# ANALYSIS OF ROUTINE TRAFFIC COUNT STATIONS TO OPTIMIZE LOCATIONS AND FREQUENCY

Final Report

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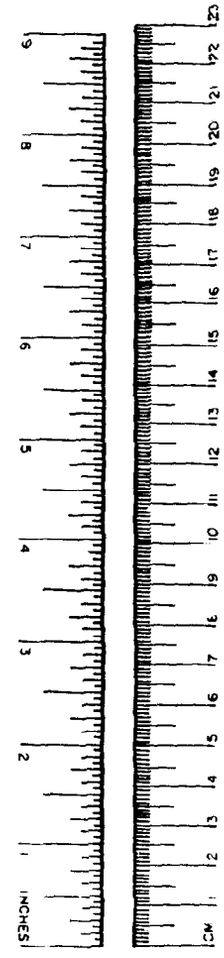
JUNE 1981

# METRIC CONVERSION FACTORS

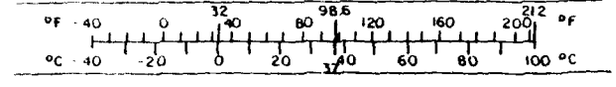
## APPROXIMATE CONVERSIONS FROM METRIC MEASURES

| SYMBOL | WHEN YOU KNOW | MULTIPLY BY | TO FIND | SYMBOL |
|---|---|---|---|---|
| **LENGTH** | | | | |
| in | inches | 2.5 | centimeters | cm |
| ft | feet | 30 | centimeters | cm |
| yd | yards | 0.9 | meters | m |
| mi | miles | 1.6 | kilometers | km |
| **AREA** | | | | |
| $in^2$ | square inches | 6.5 | square centimeters | $cm^2$ |
| $ft^2$ | square feet | 0.09 | square meters | $m^2$ |
| $yd^2$ | square yards | 0.6 | square meters | $m^2$ |
| $mi^2$ | square miles | 2.6 | square kilometers | $km^2$ |
| | acres | 0.4 | hectares | ha |
| **MASS (weight)** | | | | |
| oz | ounces | 28 | grams | g |
| lb | pounds | 0.45 | kilograms | kg |
| | short tons (2000 lb) | 0.9 | tonnes | t |
| **VOLUME** | | | | |
| tsp | teaspoons | 5 | milliliters | ml |
| tbsp | tablespoons | 15 | milliliters | ml |
| fl oz | fluid ounces | 30 | milliliters | ml |
| c | cups | 0.24 | liters | l |
| pt | pints | 0.47 | liters | l |
| qt | quarts | 0.95 | liters | l |
| gal | gallons | 3.8 | liters | l |
| $ft^3$ | cubic feet | 0.03 | cubic meters | $m^3$ |
| $yd^3$ | cubic yards | 0.76 | cubic meters | $m^3$ |
| **TEMPERATURE (exact)** | | | | |
| °F | Fahrenheit temperature | 5/9 (after subtracting 32) | Celsius temperature | °C |




## APPROXIMATE CONVERSIONS FROM METRIC MEASURES

| SYMBOL | WHEN YOU KNOW | MULTIPLY BY | TO FIND | SYMBOL |
|---|---|---|---|---|
| **LENGTH** | | | | |
| mm | millimeters | 0.04 | inches | in |
| cm | centimeters | 0.4 | inches | in |
| m | meters | 3.3 | feet | ft |
| m | meters | 1.1 | yards | yd |
| km | kilometers | 0.6 | miles | mi |
| **AREA** | | | | |
| $cm^2$ | square centimeters | 0.16 | square inches | $in^2$ |
| $m^2$ | square meters | 1.2 | square yards | $yd^2$ |
| $km^2$ | square kilometers | 0.4 | square miles | $mi^2$ |
| ha | hectares (10,000 $m^2$) | 2.5 | acres | |
| **MASS (weight)** | | | | |
| g | grams | 0.035 | ounces | oz |
| kg | kilograms | 2.2 | pounds | lb |
| t | tonnes (1000 kg) | 1.1 | short tons | |
| **VOLUME** | | | | |
| ml | milliliters | 8.03 | fluid ounces | fl oz |
| l | liters | 2.1 | pints | pt |
| l | liters | 1.06 | quarts | qt |
| l | liters | 0.26 | gallons | gal |
| $m^3$ | cubic meters | 36 | cubic feet | $ft^3$ |
| $m^3$ | cubic meters | 1.3 | cubic yards | $yd^3$ |
| **TEMPERATURE (exact)** | | | | |
| °C | Celsius temperature | 9/5 (then add 32) | Fahrenheit temperature | °F |



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## ABSTRACT

This report describes a grouping of statewide permanent and key traffic counters on the basis of their geographic variations in traffic flow. Several factors were considered including the distance between clusters and urban versus rural areas.

Traffic counts for a three-year period were grouped into clusters by highway functional class for each individual parish. The computer program examines the maximum distance within a cluster and the maximum, average and minimum distances within and between clusters. Count stations are arranged in clusters or groups of comparatively like counts.

The cluster groups were examined by reviewing parish maps which show the station locations. A computerized cluster analysis of all districts for the three-year period 1977, 1978 and 1979 was reviewed according to highway functional classes 6, 7 and 8. An in-depth review of the various cluster arrangements indicated the possibility of estimating the average annual daily traffic at some locations from sample traffic counts. A total of 111 stations could be measured less frequently by subjectively reviewing the location and proximity of the 2,290 stations, whereas a total of 1,246 stations could be read less frequently based on the objective but insensitive computerized cluster analysis. This observation confirms the need for further analysis by taking into consideration factors such as seasonal variations, geographic distribution of stations, and the number of stations existing in each cluster.

## IMPLEMENTATION

The study of the three-year-period computerized cluster analysis reveals that it is now possible to predict and estimate average annual daily traffic with a reduction of some stations. The research reveals that at least 111 stations could be read less frequently when one considers the cluster arrangement and the geographic location and proximity of one count station to another.

However, a further detailed and more in-depth study may result in a further reduction of measurements, thereby saving the state considerable monies and man-hours. Such additional study is recommended.

# INTRODUCTION

The Department expends countless man-hours in reading and recording traffic counts for ADT determination throughout the state. This method of gathering and assembling data has become cumbersome and repetitious, with data often being held waiting further recording and transfer from one source to another. A logical analysis of the various station counts throughout the state can present an overview of what has been occurring in traffic for the past "X" number of years. A review of this analysis can better assist and better qualify the traffic engineer to predict traffic counts at designated points in the highway system in addition to reducing the number of measurements. This report attempts to present a statistical approach, termed cluster analysis, to classify count stations into groups or clusters of like attributes (ADT).

## PURPOSE

It was the purpose of this research study to determine, through statistical procedure, the feasibility of grouping like traffic count stations with a view towards reducing the total number of stations now being used for estimation of ADT. If grouping is possible, then one or more of the stations could be read on an annual basis as a representative of the other stations in the grouping, which could be read on a more infrequent basis.

