MICHIGAN

CRIME AND ARREST PATTERNS

CHIGAN
RIMINAL JUSTICE PROGRAMS
ANALYSIS CENTER

M I C H I G A N

C R I M E A N D A R R E S T

P A T T E R N S

1972-1977

STATE OF MICHIGAN
OFFICE OF CRIMINAL JUSTICE PROGRAMS
STATISTICAL ANALYSIS CENTER

SEPTEMBER, 1978

PREFACE

This crime and arrest analysis was produced by the Statistical Analysis Center (SAC), Office of Criminal Justice Programs. SAC was created in 1977 pursuant to the state's Comprehensive Data Systems Plan. The basic missions of SAC are to provide coordination for Michigan's Criminal Justice data systems, conduct research when needed and, as with this report, provide criminal justice data analysis to decision makers on both the state and local level.

This report is the first of a series of crime analyses which SAC will produce on a regular basis. The content of subsequent reports will depend on requests received and on state planning needs.

This first analysis is an examination of statewide crime and arrest patterns, and is intended to supplement the more detailed analysis of crimes, clearances, arrests and dispositions by city, township, village and sheriff, which is traditionally produced by the Department of State Police. Of more than twenty-five crime categories, this report considers five of the seven index crimes; two summary groups, juvenile and adult, are dealt with; clearances are not emphasized and dispositions are not used in the report. Of the hundreds of jurisdictions and aggregates of jurisdictions, this report concentrates on twenty-four groups: counties over 100,000 in population (there are 17), four smaller counties chosen at random, the sum of the seventeen large counties, the sum of the other sixty-six smaller counties, and the sum of all jurisdictions, (i.e. the state total). Individual jurisdictions within counties are not examined. The particular strategy of studying seventeen counties was selected because these counties represent almost ninety percent of the index crime volume in Michigan.

Crime patterns were selected as the object of the study because the findings have a direct bearing on criminal justice planning. They should suggest important questions to be looked at by local planners and should influence the allocation of state and local resources. The geographic placement of crime should determine where the greater amounts of LEAA, state and local funds are spent; the crime types representing the greatest problem should be the target of prevention, enforcement, and adjudication efforts.

The study shows overall that crime patterns and relationships in the larger counties are different from those in the smaller ones. It also shows that the number of arrests in relation to crime is decreasing in some counties; there are also differences in the arrest patterns of juveniles and adults. The study raises some questions and suggests issues that will be looked at in more detail by SAC in following reports and that should be studied by local planners.

It is hoped that the report is useful and that the reader will comment to SAC regarding needs that should be addressed in future studies of this type.

ABSTRACT

Number of reported offenses for the five most numerous index crimes: burglary, larceny, robbery, aggravated assault and motor vehicle theft were analyzed along with corresponding juvenile and adult arrest data. For each data set three issues were explored: (1) What has the trend been from 1972 to 1977 for crime rates and for arrest rates? (2) How similar are the counties in their patterns of crime and arrest data? (3) How are the individual index crime categories distributed in terms of percentages of all index offenses and arrests?

Analysis of index offenses found that crime rate is now on the decrease. Relative frequencies of various crime categories follow a similar pattern for most counties; Wayne County is an exception.

During the past six years juvenile arrest rates have decreased while adult arrest rates have increased. Adult arrests were markedly higher than juvenile arrests for crime against persons.

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ANALYSIS OF CRIME AND ARREST IN MICHIGAN

GLOSSARY

Abbreviation	County
Bay	Bay
Mon	Monroe
StC	St. Clair
Cal	Calhoun
Ott	Ottawa
Jac	Jackson
Mus	Muskegon
Ber	Berrien
Kal	Kalamazoo
Sag	Saginaw
Was	Washtenaw
Ing	Ingham
Ken	Kent
Gen	Genesee
Mac	Macomb
Oak	Oakland
Way	Wayne
83	State
17	Counties over 100,000 population
66	Counties under 100,000 population
Alg	Alger
Mas	Mason
Van	Van Buren
Wex	Wexford

ANALYSIS OF CRIME AND ARRESTS IN

MICHIGAN 1972-1977

INTRODUCTION

An accurate, detailed description of crime in Michigan should be useful to planners in law enforcement and in government. It can document whether the crime rate is rising, falling or steady; what crimes are increasing or decreasing; where crimes are occurring; how many arrests are made; and so forth. This knowledge can help in planning the allocation of resources for crime reduction and law enforcement.

Still, descriptive analysis has one important limitation: it does not address the question, "Why?" The goal of this report is to seek out patterns of crime and arrest so that priority problems can be identified. Our efforts will focus on planning at the state level--identifying areas where crime levels are highest and where crime is increasing. We hope that information at this global level will aid regional and local decision makers in focussing on their more detailed analyses of local problems. Since the relationships among counties receive emphasis in this report, it will be possible for counties to identify which other counties have problems common to theirs. Important questions will be raised about the <u>why</u> of crime, but answers to these questions must await further research and documentation from local jurisdictions.

The analysis is based on UCR (Uniform Crime Report) data supplied by the Department of State Police. Crime data have been viewed with skepticism by many people in the field of criminal justice. Even though uniform reporting procedures have been adopted in Michigan, the number and diversity of reporting officers has led some critics to question whether reporting is as accurate or uniform as it should be.

What might be called the "political" factor is a second potential source of error in reporting crime statistics. When criminal justice systems operate, as they do, in the context of city, county, and state governments, political considerations are unavoidable. Since the actual influence of political factors on crime reporting has not been measured, the more jaded critic is free to believe that reporting is self-serving.

Still another factor is the incidence of unreported crime. The true measure of crime will be underestimated to the extent that offenses occur and fail to be recorded.

Despite these complications we have found remarkable consistencies in the patterns revealed by data from the Uniform Crime Report system. The emergence of systematic patterns and trends in the data inspires a sense of guarded confidence in the underlying reports.

RATIONALE

In the early stages of the analysis the 17 Michigan counties over 100,000 in population were grouped as one block and the remaining 66 counties were grouped as a second block for separate study. Since the 17 most populous counties together account for over 75% of the state population and even more of the reported offenses (82% in 1977), it seemed efficient to search for typical patterns and trends that would represent the block of large, urbanized counties as a whole. Attractive as this approach was, it soon became apparent that too much variation existed from county to county for this strategy to succeed.

Measures of crime rate for aggravated assault illustrate the wide variations encountered in the data. In Figure 1 the number of aggravated assaults per

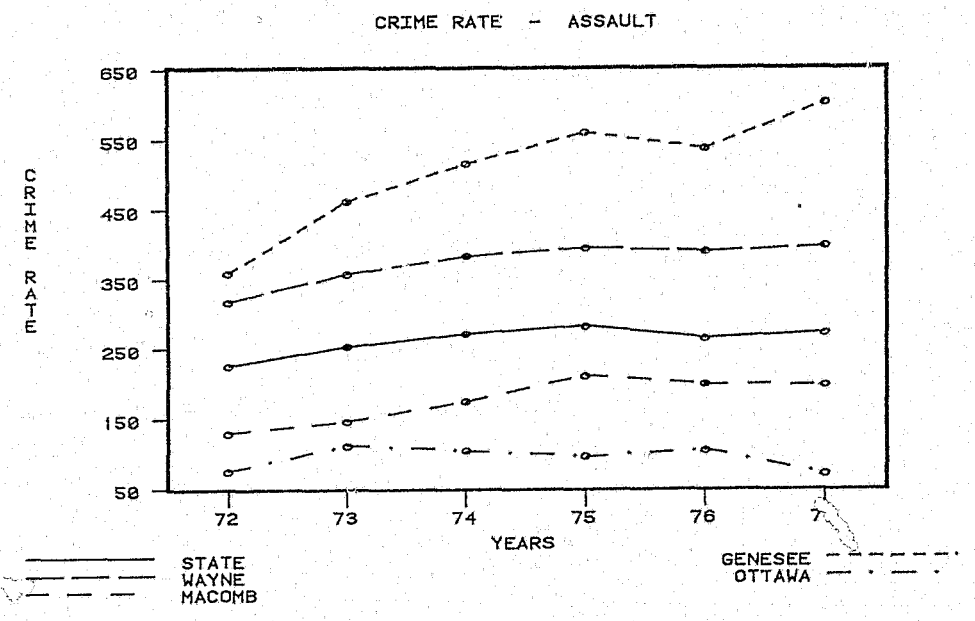


Figure 1. Crime rates for aggravated assault in the State and four large counties from 1972-1977.

100,000 population are plotted for four counties, and for the state as a whole, over a six-year period. The rate of aggravated assault for Genesee County is five times that for Ottawa County, even though both counties are among the 17 most populous. When two of the largest counties, Wayne and Macomb, both with over 600,000 population, are considered, the rates still show substantial differences. It was this kind of phenomenon that led us to look for methods of clustering counties according to similarities in crime rate, arrest and clearance measures.

Relatively new but powerful methods of analysis to accomplish clustering are available. These methods are referred to as "multidimensional scaling" and "hierarchical clustering".

The end results of these scaling procedures are pictorial representations of the counties in such a way that the distances between the counties in the picture are proportional to the similarities of the counties in their crime rates, arrest rates, or whatever measure was used in the analysis.

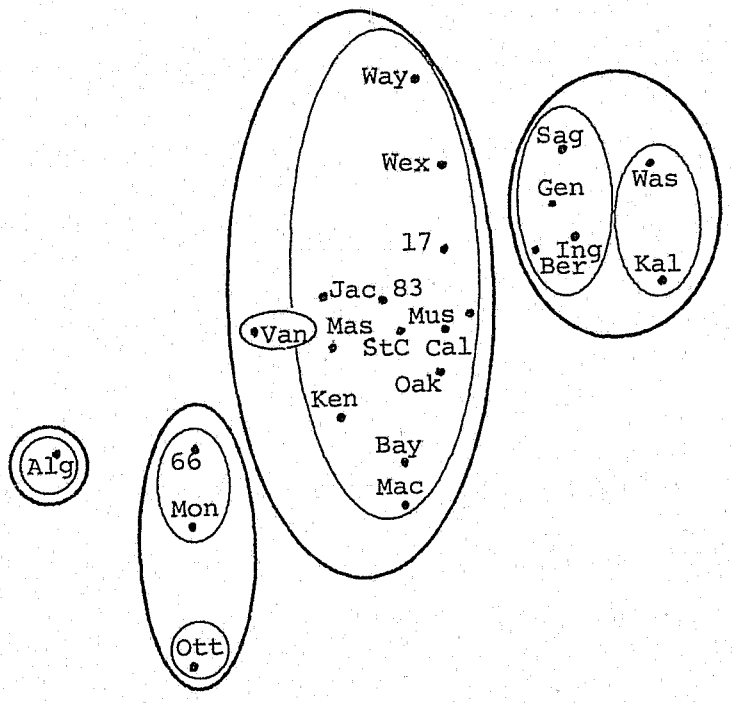


Figure 2. Counties clustered according to similarity in crime rates for burglary and larceny.

The term "proximity analysis" would be appropriate here. Figure 2 shows the results of applying scaling and clustering procedures to burglary and larceny crime data. (A glossary of abbreviations of county names follows the Table of Contents.)

The diagram identifies four major clusters of counties:

I	II	III		IV
Alger	66 Small	Van Buren	St. Clair	Saginaw
	Monroe	Wayne	Calhoun	Genesee
	Ottawa	Wexford	Muskegon	Berrien
		17 Large	Oakland	Washtenaw
		83 State	Kent	Ingham
		Jackson	Bay	Kalamazoo
		Mason	Macomb	

Counties grouped within the four major clusters show even closer levels of similarity. The diagram can be interpreted by referring back to the original data for crime rates in these crime categories. Such an examination reveals that counties towards the left have reported low rates of larceny and counties towards the right have had higher rates. Further, counties towards the top of the diagram had higher reported rates for burglary than counties towards the bottom. This kind of analysis emphasizes relationships among counties per se; consideration of absolute numbers or rates is secondary, although these data are included in Appendix A.

Interpretation of these diagrams can be likened to interpreting a regression line. For example, if police department expenditure is plotted as a function of number of police officers, a clear relationship is revealed, as shown in Figure 3. Even though the relationship isn't perfect, larger departments tend to have higher expenditures than smaller ones. Just as the regression

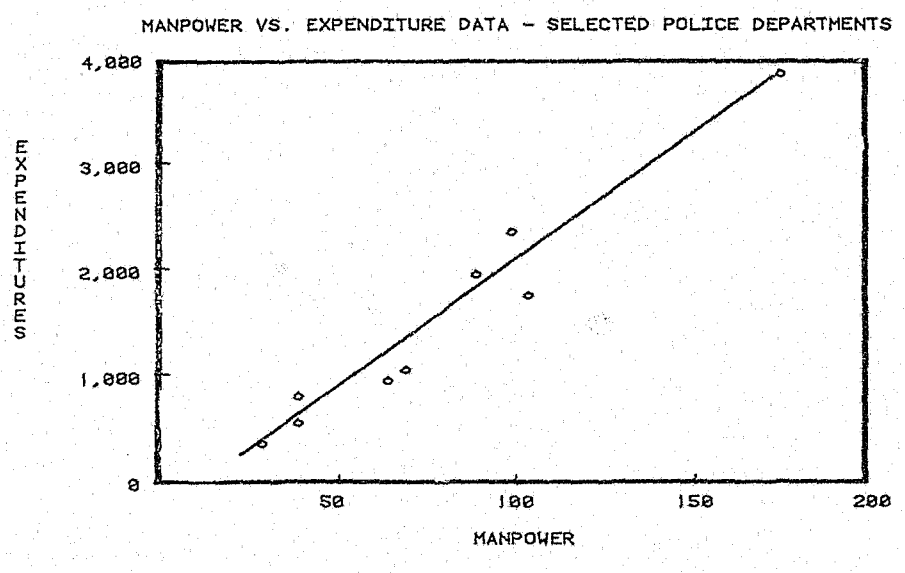


Figure 3. Regression line relating law enforcement expenditures and manpower.

line summarizes and "idealizes" the connection between manpower and expenditure, cluster diagrams reveal the underlying relationships among counties. Every county can't be exactly pinpointed by distance from every other county simultaneously, but the clusters accurately show the underlying structure in the data. The actual measures of error produced as part of the scaling analysis were acceptably small for all of the diagrams presented in this report.

MEASURES ANALYZED

The present analysis focussed on 21 of the 83 counties in Michigan and on three aggregate groups: the 83-county state total, the 17 largest counties, and

the 66 remaining small counties. The 21 individual counties are made up from the 17 counties with over 100,000 population and an additional four counties that were selected randomly from the remaining 66. The counties and their populations for the years 1972 to 1977 are listed in Appendix B.

On the following page, in Table 1, the components of the crime analysis are listed. For each of the counties and aggregate groups there were four basic raw data measurements: (1) number of reported offenses, (2) number of offenses cleared by arrest, (3) number of juvenile arrests, and (4) number of adult arrests. Separate values were listed for each of the seven index crimes, total index crime, the four crimes against persons, the three crimes against property, total non-index crime and the grand total of all reported offenses.

During the period being analyzed, 1972 through 1977, there have been some significant shifts in the populations of the counties sampled here. To offset this influence, reported offenses were converted to a measure of crime rate, the number of reported offenses per 100,000 people. Otherwise, it is quite possible for the raw number of reported offenses in a county to show an increase annually and still have no real increase in crime rate. This happens if the population increases at the same rate as the increase in number of offenses. Changes in growth of reported offenses and population can be seen in Figure 4. In this graph the raw number of offenses showed an upward trend that paralleled population growth through 1975; then reported offenses decreased while population plateaued. Converted into crime rate, there was an increase from 1973 to 1975 followed by a decrease from 1975 to 1977. During the years of greatest increase, from 1973 to 1975, crimes and population rose on a 1 to 1 basis. To have a steady rate there should be a 1 to 16 relationship between crime and population since this is the statewide average.

