

**SPATIAL DISTRIBUTION OF HOUSING AND HOUSEHOLD AMENITIES: A
DISTRICT LEVEL ANALYSIS, ODISHA.**

A Dissertation

**Submitted to the Department of Humanities and Social Sciences,
National Institute of Technology, Rourkela, in Partial Fulfillment of
Requirement of the Award of the Degree of**

**MASTER OF ARTS
IN
DEVELOPMENT STUDIES**

Submitted by

Leesa Vandana Toppo

412HS1012

Under the Guidance of

Prof. Jalandhar Pradhan

Department of Humanities and Social Sciences



NATIONAL INSTITUTE OF TECHNOLOGY

ROURKELA – 769008, ODISHA

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CERTIFICATE

This is to certify that the dissertation entitled “**Spatial Distribution of Housing and Household Amenities: A District Level Analysis, Odisha**” which is being submitted by Leesa Vandana Toppo, MA student, Studentship Roll No. 412HS1012, in the Department of Humanities and Social Sciences, National Institute of Technology, Rourkela-769008(INDIA) for the Degree of MA in Development Studies is a bonafide research work done by her under my supervision. To the best of my knowledge, the dissertation contains neither materials published or written by another person, nor the material which to a substantial extent has been accepted for the award of MA degree at Humanities and Social Sciences, NIT Rourkela or any other educational institute except where acknowledgement is made in the dissertation. Any contribution made to the research by others with whom she has worked at Humanities and Social Science Department, NIT Rourkela or elsewhere is explicitly acknowledged in the dissertation project.

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(Prof. Jalandhar Pradhan)

Research Supervisor

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ABSTRACT

Housing and availability of household amenities is considered to be the most valuable economic asset and is an important indicator of lifestyle and socio-economic status. Though we are in the path of 60yrs of independence, majority of people have been deprived of standard housing, without access to basic minimum facilities of drinking water, sanitation and public hygiene etc which requires utmost attention. The access to basic amenities like electricity, drinking water, toilet facility, clean fuels etc are the determinants of quality of life. Access to basic amenities varies in accordance with the size, categories of cities and towns except for toilet and sanitation. The access to basic amenities like electricity, drinking water, toilet facility and clean fuel are critical determinants of quality of life in most of the developing countries like India. As per 2011 census, 13% of households have no access to electricity, 16% have no access to safe drinking water and 17% have no access to toilet facility. This paper attempts to study the availability of housing and household amenities in the 30 districts comprising both of urban and rural areas. Subsequently, this study categorizes all 30 districts as low, medium and high using a composite score.

CHAPTER 1

INTRODUCTION

1.1 Introduction

House is considered to be their most valuable economic asset and is an important indicator of lifestyle and socio-economic status. It focuses on the consumption pattern of both the rural and urban people and access to the other amenities. Household assets and amenities reflect a household's quality of life. It is an important goal of Indian Developmental Planning. Housing is one of the three basic needs of human life and an important indicator of social welfare. In this we will be focusing on the lifestyles of each and every household and their consumption patterns. Housing and household amenities such as source of lighting, safe drinking water, housing facility, separate kitchen, toilet facility reflects a household quality of life. The often used Hindi phrase "**Roti, Kapda, Makaan**" is roughly translated as "**Bread, Clothing, Shelter**" which describes the man's basic needs which also captures the common man's perception. It is the most valuable economic asset as well as an important aspect of socio-economic status. It focuses on the consumption pattern of both the rural and urban people living in a particular area or a district. The amenities which reflects a quality of life such as usage of electricity enables and helpful in reading and also doing household activities, new fuels and improved stoves provides cleaner environment, clean water and proper sanitation facilities helps in reducing gastro-intestinal and various hazardous diseases, access to piped water and use of kerosene or Liquefied Petroleum Gas (LPG) for cooking reduces the time women used to spend during the collection of water and fuel. Smith (1973), "The housing is one of the three basic needs of human beings, but it is still beyond the access of the disadvantaged section of the society." Under the Goal Seven (7) of Millennium Development Goals (MDG's), targets on the usage of improved water source and sanitation facility. These goals have been targeted to be achieved by the year 2015.

Houseless is a growing major problem across the world in both rural and urban parts due to poverty, unemployment, low income, costly land and building materials, decreasing size of land holdings. In addition to that millions of people without access to the basic amenities have been worsened the housing status. Lawrence (2004) has said that, "Housing is a meant to provide shelter and security and is considered a fundamental development process, in which the built environment is created, used and maintained for the physical, social and economic well-being and quality of life of individuals and households." As far as the houses are concerned these are just the human structures which are meant to live in, work or store things. However, the term basic amenities refers to the source of drinking water, sanitation, electricity and other basic

facilities available to households provided by the governmental and non-governmental bodies. These household amenities are also determined by the economic context and also for the development. Nayyar (1997), "Housing conditions , availability of drinking water, sanitation facilities etc might contribute to the health improvement of the people and determines the quality of life of the society." This addresses on major themes such as providing a description of household's standard of living as measured by basic amenities such as access to water, sanitation, fuels and electricity.

