

Identification of Occupation Clustering in Kandy City, Sri Lanka: An Investigation of Residential Location Pattern by Occupational Status.

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Abstract

Existence of social groups with different socio-economic status is a common character in a city and makes cities to form residentially varied areas within the city which is generally termed as 'residential differentiation'. Since residential differentiation sometimes becomes a critical issue to be addressed it should be understood as much as possible before planning and organizing the urban space in optimal manner. This study attempts to investigate spatial expression of occupational structure of Kandy city, Sri Lanka. Attention is given for identifying, measuring and mapping the existing location pattern of occupational groups over the urban space of Kandy city. Occupation data in Kandy city collected from national census of population and housing in 2001 were used and Location Quotient technique (LQ) was employed to analyze the data.

Results evidently revealed that 'occupation' is influential to form a distinct location pattern in the city space. Basic pattern of location of occupation groups identifiable is that higher ranking occupation groups are concentrated in peripheral areas while lower ranking occupation groups are located in city center areas or proximity areas to the city center. This has made some particular areas to be specialized for some occupation groups. Working class or labourer category which has the highest proportion is mostly limited to city center and adjoining areas where commercial and other services are dominated. These areas are highly commercial and mix residential areas in the city and are very valuable lands that can be used for the better economic use establishing new projects. This is one of critical issues to be addressed in future development of the city.

Key Words-Occupation, Location Quotient, Spatial distribution, Kandy city.

1. Introduction

Existence of different social groups with different socio-economic status is a common character in a city as it grows and get larger in time. The general tendency of arranging the residential areas of these different social groups in the urban space is that groups or individuals who have similarity in socio-economic characteristics agglomerate geographically in certain areas. This residential choice of homogeneous groups in cities makes residential variations within the city which is generally termed as 'residential differentiation'.

Understanding of residential differentiation or spatial pattern of location of different social groups on the ground of socio-economic status in cities has become an important part in the study of cities from the early time since residential differentiation and spatial segregation sometimes have become issues to be addressed.

Cities are dynamic entities undergoing continuous changes of its functional diversity with the expansion in time and therefore, they should be understood as much as possible before planning. It is also no secret to community leaders and planners that the social characteristics and needs of these various communities vary greatly, and policies and programs need to be designed accordingly. But, because urban areas are too complex to allow public officials to rely completely on common sense and personal observations, planners and researchers constantly seek empirical tools that will provide a more reliable understanding of the changing character of large urban areas. A systematic and methodological approach will precisely answer the questions of what activities are located where and why and assist the planning process well.

Formation of socially diverse residential areas in a city is a result of typically the socio-economic status of its inhabitants. Socio-economic status is commonly conceptualized as social standing or position of an individual or a family within a hierarchical social structure. As Krieger, Williams, and Moss [1] and Lynch and Kaplan defined Socio-economic status as an aggregate concept of one's level of resources or prestige in relation to others. Resources refer to access to material and social assets including income, wealth and educational attainment and prestige refers to an individual's rank or status typically evaluated by access to and consumption of goods, services, and knowledge as linked to occupational prestige and education. However, it is often measured as a combination of three variables of income, education and occupation. Socio-economic status and human behaviour is intimately connected and social scientist hence, often use socio-economic status of population as a means of predicting human behaviour.

Occupation as person's usual or principal work or business, especially as a means of earning encompasses both income and educational attainment. It reflects the educational attainment required to obtain the job and income levels that vary with different jobs and within ranks of occupations. Additionally, it shows achievement in skills required for the job. Occupational status measures social position by describing job characteristics, decision making ability and control, and psychological demands on the job. Occupations are ranked by the Census of a country. Some of the most prestigious occupations are physicians and surgeons, lawyers, engineers, university professors, and communication analysts. These jobs, considered to be grouped in the high socio-economic status classification, provide more challenging work and greater control over working conditions but require more ability. The jobs with lower rankings include workers such as counter attendants, helpers, dishwashers, janitors, maids and housekeepers, vehicle cleaners, and parking lot attendants. The jobs that are less valued also offer significantly lower wages, and often are more laborious, very hazardous, and provide less autonomy [3]. Careful research had documented that persons with high occupational statuses are residentially segregated from persons of low occupational status, less likely to live in low rent areas, less closely bound to their places of work.

In this context, this study attempts to investigate spatial expression of occupational structure of Kandy city as it an important indicator of socio-spatial structure of the Kandy city. Attention will be given for identifying, measuring and mapping the existing location pattern of occupational groups over the urban space of Kandy city.

In terms of population, Kandy city functions as the second largest city in Sri Lanka outside the Colombo Metropolitan area and the most important city in the Central hill county in Sri Lanka. It is great national important since it is being the major cultural, commercial, administrative and transport center of the hill country during the last 600 years history since its established as the capital of the Kandyan Kingdom in the 15th Century. The most significant cultural character of the Kandy city is the location of the Sacred Tooth Relic Temple, one of the most venerable places for the Buddhist community in Sri Lanka and around the world. From 1594 Kandy was invaded by Portuguese (1594) Dutch (1802) and British (1815) and affected by their socio-economic and cultural setting. Due to its historic value which was shaped by different ruling periods of local and colonial this has been inscribed as a World heritage city by UNESCO in 1986.