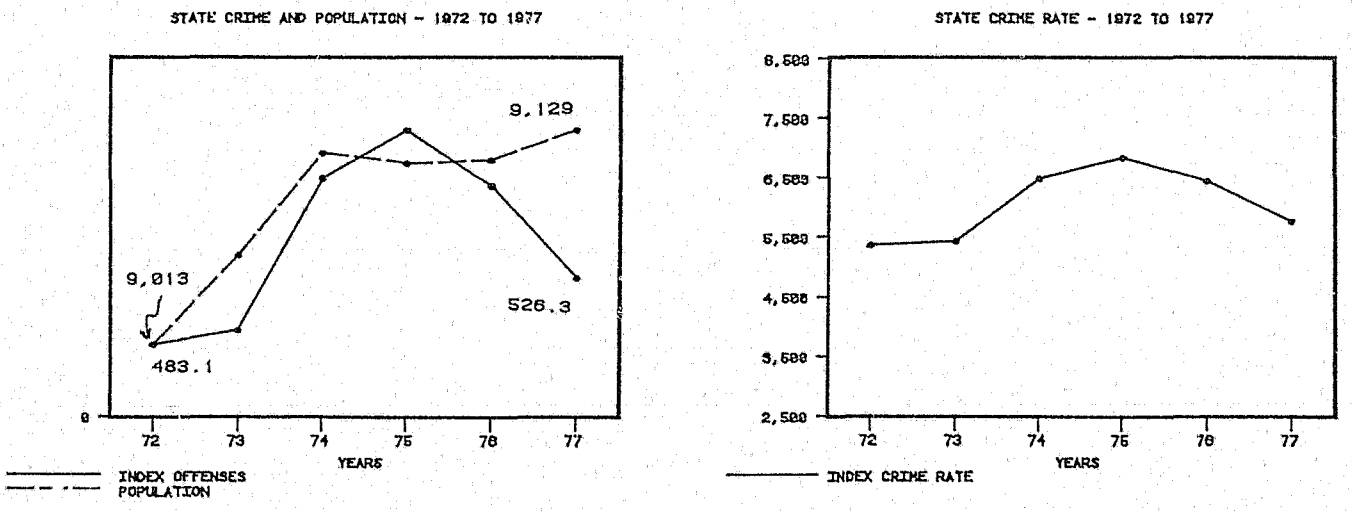


Figure 4. Comparison of number of offenses and crime rate for the years 1972 to 1977. Data values are in units of thousands.

SUMMARY OF MEASURES ANALYZED

MEASURE	CRIME CATEGORY	YEARS	JURISDICTION
Reported Offenses			17 Large Counties
	Murder	1972-1977	
Raw number	Rape		Bay
Rate per 100,000 population	Robbery		Monroe
Percentage of all index crime	Aggravated Assault		St. Clair
Clearances	Burglary		Calhoun
	Larceny		Ottawa
Raw number	Motor Vehicle Theft		Jackson
Rate per number of offenses			Muskegon
Percentage of all clearances (index)			Berrien
			Kalamazoo
Juvenile Arrests	All Index		Saginaw
	Index-Persons		Washtenaw
Raw numbers	Index-Property		Ingham
Rate per number of offenses	All Non-Index		Kent
Percentage of all juvenile arrests (index)	Total		Genesee
			Macomb
Adult Arrests			Oakland
			Wayne
Raw number			4 Small Counties
Rate per number of offenses			
Percentage of all adult arrests (index)			Alger
			Mason
All Arrests			Van Buren
			Wexford
Raw number			3 Aggregates
Rate per number of offenses			
Percentage of all arrests (index)			State-83 counties
			17 large counties
			66 small counties

Table 1. Summary of measures and variables included in the overall analysis.

In addition to the conversion of number of offenses to crime rate, a second conversion yielded the percentage of offenses in each of the crime categories. For this conversion the number of occurrences in each crime category was divided by the total number of index crimes. For example, in the State of Michigan there were 49,539 motor vehicle thefts reported in 1977 out of a total of 526,321 index offenses reported. Carrying out the division gives the proportion .0941, or 9.41 percent of index crime in the motor vehicle theft category.

Percentage data are useful in looking at differences in the mix of index crimes from county to county. Although counties may have similar rates of index crime, they might differ considerably in the makeup of the crimes adding to that total. This kind of contrast can be seen in a comparison of crimes against persons and crimes against property in Saginaw and Washtenaw counties. Saginaw has relatively more crime against persons at 11% compared to Washtenaw at 8%. Conversely, the crime against property rate for Saginaw county is 89% and for Washtenaw county 93%. In a finer grain look at crime in these two counties, the motor vehicle theft rate in Washtenaw is double the rate in Saginaw. Differences of this sort are prevalent when one looks at the counties in detail and they significantly affect the clustering of the counties into like groups.

In summary, for the number of reported offenses, there have been two conversions that yield: (1) crime rates based on population of the county, and (2) offense percentages which show the relative incidence of the individual index crimes compared to each other and to total index crime.

Similar conversions to rate and percentage were made for the clearance and arrest data. However, there is one important difference. Both clearance and arrest rates are based on number of offenses and not on population, as was the case with crime rates. Clearance rate refers to the number of crimes cleared relative to the number of reported offenses for that category. Similarly the arrest rate is obtained by dividing the number of arrests for a crime category by the total number of crimes reported in that category. Arrests and arrest rates were further subdivided into juvenile and adult categories. For convenience, the unit chosen was rate per 100 reported offenses.

One of the purposes of the conversion to rates relative to number of offenses was to determine whether the number of clearances and arrests are tied to the number of reported offenses in any systematic way. If both the number of offenses and the number of arrests move in tandem, then the rate would be a constant over the six-year period under investigation. If, on the other hand, number of arrests stays the same and reported offenses drop, then arrest rate would increase.

Percentage measures for clearances and arrests were obtained in exactly the same way as the percentages for offenses. The number of arrests, for example, for motor vehicle theft, was divided by the total number of index arrests to obtain the percentage for that category. One of the interesting results made possible by this kind of conversion is the comparison between arrest categories for juvenile and adult offenders. Sample data sheets based on state statistics for raw data, rate, and percentage are included in Appendix C.

PREVIEW OF THE ANALYSIS

In the following sections of the report the focus will first be on crime rate followed by sections on juvenile and adult arrest rates. After the offense and arrest measures are considered separately, we will compare the counties across these measures. That is, we will try to answer the question, "Which counties are similar both in crime and arrest and which are similar perhaps on one type of measure but not on the other?"

The data for clearance rates were examined but found to be less valid and to show less consistent patterning than the other measures. The reasons for this are not certain, but may be due to extreme variance in reporting practices. In any event, clearances were not included as a major part of the analysis.

ANALYSIS OF REPORTED OFFENSES

Three principal questions will be addressed in the analysis of reported offenses:

(1) Has crime increased, decreased, or held steady during the years 1972-1977 in the state and in the counties?

(2) How are the counties distributed in terms of the amount of crime (crime rate) they have experienced for the seven index crimes?

(3) Is the relative mix of crime categories similar across counties?

TRENDS IN INDEX CRIME RATE

In Figure 5 the crime rate for all index crime is plotted as a function of years, 1972 through 1977, for the State as a whole and for three individual counties that had the highest increases in rate: Kent, Genesee, and St. Clair counties. A regression function was calculated for each of the curves on the graph and from this the slope of each line was determined. The slope gives the average rate of change per year, smoothing out the ups and downs, pretending that variations from year to year are equal. When the slope values were tested statistically to determine whether any of the increases during the six-year period were significant, results were negative. Neither the State nor any of the individual counties met the requirements for significance. Only Kent County approached a significant level. In everyday terms, "not significant" means the apparent up or down trend could just be from normal year-to-year variations, or some other chance occurrence. Actually, even the most clear and dramatic trend can be only a chance happening, however remote the chance. Statistical tests can never completely rule out chance, but they can measure the odds of such flukes occurring. For this report, a significant trend is one where the odds against a fluke are better than 20 to 1 against.

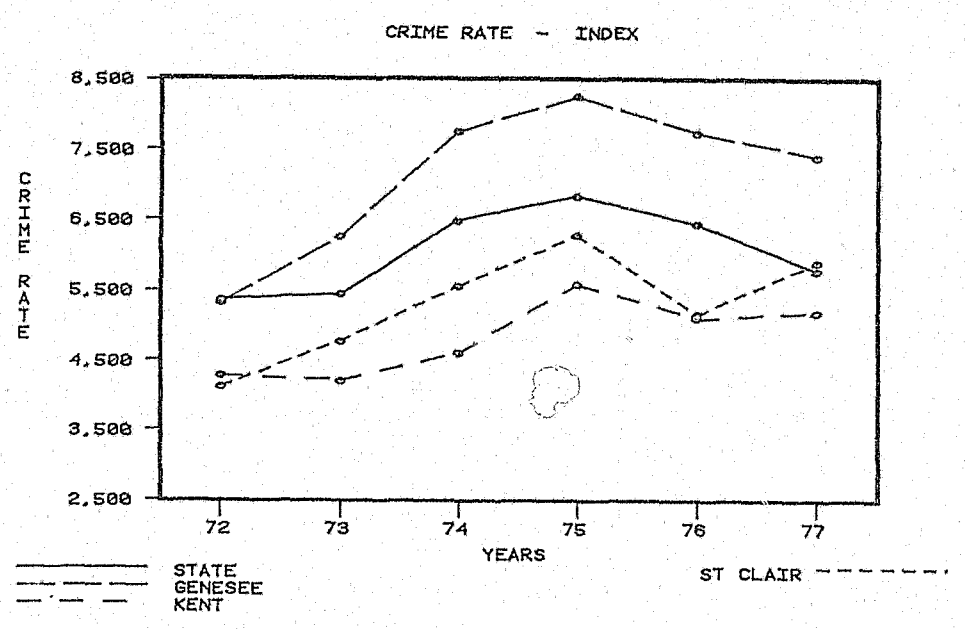


Figure 5. Index crime rate from 1972-1977 for the State and for three counties with the greatest rate increase.

There were, in fact, a number of counties that showed a downward trend in their index crime rate throughout this time period. The three counties that had the greatest average decrease were: Ingham, Washtenaw and Monroe counties. Crime rates for these three are plotted in Figure 6. Again, no significant changes in rate existed.

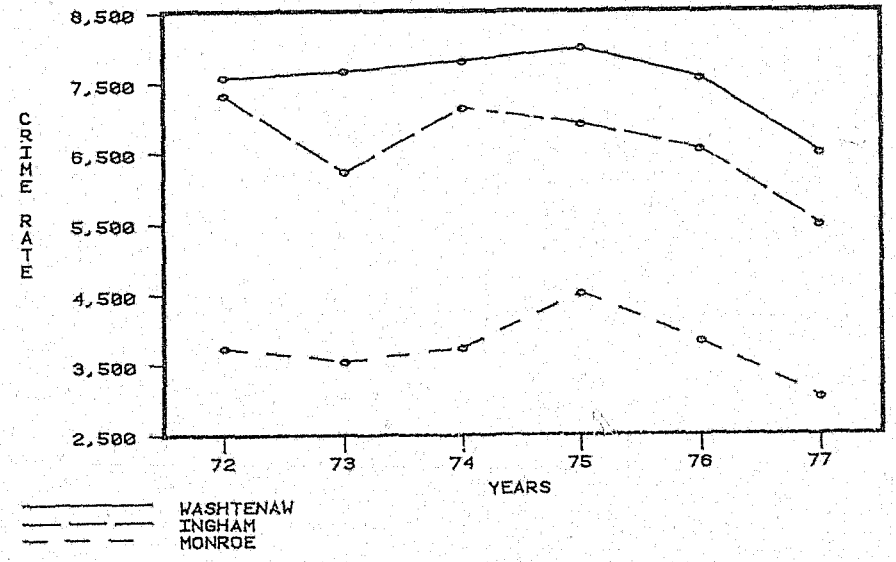


Figure 6. Index crime rates from 1972-1977 for three counties that had decreasing trends in crime rate.

Even though no significant increases or decreases in crime rates were detected, a rather consistent trend over time is evident in Figure 5 and 6. Almost every county shows a tendency for increasing crime rates up to 1975 and then a downward trend. Further examination of the data for all counties found a similar bow-shaped pattern in 16 of the 24 sample units. Another six of the remaining counties peaked in 1974 rather than 1975. This may be one reason for the lack of significant trends. Especially over a short time span, yearly changes must be sizeable and consistent in direction in order to reach a level above chance fluctuation.

The analysis of trends from 1972 to 1977 is of special interest because it coincides with the years for which detailed data are available for analysis, but consideration of crime rates over a longer time period will allow a clearer perspective of long-term changes. Crime rates for the State from 1964 to 1977 are plotted in Figure 7. Now it becomes clear that during the 1960's there was a fairly steady rise in crime rate followed by a

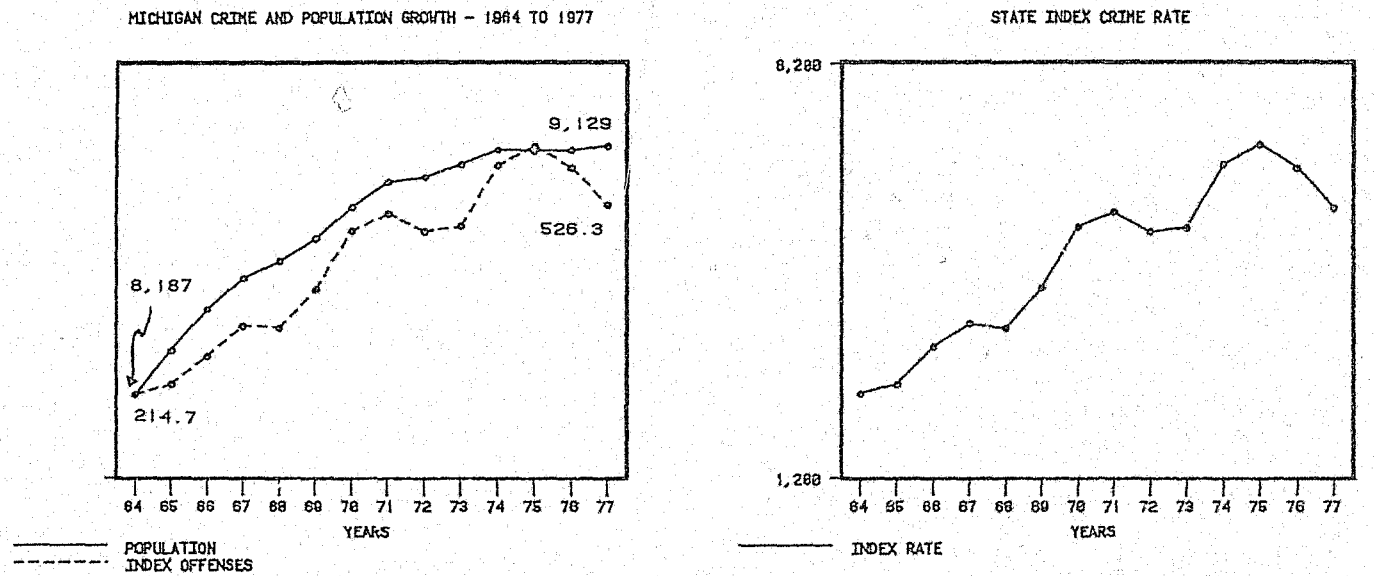


Figure 7. Number of index offenses, population, and index crime rate for the State from 1964-1977.

plateau in the early 1970's and the subsequent peak in 1975. Reports of a very preliminary nature suggest that another decrease will occur in 1978. If this materializes, it would be the first three-year consecutive decrease observed in the fifteen-year period.

PATTERNS OF CRIME

The second question raised in the analysis of crime rate was to what extent crime rates vary among the counties in Michigan and in what counties are crime rates unusually high or low?

Method of Analysis

In answering this question the seven index crimes were studied individually and also in small subgroupings. For each crime category the average crime rate for the six-year period 1972-1977 was calculated. As an illustration, average data on reported offenses for the State are shown in Appendix C. The same average crime rate data were obtained for each county and for the three aggregates.

Average crime rates served as input data for scaling and clustering analyses that were described in the introduction. The general procedure for the analyses was as follows. A matrix was constructed that showed how similar each county was to every other county in terms of crime rate. The procedure was repeated individually for each crime category. For example, consider the average crime rates for robbery, taking a reduced sample of four counties.

County	Average Rate
Bay	77
Muskegon	117
Ingham	127
Kalamazoo	137

A direct measure of similarity in terms of crime rate can be obtained by taking the difference in rates for every pair of counties, e.g. (Kalamazoo) 137 - (Ingham) 127 = 10; (Kalamazoo) 137 - (Muskegon) 117 = 20; and so forth. The difference scores are large if counties have very dissimilar rates and small when counties are similar. For convenience, the difference scores can be organized into a matrix such as Figure 8. It is readily apparent that Bay County is the "odd" one. Reference to the original data table shows that Bay County has an unusually low rate.

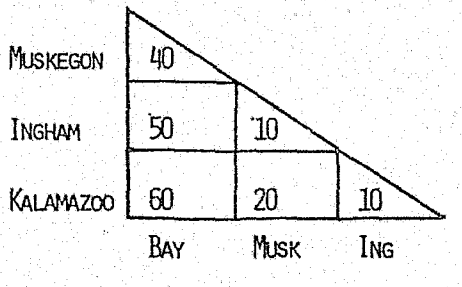


Figure 8. Similarity matrix showing differences between counties in robbery rate.

If this matrix were expanded to include the 24 sample counties and aggregates, it would no longer be easy to detect the pattern of similarities by simple inspection. The full matrix of difference scores for robbery is in Appendix D.

Scaling procedures use the matrices described above to produce diagrams that show similarities among counties as distances. The scaling solutions find the best way to simultaneously represent the differences between all pairs of counties for the crime categories input into the analysis.

Since there are seven individual index crimes and the rates of these crimes vary considerably, from near zero for murder or rape to thousands for larceny, certain decisions had to be made about how to group the crime categories. Burglary and larceny were by far the most prevalent crimes, accounting for 80% to 90% of the total index crime. These two crimes became the first target for analysis. Both murder and rape exhibited such erratic and low rates that clear patterns failed to emerge. Eliminating murder and rape led to a grouping of robbery, aggravated assault, and motor vehicle theft, which have fairly comparable rates, as a second target subgroup. Our approach to the analysis was first to cluster counties in terms of their crime rates for burglary and larceny, next to cluster them by robbery, aggravated assault, and motor vehicle theft, and finally, to compare the counties across these two crime groupings.

