



Scholars Research Library

Archives of Applied Science Research, 2012, 4 (5):2052-2067
(<http://scholarsresearchlibrary.com/archive.html>)



Urbanisation and Consistency Measurement: A Study on District of North 24 Parganas, West Bengal, India

Suman Paul¹ and Kanan Chatterjee²

¹Department of Geography, Krishnagar Govt. College, West Bengal, India

²Department of Geography, University of Calcutta, Calcutta

ABSTRACT

The District of North 24 Parganas has high urbanized history in comparison to other parts of West Bengal, India. However, the district experienced a remarkable rate of urban growth both in terms of urban population and urban centres immediately after its independence in 1951. This paper analyses the urban growth in North 24 Parganas to have an in-depth understanding about them. Firstly, the growth trends of the level of urbanization. Secondly, P.S. / C.D. Blocks were examined from two different standpoints. In the first place all the P.S. / C.D. Blocks were tested to determine 'how urban the urban centres are' on the basis of total urban population, total urban area, urban population density and urban spacing. In the second place a consistency test was carried out on P.S. / C.D. Blocks during 1951-2001 to measure 'how consistent the P.S. / C.D. Blocks are'. Hence a comparison was made between the level of urbanization and several aspects of urbanization namely total urban population, total urban area, urban population density and urban spacing.

Key words: Urbanisation, urban spacing, consistency, aspects.

INTRODUCTION

Among the most significant changes now affecting mankind of developing countries is the ever-increasing level of urbanization as well as the number of urban centres. Thus the number of urban centres is necessarily a factor in the study of urbanization and national development as well. Small urban centres on the other hand, have already achieved utmost importance particularly in developing countries^[1]. Because these small towns act as growth and service centres for the rural hinterland and thus assist in the development of rural economy and also reverse the growth of large cities which in turn mitigate the urban problems.

Historically, the process of urbanisation speeded up in the wake of industrial revolution in the western world leading to the expansion of infrastructure such as transport and communication, which propelled increased rural to urban migration. The agglomeration of population, predominance of non-agricultural activities and better provision of social amenities including health and educational infrastructure emerged as distinguishing features of settlements following the industrialization of agrarian economies. In the contemporary times, however, the settlements have become increasingly complex. Thus, in the study of urbanisation it is pertinent to know how urban areas are defined because, from the demographic point of view, the level of urbanisation is measured in terms of percentage of population living in urban areas^[6]. An area is classified as rural and urban depending upon various criteria such as

population size, density, occupational composition and civic status. There is no thumb rule to divide rural and urban, and the practice is followed diversely across the countries of the world.

It is worthwhile to mention the urban definition followed in some of our neighboring countries in order to understand the nature of urbanisation in India. For example, in Nepal only size of population (more than 9000 population) is taken to declare a settlement as urban. Geographically Nepal is situated on mountainous terrain and economically it has low level of industrialization and development. On the other hand, the neighbours like Bangladesh, Sri Lanka and Pakistan apply administrative criteria to declare a settlement urban. Any settlement with municipal corporation, municipality, town committee and urban councils etc. are declared as urban. While Bangladesh has lower level of urbanization (23 per cent), Pakistan stands much higher (33 per cent) than India (27.7 per cent) around 2001. There is no uniform rules followed by these committees in making distinction between non-agricultural and agricultural populations, nor are the rules transparent as nonagricultural residents enjoy significant privileges in terms of access to apartments, jobs and subsidized food. In fact, the size of urban population in China very much depends upon how non-agricultural population is defined (State Statistical Bureau of China 1998), and the rural-urban classification is associated with differential privilege^[8].

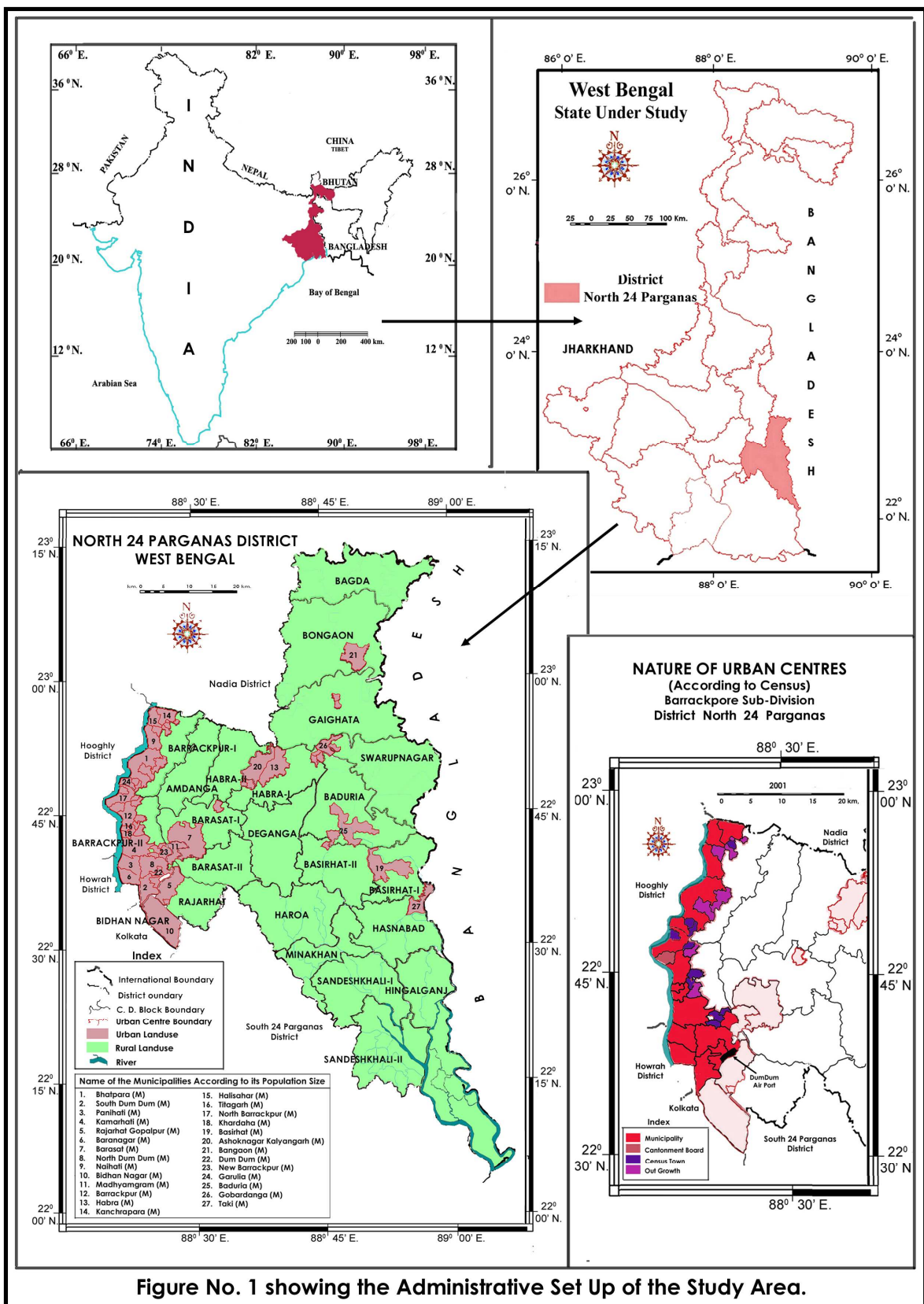
In India during British rule, urban area was defined as including every municipality of whatever size, every cantonment, all civil lines not included in municipal limits, and every other collection of houses permanently inhabited by not less than 5000 persons which is of an urban character though not under municipal government^[5]. This definition continued until 1961 census left the scope for state census superintendents to apply their judgments in declaring the settlements as urban. Since 1961 census, which defined urban on the basis of two important criteria namely:

i) statutory administration and ii) economic and demographic aspects. The first one includes civic status of towns and the second comprises criteria like population size, density of population and percentage of work force in nonagricultural sector. The towns identified on the basis of former criteria are known as statutory or municipal towns and the towns defined on the basis of latter criteria are termed as census or non-municipal towns^[7]. The non-municipal towns constitute nearly 27 per cent of all towns as per 2001 census^[4].

