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## **QUALITY OF LIVING INDEX IN CHENNAI: AN APPROACH PAPER**

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### **Introduction**

A large number of indicators on housing stock, its quality, household amenities and some assets owned by Households has been gathered as part of the Census of India 2001. These include number and quality of construction material, number of rooms used for dwelling, availability and access to drinking water, availability of kitchen, latrine, bathroom and drainage arrangements, availability of electricity, types of fuel used for cooking and ownership of certain specified assets. Each of these indicators have a bearing on the environment and thereby health and sustainability of the society.

Infirm housing structures, cramped accommodation, poor ventilation, inadequate lighting, absence of toilet facilities and drainage systems, and pollutant fuel used for cooking are a direct cause of various air and water borne diseases.

A number of indices are in circulation. To name a few, Physical Quality of Life Index (PQLI), Human Development Index (HDI), Gender Empowerment Index (GEI), Human Poverty Index (HPI), and Child Development Index (CDI). The attempt here is to use the housing data of the Census of India-2001 for Chennai City and generate a composite index that would be a guide to city planners and other agencies in the field of development. At present a few indicators that we consider as representative of negative features have been chosen. Equal weights are given to all the indicators without any attempt to give any weights.

### **Objectives**

The objectives of the paper are:

1. To identify the variables/indicators in housing in Chennai city which are unfavorable to a healthy life
2. To list out these variables/indicators for each Division of the Chennai Corporation
3. To calculate the composite index based on the indicators for each Division of the Chennai Corporation
4. To Map the Divisions of the City as per the Score

### **Study Area**

Chennai, the Capital of the State of Tamil Nadu is on the East Coast of India. It is one of the four Metropolitan Centres of India. The Population of the City as per the Census of India 2001 (provisional) was 4,216,268. The city had a Slum Population of 1,079,414 persons. The proportion of the Slum Population in Chennai to the total population is 26%. It had a sex ratio of 951 and a literacy rate of 80.14. The urban agglomeration of Chennai had a population of 6,424,624.

Chennai is a Municipal Corporation and is constituted into 155 Divisions. As per the Houselisting Data of the Census of India 2001, Chennai had 8,27,811 households. Only 87% of the households were living in permanent types of houses. Of this 89% of the households lived in houses that have less than 3 dwelling rooms. Only 64% of the households had access to drinking water within the premises. Electricity was available to 94% of the households. 10% of the households had no latrines and 11% had no drainage. Separate kitchens were not available in 8% of the houses and only 81% of the households used non-polluting fuels like LPG and Kerosene.

### **Methodology**

The indicators selected for the index are:

1. Temporary type of house - houses with wall and roof made of temporary material. Wall can be made of Grass, Thatch, Bamboo, Plastic Polythene, Mud, Plastic or Polythene
2. The source of drinking water is outside the household
3. Source of lighting facility other than electricity
4. No drainage or open drainage
5. No toilet facility
6. No kitchen within the house
7. Use of Polluting Fuels for cooking (LPG, Kerosene and Electricity alone have been considered as non-polluting)
8. The households having no exclusive room or only one room

The Proportion of households to the total number of households has been taken for purposes of calculation. The composite index is computed by using the following formula:

$$Z = \frac{X - X_{\min}}{X_{\max} - X_{\min}}$$

Where,

X = value of the indicator or variable for the particular Division,

X<sub>max</sub> = Maximum value of indicator or variable of the particular Division

X<sub>min</sub> = Minimum value of indicator or variable of the particular Division

Z = Index for one variable

By using the above formula indices have been calculated for all the Variables for each division.  
**Composite Index:** The sum of these indices divided by the number of variables give the composite index.

$$\text{Composite Index} = \frac{Z+Z_1+Z_2+Z_3+\dots\dots\dots Z_n}{N}$$

For example, the composite index for Division No.1(Kodungaiyur West) is calculated as below;

**Table: 1**

Variable	%	Max value	Min Value	Index
1.Temporary houses	5.79	31.65	0	0.1828
2.Water outside premises	47.8	84.14	4.09	0.5460
3.Other than electricity	6.27	40.89	0.85	0.1354
4.Open and no drainage	64.79	71.72	0	0.91
5.No toilet	13.21	57.72	0	0.23
6.No Kitchen	12.72	63.15	0.36	0.1969
7.Polluting fuel for cooking	7.65	25.92	1.55	0.4154
8. <=1 Room	47.54	72.96	14.47	0.4297

$$\text{Composite index} = \frac{0.1828+0.546+0.1354+0.91+0.23+0.1969+0.4154+0.4297}{8}$$

$$= 0.3807 \text{ or } 0.4$$

The composite index for all the divisions has been worked out as above. The composite index for unfavorable indicators for all the 155 divisions of city is given in Table No.1

**Discussion**

The composite index is in three ranges - high, medium and low. The highest range, which has the composite index 0.6 to 0.8, comprises 14 divisions. The next category of composite index 0.5 and 0.4 is classified as Medium. This contains 29 divisions. The last category of composite index less than 0.3 is classified as Low. This contains 112 divisions.