Results of Scaling and Clustering Analysis

Scaling and clustering solutions for burglary and larceny data are illustrated in Figure 9. Counties fall into four general clusters that reflect the joint influence of these two crime categories. Reference back to the original data will help to identify commonalities among counties and to explain why the counties clustered in this particular fashion. At the lower left of

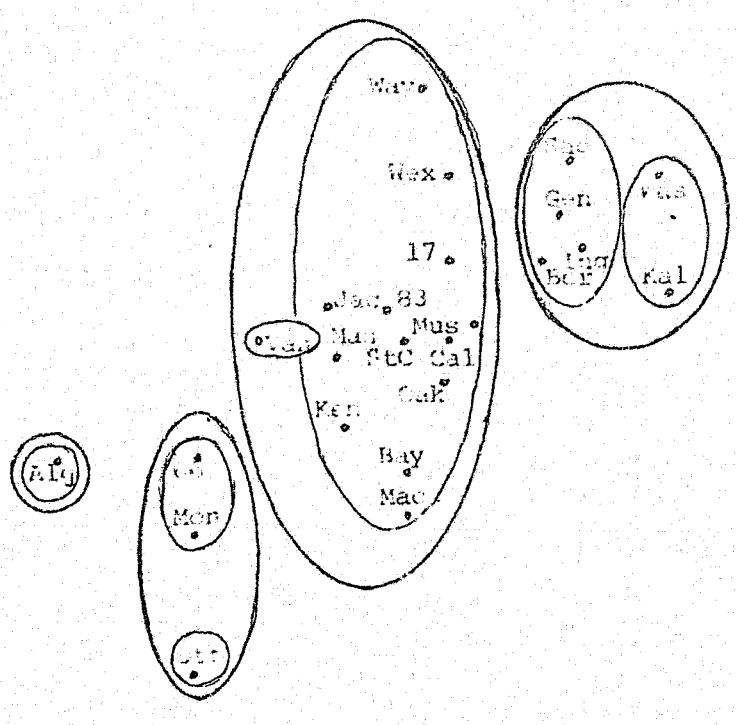


Figure 9. Counties clustered according to similarity in crime rates for burglary and larceny.

the diagram are counties which reported relatively low rates in both burglary and larceny; the clusters towards the upper right area reported relatively high rates for both crime categories. In the large central cluster all counties reported moderate rates of larcenies, but they cover a range of rates for burglary. Counties toward the top, such as Wayne and Wexford, reported higher burglary rates than Macomb, Bay and others nearer the bottom of the cluster. Appendix A contains rate data for each crime.

When we conjecture on reasons underlying these groupings of counties, population and urbanization are two popular candidates for consideration. In these configurations county size, per se, does not predict amount of crime. Of the four small counties in the sample, Alger, Mason, Wexford and Van Buren, three are clustered with much larger counties. Conversely, two large counties, Ottawa and Monroe, are more similar to the aggregate of 66 small counties than to their companions in the large county group.

Counties clustered in the high rate area of the figure do not immediately suggest any underlying common feature either. They all are in the mid-range of population for the large county group, and each county has a single dominant urban area; however, other counties with similar characteristics, e.g. Kent and Muskegon, do not show the same high rates. Certainly Wayne and Wexford Counties are dissimilar in demographics, yet they are close to each other in the central cluster. A study of subtypes of larcenies and burglaries within county units would seem to offer fertile ground for a greater understanding of crime in these counties.

Wayne, Oakland, and Macomb counties often are mentioned together as the most populous and metropolitan areas in the state. The relative locations of these three counties within the large central cluster signifies that while they have similar larceny rates, they differ a great deal in burglary rates. Wayne is very high; Oakland moderate, and Macomb low. These contrasts are illustrated numerically in Table 2. For the crime category of

COUNTY	CRIME CATEGORY	
	LARCENY	BURGLARY
WAYNE	3358	2265
OAKLAND	3438	1485
MACOMB	3232	1129

Table 2. Average crime rates for larceny and burglary in the three largest counties.

burglary there is no evidence of a ripple effect of crime from the metropolitan center to surrounding more suburban counties. Again, analysis of how burglaries break down in terms of target, location, time and offender would be useful supplemental information at the county and local level.

Moving now to robbery, aggravated assault, and motor vehicle theft, the formation of clusters based on this subgroup of crimes is shown in Figure 10.

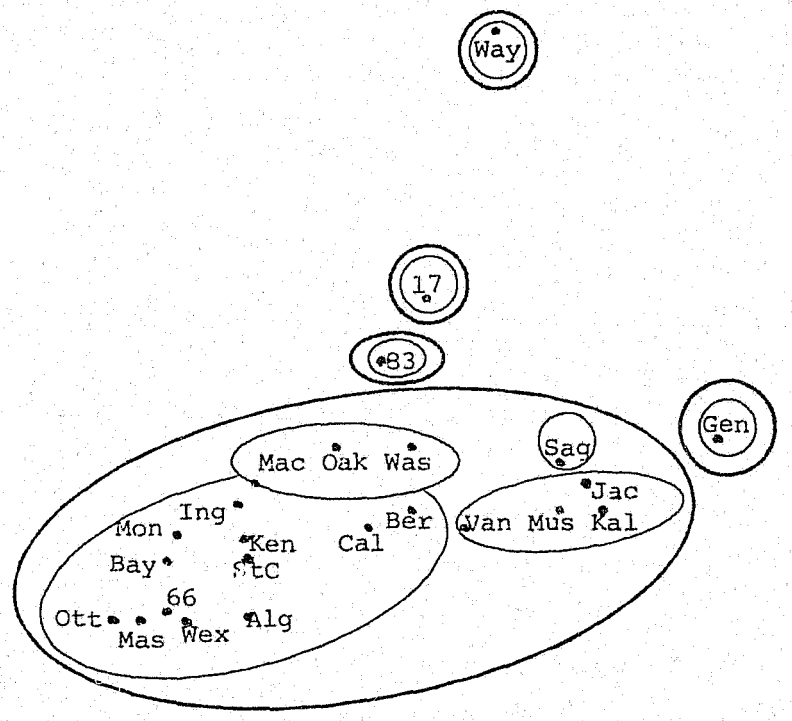


Figure 10. Counties clustered according to similarity in crime rates for robbery, aggravated assault, and motor vehicle theft.

Of the five separate clusters in the diagram, four contain only one member: Wayne, Genesee, 17 county aggregate, and the State (83 counties). These isolates are located towards the top and to the right of the figure, positions that signal high crime rates. Examination of the original data shows that placement to the right corresponds to high rates of aggravated assault; position on the vertical axis reflects rates of robbery and motor vehicle theft, two crimes that tend to show similar trends across counties.

Continuing the interpretation of the array, Genesee County shows a very high rate of reported aggravated assaults combined with a higher than average rate for the other two categories as well. Wayne County also has high rates in all three categories, but Wayne is much more extreme in robbery and motor vehicle theft than in aggravated assault. Wayne County's extraordinary rates of robbery and motor vehicle theft are large enough to pull the values for the 17 large county aggregate and even for the State out of the large cluster of remaining counties.

Within the large cluster, smaller subgroups can be identified. Subgroups tend to show a mixture of rates without pronounced extremes in any one category; for example, Washtenaw, Oakland and Macomb counties reported high rates of motor vehicle theft, well below the rate for Wayne County, but higher than any other counties in the cluster. Since all of these counties border on Wayne County, there could be a geographical basis for the pattern, in contrast to the burglary analysis which showed no such effect.

Within the large cluster Saginaw stands by itself. Its position towards the right points to a high incidence of aggravated assault, a feature borne out by the raw data. Rates for the other two crimes show a split; robbery is moderately high but motor vehicle theft is only average in magnitude. In the subgroup adjacent to Saginaw, containing Jackson, Kalamazoo, Muskegon, and Van Buren counties, rates for aggravated assault tend to be high and the other two crime rates fall in the average range.

In this configuration no counties have formed a distinct cluster based on uniformly low crime rates, but there are several counties positioned in the lower left of the diagram that tend in this direction. Mason, Wexford and Alger, three small counties, qualify, along with Ottawa County and the 66 small county aggregate.

On the basis of the cluster diagrams displayed previously in Figures 9 and 10, we can make some general remarks about how the counties behave across the two crime groups, burglary and larceny on the one hand, and robbery, aggravated assault and motor vehicle theft on the other. Tending to high crime rates in all categories are Genesee, Wayne and Saginaw counties; Washtenaw, Berrien, and Kalamazoo show a weaker tendency in this direction, but still fall into the higher crime regions of both diagrams. Wayne County has a profound influence on the position of the 17 large county aggregate and also on the State. Because Wayne County shows extremes in certain crime categories, the aggregate values do not reflect very well the average large county.

In the case of burglary and larceny, two small clusters identify counties that reported low rates and one cluster identifies six counties with high rates; for robbery, assault, and motor vehicle theft the four small outlying clusters all are in the direction of high crime rates.

Counties that experienced uniformly low crime rates were not as distinct a group, but inspection of the cluster diagrams places Ottawa, the 66 small county aggregate, Alger and Monroe in this category. Borderline tendencies toward low rates were shown by Kent, Mason, Bay and St. Clair counties. The low rate group contains three of the small counties and larger counties that are at the low end of the population range. Kent is the exception, a populous county with a large urban center. A map with the counties identified by crime rate tendencies is presented in Figure 11.

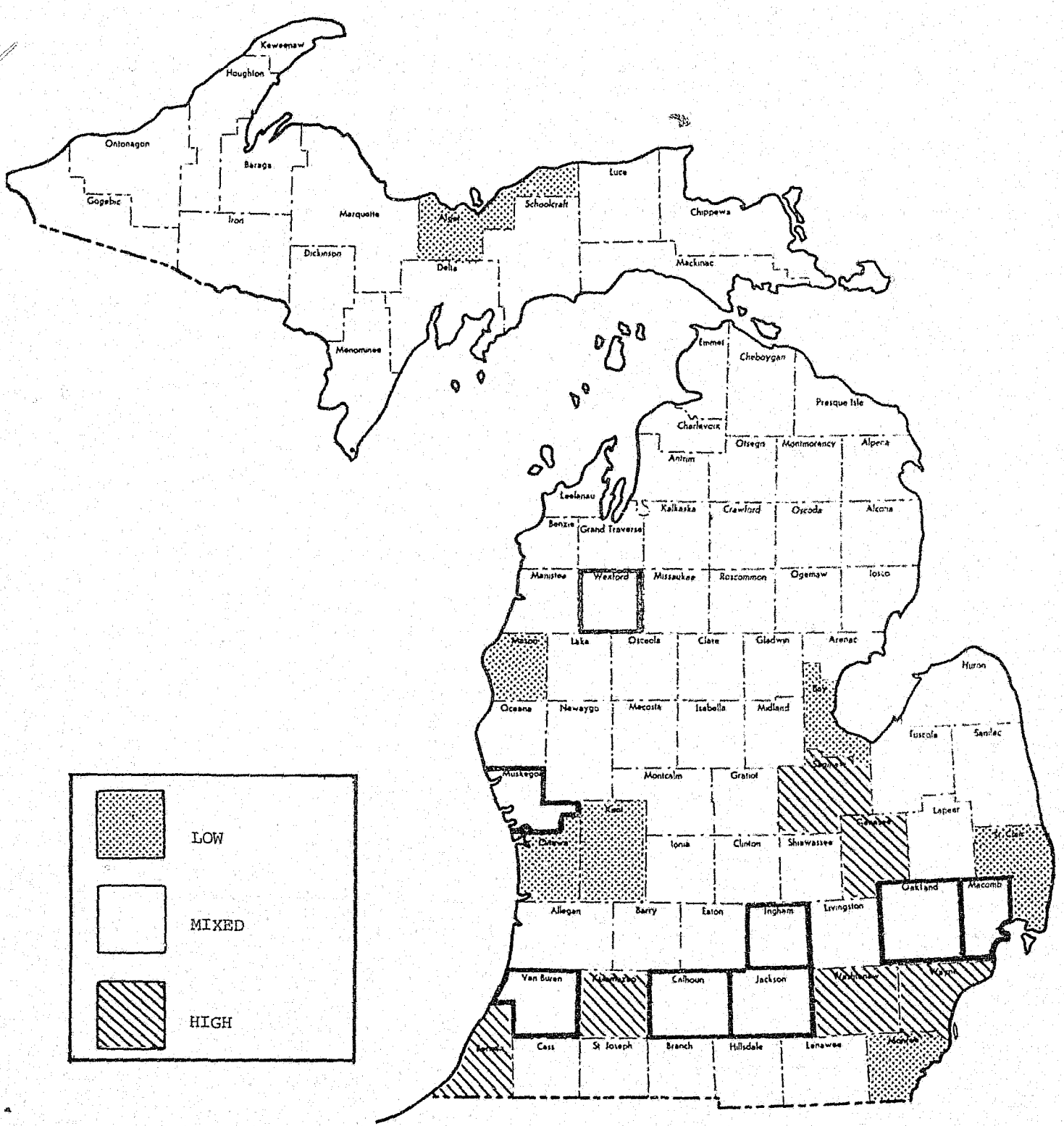


Figure 11. Sample counties coded according to crime rates for five index crimes.

THE MIX OF CRIMES WITHIN COUNTIES

Up to this point we have dealt with the rising or falling trend in crime rate for the counties and the amount of crime within the counties. Now we turn to the relative mix of these crimes. What crimes are the most frequent, and is the freqency pattern the same from one county to another? In Table 3 (next page) each of the index crimes is ranked according to relative frequency within counties and aggregate groups. Two additional columns give, first, the total percentage of index crime represented by larceny and burglary and, second, the percentage made up of robbery, aggravated assault and motor vehicle theft. Looking at these last two columns, we find that larceny and burglary account for between 80% and 95% of index crime in almost every county. The single exception is Wayne County where the number of reported larcenies and burglaries account for only 69% of the total. Corresponding percentages for the three crimes of robbery, assault and motor vehicle theft, range from 5% to 15%. Again, Wayne is the odd man out with 30%. Comparisons of crime rates for Wayne and several other counties in Table 4 demonstrate that reported larceny rates are relatively low in Wayne County and that corresponding increases in robbery and motor vehicle theft offset the shortfall in the larceny category.

	INDEX CRIME CATEGORY				
County	Burglary	Larceny	Robbery	Assault	Vehicle Theft
Wayne	26%	43%	9%	5%	16%
Oakland	24%	61%	2%	4%	9%
Genesee	26%	57%	3%	8%	5%
Saginaw	27%	59%	3%	6%	3%
Jackson	30%	55%	2%	8%	5%

Table 4. Comparison of the percentages of index crime accounted for by five crime categories in Wayne and four other counties.

Examination of the columns ranking individual crime categories in Table 3 shows that larceny is universally the most frequent and burglary the second most frequent crime. It is in the three crimes of robbery, aggravated assault and motor vehicle theft that differences in rank order arise from one county to another. One sidelight of interest here is that the relative rankings of crimes found for the State and the 17 large counties is shared only by Wayne County. No other county studied follows this pattern. Again Wayne has demonstrated its ability to influence statewide statistics. The most typical pattern finds larceny and burglary in first and second place, followed by motor vehicle theft and assault almost tied for third, robbery in fifth place, and rape and murder the least frequent.

COUNTY	Larc.	Burg.	Rob.	Agg. Aslt.	M.V. Theft	Rape	Murd.	% B&L	% Rob. AA,MV
17 Most Populous									
Bay	1	2	5	4	3	6	7	92	8
Monroe	1	2	5	4	3	6	7	88	11
St. Clair	1	2	5	4	3	6	7	91	8
Calhoun	1	2	5	3	4	6	7	89	10
Ottawa	1	2	6	3	4	5	7	94	6
Jackson	1	2	5	3	4	6	7	84	15
Muskegon	1	2	5	3	4	6	7	87	12
Berrien	1	2	5	3	4	6	7	88	11
Kalamazoo	1	2	5	3	4	6	7	88	11
Saginaw	1	2	4	3	5	6	7	86	13
Washtenaw	1	2	5	4	3	6	7	87	12
Ingham	1	2	5	4	3	6	7	90	9
Kent	1	2	5	4	3	6	7	89	10
Genesee	1	2	5	3	4	6	7	83	16
Macomb	1	2	5	4	3	6	7	84	15
Oakland	1	2	5	4	3	6	7	84	15
Wayne	1	2	4	5	3	6	7	69	30
3 Aggregates									
Total State	1	2	4	5	3	6	7	80	19
17 Counties	1	2	4	5	3	6	7	78	21
66 Counties	1	2	5	4	3	6	7	92	7
4 Small Counties									
Alger	1	2	6	3	4	5	7	89	10
Mason	1	2	5	4	3	6	7	94	6
Van Buren	1	2	5	3	4	6	7	87	12
Wexford	1	2	5.5	4	3	5.5	7	94	6
AVERAGE RANK	1	2	5	3.5	3.5	6	7		

Table 3. Crime Rate - Rank Order of Crime Categories

SUMMARY OF CRIME RATE ANALYSIS

In summary, counties form meaningful clusters according to common characteristics in crime rate. Three major groups were revealed by the data:

I Uniformly High Rates

Genesee, Wayne, Saginaw, Washtenaw, Berrien, Kalamazoo

II Uniformly Low Rates

Ottawa, Alger, Monroe, Mason, St. Clair, Kent

III Mixed or Average Rates

Wexford, Van Buren, Calhoun, Muskegon, Macomb, Jackson, Ingham, Oakland

All counties showed a very similar mix of crimes except Wayne County, which reported fewer larcenies and more robberies and motor vehicle thefts than other counties.