Study Area

The district of North 24 Parganas in West Bengal extends from latitude 22° 11' 06" north to 23° 15' 02" north and from longitude 88° 20' east to 89° 05' east. It is bordered by Nadia in the north, Bangladesh (Khulna Division) in north and east, South 24 Parganas and Kolkata to the south and Kolkata, Howrah and Hooghly to the west. Barasat is the district headquarters of North 24 Parganas district. North 24 Parganas is the most populous district in West Bengal. It is also the tenth-largest district in the State by area and second-most populated district in the country, after Thane district of Maharashtra (Census of India, 2011). The main objectives of the study are as follows:

- Trends and Pattern of Urbanisation in North 24 Parganas during 1951 – 2001,
- Level of Urbanisation in the District of North 24 Parganas during 1951 – 2001 and
- Consistency Measurement in Level of Urbanisation for the District of North 24 Parganas during 1951 – 2001.



MATERIALS AND METHODS

Basically, this is the basic part of data collection from different published sources for the fulfillment of the study. Data have been collected from different sources i.e. Census of India, Bureau of Applied Statistics and Economics, Govt. of West Bengal; different Local Urban Bodies (Municipalities), Ministry of Urban affairs, Govt. of West Bengal etc.

Method includes compilation, calculation and presentation of collected data. After getting the secondary data base, series of analysis have been done with the help of SPSS 10.1, MS Excel and MS Word. Z-score, Rank-correlation etc. are the easy statistical approach to establish the research hypothesis and satisfy the objectives. Overall the resulted values have been mapped through various remote sensing and GIS software like Map Info 8.0, Arc View and Photoshop.

FINDINGS AND ANALYSIS

Since the independence of this country, District North 24 Parganas of West Bengal, India has been experiencing a very high pace of urbanisation both in terms of volume of urban population and number of urban centres. Urban population in the district has increased from 967790 in 1951 to 4850947 in 2001 implying a nearly fivefold increase during the last 50 years (i.e. 1951 – 2001). During the same period, number of urban centres leaped from 23 to 55 indicating nearly 2.4 times multiplication and similarly percentage of urban population to total population of the district as a whole more than 1.25 times^[2 and 3] from 42.92 % in 1951 to 54.29 % in 2001. This clearly signifies the speed and scale of urbanisation within the district. Mainly, such type of urbanisation was found in European countries in the first quarter of the last century. The nature of urbanisation in this district is very high during the last five decades (i.e. 1951 – 2001) which show a constant growth. But for last two decades (i.e. 1981 – 2001) the rate of increase as well as percentage of urban population to total district population was not as high as it indicating before.

Trends and Pattern of Urbanisation in North 24 Parganas during 1951 – 2001

It is obvious, that urban population in North 24 Parganas during last 50 years (i.e. 1951 – 2001) has increased in 3883157 and therefore, the progress of urbanisation can be analysed under the following heads:

Period of Rapid Urbanisation (1951 – 1981)

In North 24 Parganas, the percentage of urban population was 42.92 % in 1951 and bounce up into 51.03 % in 1981. During this period urban-rural ratio increased from 1.33 to 0.96 and the net increase of urban centres were 32 which is 2.4 times. It is very interesting to note that during the span of these 30 years, urban population increased by 1856904 while rural population by 1423844. But the percentage increase of urban population (191.87 %) was near to double of that of the rural population (110.64 %). This differential growth rate was mainly attributed by the migration from rural areas of North 24 Parganas. A steady rural growth was found due to independence of East Pakistan and huge population influx has been noticed in the rural part of this boarder district. Urban concentration was found mainly in the Barrackpore Industrial Belt due to most favourable geo-economic consideration. This areas in and around Kolkata with expanding with road and rail network gathered momentum to attract population and began to develop as most urbanized areas within the district.

During 1951 – '61, the rate of urbanisation registered a percentage of 47.34 which was highest during all the decades. However, percentage of urban population was increased to 45.18 from 42.92 in 1951. The volume of urban population grew by 458135. In this decade the urban population increased by 47.34 %, where as the percentage of rural population increase was 34.47 per cent. During this period, it is noticeable that 7 new urban centres were emerged.

During 1961 – '71, there was an urban growth of 645396 and the percentage of urban population increased from 45.18 % in 1961 to 49.26 % in 1971 and the percentage increased of urban population of 45.26 %. During the same period there was a net increase of 14 new urban centres which has 46.67 % rate of increase (**Table: 1**).

During 1971 – '81, the rate of increase of urban population was registered of 36.37 %. However the percentage of urban population was increased to 51.03 % from 49.26 % in 1971. This is the decade where urban population crosses the number of rural population. The urban population grew by 753373. 15 new urban centres were emerged during this decade which has 34.09 per cent of increase.

Table 1: Relative Growth of Urban and Rural Population in North 24 Parganas, 1951 – 2001

Census Years	Population		Percentage of Population		Percentage of Increase		Number of Urban Centres	Percentage of Increase of Urban Centres	Urban- Rural Ratio
	Urban	Rural	Urban	Rural	Urban	Rural			
1951	967790	1286927	42.92	57.08	--	--	23	--	0.75
1961	1425925	1730490	45.18	54.82	47.34	34.47	30	30.43	0.83
1971	2071321	2133883	49.26	50.74	45.26	23.31	44	46.67	0.97
1981	2824694	2710771	51.03	48.97	36.37	27.03	59	34.09	1.04
1991	3730300	3539629	51.31	48.69	32.06	30.58	69	16.95	1.05
2001	4850947	4083339	54.29	45.71	30.04	15.36	55	-20.29	1.19

Source: Computed by the Author from Different Census Report, 1951 – 2001.

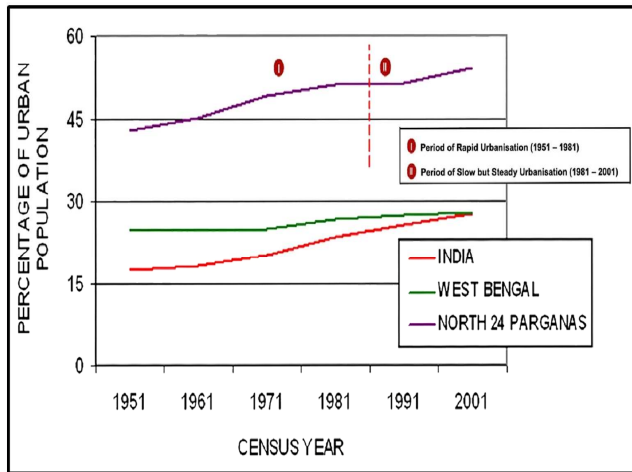


Figure 2.a showing Percentage of Urban Population at Different Regional Scale.