Roger Thomas (1991) pointed out that, "Housing and household amenities can be divided into 4 categories such as (a) Social and Economic Importance of Housing, (b) Basic Household Amenities, (c) Housing Improvement and (d) House Condition. Housing plays an important role as well as a contributor to the health status of the population. It also reflects the combined consequence of educational and economic status. The concept of house is considered as fitness for human habitation which includes other facets such as freedom from damp, natural light and air, water supply, drainage and sanitary conveniences and facilities for storage, preparation and cooking of the food for the disposal of waste water. The quality of shelter is accessible to households having certain basic amenities which are deemed to be necessary for living. Census of India, "Household is usually a group of persons who normally live together and take their meals from a common kitchen unless the exigencies of work prevent any of them from doing so. Each person should be treated as a separate household."

1.2 Brief Description about Housing and Household Amenities

Housing and household amenities play an important role in our day to day life. In this chapter we will be able to see the day to day lifestyles of the households by focusing on their consumption patterns through access to amenities such as clean water, sanitation, electricity, separate kitchen and the condition of the houses. The provision of basic services such as piped water, sanitation, electricity has been an important goal of Indian Developmental Planning. It helps in the socio-economic importance of housing, improvement of housing and the condition of the houses. Housing and household amenities plays a crucial role in the economic as well as in the educational aspect and also helps in the development of a particular area. Housing and household

amenities reflect a household's quality of life and it is also determined by the economic context and also by the development of local infrastructure. This chapter addresses the major themes such as lighting, clean water, toilet facility, separate kitchen and condition of houses which also provides a brief description about household's standard of living as measured by basic amenities. The housing and household amenities have been categorized into 5 parts:-

1.2.1 Source of Lighting

The Indian government is committed to provide an adequate source of electricity for all segments of the society. However, rapid economic growth has increased electricity demands. Government policies have emphasized rural electrification through the Rajiv Gandhi Grameen Vidyutikaran Yojana and these efforts appear to be reflected in the rapidly rising rates of electrification. Nevertheless, a significant number of rural households lack electricity and the quality of service still lags behind. As per the Rajiv Gandhi Grameen Vidyutikaran Yojana there is a significant rise in the rural electrification so the electrification rates have been increasing. Many of the households may have illegal connections which is quite a very common practice which is found mainly in the rural areas. These households may not report their illegal connection to the Census which is by default an official arm of government but the electrification rate may be under reported in the IHDS().The central government has financed much of the electricity development, but the actual delivery of electricity to consumers is primarily a state responsibility. The highly developed states of Punjab, Jammu and Kashmir and Haryana have achieved rural connections greater than 90%. All the states have in the south have rates of rural electrification greater than 80%. In contrast to that, the poor states have low rates of rural electrification such as 29% of Bihar villages have electricity, Odisha having 36% and Uttar Pradesh having 34% electricity.

Inadequate supply is an even bigger problem for rural households. It is the poor who suffer from the lack of access to electricity. Poverty is also related to low access to electricity. Poverty at an individual level as well as state level also reduces the access towards electricity. Low access to electricity reduces economic growth. Similarly states with poorly developed electric supply may experience low investment and productivity growth.

1.2.2 Availability of clean drinking water

Source of clean water forms the backbone of an effective public health system. More than half 55% of urban households get piped water in their homes; another 19% get piped water outside their homes. In villages, only 13% get piped water in their homes; another 15% have piped water outside their home. Hand pumps have 39%, open wells 18% and tube wells 13% are more common in rural areas. Whether in villages or towns, piped water is rarely available 24 hours a day. Only 6% of households with piped water report that water is available all day. Most 63% have water available fewer than three hours on a typical day. The inconsistent supply means that households have to store their water in their household containers, allowing the potential for contamination. Piped water is also more common in high income households. About one-half (52%) of the most affluent households, but only 11% of the poorest households have indoor piped water. Some of the advantage for high income households are owing to the fact that they more often live in high income states and in urban areas. But even within the rural and urban areas, the higher the income, the more likely the household is to have indoor piped water.

However, the household income does not fully explain the differences between the urban, rural or state. For those without the tap water in their households, the burden of collecting water can be time consuming. The typical Indian household without indoor water spends more than one hour per day collecting water. But some households spend much more time collecting water so the mean time spent is even higher i.e.; 103 times a day. The time spent collecting water is substantially greater in rural areas i.e.; 109 minutes a day than in urban areas i.e.; 76 minutes. Not only villagers are less likely to have indoor water than town and city dwellers, they have to go farther when they do not have it. When average over households that have piped water and those that do not, the average time spent per household fetching water is 53 minutes per day. This is a substantial loss of time that could be used for other purposes. The time spent collecting water takes time away from the household's quality of life and its productivity. In addition to it, poor supply of water has obvious health costs for both urban and rural households.

1.2.3 Availability of toilet facility

Source of toilet facility forms the backbone of an effective public health system. Researchers on various health based projects have suggested that both the quality and quantity of water are important determinants of the prevalence of gastrointestinal diseases. This problem is further compounded by lack of access to sanitation. About 58% of Indian households do not have toilet, 19% have a pit or some type of toilet facility, and 23% have a flush toilet whereas 72% of households have no toilet facilities in rural India. Moreover, among urban households that do not have a toilet, nearly half are able to use some form of public or shared toilet, a facility available to only 9% of the rural households without a toilet. Although the household wealth is associated with access to piped water and sanitation.