## SCOPE

The evaluation included the review of the count stations in relation to location and proximity. The grouped or clustered stations were examined with regard to several factors including route number and area development, both of which have an influence on the amount of traffic utilizing a system. An investigation was also made into the possibility of reducing measurements by computerized clustering of the stations with no regard to location and proximity.

A clustering system crossing functional classes and/or parish lines was ruled out. A review of the results indicated that this method of analysis could not lend any valid interpretations in the determination.

The study was initiated on a limited basis and was not intended to be a complete and detailed statistical study.

## METHODOLOGY

### Grouping of Stations - Statistical Approach

The traffic volume counting programs require sampling to estimate the ADT on various segments of the highway system. Therefore, it is important that this sampling be established so as to be representative of the total polulation. One approach would be to assign like characteristics (ADT, for example) into an identifiable group and then to sample from each of these several groups. The basis of the grouping is to improve the forecasting procedure with minimum resources.

The techniques for grouping can be classified into two broad categories:

1. Empirical (geographic, route, etc.)
2. Statistical (regionalization, multivariable statistical techniques, cluster analysis, etc.)

Rather than discuss each of the techniques available, the one that was selected is briefly discussed here.

Cluster analysis is a multivariate statistical technique employed in classification processing of objects (stations in this case) into optimally homogeneous groups on the basis of similarity among those objects. Data on similarity among the objects may be obtained directly (measured ADT) or subjectively. The method is useful when the number of similarity array is so enormous that the pattern of similarity is not evident from inspection alone. In such cases computerized cluster analysis is applied to construct hierarchical schemes of clustering representations, ranging from one in which each of the n stations is represented as a separate cluster to one in which all n stations are grouped together as a single cluster.

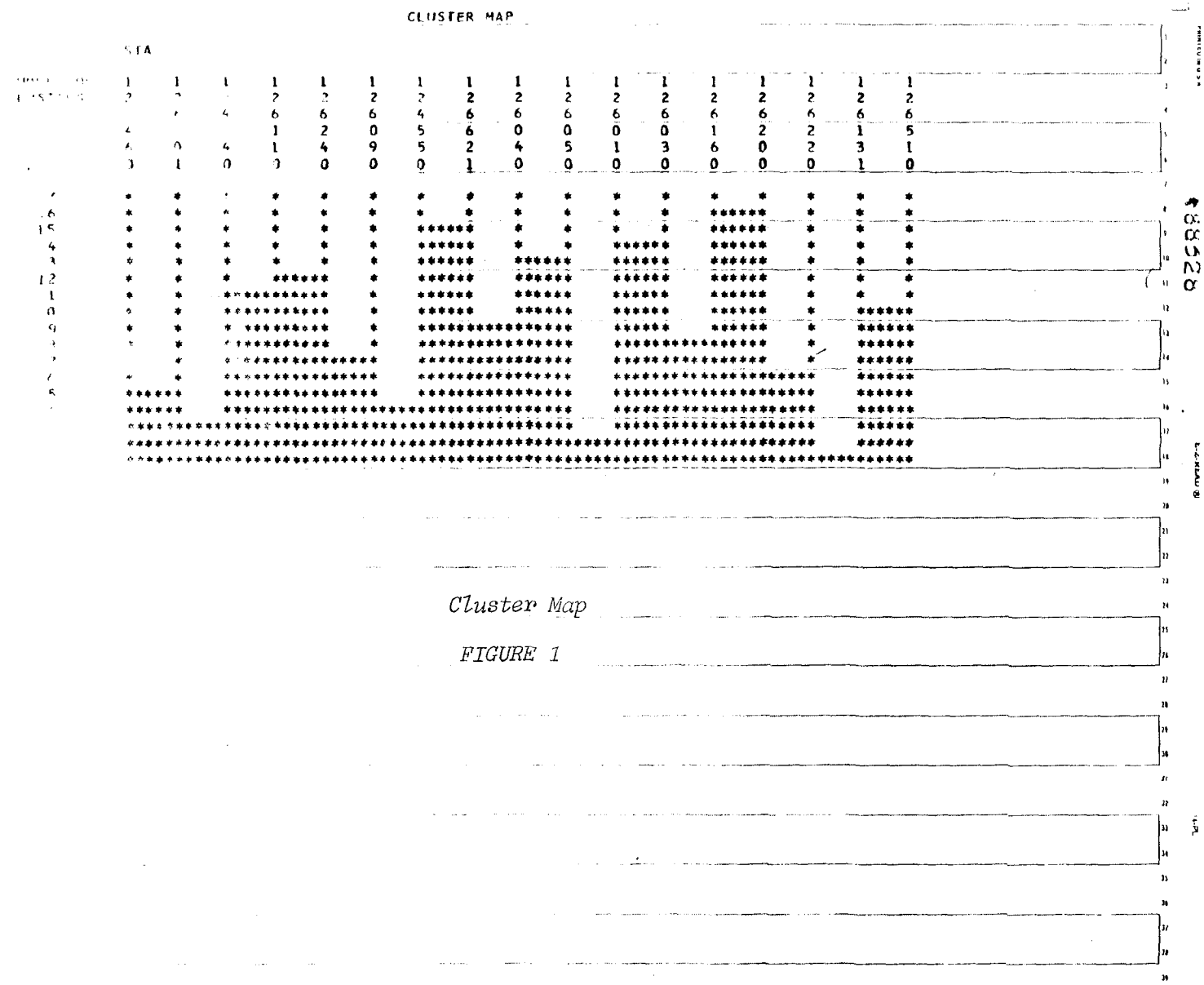
The procedure involved in this research study included the clustering of traffic counts for the three-year period 1977, 1978 and 1979 by highway functional classes 6, 7 and 8 for each individual parish. The Louisiana Department of Transportation and Development designates a highway functional class of 6 to a major arterial, a functional class of 7 to a minor arterial, and a class of 8 to a collector arterial. A review of the number of stations for each functional class in a district was made in order to logically determine the number of clusters to assign the class. The authors, after several different assignments of numbers of clusters, set a cluster number equal to approximately one-half of the number of stations involved. This appeared to satisfy the format in the effort to arrange the counts in a logical manner.

Data Output

The computer program takes into consideration the maximum distance within a cluster and the maximum, average and minimum distances within and between clusters. Count stations are arranged in clusters or groups of comparatively like counts. The clustering program, however, does not monitor the location of the stations, route numbers, proximity of one station to another, etc.

