INCIDENCE OF ABANDONED LANDED PROPERTIES IN OGBOMOSO AND OSOGBO: A SPATIAL PERSPECTIVE

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Abstract: The study appraises the incidence of landed property abandonment in Ogbomoso and Osogbo. Eight Urban blocks (10% of each) were sampled as representatives; each from three (3) different residential densities i.e. high, medium and low residential densities. From the blocks, actual enumeration of the abandoned landed properties was done. Density of abandoned landed properties was determined. The spatial analysis is obtained by running the nearest neighbour analysis for the abandoned buildings and vacant land for the cities in their respective densities. The comparison of the incidence of abandonment between both cities was done with Student's T-test. The study observed a high incidence of landed property abandonment, which was found to be more at the medium density of the residential areas. The study thus recommends a sustainable way of combating landed property abandonment.

Keywords: Landed Property Abandonment, Spatial Analysis, Buildings, Plot of Land

INTRODUCTION

It is amazing to discover that the incidence of abandonment is on the high side the world over. One may think that the issue of abandonment will be more in the less developed area and that the issue of abandonment is rare in the developed area. Abandonment is conspicuous in Europe. Even the most cursory glance at the central urban environs of cities such as Hartford and New Britain reveals a preponderance of burned out buildings and vacant lots (Setterfield, 1997).

In Baltimore city of the United States of America, Cohen (2001) reported that "the number of abandoned units in the city is between 12,700 and 42,480; the former is the city's recent count of empty units unfit for habitation and the latter is the number of vacant units from the 2000 Census". Detroit's Department of Housing and Community Development (DHCD), along with several CBOs has resigned to fate that a large portion of vacant, dilapidated units will never be rehabilitated and occupied. This is suggestive of the rate and the extent of abandonment even in developed countries.

Comparison of the magnitude of abandonment is rather problematic. This is because of the variation in the ways cities that do attempt a count define an "abandoned" structure. (Pagano and Bowman, 2000). Nevertheless, most of the report on abandonment presents figures that suggest that the problem is alarming. For example, Forth-Worth Environmental Management Department in the United States has currently identified over 3,250 abandoned buildings in the city. An estimate of an average of 18% of urban structures is presented to be sitting unused based on a survey of 100 cities.

Between 1996 and 2001 Detroit, Michigan demolished 18,200 condemned buildings with an estimated 10,000 substandard structures still remaining. Razed buildings were estimated to be

more than 20% of urban structures in Houston, Texas and more than 12% in Las Vegas, Nevada. (Mallach, 2004). The general picture is that aggregate diseconomy drives away the residents of the community to leave their buildings behind or that their lots are left undeveloped for long time disinvestments trends. Given this, the problem of abandonment can be more acute in Nigeria and again in Ogbomoso and Osogbo. The study sees Ogbomoso as economically less buoyant relative to Osogbo (a state capital). This is the basis for their comparison.

This study therefore compares the spatial incidence of abandoned buildings and vacant lot between Ogbomoso and Osogbo cities.

The Concept of Temporarily Obsolete Abandoned Derelict Sites (TOADS)
Temporarily obsolete abandoned derelict sites (TOADS) as a concept has its origin attributed to Greenberg and others (1990, 1993). TOADS are "scattered, random unused parcels of land of varying size and shape. Some have abandoned structures; others are only empty lots. They are no longer used productively or never were" (Greenberg *et al.,* 1990, pg 435). TOADS include; residential, commercial and industrial properties – examples such as warehouses, residential structures (single and multifamily), railway lines, landfills, and overgrown, underdeveloped land (Setterfield 1997).

This concept though concerns itself with highly visible aspect of abandonment e.g. obsolete and burned-out dwelling units; it does not relegate the easily overlooked aspects too. TOADS draw attentions to elements such as "infill land" (vacant parcels of land which are surrounded by urban development). Nonetheless TOADS focuses on the problems of residential building and lots abandonment, as it is believed that it is the most acute (O'Flaherty 1993, p 45).