2. Literature

Basically three classical spatial models of urban structure describe the land use pattern of traditional American cities. The earliest of these models, the Concentric Ring Model as a result of an analysis of urban social space of Chicago city by Burgess in 1925 [4] ninety years ago describes in general, the expansion process of a city through the time and also explain the distribution of social groups within urban areas as one of the prominent spatial attributes in the urban environment. This model explains that urban land use tended to display a zonal organization concentrically arranged around the city center. They were able to recognize the pattern that was population was being spatially differentiated into housing zones. More wealthy households who have both the money to afford housing and can afford to commute every day to the city were observed to live at greater distances or at the boundary areas or peripheral areas of the city and low income group, who are the poorest segment of the urban population in the areas around the city center and middle class in the areas in between the wealthy households and lower status group as the city grew and developed over time. After Burgess Hoyt in his sector model in 1939 [5] and Harris and Ullman in 1945 [6] in their multiple nuclei model explain arrangement of residential areas from the center of the city based on the social characteristic of its inhabitants. Presentation of these models encourages a bulk of investigation of residential arrangement of urban areas by employing different approaches and methods. Many of the investigation were based on the empirical testing of hypothesis which is population are segregated residentially by social class and, that since distance can be translated into physical distance, then observable pattern of residential segregation in spatial terms can be discerned within the city [7]. One of the approach to modelling the residential location of different social class is the social area analysis which is a statistical procedure based on factor analysis originally developed by sociologists Shvky, Williams and Bell by applying it to Los Angeles in 1949. Social area analysis considers three dimensions; family characteristics, socio-economic status and ethnicity and how these three aspects interrelate to produce distant spatial pattern within the city [8]; [9]; [10]. Each dimension includes a number of variables.

In many research, occupation as a most accessible parameter was used to indicate the social class. Occupation is one of the important criteria of social stratification. Its significance is clearly twofold because it relates economic relationship with the means of production but also define a work-situation which will in turn have consequences on both the consciousness of class identify and also will help to define patterns of status estimation and attitude to the stratification system both within and outside the work situation [11]. Hence, several studies have been done by Duncan and Duncan in 1955 [12], Whellar in 1968 [13] and Kain in 1962 [14] by using occupation as a measure of social class to identify social class segregation or to see the social class specialization over the urban space.

3. Data and Methodology and Analytical Technique

This paper uses occupation data in 43 Grama Niladari Divisions collected from National Census of Population and Housing in 2001 conducted by the Department of Census and Statistics Sri Lanka. Employed population aged 10 year and over in only major occupation groups given by the census which is based on Standard Classification of Occupations 2011 were considered for the analysis.

Location Quotient technique (LQ) was employed to analyze occupational data. A Location Quotient is a relative indicator that has been used widely in geographic and regional science research. Location Quotient is most widely used rate-ratio which is most commonly utilized technique of economic base analysis and can be used in finding the spatial distribution of phenomena too. In the economic base analysis this technique compares the local economy to a reference economy, in the process of attempting to identify specializations in

the local economy. It generally works with areal units, characterizing different areas subject to a larger region and providing a basic insight into where functions are clustered. This quantifies how concentrated a particular industry, cluster, occupation, or demographic group is in a spatial unit as compared to the larger spatial unit. Location Quotients are useful for studying the composition of jobs in an area or for finding areas that have high concentrations of jobs in certain occupations. It shows the occupation's share of an area's employment relative to the national average. Hence, Location Quotients show how occupation groups are spread out across the city space.

Location Quotient has 3 possible interpretations; if it is around 1 then the phenomenon in that area is at the level what is observed nationally. If the LQ is less than 1 then that area has a lesser amount of what is expected based upon national figures. Finally, if the LQ value is over 1 this suggests a concentration of occupations in the area which is greater than the nationally observed level.

This was computed with the help of Excel software 2007 to find the relative specialization of occupational groups in the city. The basic formula for the index of segregation is:

$$LQ = \frac{e_i/e}{E_i/E}$$

Where:

e_i = Local employment in industry i

e = Total local employment

E_i = Reference area employment in industry i

E = Total reference area employment

4. Results and Discussion

4.1. Overview of Economic Structure and General Composition of Occupations of Kandy City

Economic base or economic structure of a city and its occupation structure are strongly linked. Kandy city has diversified economic base since its significance as a focal point for a vast array of economic, social and cultural activities. It is the main commercial center not only for the central province but also for the country in general after Colombo, excepting perhaps Galle and Jaffna and function as both a wholesale and a retail distribution point for all the consumers, intermediate and even capital goods [15]. It also plays a role as the main collecting and distributing center for the surplus of the agricultural and manufacturing products of the area. On the other hand Kandy city provides variety of services and amenities such as medical facilities, education opportunities, financial services, political and legal, judicial, administrative and transport services too. Cultural value of the city also is important since Kandy is an internationally acclaimed world heritage site where one of the most important Buddhist temples in South Asia is situated. Cultural value of Kandy city has made it today one of the major tourist destinations in the country for the foreign and local tourists. One of the other important sectors in the Kandy city is the handicraft manufacturing sector which comes from the period in which Kandy city was the ancient royal capital of Kandyan kingdom.

Based on the above context, it is worth to understand existing economic structure of the Kandy city. Census in Sri Lanka categorizes all economic activities in an area under three groups generally called as 'industry groups' and can be best represented through three-sided triangular graph for a quick visual comparison of component dominance in the Kandy city. Accordingly, three-sided triangular graph below drawn to Kandy city clearly demonstrates that relative dominance of occupation of major industry groups (Figure 01). As the graph shows the dominant sector of the Kandy city is the service sector while manufacturing takes second and agriculture as the primary sector is nothing important.

