

Classification and Benchmarking Analysis of Philippine Electric Cooperatives

Technical Report – Phase One¹

The Consultant was engaged to undertake a component of the technical work required by the ERC's initiative to develop a new regulatory framework for the electric cooperatives (EC). In particular, the project involves two main deliverables:

1. analysis of options for, and recommendations on, a classification scheme for the ECs; and
2. analysis of options for, and recommendations on, a benchmark model to determine expenditure ceilings for the distribution expenses of the ECs.

This report presents the detailed methodology and results on the 1st deliverable of this project.

Classification Principles

The work on EC Classification was guided by the following principles:

1. Rationality – The classification is being undertaken in connection with a new regulatory framework for the ECs. As the classification will be used in setting the rates for the ECs, it must be based on criteria that have demonstrable consequences on the costs (and consequently, the revenue requirements) of the cooperatives.
2. Regulatory efficiency – Classifying the ECs is intended to reduce the time and effort required in regulating the sector. In this connection, the classification will aim to determine an 'optimal' number of EC groupings from a regulatory perspective.
3. Simplicity – The classification scheme must be simple to understand and to implement.

¹ By Prof. Helen S. Valderrama (28 March 2007)

Detailed Methodology

Three main activities defined the methodology of the work, namely:

1. Identification of the operating characteristics that impact on the distribution costs of an electric cooperative. This was done using ordinary least squares (OLS) analysis. Two models were developed: one to explain the ECs' distribution cost levels and another to explain the ECs' distribution cost per kwh.
2. Classification of the ECs based on the significant operating characteristics. This was done using one-way and two-way tabulations. For classification purposes, the tests were done on the most recent data available in the data set (i.e., CY 2005).
 - i. One-way tabulation – classification based on a single criterion
 - ii. Two-way tabulation – classification based on two criteria
3. Refinement of EC classifications to ensure independence of the groups formed. This was done using Analysis of Variance (ANOVA).

Sub-groupings were combined when these had five or fewer ECs in the sub-group.

Financial and operations data from 2001 to 2005 of 120 electric cooperatives were used in the modeling exercise. The data were provided in electronic form by the National Electrification Administration.

Results

Part 1 – Determinants of EC Distribution Costs

1. The following variables were investigated as regards their possible impact on the distribution costs of the ECs:

Variable	Definition
Size	Sales volume in MWH Length of distribution line in circuit km Peak demand in KW
Customer Structure	Percentage of residential sales and bapa sales in MWH to total sales in MWH Percentage of large load sales and industrial sales in MWH to total sales in MWH
Customer Density	MWH sales per circuit kilometer of line

Variable	Definition
Consumption	MWH sales per customer
Main grid connection	ECs that are connected to the main grid (vis-à-vis SPUG ECs)
Regional location	Luzon, Visayas and Mindanao 13 sub-regions, CAR, CARAGA, ARMM
Load factor	Ratio of average demand to peak demand
Systems loss	
Time	

2. Table 1 identifies the variables that are determined to significantly influence the distribution cost levels of ECs. The model with the best fit to the sample data (i.e., has the highest coefficient of determination or R^2) defines size as length of distribution line. This model explains 97% of the *distribution cost levels* of ECs (see Output 1 in Annex B for the EViews output of the model).

Table 1
Significant Determinants of EC Distribution Cost Levels

Variable	Definition	Direction of Relationship
Size	Sales volume in MWH or peak demand in KW	+
Customer density ²	Line length in circuit kilometer	+
Customer consumption	Sales in MWH per circuit km of line MWH sales per customer	-
Customer structure	Percentage of residential and bapa sales in MWH to total sales in MWH	-

3. A model of distribution cost per kwh was also determined. The model explains 86% of the *distribution cost per KWH* of ECs. Significant determinants of distribution cost per kwh are the following (see Output 2, Annex B):

² Falls out of model when size is defined as sales volume in MWH

Table 2
Significant Determinants of EC Distribution Cost per KWH

Variable	Definition	Direction of Relationship
Size	Peak demand in KW ³	-
	Line length in circuit kilometer	-
Customer consumption	MWH sales per customer	-
Customer structure	Percentage of residential and bapa sales in MWH to total sales in MWH	-

4. The regressions suggest a regional impact on distribution cost. In particular, it appears from the data that ECs in the Visayas region generally have significantly higher distribution cost levels as well as distribution cost per kwh than ECs in the Luzon and Mindanao regions, after controlling for the effects of size, structure and consumption.

Table 3
Regional Differences in Operating Characteristics
(figures are averages for the period 2001-2005)

	Luzon	Visayas	Mindanao
N	44	28	27
Customer density (MWH sales per ctkm)	41.32	32.18	34.77
Peak demand (in KW)	21,337	17,348	19,539
Load factor*	0.43	0.41	0.42
Distribution line length (in ctkm)	1,830.34	1,892.01	2,290.00
Customer Structure (residential sales vol/total sales vol)	0.64	0.58	0.53
Consumption (MWH per customer)	1.27	1.22	1.49
Distribution cost (Php per kwh)	0.36	0.4	0.32
Number of employees	223	181	166
Total payroll	50,230,815	43,439,589	39,827,395
Total salaries and wages	35,065,690	29,756,421	27,696,775
Payroll per employee*	215,505	232,418	211,334
Salaries and wages per employee*	152,060	157,524	145,766
Benefits per employee	53,283	65,015	55,798

Note: Regional differences are statistically significant (95% confidence level) for all categories except those indicated by *

³ Peak demand is a significant regressor if included in the model by itself, but drops out when length of distribution line is included. Further, length of distribution line has a larger (negative) coefficient than peak demand has. Thus, line length appears to have a stronger impact on distribution cost per kwh than peak demand.

Part II – Classification of ECs (limited to non-SPUG ECs and using most recent, i.e. 2005, data)

5. The regressions confirm that the following operating characteristics significantly influence the ECs’ distribution costs: size, density, consumption, and structure. Among the alternative definitions of size (namely: peak demand, sales volume, and distribution line length), distribution line length has the least correlation with the other operational characteristics and generates the highest coefficients in the models. As can also be seen in the correlation analysis (Table 4), most of the other variables are positively and relatively highly correlated, except for structure and load factor. This suggests that the three strongest candidate variables for EC classification are distribution line length, customer density, and customer structure.⁴

Table 4
Correlation Matrix of Significant Cost Determinants

	CKM	CONSUMPTN	C_DENSITY1	KWPD	LF	STRUCTURE
CKM	1.000000	0.329613	0.026298	0.514002	0.264404	-0.375410
CONSUMPTN	0.329613	1.000000	0.843362	0.713213	0.652571	-0.598298
C_DENSITY1	0.026298	0.843362	1.000000	0.642082	0.512328	-0.332102
KWPD	0.514002	0.713213	0.642082	1.000000	0.297711	-0.390352
LF	0.264404	0.652571	0.512328	0.297711	1.000000	-0.415312
STRUCTURE	-0.375410	-0.598298	-0.332102	-0.390352	-0.415312	1.000000

6. Taken individually, the fewest number of independent sub-groups per potential classification variable are as follows:

Variable	Number of groups
Size (in ckm) (Output 3)	5
Customer density (Output 4)	3
Customer structure (Output 5)	4
Load factor (Output 6)	3

The distribution of the ECs among the independent sub-groups formed using each of the variables is as follows:

Based on CKM		N
A	<2000	45
B	>2000, <4000	43
C	>4000, <6000	8
D	>6000, <8000	1
E	>8000	1

⁴ Load factor was included in the analysis because distribution cost studies identify this as a significant determinant of utilities’ costs.

Based on Structure

1	20-40%	3
2	40-60%	43
3	60-80%	50
4	over 80%	1

Based on density

I	0-100	90
II	100-200	7
III	200-300	1

Based on load factor

low	0-20%	1
medium	20-40%	18
high	40-60%	80

Three possible combinations of the candidate variables were analyzed. These were the following:

1. size and structure (2 versions) (see Output 7 and 8)
2. structure and load factor (see Output 9)
3. structure and density (see Output 10)

Cells or sub-groups were combined when there were few members in the group (less than 5) so that at most 3 groups are formed.

These combinations are shown in Annex A.

