CIRCLE WISE ELECTRICITY CONSUMTION IN KERALA- AN OVERVIEW

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Abstract:

This paper gives the back ground characteristics of the three sample districts of Kerala. The district Ernakulam was selected first on the basis of its high rank in the low tension (LT) consumption of electricity, the most common form of energy used in the state. The details of electricity consumption were readily available from Kerala State Electricity Board (KSEB). Then a district which has a closer consumption to the state average was chosen and it happens to be Palakkad. Next, Wayanad district selected on the basis of its very low usage of electricity. Of the districts selected both Ernakulam and Palakkad are from the central zone of Kerala and Wayanad is from the north zone. This paper will try to unveil the reasons behind circle wise electricity consumption in Kerala.

Keywords*: Low Tension, Power Consumption.*

INTRODUCTION

Power Sector plays a vital role in all developmental activities in our economy. As noted by the Draft of Fifth five year plan, "Electricity is the most versatile form of energy and provides an important infrastructure for economic development. It is a vital input for industry and agriculture, and is of particular importance to a developing rural sector which needs more power for its agricultural operations, for its small-scale and agro-industries"(International Energy Organization-2012). All sectors of economy need electricity for their common needs as it provides light and fuel to millions of households, industry, agriculture, commerce, all service sectors and so on. Electricity is a major type of energy. Reducing electricity consumption is equivalent to generating it, behaviour of consumers using electricity decides whether they save it or waste it. The district Ernakulam was selected first on the basis of its high rank in the low tension (LT) consumption of electricity, then a district which has a closer consumption to the state average was chosen and it happens to be Palakkad. Next, Wayanad district selected on the basis of its very low usage of electricity. Of the districts selected both

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Ernakulam and Palakkad are from the central zone of Kerala and Wayanad is from the north zone. The ranks of the districts in the state are as shown in Table 1, which indicates the Low Tension Consumption details of the Districts in Kerala in the year 2014-15.

Table 1. Low Tension Consumption details of Districts in Kerala 2014-15

Sl.No	Districts	Consumption (in MUs)
1	Ernakulam	2089.35
2	Trivandrum	1517.69
3	Trissur	1402.52
4	Malappuram	1226.23
5	Kozhikkode	1115.54
6	Kollam	1036.60
7	Palakkad	1029.20
8	Kannur	918.09
9	Alappuzha	869.32
10	Kottayam	850.94
11	Pathanamthitta	517.56
12	Kasargode	457.20
13	Idukki	302.95
14	Wayanad	187.13
	Total consumption	13520.32
	Average	965.71

Source: KSEB

Again the circle wise LT consumption details were obtained to select the rural and urban regions of the districts selected for detailed enquiry. Perumbavoor circle in Ernakulam district

was revealed to have the highest consumption continuously for the years 2012- 13 to 2014-15 as is evident from Table 2. So this circle was chosen from the district to conduct the primary enquiry. The urban area selected was Perumbavoor Municipality and the rural area chosen was Rayamangalam Panchayat. Of the two circles in Palakkad, Palakkad circle was selected for detailed enquiry. Koduvayur panchayat in this circle was selected as the rural region and the Chittur-Tattamangalam Municipality was selected for selecting the urban households. Wayanad district with least consumption of electricity had only one circle Kalpetta .So Kalpetta Municipality was selected as the urban sample and Thavinhal panchayat was selected as the rural sample from this circle. A primary survey was conducted in hundred households each from the municipalities and the panchayats thus selected. The survey was conducted during the second half of 2015-16.

Table 2. Circle wise LT Consumption details in Kerala for the years 2012- 2015

Sl. No.	Circle	2012-13	2013-14	2014-15
1	Trivandrum(Urban)	916.35	918.92	997.51
2	Trivandrum(Rural)	461.04	485.44	520.18
3	Kollam	572.85	602.03	631.60
4	Kottarakkara	368.97	384.65	405.00
5	Kottayam	586.46	586.36	594.36
6	Pathanamthitta	458.63	481.09	517.56
7	Pala	235.13	244.23	256.58
8	Alappuzha	797.65	775.98	483.07
9	Ernakulam	929.04	960.61	1018.93
10	Perumbavur	992.66	1036.33	1070.42
11	Thodupuzha	269.09	284.72	302.95
12	Thrissur	735.08	756.27	797.00
13	Harippad	0.00	0.00	386.25