CI	Name of the Division
<b>High (14)</b>	
0.8	Nehru Nagar
0.7	Kumarasamay Nagar(S), Avvai Nagar (S) Dr.Radhakrishnan Nagar (S), and Dr.Vijayaraghalu Nagar.
0.6	Vyasarjadi (S), Elephant Gate, Dr.Sathiavanimuthu Nagar, Basin Bridge, Elango Nagar, Adhikesavapuram, Azhagiri Nagar, Thiruvanmiyur (W) and Katchaleeswarar Nagar
<b>Medium (29)</b>	
0.5	Komaleeswaranpet, Thiru.Vi.Ka.Nagar, Krishnampet, Santhome, Dr.Radhakrishnan Nagar (N) and Thousand Lights
0.4	Korukkupet, Mylapore, Cherian Nagar (S), Tondiarpet, Thiruvalluvar Nagar, Velachery, Kodungaiyur (E&W), Thiruvalluvar Nagar, Pudupet, Guindy (W) Marina, Perambur (E), Shenoy Nagar, Kilpauk (S), Vidial Nagar, Viduthalai Gurusamy Nagar, Dr.Besant Nagar, G.D. Naidu Nagaar (W),Pattalam, Perumal koil Garden, Sathiamurthy Nagar, and Alwarpet(s),

## Conclusion

The mapping of the divisions as per Composite Index does not indicate any pattern except that the central and western parts of the city have low negative index. This is probably due to the fact that these areas have seen considerable housing activity in recent years with the development of new housing colonies in the public as well as private sector and the conversion of residential houses to commercial and non- residential use. The divisions categorised as medium and high are in clusters in North, East and to an extent in South of the city. Many of the Divisions in the high as well as Medium category have a higher proportion of people in the lower and middle-income brackets.

The Composite index of negative variables for the city of Chennai can be a good guide for administrators, city planners and those interested in development issues to plan appropriate interventions. The present index is based on a limited number of indicators. A more comprehensive index will be developed once the entire Census data is available.

Table No.2.

DIVISION No.	NAME OF DIVISIONS	Comp. Index	DIVISION No.	NAME OF DIVISIONS	Comp. Index
1	Kodungaiyur (West)	0.4	56	Ayanavaram	0.1
2	Kodungaiyur (East)	0.4	57	Nagamani Ammaiyar Nagar	0.2
3	Dr.Radhakrishnan Nagar (No	0.5	58	Panneerselvam Nagar (South)	0.3
4	Cheriyar Nagar (North)	0.3	59	Maraimalai Adigal Nagar (North)	0.1
5	Jeeva Nagar (North)	0.3	60	Maraimalai Adigal Nagar (South)	0.2
6	Cheriyar Nagar (South)	0.4	61	Purasaiwakkam	0.3
7	Jeeva Nagar (South)	0.3	62	Kolathur	0.2
8	Korukkupet	0.4	63	Villiwakkam (North)	0.2
9	Mottai Garden	0.1	64	Villiwakkam (South)	0.1
10	Kumarasamy Nagar(South)	0.7	65	Virugambakkam (North)	0.3
11	Dr.Radhakrishnan Nagar (So	0.7	66	Anna Nagar (West)	0.1
12	Kumarasamy Nagar (North)	0.3	67	Anna Nagar (Central)	0.2
13	Dr.Vijayaraghavalu Nagar	0.7	68	Anna Nagar (East)	0.2
14	Tondiarpet	0.4	69	Shenoy Nagar	0.4
15	Sanjeevirayanpet	0.1	70	Kilpauk (North)	0.1
16	Grace Garden Nagar	0.1	71	Gangadeeswarar Koil	0.1
17	Ma.Po.Si. Nagar	0.3	72	Kilpauk (South)	0.4
18	Royapuram	0.2	73	Aminjikarai (East)	0.2
19	Singara Garden	0.2	74	Aminjikarai (Central)	0.1
20	Narayanappa Naicken Garden	0.1	75	Aminjikarai (West)	0.1
21	Old Washerment	0.3	76	Periyar Nagar (North)	0.2
22	Meenakshi Ammanpet	0.3	77	Periyar Nagar (South)	0.2
23	Kondi Thope	0.2	78	Nungambakkam	0.2
24	Seven Wells (North)	0.1	79	Adikesavapuram	0.6
25	Amman Koil	0.1	80	Nehru Nagar	0.8
26	Muthilpet	0.3	81	Chinthadripet	0.2
27	Vallal Seethakkadhi Nagar	0.2	82	Komaleeswaranpet	0.5
28	Katchaleeswarar Nagar	0.6	83	Balasubramaniam Nagar	0.3
29	Seven Wells (South)	0.1	84	Thiruvateeswaranpet	0.1
30	Sowcarpet	0.1	85	Dr. Natesan Nagar	0.1
31	Basin Bridge	0.6	86	Chepauk	0.2
32	Vyasarpadhi (South)	0.6	87	Jam Bazaar	0.1