1.2.4 Availability of separate kitchen and use of cooking fuels

Cooking fuels have aroused increasing interest over the past twenty years because fuel wood harvesting has caused extensive deforestation and because cooking with biomass fuels on open fires causes significant health problems. It is a fact that the household uses energy for a wide variety of activities besides cooking. In India, the use of biomass energy in traditional stoves is still quite common, but the use of modern fuels such as LPG has increased as well. Almost half of all households use at least three different fuels for three different purposes such as firewood is used for cooking the main meals, LPG or kerosene fuel is used for quickly making tea and use of cow dung cakes helps to lower the heat and simmer fodder for animals or heat milk. In India, the most widely used fuel is kerosene but most households use it for lighting. However, kerosene is a poor lighting fuel which provides less light than a simple 40-watt light bulb and is more expensive. Households with electricity immediately switch to electric lighting and use kerosene as a backup fuel when the power is unreliable.

For household cooking, the most widely used cooking fuel remains firewood which is used by 72% of the households. Dung cakes are the second most common cooking fuel used by 39% of the households. The other biomass fuel used for cooking is crop residue that is stalks left over after threshing and not used for animal fodder and 15% of the household use these for at least some of the cooking purpose. The use of coal or charcoal is very localized and is used by only 5% of the households. Liquid fuels purchased in the market place have the advantage of being

used in more efficient stoves which emits less air pollution and reduces the utensil cleaning. Kerosene is almost universally available across India, through both the open market and the Public Distribution System (PDS) and is used by 26 % of households for some cooking purpose. The use of LPG has increased significantly as a result both of market liberalization to encourage private vendors and of the expansion of public sector outlets. About one-third of Indian households now use LPG for some or all of their cooking, and this figure has been increasing steadily. Urban households use modern fuels not only because they are better off financially but also because modern fuels are easily available in towns and cities. Rural households use biomass fuels not only because they tend to be poorer but also because biomass is easily available there unlike urban areas. Income definitely matters, but fuel availability in both urban and rural markets appear to be an even more important factor in determining the fuels that households adopt for cooking.

1.2.5 Condition of houses

As we know that home is the centre of most people's lives. For the majority of them their dwelling is the place where they spend most time and where they most need to feel comfortable, secured and well provided for. The dwelling not only provides shelter and a place to eat, sleep and store possessions. It is also the prime base for family and social activities and a forum of expression of personality and taste and for enjoyment of leisure activities. Once a house is purchased their dwelling is likely to be their most valuable economic asset and the kind of accommodation occupied by a household is an important indicator of its lifestyle and socio-economic status. Households which lack any of the basic amenities or have to live in decaying "slums" are rightly seen as deprived and under stress and becoming homeless is regarded by most individuals and particular by families met with any natural disaster. Local and national governments are therefore concerned not only about housing provision, but also about the physical condition of the housing. The major factors here are the age of the structure, the quality of the original building and the degree to which it has been maintained and repaired.

1.3 Review of Literature

Nayar, K.R.(1997), “the housing amenities to health improvements have examined the conventional idea that health promoting factors such as housing conditions, availability of drinking water, sanitary facilities etc would contribute to health improvement among the population sometimes even more significantly than health services.” This study indicates that contribution towards housing conditions including sanitary facilities will lead to improvement in the aspect of health. Kundu, A., Bagchi,S. and Kundu, D.(1999) hve pointed out that households having low percentage of figures in a particular state does not necessarily reflect non-availability or deprivation of a particular amenity, it could be due to natural, social and cultural factors.

Edelman, B. and Mitra, A (2006) have different views regarding the availability of basic amenities by observing the prevailing conditions of slum areas which revealed a positive relationship between political contact and access to amenities. They also considered that the social capital is effective in generating improved outcome. The social capital that the low income household possesses needs to be nurtured and it should be used as an interest in developing access to basic amenities and improved living conditions.

Shaw, A. (2007) opined that a state’s income is not the only criterion to be considered important in examining basic facilities for even when the income is same, there could be differences in the availability of basic services depending upon the policies of the government and the priority being given to the investments by the state government in urban services and their availability. However, the poorer states will need continued assistance from the central government to meet their economic needs. Amenities are region specific goods and services that make some locations particularly attractive for living and working.

Various research works have been done and conducted all over the world regarding the provision, problems and utilization of household amenities. Smith (1977) mentioned that amenities exist at various geographical areas, influences quality of life or social well – being and moreover it also influences the consumption patterns of the households. Power (1996) discussed the role of amenities have a supplementing factor as well as it transforms the community and

regional economic bases. Few empirical studies have concluded that the effects of amenities helps in sorting of households.

Dunn (2010) argued that green infrastructure is an economically and environmentally viable approach for water management and natural resource protection in urban areas. Besides, green infrastructure has additional and exceptional benefits for the urban poor which are not frequently highlighted or discussed. But it can improve urban water quality, reduce air pollution, improves public health and facilitates food security.

Ministry of Finance (2012), “Government policies are directed towards economic and social upliftment of these segments to enable to reap the benefits of growth and bring marginalized section of the society into the mainstream.” Thus this study revealed that we have been giving more emphasis on the economic growth or towards the development indicators which are related to education and health, but not on the micro level and the components related to access to drinking water, toilet facility, sanitation, clean fuel and bathroom facility as determinants of life chances, capability, social and gender equity.

R.B. Bhagat (2011), “The deprivation of drinking water, sanitation and toilet facilities is most glaring in rural areas and also in small and medium towns of urban areas.” He had also mentioned that due to deprivation of drinking water, sanitation and toilet facilities various types of gastrointestinal diseases have been increased.

Census was expected to provide more data on the economic and living conditions of the Indian people. S. K.Chandoke has mentioned in one of his articles that the villages suffer from scarcity or health hazards or special problems. The areas outside the houses are ill – planned and badly maintained making the environment more depressing.