14	Irinjalakuda	547.81	576.13	605.52
15	Palakkad	555.53	582.62	613.93
16	Shoranur	361.94	387.59	415.27
17	Manjeri	523.04	565.26	449.71
18	Tirur	533.25	559.52	616.52
19	Vatakara	312.10	332.39	361.48
20	Sreekantapuram	320.56	345.67	367.51
21	Kalpetta	155.38	171.29	187.13
22	Kannur	507.12	514.22	550.58
23	Kozhikkode	694.13	710.12	754.06
24	Kasargod	424.86	433.28	457.20
25	Nilambur	0		160.00
	KERALA	12258.66	12694.71	13520.32

Source - KSEB

The distribution of all households surveyed on the basis of their monthly income status is shown in table 3 and the rural and urban split up of this table are shown in tables 4 and 5. From table 3 it is evident that more number of households belong to the second category of low income group. One fourth of them are lower middle income group and around one fifth is in the poor category. The upper high income group and the high income group constitute only less than 10 percent. In table 4 where the distribution of rural households by class is represented around 73 percent comes from either the poor or the low income group. Hardly five percent belong to the two high income groups. In the urban region as reflected in Table 5 nearly two third of the households come under the second and third category. Only eleven percent belongs to the poor class and more than 10 percent get represented in the higher income groups in contrast to the rural areas.
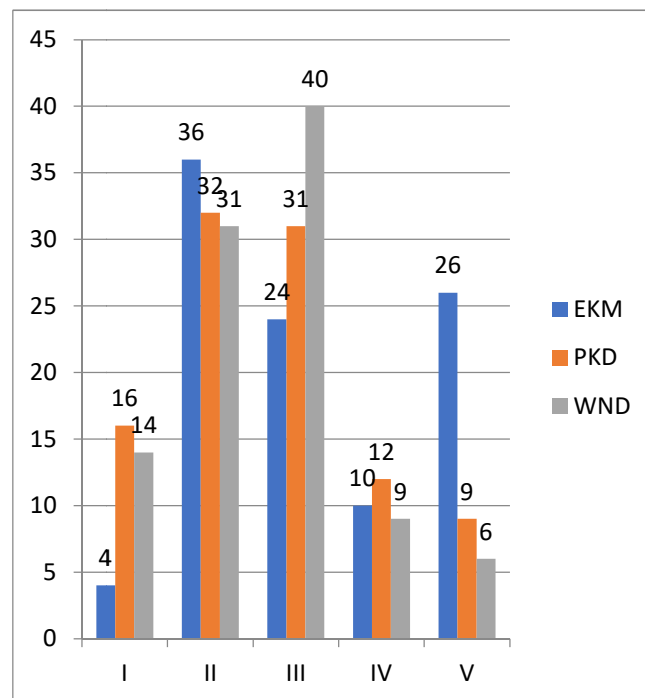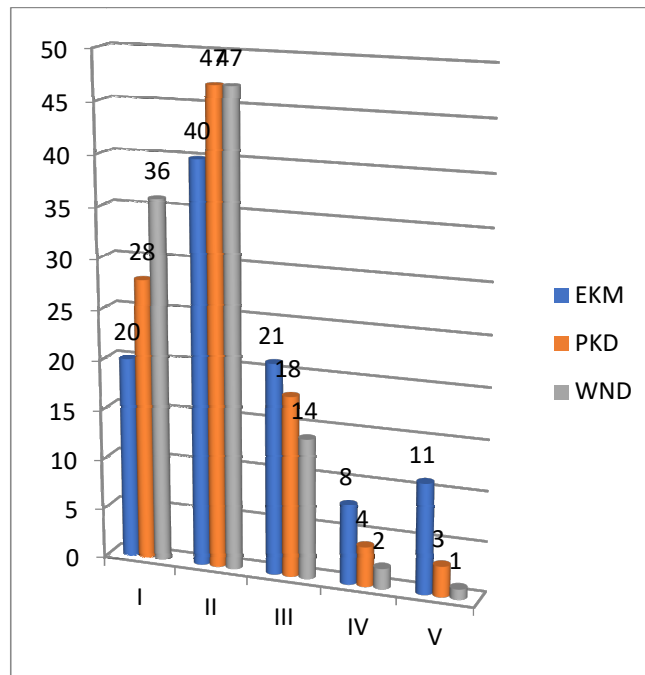
Table 3. Percentage Distribution of the Sample Households - Total

