



A state level analysis of deprivation in access to housing and basic amenities in India

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Abstract

Access to suitable housing and basic amenities reflects the quality of life and is essential for Human Development. The present study attempt to analyze the level of deprivation among the Indian states in access to Housing and basic amenities by using NSSO 76th round data, Z-score technique and Karl Pearson's correlation analysis has used to prepare the deprivation index and to examine the Correlation among the variables. And the study found that the BIMARU (Bihar, Madhya Pradesh, Uttar Pradesh, Rajasthan, and Assam) states, Dadra Nagar & Haveli and Daman Diu, are the most deprived among states and Union Territories respectively.

Keywords: basic amenities, deprivation, housing, India, quality of life

Introduction

Basic amenities refer to the things that make human life more manageable and pleasant. Basic needs, e.g., housing, clothing, and food security support human life, while basic amenities improve the quality of human life. For a high standard of living, the most fundamental amenities—such as decent housing, access to potable water, a separate area for cooking, the use of L.P.G., drainage systems, and toilet facilities to be provided (Prabhuswamy, 2014) [16]. Access to basic household amenities is essential for ease of life and improving the standard of living (Mondal & Das, 2022) [13]. They possess bettering the environment, health, and possibilities for other worthwhile pursuits (Ansari & Das, 2018). The standard of living of any household in a state or region is greatly influenced by access to safe drinking water, separate kitchen, sanitation, and drainage facility for wastewater (Das & Mistri, 2013) [5]. One of the main aims of the Millennium Development Goals was to provide basic amenities (MDGs-2015). However, most developing countries have trouble achieving the WaSH (Water-Sanitation-Hygiene) parameters of the Sustainable Development Goals (S.D.G.: 2015- 2030) (Sivaramakrishnan & Bhattacharyya, 2018) [19]. However, the disparity in access to basic amenities shows the inequality in access to drinking water, sanitation, and other basic facilities or standard of living in the following four ways 1) Spatial or regional, 2) Social, 3) Gender, and 4) Intergenerational. The spatial disparity is a better way to look at contrast because it is a component of total inequality that takes into account disparities in housing, transportation, sanitation, power, and other essential services as well as economic, social, and educational inequalities (Shukla, 2018) [18].

Literature Review

Rama, et., al. (2015) studied, with the aid of variables such as housing conditions, drinking water, toilets, and electricity, inequality in housing conditions in India was studied for two time periods, 2008–09 and 2012. It was revealed that the household's economic and social background determines access to basic services. Kundu, et.,

al. (1999) [10, 11] pointed out that, A state's low percentage of households with access to amenities does not always indicate that those amenities are unavailable or that their deprivation is severe; instead, it may be partially explained by social, cultural, and environmental reasons. Shaw (2007) [17] opened that a state's revenue is not the only factor to be considered when analyzing basic amenities, as there may be variations in the accessibility of basic services even among states with similar incomes. The state government focuses on investments in essential urban services and ensuring they are accessible in all communities, regardless of size. Mishra and Shukla (2015) [12] analyzed the progress report on basic amenities through three variables i.e., availability of toilet facilities, safe drinking water, and electricity between 2001 and 2011 in India. They concluded that many Indian households still lack the amenities required to guarantee a high standard of living; additionally, rural places have a far worse position. Roy and Chaudhari (2017) [4] have studied The Bray-Curtis Dissimilarity Index (BCDI), and Gini coefficient methodologies were used to analyze the geographical inequality between rural and urban areas in India's water and sanitation infrastructure, from the household to the national level. They discovered significant disparities between rural and urban India's water and sanitation infrastructure. They added that public health hygiene in rural India is seriously threatened by the absence of better on-site sanitation facilities.

Several studies have been conducted from time to time to assess the basic amenities in India. This paper also attempts to analyze the access to suitable Housing and basic amenities and their accessibility to people. A lot of efforts have indeed been made by the Government to provide these facilities. However, there is significant variation in the availability and accessibility of basic facilities across states.