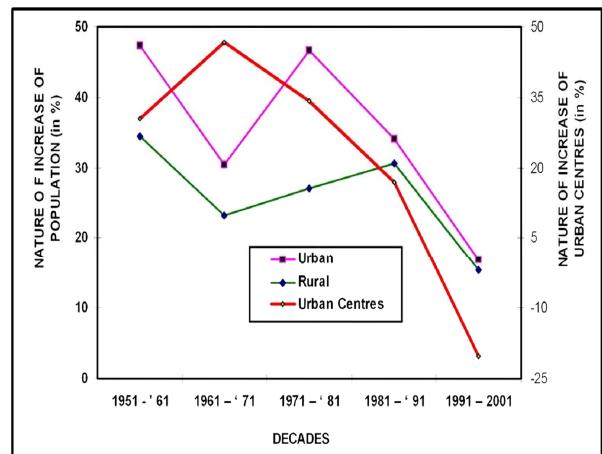


Figure 2.b showing Nature of Increase of Rural and Urban Population alongwith Urban Centres in North 24 Parganas District, West Bengal, India during 1951 - 2001.

Period of Slow but Steady Urbanisation (1981 – 2001)

During 1981 – '91, there was a net increase of 10 urban centres and total urban population increased by 905606, but the proportion of urban dwellers rose to 51.31 % compared to 51.03 % in 1971, an increase of 32.06 % which was significantly below from earlier decades. The fast rural growth of 30.58 % has controlled the huge urban growth and urban-rural ratio does not show any significant change (Table: 1).

The pace of urbanisation was further enhanced during 1991 – 2001, while the total number of urban centres decreased at a number of 14. Such type of event has been found due to declassification and merger of Class – V and Class – VI urban centres with its neighbouring Class – I or Class – II urban Centres. Though in this decade 10 new urban centres were rose but the total number was dropped. The portion of urban dwellers increased by 30.04 % when the percentage change was registered 51.31 in 1991 to 54.29 in 2001. Apart from natural increase and rural-urban migration, this huge and increase trend can be better explained by (i) reclassification of rural settlements as urban centres when they grow o a certain size and satisfy the certain criteria and, (ii) incorporation of sub-urban areas within municipal towns. This expanding limit of municipal boundaries is in fact developing the rural-urban dichotomy is gradually rising given place to rural-urban continuum.

Level of Urbanisation in the District of North 24 Parganas during 1951 – 2001

In the previous portion of this analysis an approach has been made to identify the nature, degree and tempo of urbanisation in North 24 Parganas District during 6 census (1951 – 2001) dates. This portion of the study throws a light on the level of urbanisation in spatio-temporal variation in the district of North 24 Parganas considering the Police Stations (1951 – 1981) and C.D. Blocks (1991 and 2001) as the areal unit of study. The main objective of this study is to identify the level of urbanisation in the Police Stations and C.D. Blocks of the district during each decade and analyse its temporal variation during 1951 – 2001. Next, an attempt has been made to identify the consistency of urbanisation in the district from 1951 – 2001.

Different parameters are used to measure the level of urbanisation in the study area of which commonest is the percentage of urban population to total population of an area. In fact many authors consider this criterion as an adequate measure of urbanisation in this region. However, only this criterion alone does not depict any clear picture since an area with high rural population may show high concentration of urban population not because of its large size of urban population but because of its small size of rural population. It is therefore, necessary to take the measures into considerations to identify the level of urbanisation. The following decisive factors are taken into consideration for measure the levels of urbanisation namely:

- a) Percentage of Urban Population to Total Urban Population of the P.S. / C.D. Block (**UP**),
- b) Percentage of Urban Area to Total Urban Area of the P.S. / C.D. Block (**UA**),
- c) Urban population Density (**UPD**) and
- d) Urban Spacing (**US**).

Percentage of Urban Population to Total Urban Population of the P.S. / C.D. Block (UP)

In 1951, 5 Police Stations having huge concentration of urban population sharing about 65 % by Baranagar, Noapara, Jagatdal, Titagarh and Bijpur. DumDum, Naihati and Khardaha having 20% of urban population share. Remaining share of urban population was concentrated in Habra, Barasat, Hasnabad, Basirhat, Baduria and Barrackpore Police Stations. This picture remains almost same in every census dates except Barasat and Habra having a significant change. Rajarhat and Bidhan Nagar are growing very fast in respect of urban population concentration. Rajarhat, in 1971, and Bidhan Nagar in 1981 were first come into the picture of urban growth and maintaining a high pace till 2001. Several important changes had taken place during 1951 – 2001 in respect of urban population share in spatial level which has been listed below:

- Due to nearest location of Kolkata Urban Agglomeration; Barrackpur Sub-division having a share of near about 80 % (Annexure Table 1a and Table 2) of urban population during all 6 census dates.
- Rajarhat and Bidhan Nagar came in the scene of urbanisation first in 1971 and 1981 respectively but after that the share of urban population is increasing very sharply.
- Barasat and Habra in Barasat sub-division maintaining a steady pace of urban growth. As Barasat is the Sadar (District Capital) of North 24 Parganas District, it shown a steady pace.
- The border P.S. / C.D. Blocks, i.e. Bongaon, Baduria, Hasnabad, Basirhat having a marginal urban population share. Except Bongaon, every area having a decreasing urban population share.

Percentage of Urban Area to Total Urban Area of the P.S. / C.D. Block (UA)

In 1951, North 24 Parganas District has 7.21 % of urban area to total district area. Barrackpur sub-division has almost 52% of its share whereas, Barasat, Bongaon, Habra, Baduria, Hasnabad and Basirhat has a share of rest of the 48 % of urban area. Having 48 % of urban area of the district in Barrackpur sub-division, it contains 80% – 85% of urban population share and rest of the 15% of urban population concentrated in 48% district urban area. This picture remains more or less same up to 1981. After 1981, the urban area share of Barrackpur sub-division within the district has been declining due to areal expansion of urban growth in Barasat (*Rajarhat, Barasat – I & II and Habra – I & II C.D. Blocks*) and Bidhan Nagar sub-division. Several features are coming out from this discussion which is listed below:

- Barrackpur sub-division shares only 52% of urban area though (see Annexure Table 1b and Table 2) it has 85% of urban population concentration in 1951. But after 1951, the percentage share of urban area to total urban area of the district was constantly declining due to spreading of urban growth in different P.S. / C.D. Blocks of the district during 5 census dates.
- Barasat, Habra having shared of more than 10% of urban area though these P.S. has low urban population concentration in 1951. But the whole scenario was changing after 1971 very rapidly.
- Rajarhat and Bidhan Nagar increasing their share in urban area rapidly from 7.13 % in 1981 to 14.02% in 2001 which were almost double. Habra – I and II, Barasat – I and II C.D. Blocks improving its share in urban area very steadily in the same period.
- As border P.S. / C.D. Blocks, Bongaon, Baduria, Hasnabad and Basirhat – I & II making a negative change in urban area share in every decade. Because these area has not expand in its urban area.