1.4. Objective of the Study

- i.** To assess the availability of household amenities in all 30 districts of Odisha using Census 2011.
- ii.** To examine the spatial distribution (by rural and urban) of housing and household amenities.
- iii.** To classify districts in the categories of low, medium and high with reference to the availability of housing and household amenities by using Composite Index.

CHAPTER 2

PROFILE

OF

THE STUDY AREA

2.1 Brief description of Odisha

Odisha is one of the 28 states of Indian Union was created on 1st April 1936. It extends from 17^o49¹ N to 22^o 34 N latitude and from 81^o 29 E to 87^o 29 E longitude on the Eastern coast of India. It is bounded by the Bay of Bengal on the east, West Bengal on the north-east, Jharkhand on the north and Chhatisgarh on the west and Andhra Pradesh on the south. It covers an area of 1,55,707 sq Kms and population of 3,68,04,660 according to 2001 census. The state generally slopes from north and north-east to the west and south-west and from south and south-west to east and then to the coast and coastal plains. From these physiographic points of view the state is divided into four physiographic zones viz.

1. **The Northern Plateau:** It includes the districts of Mayurbhanj, Keonjhar (Except Anandpur plains), Talcher, Pallahara of Angul district, Bonai, Tensa hills, Gangpur, Sundargarh and Panposh of Sundargarh district and Bamra, Kuchinda and Rairakhol of Sambalpur district.
2. **The Eastern Ghat Zone:** This zone comprises Koraput, Rayagada, Nabarangpur, Malkangiri, Kandhamal, Boudh and Kalahandi and Nuapara district of the state. This zone is the most mountainous zone.
3. **Central Table Land:** Sambalpur, Deogarh, Jharsuguda, Bargarh, Dhenkanal, Angul, Bolangir and Sonapur districts comprise this division.
4. **Coastal Zone:** This region comprises Balasore, Bhadrak, Cuttack, Jajpur, Kendrapara, Jagatsinghpur, Puri, Khurda, Nayagarh, Gangam and Gajapati districts. The coastal plains of Orissa stretch from Subarnarekha in the north to Rushikulya in the south.

These 30 districts have been placed under three different divisions for smoothening the governance. The divisions are North, South and Central. Each division consists of 10 districts. Its administrative head is the Revenue Divisional Commissioner (RDC) and the Police Head is Inspector General of Police (IGP). Each district is governed by a District Collector (District Magistrate), appointed either by the Indian Administrative Service or the Odisha Administrative Service. Each district is subdivided into Sub-Divisions, governed by a sub-divisional magistrate, and thereafter into blocks. Blocks consist of Panchayats (village councils) and town municipalities.

According to the 2011 census of India, the total population of Odisha is 41,947,358 (41million) of which 21,201,678 (50.54%) are male and 20,745,680 (49.46%) are female or we can say that out of 978 females per 1000 males. This represents a 13.97% increase over the population in 2001. The population density is 269 per km². The literacy rate is 73%, with 82% of males and 64% of females being literate. The proportion of people living below the poverty line in 1999–2000 was 47.15% which is nearly double the all India average of 26.10%. Data of 1996–2001 showed the life expectancy in the state was 61.64 years, higher than the national value of years. The state has a birth rate of 23.2 per 1,000 people per year, a death rate of 9.1 per 1,000 people per year, an infant mortality rate of 65 per 1000 live birth and a maternal mortality rate of 358 per 1,000,000 live births. Odisha has a Human Development Index (HDI) of 2004. Scheduled Castes and Scheduled Tribes form 16.53% and 22.13% of the state population, constituting 38.66% of the State population.

Diagrammatic representation of the 30 districts of Odisha:



Figure -1

2.2 Study Area

The present study was conducted in both the urban and rural area of Odisha as per the 2011 census. The study was confined to 30 districts comprising of both rural and urban areas of Odisha. Odisha as a whole has been chosen as study area for the recent research work and the boundary of a district has been considered as the smallest unit of the study. The state is comprises of thirty districts and lie in the eastern part of India. The mainland extends between $17^{\circ} 49'$ to $22^{\circ} 34'$ north latitudes and $81^{\circ} 29'$ to $87^{\circ} 29'$ east longitudes on the eastern coast of India (Figure 1). According to the 2011 census of India, the total population of Odisha is 41,947,358 of which 21,201,678(50.54%) are male and 20,745,680(49.46%) are females or 978 females per 1000 males. There has been an increase over the population in 2001 and the population density is 269 per km^2 . The literacy rate is 73%, 82% of males and 64% of females being literate.

CHAPTER 3

DATA AND METHODOLOGY

3.1 Tools Applied

The present study of my project spatial distribution of housing and household amenities was done on the basis of secondary data. The data collected was from the 2011 Census data which was provided by the Census, Government of India. The secondary data collected for the distribution of housing and household amenities for its various indicators such as source of lighting, source of clean drinking water, source of toilet facility, source of separate kitchen and fuels used, and source of housing was collected and analyzed in the MS- Excel worksheet.

3.2 Data Collection

Quantitative study design was followed to collect necessary information on the 5 indicators of housing and household amenities. Data was collected for my project from secondary sources i.e.; Census 2011.

3.3 Data Analysis

The data obtained was compiled and tabulated using the MS – Excel worksheet. Analysis mainly focuses on the change in availability of household amenities during the census 2011 and to examine the spatial distribution of both rural and urban at the district level and therefore the classification of districts in the categories of low, medium and high with reference to the availability of household amenities by using Composite Index.