Crime rates have not risen significantly during the period 1972-1977, but a bow-shaped curve is typical of many counties. Crime rates rose to a peak in 1974 or 1975 and then decreased in 1976 and 1977. A longer range perspective suggests that crime rate rose during the 1960's, plateaued briefly before rising to a peak in 1974-75, and now is on the decrease.

ANALYSIS OF JUVENILE ARREST RATE

The analysis of juvenile arrest rate will parallel that for crime rate in the preceding section. First, trends across time will be investigated to determine if there has been any significant increase or decrease in the rate of juvenile arrests relative to the number of offenses reported; second, the counties will be clustered according to similarity in rate of juvenile arrests for the different crime groupings; third, the relative frequency of arrest for different crime categories will be examined.

Before pursuing the analysis, a few thoughts and cautions about the arrest rate measure are in order. Interpretation of arrest rate data has meaning when applied to changing patterns of arrest over time and to relationships among counties, but not for an evaluation of effectiveness of law enforcement. If the ratio of juvenile arrests to juvenile offenses were known, then the question of effectiveness could be addressed. But, as the system exists, there is no way to determine the number of offenses committed by juvenile offenders; only the total number of reported offenses are open to analysis. In a later section some attention will be given to total number of arrests relative to number of offenses and to changes in percentages of all arrests contributed to by juvenile and adult offenders. The number of juvenile arrests relative to estimates of the juvenile population will also receive some attention.

TRENDS IN JUVENILE ARREST RATE

Twenty-one of the 24 jurisdictions in the sample showed a decreasing rate of juvenile arrest during the time period 1972 through 1977. This means that, relative to number of offenses, fewer juvenile offenders were arrested from year to year. Only three counties, Monroe, Jackson and Ingham showed increases and they were too small to be meaningful. Figure 12 displays typical curves for the State and three counties with decreasing rates.

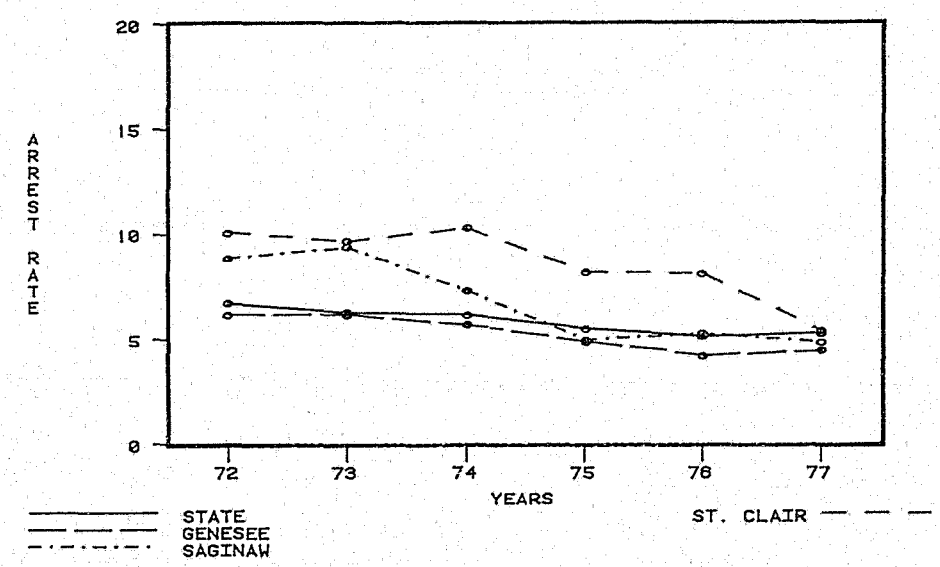


Figure 12. Juvenile arrest rate from 1972-1977 for the State and three counties with decreasing rates over time.

For each county the data relating arrest rate and year was fit by a regression function. Significance tests applied to resulting slope values found that in nine individual counties and all three aggregates, decreases in the juvenile arrest rate were significant.

A more detailed look was given to the nine counties that reported significant decreases in order to identify which crime categories were most affected. Results are shown in Table 5. For larceny all counties reported decreases over time, five counties reported decreases for burglary, and so forth. A check on the breakdown between crimes against persons and crimes against property showed declining rates of juvenile arrest in both categories, but a stronger trend in the property category.

Larceny	M V Theft	Burglary	Agg. Assault	Robbery
9	5	5	4	4

Table 5. Number of counties that reported decreases in juvenile arrest rate for each of five index crimes.

Observed decreases in juvenile arrest rate do not necessarily imply a reduction in juvenile crime. A possible procedure to answer that issue involves looking at the trends for number of juvenile arrests compared to juvenile population over the years. This exercise will yield estimates rather than firm figures because of the difficulty in getting accurate juvenile population values. Those available are for the age range 5 to 17 years rather than the desired 6 to 16 years, used in UCR reporting. Relevant data are displayed in Table 6 and Figure 13. Changes in juvenile arrest rate relative to population show an increase from 1973 to 1974 and then a decline for each succeeding year. The trend observed here is similar to the trend for crime rate illustrated in Figure 4.

Year	Population (thousands) 5-17 years	Number of Juvenile Arrests (thousands)
1972	2,400*	32.4
1973	2,365	30.9
1974	2,337	36.4
1975	2,288	34.1
1976	2,242	29.8
1977	2,200*	27.7

*Estimates

Table 6. Statewide population and numbers of juvenile arrests.

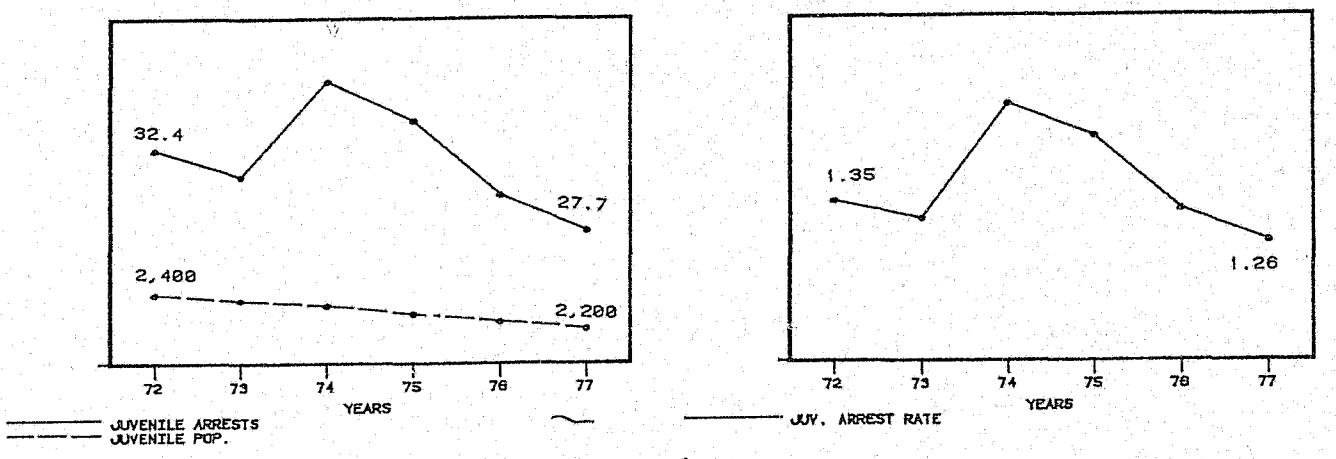


Figure 13. Juvenile population, number of arrests, and arrest rate for the State from 1972 to 1977. Data are in units of thousands.

PATTERNS OF JUVENILE ARREST RATES

A pictorial display of the counties clustered according to similarity in arrest rate for burglary and larceny is shown in Figure 14. There are three major

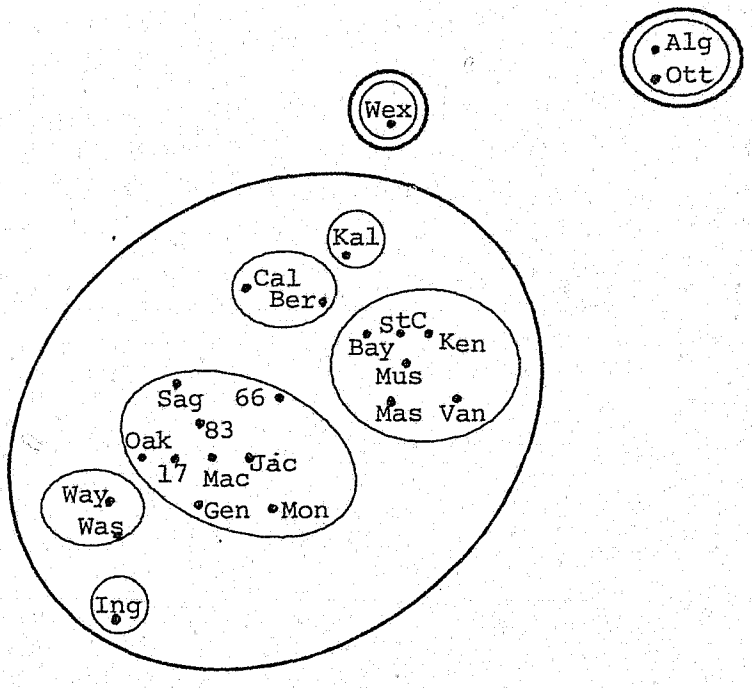


Figure 14. Counties clustered according to similarity in arrest rate for burglary and larceny.

groupings here; Ottawa and Alger toward the upper right, Wexford at the top, and all of the remaining counties in a large, diagonally oriented cluster. Coordinating the original data and locations of counties in the figure indicates that unusually high arrest rates for both larceny and burglary were reported by Alger and Ottawa and also by Wexford County, although Wexford was more moderate in arrest rate for burglary. At the other extreme, in the lower left of the large cluster, Ingham, Washtenaw and Wayne counties reported the lowest arrest rates.

There seems to be a closer relationship between juvenile arrest rate and population than there was between crime rate and population. With the exception of Kent County, all of the counties with the largest populations tended to have relatively low juvenile arrest rates.

Similarities based on juvenile arrest rates for robbery, aggravated assault, and motor vehicle theft will be considered next. Clustering of the counties is shown in Figure 15. In this configuration many of the counties appear to have some unique feature since they fail to group together or show a high degree of similarity to each other. Especially within the large cluster there is more fragmentation and dispersion than in previous diagrams.

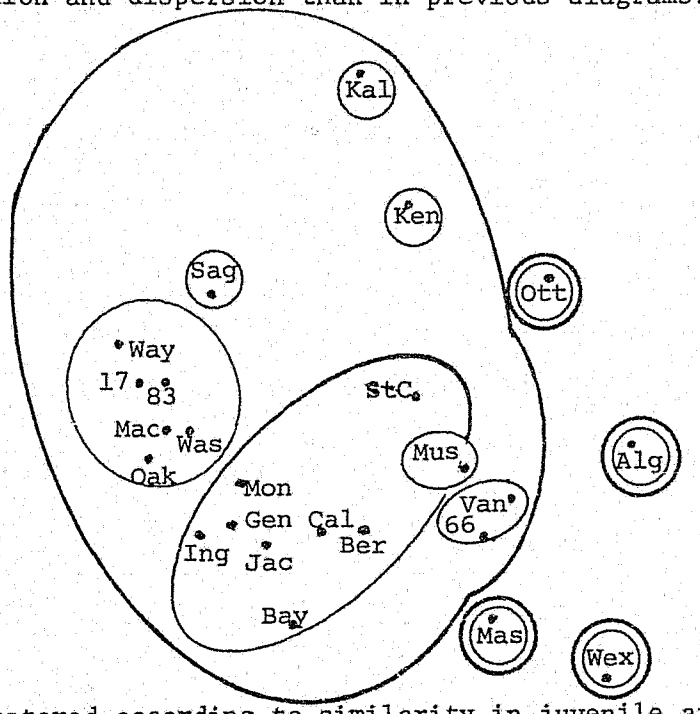


Figure 15. Counties clustered according to similarity in juvenile arrest rates for robbery, aggravated assault and motor vehicle theft.

In Figure 15 counties positioned toward the left tend to have low arrest rates for both robbery and motor vehicle theft; arrest rates for these two categories often are either both high or both low. At the top of the diagram lie counties reporting high arrest rates for aggravated assaults; low rates are associated with counties at the bottom of the figure. The placement of Ottawa, Alger and Wexford counties, all separate clusters,

implies unusually high juvenile arrests for robbery and motor vehicle theft, coincident with a spread among them in rates for aggravated assault. Ottawa, toward the top of the diagram, had a high rate of arrest for assault; Alger was moderate, and Wexford the lowest.

It might be well to note that the arrest rates for some of the small counties in this sample can be unstable because of very low number of offenses in a crime category. In such cases even one arrest can appear as a high rate. For this reason the data for the larger counties are more valid in reflecting a meaningful analysis of arrest activity. To illustrate this point we have shown data for all index arrests reported by a small county and a large county in Figure 16. One would expect data for a single crime category to be even

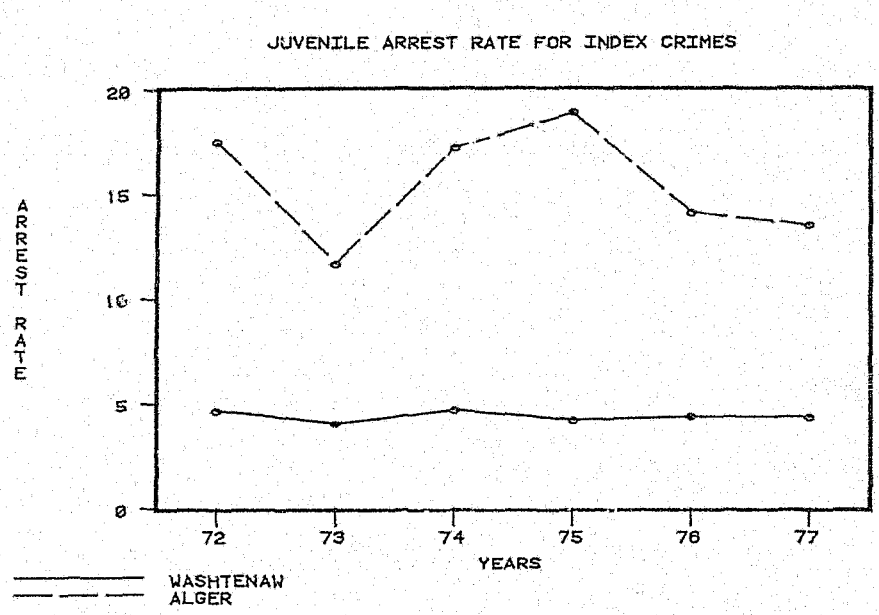


Figure 16. Juvenile arrest rates for a small county and larger county from 1972-1977.

more erratic. The analysis is most affected when there are no offenses reported for some years; arrest rate then has no meaning. This problem arose in one crime category; robbery, but only for the smallest counties, Alger, Mason and Wexford.

Returning to the interpretation of Figure 15, we will now focus on counties within the large cluster. Wayne, Macomb, Oakland and Washtenaw are grouped together in a position indicating low rates of arrest for robbery and motor vehicle theft coupled with moderate rates for aggravated assault. In the prior analysis of crime rates these same counties were similarly grouped together, all having in common a high rate of motor vehicle theft.

The cluster that contains Ingham, Bay and other counties also tends to represent low rates for robbery and motor vehicle theft, and these counties are low in juvenile arrest rate for aggravated assault as well. Three

counties tending to have high rates of arrest for assault are Kalamazoo, Kent and Saginaw. These counties all represent single member clusters because of differing rates for the other two crime categories. Actual values for juvenile arrest rates for each of the five index crimes are shown in Appendix A in the form of histograms that list the counties in rank order from lowest to highest rates of arrest. For reference here, the lowest and highest arrest rate for each crime category are given in Table 7. The range of arrest rates is quite consistent for four of the

	Arrest Rate (Re Number of Arrests)				
	Burglary	Larceny	Robbery	Agg. Assault	M V Theft
Lowest	3.7	2.2	3.6	1.3	2.9
Highest	15.7	15.2	16.7	12.9	25.2

Table 7. Lowest and highest juvenile arrest rates by crime category.

crime categories. The exception is arrest rate for motor vehicle theft which has a much higher maximum, characteristic of the small counties located on the right of Figure 15. There are two hypotheses that come to mind. Either juveniles are more involved in motor vehicle thefts relative to other crimes in these counties compared to other counties, or it is easier to apprehend juvenile offenders in small counties , or both.