The cluster map in Figure 1 is the graphic production of the cluster analysis of the three-year period 1977, 1978 and 1979. The example in Figure 1 shows seventeen separate clusters for the seventeen stations. At one end of the scale each separate station would be a cluster by itself. At the other end of the scale (bottom) all seventeen stations can be grouped into a single cluster. One can select the best cluster from one to seventeen which would provide the homogeneity desired within each cluster. Thus, if seven clusters are selected, the data in Figure 2 would provide the distribution of data (ADT) within each of the seven clusters shown in Figure 1. Thus, in Figure 1, the first two stations represent a cluster by themselves individually. The third

CLUSTER MAP



*Cluster Map*

*FIGURE 1*

CLUSTER ANALYSIS FOR DIST04 & PAR09 FOR CLASS 6 16:54 MONDAY, AUGUST 4, 1980 29

CLUSTER LISTING

| CLUSTER | STA | YR79 | YR78 | YR77 |
|---|---|---|---|---|
| 1 | 124460 | 6095.0 | 5099.0 | 5494.0 |
| 2 | 126301 | 6804.0 | 6927.0 | 6666.0 |
| 3 | 124540 | 3477.0 | 3364.0 | 2770.0 |
| 3 | 126110 | 3993.0 | 3786.0 | 3723.0 |
| 3 | 126240 | 3362.0 | 3510.0 | 3567.0 |
| 3 | 126090 | 2504.0 | 4187.0 | 3342.0 |
| 3 | MEAN | 3334.0 | 3711.8 | 3350.5 |
| 4 | 124550 | 5412.0 | 4334.0 | 4359.0 |
| 4 | 126621 | 5296.0 | 4650.0 | 4650.0 |
| 4 | 126040 | 4722.0 | 4523.0 | 3570.0 |
| 4 | 126050 | 4450.0 | 4568.0 | 4187.0 |
| 4 | MEAN | 4970.0 | 4518.8 | 4191.5 |
| 5 | 126010 | 1490.0 | 1402.0 | 1245.0 |
| 5 | 126030 | 1103.0 | 1155.0 | 1076.0 |
| 5 | 126160 | 1755.0 | 1698.0 | 2000.0 |
| 5 | 126200 | 1590.0 | 1481.0 | 1700.0 |
| 5 | MEAN | 1484.5 | 1434.0 | 1505.3 |
| 6 | 126220 | 2391.0 | 2231.0 | 2413.0 |
| 7 | 126131 | 9494.0 | 8969.0 | 8204.0 |
| 7 | 126510 | 9498.0 | 8783.0 | 9368.0 |
| 7 | MEAN | 9496.0 | 8876.0 | 8786.0 |

*Cluster Listing - Three-Year Period*

*FIGURE 2*

CLUSTER ANALYSIS FOR DIST04 & PARK FOR CLASS 6 11:34 WEDNESDAY, AUGUST 13, 1980 29

CLUSTER LISTING

| CLUSTER | STA | YR79 | YR78 |
|---|---|---|---|
| 1 | 124460 | 6095.0 | 5999.0 |
| 2 | 124550 | 5412.0 | 4334.0 |
| 2 | 126621 | 5296.0 | 4650.0 |
| 2 | 126040 | 4722.0 | 4523.0 |
| 2 | 126050 | 4450.0 | 4368.0 |
| 2 | MEAN | 4970.0 | 4518.8 |
| 3 | 126301 | 6804.0 | 6927.0 |
| 4 | 126131 | 9494.0 | 8989.0 |
| 4 | 126510 | 9498.0 | 8783.0 |
| 4 | MEAN | 9496.0 | 8886.0 |
| 5 | 124540 | 3477.0 | 3304.0 |
| 5 | 126240 | 3362.0 | 3510.0 |
| 5 | 126110 | 3993.0 | 3786.0 |
| 5 | 126090 | 2504.0 | 4147.0 |
| 5 | MEAN | 3334.0 | 3711.8 |
| 6 | 126010 | 1490.0 | 1402.0 |
| 6 | 126200 | 1590.0 | 1481.0 |
| 6 | 126160 | 1755.0 | 1698.0 |
| 6 | 126030 | 1103.0 | 1155.0 |
| 6 | MEAN | 1484.5 | 1434.0 |
| 7 | 126220 | 2391.0 | 2231.0 |

*Cluster Listing - Two-Year Period*

*FIGURE 3*

CLUSTER ANALYSIS FOR DIST04 & PAR09 FOR CLASS 6 17:02 WEDNESDAY, AUGUST 13, 1980 29

CLUSTER LISTING

| CLUSTER | STA | YR79 |
|---|---|---|
| 1 | 124460 | 6095.0 |
| 1 | 126301 | 6804.0 |
| 1 | MEAN | 6449.5 |
| 2 | 126131 | 9494.0 |
| 2 | 126510 | 9498.0 |
| 2 | MEAN | 9496.0 |
| 3 | 124540 | 3477.0 |
| 3 | 126240 | 3362.0 |
| 3 | 126110 | 3993.0 |
| 3 | MEAN | 3610.7 |
| 4 | 124550 | 5412.0 |
| 4 | 126621 | 5296.0 |
| 4 | MEAN | 5354.0 |
| 5 | 126040 | 4722.0 |
| 5 | 126050 | 4450.0 |
| 5 | MEAN | 4586.0 |
| 6 | 126010 | 1490.0 |
| 6 | 126200 | 1590.0 |
| 6 | 126160 | 1755.0 |
| 6 | 126030 | 1103.0 |
| 6 | MEAN | 1484.5 |
| 7 | 126090 | 2504.0 |
| 7 | 126220 | 2391.0 |
| 7 | MEAN | 2447.5 |