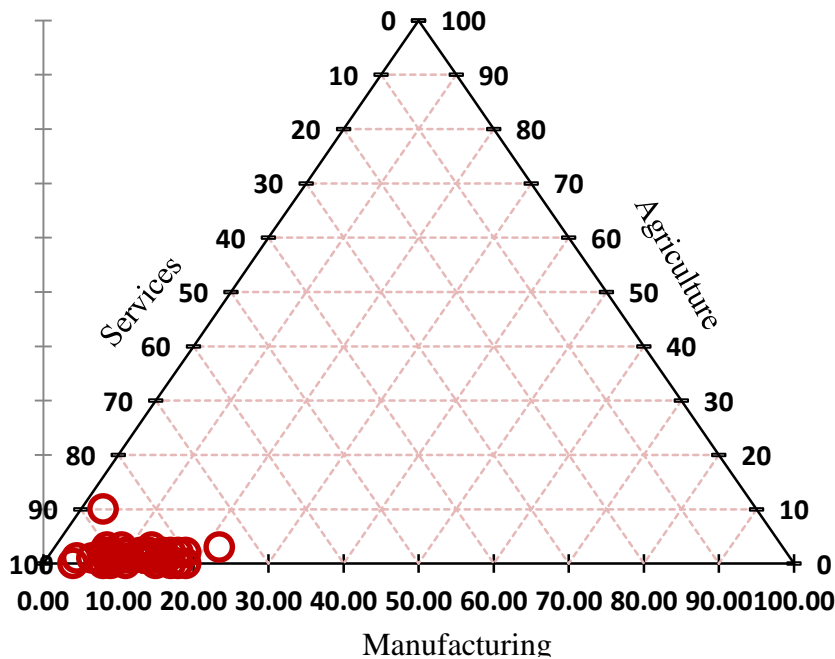


Figure 01: Relative Dominance of Occupations of Major Industry Groups in Kandy City

As reported by the census in 2001 the largest concentration of employment in the city is within the services sector. Over 80 % of labour force in each Grama Niladari Division is engaged in service sector employment. The major contributory sub sectors in the service sector are financial services, trading, transport, communication and information technology, Tourism, education, health and public administration. Employment in manufacturing sector is minimal as below 25 % because of less concentration of industries in the city.

Drawing the attention to the occupation groups and number of workers in each group consisted by the above three industry groups jointly in the Kandy city is important to get a picture regarding occupational composition in the Kandy city. According to the international standard classification of occupations identified by the Department of census in 2001 occupational composition in hierarchical order in the Kandy city is given below (Table 01). Proportion of works in higher level occupations; legislators, senior officials and managers (3.74%) Private business owners (10.09%), Professionals (15.06%) is about 29% of the total. Their existence is because of concentration of regional head offices in many fields such as leading hospitals, schools, national university, government and private higher educational institutions and major judiciary institutions. Proportion of the workers in the middle and lower end of the occupational hierarchy (codes 3, 4,5,6,7,8 and 9) jointly accounts for about 68 %. Proportion of service workers & shop and market sales workers are recorded as 12.68 % because the job generation ability of the city as the major center for the trade and commerce in the central province. Percentage of craft and related workers also is significant since handicraft manufacturing (in particular wood carving and ceramics) is a large and growing sector in the Central Province, with important economic linkages to tourism [16]. The other noticeable character is the high proportion of workers who are mostly regarded as labours falling into elementary occupation. It is 15.60 % which is the highest proportion in the city compared with proportion of all the other occupation groups in the city.

Table-01: Occupational Composition in Kandy City- Major Occupation Groups, 2001

Code	Occupation groups(Major)	Number of workers	Percentages
1	Legislators, senior officials and managers	1346	3.74
1A	Private business owners	3625	10.09
2	Professionals	5426	15.06
3	Technicians and associate professionals	5319	14.76
4	Clerks	2739	7.60
5	Service workers & shop and market sales workers	4570	12.68
6	Skilled agricultural and fishery workers	590	1.63
7	Craft and related workers	2680	7.44
8	Plant & machine operators and assemblers	1934	5.3
9	Elementary occupations	5632	15.60
10	Others	2147	5.96
Total		36018	100.00

4.2. Spatial Distribution Pattern of Occupational Groups in Kandy City: Result Interpretation

General composition of occupation groups does not give a picture of how these occupation groups are spread over the urban space and attempting to look at its distribution over the urban space provides a basic insight into location pattern in the city. To study how these occupation groups are distributed and measure the degree of concentration in the urban space of Kandy city calculated LQ values are categories as follows (Table 02).