3.4 Assessing Composite Score

The five indicators of housing and household amenities are considered to estimate the percentage, mean, standard score and composite score of all 30 districts of Odisha will be categorized in reference to low, medium and high. The indicators such as source of lighting, source of clean drinking water, source of toilet facility, source of separate kitchen and fuels used and source of housing condition. The raw data for each variable determines the real variation of levels of housing and household amenities have been computed into standard score. It is generally known as Z value or Z-score.

$$Z = (x - \mu) / \delta$$

Where Z = standardized value of the variable in a district

x = actual value of a variable in district

μ = population mean of a variable in district

δ = standard deviation of variable in district.

In the second step, the Z scores of all variables have been added district wise and the average has been taken out for the variables used which may be called as composite scores for each district and may be expressed as :-

$$CS = (\sum Z_{ij}) / N$$

CHAPTER 4

RESULTS AND CONCLUSION

Results

From the table below it is evident that in Odisha, the mean score of rural housing and household amenities depicts that in Nabarangpur district (8.5) electricity of households is still not readily available, whereas in Khordha (57.3) there is good facility of electricity. Availability of safe drinking water is good in Ganjam (10) and lowest in Bhaudh (1.1). Toilet facility is variedly better in all the districts with highest mean score (17.1) in Jagatsinghpur whereas in Nabarangpur it is less developed (2.9). The separate kitchen condition is better in Ganjam (6.2) and less developed in Nabarangpur (0.8). Kendrapada, Jagatsinghpur, Nayagarh (35) has got good housing conditions and least development in housing conditions is found in Debagarh (11).

Table - 1: Percentage of housing and household amenities in rural Odisha.

	Availability of housing and household amenities and its indicators				
	electricity	drinking water	toilet facility	good condition of houses	separate kitchen
Bargarh	40.3	4.7	8.4	23.5	1.7
Jharsugda	44.5	4.1	8.0	21.5	2.8
Sambalpur	35.8	3.5	6.9	21.8	3.1
Debagarh	26.2	1.9	4.4	11	1.1
Sundargarh	25.6	2.6	6.4	18	2.3
Kendhujhar	23.0	2.9	5.7	21	2.8
Mayurbhanj	19.6	2.1	6.0	18	1.8
Baleswar	52.7	6.7	7.4	26	2.8
Bhadrak	50.4	2.2	8.5	26	2.6
Kendrapara	51.3	3.7	10.8	35	3.7
Jagatsinghapur	51.2	2.4	17.1	35	4.5

Cuttack	51.7	4.8	16.4	34	5.1
Jajapur	44.7	2.1	13.1	27	4.1
Dhenkanal	38.5	2.4	8.0	23	4.2
Anugul	38.0	4.8	10.7	23	4.4
Nayagarh	52.1	6.8	10.0	35	2.7
Khordha	57.3	6.5	13.5	29	6.0
Puri	49.0	2.6	10.8	24	2.7
Ganjam	46.2	10.0	12.6	28	6.2
Gajapati	44.7	4.8	7.3	26	3.5
Kandhamal	10.9	1.3	3.9	24	1.1
Baudh	15.3	1.1	5.0	19	1.3
Subarnapur	29.5	1.3	5.8	18	1.7
Balangir	22.7	3.7	6.0	24	1.1
Nuapada	24.9	2.4	6.0	22	2.4
Kalahandi	18.6	2.0	5.2	20	1.9
Rayagada	17.5	6.6	4.5	24	3.3
Nabarangpur	8.5	2.1	2.9	26	0.8
Koraput	14.9	4.7	5.3	28	3.3
Malkangiri	13.4	1.2	4.4	25	1.3

From the table above it is evident that in Odisha, the mean score of rural housing and household amenities depicts that in Nabarangpur district (8.5) electricity of households is still not readily available, whereas in Khordha (57.3) there is good facility of electricity. Availability of safe drinking water is good in Ganjam (10) and lowest in Bhaudh (1.1). Toilet facility is variedly better in all the districts with highest mean score (17.1) in Jagatsinghpur whereas in Nabarangpur it is less developed (2.9). The separate kitchen condition is better in Ganjam (6.2) and less developed in Nabarangpur (0.8). Kendrapada, Jagatsinghpur, Nayagarh (35) has got good housing conditions and least development in housing conditions is found in Debagarh (11).

Table 2: Percentage of urban housing and household amenities in urban Odisha.

Name of the districts	Availability of Housing and Household amenities and its indicators				
	electricity	drinking water	toilet facility	separate kitchen	good housing condition
Bargarh	88.4	21.9	46.9	32.3	46.8
Jharsuguda	87.0	30.5	50.2	32.6	47.6
Sambalpur	89.5	59.9	54.4	40.3	52.4
Debagarh	73.0	31.2	42.8	26.8	31.4
Sundargarh	88.6	44.8	60.7	43.4	48.0
Kendhujhar	72.7	40.1	44.3	36.1	42.7
Mayurbhanj	77.3	28.0	52.9	45.3	47.3
Baleshwar	84.8	23.8	52.0	41.9	49.3
Bhadrak	75.2	7.1	39.0	25.0	39.3
Kendrapara	83.4	41.6	51.7	27.9	45.9
Jagatsinghapur	64.0	48.3	40.5	34.3	38.7
Cuttack	91.6	60.1	71.7	57.6	56.0
Jajapur	78.9	31.0	49.5	35.0	49.7
Dhenkanal	78.4	22.9	49.1	37.0	50.0
Anugul	80.3	42.0	56.7	35.0	53.9
Nayagarh	78.3	13.5	44.3	30.9	50.0
Khordha	86.0	48.2	65.6	60.2	57.5
Puri	88.2	33.7	63.8	47.5	46.4
Ganjam	82.2	49.9	54.9	53.5	53.0
Gajapati	79.2	45.1	49.7	50.5	52.5