Strata	Income Group	Ernakulam	Palakkad	Wayand	Total Households	
					No	%
I	Below 10000	24	44	50	118	19.7
II	10000- 20000	76	79	78	233	38.8
III	20000-30000	45	49	54	148	24.7
IV	30000-40000	18	16	11	45	7.5
V	Above 40000	37	12	7	56	9.3
	Total	200	200	200	600	100

Source: Survey data

Table 4. Distribution of the Sample Households - Rural

Strata	Income Group	Ernakulam	Palakkad	Wayand	Total Households	
					Number	Percentage
I	Below 10000	20	28	36	84	28
II	10000- 20000	40	47	47	134	44.7
III	20000-30000	21	18	14	53	17.
IV	30000-40000	8	4	2	14	4.7
V	Above 40000	11	3	1	15	5
	Total	100	100	100	300	100

Source: Survey data

Table 5. Percentage Distribution of the Sample Households - Urban

Strata	Income Group	Ernakulam	Palakkad	Wayand	Total Households	
					No	%
I	Below 10000	4	16	14	34	11.3
II	10000- 20000	36	32	31	99	33.0
III	20000-30000	24	31	40	95	31.7
IV	30000-40000	10	12	9	31	10.3
V	Above 40000	26	9	6	41	13.7
	Total	100	100	100	300	100

Source: Survey data

An inter district comparison is illustrated by Bar charts 1 and2 in the rural and urban samples respectively. While only one fifth of the total rural households surveyed in Ernakulam are in the poor category one third of the sample households from rural Wayanad are poor.

Figure 1& 2. Bar Charts Showing Inter District Comparison Of the Rural and Urban Households Surveyed by Class

The populations represented in these households are revealed in tables 6 & 7. To have a comparative picture of the number of households and population represented we have converted the tables in to pie charts and is shown as figures 3 and 4. Figure 3 represent the

households and population in the rural sample and 4 shows the same in the urban sample. The tables together with pie charts explain the extent of households and the common people covered by the study.

Table 6. Percentage Distribution of the Sample Households by Population -Rural

Strata	Income Group	Ernakulam		Palakkad		Wayand		Total population	
								No	%
I	Below 10000	65	19	127	26	171	36	363	28.6
II	10000- 20000	126	38	235	51	218	46	579	45.6
III	20000-30000	67	20	81	18	69	15	217	17.1
IV	30000-40000	27	8	12	3	9	2	48	3.8
V	Above 40000	51	15	8	2	5	1	64	5.0
	Total	336	100	463	100	472	100	1271	100

Source: Survey data; Figures in brackets show percentages to the total

In the rural areas more households and consequently more population comes from the second category of income LIG. To be more precise is evident from fig 3 that 44.7 percent of the households and 45.6 percent of the population surveyed belonged to this stratum. However nearly 28 percent of the rural households surveyed are poor. The Lower Middle Income Group (LMIG) constituted 17 percent which corresponded to the third strata. The concentration of high income and upper middle income group is 5 percent or below it in the rural region.
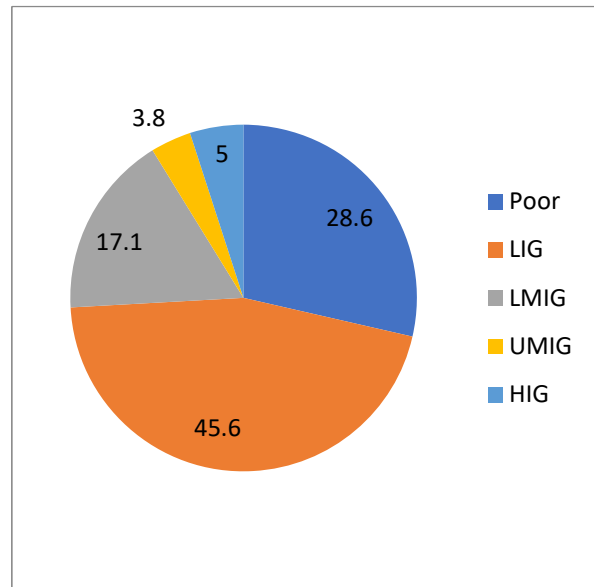
Figure 3. Pie-charts Showing the Distribution of Households and Population in the Rural Samples