Abandonment Defined
A unique definition of abandonment is yet to be developed (Setterfield, 1997). O'Flaherty (1993 p 45) suggested that abandonment can mean "an owner ceasing to provide maintenance and operating services to a building or the loss of an owner's legal right to a building or the demolition of a building". Linten, Mields and Cottane (1971) defines abandonment in terms of buildings that are unoccupied, vandalized, boarded-up deteriorated or those which have unmaintained grounds (Greenberg et al., 1990 p 438). The National Urban League and the center for community change (1971) in their study of abandonment in seven American cities refers to abandonment as structures on which taxes and mortgages are no longer paid and for which services are neither paid for nor provided. (Greenberg et al 1990).

Abandoned house is a chronically vacant and uninhabitable unit whose owner is taking no active step to bring it back into the housing market. (Keenan, Lowe and Spencer 1999). Fielder and Smith (1996) came up with the distinction between "transactional vacant" and "problematic vacants". The latter referring to units that is often in poor condition and for which vacancy is likely to be prolonged.

Pagano and Bowman (2005) in their treatise on vacant land as opportunity and challenge, vacant land was described as "virgin land or farmland but within the older built-up area. On the other hand, they are abandoned land or unsafe spaces with real imagined or perceived environmental contamination". Nevertheless, they attempted a classification of abandoned land upon recognition that some lands are actually vacant due to their peculiar physical characteristics or terrain. Their physical feature makes them impossible to develop. Some still

are with natural resources value e.g., wetland habitats. The table below shows their descriptions and classification of vacant land.

Table 1: Classes of Abandoned Lots

Type of Parcel	Site Characteristics	Possibility of Development
Remnant land	Small size, irregular shape	Low. Unsuitable for development
Land with physical limitation	Small or large unbuildable due to slope drainage or other limitation	Low. Unsuitable for development
Reserved parcels	Held by public and private owners, located at urban fringe or at the boarder of existing buildings	High. Eventual development likely
Speculative parcels	May be located in low value or transitional area held in anticipation of increased future land value	High. Especially in strong property market lower in weak property market
Derelict land	Damaged parcels, brownfields that are contaminated or perceived to be contaminated	Low. Unless the parcels is restored to an acceptable standard for development

Source: Pagano and Bowman 2005.

The classification above reveals both the degree of abandonment and the prospect for redevelopment, given the level of economic prosperity and the strength of property market. The descriptions in the classification further reveal the socio cultural and psychological perspective of landowners with specific reference to speculation, which is predominant in this part of the world. It can therefore be seen that vacant land is defined primarily in terms of abandonment whether residential commercial or industrial.

METHODOLOGY

The study addresses abandonment in Ogbomoso and Osogbo. Thus, both the North and South Local Government areas in Ogbomoso and; Olorunda and Osogbo local government areas of the township are regarded as the frame of sample. Nevertheless, the two cities as a whole are divided into small units referred to in this study as urban blocks. In this context, urban blocks are a group of buildings bounded by roads. These urban blocks were sampled and representatives were chosen from three different residential densities i.e. high, medium and low residential densities.

Eight blocks each were sampled from each residential density. This enhanced the spatial analysis as well as the determination of the magnitude of abandonment. The spatial analysis is obtained by running the nearest neighbour analysis for the abandoned buildings and vacant land for the cities in their respective densities. The comparison of the incidence of abandonment between both cities was done with Student's T-test.

A comprehensive list of salient areas or localities for each of the high, medium and low residential area densities were compiled for both cities. The total number of the areas in each city was then computed. The percentage proportion of the number of the areas in each residential density relative to the grand total of all the city areas was then computed. This was to determine the proportion to be sampled from each density and city.

The total number of blocks earlier defined in the sample frame was determined by counting from the road network map of each of Ogbomoso and Osogbo comprising Ogbomoso North and south; and Osogbo and olorunda local government areas respectively. A total number of 254 blocks are found in Ogbomoso city while 243 are found in Osogbo.

For the reason of convenience, 10% of total number of blocks in each city was sampled. This connotes that approximately 25 blocks are sampled in each city. Nine areas were randomly selected for the high density, 12 for the medium and 4 for the low densities respectively in Ogbomoso. Nine was similarly selected for the high, 13 for the medium and 3 for low densities respectively in Osogbo. This distribution is informed by the percentage proportion of the total number of areas relative to the grand total of all the areas listed for each city. The medium density for each city received the lion share of the sampling and the reason is that greater number of the identified areas belongs to the medium density category.

To determine the incidence and spatial analysis of abandoned landed properties, the actual number of abandoned structures and plot of land within each sampled block were enumerated noting their type and the mean distance between them all in the block among others. The total land area of the block and the total number of houses in each were also taken.