7. The resulting groups and their descriptive statistics are as follows:

A. Based on Size and Structure (Version 1)

	Distribution Line Length	Total distribution cost	Distribution on cost per kwh	Load factor	Customer Structure	Density
Camarines Norte Electric Cooperative	8,821	36,246	0.535	0.444	0.653	7.686
Davao Norte Electric Cooperative	6,592	48,863	0.220	0.458	0.464	33.752
Cotabato Electric Cooperative	5,981	31,917	0.322	0.461	0.463	16.581

	Distribution Line Length	Total distribution cost	Distribution cost per kwh	Load factor	Customer Structure	Density
Zamboanga Norte Electric Cooperative	5,697	28,551	0.292	0.452	0.605	17.163
Maguindanao Electric Cooperative	5,114	16,065	0.282	0.392	0.606	11.154
Ilocos Norte Electric Cooperative Inc.	5,016	112,060	0.729	0.494	0.587	30.628
Batangas II Electric Cooperative	4,794	73,575	0.169	0.523	0.429	90.889
Capiz Electric Cooperative	4,710	42,937	0.401	0.460	0.578	22.713
Negros Occidental Electric Cooperative	4,439	28,513	0.241	0.418	0.618	26.647
South Cotabato II Electric Cooperative	4,051	84,380	0.198	0.553	0.374	105.183

mean	5,521	50,311	0.339	0.466	0.538	36.240
median	5,065	39,592	0.287	0.459	0.582	24.680
minimum	4,051	16,065	0.169	0.392	0.374	7.686
maximum	8,821	112,060	0.729	0.553	0.653	105.183
std dev	1,383	30,238	0.174	0.047	0.096	33.743
n	10	10	10	10	10	10

Misamis Oriental I Electric Cooperative	2,344	23,266	0.289	0.516	0.404	34.306
Agusan Norte Electric Cooperative	2,716	55,002	0.262	0.518	0.408	77.332
Cebu II Electric Cooperative	3,296	60,734	0.461	0.503	0.416	39.951
Bukidnon II Electric Cooperative	2,843	12,163	0.192	0.450	0.431	22.307
Misamis Oriental II Electric Cooperative	2,118	14,392	0.207	0.502	0.435	32.881
Davao Sur Electric Cooperative	3,123	35,100	0.248	0.502	0.444	45.394

	Distribution Line Length	Total distribution cost	Distribution cost per kwh	Load factor	Customer Structure	Density
Bukidnon II Electric Cooperative	3,897	17,683	0.213	0.442	0.456	21.305
Zamboanga Sur I Electric Cooperative	3,973	32,014	0.306	0.495	0.468	26.332
Davao Oriental Electric Cooperative	2,177	19,251	0.356	0.479	0.470	24.826
Benguet Electric Cooperative	3,949	89,367	0.357	0.505	0.487	63.441
Central Negros Electric Cooperative	3,182	77,021	0.183	0.505	0.501	132.294
Negros Oriental II Electric Cooperative	2,949	34,531	0.241	0.504	0.504	48.584
South Cotabato I Electric Cooperative	2,093	29,998	0.268	0.476	0.504	53.419
Aklan Electric Cooperative	3,626	40,677	0.392	0.440	0.508	28.589
Zamboanga Sur II Electric Cooperative	2,560	18,837	0.305	0.438	0.519	24.095
Cebu I Electric Cooperative	3,032	38,164	0.438	0.445	0.519	28.750
Isabela I Electric Cooperative	3,732	44,855	0.259	0.491	0.520	46.340
Agusan Sur Electric Cooperative	3,101	18,941	0.343	0.440	0.532	17.829
Sultan Kudarat Electric Cooperative	3,215	21,832	0.248	0.465	0.534	27.374
Cagayan I Electric Cooperative	2,393	22,953	0.219	0.449	0.535	43.844
VMC Rural Electric Cooperative	2,923	26,157	0.254	0.464	0.551	35.249
Bohol I Electric Cooperative	3,978	45,624	0.650	0.385	0.563	17.636
Batangas I Electric Cooperative	2,724	54,560	0.304	0.481	0.565	65.942
Albay Electric Cooperative	3,155	32,717	0.145	0.459	0.569	71.459

	Distrib ution Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Negros Oriental I Electric Cooperative	2,060	12,595	0.395	0.368	0.584	15.492
Leyte V Electric Cooperative	2,184	26,001	0.275	0.462	0.585	43.237
Cebu III Electric Cooperative	1,459	35,212	0.350	0.538	0.298	68.962
Zamboanga City Electric Cooperative	1,273	46,500	0.129	0.558	0.398	282.822
Pampanga III Electric Cooperative	1,057	16,709	0.105	0.529	0.402	150.967
Leyte II Electric Cooperative	729	31,014	0.245	0.515	0.425	173.720
Misamis Occidental II Electric Cooperative	1,872	20,344	0.225	0.484	0.453	48.272
Camarines Sur II Electric Cooperative	1,635	52,978	0.327	0.514	0.470	98.951
San Jose City Electric Cooperative	588	14,013	0.318	0.534	0.486	75.006
Tarlac II Electric Cooperative	1,541	24,450	0.206	0.483	0.507	77.151
Samar I Electric Cooperative	1,028	27,060	0.832	0.468	0.553	31.637
Surigao Norte Electric Cooperative	1,486	16,200	0.259	0.479	0.565	42.045
Surigao Sur II Electric Cooperative	1,858	14,937	0.504	0.436	0.585	15.961
Misamis Occidental I Electric Cooperative	1,265	11,525	0.381	0.409	0.585	23.936
Mountain Province Electric Cooperative	1,923	3,643	0.394	0.330	0.589	4.808
Ifugao Electric Cooperative	954	4,661	0.562	0.458	0.595	8.684
Mean	2,400	30,592	0.316	0.473	0.498	54.778
median	2,369	26,079	0.282	0.479	0.506	40.998
minimum	588	3,643	0.105	0.330	0.298	4.808
maximum	3,978	89,367	0.832	0.558	0.595	282.822
std dev	969	18,714	0.140	0.046	0.069	52.246
n	40	40	40	40	40	40

	Distribution Line Length	Total distribution cost	Distribution cost per kwh	Load factor	Customer Structure	Density
Surigao Sur I Electric Cooperative	2,053	18,176	0.568	0.412	0.617	15.599
Bohol II Electric Cooperative	2,746	17,795	0.396	0.358	0.620	16.373
Pangasinan I Electric Cooperative	2,851	17,115	0.309	0.472	0.623	19.451
Pangasinan III Electric Cooperative	2,266	51,830	0.288	0.473	0.625	79.534
Lanao Norte Electric Cooperative	3,626	23,530	0.482	0.440	0.628	13.470
Isabela II Electric Cooperative	2,483	22,047	0.267	0.042	0.652	33.218
Samar II Electric Cooperative	2,294	16,362	0.471	0.356	0.657	15.150
Nueva Vizcaya Electric Cooperative	3,343	17,759	0.291	0.454	0.668	18.228
Ilocos Sur Electric Cooperative	2,486	61,048	0.443	0.488	0.691	55.456
Iloilo I Electric Cooperative	3,509	26,379	0.233	0.443	0.693	32.237
La Union Electric Cooperative	2,328	45,897	0.428	0.474	0.701	46.051
Antique Electric Cooperative	2,214	22,013	0.488	0.439	0.710	20.365
Tarlac I Electric Cooperative	2,514	60,910	0.531	0.480	0.711	45.614
Pampanga II Electric Cooperative	2,014	44,828	0.214	0.450	0.739	104.143
Iloilo II Electric Cooperative	2,994	29,566	0.412	0.381	0.746	23.968
Central Pangasinan Electric Cooperative	3,779	24,866	0.148	0.445	0.748	44.324
Cagayan II Electric Cooperative	2,902	17,080	0.316	0.359	0.749	18.648
Leyte IV Electric Cooperative	1,040	14,003	0.436	0.408	0.628	30.863

	Distribution Line Length	Total distribution cost	Distribution cost per kwh	Load factor	Customer Structure	Density
Camiguin Electric Cooperative	662	5,969	0.529	0.380	0.636	17.045
Quirino Electric Cooperative Peninsula	1,131	5,782	0.382	0.399	0.666	13.386
Electric Cooperative Sorsogon II	1,962	47,572	0.222	0.517	0.667	109.407
ELECTRIC COOPERATIVE Zambales I	1,704	27,581	0.577	0.431	0.669	28.050
Electric Cooperative Camarines Sur III	944	19,844	0.375	0.477	0.679	56.108
Electric Cooperative Quezon I	1,481	16,458	0.328	0.375	0.682	33.889
Electric Cooperative Zambales II	1,758	49,375	0.521	0.467	0.685	53.939
Electric Cooperative Camarines Sur IV	1,321	28,807	0.395	0.500	0.691	55.176
Electric Cooperative Iloilo III	1,343	9,939	0.421	0.404	0.699	17.592
Electric Cooperative Guimaras	1,435	17,108	0.453	0.392	0.706	26.323
Electric Cooperative Nueva Ecija II	1,273	7,007	0.504	0.353	0.709	10.916
Electric Cooperative Nueva Ecija III	1,683	17,792	0.219	0.406	0.711	48.350
Electric Cooperative Abra	1,623	23,267	0.279	0.461	0.712	51.454
Electric Cooperative Northern Samar	1,500	18,116	0.706	0.420	0.713	17.121
Electric Cooperative Sorsogon I	1,121	15,755	0.476	0.463	0.714	29.536
Electric Cooperative Kalinga Apayao	1,426	10,769	0.388	0.433	0.719	19.442
Electric Cooperative Siargao	1,107	9,818	0.708	0.442	0.726	12.524
Electric Cooperative	562	3,508	0.447	0.415	0.729	13.966

	Distribution Line Length	Total distribution cost	Distribution cost per kwh	Load factor	Customer Structure	Density
Davao Oriental Electric Cooperative	1,361	12,373	0.405	0.307	0.736	22.427
Southern Leyte Electric Cooperative	1,773	19,116	0.418	0.392	0.740	25.773
Eastern Samar Electric Cooperative	1,082	12,646	0.413	0.444	0.741	28.283
First Laguna Electric Cooperative	988	18,476	0.320	0.437	0.742	58.397
Aurora Electric Cooperative	1,125	5,422	0.337	0.544	0.752	14.278
Pampanga I Electric Cooperative	868	18,664	0.181	0.459	0.754	118.709
Biliran Electric Cooperative	572	8,420	0.600	0.393	0.756	24.540
Leyte III Electric Cooperative	993	11,368	0.656	0.389	0.763	17.458
Nueva Ecija I Electric Cooperative	1,112	24,541	0.309	0.487	0.765	71.418
Quezon II Electric Cooperative	922	3,357	0.235	0.509	0.773	15.505
Pampanga Rural Service Electric Cooperative	307	5,022	0.250	0.455	0.813	65.372
Camarines Sur I Electric Cooperative	1,940	17,253	0.499	0.416	NA	17.802