Figure3a. Households   *Figure3b. Population*
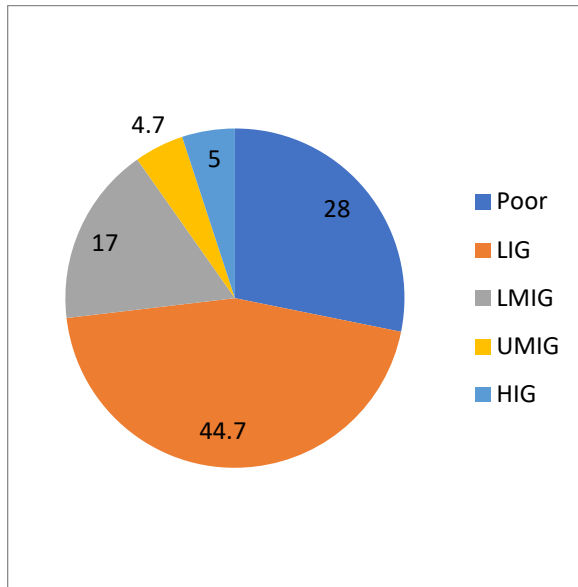
In the urban area also more number of households and population belong to the second category LIG. To be more precise around 32 percent of the urban households and population surveyed belonged to this stratum. Another observation from the table is that in the urban areas only 13.2 percent turned out to be poor that denoted the first strata of income. The Lower Middle Income Group (LMIG) constituted 32.6 percent of the urban population which corresponded to the third strata. The concentration of high income households is more in the urban areas than those in the rural region. More than 10 percent each of the households in the urban area turned out to be either in the last two strata which denoted either upper middle income or the high income groups.

Table 7. Percentage Distribution of the Sample Households by Population -Urban

Strata	Income Group	Ernakulam		Palakkad		Wayanad		Total Population	
								No	%
I	Below 10000	11	3	89	20	62	15	162	13.2
II	10000- 20000	124	32	138	32	131	32	393	32.0
III	20000-30000	100	26	133	31	168	41	401	32.6
IV	30000-40000	47	12	42	10	42	11	131	10.7
V	Above 40000	104	27	34	7	4	1	142	11.6
	Total	386	100	436	100	407	100	1229	100

Source: Survey data

Figure 4. Pie-charts Showing the Distribution of Households and Population in the Urban Samples

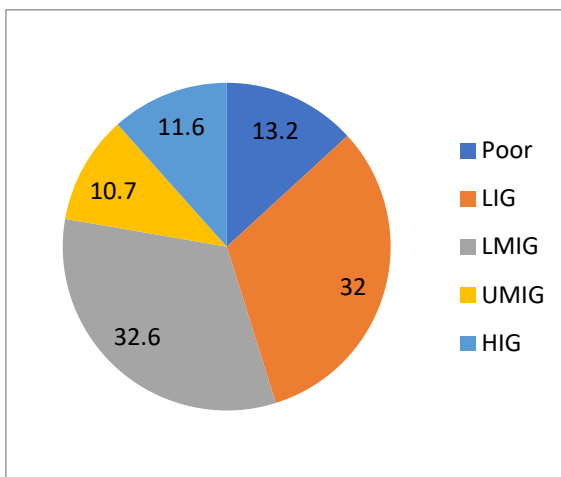*Figure 4a.Households*   *Figure 4b.Population*
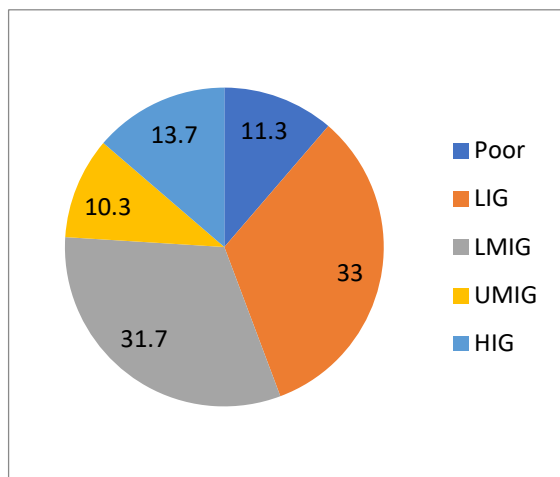
The table 8 & 9 give us an idea about the family size of households in the sample. On an average the household size for both rural and urban areas comes to be 4.1. However in both rural and urban areas of Ernakulum district the poor households or households in the first two strata have family sizes below 4.0 where as it is so among the urban rich groups that is the last two strata in Palakkad. In Wayanad all income strata had an average family size around 4.5.