Spatial Incidence of Abandonment
Dwelling on the information obtainable from the 25 sampled blocks from the three residential densities in each city, table 3 (See Appendix 1) shows the abandonment characteristics of each sampled block in different residential densities of both cities. The table features the number of abandoned landed properties in each density and city, the total land area of each block the total number of buildings in each block and the mean distance between abandoned land and building, abandoned land per m^2, abandoned building per m^2 and the percentage of abandonment among all existing structures.

Table 4 (See Appendix 2) shows the summary of abandonment spatial characteristics per city and density. It summarizes the spatial lands per m^2, abandoned building among all buildings: abandoned building per m^2 and the percentage of abandoned buildings. Each calculated mean generalize the incidence of abandonment per city and density.

For the low density area, Osogbo has 0.0001225 vacant land per m^2 while Ogbomoso has 0.0001925. Assuming the total city buildings are summed up in one, Osogbo has 0.2725 abandonments per building while Ogbomoso has 0.2257. Osogbo has 0.00025 abandoned building per m^2, while Ogbomoso has 0.0003875. The percentage of abandoned building relative to the total number of building in Osogbo is 27.21% while that of Ogbomoso is 22.62%. This magnitude may be explained by the fact that low density area are the developing area of the cities, where buildings under construction and abandoned are many within a relatively small land area. This implies that in the low density area, at least one vacant land is found within an acre or 10,000m^2 in Osogbo and 2 are found within an acre in Ogbomoso. Out of every 10000 houses in Osogbo 273 are abandoned but in Ogbomoso only about 226 in every 10000 houses are abandoned. At least 0.00025 abandoned buildings are found per m^2, 3 abandoned buildings are found in 1 acre in Osogbo while 0.0003875 abandoned building per m^2 or 4 abandoned buildings are found in 1 acre in Ogbomoso. Out of every 1000 buildings about 27 is abandoned in Osogbo while about 23 abandoned in Ogbomoso. The seemingly low incidence of abandonment in Ogbomoso in terms of percentage and abandonment per

10,000 houses is a function of the higher absolute total number of houses within a block in the town. More houses are in the city and the sampled block; the percentage of abandoned building therefore seems to be low.

For the medium density, Osogbo has a minimum of two vacant land in 1 acre while Ogbomoso has a minimum of six vacant land in 1 acre (these figures are obtained by multiplying vacant land per m^2 by 10,000) out of 1000 buildings at least 192 are abandoned in Osogbo and about 251 are abandoned in Ogbomoso. This corresponds to 19.4% and 25.1% of abandoned buildings per block in Osogbo and Ogbomoso medium density areas respectively. Also multiplying abandoned buildings per m^2 by 1000, it can be deduced that at least 2 and 4 abandoned buildings are found in 1 acre of the medium density of Osogbo and Ogbomoso respectively.

In the high density, Osogbo and Ogbomoso have a minimum of two vacant lands in an acre. Out of every 1000 buildings, about 163 are abandoned in Osogbo and about 221 in Ogbomoso. At least 4 buildings and 3 buildings are abandoned in every 1 acre in osogbo and Ogbomoso respectively. Out of every 100 houses 16 are abandoned in osogbo and 22 are abandoned in Ogbomoso.

Generally, the ratio of vacant land comparing Osogbo and Ogbomoso is 1:4 respectively, that is, when there is a vacant land in Osogbo there are about 4 in Ogbomoso. The incidence of abandonment is also higher in Ogbomoso. For instance, in every 1000 buildings 196 are abandoned in Osogbo but 236 in Ogbomoso. Similarly, in an acre 2 (2.3) are abandoned in Osogbo while about 4 are abandoned in Ogbomoso.

DISCUSSION
Table 5: The Nearest Neighbour Analysis Result

City	Density	Rn Value (Building)	Rn Value (Land)
Ogbomoso	High Density	0.10	0.16
	Medium Density	0.14	0.29
	Low Density	0.28	0.38
Osogbo	High density	0.23	0.41
	Medium Density	0.24	0.24
	Low Density	0.07	0.09

Source: Author's Field Survey, 2005

For abandoned building in Osogbo the Rn value was 0.215, for Ogbomoso it is 0.13. This implies that abandoned buildings are clustered in both cities but more clustered in Ogbomoso than Osogbo as the Rn value tends more to zero for the city. Similarly, vacant land in both cities is clustered in Ogbomoso than Osogbo with Rn value of 0.26 and 0.28 respectively. This connotes that most of the abandonment concentrates in a particular area in both cities. This requires the calculation of nearest neighbor analysis (Rn) for each density of both cities.