Aims and objectives

The main objectives of the study are to;

1. Analyze the housing conditions and basic amenities across the Indian states.
2. Measure the deprivation level in access to housing and basic amenities in Indian states.

3. Describe the connection between the housing and essential amenities variables.

Database and Methodology

The database on the study of basic amenities is available by Census, National Sample Survey (N.S.S.) Rounds, and National Family and Health Survey. The study is based on the Drinking Water, Sanitation, Hygiene, and Housing Condition survey of the N.S.S. 76th round conducted from July to December 2018. Z score techniques have been applied to standardize variables for the composite score calculation, which shows the level of deprivation in access to basic amenities. *Karl Pearson, Correlation Coefficient technique* has been used to study the correlation matrix among the variables.

$$Z\text{-Score} = (X-\mu)/\sigma$$

Where,

Z= Standardized value of the variable

X= Actual value of the variable

μ= Mean value of the variable

σ = Standard deviation of variables

Composite score of a state= Sum of standardized values of all the indicators of a state/No. of indicators.

Table 1: List of Selected Variables for the Calculation of Deprivation among Indian States

Variables	Description
X ₁	Percentage of Households having good and satisfactory condition of housing.
X ₂	Percentage of Households having drinking water source within premises.
X ₃	Percentage of Households having bathroom facility in their building.
X ₄	Percentage of Households having latrine facility in their building.
X ₅	Percentage of Households having a separate kitchen in their house.
X ₆	Percentage of Households having drainage facility.
X ₇	Percentage of Households having using clean fuel for cooking purposes.
X ₈	Percentage of Households having electricity for domestic use.

Results and Discussion

Table 2: Housing and Basic Amenities Distribution in India, 2018

State/U.T.	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈
Andhra Pradesh	91.7	40.6	87.2	83.4	67.5	69.8	81.3	99.5
Arunachal Pradesh	93.4	85.3	86.5	97.5	68.5	57.2	64.7	97.4
Assam	92.7	89.5	67.4	97.5	82.3	51.5	59.2	94.1
Bihar	84.2	92.2	45.7	66.8	46.1	66.9	49.4	97.8
Chhattisgarh	87.6	45.4	44.8	91.9	62.7	66.5	40.6	98.6
Delhi	92.5	87.8	96.8	95.2	74.8	98.6	94.3	99.3
Goa	93.9	96.4	92.4	88.2	89.6	97.1	93.5	99.5
Gujarat	91.0	79.6	79.6	84.7	68.0	74.1	66.7	98.0
Haryana	92.1	81.4	97.0	97.1	77.3	99.4	69.3	99.5
Himachal Pradesh	94.2	72.6	95.3	96.1	88.8	91.3	51.9	99.3
J&K	93.5	82.4	88.4	87.1	88.8	79.6	68.1	99.9
Jharkhand	79.8	37.3	33.2	66.1	33.7	54.1	32.9	88.3
Karnataka	95.0	62.8	88.5	80.4	79.3	84.9	81.4	98.9
Kerala	94.2	89.5	98.3	99.2	95.9	75.8	58.9	99.7
Madhya Pradesh	82.3	43.3	62.2	76.9	49.1	68.7	48.3	97.2