Urban population Density (UPD)

Urban population Density designates the volume of urban population / sq. unit of urban area and is a measure of urban concentration in spatial variation. In 1951, from district urban population density, it has been found that, Bongaon Khardaha, Habra, Barasat, Barrackpore, DumDum, Baduria, Hasnabad and Basirhat were well below that district average (see Annexure Table 1c and Table 2). On the other hand Bijpur, Naihati, Titagarh, Jagatdal, Baranagar were well above from district picture. This picture remains same during 1951 – 1981. After 1981, administrative changes taken place and analysis have been done in C.D. Block level taking as an areal unit. Barrackpur – I and II crossed the district figure only. The main findings from this analysis are:

- Baranagar, Khardaha, Naihati, DumDum, Bijpur Police Stations constantly increasing their population density (see Annexure Table 1b and Table 2) during 1951 – 1981 where as Jagatdal, Noapara and Titagarh having a declining nature.
- Except Barrackpur sub-division, Barasat, Basirhat, Hasnabad having a fluctuating nature up to 1981. Rajarhat, Habra, Barasat – I and II, Baduria, Hasnabad having a positive density growth during 1981 – 2001.

Urban Spacing (US)

Spacing of settlements is largely governed by their size. Large settlements would be widely spaced while smaller settlements would be widely spaced. These spatial patterns are constantly changing in time and space which has resulted in an increase in the size of settlements and reduction in their spacing. Taking Police Stations (1951 – 1981) and C.D. Blocks (1991 and 2001) as the areal unit, the spacing of urban settlements of North 24 Parganas District has been calculated by employing Sarkar's method for 6 census dates (1951 – 2001). The inter-settlement spacing is given by the equation:

Inter-settlement spacing: $2 \cdot \sqrt{A/n}$

where, n showing the number of urban settlements within the Police Stations / C.D. Blocks with an area of 'A'.

Except last mentioned index, all the parameters bear a direct proportional relationship with level of urbanisation. Since, the level of urbanisation is inversely proportional to spacing of settlements, here the reciprocal has been considered.

Spatio – Temporal Pattern of Urbanisation in the District of North 24 Parganas

The four parameters of urbanisation discussed above showing spatio – temporal patterns in the district of North 24 Parganas during 1951 – 2001. In addition it must be remembered that a Police Station / C. D. Block does not show same rank (Annexure Table 1d and Table 2) in all criteria. While it is true for the Police Stations (1951 to 1981) and C. D. Blocks (1991–2001) under Barrackpur Sub–division showing the higher ranks in all respect. There are also Police Stations/ C.D. Blocks like Rajarhat, Bidhan Nagar and Habra are marinating a higher pace in last two census dates (1991 and 2001) in every urban aspect.

Therefore a '**Composite Value of level of urbanisation**' has been developed on the basis of '**Summation of Z-score**' to obtain overall idea of combined effect of all the four parameters discussed above. Here all the negative value of the '**Summation of Z-score**' has been converted into positive one adding '**3**' with every Z-score. The '**Composite Value of level of urbanisation**' has been obtained with respect to the four criteria discussed above by means of following procedure:

- i. Mean (**x**) and standard deviation (**s_{dn}**) values of each attribute for the Police Stations (1951 – 1981) and C.D. Blocks (1991 and 2001) during each census dates have been computed.
- ii. For identification of existing gap in different attribute for every census dates on the Police Stations (1951 – 1981) and C.D. Blocks (1991 and 2001), '**Z-score**' values has been derived.
- iii. After having '**Z-score**' values of each attribute for the Police Stations (1951 – 1981) and C.D. Blocks (1991 and 2001) during each census dates, it has been summing up to find out the '**Composite Value of level of urbanisation**' in respect of every census dates.
- iv. Summation of '**Z-score**' has showing some of the areal unit (Police Stations during 1951 – 1981 and C.D. Blocks for 1991 and 2001) having the negative value. For such event, '**3**' has been added with each areal unit for every census dates. With this '**Composite Value of level of urbanisation**' five zones have been delineated during 1951 – 2001.

Table 2a: Spatial Distribution of Police Stations for Level of Urbanisation (LU) during 1951 – 1981

Census Year	Composite Value for Level of Urbanisation				
	Very High (Above 5.00)	High (3.75 – 5.00)	Moderate (2.50 – 3.74)	Low (1.25 – 2.49)	Very Low (Below 1.25)
1951	NOAPARA, DUMDUM, BARANAGAR, TITAGARH	JAGATDAL, BIJPUR	KHARDAHA, BARRACKPORE, HABRA	BARASAT, NAIHATI, BASIRHAT, BADURIA	BONGAON, HASNABAD
1961	BARANAGAR, DUMDUM, NOAPARA, TITAGARH	KHARDAHA, BIJPUR, JAGATDAL	HABRA, BARASAT, BARRACKPORE	NAIHATI, BASIRHAT, BADURIA	BONGAON, HASNABAD
1971	BARANAGAR, DUMDUM, NOAPARA, TITAGARH	KHARDAHA, BIJPUR, JAGATDAL, BELGHORIA	HABRA, BARASAT, BARRACKPORE	NAIHATI, BASIRHAT, BADURIA	BONGAON, RAJARHAT, HASNABAD
1981	KHARDAHA, DUMDUM, BARANAGAR, JAGATDAL, BELGHORIA	BIJPUR, AIRPORT, TITAGARH, NOAPARA	BARASAT, NAIHATI, BARRACKPORE, HABRA	NIMTA, RAJARHAT, SALT LAKE, BASIRHAT	BADURIA, BONGAON, HASNABAD

Source: Annexure Table 3a.

- i. Moderate to low level of urbanisation is found in the Bongaon, Baduria, Hasnabad and Basirhat which are mainly located within the border and maintain a low concentration of urbanisation in all the above mentioned four parameters. But recently (2001) these areas improve to some extent in respect of first two criteria within the district.
- ii. From 1951 – 2001, Bagda, Haroa, Minakhan, Sandeshkhali – I & II, Hingaljanj were out of urban scene throughout the period under review. These areas were entirely rural based. Swarupnagar and Deganga first came into the urban scene in 1991 but in 2001 it has been declassified and transformed into rural based. So the main direction of urban growth has been found from West to East and North direction of the district of North 24 Parganas.

Table 2b: Spatial Distribution of C.D. Blocks for Level of Urbanisation (LU) during 1991 – 2001

Census Year	Composite Value for Level of Urbanisation				
	Very High (Above 6.00)	High (4.5 – 6.00)	Moderate (3.00 – 4.49)	Low (1.5 – 2.99)	Very Low (Below 1.5)
1991	BARRACKPUR – II, BARRACKPUR – I	RAJARHAT, HABRA – I, BARASAT – I	BIDHAN NAGAR, BARASAT – II, BASIRHAT – I	GAIGHATA, BONGAON, BADURIA, HASNABAD, SWARUPNAGAR	DEGANGA
2001	BARRACKPUR – II, BARRACKPUR – I	RAJARHAT, HABRA – I, BIDHAN NAGAR	BARASAT – I, BARASAT – II, BASIRHAT – I	BONGAON, GAIGHATA, HABRA – II, BADURIA, HASNABAD	BASIRHAT – II

Source: Annexure Table 3b.