For abandoned buildings in the low density area of Ogbomoso, Rn value is 0.28 for the medium density it is 0.14 for the high density, it is 0.10. This gives a general picture of clusteredness of abandoned buildings in Ogbomoso with clustering higher in the high density area than the medium than the low density area. In the case of abandoned land, the low density has Rn value of 0.38 the medium density has 0.29 and high has 0.16. In essence the distribution of vacant land in the low density is almost random but still clustered. They are

clustered in the medium and high density area with the degree of clustering higher in the high density area.

For abandoned buildings in Osogbo, Rn value is 0.07, 0.24 and 0.23 for the low, medium and high density area respectively. Rn value for abandoned land is 0.09, 0.24 and 0.41 for the low, medium and high residential densities respectively. This implies a very high degree of clustering in the low density area more clustered than the Ogbomoso's low density. The abandoned building and land are also clustered in Osogbo but not as much as that of Ogbomoso. The Rn value for abandoned buildings and land in Ogbomoso medium and high density tends more to zero than in Osogbo

The T-Test Result
Students T-Test was used to compare the incidence of abandoned buildings and plots of land between Ogbomoso and Osogbo. The F value for the comparison of the incidence of abandoned land is 4.544 and the significance of the difference (2-tailed) is 0.012. This implies that there is significant difference between the incidence of abandoned land in Ogbomoso and Osogbo at 95 percent confidence level. Considering table 2, it can be deduced that Ogbomoso has the higher incidence of abandoned land.

The F value for the comparison of the incidence of abandoned buildings is 223.739 and the significance of the difference (2-tailed) is 0.000. This implies a very significant difference between the incidences of abandoned buildings in both cities at 99 percent confidence level. Generally, it can be said that there are more abandoned buildings in Ogbomoso than Osogbo. This is because 23.63% of the total buildings in Ogbomoso were statistically found to have been abandoned, while 17.27% of buildings in Osogbo are similarly found to have been abandoned. Again, Ogbomoso has more land area for expansion compared to Osogbo, and may not be enjoying population influx like Osogbo a state Capital.

CONCLUSION AND RECOMMENDATION
There is generally high incidence of abandonment in both Ogbomoso and Osogbo. However, abandonment of landed properties is higher in Ogbomoso compared to Osogbo. Statistics showed that about 23.63% of the total buildings in Ogbomoso are abandoned while about 17.27% of the total buildings in Osogbo are abandoned as at the period of the study. Again, statistics showed that 2 abandoned buildings are found per acre in Osogbo while 4 abandoned buildings are found per acre in Ogbomoso. Similarly while a vacant land is found per acre in Osogbo, about 4 is found per acre in Ogbomoso. This may be attributed to the fact that Osogbo; the capital city of Osun State, with its relatively small land area is fast urbanizing. Ogbomoso on the other hand is bigger in terms of total land area, yet, not rapidly urbanizing in relative comparison with Osogbo. The structure of the population that is expanding Osogbo are intuitively the working class that can contribute to physical development while Ogbomoso is increasing mostly with student's population. Abandonment of landed properties is generally higher in the medium density residential areas of both cities.

Advantage should therefore be taken of the high incidence of landed property abandonment. The wastes should be turned to wealth through a collaborative effort of the financial institutions and the government. This partnership can turn abandoned houses and plots to usable facilities and forestall all external negativities associated with brownfields.