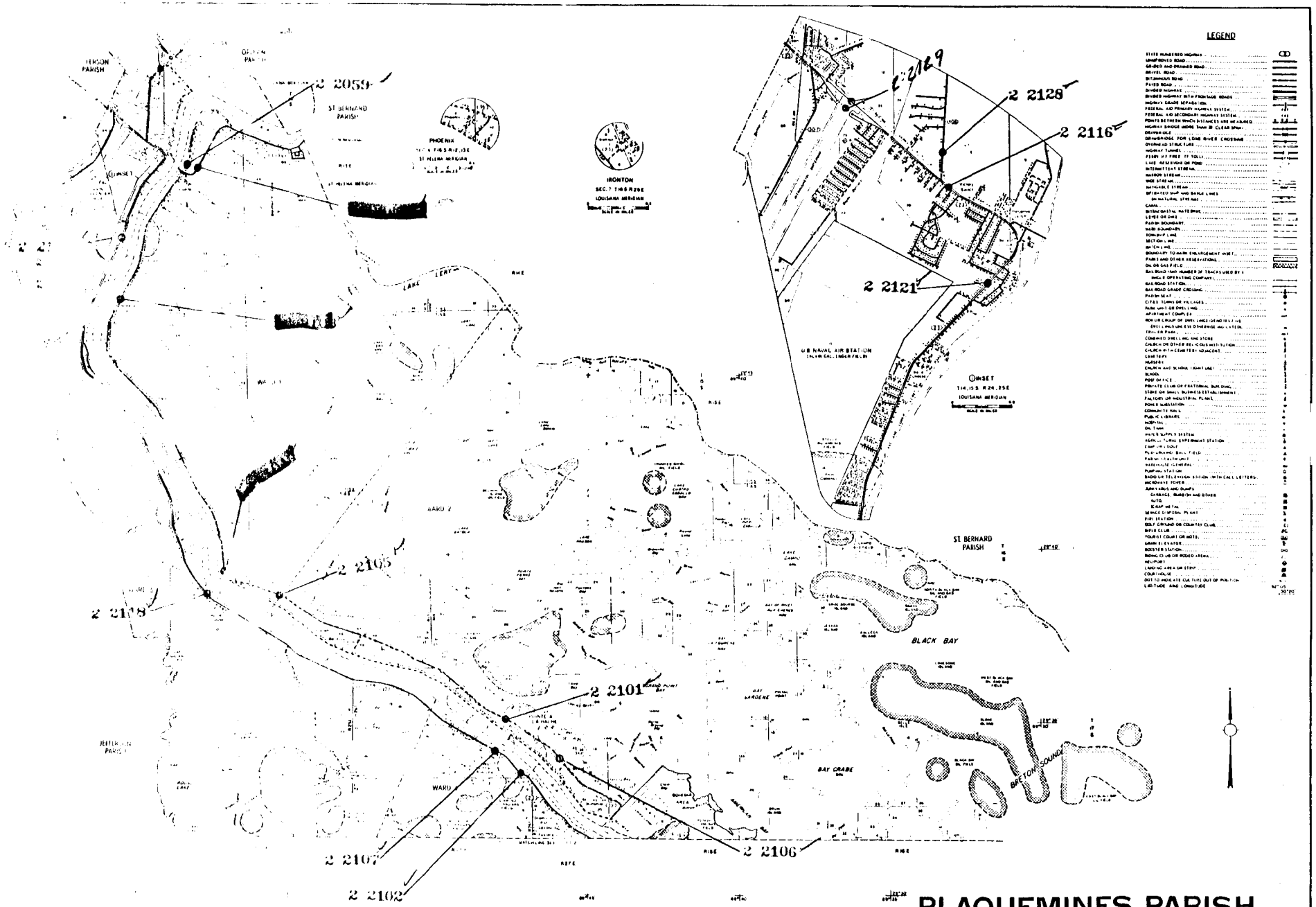
*Cluster Listing - One-Year Period*

*FIGURE 4*

cluster, according to Figure 1, is composed of four stations, 124540, 126110, 126240 and 126090. The seventh cluster likewise has only two stations in it, 126131 and 126510. Figures 3 and 4 are cluster listings for two-year and one-year data, respectively. The graphical presentations of the two-year and one-year data are not shown.

It became apparent that confining a decision to simply examining the cluster arrangement is not a valid method. One must use engineering judgment in employing a manual and subjective examination of the cluster arrangement. There are many variables which must be considered such as route numbers, location, proximity relation of the stations, and the presence or absence of urbanization and/or industrialization.

The parish map in Figure 5 exemplifies the importance and necessity of examining the aforementioned variables in making a decision in clustering or grouping stations. A close review of stations 22120 and 22119, for example, denotes a distance of approximately three (3) miles between the counters with an ADT of 12,926 for station 22120 and an ADT of 8,045 for the other, a difference of 4,881 in ADT, a sizeable variation. A close examination reveals that an oil field exists in the area of station 22120, thereby leading one to believe that the greater influx of traffic is a direct result of the existence of the oil field. The parish maps were instrumental in determining why the flow of traffic was greater on one portion of a route. A review of the map and its details revealed the presence of urban areas, intersecting routes, industrial areas, developed areas, etc., knowledge which is instrumental in the determination and explanation of variations in traffic flow and count.




*Parish Map Denoting Count Stations*

*FIGURE 5*

## DISCUSSION OF RESULTS

The results obtained in the study were formulated in two different phases. The first phase consisted of the computer analysis, while the second phase involved a manual and subjective analysis of the clustered count stations.

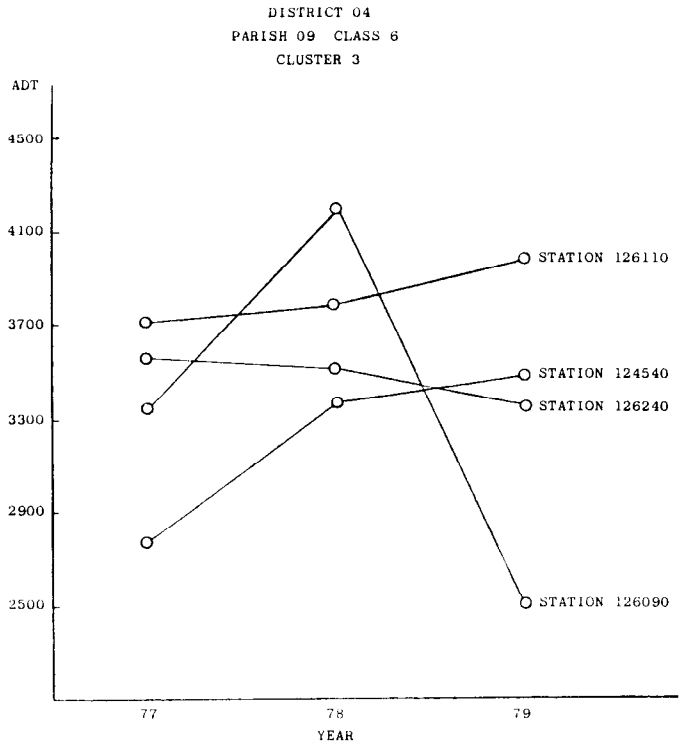
### Phase I: Computerized Cluster Analysis

It was the intent of this first phase of the study to develop clusters and apply the use of these clusters in determining which count stations could be read less frequently. The computerized analysis indicated that a total of 1,246 stations could be read less frequently. Table 1* is a breakdown of the count stations by highway functional classes and districts with the figures in the parentheses denoting the number of stations after reduction. Table 2 is a further breakdown, by parish, of the count stations and reductions based solely on the computerized cluster arrangement.

Graphs were plotted for each cluster of three or more stations for the three-year cluster arrangement. Figures 6, 7 and 8 are graphs exemplifying the trend or lack of trend of the computer-clustered count stations, again with no regard to the geographic location and route number. It is possible to determine from the graphs if a true trend does indeed exist if consideration were given to the above-mentioned variables.