FREQUENCY OF JUVENILE ARRESTS BY CRIME CATEGORY

As shown in Table 8, the dominant pattern of arrest for juvenile offenders from the most frequent to the least frequent categories follows the order: larceny, burglary, motor vehicle theft, aggravated assault, robbery, rape and murder. This is the same pattern that emerged from analysis of frequency of offenses, although motor vehicle theft has somewhat greater prominence in the juvenile arrest data than in reported offenses. This pattern is very consistent across counties; every county had the most arrests for larceny and burglary; all but two ranked motor vehicle theft as third most frequent. The two exceptions, Saginaw and Kalamazoo experienced higher arrest rates for aggravated assault than for motor vehicle theft. Again paralleling reported offenses, rape and murder were the least frequent in juvenile arrest.

The actual percentages of arrest accounted for by burglary and larceny and by robbery, aggravated assault, and motor vehicle theft (as a group) show a remarkable similarity to the corresponding figures for percentages of reported offenses, previously listed in Table 3. In 80% to 90% of the arrests the crime category is either burglary or larceny. The other three crimes account for between 5% and 15% of the juvenile arrests. Again it is Wayne County which shows a pattern different from any other county. Wayne had only 72% of arrests in the burglary and larceny categories and 27% in the other three crimes.

COUNTY	Larc.	Burg.	Rob.	Agg. Aslt.	M.V. Theft	Rape	Murd.	% B&L	% Rob. AA,MV
17 Most Populous									
Bay	1	2	4	5	3	6	7	93	7
Monroe	1	2	5	4	3	6	7	84	14
St. Clair	1	2	5	4	3	6	7	91	9
Calhoun	1	2	5	4	3	6.5	6.5	92	8
Ottawa	1	2	5	4	3	6	7	93	6
Jackson	1	2	5	4	3	6	7	84	15
Muskegon	1	2	5	4	3	6	7	86	13
Berrien	1	2	4	5	3	6	7	89	10
Kalamazoo	1	2	5	3	4	6	7	86	14
Saginaw	1	2	5	3	4	6	7	87	13
Washtenaw	1	2	5	3.5	3.5	6	7	86	14
Ingham	1	2	5	4	3	6	7	81	19
Kent	1	2	5	4	3	6	7	86	14
Genesee	1	2	5	4	3	6	7	83	16
Macomb	1	2	5	4	3	6	7	89	10
Oakland	1	2	5	4	3	6	7	89	11
Wayne	1	2	4	5	3	6	7	72	27
3 Aggregates									
Total State	1	2	5	4	3	6	7	84	16
17 Counties	1	2	5	4	3	6	7	82	17
66 Counties	1	2	5	4	3	6	7	90	10
4 Small Counties									
Alger	1	2	5	4	3	6.5	6.5	89	11
Mason	1	2	5	4	3	6	7	89	11
Van Buren	1	2	5	4	3	6	7	87	13
Wexford	1	2	4	5	3	6.5	6.5	94	6
AVERAGE RANK	1	2	5	4	3	6	7		

Table 8. Juvenile Arrest Rate - Rank Order of Crime Categories

SUMMARY OF JUVENILE ARREST DATA

The dominant features of the juvenile arrest rate data are as follows: First, during the past six years most counties have shown an overall decrease in rate of juvenile arrests based on number of offenses. Only three counties showed any increase, and that was small. The counties as a whole had very similar rates of decrease over time. Decreases appeared to be tied to the rate of arrest for larceny.

Statewide, the rate of juvenile arrests, relative to population, rose from 1972 to 1974 and then decreased since that peak year.

Although high arrest rates were more typical of small counties than large ones, Ottawa, with over 100,000 population, showed relatively high arrest rates for all categories. Other large counties with a tendency toward high juvenile arrests include St. Clair, Kent and Kalamazoo. Many of the largest, most populous counties reported relatively low rates. Particularly low arrest rates for motor vehicle theft were reported by counties with high crime levels for motor vehicle theft: Wayne, Oakland, Macomb and Washtenaw.

The patterns of juvenile arrest relative to different crime categories shows similarity from one county to another and very closely parallels the patterns reported for number of offenses. Wayne County has a different pattern than other counties in regard to lower percentages of arrests for larceny and higher than ordinary percentages for robbery.

ANALYSIS OF ADULT ARREST RATE

TRENDS IN ADULT ARREST RATE

Trends in arrest rates for adults are much less orderly than corresponding trends for juveniles where almost every county showed a decreasing arrest rate over time. Adult arrest rates tended to increase in the largest counties, but rates were mixed with no apparent pattern for most of the other jurisdictions. The only statistically significant increase in rate occurred in Wayne County; the single significant decrease was reported by Kalamazoo County. Trend data for the State, Wayne, and Kalamazoo counties are shown in Figure 17.

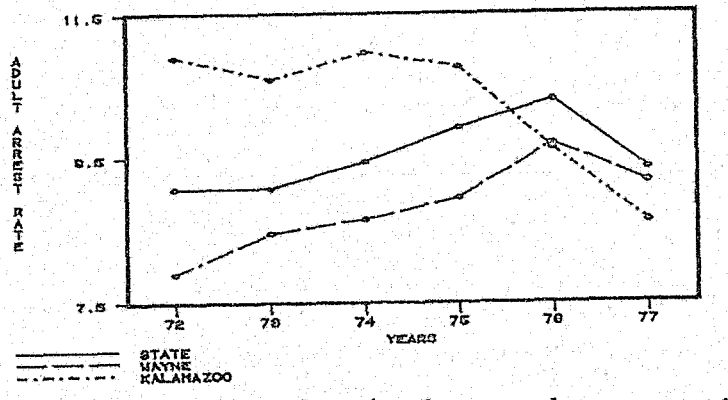


Figure 17. Adult arrest rates for the State and two counties

Examination of arrest rates for individual crime categories in the various counties clarified the principal sources of increased arrest activity. Almost every large county had an increasing arrest rate for burglary from 1972 to 1977; many also had increasing rates for aggravated assault and larceny. The only category that appeared to be decreasing in adult arrest rate was motor vehicle theft--all three aggregate groups showed an overall downward trend.

It bears repeating that arrest rates for the small counties are unstable for individual crime categories. Conclusions about trends and level of arrest for local jurisdictional units are suggestive rather than definitive.

At this point we will introduce a comparison of the juvenile and adult arrest trends as they contribute to total arrests in the State. We have already established that statewide juvenile arrest rates based on number of offenses have declined; comparable rates for adults have increased overall, although the increase is not significant. Do these opposite trends offset each other to the extent that there has been no overall change, but only a shift in age of arrestee? The statewide arrest rate relative to number

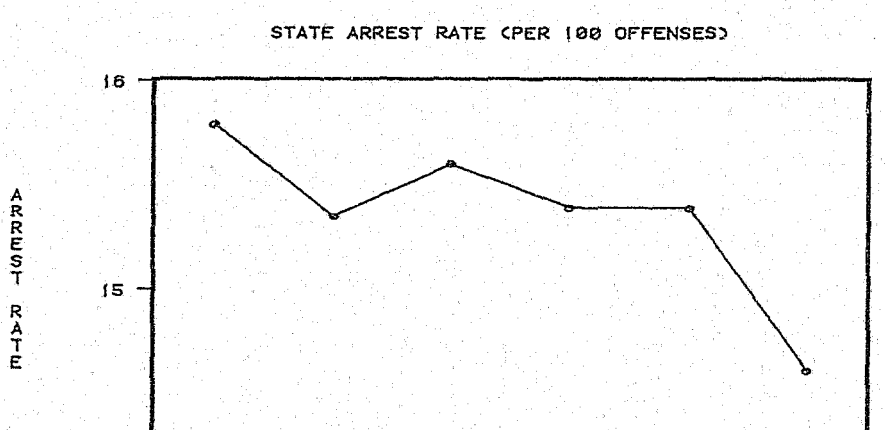


Figure 18. State arrest rate for combined juvenile and adult arrests from 1972 to 1977.

of index offenses is plotted in Figure 18. The downward trend is evident, although results from 1977 contribute heavily to the impression of a decreasing rate. If the trend continues it could mean that the tendency for increasing adult rates has peaked and now is on the downswing.

PATTERNS OF ADULT ARREST RATES

Cluster analysis of counties based on adult arrest rates for burglary and larceny produced the pattern shown in Figure 19. The small counties tend to be separate from the larger counties to an even greater extent than usual in this configuration. Alger and Wexford are characterized by high

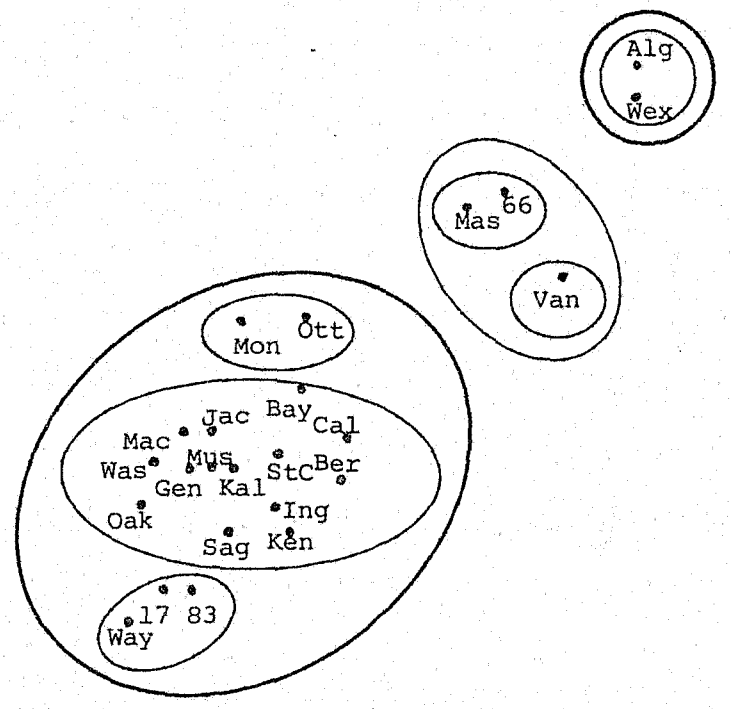


Figure 19. Counties clustered according to similarity in adult arrest rates for burglary and larceny

arrest rates for both crimes; Van Buren and Mason are in a position associated with high rates of arrest for burglary, but low rates for larceny.

The large dominant cluster is almost circular in form. This means that counties are spread almost equally among the possible combinations of arrest rate summarized in Table 9. This contrasts with the situation covered in the analysis of juvenile arrest rates. In that case counties high in arrest rate for one crime category tended to be high in the others as well, and similarly with low arrest rates; the measures tended to be closely related within counties.

	ADULT ARREST RATE		JUVENILE RATE	
	Low Burglary	High Burglary	Low Burglary	High Burglary
Low Larceny	Ing Gen Sag St.C Cal	Van Mus Mas Bay Mon	83 66 Ing Mon Way 17 Was Mac Oak Jac Gen Sag	Cal
High Larceny	Way 17 Ken Ber Kal 83 Oak Was Mac	Alg 66 Wex Ott Jac	Mas Van Mus	Alg Ber Ott Bay Wex St.C Kal Ken

Table 9. Counties partitioned according to adult and juvenile arrest rates for burglary and larceny.

The final configuration of counties, in Figure 20, shows relationships in terms of arrest rates for robbery, aggravated assault and motor vehicle theft. In this figure the major directional thrust is diagonal, with low arrest rates represented in the lower left region and high arrest rates in the upper right area. Smaller groups inside the main cluster are differentiated similarly according to arrest rate for robbery. Monroe and Ottawa have much higher adult arrest rates than does Wayne. The now familiar pattern of small counties toward the upper right is again repeated.

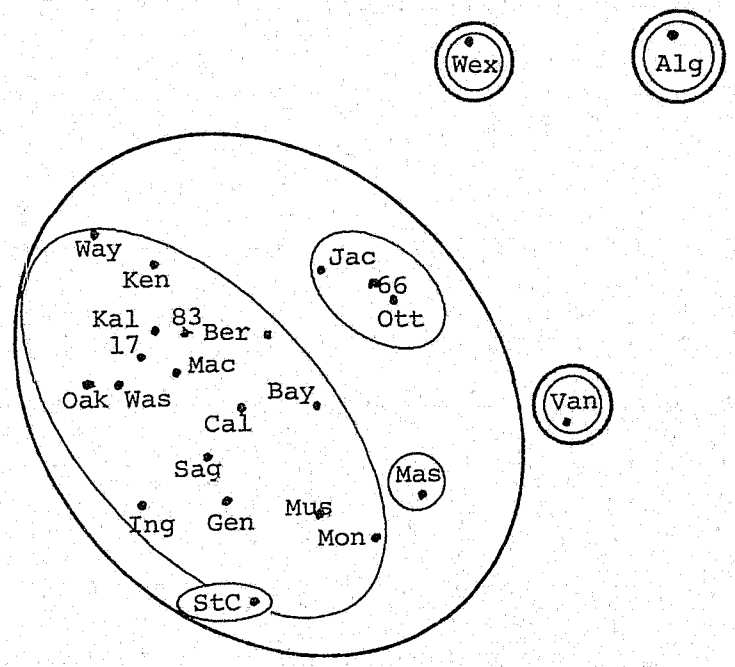


Figure 20. Counties clustered according to similarity in adult arrest rates for robbery, aggravated assault and motor vehicle theft.

Small counties tend to have a larger number of arrests relative to number of offenses than large counties. Although population and urbanization are not able to account for all differences among counties, a point brought out previously, these factors appear to be correlated with arrest measures in a significant way.

FREQUENCY OF ADULT ARRESTS BY CRIME CATEGORY

The relative ranking of the crime categories in terms of frequency of adult arrests diverges from the pattern for juvenile arrests and reported offenses. Data are listed in Table 10. Almost all counties reported aggravated assault as the third most prevalent crime category following larceny and burglary which held first and second place. Third place for juvenile arrests was held by motor vehicle theft. One exception to the general ranking order was Wayne County where adult arrests for robbery are third most frequent after burglary and larceny. For all counties burglary and larceny rank one and two, and in almost all cases murder and rape are at the bottom.

The percentages of arrests in the two major crime groupings studied in this analysis also are listed in the last two columns of Table 10. Adult arrests for burglary and larceny account for a smaller percentage of overall arrests than was the case for juvenile arrests and number of reported offenses. For adults, most counties fall in the range of 70% to 85%, a lower value than the 85% to 95% found for juvenile arrests and crime measures. A corresponding increase in adult arrests in the robbery subgroup can be seen, with the range from 15% to 25%. The greatest discrepancies can be attributed to higher levels of adult arrest for aggravated assault, robbery, and also murder and rape. Motor vehicle theft is a category with lower adult arrests relative to juvenile arrests. In absolute numbers, adult arrests far exceed the number of juvenile arrests in every category except motor vehicle theft. Figure 21 compares the average arrest rates for juveniles and adults in the five major index crime categories.