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Appendix 1

Table 3: Spatial Incidence of Abandonment

Block	Area	City	Density	No of Vacant Land	Block Land Area	Vacant Land per m²	Abandoned Bldg in Block	Total Bldg in Block	Bldg Abandoned per m²	% Abandoned Bldg in Block	Mean Dist. b/w Abandon Bldg	Mean Dist. b/w Vacant Land	Abandonment per Bldg
1	YOACO	O	Low	4	8756	0.0005	5	20	0.0006	25	14	35	0.25
1	Low Cost		Low	2	8100	0.0002	4	21	0.0005	19.05	44	150	0.19
	Adeniran	G	Low	1	37800	0.00003	2	13	0.00005	15.38	4	5	0.15
	Maryland		Low	1	22400	0.00004	9	29	0.0004	31.03	17	40	0.31
	Taki	B	Medium	4	18000	0.0002	2	33	0.0001	6.06	19	22	0.06
	Olope marun		Medium	2	5400	0.0004	8	28	0.0015	28.57	24	50	0.29
2	Olope marun	O	Medium	4	6780	0.0006	7	24	0.001	29.17	30	37	0.29
	Apake		Medium	6	16500	0.0004	4	27	0.0002	14.81	11	40	0.15
	High court	M	Medium	2	6448	0.0003	2	21	0.0003	9.52	8	49	0.10
	Orita naira		Medium	9	32000	0.0003	11	37	0.0003	29.73	6	10	0.30
	Gaa masifa	O	Medium	6	97240	0.00006	14	36	0.0001	38.89	19	14	0.39
	Stadium	S	Medium	4	72000	0.00006	18	26	0.0001	30.77	7	37	0.31
	Taraa		High	5	12600	0.0004	7	34	0.0006	20.59	30	38	0.21
	Isale Afon	O	High	1	24300	0.00004	5	28	0.0002	17.86	6	-	0.18
	General		Medium	2	17600	0.0001	5	26	0.0003	19.23	7	12	0.19
	Oke aanu		Medium	3	33175	0.00009	16	34	0.0005	47.06	8	15	0.47
	Sabo		Medium	5	23800	0.0002	6	31	0.0002	19.35	4	9	0.19
	Oke ado		Medium	5	20400	0.0002	8	29	0.0004	27.59	4	4	0.28
	Aaje		High	4	10080	0.0004	6	32	0.0006	18.75	3	14	0.19
	Ijeru		High	10	291720	0.00003	36	89	0.0001	40.44	17	42	0.40
	Masifa		High	10	586824	0.00002	10	78	0.00002	12.82	36	34	0.13
	Orita merin		High	3	21600	0.0001	7	23	0.0003	30.43	15	25	0.30
	Osupa		High	2	27600	0.00007	9	27	0.0003	33.33	8	17	0.33
2	Osupa		High	4	13900	0.0003	6	31	0.0004	19.35	8	24	0.19
	Oja igbo		High	3	10242	0.0003	2	33	0.0002	6.06	30	41	0.06
	Oke Ayepe	O	Low	4	18900	0.0002	7	19	0.0004	36.84	7	14	0.37
	Ibikunle		Low	2	20960	0.0001	4	21	0.0002	19.05	9	8	0.19
	Halleluyah	S	Low	3	24100	0.0001	9	17	0.0004	52.94	4	3	0.53
	G.R.A		Low	1	10843	0.00009	0	14	0	0	0	-	-
	Ota efun	O	Medium	2	16800	0.0001	4	23	0.0002	17.39	36	30	0.17
2	Ota efun		Medium	1	27000	0.00004	6	31	0.0002	19.35	82	-	0.19
	Igbona	G	Medium	2	17280	0.0001	4	26	0.0002	15.38	30	28	0.15
2	Igbona		Medium	2	12240	0.0002	0	33	0	0	0	40	-
	Jaleyemi	B	Medium	3	32400	0.00009	3	23	0.00009	13.04	8	18	0.13
	Ahmadiyah		Medium	4	29400	0.0001	12	39	0.0004	30.77	18	17	0.41
	Egbatedo	O	Medium	2	19200	0.0001	3	51	0.0002	5.88	35	70	0.06
3	Estate		Medium	3	13760	0.0002	3	15	0.0002	20.00	4	14	0.20
2	Estate		Medium	4	102000	0.00004	10	33	0.0001	30.30	12	19	0.77
	Estate		Medium	1	21600	0.00005	1	12	0.00005	8.33	-	-	0.08
	Ajegunle		Medium	0	14560	0	0	32	0	0	-	-	-
	Sabo		Medium	2	14400	0.0001	2	23	0.0001	8.70	10	2	0.09
2	Sabo		Medium	4	19000	0.0002	7	28	0.0004	25.00	17	12	0.25
	Asubiaro		High	5	15600	0.0003	8	37	0.0005	21.62	11	27	0.22
2	Asubiaro		High	5	43200	0.0001	14	102	0.0003	13.73	18	45	0.14
	Isale aro		High	2	11200	0.0002	2	26	0.0002	7.69	47	15	0.08
	Isale Ijebu		High	4	7600	0.0005	4	37	0.0005	10.81	29	65	0.11
2	Isale aro		High	5	19200	0.0003	12	31	0.0006	38.71	21	33	0.39
	Ayetoro		High	2	27600	0.00007	6	39	0.0002	15.38	9	42	0.15
	Oke Bale		High	6	90000	0.00007	21	322	0.0002	6.52	16	19	0.07
	Isale Osun		High	8	61200	0.0001	19	133	0.0003	14.29	20	60	0.14