Kandhamal	70.4	28.0	46.0	31.1	45.1
Baudh	74.8	58.0	41.5	38.7	37.3
Subarnapur	72.1	37.1	35.2	23.3	31.7
Balangir	79.3	35.8	52.1	38.3	45.2
Nuapada	76.3	12.4	43.8	34.7	39.3
Kalahandi	75.6	20.0	43.6	38.1	44.3
Rayagada	81.4	53.9	55.2	54.1	58.2
Nabarangpur	64.6	23.7	47.0	36.2	42.5
Koraput	79.4	48.4	60.1	57.9	54.4
Malkangiri	68.6	27.5	44.5	27.7	43.9

From the table above it is evident that in Odisha, the mean score of urban housing and household amenities depicts that in Jagatsinghpur district (64) electricity of households is still not readily available, whereas in Cuttack (91) there is good facility of electricity. Availability of safe drinking water is good in Cuttack (60.1) and bad in Bhadrak (7.1). Toilet facility is variedly better in all the districts with highest mean score (71.7) in Cuttack whereas in Subarnapur it is less developed (23.3). The separate kitchen condition is better in Khordha (60.2) and less developed in Subarnapur (23.3). Rayagada (58.2) has got good housing conditions and least development in housing conditions is found in Subarnapur (31.7).

Table -3: Percentage share of Total population of Odisha State.

Name of the districts	Availability of Housing and Household amenities and its indicators				
	electricity	safe drinking water	toilet facility	separate kitchen	good housing condition
Bargarh	44.7	6.3	54.4	4.5	25.7
Jharsuguda	60.6	14.1	42.8	14.1	31.4
Sambalpur	50.8	19.4	60.7	13.5	30.4
Debagarh	29.6	5.0	44.3	2.9	12.8
Sundargarh	47.2	17.1	52.9	16.4	28.0
Kendhujhar	30.0	8.1	52.0	7.4	23.9
Mayurbhanj	23.9	4.0	39.0	4.9	20.1
Baleshwar	56.1	8.5	51.7	6.9	28.3
Bhadrak	53.2	2.8	40.5	5.1	27.8
Kendrapara	52.9	5.5	71.7	4.8	35.6
Jagatsinghapur	52.6	7.3	49.5	7.6	35.6
Cuttack	61.7	18.6	49.1	18.2	39.8
Jajapur	47.2	4.2	56.7	6.4	28.9
Dhenkanal	42.1	4.2	44.3	7.1	25.1
Anugul	44.6	10.6	65.6	9.2	28.1
Nayagarh	54.1	7.3	63.8	4.8	24.4
Khordha	71.5	27.1	54.9	32.7	42.9
Puri	54.6	7.0	49.7	9.0	27.3

Ganjam	53.5	18.2	46.0	15.9	33.1
Gajapati	49.0	9.8	41.5	9.3	29.7
Kandhamal	16.7	3.9	35.2	4.0	25.9
Baudh	17.8	3.5	52.1	2.9	20.2
Subarnapur	32.8	4.1	43.8	3.4	18.9
Balangir	28.6	7.0	43.6	4.9	25.9
Nuapada	27.5	2.9	55.2	4.0	22.5
Kalahandi	22.5	3.2	47.0	4.4	21.5
Rayagada	27.2	13.8	60.1	11.0	29.3
Nabarangpur	12.6	3.7	44.5	3.4	26.9
Koraput	25.4	11.8	56.5	11.7	32.5
Malkangiri	17.9	3.3	7.7	3.4	26.3

From the table above it is evident that in Odisha, the mean score of total housing and household amenities depicts that in Nabarangpur district (12.6) electricity of households is still not readily available, whereas in Khordha (71.5) there is good facility of electricity. Availability of safe drinking water is good in Khordha (27) and bad in Bhadrak (2.8). Toilet facility is variedly better in all the districts with highest mean score (71) in Kendrapada whereas in Malkangiri it is less developed (7.7). The separate kitchen condition is better in Khordha (32.7) and less developed in Debagarh and Baudh (2.9). Khordha (42.9) has got good housing conditions and least development in housing conditions is found in Debagarh (-12.8).