1. Present Scenario of Basic Amenities in India

Higher economic and social standing is connected with having better housing options in developing nations (Huang and Jiang, 2009; Ahmad, 2012) [8, 2]. India, like other developing nations, experiences housing and basic utilities inequalities (Kundu *et al.*, 1999; Srinivasan and Mohanty, 2004; Edelman and Mitra, 2006; Motkuri and Joe, 2005; Pal, Aneja and Nagpal, 2015; Kumar 2015) [10, 11, 20, 7, 14, 15, 9]. Among basic needs, housing is essential for survival, and in India, about 88 percent of households have either satisfactory or good-conditioned houses (Table-2, Figure-1). Table-2 and Figure-2 also depict that about 66 percent of households in India have drinking water facilities within their premises; about 58.2 percent are rural households, and 80.7 percent are urban households, respectively. Contrarily, 68.1 percent of households have bathrooms in their houses or buildings; 56.4 percent of these households are in rural areas, while 90.9 percent are in urban areas. About 21.8 percent of households have no access to toilet facilities in their houses; they go for open defecation or public toilets. The percentage of households having toilet facilities in their houses is high at 93.2 percent in urban India compared to rural households, which are 70.5. In the same way, 60.2 percent of households have separate kitchen facilities; among them, 52.4 percent are rural and 75.3 percent are urban households. Electricity is indispensable to today’s civilized society (Zohuri, 2016) [21]; Access to electricity is also essential for dignified sustenance and an important indicator of balanced development (Jaydip., et., al., 2020). About 95.7 percent of Indian households have access to electricity for domestic use. About 94 percent are rural households, and 99.1 percent of urban households have electricity for domestic use. Access to LPG/PNG or clean fuel for cooking provides a healthy, smoke-free indoor environment. 61.4 percent of total households have access to clean fuel for cooking, 48.3 percent of rural households, and 86.6 percent of urban households have LPG/PNG access. Still, drainage facility is a significant challenge in India; about 28.3 percent of households have no drainage facility for wastewater disposal, while about 38 percent of rural and 8 percent of urban households have not either open or closed drainage facility. Although housing conditions in India have improved tremendously, yet a considerable majority of households still lack access to basic necessities such as sanitation, adequate living space, etc. (Ahmad & Bano, 2018) [1].

Maharashtra	85.9	79.0	84.9	79.8	61.7	84.0	75.6	98.0
Manipur	86.9	46.4	75.8	99.1	83.4	77.0	62.9	98.9
Meghalaya	96.4	32.5	81.7	97.9	81.9	87.4	34.7	92.4
Mizoram	90.0	65.2	97.8	99.8	17.7	73.4	74.3	98.6
Nagaland	94.0	63.8	96.2	97.2	83.2	93.5	59.9	100.0
Odisha	76.3	33.7	29.9	54.5	45.0	27.2	32.6	91.5
Punjab	92.3	93.9	97.6	96.0	83.2	98.9	84.8	99.8
Rajasthan	91.7	63.0	72.8	73.2	60.2	65.8	48.1	94.6
Sikkim	98.5	88.8	100.0	100.0	93.3	95.8	96.3	99.9
Tamil Nadu	95.7	57.8	83.1	76.7	76.8	69.0	86.7	98.9
Telangana	93.4	59.5	91.5	87.2	63.9	84.8	90.7	99.8
Tripura	82.7	58.9	24.0	97.4	86.5	30.3	41.3	95.3
Uttarakhand	94.0	83.7	99.1	97.7	74.8	80.5	69.9	98.6
Uttar Pradesh	83.1	73.6	46.0	61.8	35.3	84.5	50.2	84.2
West Bengal	83.2	48.0	49.4	84.7	54.8	45.4	42.8	97.8
A & N Island	89.2	76.6	99.2	95.4	88.1	85.4	81.8	97.5
Chandigarh	90.1	97.6	97.5	98.5	71.7	99.0	88.9	100.0
D.N. Haveli	82.6	42.8	43.1	87.7	45.3	63.5	86.6	100.0
Daman Diu	80.5	49.3	73.4	97.1	17.2	94.4	87.0	100.0
Lakshadweep	96.9	91.3	100.0	100.0	100.0	54.4	61.7	100.0
Pondicherry	97.3	81.7	93.4	87.5	86.9	82.1	96.5	100.0
Total	87.8	65.9	68.1	78.2	60.2	71.7	61.4	95.7
Rural	85.1	58.2	56.4	70.5	52.4	61.1	48.3	93.9
Urban	93.1	80.7	90.9	93.2	75.3	92.0	86.6	99.1