- LQ=Less than 0.5 - Very low concentration
- LQ=0.6-0.9 - Low concentration
- LQ=1.0 - Average (No concentration)
- LQ=1.1-1.5 - Moderately high concentration
- LQ=Above 1.6 - Strongly high concentration

Table 02: LQ Values for Occupation Groups in Kandy City

GN D Code	Name of GND	Codes of Occupation Groups*									
		1	1A	2	3	4	5	6	7	8	9
227	Mavilmada	1.4	0.8	1.1	1.4	1.2	0.5	0.7	1.4	1.3	0.6
226	Siyambalagasthanna	1.1	1.4	0.7	1.2	1.0	1.1	0.3	0.9	1.3	0.8
250	Pitakanda Gama	1.3	1.3	1.1	0.9	1.0	1.2	0.3	1.0	0.7	1.0
251	Senkadagala	0.9	2.1	0.9	1.0	0.5	1.4	0.4	1.1	1.1	0.5
238	Wattaramthanna	1.7	1.1	1.0	1.0	1.4	0.8	0.5	1.2	0.8	0.8
225	Tittawela	1.1	0.6	0.6	1.1	0.9	0.8	0.4	1.6	1.2	1.0

228	Watapuluwa	1.3	0.4	0.8	1.4	1.9	0.6	0.7	1.4	1.4	0.8
231	Mahaweli Uyana	2.8	0.3	1.6	1.1	1.3	0.6	0.6	0.6	0.5	0.8
230	Watapuluwa South	1.7	0.8	1.2	1.6	1.4	0.6	0.8	0.7	0.9	0.7
224	Aruppala East	0.9	0.5	1.0	1.5	1.4	1.1	0.1	0.9	1.4	0.6
223	Aruppala West	0.9	0.9	1.1	1.1	1.4	0.7	0.3	1.1	1.4	1.0
229	Watapuluwa West	1.6	0.4	1.3	1.5	1.8	0.7	1.1	1.0	0.9	0.5
239	Mahaiyawa	1.0	1.5	0.9	1.0	1.1	0.9	0.3	0.8	1.3	1.0
237	Mapanawathura	1.7	0.6	1.1	1.1	1.5	1.0	0.6	1.5	0.9	0.6
241	Poorna Watta East	0.6	1.0	0.9	0.8	1.1	1.0	0.1	1.7	0.8	1.2
240	Poorna Watta West	0.1	0.8	0.2	0.5	0.4	1.0	0.1	1.9	0.6	2.7
235	Asgiriya	1.1	1.1	1.1	1.3	1.1	0.7	1.1	1.6	1.0	0.7
236	Bahirawa Kanda	1.2	1.4	1.1	0.8	1.0	1.0	0.3	0.9	1.1	0.8
232	Nuwara Dodamwala	1.8	0.6	0.9	1.2	0.7	0.7	0.7	1.3	1.6	0.9
234	Aniwatta East	1.8	0.8	1.3	1.0	1.2	0.7	0.7	0.5	1.0	1.4
256	Katukele West	1.2	1.7	1.0	0.9	0.9	1.3	0.1	0.6	1.1	0.9
255	Katukele	1.1	1.6	0.7	1.1	0.8	1.7	0.3	0.8	0.7	0.8
258	Ihala Katukele	0.2	1.6	0.7	1.5	0.5	2.0	0.1	0.5	0.7	0.4
257	Mahanuwara	0.5	0.9	0.6	0.7	0.6	2.1	1.6	0.6	0.7	1.0
222	Lewella	1.2	0.9	0.9	1.0	0.9	0.7	0.4	0.9	1.8	0.9
221	Thalwatta	1.5	0.5	1.3	1.3	1.3	0.5	0.4	0.9	1.1	0.9
220	Boowelikada	0.7	0.8	0.7	0.6	0.8	1.1	0.7	0.3	0.7	0.7
254	Malwatta	0.6	1.0	1.2	1.0	1.1	1.2	0.5	0.7	0.9	1.0
264	Bogambara	0.1	1.2	0.7	0.6	0.7	1.1	5.8	0.4	0.9	1.7
261	Deiyannewela	0.3	0.7	1.3	1.0	0.8	0.9	5.6	0.7	1.1	1.0
262	Nagasthenna	0.3	1.1	0.7	0.9	0.8	1.1	0.4	1.5	1.3	1.3
265	Suduhumpala East	0.3	1.2	0.3	0.8	0.5	0.9	0.2	1.7	1.6	1.8
266	Suduhumpala West	1.0	1.1	1.1	0.9	1.2	1.0	0.4	1.6	0.9	0.9
260	Welata	1.3	1.1	1.3	1.0	0.8	1.3	0.3	0.7	0.5	1.0
233	Aniwatta West	2.3	1.5	1.8	0.9	0.7	0.4	0.5	0.3	0.7	0.9
259	Getambe	1.0	1.0	1.5	0.8	1.2	0.6	1.9	0.8	0.8	1.1
245	Bowala	1.3	0.6	1.4	1.3	1.2	0.7	0.2	1.1	1.3	0.9
243	Mulgampala	1.0	1.0	1.3	1.3	1.0	0.6	0.6	1.4	0.6	0.8
253	Ampitiya South	1.3	1.4	0.8	0.9	0.6	0.6	0.5	0.6	1.0	1.7
252	Ampitiya North	0.8	1.3	0.7	0.9	1.4	0.8	0.2	1.3	1.6	1.0
415	Yatiwawala	0.8	1.0	1.0	0.7	1.0	1.1	1.8	1.4	1.2	1.0
607	Galawaththa	1.2	1.4	0.9	0.9	1.1	1.2	0.0	1.6	0.9	0.7
608	Nawayalathanna	1.3	0.8	1.3	0.9	1.8	0.8	0.1	1.1	0.9	0.8

* Table-01

Very low concentration	
Low concentration	
Average concentration	(No concentration)
Moderately high concentration	high
Strongly high concentration	high