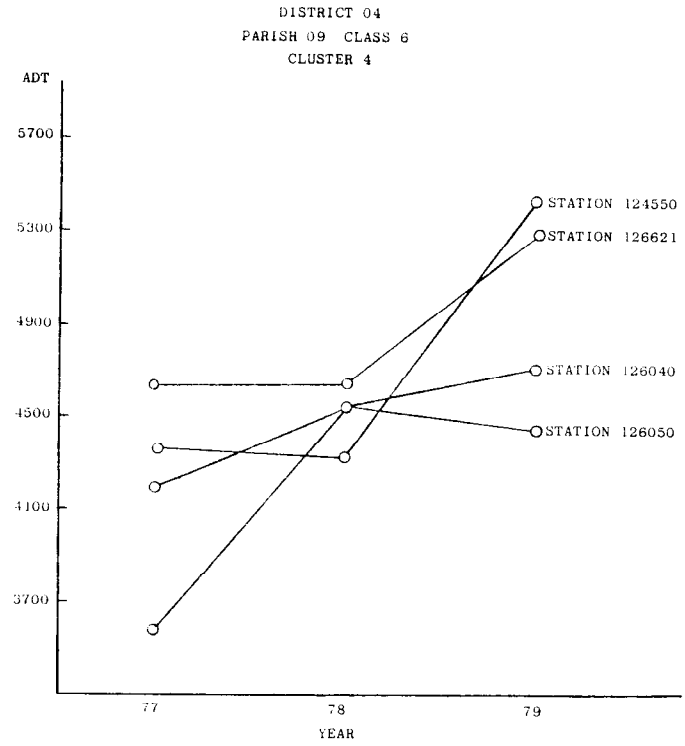
A two-year cluster arrangement consisting of the 1979-1980 period and one-year cluster arrangement involving only the year 1979 were developed to determine if any reasonable correlation could be found in comparison to the three-year arrangement. It was learned that the two- and the one-year arrangements did not exhibit enough, if any, significant information on which to make a sound judgment in combining some stations and/or measuring the same less frequently. Figure 9 is a plotted graph of the two-year cluster arrangement

*All tables may be found in the Appendix, page 21.



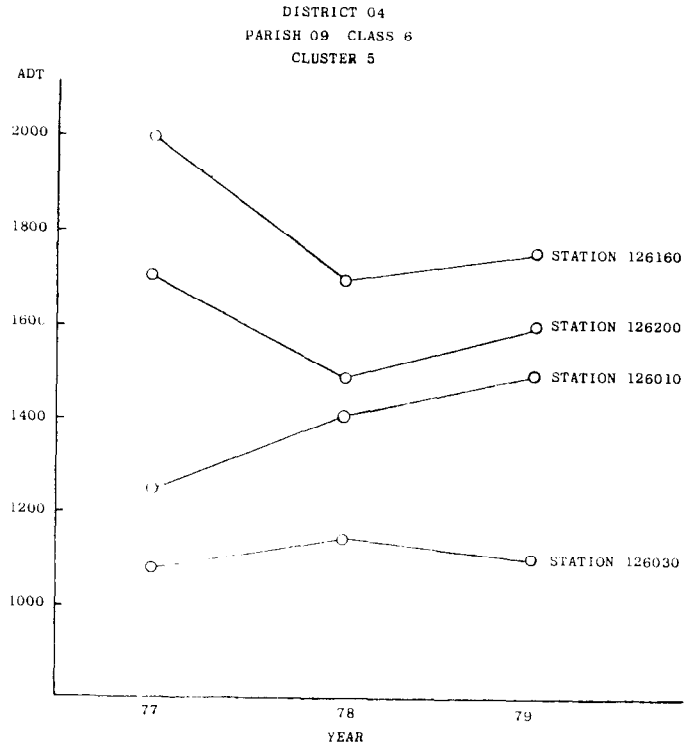

*Graph of Cluster for Three-Year Period*

*FIGURE 6*



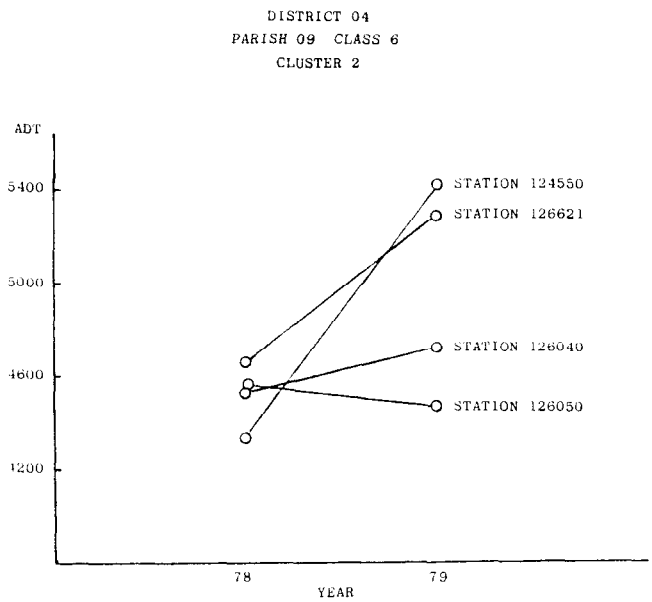

*Graph of Cluster for Three-Year Period*

*FIGURE 7*




*Graph of Cluster for Three-Year Period*

*FIGURE 8*




*Graph of Cluster for Two-Year Period*

*FIGURE 9*

which exemplifies the necessity of employing at least a three-year period of traffic counts in order to examine a cluster arrangement with any reliability and dependence on its validity.

It is of interest to note that by this Phase I method a total of 1,246 or 54% of the 2,290 traffic count stations could be read less frequently as a result of clustering alone with no consideration given to other variables. With this in mind, it was decided to employ a complete and detailed analysis of each clustered arrangement taking into consideration variables such as route number, geographical location, urbanization, industrialization, proximity of stations to one another, etc.

Phase II: Subjective Cluster Analysis

This method involved the use of the parish maps. Figure 5 exemplifies the importance and necessity of meticulously examining the many variables which affect traffic count and the determination of valid clusters for possible reading frequency reduction purposes.

A detailed subjective examination of the cluster arrangements yields a total of 111 stations which could be read less frequently when consideration of the sundry variables is employed. Table 3 is a listing of the count stations by district and highway functional classes, whereas Table 4 is a complete breakdown of the clusters and count stations by individual parishes. Table 5 presents the detailed distribution and a summary of the count stations and reduction by class.

It is of importance that one recognize the tremendous difference in the number of reductions when the sundry variables are considered. Figure 5 is an example of this observation. Station 22103 has an ADT of 1,226 while station 22104 has an ADT of 896, a relatively small difference in the count. The distance between the clustered stations, which are on the same route, is approximately ten (10)

miles. It is readily apparent that one of these two stations could be used to represent the two readings on an annual basis with the other station being read every second or third year.

Additional Analysis of Count Stations and ADT

A program was utilized to generate output of cluster arrangements by combining functional classes as 6-7, 6-8, 7-8 and 6-7-8 for the three-, two- and one-year periods. It was determined that the output did not lend any insight or justification into the possibility of reducing frequency measurements in the state's traffic counter system.