Consistency Measurement in Level of Urbanisation for the District of North 24 Parganas during 1951 – 2001

There are quite a few aspects closely associated with level of urbanisation (LU). These aspects are percentage of urban population to total urban population (UP), percentage of urban area to total urban area (UA), urban population density (UPD) and urban spacing (US). The objective here is to test the 'status of consistency of Police Stations / C.D. Blocks' with reference to their level of urbanisation. In order to know whether these aspects vary consistently with level of urbanisation, the extent of deviation of all these aspects through their ranks to the corresponding ranks in level of urbanisation individually of all Police Stations / C.D. Blocks for six consecutive census dates has been examined. This was accomplished by comparing rank of a particular Police Stations / C.D. Blocks in level of urbanisation with the rank of a Police Stations / C.D. Blocks on the basis of above mentioned aspect of urbanisation. By these comparisons the Police Stations / C.D. Blocks has been grouped into four categories:

- Category – A (Perfectly Consistent): No deviation or coincidence of ranks.**
- Category – B (Moderately Consistent): Deviation by 1 or 2 ranks.**
- Category – C (Marginally Consistent): Deviation by 3 or 4 ranks.**
- Category – D (No Consistency): Deviation by more than 4 ranks.**

If a Police Stations / C.D. Blocks falls into category – A, it will be termed as perfectly consistent, if it falls into the category – B then moderately consistent, if it falls into the category – C then marginally consistent and finally, if it falls into category – D then it will be considered as no consistency.

Symbolically,

if, $R_{LU} - R_{UP} = 0$ Perfectly Consistent;

if, $R_{LU} - R_{UP} = \pm 1$ or ± 2 Moderately Consistent;

if, $R_{LU} - R_{UP} = \pm 3$ or ± 4 Marginally Consistent and,

if, $R_{LU} - R_{UP} = > \pm 4$ No Consistency.

where, R_{LU} is Rank of Level of Urbanisation and R_{UP} is Rank of percentage of urban population to total urban population.

If a Police Station / C.D. Block's rank in LU is same to its rank in any of the aspects say UP, then the Police Station / C.D. Block will fall into category – A and will be treated as consistent in reference to the aspect UP. For example, in appendix table Baranagar Police Station's rank in LU is 1st and its rank in UP is also 1st in 1961. So it belongs to the category – A. Note that, hence the absolute difference between the two ranks is zero. Similarly, if the absolute difference between ranks of LU and the aspect of UP is 1 or 2, the Police Station / C.D. Block will fall under category – B. In the same way, if the absolute difference between the ranks of LU and the aspect of UP is 3 or 4, the Police Stations / C.D. Blocks will fall under category – C. As for example, in Appendix Table the ranks of LU for Noapara and DumDum Police Stations are 1st and 3rd while their ranks in UP are 2nd and 6th respectively in 1951. In the case of Noapara and DumDum Police Stations the absolute difference is 1 and 3 respectively, thus Noapara falls into category – B and that of DumDum Police Station is 3, so it belongs to the category – C. In the same way, the Police Station / C.D. Block could be categorized for each of the four aspects separately for six census dates.

Statistical Measurement of the Level of Urbanisation and the Aspects

Coefficient of rank correlation (Table) was computed for all the four aspects, viz UP, UA, UPD and US with LU separately for six consecutive census years (i.e. 1951 - 2001). The obtained results support findings.

Table 3a: Consistency Status of P.S. / C.D. Blocks of North 24 Parganas District during 1951 – 2001

Census Years	Perfectly Consistent	Moderately Consistent	Marginally Consistent	No Consistency
Percentage of Urban Population to Total Urban Population (UP)				
1951	TITAGARH, KHARDAHA	NOAPARA, BARANAGAR, BIJPUR, JAGATDAL, BADURIA, HASNABAD	DUMDUM, NAIHATI, BARRACKPORE, BARASAT, BASIRHAT, BONGAON	HABRA
1961	BARANAGAR, DUMDUM, KHARDAHA, BIJPUR, HABRA, BARASAT, BADURIA	TITAGARH, NAIHATI, HASNABAD, BASIRHAT	NOAPARA, JAGATDAL, BONGAON	----
1971	TITAGARH, BELGHORIA, HASNABAD, HABRA	DUMDUM, BIJPUR, BARASAT, NAIHATI, BASIRHAT, BADURIA, BONGAON, RAJARHAT	KHARDAHA	BARANAGAR, NOAPARA, JAGATDAL, BARRACKPORE
1981	KHARDAHA, BIJPUR, RAJARHAT	JAGATDAL, DUMDUM, NAIHATI, BELGHORIA, AIRPORT, NOAPARA BARASAT, SALLAKE, BADURIA, HASNABAD	TITAGARH, HABRA, BASIRHAT	BARANAGAR, BARRACKPORE, BONGAON
1991	BARRACKPUR – II, BARRACKPUR – I	RAJARHAT, HABRA – I, BARASAT – I, BIDHAN NAGAR, BARASAT – II, DEGANGA, BONGAON, BADURIA, HASNABAD, SWARUPNAGAR, BASIRHAT – I	GAIGHATA	----
2001	BARRACKPUR – II, BONGAON, RAJARHAT, BARRACKPUR – I, HABRA – I, BARASAT – II, BASIRHAT – I, BASIRHAT – II	BIDHAN NAGAR, BARASAT – I, GAIGHATA, HABRA – II, BADURIA, HASNABAD	----	----
Percentage of Urban Area to Total Urban Area (UA)				
1951	----	NAIHATI, BIJPUR, DUMDUM	KHARDAHA	BADURIA, NOAPARA, BARANAGAR, BARRACKPORE, BASIRHAT, TITAGARH, JAGATDAL, BARASAT, BONGAON, HASNABAD
1961	----	DUDDUM	----	BADURIA, NOAPARA, BARANAGAR, BARRACKPORE, BASIRHAT, TITAGARH, JAGATDAL, BARASAT, BONGAON, HASNABAD
1971	----	DUMDUM, KHARDAHA, BIJPUR, JAGATDAL, NAIHATI	RAJARHAT	TITAGARG, BELGHORIA, HABRA, HASNABAD, BARASAT, BASIRHAT, BADURIA, BONGAON, BARANAGAR, NOAPARA, BARRACKPORE
1981	KHARDAHA, BIJPUR, RAJARHAT	JAGATDAL, NOAPARA	AIRPORT, TITAGARH, SALT LAKE	BARANAGAR, DUMDUM, BELGHORIA, BARASAT, HABRA, BARRACKPORE, NIMTA, BASIRHAT, BADURIA, NAIHATI, BONGAON, HASNABAD
1991	BARRACKPUR – II, BARRACKPUR – I	RAJARHAT, HABRA – I, BARASAT – I, BIDHAN NAGAR, BASIRHAT – I, BONGAON, HASNABAD, DEGANGA	BARASAT – I, GAIGHATA, BADURIA, SWARUPNAGAR	----
2001	BARRACKPUR – II, BARRACKPUR – I, HABRA – I, BASIRHAT – I, RAJARHAT	BIDHAN NAGAR, BARASAT – I, BASIRHAT – I, BONGAON, HABRA – II, HASNABAD	BARASAT – II, GAIGHATA, BADURIA	----

Source: Annexure Table 1a, 1b and 2.

Table 3b: Consistency Status of P.S. / C.D. Blocks of North 24 Parganas District during 1951 – 2001.