(Figure in the percentage of households to total household)
Source- NSSO, 2018

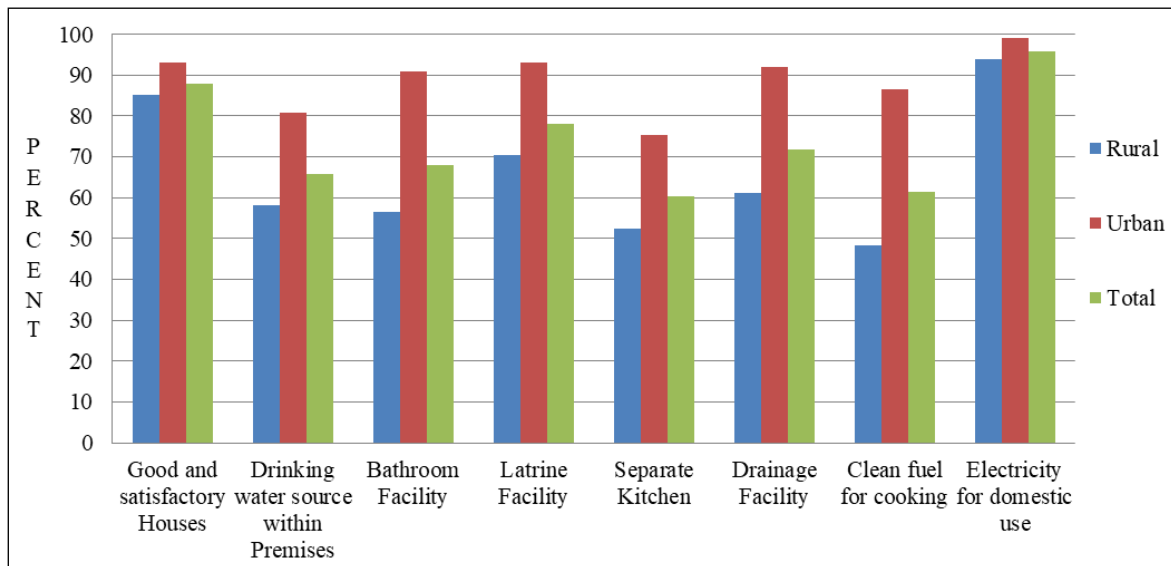


Fig 1: Housing and Basic Amenities in India, 2018

2. Deprivation level

The deprivation level in terms of housing and household amenities has been calculated based on eight selected variables among Indian states and union territories (Table-1). The deprivation index of a state has been prepared sum of standardized values of all the indicators of the state/No.

of indicators as composite z-score (C.Z.S.). And then it is categories into five groups, i.e., Very Low, Low, Medium, High, and Very High. The States or U.T.s with very low composite Z-Score represents a very high level of deprivation and vice-versa.

Table 3: Deprivation level in Access to Housing and Basic Amenities in India, 2018

Category	Composite Z-Score Range	No. of States/U.Ts	Name of the States/U.Ts
Very Low	Less than, -0.74	6	Jharkhand, Madhya Pradesh, Odisha, Tripura, Uttar Pradesh, West Bengal
Low	-0.74 to -0.37	4	Bihar, Chhattisgarh, Rajasthan, Dadra Nagar & Haveli
Medium	-0.37 to 0.37	12	Andhra Pradesh, Gujarat, Arunachal Pradesh, Karnataka, Assam, Maharashtra, Tamil Nadu, Manipur, Telangana, Meghalaya, Daman & Diu, Mizoram,
High	0.37 to 0.74	9	Lakshadweep, Puducherry, Andaman & Nicobar Island, Uttarakhand, Nagaland, Kerala, Jammu & Kashmir, Himachal Pradesh, Haryana
Very High	More than 0.74	5	Delhi, Goa, Punjab, Sikkim, Chandigarh