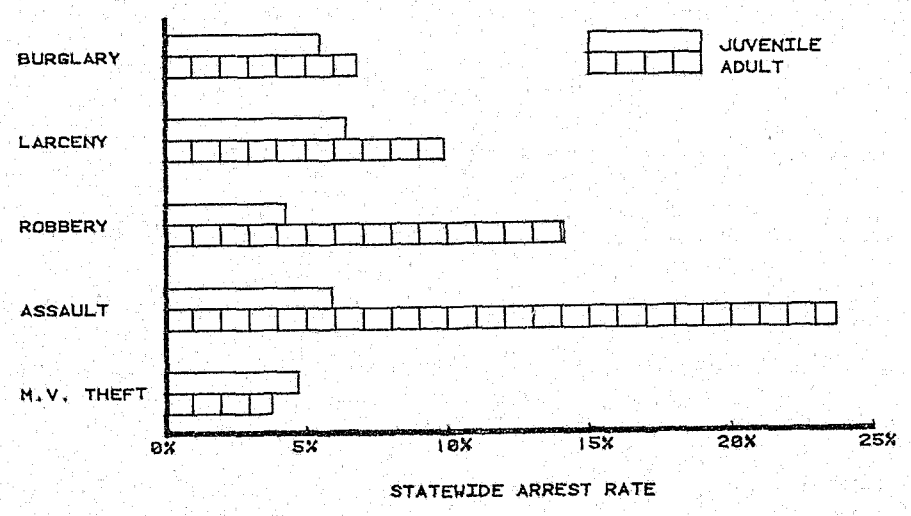


Figure 21. Comparison of juvenile and adult arrest rates for five index crimes, averaged over the years 1972-1977

COUNTY	Larc.	Burg.	Rob.	Agg. Aslt.	M.V. Theft	Rape	Murd.	% B&L	% Rob. AA,MV
17 Most Populous									
Bay	1	2	4	3	5	6	7	82	16
Monroe	1	2	4	3	5	6	7	74	22
St. Clair	1	2	4	3	5	6	7	76	22
Calhoun	1	2	4	3	5	6	7	72	24
Ottawa	1	2	5	3	4	6	7	86	12
Jackson	1	2	4	3	5	6	7	73	24
Muskegon	1	2	4	3	5	6	7	71	25
Berrien	1	2	4	3	5	6	7	75	22
Kalamazoo	1	2	4	3	5	6	7	77	22
Saginaw	1	2	4	3	5	7	6	70	26
Washtenaw	1	2	4	3	5.5	5.5	7	79	19
Ingham	1	2	4	3	5	6	7	78	19
Kent	1	2	4	3	5	6	7	80	18
Genesee	1	2	4	3	5	6	7	65	31
Macomb	1	2	4	3	5	6	7	79	20
Oakland	1	2	4	3	5	6	7	78	20
Wayne	1	2	3	4	5	7	6	69	26
3 Aggregates									
Total State	1	2	4	3	5	6	7	74	22
17 Counties	1	2	4	3	5	6	7	73	24
66 Counties	1	2	5	3	4	6	7	80	18
4 Small Counties									
Alger	1	2	6	3	4	5	7	78	19
Mason	1	2	5	3	4	6	7	82	16
Van Buren	1	2	5	3	4	6	7	65	32
Wexford	1	2	5	3	4	6	7	86	13
AVERAGE RANK	1	2	4.5	3	4.5	6	7		

Table 10. Adult Arrest - Rank Order of Crime Categories

At this point we will introduce a comparison of the percentage of total arrests that are accounted for by juvenile offenders and by adult offenders. In Figure 22, the percentages of arrests for all index crimes attributed to juvenile offenders and to adult offenders are shown for the years 1972 through 1977. There is a fairly consistent decrease in the percentage of

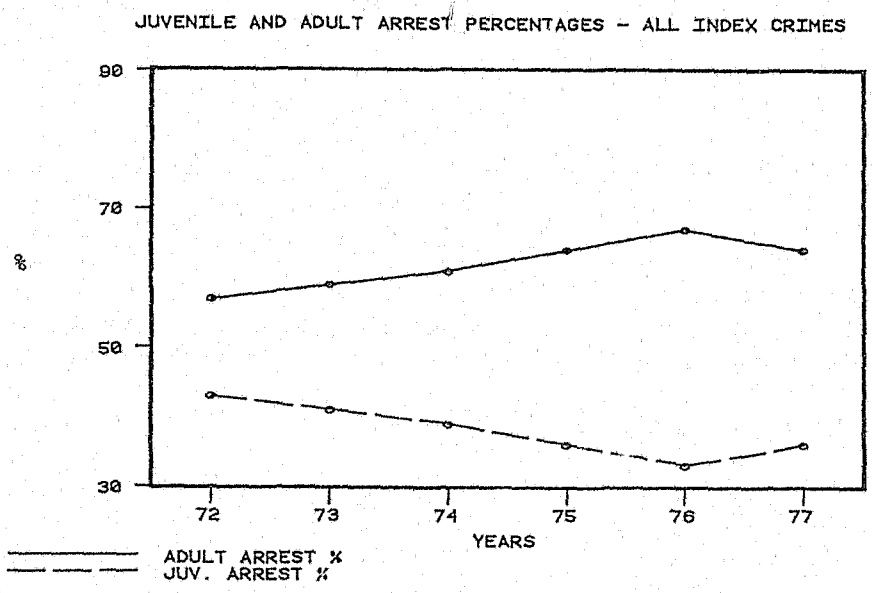


Figure 22. Percentages of all arrests divided into juvenile and adult arrest categories for the years 1972-1977

juvenile arrests and a corresponding increase in the percentage of adult arrests during this time period, although the divergence appears to level off towards the end of this span. Looking at one more level of refinement in analysis, index crimes were divided into crimes against persons and crimes against property. Major decreases in juvenile arrests relative to adult arrests have occurred in the property category with a lesser decrease in arrests for crimes against persons category. For crimes against persons, the adult proportion is approximately four times that of the juvenile figure. For crimes against property, the adult proportions is one and one-half times greater.

SUMMARY OF ADULT ARREST RATE

Adult arrest rates have been increasing in the most populous counties; other counties show a mixed picture. Increased rates were widespread for burglary, aggravated assault and larceny.

Whereas juvenile arrest rates for burglary and larceny tended to be linked, either both high or both low, no such linkage appeared in the corresponding adult analysis.

Patterns of adult arrest for robbery, aggravated assault and motor vehicle theft showed a correlation with county population. Large, populous counties had lower arrest rates; smaller counties had higher rates.

Relative to juveniles, a smaller percentage of adult arrests were in the categories burglary and larceny; higher percentages of adult arrest were found for index crimes against persons. Adult arrests accounted for 80% of all arrests for crimes against persons and 60% of all arrests for crimes against property.

CONCLUSIONS

1. After 10 years of increases in statewide index crime rate, since 1975 a reverse trend of decreasing crime rates appears to dominate.

2. The 21 counties in the sample can be roughly grouped into high, mixed, and low groups based on crime rates for five major index crimes.

3. Across counties, a very general pattern of relative frequencies for individual crime categories was detected, but planning programs for crime reduction and prevention would require more detailed analysis within each county.

4. Juvenile arrest rates have trended downward in recent years relative to both number of reported offenses and juvenile population.

5. Overall, the total number of arrests relative to reported offenses has declined from 1972 to 1977.

6. Adult arrest rates, compared to juveniles, were markedly higher for robbery and aggravated assault.

7. Adult arrests have accounted for a steadily increasing percentage of total arrests until the past year when the function leveled off.

8. Crime prevention and crime reduction efforts have the greatest potential payoff in some of the larger more populous counties that experience high crime rates across many crime types (e.g. Wayne, Genessee and Saginaw counties).

9. Counties that are relatively small in population may have special needs for support in controlling crime in one or more specific categories (e.g. burglaries in Wexford county).

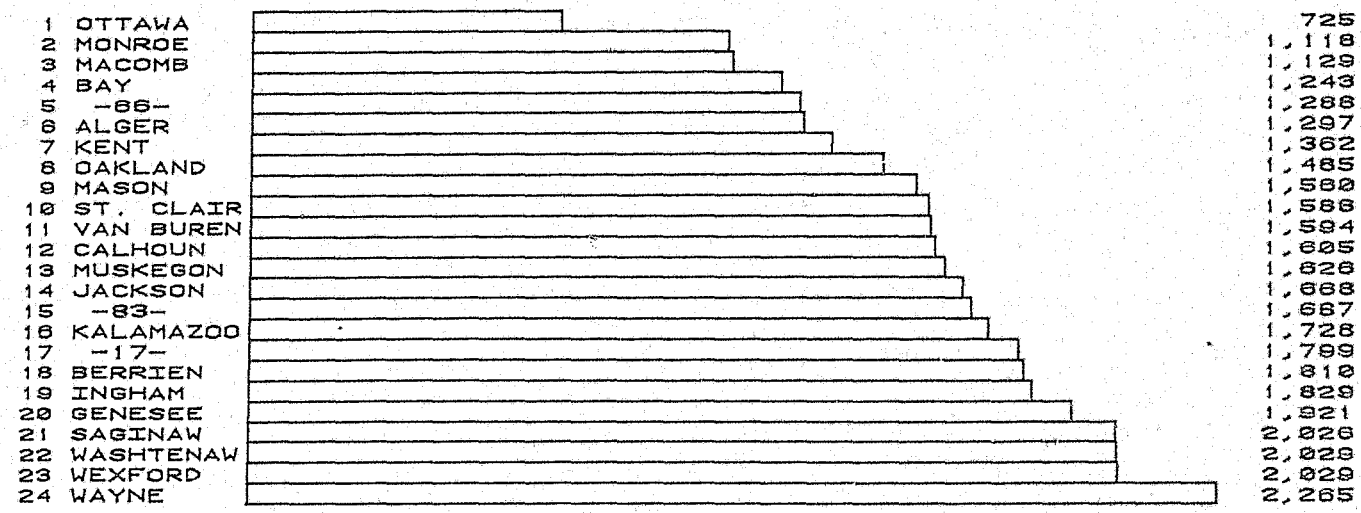
10. The statewide decline in total arrests for larcenies and motor vehicle thefts merits further analysis at local jurisdictional levels.

APPENDIX A

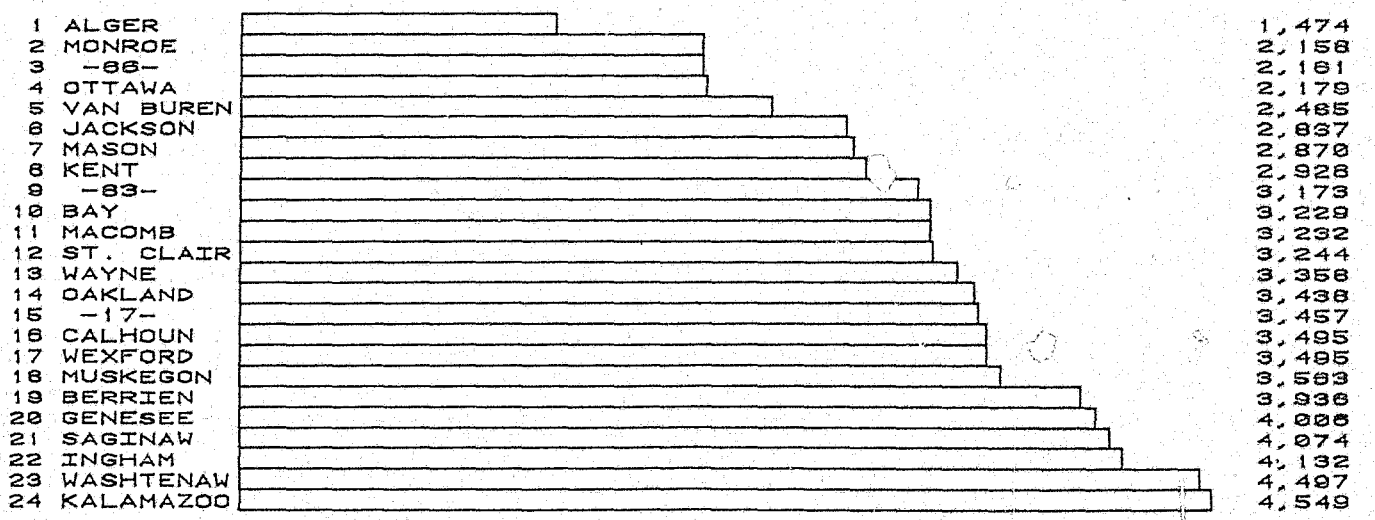
Histograms ranking counties and numerical values for:

1. Crime rates for burglary and larceny
2. Crime rates for robbery, aggravated assault and motor vehicle theft
3. Juvenile arrest rates for burglary and larceny
4. Juvenile arrest rates for robbery, assault and motor vehicle theft
5. Adult arrest rates for burglary and larceny
6. Adult arrest rates for robbery, assault and motor vehicle theft