Census Years	Perfectly Consistent	Moderately Consistent	Marginally Consistent	No Consistency
Urban Population Density (UPD)				
1951	BIJPUR, KHARDAHA, BADURIA	NOAPARA, BARANAGAR, BARRACKPORE, BASIRHAT	TITAGARH, HASNABAD, JAGATDAL, BARASAT, BONGAON	DUMDUM, NAIHATI
1961	KHARDAHA, BIJPUR	BARANAGAR, NOAPARA, BARRACKPORE, BASIRHAT, RAJARHAT, HASNABAD, HABRA	TITAGARH, BARASAT, BASIRHAT	DUMDUM, JAGATDAL, BONGAON
1971	-----	BARANAGAR, NOAPARA, BARRACKPORE, NAIHATI, BADURIA, HASNABAD, HABRA	NOAPARA, JAGATDAL, TITAGARH, BARASAT, BADURIA, BONGAON	DUMDUM, NAIHATI
1981	NOAPARA	BARANAGAR, DUMDUM, BARRACKPORE, HABRA, BASIRHAT, SALT LAKE, BADURIA, HASNABAD, BIJPUR,	JAGATDAL, BELGHORIA, TITAGARH, RAJARHAT	KHARDAHA, AIRPORT, BARASAT, NAIHATI, NIMTA, BONGAON
1991	BARRACKPUR – II, BARRACKPUR – I	RAJARHAT, BASIRHAT – I, BIDHAN NAGAR, HASNABAD, SWARUPNAGAR, BARASAT – I,	BARASAT – II, BONGAON, BADURIA, DEGANGA	HABRA – I, GAIGHATA
2001	BARRACKPUR – II, BARRACKPUR – I, HASNABAD	RAJARHAT, BARASAT – I, BASIRHAT – I, BONGAON, GAIGHATA, HABRA – II, BADURIA	BIDHAN NAGAR, HABRA – I, BARASAT – II, BASIRHAT – II	-----
Urban Spacing (US)				
1951	NOAPARA, BIJPUR, KHARDAHA	BARANAGAR, DUMDUM, TITAGARH, BASIRHAT, BONGAON, HASNABAD	JAGATDAL, HABRA, BARASAT, NAIHATI, BADURIA	BARRACKPORE
1961	BONGAON, HASNABAD	BARANAGAR, DUMDUM, NOAPARA, TITAGARH, KHARDAHA, BIJPUR, JAGATDAL, BARASAT, BASIRHAT, BADURIA	HABRA, NAIHATI	BARRACKPORE
1971	DUMDUM, BADURIA	NOAPARA, BELGHORIA, KHARDAHA, BIJPUR, JAGATDAL, BARASAT, NAIHATI, BONGAON, HASNABAD	BARANAGAR, TITAGARH, HABRA, BASIRHAT	BARRACKPORE, RAJARHAT
1981	AIRPORT	BARANAGAR, DUMDUM, TITAGARH, NAIHATI, RAJARHAT, BADURIA, BONGAON, HASNABAD	BIJPUR, HABRA, NIMTA, BASIRHAT, SALT LAKE	KHARDAHA, JAGATDAL, BELGHORIA, NOAPARA, BARASAT, BARRACKPORE
1991	BARRACKPUR – II, BARRACKPUR – I, BASIRHAT – I, BARASAT – I, RAJARHAT, BARASAT – II	HABRA – I, BIDHAN NAGAR, BADURIA, SWARUPNAGAR	GAIGHATA, BONGAON, HASNABAD, DEGANGA	-----
2001	BARRACKPUR – II, BARRACKPUR – I, BARASAT – II	HABRA – I, RAJARHAT, BIDHAN NAGAR, GAIGHATA, BADURIA, HASNABAD	BARASAT – I, BASIRHAT – I, HABRA – II, BASIRHAT – II	BONGAON

Source: Annexure Table 1c, 1d and 2.

Table 4: Rank Correlation Coefficient between Level of Urbanisation and different Aspects of Urbanisation

Rank Correlation Between	1951	1961	1971	1981	1991	2001
LU – UP	0.79	0.88	0.82	0.87	0.92	0.96
LU – UA	-0.025	0.17	0	0.25	0.81	0.9
LU – UPD	0.7	0.76	0.80	0.71	0.75	0.88
LU – US	0.83	0.81	0.8	0.75	0.85	0.83

It is evident from the **table 4** that during the entire census dates UP appeared as the highest consistent aspect with coefficients of rank correlation 0.79, 0.88, 0.82, 0.87, 0.92 and 0.96 respectively. On the other hand, UA came into sight as the least consistent aspect with coefficients up to 1981 having value of - 0.025, 0.17, 0 and 0.25 respectively. But it has been changed in 1991 and 2001. UDP followed by UP with coefficients of 0.83, 0.81, 0.8, 0.71, 0.75 and 0.87 during six census dates while US came into view with fluctuating values of coefficient during 1951 – 2001.

CONCLUSION

A spatio-temporal analysis of the levels of urbanisation with respect to above mentioned parameters in the Police Stations (1951 – 1981) and C.D. Blocks (for 1991 and 2001) of North 24 Parganas reveals that there are wide disparities in the level of urbanisation experienced in the different parts of district. High levels of urbanisation are seen in Barrackpur Sub-division. A study of composite index of ‘Z-Scores’ for levels of urbanisation shows that the value of Police Stations (1951 – 1981) and C.D. Blocks (for 1991 and 2001) under Barrackpur Sub-division of North 24 Parganas district indicating a significant breakpoint between P.S./ C.D. Blocks under Barrackpur sub-division and other area of the district. Even the P.S. like Habra, Barasat and Rajarhat with comparatively higher level of urbanisation does not catch up the pace of Barrackpur Sub-division during the period of study.

After 1981, a locational shift has been observed very significantly from Barrackpur sub-division to Barasat Sub-division. Barasat, Habra having shared just more than 10 percent of urban area though these P.S. having concentration of low urban population in 1951. But the whole scenario was changing after 1971 very rapidly. Rajarhat, Bidhan Nagar which came first into scene of urban population concentration in 1971 and 1981 consecutively increasing their share of in urban area rapidly which was almost double in 2001. Habra – I, Barasat – I and Barasat – II C.D. Blocks has improving its share in urban area very steadily in the same period.

The consistency test showed that Barrackpur – I and Barrackpur – II C.D. Blocks were totally consistent in both the census year of 1991 and 2001. No other C.D. Blocks were found totally consistent in any of these census years but a number of P.S. / C.D. Blocks were found partially consistent. It was also observed from the findings that generally higher level urbanized P.S. / C.D. Blocks revealed themselves as more consistent than the lower level ones.

REFERENCES

- [1] United Nations (2006) World Urbanisation Prospects: The **2005** Revision, Population Division, UN, New York.
- [2] Census of India, District Census Handbook, 24 Parganas, West Bengal Series, **1951, 1961, 1971** and **1981**.
- [3] Census of India, District Census Handbook, North 24 Parganas, West Bengal Series, **1991** and **2001**.
- [4] Cohen, B. (2004) “Urban Growth in Developing Countries: A Review of Current Trends and a Caution Regarding Existing Forecast”, World Development, Vol. 32, No. 1, Pp. 23 – 51.
- [5] Davis, K. (1962) “Urbanisation in India: Past and Future”, in Roy Turner (ed.) Indian Urban Future, University of California Press.
- [6] Bhagat, R.B. (2005) *Singapore Journal of Tropical Geography*, Vol. 26, No. 1, Pp. 61 – 74.
- [7] Bhagat, R.B (2002) “Challenges of Rural – urban Classification for Decentralised Governance”, Economic and Political Weekly, June 22, 2002, Pp. 2413 – 2416.
- [8] Zhu, Y (2001) “The Transformation of Townships into Towns and Their Roles in China’s Urbanisation: Evidence from Fujian Province” Paper Presented to IUSSP’s XXIV General Population Conference, Bahia, Brazil, August, **2001**.