Table 4: District wise availability of mean score of rural Housing and Household Amenities in Odisha

Name of the districts	Mean Score				good housing condition.
	electricity	safe drinking water	toilet facility	separate kitchen	
Bargarh	2.5	-1.8	2.3	-0.9	-0.3
Jharsugda	2.8	1.9	2.2	-0.2	-0.6
Sambalpur	2.2	4.5	1.9	0.0	-0.6
Debagarh	1.6	-2.4	1.2	-1.4	-2.5
Sundargarh	1.6	3.4	1.7	-0.6	-1.4
Kendhujhar	1.4	-0.9	1.6	-0.2	-0.8
Mayurbhanj	1.2	-2.8	1.6	-0.9	-1.3
Baleshwar	3.4	-0.7	2.0	-0.2	0.1
Bhadrak	3.2	-3.4	2.3	-0.4	0.2
Kendrapara	3.3	-2.1	3.0	0.4	1.8
Jagatsinghapur	3.3	-1.3	4.7	1.0	1.8
Cuttack	3.3	4.1	4.5	1.4	1.7
Jajapur	2.8	-2.8	3.6	0.7	0.4
Dhenkanal	2.4	-2.7	2.2	0.7	-0.5
Anugul	2.4	0.3	2.9	0.9	-0.3
Nayagarh	3.3	-1.3	2.7	-0.3	1.8
Khordha	3.7	8.2	3.7	2.0	0.6
Puri	3.1	-1.4	3.0	-0.3	-0.2
Ganjam	2.9	3.9	3.4	2.2	0.5
Gajapati	2.8	-0.1	2.0	0.3	0.2
Kandhamal	0.6	-2.9	1.1	-1.4	-0.2
Baudh	0.9	-3.1	1.4	-1.2	-1.0
Subarnapur	1.8	-2.8	1.6	-1.0	-1.3
Balangir	1.4	-1.4	1.6	-1.4	-0.3

Nuapada	1.5	-3.4	1.6	-0.5	-0.6
Kalahandi	1.1	-3.2	1.4	-0.9	-0.9
Rayagada	1.0	1.8	1.2	0.2	-0.2
Nabarangpur	0.4	-3.0	0.8	-1.6	0.1
Koraput	0.9	0.8	1.4	0.2	0.6
Malkangiri	0.8	-3.2	1.2	-1.2	-0.1

From the table above it is evident that in Odisha, the mean score of rural housing and household amenities depicts that in Nabarangpur district (0.4) electricity of households is still not readily available, whereas in Khordha (3.7) there is good facility of electricity. Availability of safe drinking water is good in Khordha (3.2) and bad in Bhadrak and Nuapada (-3.4). Toilet facility is variedly better in all the districts with highest mean score (4.7) in Jagatsinghpur and lowest found in Nabarangpur (0.8). The separate kitchen condition is better in Ganjam (2.2) and less developed in Nabarangpur (-1.6). Kendrapada and Jagatsinghpur (1.8) has got good housing conditions and least development in housing conditions is found in Debagarh (-2.5).

Table – 5 : District wise mean score of availability of urban housing and household amenities in Odisha

Name of the districts	Mean Score				
	electricity	safe drinking water	toilet facility	separate kitchen	good housing condition.
Bargarh	0.7	-1.4	5.6	-23.9	-0.5
Jharsugda	0.5	-0.8	6.0	-23.7	-0.4
Sambalpur	0.9	1.2	6.5	-16.0	0.3
Debagarh	-1.4	-0.8	5.1	-29.4	-2.8
Sundargarh	0.8	0.2	7.3	-12.9	-0.4
Kendhujhar	-1.4	-0.1	5.3	-20.2	-1.1

Mayurbhanj	-0.8	-1.0	6.3	-10.9	-0.5
Baleshwar	0.2	-1.3	6.2	-14.3	-0.2
Bhadrak	-1.1	-2.4	4.7	-31.3	-1.6
Kendrapara	0.0	0.0	6.2	-28.4	-0.7
Jagatsinghapur	-2.6	0.4	4.9	-22.0	-1.7
Cuttack	1.2	1.3	8.6	1.3	0.8
Jajapur	-0.6	-0.8	5.9	-21.2	-0.1
Dhenkanal	-0.7	-1.3	5.9	-19.3	-0.1
Anugul	-0.4	0.0	6.8	-21.3	0.5
Nayagarh	-0.7	-2.0	5.3	-25.4	-0.1
Khordha	0.4	0.4	7.9	3.9	1.0
Puri	0.7	-0.6	7.6	-8.8	-0.6
Ganjam	-0.1	0.6	6.6	-2.8	0.4
Gajapati	-0.5	0.2	6.0	-5.8	0.3
Kandhamal	-1.8	-1.0	5.5	-25.2	-0.8
Baudh	-1.1	1.1	5.0	-17.6	-1.9
Subarnapur	-1.5	-0.3	4.2	-33.0	-2.7
Balangir	-0.5	-0.4	6.2	-18.0	-0.8
Nuapada	-0.9	-2.1	5.3	-21.6	-1.6
Kalahandi	-1.0	-1.5	5.2	-18.2	-0.9
Rayagada	-0.2	0.8	6.6	-2.2	1.1
Nabarangpur	-2.6	-1.3	5.6	-20.1	-1.2
Koraput	-0.5	0.4	7.2	1.7	0.6
Malkangiri	-2.0	-1.0	5.3	-28.6	-1.0

From the table above it is evident that in Odisha, the mean score of urban housing and household amenities depicts that in Nabarangpur district (-2.6) and Jagatsinghpur electricity of households is still not readily available, whereas in Cuttack (1.2) there is good facility of electricity. Availability of safe drinking water is good in Cuttack (1.3) and bad in Bhadrak (-2.4). Toilet facility is variedly better in all the districts with highest mean score (8.6) in Cuttack. The separate kitchen condition is better in Khordha (3.9) and less

developed in Subarnapur (-33.0). Rayagada(1.1) has got good housing conditions and least development in housing conditions is found in Debagarh (-2.8).

Table 6: District wise availability of mean score of total housing and household amenities in Odisha.