Source-Based on NSSO, 2018

Table 3 clearly shows that the highest level of deprivation is in the states of northern India, especially in the Gangetic plain region. It also shows that big states are highly deprived compared to small states and union territories. States from the south Indian region perform moderately in the deprivation index except for Kerala, and north-western states perform very well in access to basic amenities and housing as they all are either in high performing or very

highly performing categories. Tripura is the most deprived state in the northeast, while Nagaland has the least. Among Union Territories, Delhi and Chandigarh are highly developed in access to housing and basic amenities, while Dadra Nagar & Haveli is the most deprived. Among the States, Jharkhand is the most poor-performing state in terms of housing and basic amenities, while Sikkim is the best-performing state.

Table 4: Composite Z-Scores of Housing and Basic Amenities in India, 2018

State/UT	ZX1	ZX2	ZX3	ZX4	ZX5	ZX6	ZX7	ZX8	CZS
Andhra Pradesh	0.305	-1.397	0.408	-0.402	-0.069	-0.295	0.724	0.541	-0.023
Arunachal Pradesh	0.604	0.825	0.377	0.764	-0.023	-0.968	-0.119	-0.050	0.176
Assam	0.481	1.034	-0.448	0.764	0.625	-1.272	-0.399	-0.979	-0.024
Bihar	-1.015	1.169	-1.387	-1.774	-1.074	-0.450	-0.896	0.063	-0.671
Chhattisgarh	-0.417	-1.159	-1.425	0.301	-0.295	-0.471	-1.343	0.288	-0.565
Delhi	0.446	0.950	0.823	0.574	0.273	1.242	1.384	0.485	0.772
Goa	0.693	1.377	0.633	-0.005	0.968	1.162	1.343	0.541	0.839
Gujarat	0.182	0.542	0.079	-0.294	-0.046	-0.066	-0.018	0.119	0.062
Haryana	0.376	0.632	0.831	0.731	0.390	1.285	0.114	0.541	0.613
Himachal Pradesh	0.745	0.194	0.758	0.648	0.930	0.853	-0.770	0.485	0.480
Jammu & Kashmir	0.622	0.681	0.460	-0.096	0.930	0.228	0.053	0.654	0.442
Jharkhand	-1.790	-1.561	-1.927	-1.831	-1.656	-1.133	-1.735	-2.613	-1.781
Karnataka	0.886	-0.293	0.464	-0.649	0.484	0.511	0.729	0.372	0.313
Kerala	0.745	1.034	0.888	0.904	1.263	0.025	-0.414	0.598	0.630
Madhya Pradesh	-1.350	-1.263	-0.673	-0.939	-0.933	-0.354	-0.952	-0.106	-0.821
Maharashtra	-0.716	0.512	0.308	-0.699	-0.342	0.463	0.434	0.119	0.010
Manipur	-0.540	-1.109	-0.085	0.896	0.677	0.089	-0.211	0.372	0.011
Meghalaya	1.133	-1.800	0.170	0.797	0.606	0.644	-1.643	-1.458	-0.194
Mizoram	0.006	-0.174	0.866	0.954	-2.406	-0.103	0.368	0.288	-0.025
Nagaland	0.710	-0.244	0.797	0.739	0.667	0.970	-0.363	0.682	0.495
Odisha	-2.406	-1.740	-2.070	-2.790	-1.125	-2.569	-1.750	-1.712	-2.020
Punjab	0.411	1.253	0.857	0.640	0.667	1.258	0.902	0.626	0.827
Rajasthan	0.305	-0.283	-0.215	-1.245	-0.412	-0.509	-0.963	-0.839	-0.520
Sikkim	1.502	0.999	0.961	0.970	1.141	1.093	1.486	0.654	1.101
Tamil Nadu	1.009	-0.542	0.230	-0.955	0.367	-0.338	0.998	0.372	0.143
Telangana	0.604	-0.457	0.594	-0.087	-0.238	0.506	1.201	0.626	0.343
Tripura	-1.279	-0.487	-2.325	0.756	0.822	-2.403	-1.308	-0.641	-0.858
Uttarakhand	0.710	0.746	0.922	0.780	0.273	0.276	0.145	0.288	0.518
Uttar Pradesh	-1.209	0.244	-1.374	-2.187	-1.580	0.490	-0.856	-3.767	-1.280
West Bengal	-1.191	-1.029	-1.227	-0.294	-0.665	-1.597	-1.232	0.063	-0.897
A & N Island	-0.135	0.393	0.927	0.590	0.897	0.538	0.749	-0.022	0.492
Chandigarh	0.023	1.437	0.853	0.846	0.128	1.264	1.110	0.682	0.793
Dadra & Nagar Haveli	-1.297	-1.288	-1.499	-0.046	-1.111	-0.631	0.993	0.682	-0.525
Daman & Diu	-1.667	-0.965	-0.189	0.731	-2.430	1.018	1.013	0.682	-0.226
Lakshadweep	1.221	1.124	0.961	0.970	1.456	-1.117	-0.272	0.682	0.628
Puducherry	1.291	0.646	0.676	-0.063	0.841	0.361	1.496	0.682	0.741