Mean	1,761	21,299	0.402	0.424	0.703	36
median	1,561	17,794	0.409	0.438	0.710	26
minimum	307	3,357	0.148	0.042	0.617	11
maximum	3,779	61,048	0.708	0.544	0.813	119
std dev	860	14,475	0.134	0.074	0.047	26
N	48	48	48	48	47	48

B. Based on Size and Structure (Version 2)⁵

	Distribution Line Length	Total distribution cost	Distribution cost per kwh	Load factor	Costumer Structure	Density
Camarines Norte Electric Cooperative	8,821	36,246	0.535	0.444	0.653	7.686
Davao Norte Electric Cooperative	6,592	48,863	0.220	0.458	0.464	33.752
South Cotabato II Electric Cooperative	4,051	84,380	0.198	0.553	0.374	105.183
Batangas II Electric Cooperative	4,794	73,575	0.169	0.523	0.429	90.889
Cotabato Electric Cooperative	5,981	31,917	0.322	0.461	0.463	16.581
Capiz Electric Cooperative	4,710	42,937	0.401	0.460	0.578	22.713
Ilocos Norte Electric Cooperative Inc.	5,016	112,060	0.729	0.494	0.587	30.628
Zamboanga Norte Electric Cooperative	5,697	28,551	0.292	0.452	0.605	17.163
mean	5,708	57,316	0.358	0.481	0.519	41
median	5,357	45,900	0.307	0.461	0.521	27
minimum	4,051	28,551	0.169	0.444	0.374	8
maximum	8,821	112,060	0.729	0.553	0.653	105
std dev	1,493	29,733	0.192	0.039	0.099	37
n	8	8	8	8	8	8
Maguindanao Electric Cooperative	5,114	16,065	0.282	0.392	0.606	11.154
Negros Occidental Electric Cooperative	4,439	28,513	0.241	0.418	0.618	26.647
Misamis Oriental I Electric Cooperative	2,344	23,266	0.289	0.516	0.404	34.306

⁵ Four groups are formed in this scheme.

	Distribution Line Length	Total distribution cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Agusan Norte Electric Cooperative	2,716	55,002	0.262	0.518	0.408	77.332
Cebu II Electric Cooperative	3,296	60,734	0.461	0.503	0.416	39.951
Bukidnon II Electric Cooperative	2,843	12,163	0.192	0.450	0.431	22.307
Misamis Oriental II Electric Cooperative	2,118	14,392	0.207	0.502	0.435	32.881
Davao Sur Electric Cooperative	3,123	35,100	0.248	0.502	0.444	45.394
Bukidnon II Electric Cooperative	3,897	17,683	0.213	0.442	0.456	21.305
Zamboanga Sur I Electric Cooperative	3,973	32,014	0.306	0.495	0.468	26.332
Davao Oriental Electric Cooperative	2,177	19,251	0.356	0.479	0.470	24.826
Benguet Electric Cooperative	3,949	89,367	0.357	0.505	0.487	63.441
Central Negros Electric Cooperative	3,182	77,021	0.183	0.505	0.501	132.294
Negros Oriental II Electric Cooperative	2,949	34,531	0.241	0.504	0.504	48.584
South Cotabato I Electric Cooperative	2,093	29,998	0.268	0.476	0.504	53.419
Aklan Electric Cooperative	3,626	40,677	0.392	0.440	0.508	28.589
Zamboanga Sur II Electric Cooperative	2,560	18,837	0.305	0.438	0.519	24.095
Cebu I Electric Cooperative	3,032	38,164	0.438	0.445	0.519	28.750
Isabela I Electric Cooperative	3,732	44,855	0.259	0.491	0.520	46.340
Agusan Sur Electric Cooperative	3,101	18,941	0.343	0.440	0.532	17.829

	Distribution Line Length	Total distribution cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Sultan Kudarat Electric Cooperative	3,215	21,832	0.248	0.465	0.534	27.374
Cagayan I Electric Cooperative	2,393	22,953	0.219	0.449	0.535	43.844
VMC Rural Electric Cooperative	2,923	26,157	0.254	0.464	0.551	35.249
Bohol I Electric Cooperative	3,978	45,624	0.650	0.385	0.563	17.636
Batangas I Electric Cooperative	2,724	54,560	0.304	0.481	0.565	65.942
Albay Electric Cooperative	3,155	32,717	0.145	0.459	0.569	71.459
Negros Oriental I Electric Cooperative	2,060	12,595	0.395	0.368	0.584	15.492
Leyte V Electric Cooperative	2,184	26,001	0.275	0.462	0.585	43.237

mean	3,103	33,893	0.298	0.464	0.508	40
median	3,066	29,256	0.272	0.464	0.513	34
minimum	2,060	12,163	0.145	0.368	0.404	11
maximum	5,114	89,367	0.650	0.518	0.618	132
std dev	770	19,202	0.103	0.040	0.060	25
n	28	28	28	28	28	28

Surigao Sur I Electric Cooperative	2,053	18,176	0.568	0.412	0.617	15.599
Bohol II Electric Cooperative	2,746	17,795	0.396	0.358	0.620	16.373
Pangasinan I Electric Cooperative	2,851	17,115	0.309	0.472	0.623	19.451
Pangasinan III Electric Cooperative	2,266	51,830	0.288	0.473	0.625	79.534
Lanao Norte Electric Cooperative	3,626	23,530	0.482	0.440	0.628	13.470
Isabela II Electric Cooperative	2,483	22,047	0.267	0.042	0.652	33.218
Samar II Electric Cooperative	2,294	16,362	0.471	0.356	0.657	15.150

	Distribution Line Length	Total distribution cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Nueva Vizcaya Electric Cooperative	3,343	17,759	0.291	0.454	0.668	18.228
Ilocos Sur Electric Cooperative	2,486	61,048	0.443	0.488	0.691	55.456
Iloilo I Electric Cooperative	3,509	26,379	0.233	0.443	0.693	32.237
La Union Electric Cooperative	2,328	45,897	0.428	0.474	0.701	46.051
Antique Electric Cooperative	2,214	22,013	0.488	0.439	0.710	20.365
Tarlac I Electric Cooperative	2,514	60,910	0.531	0.480	0.711	45.614
Pampanga II Electric Cooperative	2,014	44,828	0.214	0.450	0.739	104.143
Iloilo II Electric Cooperative	2,994	29,566	0.412	0.381	0.746	23.968
Central Pangasinan Electric Cooperative	3,779	24,866	0.148	0.445	0.748	44.324
Cagayan II Electric Cooperative	2,902	17,080	0.316	0.359	0.749	18.648
Cebu III Electric Cooperative	1,459	35,212	0.350	0.538	0.298	68.962
Zamboanga City Electric Cooperative	1,273	46,500	0.129	0.558	0.398	282.822
Pampanga III Electric Cooperative	1,057	16,709	0.105	0.529	0.402	150.967
Leyte II Electric Cooperative	729	31,014	0.245	0.515	0.425	173.720
Misamis Occidental II Electric Cooperative	1,872	20,344	0.225	0.484	0.453	48.272
Camarines Sur II Electric Cooperative	1,635	52,978	0.327	0.514	0.470	98.951
San Jose City Electric Cooperative	588	14,013	0.318	0.534	0.486	75.006
Tarlac II Electric Cooperative	1,541	24,450	0.206	0.483	0.507	77.151
Samar I Electric Cooperative	1,028	27,060	0.832	0.468	0.553	31.637

	Distribution Line Length	Total distribution cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Surigao Norte Electric Cooperative	1,486	16,200	0.259	0.479	0.565	42.045
Surigao Sur II Electric Cooperative	1,858	14,937	0.504	0.436	0.585	15.961
Misamis Occidental I Electric Cooperative	1,265	11,525	0.381	0.409	0.585	23.936
Mountain Province Electric Cooperative	1,923	3,643	0.394	0.330	0.589	4.808
Ifugao Electric Cooperative	954	4,661	0.562	0.458	0.595	8.684
Mean	2,099	26,982	0.359	0.442	0.596	55
median	2,053	22,047	0.327	0.458	0.620	33
minimum	588	3,643	0.105	0.042	0.298	5
maximum	3,779	61,048	0.832	0.558	0.749	283
std dev	861	15,536	0.154	0.093	0.118	59
n	31	31	31	31	31	31

Leyte IV Electric Cooperative	1,040	14,003	0.436	0.408	0.628	30.863
Camiguin Electric Cooperative	662	5,969	0.529	0.380	0.636	17.045
Quirino Electric Cooperative	1,131	5,782	0.382	0.399	0.666	13.386
Peninsula Electric Cooperative	1,962	47,572	0.222	0.517	0.667	109.407
Sorsogon II ELECTRIC COOPERATIVE	1,704	27,581	0.577	0.431	0.669	28.050
Zambales I Electric Cooperative	944	19,844	0.375	0.477	0.679	56.108
Camarines Sur III Electric Cooperative	1,481	16,458	0.328	0.375	0.682	33.889
Quezon I Electric Cooperative	1,758	49,375	0.521	0.467	0.685	53.939
Zambales II Electric Cooperative	1,321	28,807	0.395	0.500	0.691	55.176
Camarines Sur IV Electric Cooperative	1,343	9,939	0.421	0.404	0.699	17.592