Table 8. Average Family Size by Class (Category- Rural)

Strata	Income group	Average Family size			
		Ernakulam	Palakkad	Wayanad	Total
I	Below 10000	3.4	4.5	4.7	4.2
II	10000- 20000	3.5	5	4.5	4.3
III	20000-30000	4.1	4.4	4.5	4.3
IV	30000-40000	5.0	3.6	4.5	4.4
V	Above 40000	4.3	3.2	4.4	4.0
	Total	3.8	4.1	4.5	4.1

Source: Survey data

Table 9. Average Family Size by Class (Category- Urban)

Strata	Income group	Average Family size			
		Ernakulam	Palakkad	Wayanad	Total
I	Below 10000	3.0	4.4	4.6	4.0
II	10000- 20000	3.4	4.8	4.6	4.3
III	20000-30000	4.1	4.4	4.5	4.3
IV	30000-40000	4.7	3.5	4.4	4.2
V	Above 40000	4.0	3.2	4.6	3.9
	Total	3.8	4.1	4.5	4.1

Table 10 and 11 gives the average size of our sample houses or their area in sq, feet in different strata. A poor rural house in our sample on an average had an area of 725 sq.ft whereas a rich household in the region had an area of 1807 sq. feet. The area of the houses increased progressively as the income strata progressed.

Table 10. Average Area of the House Building by Different Class (Category- Rural)

Strata	Income Group	Average Area (in Sq.feet)			
		Ernakulam	Palakkad	Wayanad	Total
I	Below 10000	762	864	550	725
II	10000-20000	934	1769	658	1120
III	20000-30000	1120	1756	1085	1320
IV	30000-40000	1639	1850	1688	1726
V	Above 40000	2072	1600	1750	1807
	Total	1122	1568	1146	1279

Source: Survey data

Table 11. Average Area of the House Building by Different Class (Category- Urban)

Strata	Income Group	Average Area (in Sq.feet)			
		Ernakulam	Palakkad	Wayanad	Total
I	Below 10000	825	937	623	795
II	10000-20000	1062	1526	1032	1207
III	20000-30000	1374	1884	1657	1638
IV	30000-40000	1487	2100	1600	1729
V	Above 40000	2146	1878	2000	2008
	Total	1451	1665	1383	1500

Source: Survey data

In the urban sample a poor household had an area of 795 Sq. feet and a rich household had an average area of 2008 sq. ft. The area of the houses increased progressively as the income

strata progressed in urban areas also. A look at the housing profile of the households in the sample by ownership revealed that all rich households had their own living abode both in the rural and urban areas. In the UMIG group however 15 percent urban households are on rent. In the first strata 88 percent of rural households have ownership of the houses they reside in, whereas only 75 percent of the poor urban households have ownership. In figure 5 the details of ownership of houses in the sample region in different income strata by region are given.