Source- Computed by Author from NSSO 76th, 2018

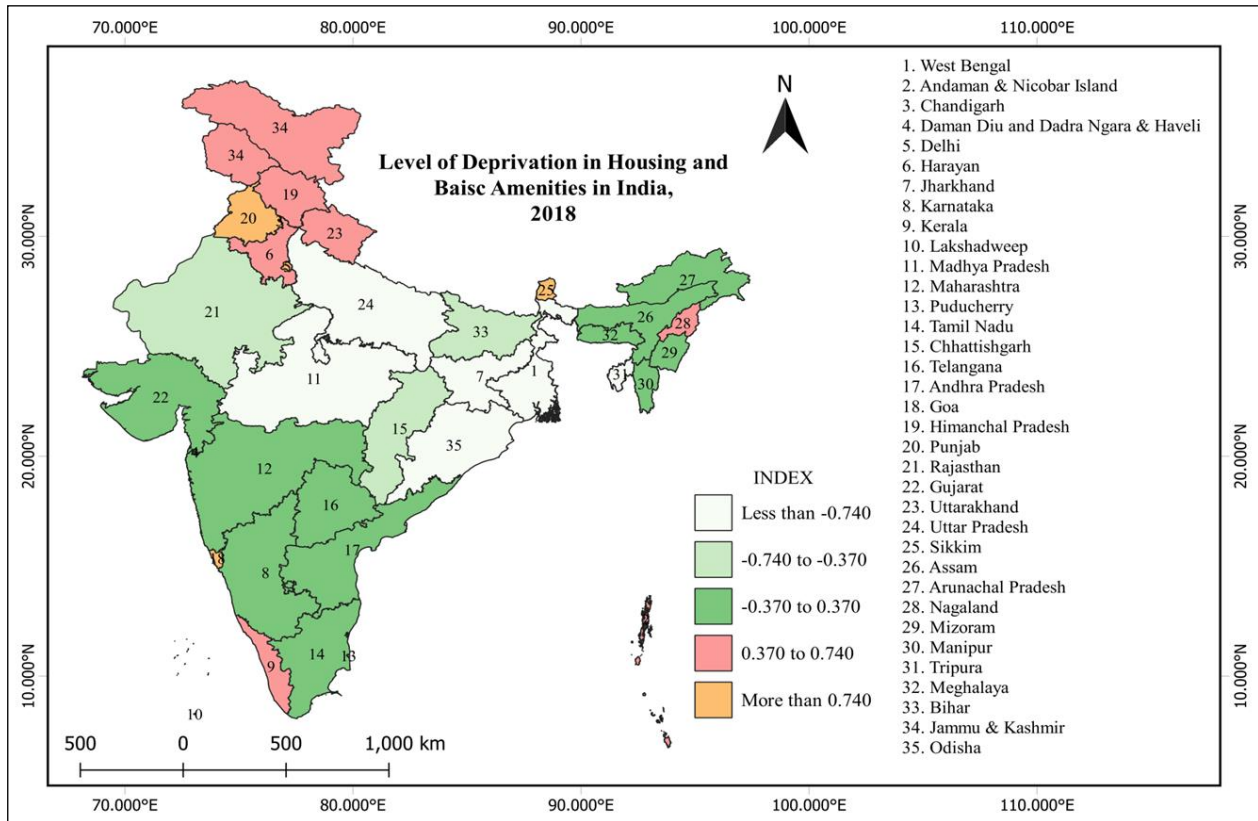


Fig 2: Level of Deprivation in Housing and Basic Amenities in India, 2018

3. Correlation between the variables of Basic Amenities

Table 5: Correlation Matrix between the Variables of Deprivation in Access to Housing and Basic Amenities in India, 2018

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	CZS
X ₁	1								
X ₂	.515**	1							
X ₃	.811**	.557**	1						
X ₄	.539**	.339*	.597**	1					
X ₅	.719**	.462**	.509**	.490**	1				
X ₆	.483**	.407*	.713**	.373*	0.211	1			
X ₇	.456**	.450**	.643**	.357*	0.208	.612**	1		
X ₈	.465**	0.320	.603**	.599**	.391*	.378*	.622**	1	
CZS	.835**	.678**	.910**	.719**	.668**	.700**	.728**	.733**	1

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

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

CZS= Composite Z-Scores

Karl Pearson's correlation coefficient method has been used to investigate the link between the variables of deprivation in housing and basic amenities, whose values ranges from -1 to +1, where 0 and above value represent the positive relationship between variables. In contrast, less than 0 values represent negative relationships between variables. The result of the correlation coefficient among the variables has been shown in Table---. Good and Satisfactory housing (X1) has a high degree of positive relationships with the Bathroom facility in the building (X3), Separate kitchen in the house (X5), and Composite Z-Scores (CZS) at 99 percent significance level. The bathroom facility in the building (X3) has a high degree of positive relationship with Composite Z-Scores (CZS) and Households having a drainage facility (X6) at 99 percent confidence level. Composite Z-Scores (CZS) have high degree of positive association with all the variables at 99 percent significance

level. It has been observed that all the variables have a positive association between them.