One other possible cross-reference, that of crossing parish lines, with or without integrating class functions, was not utilized. It became apparent that crossing a parish line would not produce any valid cluster arrangements. The diversity of the geography and the intricate highway system of the areas would not lend themselves to positive results.

## SUMMARY AND CONCLUSIONS

The feasibility of reducing the number of count stations and/or the number of measurements has been verified in this study.

The following conclusions are a result of this study.

1. A review of the computerized cluster analysis indicates that a total of 1,246 or 54% of the count stations could be read less frequently based on this objective but insensitive analysis.

2. The subjective analysis of the cluster arrangement indicates that a total of 111 count stations could be read on a more infrequent basis.

3. A cluster analysis technique and a resulting revised count system can afford the state a better understanding of its system and lead to the development of an improved method of predicting traffic.

4. An in-depth study, one considering the various variables which influence ADT, could lead to a greater insight in grouping count stations for possible measurement reduction.

## RECOMMENDATIONS

A review of the preceding summary and conclusions results in the following recommendations:

1. Traffic counters be measured on a cluster basis in order to read less frequently lll count stations.

2. Additional study be made to determine if the clusters established in this study are statistically different and if stations within each cluster are statistically similar.

3. A further and more detailed study be made of the traffic count system with emphasis being placed on the various variables which influence the traffic count.

## REFERENCES

1. Louisiana Department of Highways, Traffic and Planning Section, "Highway Needs and Priorities," March, 1980.

# APPENDIX

TABLE 1

NUMBER OF TRAFFIC COUNT STATIONS BY DISTRICT
AND FUNCTIONAL CLASS BEFORE AND AFTER(NO.)
COMPUTERIZED REDUCTION

| DISTRICT | CLASS 6 | CLASS 7 | CLASS 8 |
|---|---|---|---|
| 02 | 23(16) | 17(10) | 48(33) |
| 03 | 38(16) | 246(117) | 361(174) |
| 04 | 78(35) | 166(71) | 290(119) |
| 05 | 48(24) | 180(82) | 251(119) |
| 07 | 52(28) | 192(64) | 266(123) |
| 08 | 47(29) | 169(71) | 282(129) |
| 58 | 17(10) | 114(53) | 137(66) |
| 61 | 44(16) | 223(99) | 355(158) |
| 62 | 63(28) | 200(75) | 298(123) |
| TOTALS | 410(207) | 1529(692) | 2290(1044) |

TABLE 2

CLUSTERS AND STATIONS BY FUNCTIONAL CLASSES -
(NO.) DENOTES STATIONS AFTER
COMPUTERIZED REDUCTION

| PARISH NO. | NAME | CLASS 6 NO. STATIONS | CLASS 6 NO. CLUSTERS | CLASS 7 NO. STATIONS | CLASS 7 NO. CLUSTERS | CLASS 8 NO. STATIONS | CLASS 8 NO. CLUSTERS |
|---|---|---|---|---|---|---|---|
| | | | DISTRICT 02 | | | | |
| 38 | PLAQUEMINES | 17(13) | 11 | - | - | - | - |
| 45 | ST. CHARLES | 6(5) | 5 | 17(10) | 10 | 8(5) | 5 |
| | | | DISTRICT 03 | | | | |
| 23 | IBERIA | - | - | 25(12) | 12 | - | - |
| 28 | LAFAYETTE | - | - | 30(15) | 15 | 7(3) | 3 |
| 29 | LAFOURCHE | 11(6) | 4 | 34(17) | 17 | 8(4) | 4 |
| 49 | ST. LANDRY | 15(8) | 6 | 62(31) | 31 | 20(10) | 10 |
| 50 | ST. MARTIN | - | - | 35(15) | 17 | 16(8) | 8 |
| 51 | ST. MARY | - | - | 16(8) | 8 | 5(3) | 4 |
| 55 | TERREBONNE | - | - | 23(8) | 11 | 9(5) | 4 |
| 57 | VERMILLION | 12(5) | 5 | 23(11) | 11 | 10(5) | 5 |
| | | | DISTRICT 04 | | | | |
| 07 | BIENVILLE | - | - | 57(16) | 28 | - | - |
| 08 | BOSSIER | 15(6) | 6 | 31(11) | 15 | - | - |
| 09 | CADDO | 17(7) | 7 | 23(8) | 11 | 13(6) | 6 |
| 14 | CLAIBORNE | 7(2) | 2 | 24(8) | 12 | 6(3) | 3 |
| 16 | DESOTO | 8(5) | 5 | 21(10) | 10 | - | - |
| 41 | RED RIVER | 18(6) | 6 | 8(4) | 4 | 7(4) | 3 |
| 60 | WEBSTER | 13(9) | 8 | 22(11) | 11 | - | - |

TABLE 2 (CONTINUED)

CLUSTERS AND STATIONS BY FUNCTIONAL CLASSES -
(NO.) DENOTES STATIONS AFTER
COMPUTERIZED REDUCTION

| PARISH NO. | NAME | CLASS 6 NO. STATIONS | CLASS 6 NO. CLUSTERS | CLASS 7 NO. STATIONS | CLASS 7 NO. CLUSTERS | CLASS 8 NO. STATIONS | CLASS 8 NO. CLUSTERS |
|---|---|---|---|---|---|---|---|
| | | | DISTRICT 05 | | | | |
| 18 | E. CARROLL | - | - | 6(3) | 3 | - | - |
| 25 | JACKSON | - | - | 16(8) | 8 | - | - |
| 31 | LINCOLN | - | - | 25(12) | 12 | 6(4) | 3 |
| 33 | MADISON | - | - | 12(6) | 6 | - | - |
| 34 | MOREHOUSE | 9(6) | 5 | 22(10) | 11 | - | - |
| 37 | OUACHITA | - | - | 25(12) | 12 | 8(5) | 4 |
| 42 | RICHLAND | 6(3) | 2 | 32(13) | 16 | 9(4) | 4 |
| 56 | UNION | 11(6) | 6 | 31(13) | 15 | - | - |
| 62 | W. CARROLL | 22(9) | 9 | 11(5) | 5 | - | - |
| | | | DISTRICT 07 | | | | |
| 01 | ACADIA | 8(5) | 5 | 46(20) | 23 | 9(4) | 4 |
| 02 | ALLEN | 6(3) | 2 | 19(9) | 9 | - | - |
| 06 | BEAUREGARD | 12(7) | 7 | 23(10) | 11 | - | - |
| 10 | CALCASIEU | 6(6) | 6 | 40(20) | 20 | 7(3) | 3 |
| 12 | CAMERON | - | - | 21(10) | 10 | - | - |
| 20 | EVANGELINE | 12(4) | 4 | 26(7) | 13 | - | - |
| 27 | JEFF DAVIS | 8(3) | 3 | 17(8) | 8 | 8(4) | 4 |
| | | | DISTRICT 08 | | | | |
| 05 | AVOYELLES | 14(9) | 9 | 33(14) | 17 | 25(8) | 8 |
| 22 | GRANT | 8(5) | 5 | 27(10) | 10 | - | - |
| 35 | NATCHITOCHES | 18(11) | 11 | 25(10) | 10 | 6(4) | 4 |
| 40 | RAPIDES | - | - | 29(11) | 12 | 21(10) | 11 |
| 43 | SABINE | 7(4) | 5 | 20(8) | 8 | 6(4) | 4 |
| 58 | VERNON | - | - | 24(13) | 13 | 8(3) | 3 |
| 64 | WINN | - | - | 11(5) | 6 | - | - |