Table 03: Degree of Specialization of Occupation Groups in Kandy City-2001

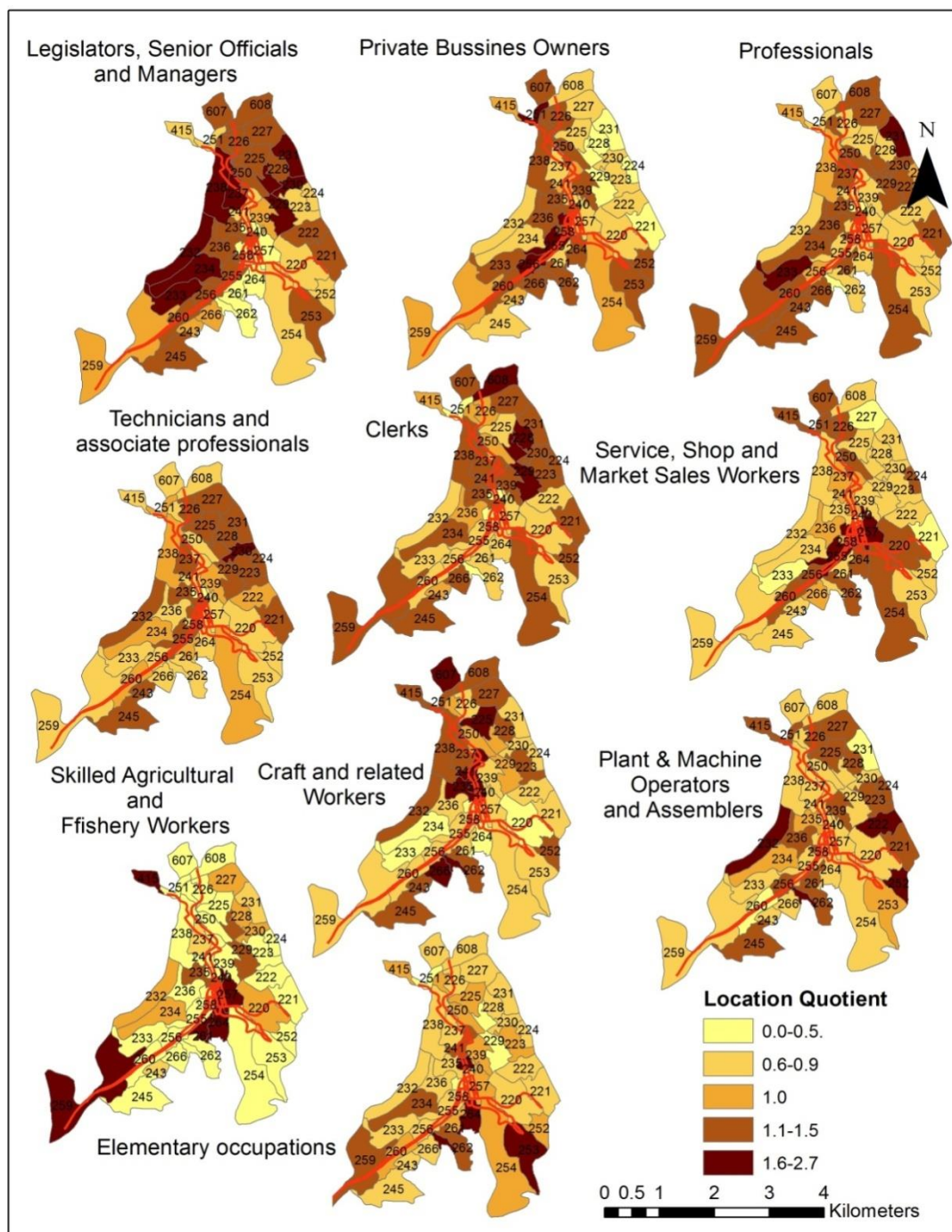
Code	Occupation groups(Major)	LQ Classification				
		LQ=Less than 0.5 Very Low	LQ=0.6-0.9 Low	LQ=1.0 Average	LQ=1.1-1.5 Moderately High	LQ=Above 1.6 Strongly High
1	Legislators, senior officials and managers	240,258,257,264,261,262,265	252,414,254,220,241,223,224,251	239,266,259,243	227,226,250,228,229,235,236,256,255,222,221,260,245,253,607,608	238,231,230,229,237,232,234,233
1A	Private business owners	228,231,224,229,221	227,225,230,223,237,240,232,234,257,222,220,261,245,608	415,243,259,254,241,	226,250,238,239,235,236,264,262,265,266,260,133,253,252,607	251,256,255,258
2	Professionals	240	226,251,225,228,239,241,232,255,258,257,222,220,264,262,253,252,607	238,224,256,415	227,250,230,223,229,237,235,236,234,221,254,261,266,260,259,245,243,608	231,233
3	Technicians and associate professionals	240	250,241,236,256,257,220,264,262,265,266,233,259,253,252,415,607,608	251,238,239,231,222,254,261,260	227,226,225,228,231,224,223,229,237,235,232,155,258,221,245,243	230
4	Clerks	251,240,258,265	225,232,256,255,257,222,220,264,261,262,260,233,253	415,243,226,250,236	227,238,231,230,224,223,239,237,241,235,234,221,254,266,259,245,252,607	228,229,608
5	Service workers & shop and market sales workers	227,221,233	238,225,228,231,230,223,229,239,235,232,234,222,261,265,259,	237, 241, 236,240, 266	226,250,251,224,256,220,254,264,262,260,415,607	257,258,255