Figure 5. Percentage of Owned Houses in the Sample by Region and Class
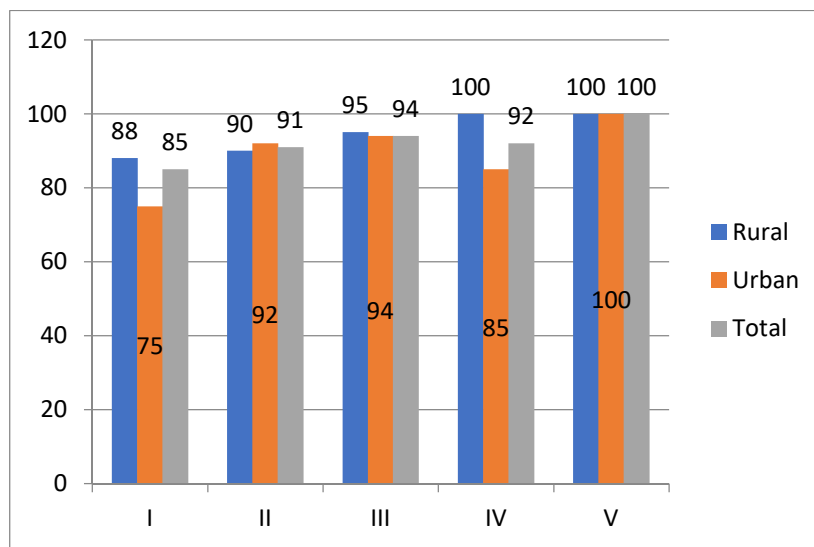
Figure 6 throws some light as to the nature of family. On the whole around 83 percentages of the households had nuclear families and the rest resided as joint families. Percentage of nuclear families was higher among all income strata except that of the urban poor as three fourth of the households in this strata were categorized as joint. But as income category progressed the concentration of nuclear families got reduced in the rural areas whereas it fluctuated in the urban areas.

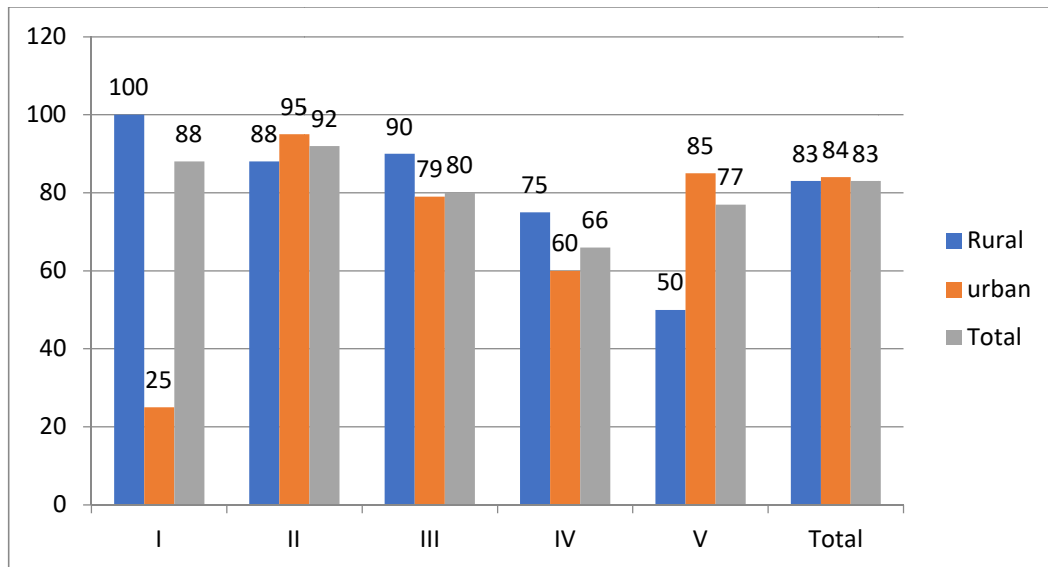*Figure 6. Percentage of Nuclear Families in the Sample Households by Region & Class*

Figure 7 shows the distribution of sample households by caste as categorized as general, other backward caste (OBC) and castes with reservation. In both the regions together the SC/ST households mainly groups up in the lowest income strata (52 percent) and the percentages decline as we go high on the income ladder. Among the OBC category 20 percent appear to be in the very poor group and 40 percent get represented in the next highest strata Rs. 20000-Rs. 30000. It is also to be noted that only 5 percent of the general category has got categorized as poor in both regions together.