TABLE 2 (CONTINUED)

CLUSTERS AND STATIONS BY FUNCTIONAL CLASSES -
(NO.) DENOTES STATIONS AFTER
COMPUTERIZED REDUCTION

| PARISH NO. | NAME | CLASS 6 NO. STATIONS | CLASS 6 NO. CLUSTERS | CLASS 7 NO. STATIONS | CLASS 7 NO. CLUSTERS | CLASS 8 NO. STATIONS | CLASS 8 NO. CLUSTERS |
|---|---|---|---|---|---|---|---|
| | | | | DISTRICT 58 | | | |
| 11 | CALDWELL | - | - | 13(6) | 6 | - | - |
| 13 | CATAHOULA | - | - | 21(10) | 10 | - | - |
| 15 | CONCORDIA | - | - | 16(8) | 8 | - | - |
| 21 | FRANKLIN | - | - | 21(9) | 10 | - | - |
| 30 | LASALLE | 9(6) | 6 | 23(10) | 11 | 6(3) | 3 |
| 54 | TENSAS | 8(4) | 5 | 20(10) | 10 | - | - |
| | | | | DISTRICT 61 | | | |
| 03 | ASCENSION | 14(11) | 11 | 37(16) | 18 | 18(9) | 9 |
| 04 | ASSUMPTION | - | - | 21(10) | 10 | 9(3) | 4 |
| 17 | E. BATON ROUGE | - | - | 32(15) | 16 | 9(5) | 4 |
| 19 | E. FELICIANA | 9(3) | 3 | 34(15) | 17 | 8(4) | 4 |
| 24 | IBERVILLE | 6(4) | 4 | 33(13) | 16 | 15(7) | 7 |
| 39 | POINT COUPEE | 15(9) | 9 | 27(11) | 13 | 11(5) | 5 |
| 47 | ST. JAMES | - | - | 15(6) | 7 | 6(4) | 3 |
| 61 | W. BATON ROUGE | - | - | 12(7) | 6 | 12(6) | 6 |
| 63 | W. FELICIANA | - | - | 12(6) | 6 | - | - |
| | | | | DISTRICT 62 | | | |
| 32 | LIVINGSTON | 6(4) | 4 | 52(9) | 6 | - | - |
| 46 | ST. HELENA | 6(3) | 2 | 23(8) | 11 | - | - |
| 52 | ST. TAMMANY | 24(10) | 10 | 41(19) | 20 | 10(7) | 5 |
| 53 | TANGIPAHOA | 6(4) | 4 | 59(28) | 29 | 19(10) | 9 |
| 59 | WASHINGTON | 21(7) | 8 | 25(11) | 12 | 6(3) | 3 |

TABLE 3

NUMBER OF TRAFFIC COUNT STATIONS BY DISTRICT
AND BY CLASS BEFORE AND AFTER
SUBJECTIVE CLUSTERING

| DISTRICT NO. | CLASS 6 | CLASS 7 | CLASS 8 | TOTALS |
|---|---|---|---|---|
| 02 | 23(21) | 17(16) | 8(7) | 48(44) |
| 03 | 38(34) | 248(239) | 75(74) | 361(347) |
| 04 | 78(70) | 186(176) | 26(25) | 290(270) |
| 05 | 48(44) | 180(167) | 23(23) | 251(234) |
| 07 | 52(48) | 192(186) | 24(24) | 268(258) |
| 08 | 47(47) | 169(163) | 66(64) | 282(274) |
| 58 | 17(17) | 114(108) | 6(6) | 137(131) |
| 61 | 44(42) | 223(220) | 88(85) | 355(347) |
| 62 | 63(52) | 200(185) | 35(35) | 298(272) |
| TOTALS | 410(375) | 1529(1460) | 351(344) | 2290(2179) |

TABLE 4

CLUSTERS AND STATIONS BY FUNCTIONAL CLASSES -
(NO.) DENOTES STATIONS AFTER
SUBJECTIVE REDUCTION

| PARISH NO. | PARISH NAME | CLASS 6 NO. STATIONS | CLASS 6 NO. CLUSTERS | CLASS 7 NO. STATIONS | CLASS 7 NO. CLUSTERS | CLASS 8 NO. STATIONS | CLASS 8 NO. CLUSTERS |
|---|---|---|---|---|---|---|---|
| | | | DISTRICT 02 | | | | |
| 38 | PLAQUEMINES | 17(16) | 11 | - | - | - | - |
| 45 | ST. CHARLES | 6(5) | 5 | 17(16) | 10 | 8(7) | 5 |
| | | | DISTRICT 03 | | | | |
| 23 | IBERIA | - | - | 25(24) | 12 | - | - |
| 28 | LAFAYETTE | - | - | 30(29) | 15 | 7 | 3 |
| 29 | LAFOURCHE | 11(10) | 4 | 34(32) | 17 | 8 | 4 |
| 49 | ST. LANDRY | 15(14) | 6 | 62 | 31 | 20 | 10 |
| 50 | ST. MARTIN | - | - | 35(34) | 17 | 16 | 8 |
| 51 | ST. MARY | - | - | 16(15) | 8 | 5 | 4 |
| 55 | TERREBONNE | - | - | 23 | 11 | 9(8) | 4 |
| 57 | VERMILLION | 12(10) | 5 | 23(20) | 11 | 10 | 5 |
| | | | DISTRICT 04 | | | | |
| 07 | BIENVILLE | - | - | 57(52) | 28 | - | - |
| 08 | BOSSIER | 15(14) | 6 | 31(29) | 15 | - | - |
| 09 | CADDO | 17(14) | 7 | 23(22) | 11 | 13 | 6 |
| 14 | CLAIBORNE | 7 | 2 | 24 | 12 | 6 | 3 |
| 16 | DESOTO | 8(7) | 5 | 21(20) | 10 | - | - |
| 41 | RED RIVER | 18(16) | 6 | 8(7) | 4 | 7 | 3 |
| 60 | WEBSTER | 13(12) | 8 | 22 | 11 | - | - |

TABLE 4 (CONTINUED)