			245,243,252, 253,608			
6	Skilled agricultural and fishery workers	226,250,251,238, 225,224,223,239, 241,236,256,255, 258,222,221,254, 262,265,266,260, 233,245,253,252, 607,608, 240	227,228,231,230, 237,232,234,220, 243	-	229,235,	257, 264, 261, 259, 415
7	Craft and related workers	234,258,220,264,233	226,231,230,224, 239,236,256,255, 257,222,221,254, 261,260,269,253	250,229	227,251,238,228,223,237 232,262,245,243,252,415, 608	266,265,235,240, 241,225
8	Plant & machine operators and assemblers	231,260	250,238,230,229, 237,241,240,255, 257,258,220,254, 264,266,233,259, 243,607,608	235,234,253	227,226,251,225,228,223 224,239,236,256,221,261 262,245,415	232,222,265,252
9	Elementary occupations	251, 229, 258,	227,226,238,228, 231,230,224,237, 235,236,232,256, 222,221,220,266, 233,245,243,607, 608	250,225,223,239, 257,254, 261,260 252,415	241,234, 262, 259	240, 253,264,265

Figure 02 shows thematic maps prepared to visualize the geographical distribution pattern of each occupation groups in the Kandy city. As shown by the figure, all categories of occupations are spread out in the overall city space at varying degrees but concentration of certain occupation categories are obvious in some areas in the city making those areas specialized for those occupation groups (Figure 03).

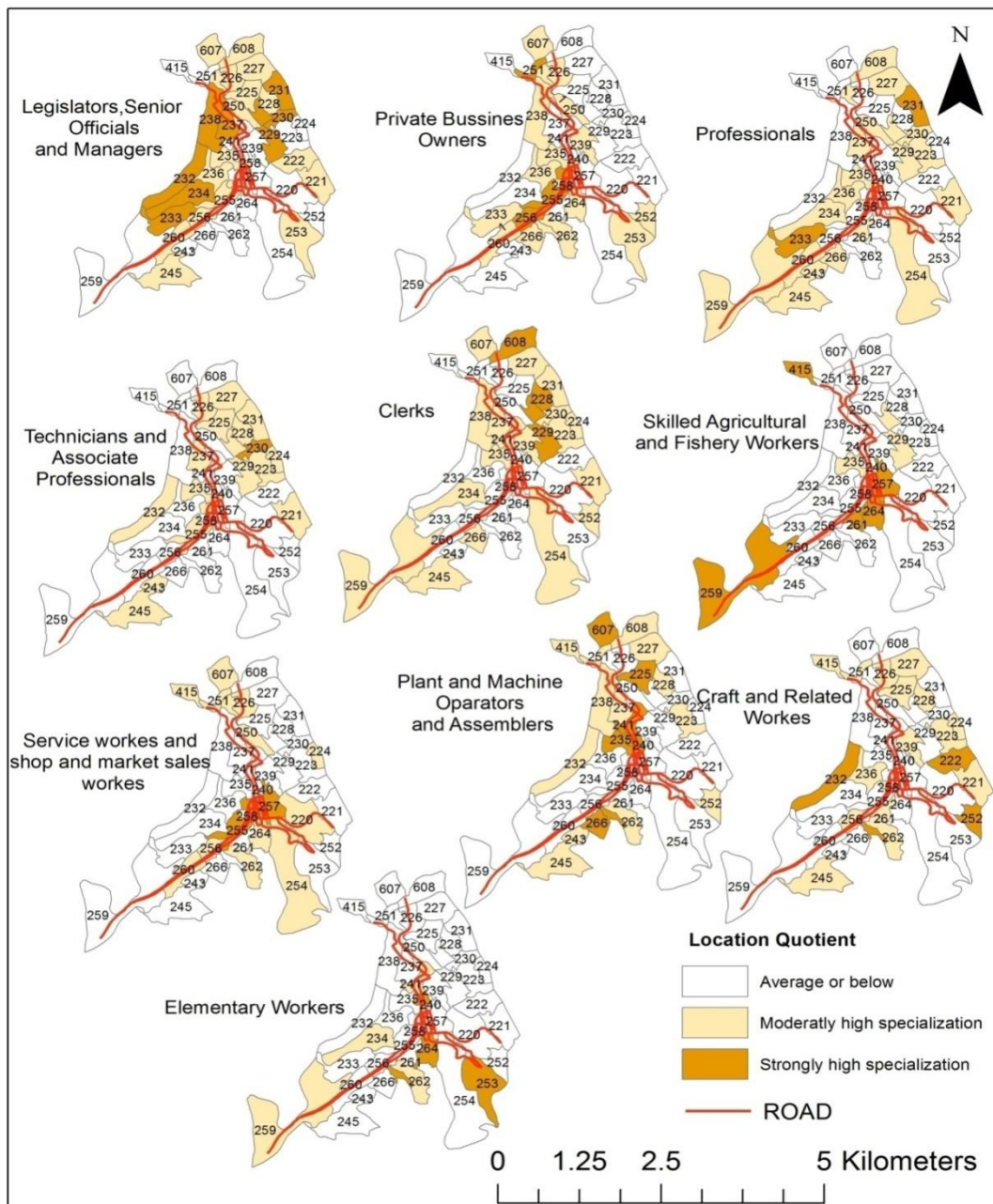
According to the hierarchy of occupation categories legislators, senior officials and managers (code 1), Private business owners (code 1A) and professionals (code 2) are considered as the upper level occupations of the social ladder and regarded as upper class with more prestige. As early theoretical explanation of Burgess,