Annexure

Table 1a: Percentage of Urban Population to District Urban Population of the Police Stations of District of North 24 Parganas during 1951 – 1981.

Sl. No.	Police Stations	Percentage of Urban Population to District Urban Population				Sl. No.	Police Stations	Percentage of Urban Population to District Urban Population			
		1951	1961	1971	1981			1951	1961	1971	1981
1	BAGDA	---	0	0	0	16	BELGHORIA	---	---	8.18	8.32
2	BONGAON	2.41	2.88	2.44	2.47	17	BARANAGAR	15.95	16.88	6.61	6.03
3	GAIGHATA	0	0	0	0	18	DUMDUM	9.05	12.22	14.55	9.55
4	HABRA	0.67	5.48	5.48	5.58	19	NIMTA	---	---	---	0.27
5	BARASAT	1.66	4.79	5.02	5.67	20	AIRPORT	---	---	---	5.68
6	RAJARHAT	---	---	1.61	2.39	21	SALT LAKE	---	---	---	1.18
7	AMDANGA	---	---	---	---	22	BADURIA	1.69	1.65	1.33	1.15
8	DEGANGA	---	---	---	---	23	BASIRHAT	3.60	3.78	3.08	2.87
9	BIJPUR	9.44	8.96	7.13	7.02	24	HASNABAD	1.36	1.24	1.01	0.88
10	NAIHATI	5.72	2.45	5.24	5.23	25	SWARUPNAGAR	0	0	0	0
11	JAGATDAL	13.94	10.79	10.89	10.63	26	SANDESHKHALI	0	0	0	0
12	NOAPARA	14.01	6.83	6.40	5.28	27	MINAKHAN	---	--	0	0
13	BARRACKPORE	1.67	1.19	1.21	0.70	28	HAROA	0	0	0	0
14	TITAGARH	11.81	10.83	8.94	7.79	29	HINGALGANJ	---	---	0	0
15	KHARDAHA	7.03	10.03	10.89	11.30	DISTRICT		100	100	100	100

Source: Primary Census Abstract, 24 Parganas District, West Bengal Series, 1951 – 1981.

Table 1b: Percentage of Urban Area to District Urban Area of the Police Stations of North 24 Parganas District during 1951 – 1981.

Sl. No.	Police Stations	Percentage of Urban Area to District Urban Area				Sl. No.	Police Stations	Percentage of Urban Area to District Urban Area			
		1951	1961	1971	1981			1951	1961	1971	1981
1	BAGDA	---	---	---	---	16	BELGHORIA	---	---	3.33	2.72
2	BONGAON	5.08	5.08	4.72	3.86	17	BARANAGAR	6.42	6.42	2.63	1.76
3	GAIGHATA	0.00	0.00	0.00	0.00	18	DUMDUM	12.34	12.34	11.47	4.90
4	HABRA	11.49	11.49	9.23	8.76	19	NIMTA	---	---	---	0.17
5	BARASAT	10.40	10.40	10.63	10.29	20	AIRPORT	---	---	---	9.43
6	RAJARHAT	---	---	3.6	3.29	21	SALT LAKE	---	---	---	3.84
7	AMDANGA	---	---	---	---	22	BADURIA	7.35	7.35	6.78	5.55
8	DEGANGA	---	---	---	---	23	BASIRHAT	7.19	7.19	6.66	5.44
9	BIJPUR	7.61	7.61	7.05	5.64	24	HASNABAD	5.07	5.07	4.69	3.84
10	NAIHATI	3.80	3.80	3.51	2.87	25	SWARUPNAGAR	---	---	---	---
11	JAGATDAL	3.89	3.89	6.90	7.05	26	SANDESHKHALI	---	---	---	---
12	NOAPARA	4.99	4.99	4.66	4.26	27	MINAKHAN	---	---	---	---
13	BARRACKPORE	2.71	2.71	2.51	0.92	28	HAROA	---	---	---	---
14	TITAGARH	3.13	3.13	2.88	4.18	29	HINGALGANJ	---	---	---	---
15	KHARDAHA	8.54	8.54	8.72	11.23	DISTRICT		100	100	100	100

Source: Primary Census Abstract, 24 Parganas District, West Bengal Series, 1951 – 1981.

Table 1c: Urban Population Density of the Police Stations of North 24 Parganas District during 1951 – 1981.

Sl. No.	Police Stations	Urban Population Density				Sl. No.	Police Stations	Urban Population Density			
		1951	1961	1971	1981			1951	1961	1971	1981
1	BAGDA	---	---	---	---	16	BELGHORIA	---	---	15400	21359
2	BONGAON	2416	4248	3240	4480	17	BARANAGAR	12623	19076	15729	23925
3	GAIGHATA	---	---	---	---	18	DUMDUM	3727	7415	7951	13622
4	HABRA	298	3574	3722	4425	19	NIMTA	---	---	---	11128
5	BARASAT	810	3114	2962	3851	20	AIRPORT	---	---	---	4154
6	RAJARHAT	---	---	2803	5085	21	SALT LAKE	---	---	---	2135
7	AMDANGA	---	---	---	---	22	BADURIA	1170	1684	1234	1450
8	DEGANGA	---	---	---	---	23	BASIRHAT	2546	3943	2901	3682
9	BLJPUR	6308	8314	6338	8692	24	HASNABAD	1361	1820	1350	1588
10	NAIHATI	7640	2359	9356	12737	25	SWARUPNAGAR	---	---	---	---
11	JAGATDAL	18232	19950	9889	10535	26	SANDESHKHALI	---	---	---	---
12	NOAPARA	14284	10338	8609	8679	27	MINAKHAN	---	---	---	---
13	BARRACKPORE	3143	3284	3016	5378	28	HAROA	---	---	---	---
14	TITAGARH	19204	23564	19485	13021	29	HINGALGANJ	---	---	---	---
15	KHARDAHA	4187	8799	7832	7032	DISTRICT		5084	7491	6271	6988

Source: Primary Census Abstract, 24 Parganas District, West Bengal Series, 1951 – 1981.

Table 1d: Urban Spacing of the Police Stations of North 24 Parganas District during 1951 – 1981.

Sl. No.	Police Stations	Urban Spacing				Sl. No.	Police Stations	Urban Spacing			
		1951	1961	1971	1981			1951	1961	1971	1981
1	BAGDA	---	---	---	---	16	BELGHORIA	---	---	0.151	0.151
2	BONGAON	0.021	0.027	0.027	0.027	17	BARANAGAR	0.159	0.159	0.170	0.187
3	GAIGHATA	---	---	---	---	18	DUMDUM	0.134	0.154	0.218	0.187
4	HABRA	0.030	0.052	0.052	0.052	19	NIMTA	---	---	---	0.146
5	BARASAT	0.030	0.053	0.061	0.068	20	AIRPORT	---	---	---	0.173
6	RAJARHAT	---	---	0.085	0.110	21	SALT LAKE	---	---	---	0.076
7	AMDANGA	---	---	---	---	22	BADURIA	0.035	0.035	0.035	0.035
8	DEGANGA	---	---	---	---	23	BASIRHAT	0.031	0.031	0.031	0.031
9	BLJPUR	0.112	0.112	0.112	0.209	24	HASNABAD	0.025	0.025	0.032	0.032
10	NAIHATI	0.079	0.111	0.111	0.111	25	SWARUPNAGAR	---	---	---	---
11	JAGATDAL	0.065	0.065	0.146	0.185	26	SANDESHKHALI	---	---	---	---
12	NOAPARA	0.222	0.222	0.221	0.209	27	MINAKHAN	---	---	---	---
13	BARRACKPORE	0.174	0.174	0.174	0.260	28	HAROA	---	---	---	---
14	TITAGARH	0.131	0.131	0.131	0.161	29	HINGALGANJ	---	---	---	---
15	KHARDAHA	0.096	0.117	0.151	0.166	DISTRICT		0.039	0.044	0.053	0.061

Source: Primary Census Abstract, 24 Parganas District, West Bengal Series, 1951 – 1981.