	Distribution Line Length	Total distribution cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Iloilo III Electric Cooperative Guimaras	1,435	17,108	0.453	0.392	0.706	26.323
Electric Cooperative Nueva Ecija II	1,273	7,007	0.504	0.353	0.709	10.916
Electric Cooperative Nueva Ecija III	1,683	17,792	0.219	0.406	0.711	48.350
Electric Cooperative Abra	1,623	23,267	0.279	0.461	0.712	51.454
Electric Cooperative Northern Samar	1,500	18,116	0.706	0.420	0.713	17.121
Electric Cooperative Sorsogon I	1,121	15,755	0.476	0.463	0.714	29.536
Electric Cooperative Kalinga Apayao	1,426	10,769	0.388	0.433	0.719	19.442
Electric Cooperative Siargao	1,107	9,818	0.708	0.442	0.726	12.524
Electric Cooperative Davao Oriental	562	3,508	0.447	0.415	0.729	13.966
Electric Cooperative Southern Leyte	1,361	12,373	0.405	0.307	0.736	22.427
Electric Cooperative Eastern Samar	1,773	19,116	0.418	0.392	0.740	25.773
Electric Cooperative First Laguna	1,082	12,646	0.413	0.444	0.741	28.283
Electric Cooperative Aurora	988	18,476	0.320	0.437	0.742	58.397
Electric Cooperative Pampanga I	1,125	5,422	0.337	0.544	0.752	14.278
Electric Cooperative Biliran	868	18,664	0.181	0.459	0.754	118.709
Electric Cooperative Leyte III	572	8,420	0.600	0.393	0.756	24.540
Electric Cooperative Nueva Ecija I	993	11,368	0.656	0.389	0.763	17.458
Electric Cooperative Quezon II	1,112	24,541	0.309	0.487	0.765	71.418
Electric Cooperative	922	3,357	0.235	0.509	0.773	15.505

	Distribution Line Length	Total distribution cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Pampanga Rural Service Electric Cooperative	307	5,022	0.250	0.455	0.813	65.372
Camarines Sur I Electric Cooperative	1,940	17,253	0.499	0.416	NA	17.802

mean	1,230	16,294	0.419	0.431	0.716	36
median	1,131	15,755	0.413	0.431	0.713	26
minimum	307	3,357	0.181	0.307	0.628	11
maximum	1,962	49,375	0.708	0.544	0.813	119
std dev	410	10,991	0.139	0.051	0.042	27
n	31	31	31	31	30	31

B. Based on Structure and Load Factor

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Cebu III Electric Cooperative	1,459	35,212	0.350	0.538	0.298	68.962
South Cotabato II Electric Cooperative	4,051	84,380	0.198	0.553	0.374	105.183
Zamboanga City Electric Cooperative	1,273	46,500	0.129	0.558	0.398	282.822
San Jose City Electric Cooperative	588	14,013	0.318	0.534	0.486	75.006
Pampanga III Electric Cooperative	1,057	16,709	0.105	0.529	0.402	150.967
Batangas II Electric Cooperative	4,794	73,575	0.169	0.523	0.429	90.889
Agusan Norte Electric Cooperative	2,716	55,002	0.262	0.518	0.408	77.332
Misamis Oriental I Electric Cooperative	2,344	23,266	0.289	0.516	0.404	34.306
Leyte II Electric Cooperative	729	31,014	0.245	0.515	0.425	173.720

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Camarines Sur II Electric Cooperative	1,635	52,978	0.327	0.514	0.470	98.951
Benguet Electric Cooperative	3,949	89,367	0.357	0.505	0.487	63.441
Central Negros Electric Cooperative	3,182	77,021	0.183	0.505	0.501	132.294
Negros Oriental II Electric Cooperative	2,949	34,531	0.241	0.504	0.504	48.584
Cebu II Electric Cooperative	3,296	60,734	0.461	0.503	0.416	39.951
Davao Sur Electric Cooperative	3,123	35,100	0.248	0.502	0.444	45.394
Misamis Oriental II Electric Cooperative	2,118	14,392	0.207	0.502	0.435	32.881
Zamboanga Sur I Electric Cooperative	3,973	32,014	0.306	0.495	0.468	26.332
Ilocos Norte Electric Cooperative Inc.	5,016	112,060	0.729	0.494	0.587	30.628
Isabela I Electric Cooperative	3,732	44,855	0.259	0.491	0.520	46.340
Misamis Occidental II Electric Cooperative	1,872	20,344	0.225	0.484	0.453	48.272
Tarlac II Electric Cooperative	1,541	24,450	0.206	0.483	0.507	77.151
Batangas I Electric Cooperative	2,724	54,560	0.304	0.481	0.565	65.942
Surigao Norte Electric Cooperative	1,486	16,200	0.259	0.479	0.565	42.045
Davao Oriental Electric Cooperative	2,177	19,251	0.356	0.479	0.470	24.826
South Cotabato I Electric Cooperative	2,093	29,998	0.268	0.476	0.504	53.419
Samar I Electric Cooperative	1,028	27,060	0.832	0.468	0.553	31.637

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Sultan Kudarat Electric Cooperative	3,215	21,832	0.248	0.465	0.534	27.374
VMC Rural Electric Cooperative	2,923	26,157	0.254	0.464	0.551	35.249
Leyte V Electric Cooperative	2,184	26,001	0.275	0.462	0.585	43.237
Cotabato Electric Cooperative	5,981	31,917	0.322	0.461	0.463	16.581
Capiz Electric Cooperative	4,710	42,937	0.401	0.460	0.578	22.713
Albay Electric Cooperative	3,155	32,717	0.145	0.459	0.569	71.459
Davao Norte Electric Cooperative	6,592	48,863	0.220	0.458	0.464	33.752
Ifugao Electric Cooperative	954	4,661	0.562	0.458	0.595	8.684
Bukidnon II Electric Cooperative	2,843	12,163	0.192	0.450	0.431	22.307
Cagayan I Electric Cooperative	2,393	22,953	0.219	0.449	0.535	43.844
Cebu I Electric Cooperative	3,032	38,164	0.438	0.445	0.519	28.750
Bukidnon II Electric Cooperative	3,897	17,683	0.213	0.442	0.456	21.305
Agusan Sur Electric Cooperative	3,101	18,941	0.343	0.440	0.532	17.829
Aklan Electric Cooperative	3,626	40,677	0.392	0.440	0.508	28.589
Zamboanga Sur II Electric Cooperative	2,560	18,837	0.305	0.438	0.519	24.095
Surigao Sur II Electric Cooperative	1,858	14,937	0.504	0.436	0.585	15.961
Misamis Occidental I Electric Cooperative	1,265	11,525	0.381	0.409	0.585	23.936

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
mean	2,772	36,176	0.308	0.483	0.490	57
median	2,724	31,014	0.268	0.481	0.501	42
minimum	588	4,661	0.105	0.409	0.298	9
maximum	6,592	112,060	0.832	0.558	0.595	283
std dev	1,370	23,354	0.144	0.035	0.069	51
n	43	43	43	43	43	43
Aurora Electric Cooperative Peninsula Electric	1,125	5,422	0.337	0.544	0.752	14.278
Cooperative Quezon II Electric	1,962	47,572	0.222	0.517	0.667	109.407
Cooperative Zambales II Electric	922	3,357	0.235	0.509	0.773	15.505
Cooperative Ilocos Sur Electric	1,321	28,807	0.395	0.500	0.691	55.176
Cooperative Nueva Ecija I Electric	2,486	61,048	0.443	0.488	0.691	55.456
Cooperative Tarlac I Electric	1,112	24,541	0.309	0.487	0.765	71.418
Cooperative Zambales I Electric	2,514	60,910	0.531	0.480	0.711	45.614
Cooperative La Union Electric	944	19,844	0.375	0.477	0.679	56.108
Cooperative Pangasinan III Electric	2,328	45,897	0.428	0.474	0.701	46.051
Cooperative Pangasinan I Electric	2,266	51,830	0.288	0.473	0.625	79.534
Cooperative Quezon I Electric	2,851	17,115	0.309	0.472	0.623	19.451
Cooperative Northern Samar Electric	1,758	49,375	0.521	0.467	0.685	53.939
Cooperative Nueva Ecija III Electric	1,121	15,755	0.476	0.463	0.714	29.536
Cooperative Pampanga I Electric	1,623	23,267	0.279	0.461	0.712	51.454
Cooperative	868	18,664	0.181	0.459	0.754	118.709