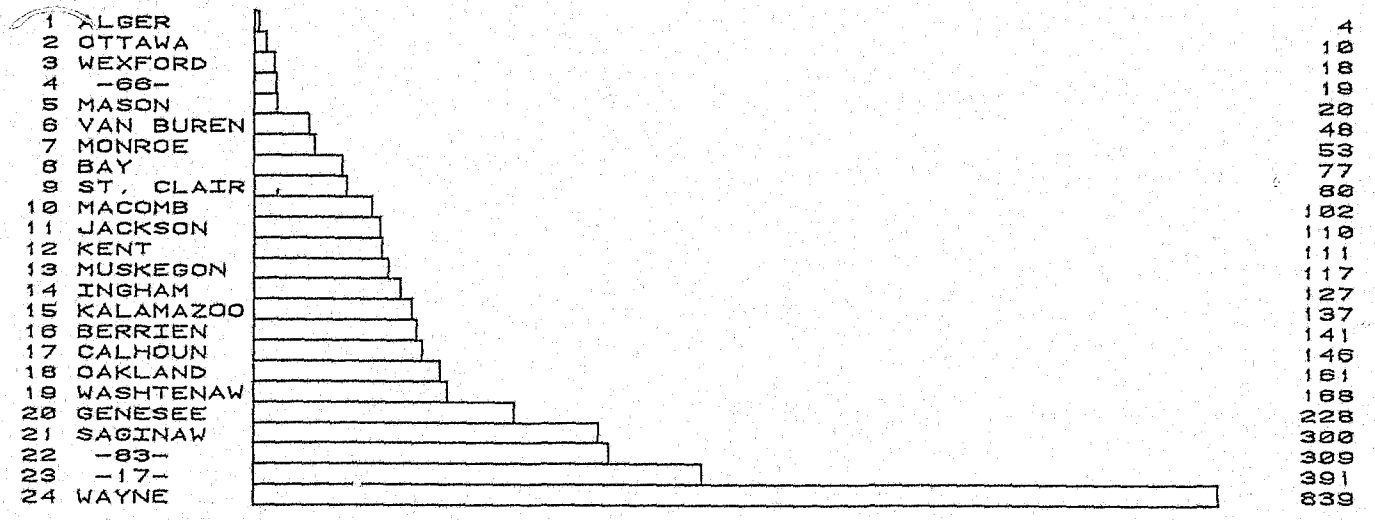
CRIME RATE - BURGLARY



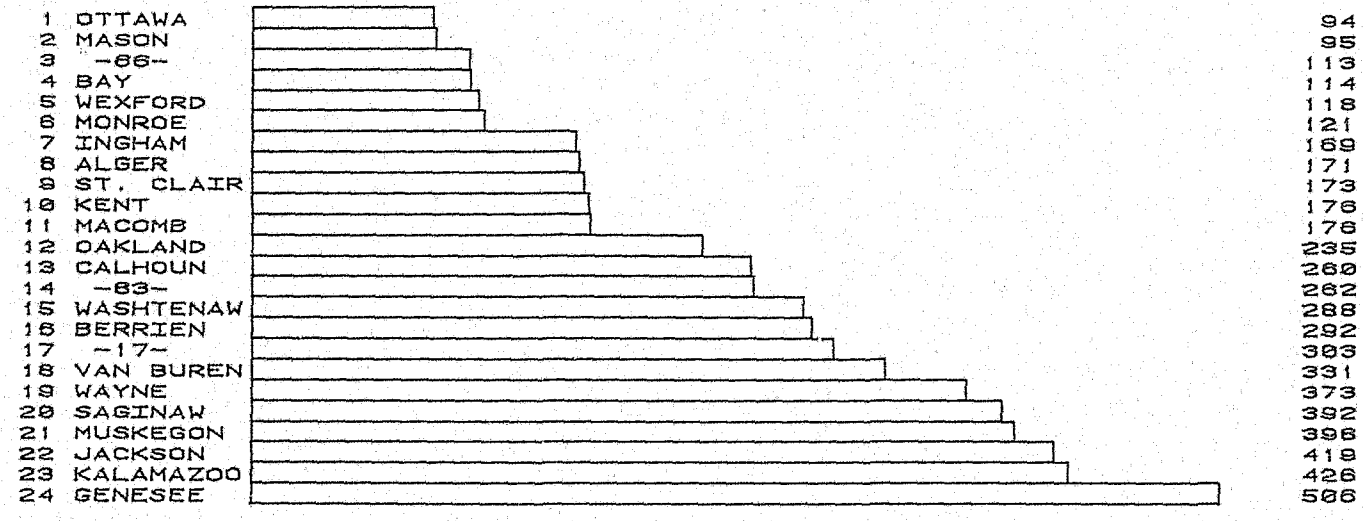
CRIME RATE - LARCENY



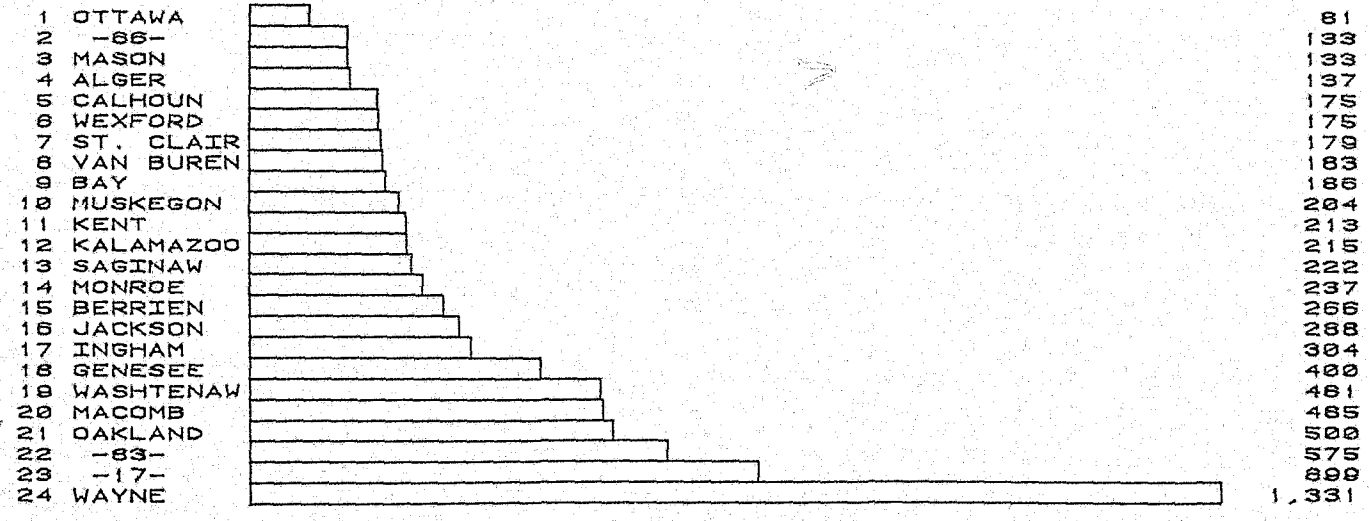
CRIME RATE - ROBBERY



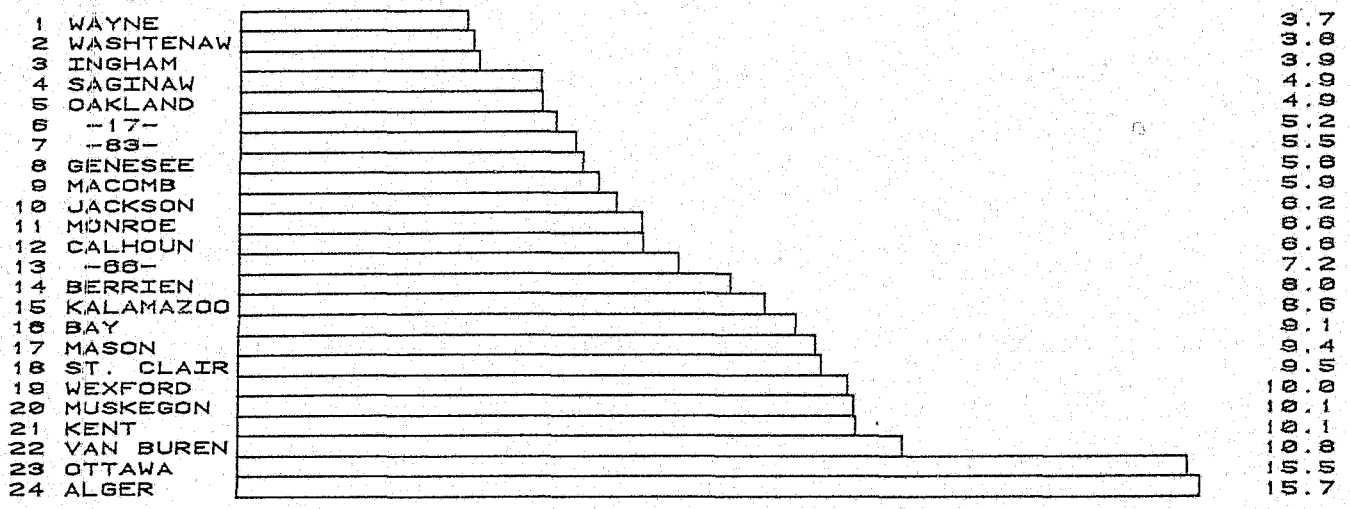
CRIME RATE - ASSAULT



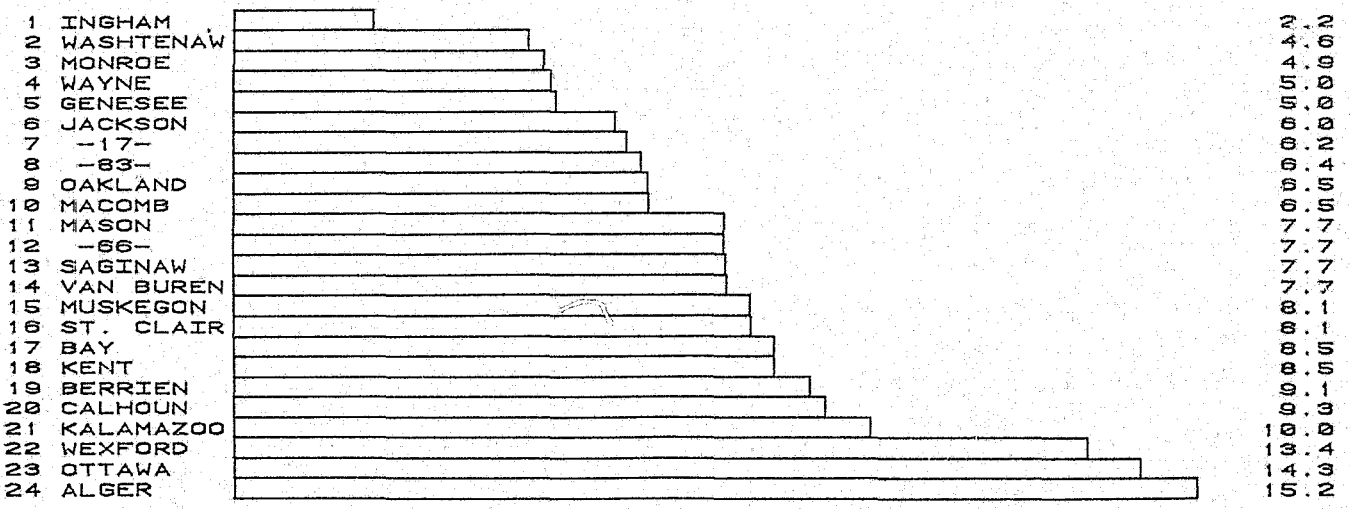
CRIME RATE - M. V. THEFT



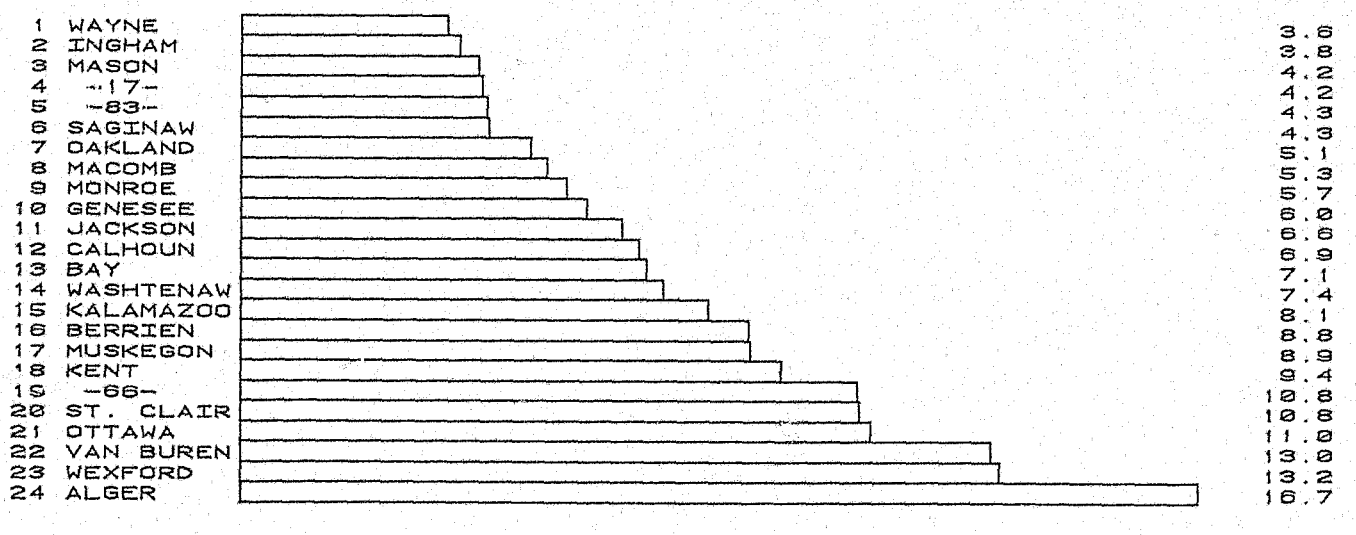
JUVENILE ARREST RATES – BURGLARY



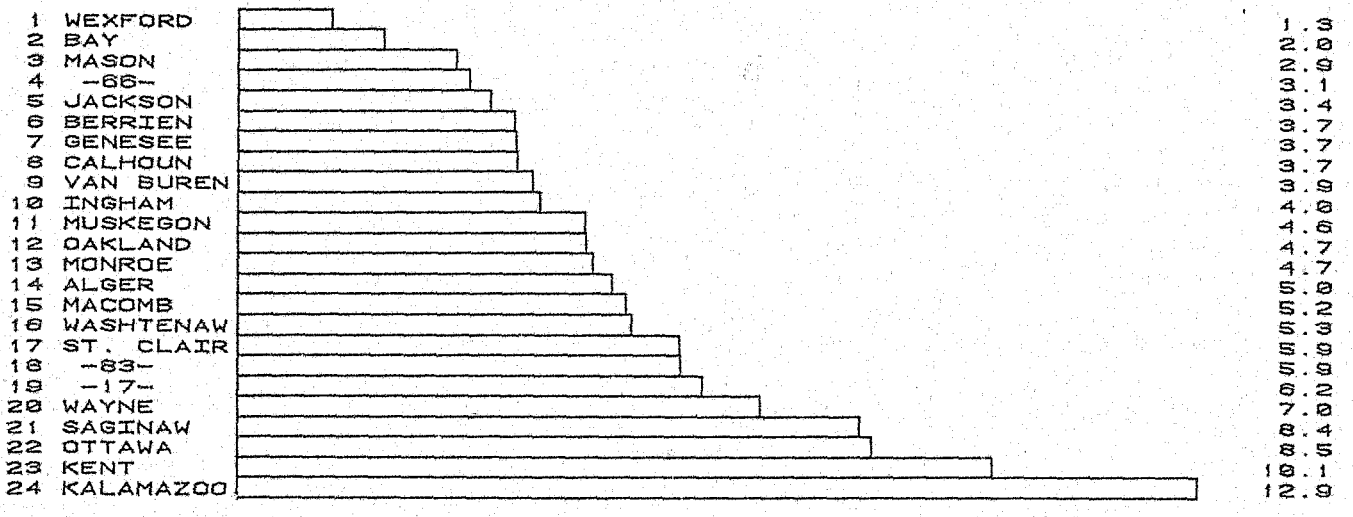
JUVENILE ARREST RATES – LARCENY



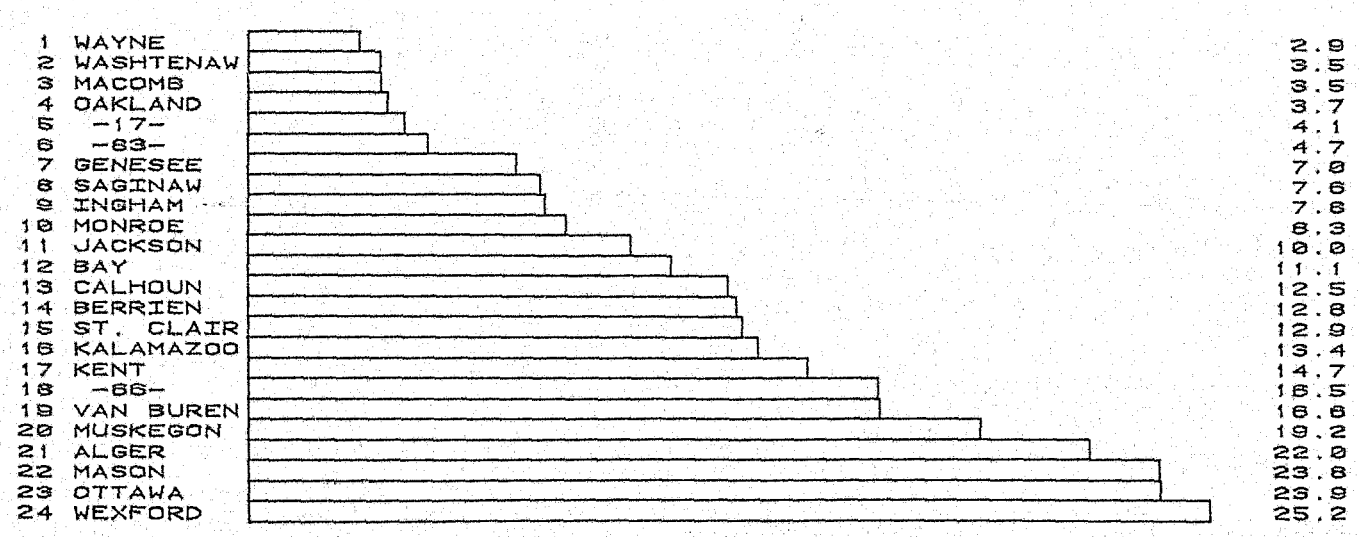
JUVENILE ARREST RATES – ROBBERY



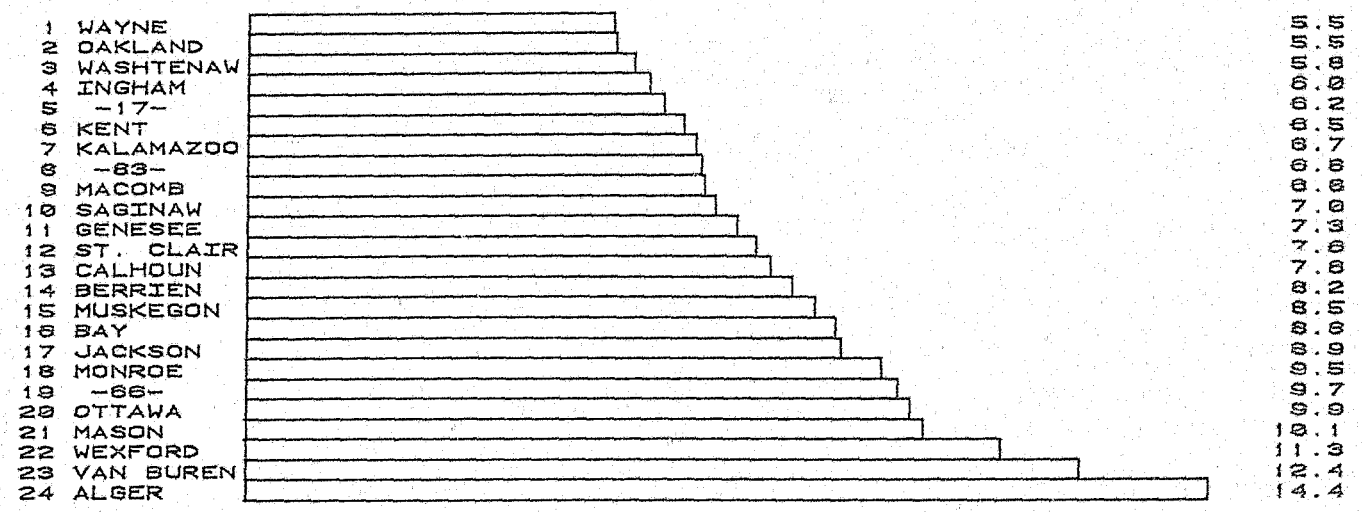
JUVENILE ARREST RATES – ASSAULT



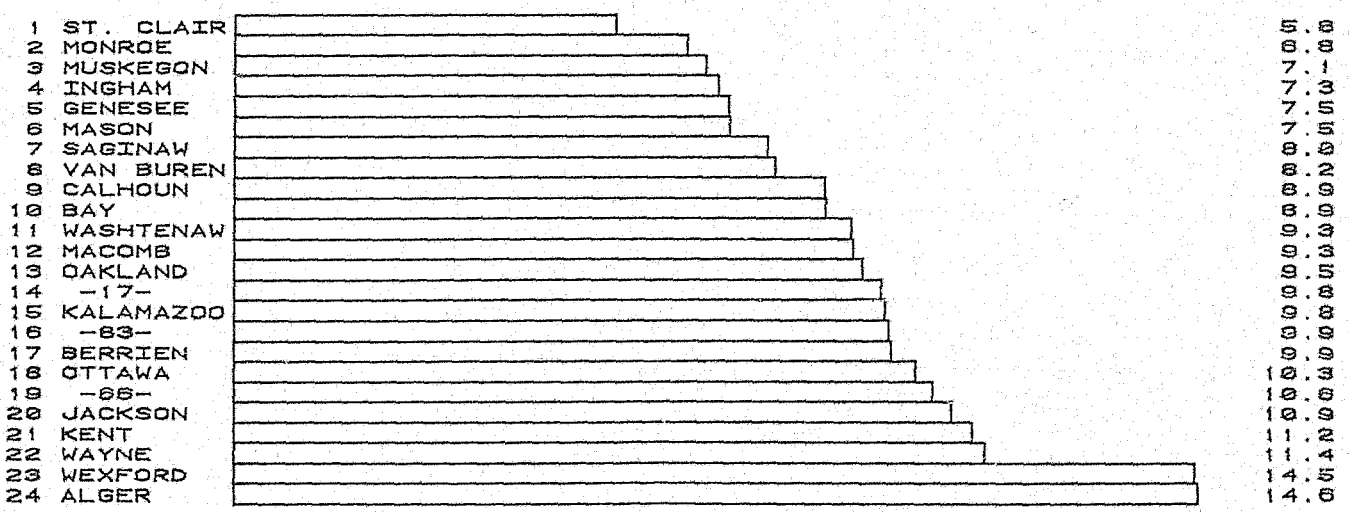
JUVENILE ARREST RATES – M. V. THEFT



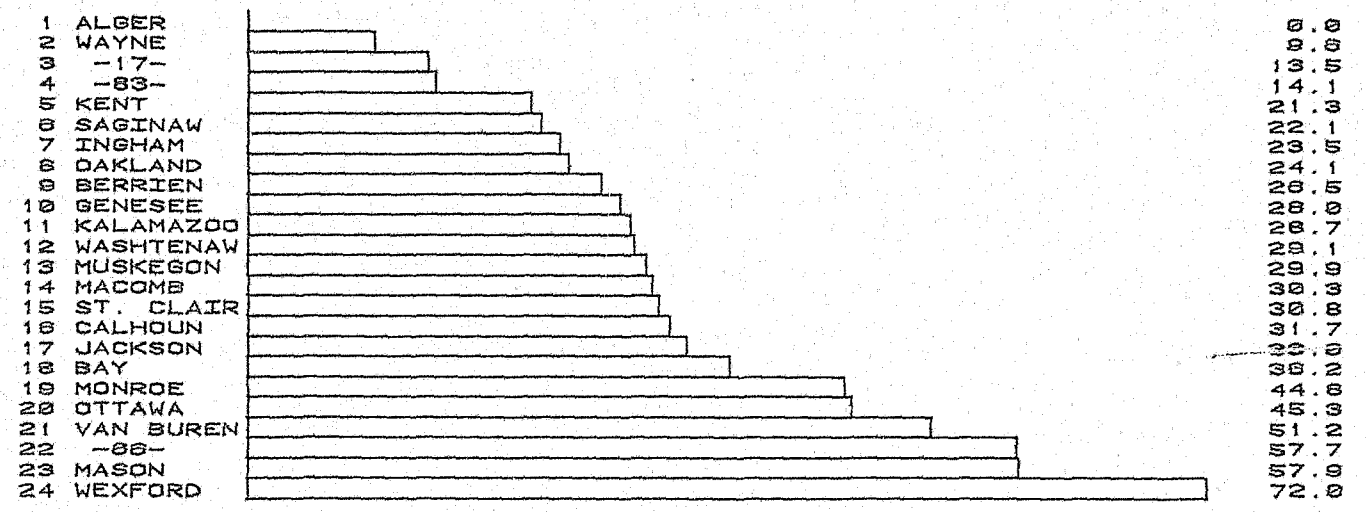
ADULT ARREST RATES - BURGLARY



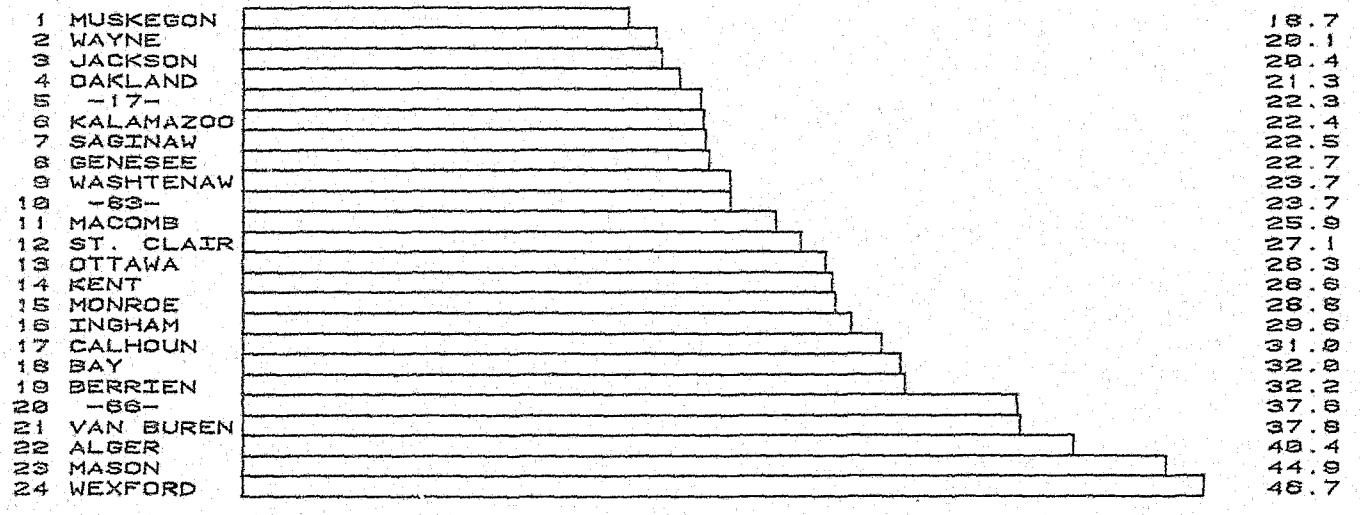
ADULT ARREST RATES - LARCENY



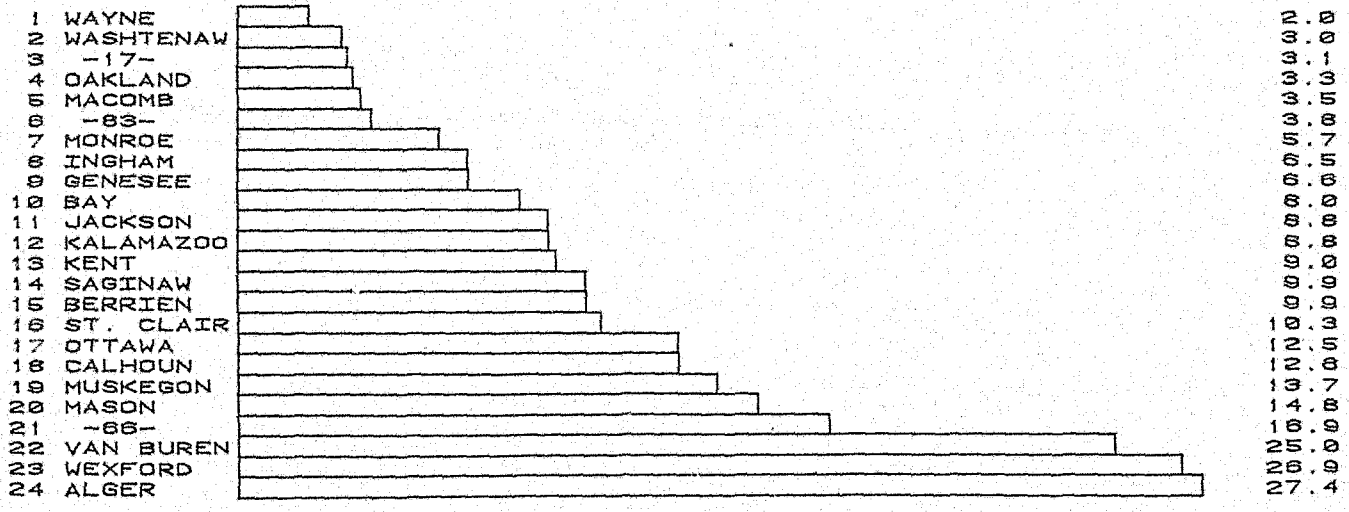
ADULT ARREST RATES - ROBBERY



ADULT ARREST RATES - ASSAULT



ADULT ARREST RATES - M. V. THEFT



APPENDIX B

Populations in each county for the years 1972 to 1977.

POPULATIONS

JURISDICTION	72	73	74	75	76	77
BAY	118,700	119,527	120,300	120,000	120,000	122,000
MONROE	123,200	124,439	125,000	126,300	127,000	129,100
ST. CLAIR	126,200	127,321	129,100	129,800	130,500	131,600
CALHOUN	141,000	142,169	141,700	141,000	140,200	139,800
OTTAWA	131,200	136,694	138,800	141,000	142,900	146,100
JACKSON	143,700	144,321	146,200	146,900	147,200	149,900
MUSKEGON	158,400	157,863	157,300	157,400	158,600	158,000
BERRIEN	166,500	168,644	169,500	170,100	170,800	169,100
KALAMAZOO	202,000	200,021	201,600	201,500	203,200	206,300
SAGINAW	224,000	225,488	226,500	226,300	226,600	226,700
WASHTENAW	239,300	241,916	252,900	246,600	249,400	250,300
INGHAM	265,600	268,294	270,100	268,400	270,100	272,000
KENT	414,300	419,573	423,300	424,300	427,200	429,500
GENESEE	449,800	452,304	452,000	448,800	446,800	444,900
MACOMB	638,000	654,480	663,900	667,100	672,900	686,000
OAKLAND	921,800	941,709	957,700	965,200	971,100	984,100
WAYNE	2,652,600	2,600,322	2,560,000	2,518,800	2,469,500	2,418,000
TOTAL STATE	9,013,000	9,064,979	9,117,000	9,111,000	9,113,000	9,129,000
17 COUNTIES	7,116,300	7,125,085	7,135,900	7,099,500	7,074,000	7,063,400
66 COUNTIES	1,896,700	1,939,894	1,981,100	2,011,500	2,039,000	2,065,600
ALGER	8,300	8,572	8,800	9,100	9,400	9,800
MASON	24,400	24,762	24,400	24,600	24,800	25,200
VAN BUREN	59,500	59,987	60,600	61,700	61,800	61,800
WEXFORD	20,600	21,317	21,500	22,000	22,100	22,400

Source: Bureau of the Census, Current Population Reports, Series P-25.

APPENDIX C

Raw data, rate measures and percentage data for the State of Michigan:

1. Reported offenses
2. Clearances
3. Juvenile arrests
4. Adult arrests
5. Total arrests

	72	73	74	75	76	77	AVG.	SLOPE*
STATE - OFFENSES								
MURD	964	1,081	1,170	1,042	1,001	853	1,019	
RAPE	2,644	3,166	3,370	3,477	3,281	3,537	3,246	
ROBB	26,182	25,521	30,657	32,354	30,241	23,834	28,132	
ASLT	20,347	23,001	24,739	25,751	24,154	24,828	23,803	
BURG	142,734	142,304	172,828	173,134	151,207	138,298	153,418	
LARC	247,410	247,785	302,301	327,367	321,192	285,432	288,581	
MVTH	42,841	49,234	56,599	59,755	55,688	49,539	52,276	
PERS	50,137	52,769	59,936	62,624	58,677	53,052	56,199	
PROP	432,985	439,323	531,728	560,256	528,087	473,269	494,275	
INDX	483,122	492,092	591,664	622,880	586,764	526,321	550,474	
NIND	437,255	468,143	526,939	568,658	537,759	546,424	514,196	
TOTL	920,377	960,235	1,118,603	1,191,538	1,124,523	1,072,745	1,064,670	
STATE - CRIME RATE								
MURD	11	12	13	11	11	9	11	-0.27
RAPE	29	35	37	38	36	39	36	0.43
ROBB	290	282	336	355	332	261	309	0.02
ASLT	226	254	271	283	265	272	262	0.39
BURG	1,584	1,570	1,896	1,900	1,659	1,515	1,687	-0.01
LARC	2,745	2,733	3,316	3,593	3,525	3,127	3,173	0.35