Name of the districts	Mean Score				
	source of electricity	drinking water	toilet facility	separate kitchen	good housing condition
Bargarh	0.1	-11.6	4.7	-11.6	-0.5
Jharsuguda	1.1	-2.1	3.7	-2.1	0.4
Sambalpur	0.5	-2.6	5.3	-2.6	0.3
Debagarh	-0.8	-13.2	3.9	-13.2	-2.6
Sundargarh	0.3	0.2	4.6	0.2	-0.1
Kendhujhar	-0.8	-8.7	4.5	-8.7	-0.8
Mayurbhanj	-1.2	-11.2	3.4	-11.2	-1.4
Baleshwar	0.8	-9.3	4.5	-9.3	-0.1
Bhadrak	0.6	-11.0	3.5	-11.0	-0.2
Kendrapara	0.6	-11.3	6.2	-11.3	1.1
Jagatsinghapur	0.6	-8.5	4.3	-8.5	1.1
Cuttack	1.2	2.1	4.3	2.1	1.8
Jajapur	0.3	-9.8	4.9	-9.8	0.0
Dhenkanal	-0.1	-9.0	3.9	-9.0	-0.6
Anugul	0.1	-7.0	5.7	-7.0	-0.1
Nayagarh	0.7	-11.3	5.6	-11.3	-0.7
Khordha	1.8	16.6	4.8	16.6	2.3
Puri	0.7	-7.1	4.3	-7.1	-0.3
Ganjam	0.7	-0.3	4.0	-0.3	0.7
Gajapati	0.4	-6.8	3.6	-6.8	0.1
Kandhamal	-1.7	-12.1	3.1	-12.1	-0.5
Baudh	-1.6	-13.3	4.5	-13.3	-1.4
Subarnapur	-0.6	-12.8	3.8	-12.8	-1.6
Balangir	-0.9	-11.2	3.8	-11.2	-0.5
Nuapada	-1.0	-12.1	4.8	-12.1	-1.0
Kalahandi	-1.3	-11.8	4.1	-11.8	-1.2

Rayagada	-1.0	-5.1	5.2	-5.1	0.1
Nabarangpur	-1.9	-12.7	3.9	-12.7	-0.3
Koraput	-1.1	-4.4	4.9	-4.4	0.6
Malkangiri	-1.6	-12.7	0.7	-12.7	-0.4

From the table above it is evident that in Odisha, the mean score of total housing and household amenities depicts that in Nabarangpur district (-1.9) electricity of households is still not readily available, whereas in Khordha (1.8) there is good facility of electricity. Availability of safe drinking water is also good in Khordha (16.6) and bad in Baudh (-13.3). Toilet facility is variedly better in all the districts with highest mean score (6.2) in Kendrapada. The separate kitchen condition is better in Khordha (16.6) and less developed in Baudh (-13.3). Cuttack (1.8) has got good housing conditions and least development is found in Debagarh (-2.6).

Table 7: District wise Availability of housing and household amenities.

Districts	Composite scores		
	Rural	Urban	Total
Debagarh	-0.7	-6.66	-3.02
Nabarangapur	-0.66	-6.34	-2.7
Baudh	-0.6	-5.86	-2.58
Kandhamal	-0.56	-5.46	-2.44
Kalahandi	-0.5	-4.66	-2.44
Malkangiri	-0.5	-4.58	-2.4
Mayurbhanj	-0.44	-4.58	-2.28
Subarnapur	-0.34	-4.2	-2.26
Nuapada	-0.28	-4.18	-2.08
Balangir	-0.02	-3.92	-1.86

Kendujhar	0.22	-3.9	-1.66
Bargarh	0.36	-3.68	-1.58
Bhadrak	0.38	-3.5	-1.34
Dhenakanal	0.42	-3.36	-1.22
Koraput	0.78	-3.28	-1.22
Rayagada	0.8	-3.1	-1.1
Puri	0.84	-2.9	-0.86
Baleshwar	0.92	-2.88	-0.82
Sundargarh	0.94	-2.7	-0.58
Jajapur	0.94	-1.88	-0.58
Gajapati	1.04	-1.42	-0.54
Jharsugda	1.22	-1.38	-0.24
Anugul	1.24	-1	-0.04
Nayagarh	1.24	-0.34	0.06
Kendrapara	1.28	0.04	0.76
Sambalpur	1.6	0.94	1
Jagatsinhapur	1.9	1.22	1.24
Ganjam	2.58	1.88	1.28
Cuttack	3	2.64	2.16
Khordha	3.64	2.72	5.66

Conclusions

The problem of houselessness continues to prevail in India since long. Majority of the houses are either in a barely livable or in dilapidated condition. Amenities such as access to electricity, a clean water supply, quality of cooking fuels are major factors in determining the quality of life for each and every citizen. Wealthy households have better access to quality household fuels, reliable electricity and tap water. Access to services like rural electrification has been expanding greatly and there is a slow progress in the case of water supply as well as in the case of sanitation. Results suggest that the total composite score for housing and household amenities ranges from -3.02 to 5.66, with the least developing district being Debagarh and the developed district being Khordha. From the analysis it is observed that all rural, urban and total housing and household amenities in Odisha basically show a similar trend. The coastal districts of the state such as Khordha, Jagatsinghpur, Kendrapada, etc are on the higher side, whereas the western and north eastern districts show a lower trend respectively. The western and south eastern districts show high spatial patterns whereas medium in the central eastern, western northern and southern and low in south western and north eastern districts of Odisha.

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