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Nueva Vizcaya Electric Cooperative	3,343	17,759	0.291	0.454	0.668	18.228
Zamboanga Norte Electric Cooperative	5,697	28,551	0.292	0.452	0.605	17.163
Pampanga II Electric Cooperative	2,014	44,828	0.214	0.450	0.739	104.143
Central Pangasinan Electric Cooperative	3,779	24,866	0.148	0.445	0.748	44.324
Camarines Norte Electric Cooperative	8,821	36,246	0.535	0.444	0.653	7.686
Eastern Samar Electric Cooperative	1,082	12,646	0.413	0.444	0.741	28.283
Iloilo I Electric Cooperative	3,509	26,379	0.233	0.443	0.693	32.237
Kalinga Apayao Electric Cooperative	1,107	9,818	0.708	0.442	0.726	12.524
Lanao Norte Electric Cooperative	3,626	23,530	0.482	0.440	0.628	13.470
Antique Electric Cooperative	2,214	22,013	0.488	0.439	0.710	20.365
First Laguna Electric Cooperative	988	18,476	0.320	0.437	0.742	58.397
Sorsogon I Electric Cooperative	1,426	10,769	0.388	0.433	0.719	19.442
Sorsogon II ELECTRIC COOPERATIVE	1,704	27,581	0.577	0.431	0.669	28.050
Abra Electric Cooperative	1,500	18,116	0.706	0.420	0.713	17.121
Negros Occidental Electric Cooperative	4,439	28,513	0.241	0.418	0.618	26.647
Siargao Electric Cooperative	562	3,508	0.447	0.415	0.729	13.966
Surigao Sur I Electric Cooperative	2,053	18,176	0.568	0.412	0.617	15.599
Leyte IV Electric Cooperative	1,040	14,003	0.436	0.408	0.628	30.863

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Nueva Ecija II Electric Cooperative	1,683	17,792	0.219	0.406	0.711	48.350
Camarines Sur IV Electric Cooperative	1,343	9,939	0.421	0.404	0.699	17.592
Pampanga Rural Service Electric Cooperative	307	5,022	0.250	0.455	0.813	65.372
mean	2,151	24,776	0.381	0.455	0.697	41
median	1,693	20,929	0.381	0.451	0.705	30
minimum	307	3,357	0.148	0.404	0.605	8
maximum	8,821	61,048	0.708	0.544	0.813	119
std dev	1,629	15,612	0.142	0.032	0.050	29
n	36	36	36	36	36	36
Quirino Electric Cooperative	1,131	5,782	0.382	0.399	0.666	13.386
Biliran Electric Cooperative	572	8,420	0.600	0.393	0.756	24.540
Iloilo III Electric Cooperative	1,435	17,108	0.453	0.392	0.706	26.323
Maguindanao Electric Cooperative	5,114	16,065	0.282	0.392	0.606	11.154
Southern Leyte Electric Cooperative	1,773	19,116	0.418	0.392	0.740	25.773
Leyte III Electric Cooperative	993	11,368	0.656	0.389	0.763	17.458
Iloilo II Electric Cooperative	2,994	29,566	0.412	0.381	0.746	23.968
Camiguin Electric Cooperative	662	5,969	0.529	0.380	0.636	17.045
Camarines Sur III Electric Cooperative	1,481	16,458	0.328	0.375	0.682	33.889
Cagayan II Electric Cooperative	2,902	17,080	0.316	0.359	0.749	18.648
Bohol II Electric Cooperative	2,746	17,795	0.396	0.358	0.620	16.373
Samar II Electric Cooperative	2,294	16,362	0.471	0.356	0.657	15.150

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Guimaras Electric Cooperative	1,273	7,007	0.504	0.353	0.709	10.916
Davao Oriental Electric Cooperative	1,361	12,373	0.405	0.307	0.736	22.427
Isabela II Electric Cooperative	2,483	22,047	0.267	0.042	0.652	33.218
Bohol I Electric Cooperative	3,978	45,624	0.650	0.385	0.563	17.636
Negros Oriental I Electric Cooperative	2,060	12,595	0.395	0.368	0.584	15.492
Mountain Province Electric Cooperative	1,923	3,643	0.394	0.330	0.589	4.808
mean	2,065	15,799	0.437	0.353	0.676	19
median	1,848	16,214	0.409	0.377	0.674	18
minimum	572	3,643	0.267	0.042	0.563	5
maximum	5,114	45,624	0.656	0.399	0.763	34
std dev	1,173	9,868	0.115	0.081	0.066	8
n	18	18	18	18	18	18

C. Based on Structure and Density

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Pampanga Rural Service Electric Cooperative	307	5,022	0.250	0.455	0.813	65.372
Camarines Norte Electric Cooperative	8,821	36,246	0.535	0.444	0.653	7.686
Guimaras Electric Cooperative	1,273	7,007	0.504	0.353	0.709	10.916
Maguindanao Electric Cooperative	5,114	16,065	0.282	0.392	0.606	11.154
Kalinga Apayao Electric Cooperative	1,107	9,818	0.708	0.442	0.726	12.524
Quirino Electric Cooperative	1,131	5,782	0.382	0.399	0.666	13.386
Lanao Norte Electric Cooperative	3,626	23,530	0.482	0.440	0.628	13.470
Siargao Electric Cooperative	562	3,508	0.447	0.415	0.729	13.966
Aurora Electric Cooperative	1,125	5,422	0.337	0.544	0.752	14.278
Samar II Electric Cooperative	2,294	16,362	0.471	0.356	0.657	15.150
Quezon II Electric Cooperative	922	3,357	0.235	0.509	0.773	15.505
Surigao Sur I Electric Cooperative	2,053	18,176	0.568	0.412	0.617	15.599
Bohol II Electric Cooperative	2,746	17,795	0.396	0.358	0.620	16.373
Camiguin Electric Cooperative	662	5,969	0.529	0.380	0.636	17.045
Abra Electric Cooperative	1,500	18,116	0.706	0.420	0.713	17.121
Zamboanga Norte Electric Cooperative	5,697	28,551	0.292	0.452	0.605	17.163
Leyte III Electric Cooperative	993	11,368	0.656	0.389	0.763	17.458

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Camarines Sur IV Electric Cooperative	1,343	9,939	0.421	0.404	0.699	17.592
Nueva Vizcaya Electric Cooperative	3,343	17,759	0.291	0.454	0.668	18.228
Cagayan II Electric Cooperative	2,902	17,080	0.316	0.359	0.749	18.648
Sorsogon I Electric Cooperative	1,426	10,769	0.388	0.433	0.719	19.442
Pangasinan I Electric Cooperative	2,851	17,115	0.309	0.472	0.623	19.451
Antique Electric Cooperative	2,214	22,013	0.488	0.439	0.710	20.365
Davao Oriental Electric Cooperative	1,361	12,373	0.405	0.307	0.736	22.427
Iloilo II Electric Cooperative	2,994	29,566	0.412	0.381	0.746	23.968
Biliran Electric Cooperative	572	8,420	0.600	0.393	0.756	24.540
Southern Leyte Electric Cooperative	1,773	19,116	0.418	0.392	0.740	25.773
Iloilo III Electric Cooperative	1,435	17,108	0.453	0.392	0.706	26.323
Negros Occidental Electric Cooperative	4,439	28,513	0.241	0.418	0.618	26.647
Sorsogon II ELECTRIC COOPERATIVE	1,704	27,581	0.577	0.431	0.669	28.050
Eastern Samar Electric Cooperative	1,082	12,646	0.413	0.444	0.741	28.283
Northern Samar Electric Cooperative	1,121	15,755	0.476	0.463	0.714	29.536
Leyte IV Electric Cooperative	1,040	14,003	0.436	0.408	0.628	30.863
Iloilo I Electric Cooperative	3,509	26,379	0.233	0.443	0.693	32.237
Isabela II Electric Cooperative	2,483	22,047	0.267	0.042	0.652	33.218

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Camarines Sur III Electric Cooperative Central Pangasinan Electric Cooperative Tarlac I Electric Cooperative La Union Electric Cooperative Nueva Ecija II Electric Cooperative Nueva Ecija III Electric Cooperative Quezon I Electric Cooperative Zambales II Electric Cooperative Ilocos Sur Electric Cooperative Zambales I Electric Cooperative First Laguna Electric Cooperative Nueva Ecija I Electric Cooperative Pangasinan III Electric Cooperative	1,481 3,779 2,514 2,328 1,683 1,623 1,758 1,321 2,486 944 988 1,112 2,266	16,458 24,866 60,910 45,897 17,792 23,267 49,375 28,807 61,048 19,844 18,476 24,541 51,830	0.328 0.148 0.531 0.428 0.219 0.279 0.521 0.395 0.443 0.375 0.320 0.309 0.288	0.375 0.445 0.480 0.474 0.406 0.461 0.467 0.500 0.488 0.477 0.437 0.487 0.473	0.682 0.748 0.711 0.701 0.711 0.712 0.685 0.691 0.691 0.679 0.742 0.765 0.625	33.889 44.324 45.614 46.051 48.350 51.454 53.939 55.176 55.456 56.108 58.397 71.418 79.534
mean	2,121	20,904	0.406	0.421	0.695	30
median	1,653	17,794	0.409	0.435	0.703	24
minimum	307	3,357	0.148	0.042	0.605	8
maximum	8,821	61,048	0.708	0.544	0.813	80
std dev	1,539	13,783	0.129	0.073	0.051	18
n	48	48	48	48	48	48
Mountain Province Electric Cooperative	1,923	3,643	0.394	0.330	0.589	4.808