4. Conclusion and Suggestions

The above analysis reveals a significant gap in rural and urban India's access to housing and basic amenities except for some indicators like the percentage of households with electric connections for domestic use and the percentage of households with good and satisfactory housing conditions. However, in deprivation analysis, it is found that large states like Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar, Odisha, and Chhattisgarh are most deprived, while small states like Sikkim, Goa, Punjab, Haryana, Kerala are least deprived in access to suitable housing and basic amenities. Tripura is the only states from the north-east in the least deprived category rest are performing well in terms of access to housing and basic amenities. Among the Union

Territories, Dadra Nagar & Haveli and Daman Diu are the most deprived, while Delhi and Chandigarh are least deprived in access to housing and basic amenities. There is a close association among the selected variables of housing and basic amenities, which leads to a deficiency in one variable resulting in another.

Despite a lot of efforts made by both central and state governments to improve the housing and basic amenities through various schemes like Indra Awas Yojana, Ujjawal Yojana, and JNNURAM, Still, there is a considerable variation in rural and urban India, and there is inter-state variation also. The policy should be focused on adequately implementing various schemes at the grassroots level in rural India and in the BIMARU (Bihar, Madhya Pradesh, Uttar Pradesh, Rajasthan, and Assam) states to achieve Sustainable Development Goals (SDGs) -like housing and sanitation for all.

Note- Jammu & Kashmir and Laddakh are given the same number in Figure 2 because they weren't divided at the time of the NSSO's 2018 data collection.

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