Source: Author's Field Survey 2005.

NB: Vacant land per m² = $\dfrac{No.\,of\ Vacant\ Land}{Block\ Land\ Area}$

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Abandoned building per m^2 = $\dfrac{No.of\ Abandoned\ Building\ in\ Block}{Block\ Land\ Area}$

Abandoned building per building = $\dfrac{No.of\ Vacant\ Land}{Block\ Land\ Area}$

Appendix 2

Table 4: Spatial Incidence of Abandonment According to Densities

Density	Vacant Land Per M2		Abandonment / Building		Abandoned Building/ M2		% of Abandoned Building	
	Osogbo	Ogbomoso	Osogbo	Ogbomoso	Osogbo	Ogbomoso	Osogbo	Ogbomoso
Low Density	0.0002	0.0005	0.37	0.25	0.0004	0.0006	36.84	25
	0.0001	0.0002	0.19	0.19	0.0002	0.0005	19.05	19.05
	0.0001	0.00003	0.53	0.15	0.0004	0.00005	52.94	15.38
	0.00009	0.00004	0	0.31	0	0.0004	0	31.03
*	0.0001225	0.0001925	0.2725	0.2257	0.00025	0.0003875	27.2075	22.615
	0.0001	0.0002	0.17	0.06	0.0002	0.0001	17.39	6.06
	0.00004	0.0004	0.19	0.29	0.00002	0.0015	19.35	28.57
	0.0001	0.0006	0.15	0.29	0.0002	0.001	15.38	29.17
	0.0002	0.0004	0	0.15	0	0.0002	0	14.81
	0.00009	0.0003	0.13	0.10	0.00009	0.0003	13.04	9.52
	0.0001	0.0003	0.41	0.30	0.0004	0.0003	30.77	29.73
	0.0001	0.00006	0.06	0.39	0.0002	0.0001	5.88	38.89
	0.0002	0.00006	0.2	0.31	0.0002	0.0001	20.00	30.77
	0.00004	0.0001	0.77	0.19	0.0001	0.0003	30.30	19.23
	0.00005	0.00009	0.08	0.47	0.00005	0.0005	8.33	47.06
	0	0.0002	0	0.19	0	0.0002	0	19.35
	0.0001	0.0002	0.09	0.28	0.0001	0.0004	8.70	27.59
	0.0002	*0.00067	0.25	*0.251667	0.0004	*0.0004167	25.00	*25.0625
*	0.000102	0.0004	*0.1923077	0.21	*0.000151	0.0006	*19.43385	20.59
High Density	0.0003	0.00004	0.22	0.18	0.0005	0.0002	21.62	17.86
	0.0001	0.0004	0.14	0.19	0.0003	0.0006	13.73	18.75
	0.0002	0.00003	0.08	0.40	0.0002	0.0001	7.69	40.44
	0.0005	0.00002	0.11	0.13	0.0005	0.00002	10.81	12.82
	0.0003	0.0001	0.39	0.30	0.0006	0.0003	38.71	30.43
	0.00007	0.00007	0.15	0.33	0.0002	0.0003	15.38	33.33
	0.00007	0.0003	0.07	0.19	0.0002	0.0004	6.52	19.35
	0.0001	0.0003	0.14	0.06	0.0003	0.0002	14.29	6.06
*	0.000205	0.000184	0.1625	0.22111111	0.00035	0.00030222	16.09375	22.181111
City mean	0.000138	0.0004188	0.1956	0.2364	0.0002304	0.0003708	17.2688	23.6336

Source: Author's Field Survey 2005.   * Mean For The Density