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Ifugao Electric Cooperative	954	4,661	0.562	0.458	0.595	8.684
Negros Oriental I Electric Cooperative	2,060	12,595	0.395	0.368	0.584	15.492
Surigao Sur II Electric Cooperative	1,858	14,937	0.504	0.436	0.585	15.961
Cotabato Electric Cooperative	5,981	31,917	0.322	0.461	0.463	16.581
Bohol I Electric Cooperative	3,978	45,624	0.650	0.385	0.563	17.636
Agusan Sur Electric Cooperative	3,101	18,941	0.343	0.440	0.532	17.829
Bukidnon II Electric Cooperative	3,897	17,683	0.213	0.442	0.456	21.305
Bukidnon II Electric Cooperative	2,843	12,163	0.192	0.450	0.431	22.307
Capiz Electric Cooperative	4,710	42,937	0.401	0.460	0.578	22.713
Misamis Occidental I Electric Cooperative	1,265	11,525	0.381	0.409	0.585	23.936
Zamboanga Sur II Electric Cooperative	2,560	18,837	0.305	0.438	0.519	24.095
Davao Oriental Electric Cooperative	2,177	19,251	0.356	0.479	0.470	24.826
Zamboanga Sur I Electric Cooperative	3,973	32,014	0.306	0.495	0.468	26.332
Sultan Kudarat Electric Cooperative	3,215	21,832	0.248	0.465	0.534	27.374
Aklan Electric Cooperative	3,626	40,677	0.392	0.440	0.508	28.589
Cebu I Electric Cooperative	3,032	38,164	0.438	0.445	0.519	28.750
Ilocos Norte Electric Cooperative Inc.	5,016	112,060	0.729	0.494	0.587	30.628
Samar I Electric Cooperative	1,028	27,060	0.832	0.468	0.553	31.637

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Misamis Oriental II Electric Cooperative	2,118	14,392	0.207	0.502	0.435	32.881
Davao Norte Electric Cooperative	6,592	48,863	0.220	0.458	0.464	33.752
Misamis Oriental I Electric Cooperative	2,344	23,266	0.289	0.516	0.404	34.306
VMC Rural Electric Cooperative	2,923	26,157	0.254	0.464	0.551	35.249
Cebu II Electric Cooperative	3,296	60,734	0.461	0.503	0.416	39.951
Surigao Norte Electric Cooperative	1,486	16,200	0.259	0.479	0.565	42.045
Leyte V Electric Cooperative	2,184	26,001	0.275	0.462	0.585	43.237
Cagayan I Electric Cooperative	2,393	22,953	0.219	0.449	0.535	43.844
Davao Sur Electric Cooperative	3,123	35,100	0.248	0.502	0.444	45.394
Isabela I Electric Cooperative	3,732	44,855	0.259	0.491	0.520	46.340
Misamis Occidental II Electric Cooperative	1,872	20,344	0.225	0.484	0.453	48.272
Negros Oriental II Electric Cooperative	2,949	34,531	0.241	0.504	0.504	48.584
South Cotabato I Electric Cooperative	2,093	29,998	0.268	0.476	0.504	53.419
Benguet Electric Cooperative	3,949	89,367	0.357	0.505	0.487	63.441
Batangas I Electric Cooperative	2,724	54,560	0.304	0.481	0.565	65.942
Albay Electric Cooperative	3,155	32,717	0.145	0.459	0.569	71.459
San Jose City Electric Cooperative	588	14,013	0.318	0.534	0.486	75.006

	Distributi on Line Length	Total distributio n cost	Distributi on cost per kwh	Load factor	Costumer Structure	Density
Tarlac II Electric Cooperative	1,541	24,450	0.206	0.483	0.507	77.151
Agusan Norte Electric Cooperative	2,716	55,002	0.262	0.518	0.408	77.332
Batangas II Electric Cooperative	4,794	73,575	0.169	0.523	0.429	90.889
Camarines Sur II Electric Cooperative	1,635	52,978	0.327	0.514	0.470	98.951
Cebu III Electric Cooperative	1,459	35,212	0.350	0.538	0.298	68.962
mean	2,850	33,214	0.337	0.469	0.505	40
median	2,724	27,060	0.305	0.468	0.508	34
minimum	588	3,643	0.145	0.330	0.298	5
maximum	6,592	112,060	0.832	0.538	0.595	99
std dev	1,324	22,219	0.146	0.043	0.067	23
n	41	41	41	41	41	41
Central Negros Electric Cooperative	3,182	77,021	0.183	0.505	0.501	132.294
Pampanga III Electric Cooperative	1,057	16,709	0.105	0.529	0.402	150.967
Leyte II Electric Cooperative	729	31,014	0.245	0.515	0.425	173.720
Pampanga II Electric Cooperative	2,014	44,828	0.214	0.450	0.739	104.143
Peninsula Electric Cooperative	1,962	47,572	0.222	0.517	0.667	109.407
Pampanga I Electric Cooperative	868	18,664	0.181	0.459	0.754	118.709
South Cotabato II Electric Cooperative	4,051	84,380	0.198	0.553	0.374	105.183
Zamboanga City Electric Cooperative	1,273	46,500	0.129	0.558	0.398	282.822
mean	1,892	45,836	0.185	0.511	0.533	147
median	1,618	45,664	0.190	0.516	0.463	126
minimum	729	16,709	0.105	0.450	0.374	104
maximum	4,051	84,380	0.245	0.558	0.754	283
std dev	1,185	24,695	0.047	0.039	0.161	60
n	8	8	8	8	8	8

Among the classification schemes analyzed, the one using structure and density appears to be the most promising, given the following considerations:

1. Structure is a significant regressor in the distribution cost per kwh model. Density is positively and highly correlated with consumption, which is also a significant regressor in the distribution cost per kwh model.
2. This scheme produces the lowest total standard deviation of distribution cost per kwh, as well as the lowest total difference between mean and median distribution cost per kwh. These are desirable given the preference that the subgroups be as homogenous as possible.

Classification Schemes
size and structure (R.Tan)

Group A			
	I	II	III
1			
2			
3	1		
4			
Group B			
	I	II	III
1			
2	1		
3			
4			
Group C			
	I	II	III
1		1	
2	4		
3	3		
4			

Group D			
	I	II	III
1	1		
2	25	1	
3	16	1	
4			
Group E			
	I	II	III
1	1		1
2	10	2	
3	27	2	
4	1		

size and structure (M.Pitlock)

Group A			
	I	II	III
1			
2			
3	1		
4			
Group B			
	I	II	III
1			
2	1		
3			
4			
Group C			
	I	II	III
1		1	
2	4		
3	3		
4			
Group D			
	I	II	III
1	1		
2	25	1	
3	16	1	
4			
Group E			
	I	II	III
1	1		1
2	10	2	
3	27	2	
4	1		

structure and load factor

	20-40	40-60	60-80	>80
low	0	0	1	
med	0	3	14	
high	3	40	35	1

structure and density

	20-40	40-60	60-80	>80
0-100	1	40	47	1
100-200	1	3	3	0
200-300	1	0	0	0

Annex B – EViews Output Tables

Output 1

Dependent Variable: LOG(DIST_C)
 Method: Panel Least Squares
 Date: 02/13/06 Time: 10:09
 Sample (adjusted): 2002 2005
 Cross-sections included: 119
 Total panel (unbalanced) observations: 461
 Convergence achieved after 5 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(CKM)	0.903173	0.019839	45.52532	0.0000
LOG(C_DENSITY1)	0.950141	0.037124	25.59361	0.0000
LOG(M_TOT/C_TOT)	-0.731864	0.074837	-9.779500	0.0000
LOG(STRUCTURE2)	-0.425997	0.201724	-2.111783	0.0352
AR(1)	0.885448	0.023799	37.20501	0.0000
R-squared	0.972135	Mean dependent var		9.597026
Adjusted R-squared	0.971891	S.D. dependent var		1.005109
S.E. of regression	0.168514	Akaike info criterion		-0.712810
Sum squared resid	12.94900	Schwarz criterion		-0.667979
Log likelihood	169.3027	Durbin-Watson stat		1.993396

Output 2

Dependent Variable: LOG(DIST_C/M_TOT)
 Method: Panel Least Squares
 Date: 02/13/06 Time: 16:13
 Sample (adjusted): 2002 2005
 Cross-sections included: 119
 Total panel (unbalanced) observations: 461
 Convergence achieved after 6 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(CKM)	-0.107997	0.018844	-5.730936	0.0000
LOG(STRUCTURE2)	-0.360773	0.197941	-1.822625	0.0690
LOG(M_TOT/C_TOT)	-0.778430	0.067818	-11.47816	0.0000
AR(1)	0.895635	0.022620	39.59528	0.0000
R-squared	0.864285	Mean dependent var		-1.109727
Adjusted R-squared	0.863394	S.D. dependent var		0.456282
S.E. of regression	0.168643	Akaike info criterion		-0.713424
Sum squared resid	12.99732	Schwarz criterion		-0.677560
Log likelihood	168.4443	Durbin-Watson stat		1.998852

Output 3

Test for Equality of Means of DIST_C/M_TOT

Categorized by values of CKM

Date: 02/14/06 Time: 02:16

Sample: 2005 2005 IF DUM_MG=1

Included observations: 98

Method	df	Value	Probability
Anova F-statistic	(4, 93)	1.984026	0.1034

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	4	0.161132	0.040283
Within	93	1.888240	0.020304
Total	97	2.049372	0.021128