Hoyt and Harris and Ullman people in this occupation category generally reside in peripheral or outside areas which are low density areas in the city. As Table 02 and Figure 02 demonstrate similar residential pattern is noticeable even in the Kandy city. Though Legislators, senior officials and managers are relatively a small proportion (3.74%) compared with other categories they are concentrated in 24 Grama Niladari Divisions located in the Northern and Western edges of the city. Their concentration is found to be moderately high in 16 GN Divisions and concentration is strongly high in only 8 Grama Niladari Divisions. Mahawali Uyana (231), Watapuluwa South (230), Watapuluwa West (229), Mapanawatura (237), Wattaramtanna (238), Nuwara Dodanwala (232), Aniwatta East (234) Aniwatta West (233) are the Grama Niladari Divisions found with strong high concentration of this occupation category. Mahawali Uyana and Aniwatta West are the Grama Niladari Divisions



See Appendix 01 for the Ward names

Figure 02: Spatial Distribution Pattern of Occupation group in Kandy City (LQ values)-2001



See Appendix 01 for the Ward names

Figure-03: Spatial Specialization of Occupation Groups in Kandy City-2001

Having highest LQ Values. According to the development plan of Kandy city for 2002-2016 [17] these peripheral areas are allocated for mostly the primary residential activities. Availability of land, good living environment, low density housing, relatively low land price are some of key factors for high concentration of this category of occupations. Proportion of private business owners in the city is accounted for 10.09 % which is considerably a high proportion, can be found mostly along the main roads running through the city mainly Colombo-Kandy and Kandy-Kurunagala road making another distinct location pattern. In this regards, they

prefer to reside in the areas where commercial activities take place showing a relationship between concentration of private business owners and location of commercial activities. There are 15 Grama Niladari Divisions with moderately high concentration of private business owners along the main roads and 4 Gramaniladari Divisions mainly Katukale West (256), Katukale (255), and Ihala Katukale (258) in Southern part of the city and Senkadagala (251) in Northern part of the city. Senkadahala Grama Niladari Division has the highest LQ value (2.1). Proposition of professionals (Code 3) also has a distinct pattern. Professionals are regarded as upper class. Their proportion in the Kandy city is 10.60% which is the second highest category in number in the city. Even though they are seem to be spread out throughout the city space concentration is limited to certain divisions. Concentration of professionals is more obvious in the peripheral areas of South-Western and North-Eeastern part of the city. Grama Niladari Divisions such as Gatambe (259), Welata (260) Mulgampola (243), Suduhumpola (266), Bowala (245), Asgiriya (235), Aniwatta East (234) Malwatta (254) Bahirawakanda (236) and Deiyannawela (261) in South Western part and Grama Niladari Divisions such as Nawayalathanna (608), Mawilmada (227), Pitakandagama (250), Mapanawatura (237), Watapuluwa West (227), Watapuluwa South (230) Aruppola West (221) Thalwatta (221) in North-eastern part have moderately high concentration while Aniwatta West and Mahawali Uyana (233) has the highest concentration. According to the development plan these areas are also under primary and mixed residential zone. Most of the government and private offices related to many fields are located in the Gatambe (259) and surrounding areas. University of Peradeniya is one of such institution and a large number of professionals work in those instructions reside in the areas which are close proximity to their work places.

Other two categories of occupations; technicians and associate professionals and clerks are generally taken as middle class people. Their makeup is 24% in the Kandy city. Their concentration is most obvious in the North and Eastern parts of the city where commercial, public and semi-public activities are located. Concentration of technicians and associate professionals is moderately high in 15 Grama Niladari Divisions and highly concentrated in only Watapuluwa South (230). Clarks are moderately high in even the South-Western part because of a large number of services including administrative, education, hospital and agriculture in the Gatambe Grama Niladari Division and its surrounding areas.

Service workers & shop and market sales workers, skilled agricultural and fishery workers, craft and related workers, Plant & machine operators and assemblers are termed as working class or labouring class. The working class is the class of people employed for wages, especially in manual or industrial work and belongs to lower rungs of the socio-economic ladder. The working class relies on earnings from wage labour thereby including a large majority of the population industrialised economies, of the urban areas of non-industrialized economies, and also a significant number of the rural workforce worldwide. In case of Kandy city, makeup of this category collectively is significantly high (26%) because of job availability in the city. Figure 02 shows their distribution pattern over the city space and has a separate pattern than the distribution pattern of upper and middle class categories. As described by the early city models of industrialized countries working class population, depending on their socio-economic status tend to be located city center areas or near to central business district which are highly congested and environmentally unsuitable areas to for living.