CLUSTERS AND STATIONS BY FUNCTIONAL CLASSES -
(NO.) DENOTES STATIONS AFTER
SUBJECTIVE REDUCTION

| PARISH NO. | PARISH NAME | CLASS 6 NO. STATIONS | CLASS 6 NO. CLUSTERS | CLASS 7 NO. STATIONS | CLASS 7 NO. CLUSTERS | CLASS 8 NO. STATIONS | CLASS 8 NO. CLUSTERS |
|---|---|---|---|---|---|---|---|
| | | | DISTRICT 05 | | | | |
| 18 | E. CARROLL | - | - | 6(4) | 3 | - | - |
| 25 | JACKSON | - | - | 16(15) | 8 | - | - |
| 31 | LINCOLN | - | - | 25(24) | 12 | 6 | 3 |
| 33 | MADISON | - | - | 12(10) | 6 | - | - |
| 34 | MOREHOUSE | 9 | 5 | 22(20) | 11 | - | - |
| 37 | OUACHITA | - | - | 25(23) | 12 | 8 | 4 |
| 42 | RICHLAND | 6 | 2 | 32(30) | 16 | 9 | 4 |
| 56 | UNION | 11(10) | 6 | 31(30) | 15 | - | - |
| 62 | W. CARROLL | 22(19) | 9 | 11 | 5 | - | - |
| | | | DISTRICT 07 | | | | |
| 01 | ACADIA | 8(7) | 5 | 46(45) | 23 | 9 | 4 |
| 02 | ALLEN | 6(5) | 2 | 19 | 9 | - | - |
| 06 | BEAUREGARD | 12 | 7 | 23 | 11 | - | - |
| 10 | CALCASIEU | 6 | 6 | 40 | 20 | 7 | 3 |
| 12 | CAMERON | - | - | 21 | 10 | - | - |
| 20 | EVANGELINE | 12(11) | 4 | 26(23) | 13 | - | - |
| 27 | JEFF DAVIS | 8(7) | 3 | 17(15) | 8 | - | - |
| | | | DISTRICT 08 | | | | |
| 05 | AVOYELLES | 14 | 9 | 33(32) | 17 | 25(24) | 8 |
| 22 | GRANT | 8 | 5 | 27(26) | 10 | - | - |
| 35 | NATCHITOCHES | 18 | 11 | 25(24) | 10 | 6 | 4 |
| 40 | RAPIDES | - | - | 29 | 12 | 21 | 11 |
| 43 | SABINE | 7 | 5 | 20(18) | 8 | 6 | 4 |
| 58 | VERNON | - | - | 24 | 13 | 8(7) | 3 |
| 64 | WINN | - | - | 11(10) | 6 | - | - |

TABLE 4 (CONTINUED)

CLUSTERS AND STATIONS BY FUNCTIONAL CLASSES -
(NO.) DENOTES STATIONS AFTER
SUBJECTIVE REDUCTION

| PARISH NO. | PARISH NAME | CLASS 6 NO. STATIONS | CLASS 6 NO. CLUSTERS | CLASS 7 NO. STATIONS | CLASS 7 NO. CLUSTERS | CLASS 8 NO. STATIONS | CLASS 8 NO. CLUSTERS |
|---|---|---|---|---|---|---|---|
| | | | DISTRICT 58 | | | | |
| 11 | CALDWELL | - | - | 13(12) | 6 | - | - |
| 13 | CATAHOULA | - | - | 21(20) | 10 | - | - |
| 15 | CONCORDIA | - | - | 16 | 8 | - | - |
| 21 | FRANKLIN | - | - | 21 | 10 | - | - |
| 30 | LASALLE | 9 | 6 | 23(22) | 11 | 6 | 3 |
| 54 | TENSAS | 8 | 5 | 20(17) | 10 | - | - |
| | | | DISTRICT 61 | | | | |
| 03 | ASCENSION | 14(13) | 11 | 37(35) | 18 | 18 | 9 |
| 04 | ASSUMPTION | - | - | 21 | 0 | 9(8) | 4 |
| 17 | E. BATON ROUGE | - | - | 32 | 16 | 9(8) | 4 |
| 19 | E. FELICIANA | 9(8) | 3 | 34 | 17 | 8 | 4 |
| 24 | IBERVILLE | 6 | 4 | 33(32) | 16 | 15 | 7 |
| 39 | POINT COUPEE | 15 | 9 | 27 | 13 | 11(10) | 5 |
| 47 | ST. JAMES | - | - | 15 | 7 | 6 | 3 |
| 61 | W. BATON ROUGE | - | - | 12 | 6 | 12 | 6 |
| 63 | W. FELICIANA | - | - | 12 | 6 | - | - |
| | | | DISTRICT 62 | | | | |
| 32 | LIVINGSTON | 6(5) | 4 | 52(44) | 6 | - | - |
| 46 | ST. HELENA | 6(4) | 2 | 23(19) | 11 | - | - |
| 52 | ST. TAMMANY | 24(19) | 10 | 41(39) | 20 | 10 | 5 |
| 53 | TANGIPAHOA | 6 | 4 | 59 | 29 | 19 | 9 |
| 59 | WASHINGTON | 21(18) | 8 | 25(24) | 12 | 6 | 3 |

TABLE 5

DISTRIBUTION AND SUMMARY OF COUNT STATIONS REDUCTIONS BY DISTRICT AND CLASS AFTER SUBJECTIVE CLUSTERING

| DISTRICT NO. | NO. OF PARISHES | NO. OF PARISHES WITH CLASS | | | NO. OF PARISHES WITH REDUCTIONS BY CLASS | | | NO. OF PARISHES WITHOUT REDUCTIONS | NO. OF REDUCTIONS BY CLASS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 7 | 8 | 6 | 7 | 8 | | 6 | 7 | 8 |
| 02 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 1 | 1 |
| 03 | 8 | 3 | 8 | 7 | 3 | 6 | 1 | 0 | 4 | 9 | 1 |
| 04 | 7 | 6 | 7 | 3 | 5 | 5 | 0 | 1 | 8 | 10 | 0 |
| 05 | 9 | 4 | 9 | 3 | 2 | 8 | 0 | 0 | 4 | 13 | 0 |
| 07 | 7 | 6 | 7 | 3 | 4 | 3 | 0 | 3 | 4 | 6 | 0 |
| 08 | 7 | 4 | 7 | 5 | 0 | 5 | 2 | 1 | 0 | 6 | 2 |
| 58 | 6 | 2 | 6 | 1 | 0 | 4 | 0 | 2 | 0 | 6 | 0 |
| 61 | 9 | 4 | 9 | 8 | 2 | 2 | 3 | 3 | 2 | 3 | 3 |
| 62 | 5 | 5 | 5 | 3 | 4 | 4 | 0 | 1 | 11 | 15 | 0 |
| TOTALS | 60 | 36 | 59 | 34 | 21 | 38 | 8 | 12 | 35 | 69 | 7 |