Category Statistics

CKM	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 2000)	45	0.396124	0.158282	0.023595
[2000, 4000)	43	0.327775	0.116104	0.017706
[4000, 6000)	8	0.329272	0.177177	0.062642
[6000, 8000)	1	0.219624	NA	NA
[8000, 10000)	1	0.534657	NA	NA
All	98	0.360290	0.145353	0.014683

Output 4

Test for Equality of Means of DIST_C/M_TOT

Categorized by values of C_DENSITY1

Date: 02/14/06 Time: 02:12

Sample: 2005 2005 IF DUM_MG=1

Included observations: 98

Method	df	Value	Probability
Anova F-statistic	(2, 95)	7.289922	0.0011

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	2	0.272674	0.136337
Within	95	1.776699	0.018702
Total	97	2.049372	0.021128

Category Statistics

C_DENSITY 1	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 100)	90	0.375915	0.140812	0.014843
[100, 200)	7	0.192422	0.044718	0.016902
[200, 300)	1	0.129112	NA	NA
All	98	0.360290	0.145353	0.014683

Output 5

Test for Equality of Means of DIST_C/M_TOT

Categorized by values of STRUCTURE2

Date: 02/13/06 Time: 20:06

Sample: 2005 2005 IF DUM_MG=1

Included observations: 97

Method	df	Value	Probability
Anova F-statistic	(3, 93)	3.136872	0.0291

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	3	0.186521	0.062174
Within	93	1.843286	0.019820
Total	96	2.029807	0.021144

Category Statistics

STRUCTUR E2	Count	Mean	Std. Dev.	Std. Err. of Mean
[0.2, 0.4)	3	0.225686	0.112981	0.065230
[0.4, 0.6)	43	0.325775	0.149491	0.022797
[0.6, 0.8)	50	0.397461	0.133948	0.018943
[0.8, 1)	1	0.250486	NA	NA
All	97	0.358855	0.145409	0.014764

Output 6

Test for Equality of Means of DIST_C/M_TOT

Categorized by values of LF

Date: 02/14/06 Time: 05:22

Sample: 2005 2005 IF DUM_MG=1

Included observations: 99

Method	df	Value	Probability
Anova F-statistic	(2, 96)	3.178666	0.0461

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	2	0.128599	0.064300
Within	96	1.941939	0.020229
Total	98	2.070539	0.021128

Category Statistics

LF	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 0.2)	1	0.267285	NA	NA
[0.2, 0.4)	18	0.433560	0.120002	0.028285
[0.4, 0.6)	80	0.343139	0.146570	0.016387
All	99	0.358813	0.145355	0.014609

Output 7

Test for Equality of Means of DIST_C/M_TOT
 Categorized by values of STRUCTURE2 and CKM and LF
 Date: 02/13/06 Time: 20:06
 Sample: 2005 2005 IF DUM_MG=1
 Included observations: 97

Method	df	Value	Probability
Anova F-statistic	(16, 80)	1.692376	0.0651

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	16	0.513300	0.032081
Within	80	1.516507	0.018956
Total	96	2.029807	0.021144

Category Statistics

LF	CKM	STRUCTURE2	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 0.2)	[0, 2000)	[0.2, 0.4)	0	NA	NA	NA
[0, 0.2)	[0, 2000)	[0.4, 0.6)	0	NA	NA	NA
[0, 0.2)	[0, 2000)	[0.6, 0.8)	0	NA	NA	NA
[0, 0.2)	[0, 2000)	[0.8, 1)	0	NA	NA	NA
[0, 0.2)	[2000, 4000)	[0.2, 0.4)	0	NA	NA	NA
[0, 0.2)	[2000, 4000)	[0.4, 0.6)	0	NA	NA	NA
[0, 0.2)	[2000, 4000)	[0.6, 0.8)	1	0.267285	NA	NA
[0, 0.2)	[2000, 4000)	[0.8, 1)	0	NA	NA	NA
[0, 0.2)	[4000, 6000)	[0.2, 0.4)	0	NA	NA	NA
[0, 0.2)	[4000, 6000)	[0.4, 0.6)	0	NA	NA	NA
[0, 0.2)	[4000, 6000)	[0.6, 0.8)	0	NA	NA	NA
[0, 0.2)	[4000, 6000)	[0.8, 1)	0	NA	NA	NA
[0, 0.2)	[6000, 8000)	[0.2, 0.4)	0	NA	NA	NA
[0, 0.2)	[6000, 8000)	[0.4, 0.6)	0	NA	NA	NA
[0, 0.2)	[6000, 8000)	[0.6, 0.8)	0	NA	NA	NA
[0, 0.2)	[6000, 8000)	[0.8, 1)	0	NA	NA	NA
[0, 0.2)	[8000, 10000)	[0.2, 0.4)	0	NA	NA	NA
[0, 0.2)	[8000, 10000)	[0.4, 0.6)	0	NA	NA	NA

[0, 0.2)	[8000, 10000)	[0.6, 0.8)	0	NA	NA	NA
[0, 0.2)	[8000, 10000)	[0.8, 1)	0	NA	NA	NA
[0.2, 0.4)	[0, 2000)	[0.2, 0.4)	0	NA	NA	NA
[0.2, 0.4)	[0, 2000)	[0.4, 0.6)	1	0.393966	NA	NA
[0.2, 0.4)	[0, 2000)	[0.6, 0.8)	9	0.475013	0.106562	0.035521
[0.2, 0.4)	[0, 2000)	[0.8, 1)	0	NA	NA	NA
[0.2, 0.4)	[2000, 4000)	[0.2, 0.4)	0	NA	NA	NA
[0.2, 0.4)	[2000, 4000)	[0.4, 0.6)	2	0.522482	0.180741	0.127803
[0.2, 0.4)	[2000, 4000)	[0.6, 0.8)	4	0.398582	0.064022	0.032011
[0.2, 0.4)	[2000, 4000)	[0.8, 1)	0	NA	NA	NA
[0.2, 0.4)	[4000, 6000)	[0.2, 0.4)	0	NA	NA	NA
[0.2, 0.4)	[4000, 6000)	[0.4, 0.6)	0	NA	NA	NA
[0.2, 0.4)	[4000, 6000)	[0.6, 0.8)	1	0.281635	NA	NA
[0.2, 0.4)	[4000, 6000)	[0.8, 1)	0	NA	NA	NA
[0.2, 0.4)	[6000, 8000)	[0.2, 0.4)	0	NA	NA	NA
[0.2, 0.4)	[6000, 8000)	[0.4, 0.6)	0	NA	NA	NA
[0.2, 0.4)	[6000, 8000)	[0.6, 0.8)	0	NA	NA	NA
[0.2, 0.4)	[6000, 8000)	[0.8, 1)	0	NA	NA	NA
[0.2, 0.4)	[8000, 10000)	[0.2, 0.4)	0	NA	NA	NA
[0.2, 0.4)	[8000, 10000)	[0.4, 0.6)	0	NA	NA	NA
[0.2, 0.4)	[8000, 10000)	[0.6, 0.8)	0	NA	NA	NA
[0.2, 0.4)	[8000, 10000)	[0.8, 1)	0	NA	NA	NA
[0.4, 0.6)	[0, 2000)	[0.2, 0.4)	2	0.239523	0.156144	0.110410
[0.4, 0.6)	[0, 2000)	[0.4, 0.6)	11	0.360284	0.204433	0.061639
[0.4, 0.6)	[0, 2000)	[0.6, 0.8)	20	0.398220	0.148326	0.033167
[0.4, 0.6)	[0, 2000)	[0.8, 1)	1	0.250486	NA	NA
[0.4, 0.6)	[2000, 4000)	[0.2, 0.4)	0	NA	NA	NA
[0.4, 0.6)	[2000, 4000)	[0.4, 0.6)	24	0.281882	0.078603	0.016045
[0.4, 0.6)	[2000, 4000)	[0.6, 0.8)	12	0.368548	0.137863	0.039798
[0.4, 0.6)	[2000, 4000)	[0.8, 1)	0	NA	NA	NA
[0.4, 0.6)	[4000, 6000)	[0.2, 0.4)	1	0.198014	NA	NA
[0.4, 0.6)	[4000, 6000)	[0.4, 0.6)	4	0.405368	0.236580	0.118290
[0.4, 0.6)	[4000, 6000)	[0.6, 0.8)	2	0.266530	0.036026	0.025474
[0.4, 0.6)	[4000, 6000)	[0.8, 1)	0	NA	NA	NA
[0.4, 0.6)	[6000, 8000)	[0.2, 0.4)	0	NA	NA	NA
[0.4, 0.6)	[6000, 8000)	[0.4, 0.6)	1	0.219624	NA	NA
[0.4, 0.6)	[6000, 8000)	[0.6, 0.8)	0	NA	NA	NA
[0.4, 0.6)	[6000, 8000)	[0.8, 1)	0	NA	NA	NA
[0.4, 0.6)	[8000, 10000)	[0.2, 0.4)	0	NA	NA	NA
[0.4, 0.6)	[8000, 10000)	[0.4, 0.6)	0	NA	NA	NA
[0.4, 0.6)	[8000, 10000)	[0.6, 0.8)	1	0.534657	NA	NA