Though, there are some variations of concentration of each individual sub group of occupation of working class the initial pattern observable even in the Kandy city is the tendency to concentrate in city center areas, its close proximity and commercial areas in the city. Service workers and shop and market sales workers those proportion is 12.68% are concentrated basically in three locations that are city center areas, along the Colombo Kandy road and Northern part of the city which is also one of commercial zones in the city. Their concentration is moderately high in 11 Gramam Niladari Divisions and strongly high in Mahanuwara (257), Katukale (255) and Ihala katukale (258) located in city canter areas. These areas are highly commercial areas according to the development plan of Kandy city for 2002-2016. Major of commercial activities as well as service functions are located here. Skilled agricultural and fishery workers that is another sub category of

occupations comes under working class has recorded the lowest proportion which is 1.3 % are strongly concentrated in 5 Grama Niladari divisions. These concentrations are due to 2 % of agricultural activities, especially paddy cultivation and 7.8 % of water bodies in the city. According to the city development plan Malwatta(254) and Ampitiya South (253) are in the agricultural zone and Grama Niladairi Divisions; Mahanuwara (257), Bogambara(264) Deiyannawela (261) surrounded by agricultural zone and water bodies exhibit strongly high concentration of agricultural and fishery workers. In addition, Gatambe (259) in the South - western edge and Yatiwawala (415) in the North Western edge also fall into this category.

From the ancient era arts and crafts are tied with the culture of the Kandyan Society and contributed to the economic life of society second only to agriculture. The artists and craftsmen had the patronage of the king. The best were permanently employed in the royal household and were gifted with land in return for their services. All Royal requirements including, jewellery, ornaments utensils, gifts given to other Heads of state on delegations jewellery and ornaments required by the nobility were turned out by the traditional Craftsmen. The Knowledge and practices were passed down from generation to generation. Even today it is one of key growth driver in Kandy city and its proportion in the city is accounted as 7.44 %. Today their high concentration in two locations in the city is mostly lie very close to the commercial zone. They tend to live mainly around the city center and commercial line which runs along the Kandy Kurunagala road in the Northern part of the city while the other location with high concentration lies along the Colombo–Kandy road. However, their preference is to live more closely to the commercial areas so as to get easy access to the market for their production. Plant & machine operators and assemblers with 5.3% proportion in the city display somewhat different picture than the other occupation groups in the working class. A distinct distribution pattern is hardly identified but Grama Niladari Divisions with moderate and high concentrations are in peripheral areas in the city. These areas are in the primary residential zone according to the city development plan.

The last occupation group is elementary workers is in the bottom end of the societal hierarchy. They perform a variety of routine and repetitive physical tasks which mainly require the use of hand-held tools and in some cases considerable physical effort. Cleaners and helper, vehicle, window, laundry and other hand cleaning workers, agricultural, forestry and fishery labourers, labourers in mining, construction, manufacturing and transport and storage laborers are some of workers included in this category and they are regarded as poor in the city or low income neighborhood in the city. They are the largest occupation group in the city (15.60%) and basically reside in the areas close to the city center and areas along the main commercial belt. The highest concentration which is LQ 2.7 found in Poornawatta Grama Niladari Division which is very close to the city center and majority of them living here is Indian Tamils whose origin in Sri Lanka is after the British occupation in Kandy city after 1815. Concentration of upper and middle class people in this Grama Niladari Division is found to be very low. In addition, other two divisions; Bogambara, Suduhumpola East also close proximity to city center and Southern commercial belt built along the main road contain the highest concentration of this group of occupation.

5. Conclusion

Results of the investigation, evidently reveals that ‘occupation’ as most important indication of socio-economic status undoubtedly influential to form a distinct location pattern in the city space. Basic pattern of location of occupation groups identifiable is that higher ranking occupation groups are concentrated in peripheral areas while lower ranking occupation groups are located in city center areas or proximity areas to the city center. This has made some particular areas to be specialized for some occupation groups. Areas with typically rural characteristics located in Western and North-Eastern edges in the city are strongly specialized

for Legislators, senior officials and managers and this is within the primary residential zone in the city. Professionals also are away from the city center and highly congested commercial belt and concentrate mostly in the same areas of legislators, senior officials and managers. Grama Niladari Division which is 233 in Southern part of the city is highly specialized for professionals since a number of higher and secondary education institutions and research centers are located in its adjoining areas (259). Business group is strongly specialized along the main roads running across the city and city center areas which are the commercial zones in the city. Working class or labourer category which has the highest proportion is mostly limited to city center and adjoining areas where commercial and other services are dominated. These areas are highly commercial and mix residential areas in the city. Grama Niladari divisions such as Katukale, Ihala Katukale, Mahanuwara, Poornawatta west located around the city center which are very valuable lands that can be used for the better economic use establishing new projects are occupied by low income category. This is one of the critical issues to be addressed in the future development of Kandy city.

6. References

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Appendix -01: Grama Niladari Divisions of Kandy City

GND Code	GND Name	GND Code	GND Name
224	Aruppala East	250	Pitakanda Gama
259	Getambe	231	Mahaweli Uyana
226	Siyambalagasthanna	228	Watapuluwa
227	Mavilmada	225	Tittawela
245	Bowala	230	Watapuluwa South
243	Mulgampala	223	Aruppala West
266	Suduhumpala West	239	Mahaiyawa
260	Welata	257	Mahanuwara
265	Suduhumpala East	222	Lewella
234	Aniwatta East	221	Thalwatta
233	Aniwatta West	220	Boowelikada
262	Nagasthenna	253	Ampitiya South
261	Deiyannewela	229	Watapuluwa West
255	Katukele	252	Ampitiya North
236	Bahirawa Kanda	254	Malwatta
232	Nuwara Dodamwala	415	Yatiwawala
264	Bogambara	607	Galawaththa
258	Ihala Katukele	251	Senkadagala
235	Asgiriya	608	Nawayalathanna
240	Poorna Watta West	256	Katukele West
241	Poorna Watta East		
237	Mapanawathura		
238	Wattaramthanna		