Figure 7. Bar-chart showing the Percentage Distribution of Households by Caste
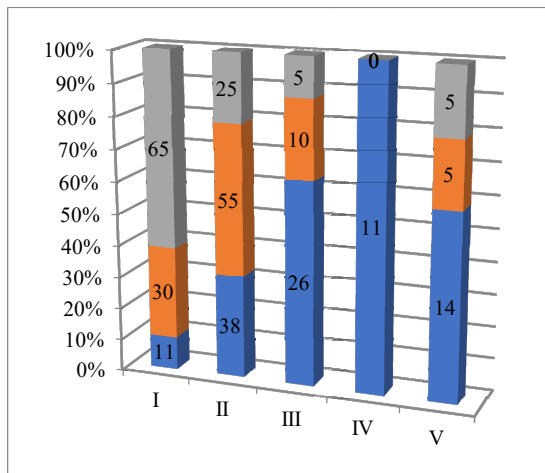*(Rural & Urban Together)*
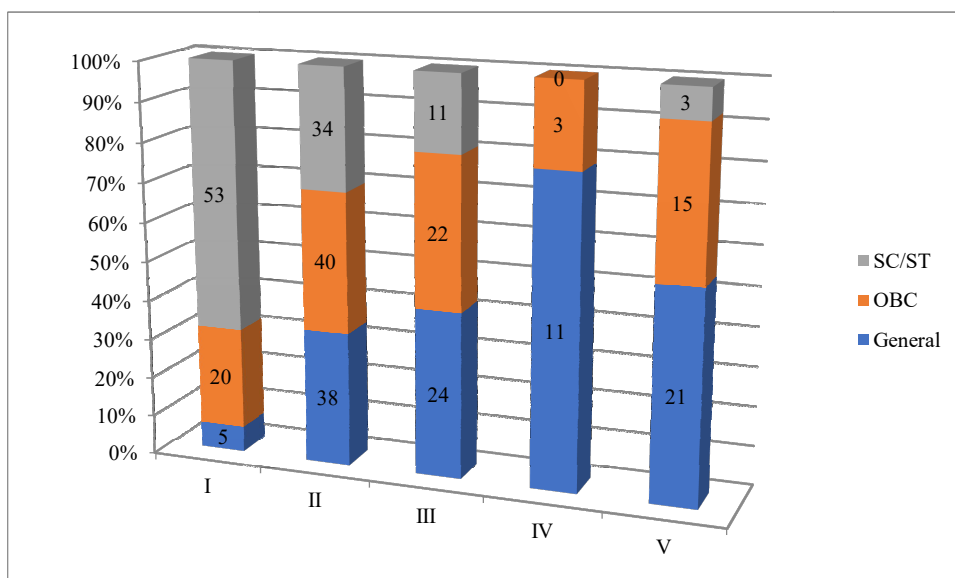
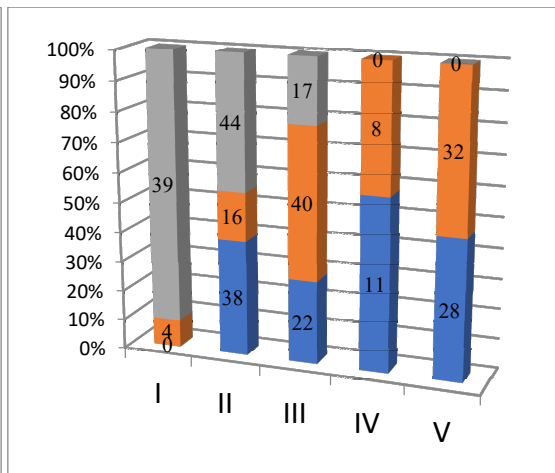*Figure 7a. Rural*   *Figure 7b. Urban*

Figure 7a and figure 7b show the corresponding figures in the rural and urban area by class category. Among the rural households only five percent of the poor strata belonged to the general category and among the urban poor no family belonged to the general group. The rural rich group had 5 percent from the reserved category whereas among the high income groups in the urban households no family was found to be from the reserved category.

The percentage distribution of households by broad employment type in both rural and urban areas is shown in figures 8 and 9 respectively. Among the poor in rural areas that happen to be those households included in the first strata, the basic employment category is either agricultural labour or other casual labour. In the second income strata also around 50 percent households get similar status. Only 5 percent of them belong to the salaried class. In the high income group the employment categories noticed are either self-employed in non-agriculture or salaried. In the urban areas also a similar categorization is noted with 90 percent workers falling under casual labor or self employed in the last two strata of income. The high income strata households in this area also gets grouped either as salaried or self employed.