[0.4, 0.6)	[8000, 10000)	[0.8, 1)	0	NA	NA	NA
All			97	0.358855	0.145409	0.014764

Output 8

Test for Equality of Means of DIST_C/M_TOT

Categorized by values of STRUCTURE2 and CKM and C_DENSITY1

Date: 02/13/06 Time: 20:06

Sample: 2005 2005 IF DUM_MG=1

Included observations: 97

Method	df	Value	Probability
Anova F-statistic	(15, 81)	2.315131	0.0085

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	15	0.609098	0.040607
Within	81	1.420709	0.017540
Total	96	2.029807	0.021144

Category Statistics

C_DENSITY 1	CKM	STRUCTUR E2	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 100)	[0, 2000)	[0.2, 0.4)	1	0.349933	NA	NA
[0, 100)	[0, 2000)	[0.4, 0.6)	10	0.400758	0.189745	0.060003
[0, 100)	[0, 2000)	[0.6, 0.8)	27	0.438400	0.130090	0.025036
[0, 100)	[0, 2000)	[0.8, 1)	1	0.250486	NA	NA
[0, 100)	[2000, 4000)	[0.2, 0.4)	0	NA	NA	NA
[0, 100)	[2000, 4000)	[0.4, 0.6)	25	0.305087	0.105534	0.021107
[0, 100)	[2000, 4000)	[0.6, 0.8)	16	0.379403	0.118146	0.029537
[0, 100)	[2000, 4000)	[0.8, 1)	0	NA	NA	NA
[0, 100)	[4000, 6000)	[0.2, 0.4)	0	NA	NA	NA
[0, 100)	[4000, 6000)	[0.4, 0.6)	4	0.405368	0.236580	0.118290
[0, 100)	[4000, 6000)	[0.6, 0.8)	3	0.271565	0.026926	0.015546
[0, 100)	[4000, 6000)	[0.8, 1)	0	NA	NA	NA
[0, 100)	[6000, 8000)	[0.2, 0.4)	0	NA	NA	NA
[0, 100)	[6000, 8000)	[0.4, 0.6)	1	0.219624	NA	NA
[0, 100)	[6000, 8000)	[0.6, 0.8)	0	NA	NA	NA
[0, 100)	[6000, 8000)	[0.8, 1)	0	NA	NA	NA

[0, 100)	[8000, 10000)	[0.2, 0.4)	0	NA	NA	NA
[0, 100)	[8000, 10000)	[0.4, 0.6)	0	NA	NA	NA
[0, 100)	[8000, 10000)	[0.6, 0.8)	1	0.534657	NA	NA
[0, 100)	[8000, 10000)	[0.8, 1)	0	NA	NA	NA
[100, 200)	[0, 2000)	[0.2, 0.4)	0	NA	NA	NA
[100, 200)	[0, 2000)	[0.4, 0.6)	2	0.174757	0.099073	0.070055
[100, 200)	[0, 2000)	[0.6, 0.8)	2	0.201357	0.028695	0.020290
[100, 200)	[0, 2000)	[0.8, 1)	0	NA	NA	NA
[100, 200)	[2000, 4000)	[0.2, 0.4)	0	NA	NA	NA
[100, 200)	[2000, 4000)	[0.4, 0.6)	1	0.182961	NA	NA
[100, 200)	[2000, 4000)	[0.6, 0.8)	1	0.213748	NA	NA
[100, 200)	[2000, 4000)	[0.8, 1)	0	NA	NA	NA
[100, 200)	[4000, 6000)	[0.2, 0.4)	1	0.198014	NA	NA
[100, 200)	[4000, 6000)	[0.4, 0.6)	0	NA	NA	NA
[100, 200)	[4000, 6000)	[0.6, 0.8)	0	NA	NA	NA
[100, 200)	[4000, 6000)	[0.8, 1)	0	NA	NA	NA
[100, 200)	[6000, 8000)	[0.2, 0.4)	0	NA	NA	NA
[100, 200)	[6000, 8000)	[0.4, 0.6)	0	NA	NA	NA
[100, 200)	[6000, 8000)	[0.6, 0.8)	0	NA	NA	NA
[100, 200)	[6000, 8000)	[0.8, 1)	0	NA	NA	NA
[100, 200)	[8000, 10000)	[0.2, 0.4)	0	NA	NA	NA
[100, 200)	[8000, 10000)	[0.4, 0.6)	0	NA	NA	NA
[100, 200)	[8000, 10000)	[0.6, 0.8)	0	NA	NA	NA
[100, 200)	[8000, 10000)	[0.8, 1)	0	NA	NA	NA
[200, 300)	[0, 2000)	[0.2, 0.4)	1	0.129112	NA	NA
[200, 300)	[0, 2000)	[0.4, 0.6)	0	NA	NA	NA
[200, 300)	[0, 2000)	[0.6, 0.8)	0	NA	NA	NA
[200, 300)	[0, 2000)	[0.8, 1)	0	NA	NA	NA
[200, 300)	[2000, 4000)	[0.2, 0.4)	0	NA	NA	NA
[200, 300)	[2000, 4000)	[0.4, 0.6)	0	NA	NA	NA
[200, 300)	[2000, 4000)	[0.6, 0.8)	0	NA	NA	NA
[200, 300)	[2000, 4000)	[0.8, 1)	0	NA	NA	NA
[200, 300)	[4000, 6000)	[0.2, 0.4)	0	NA	NA	NA
[200, 300)	[4000, 6000)	[0.4, 0.6)	0	NA	NA	NA
[200, 300)	[4000, 6000)	[0.6, 0.8)	0	NA	NA	NA
[200, 300)	[4000, 6000)	[0.8, 1)	0	NA	NA	NA
[200, 300)	[6000, 8000)	[0.2, 0.4)	0	NA	NA	NA
[200, 300)	[6000, 8000)	[0.4, 0.6)	0	NA	NA	NA
[200, 300)	[6000, 8000)	[0.6, 0.8)	0	NA	NA	NA
[200, 300)	[6000, 8000)	[0.8, 1)	0	NA	NA	NA
[200, 300)	[8000, 10000)	[0.2, 0.4)	0	NA	NA	NA

[200, 300)	[8000, 10000)	[0.4, 0.6)	0	NA	NA	NA
[200, 300)	[8000, 10000)	[0.6, 0.8)	0	NA	NA	NA
[200, 300)	[8000, 10000)	[0.8, 1)	0	NA	NA	NA
All			97	0.358855	0.145409	0.014764

Output 9

Test for Equality of Means of DIST_C/M_TOT
Categorized by values of STRUCTURE2 and LF
Date: 02/14/06 Time: 00:09
Sample: 2005 2005 IF DUM_MG=1
Included observations: 97

Method	df	Value	Probability
Anova F-statistic	(6, 90)	2.707432	0.0183

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	6	0.310354	0.051726
Within	90	1.719453	0.019105
Total	96	2.029807	0.021144

Category Statistics

LF	STRUCTUR E2	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 0.2)	[0.2, 0.4)	0	NA	NA	NA
[0, 0.2)	[0.4, 0.6)	0	NA	NA	NA
[0, 0.2)	[0.6, 0.8)	1	0.267285	NA	NA
[0, 0.2)	[0.8, 1)	0	NA	NA	NA
[0.2, 0.4)	[0.2, 0.4)	0	NA	NA	NA
[0.2, 0.4)	[0.4, 0.6)	3	0.479643	0.147781	0.085321
[0.2, 0.4)	[0.6, 0.8)	14	0.439363	0.106015	0.028334
[0.2, 0.4)	[0.8, 1)	0	NA	NA	NA
[0.4, 0.6)	[0.2, 0.4)	3	0.225686	0.112981	0.065230
[0.4, 0.6)	[0.4, 0.6)	40	0.314235	0.144875	0.022907
[0.4, 0.6)	[0.6, 0.8)	35	0.384420	0.142000	0.024002
[0.4, 0.6)	[0.8, 1)	1	0.250486	NA	NA
All		97	0.358855	0.145409	0.014764

Output 10

Test for Equality of Means of DIST_C/M_TOT

Categorized by values of STRUCTURE2 and C_DENSITY1

Date: 02/14/06 Time: 00:09

Sample: 2005 2005 IF DUM_MG=1

Included observations: 97

Method	df	Value	Probability
Anova F-statistic	(7, 89)	3.126084	0.0054

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	7	0.400581	0.057226
Within	89	1.629226	0.018306
Total	96	2.029807	0.021144

Category Statistics

C_DENSITY 1	STRUCTUR E2	Count	Mean	Std. Dev.	Std. Err. of Mean
[0, 100)	[0.2, 0.4)	1	0.349933	NA	NA
[0, 100)	[0.4, 0.6)	40	0.336896	0.148309	0.023450
[0, 100)	[0.6, 0.8)	47	0.409715	0.128589	0.018757
[0, 100)	[0.8, 1)	1	0.250486	NA	NA
[100, 200)	[0.2, 0.4)	1	0.198014	NA	NA
[100, 200)	[0.4, 0.6)	3	0.177492	0.070215	0.040539
[100, 200)	[0.6, 0.8)	3	0.205487	0.021515	0.012421
[100, 200)	[0.8, 1)	0	NA	NA	NA
[200, 300)	[0.2, 0.4)	1	0.129112	NA	NA
[200, 300)	[0.4, 0.6)	0	NA	NA	NA
[200, 300)	[0.6, 0.8)	0	NA	NA	NA
[200, 300)	[0.8, 1)	0	NA	NA	NA
	All	97	0.358855	0.145409	0.014764