33	Vyasarjadi (North)	0.1	88	Umar Pulavar Nagar	0.1
34	Perambur (North)	0.3	89	Triplicane	0.0
35	Perambur (East)	0.4	90	Marina	0.4
36	Elango Nagar	0.6	91	Krishnampet	0.5
37	Perambur (South)	0.2	92	Bharathi Nagar	0.3
38	Thiru Vi.Ka.Nagar	0.5	93	Azad Nagar (North)	0.1
39	Vidia Nagar	0.4	94	Bharathidasan Nagar	0.3
40	Dr.Sathiavanimuthu Nagar	0.6	95	Azad Nagar (South)	0.1
41	Pulian Thope	0.3	96	Vivekanandapuram	0.3
42	Dr.Besant Nagar	0.4	97	Anjugam Ammaiyar Nagar	0.3
43	Peddunaicken Pet	0.2	98	Kosapet	0.2
44	Perumal Koil Garden	0.4	99	Pattalam	0.4
45	Thattan Kulam	0.3	100	Anbazhagan Nagar	0.1
46	Choolai	0.2	101	Perumalpet	0.1
47	Park Town	0.2	102	Kannappa Nagar	0.1
48	Elephant Gate	0.6	103	Dr. Ambedkar Nagar	0.2
49	Edapalayam	0.2	104	Chetput	0.3
50	Agaram (North)	0.1	105	Egmore	0.2
51	Sembiam	0.1	106	Pudupet	0.4
52	Siruvallloor	0.2	107	Ko Si Mani Nagar	0.3
53	Nagammai Ammaiyar Nagar (North)	0.2	108	Nakkeerar Nagar	0.2
54	Agaram (South)	0.1	109	Thousand Lights	0.5
55	Viduthalai Gurusamy Naga	0.4	110	Azhagiri Ngar	0.6
111	Amir Mahal	0.2			
112	Royapettah	0.2			
113	Teynampet	0.2			
114	Sathyamurthy Nagar	0.4			
115	Alwarpet (North)	0.3			
116	Alwarpet (South)	0.4			
117	Vadapalani (West)	0.1			
118	Vadapalani (East)	0.2			
119	Kalaivanar Nagar	0.2			
120	Navalar 'Nedunchezhan Ngr	0.2			
121	Navalar 'Nedunchezhan Ngr	0.2			
122	Ashok Nagar	0.2			
123	M.G.R. Nagar	0.2			
124	Kamarajar Nagar (North)	0.1			
125	Kamarajar Nagar (South)	0.1			
126	Thiyagarayanagar	0.1			
127	Rajaji Nagar	0.1			
128	Virugambakkam	0.1			
129	Saligramam	0.2			
130	Kodambakkam (North)	0.2			

131	Kodambakkam (South)	0.4
132	Saidapet (West)	0.3
133	Kumaran Nagar (North)	0.3
134	Kumaran Nagar (South)	0.1
135	Saidapet (East)	0.3
136	K.K. Nagar	0.3
137	V.O.C. Nagar	0.1
138	G.D. Naidu Nagar (East)	0.3
139	G.D. Naidu Nagar (West)	0.4
140	Guindy (West)	0.4
141	Guindy (East)	0.3
142	Bheemanpet	0.1
143	Tiruvalluvar Nagar	0.4
144	Madhavaperumalpuram	0.3
145	Karaneeswararapuram	0.3
146	Santhome	0.5
147	Mylapore	0.4
148	Avvai Nagar (North)	0.2
149	Raja Annamalaipuram	0.2
150	Avvai Nagar (South)	0.7
151	Adyar (West)	0.2
152	Adyar (East)	0.2
153	Velachery	0.4
154	Thiruvanmiyur (West)	0.6
155	Thiruvanmiyur (East)	0.3