Figure 8. Bar chart showing the Percentage Distribution of Households by Employment
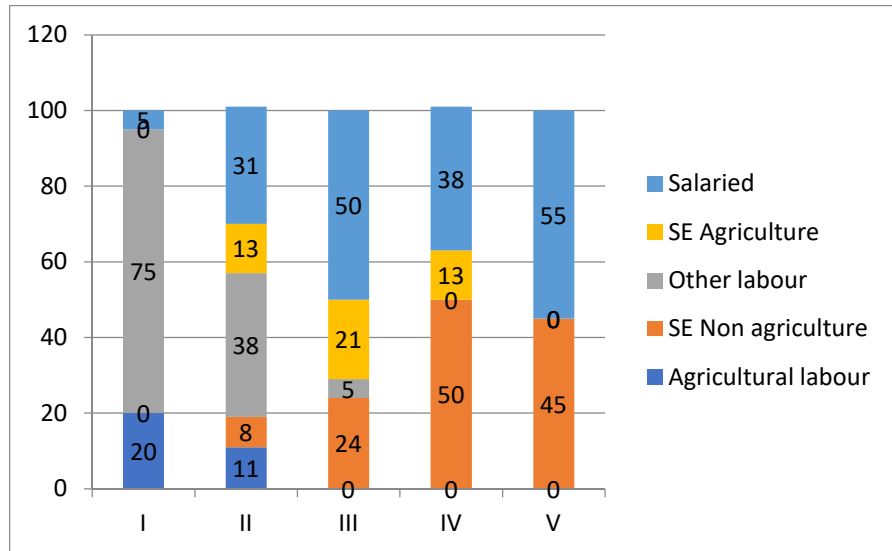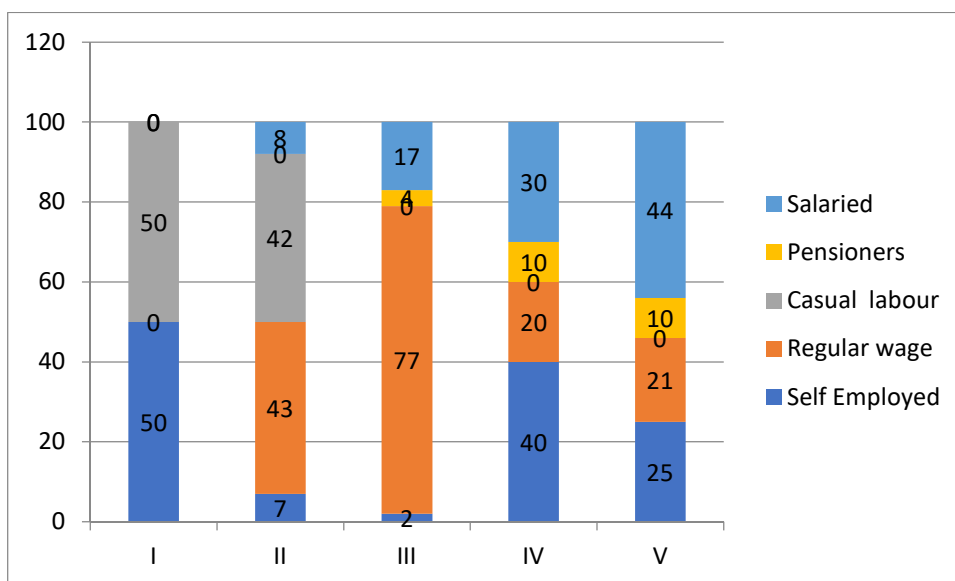
(Type – Rural)

Figure 9. Bar chart showing the Percentage Distribution of Households by Employment

(Type – Urban)

CONCLUSION

This short profile sketch makes us to infer that the households reflected in the sample in both the urban and rural areas are having more or less similar features. In both areas the poor belonged to the reserved caste and they lived in moderate dwellings below 800 sq. ft as nuclear families with a household size below 4 members and were engaged either as casual labour or agricultural labour. The rich in both the regions were found to be in the general

category either earning an income from salary / pension or engaged as self-employed in non agriculture. They lived mostly as joint families in houses which had an area of more than 1750 sq. ft. with an average family size of above 4.5. The percentage distribution of the sample households population is high in Palakkad district with least in Ernakulam district.

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