Table 2: Different Decisive Factors for Measures the Level of Urbanisation in the District of North 24 Parganas during 1991 – 2001.

North 24 Parganas

Sl. No.	Name of the C. D. Blocks	% of Urban Population to Total Urban Population		% of Urban Area to Total Urban Area		Urban Population Density		Urban Spacing	
		1991	2001	1991	2001	1991	2001	1991	2001
1	BAGDA	0.00	0.00	0.00	0.00	0	0	0.0	0.0
2	BONGAON	2.11	2.11	3.56	4.94	5101	4136	0.027	0.027
3	GAIGHATA	0.17	0.32	0.18	0.63	8109	4941	0.032	0.045
4	HABRA - I	6.61	6.26	11.53	10.65	4891	5711	0.080	0.072
5	HABRA - II	0.00	0.32	0.00	1.28	0	2418	0.0	0.058
6	BARASAT - I	4.72	5.18	7.28	6.95	5514	7245	0.084	0.042
7	BARASAT - II	2.14	3.20	2.51	4.27	7259	7291	0.060	0.060
8	AMDANGA	0.00	0.00	0.00	0.00	0	0	0.0	0.0
9	DEGANGA	0.20	0.00	0.62	0.00	2696	0	0.035	0.0
10	RAJARHAT	3.95	5.74	5.39	7.31	6230	7623	0.139	0.070
11	BADURIA	1.12	0.98	5.12	4.49	1862	2114	0.033	0.033
12	HAROA	0.00	0.00	0.00	0.00	0	0	0.0	0.0
13	MINAKHAN	0.00	0.00	0.00	0.00	0	0	0.0	0.0
14	SWARUPNAGAR	0.10	0.00	0.36	0.00	2399	0	0.034	0.0
15	HASNABAD	0.82	0.77	3.54	3.11	1958	2401	0.038	0.038
16	HINGALGANJ	0.00	0.00	0.00	0.00	0	0	0.0	0.0
17	SANDESHKHALI - I	0.00	0.00	0.00	0.00	0	0	0.0	0.0
18	SANDESHKHALI - II	0.00	0.00	0.00	0.00	0	0	0.0	0.0
19	BASIRHAT - I	2.72	2.33	4.98	4.41	4645	5141	0.043	0.061
20	BASIRHAT - II	0.00	0.09	0.00	0.29	0	2856	0.0	0.04
21	BARRACKPUR - I	26.01	24.05	19.14	17.63	11562	13244	0.184	0.157
22	BARRACKPUR - II	46.62	45.27	31.17	27.34	12721	16079	0.170	0.161
23	BIDHAN NAGAR	2.70	3.39	4.62	6.71	4943	4902	0.111	0.111
District		100.00	100.00	100.00	100	8507	9710	0.060	0.058

Source: Primary Census Abstract, North 24 Parganas District, West Bengal Series, 1991 and 2001.

Table 3a: Level of Urbanisation during 1951 – 1981 in North 24 Parganas District (Police Station Wise).

Police Station (1951)	Composite Z-Score for LU	Police Station (1961)	Composite Z-Score for LU	Police Station (1971)	Composite Z-Score for LU U	Police Station (1981)	Composite Z-Score for LU
NOAPARA	6.376	BARANAGAR	6.230	BARANAGAR	6.234	KHARDAHA	6.200
BARANAGAR	5.628	DUMDUM	6.110	DUMDUM	6.111	BARANAGAR	5.810
DUMDUM	5.384	NOAPARA	5.210	NOAPARA	5.207	JAGATDAL	5.650
TITAGARH	5.086	TITAGARH	5.190	TITAGARH	5.186	DUMDUM	5.410
JAGATDAL	4.205	KHARDAHA	4.490	BELGHORIA	4.61	BELGHORIA	5.360
BIJPUR	4.042	BIJPUR	4.020	KHARDAHA	4.485	BIJPUR	4.980
KHARDAHA	3.657	JAGATDAL	3.840	BIJPUR	4.017	AIRPORT	4.850
BARRACKPORE	2.787	HABRA	3.410	JAGATDAL	3.843	TITAGARH	4.590
HABRA	2.682	BARASAT	3.010	HABRA	3.409	NOAPARA	4.410
BARASAT	2.471	BARRACKPORE	2.540	BARASAT	3.008	BARASAT	3.590
NAIHATI	2.467	NAIHATI	1.770	BARRACKPORE	2.544	NAIHATI	3.230
BASIRHAT	1.865	BASIRHAT	1.770	NAIHATI	1.775	BARRACKPORE	3.200
BADURIA	1.695	BADURIA	1.480	BASIRHAT	1.770	HABRA	2.970
BONGAON	1.017	BONGAON	1.080	BADURIA	1.483	NIMTA	2.250
HASNABAD	0.876	HASNABAD	0.640	BONGAON	1.083	RAJARHAT	1.920
				RAJARHAT	1.003	BASIRHAT	1.300
				HASNABAD	0.664	SALT LAKE	1.050
						BADURIA	0.900
						BONGAON	0.840
						HASNABAD	0.320

Source: Appendix, Table 1a – 1d.

Table 1 B: Level of Urbanisation during 1991 – 2001 in North 24 Parganas District (C. D. Block Wise).

1991				2001			
C. D. Blocks	Composite Z-Score for LU	C. D. Blocks	Composite Z-Score for LU	C. D. Blocks	Composite Z-Score for LU	C. D. Blocks	Composite Z-Score for LU
<i>BARRACKPUR - II</i>	15.16	<i>BASIRHAT - I</i>	3.17	<i>BARRACKPUR - II</i>	15.72	<i>BASIRHAT - I</i>	3.53
<i>BARRACKPUR - I</i>	11.57	<i>GAIGHATA</i>	2.99	<i>BARRACKPUR - I</i>	11.47	<i>BONGAON</i>	2.65
<i>RAJARHAT</i>	5.47	<i>BONGAON</i>	2.75	<i>HABRA - I</i>	5.20	<i>GAIGHATA</i>	2.39
<i>HABRA - I</i>	5.13	<i>BADURIA</i>	2.13	<i>RAJARHAT</i>	5.05	<i>HABRA - II</i>	2.18
<i>BARASAT - I</i>	4.62	<i>HASNABAD</i>	2.01	<i>BIDHAN NAGAR</i>	4.96	<i>BADURIA</i>	2.13
<i>BIDHAN NAGAR</i>	4.41	<i>SWARUPNAGAR</i>	1.56	<i>BARASAT - I</i>	4.27	<i>HASNABAD</i>	2.08
<i>BARASAT - II</i>	3.77	<i>DEGANGA</i>	0.26	<i>BARASAT - II</i>	4.06	<i>BASIRHAT - II</i>	1.73

Source: Appendix, Table 2.