MVTH	475	543	621	656	611	543	575	0.25
PERS	556	582	657	687	644	581	618	0.19
PROP	4,804	4,846	5,832	6,149	5,795	5,184	5,435	0.26
INDX	5,360	5,428	6,490	6,837	6,439	5,765	6,053	0.25
NIND	4,851	5,164	5,780	6,241	5,901	5,986	5,654	0.45
TOTL	10,212	10,593	12,269	13,078	12,340	11,751	11,707	0.36
STATE - OFFENSE PERCENTAGES								
MURD	0.20	0.22	0.20	0.17	0.17	0.16	0.19	
RAPE	0.55	0.64	0.57	0.56	0.56	0.67	0.59	
ROBB	5.42	5.19	5.18	5.19	5.15	4.53	5.11	
ASLT	4.21	4.67	4.18	4.13	4.12	4.72	4.34	
BURG	29.54	28.92	29.21	27.80	25.77	26.28	27.92	
LARC	51.21	50.35	51.09	52.56	54.74	54.23	52.36	
MVTH	8.87	10.01	9.57	9.59	9.49	9.41	9.49	
PERS	10.38	10.72	10.13	10.05	10.00	10.08	10.23	
PROP	89.62	89.28	89.87	89.95	90.00	89.92	89.77	
INDX	52.49	51.25	52.89	52.28	52.18	49.06	51.69	
NIND	47.51	48.75	47.11	47.72	47.82	50.94	48.31	
TOTL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

* Slopes are normalized to permit comparisons across crime types.

	72	73	74	75	76	77	AVG.	SLOPE*
STATE - CLEARANCES								
MURD	616	660	766	712	722	577	676	
RAPE	1,047	1,185	1,286	1,462	1,360	1,511	1,309	
ROBB	4,744	4,790	5,649	6,251	5,273	4,272	5,163	
ASLT	10,496	12,093	13,168	14,151	12,662	12,383	12,492	
BURG	18,058	19,736	25,838	25,537	19,650	17,512	21,055	
LARC	41,812	43,683	59,560	65,733	52,650	44,599	51,340	
MVTH	5,110	7,003	6,855	6,626	5,547	5,516	6,110	
PERS	16,903	18,728	20,869	22,576	20,017	18,743	19,639	
PROP	64,980	70,422	92,253	97,896	77,847	67,627	78,504	
INDX	81,883	89,150	113,122	120,472	97,864	86,370	98,144	
NIND	179,285	200,183	234,203	266,486	222,335	210,267	218,793	
TOTL	261,168	289,333	347,325	386,958	320,199	296,637	316,937	
STATE - CLEARANCE RT								
MURD	63.90	61.05	65.47	68.33	72.13	67.64	66.42	0.41
RAPE	39.60	37.43	38.16	42.05	41.45	42.72	40.23	0.42
ROBB	18.12	18.77	18.43	19.32	17.44	17.92	18.33	-0.18
ASLT	51.59	52.58	53.23	54.95	52.42	49.88	52.44	-0.12
BURG	12.65	13.87	14.95	14.75	13.00	12.66	13.65	-0.08
LARC	16.90	17.63	19.70	20.08	16.39	15.63	17.72	-0.15
MVTH	11.93	14.22	12.11	11.09	9.96	11.13	11.74	-0.35
PERS	33.71	35.49	34.82	36.05	34.11	35.33	34.92	0.17
PROP	15.01	16.03	17.35	17.47	14.74	14.29	15.82	-0.15
INDX	16.95	18.12	19.12	19.34	16.68	16.41	17.77	-0.15
NIND	41.00	42.76	44.45	46.86	41.34	38.48	42.48	-0.14
TOTL	28.38	30.13	31.05	32.48	28.47	27.65	29.69	-0.11
STATE - CLRANCE PERCENTAGES								
MURD	0.75	0.74	0.68	0.59	0.74	0.67	0.69	
RAPE	1.28	1.33	1.14	1.21	1.39	1.75	1.35	
ROBB	5.79	5.37	4.99	5.19	5.39	4.95	5.28	
ASLT	12.82	13.56	11.64	11.75	12.94	14.34	12.84	
BURG	22.05	22.14	22.84	21.20	20.08	20.28	21.43	
LARC	51.06	49.00	52.65	54.56	53.80	51.64	52.12	
MVTH	6.24	7.86	6.06	5.50	5.67	6.39	6.29	
PERS	20.64	21.01	18.45	18.74	20.45	21.70	20.17	
PROP	79.36	78.99	81.55	81.26	79.55	78.30	79.83	
INDX	31.35	30.81	32.57	31.13	30.56	29.12	30.92	
NIND	68.65	69.19	67.43	68.87	69.44	70.88	69.08	
TOTL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

* Slopes are normalized to permit comparisons across crime types.

	72	73	74	75	76	77	AVG.	SLOPE*
STATE - JUV ARRESTS								
MURD	40	50	47	41	69	56	51	
RAPE	134	139	130	109	155	217	147	
ROBB	1,200	1,115	1,230	1,339	1,219	1,123	1,204	
ASLT	1,365	1,271	1,606	1,459	1,307	1,422	1,405	
BURG	8,112	8,355	9,689	8,657	7,988	7,684	8,414	
LARC	19,049	16,740	21,012	20,406	16,973	15,276	18,243	
MVTH	2,536	3,211	2,639	2,110	2,123	1,915	2,422	
PERS	2,739	2,575	3,013	2,948	2,750	2,818	2,807	
PROP	29,697	28,306	33,340	31,173	27,084	24,875	29,079	
INDX	32,436	30,881	36,353	34,121	29,834	27,693	31,886	
NIND	34,894	31,783	35,337	31,839	31,945	27,383	32,197	
TOTL	67,330	62,664	71,690	65,960	61,779	55,076	64,083	
STATE - JUV ARR RATE								
MURD	4.15	4.63	4.02	3.93	6.89	6.57	5.03	0.40
RAPE	5.07	4.39	3.86	3.13	4.72	6.14	4.55	0.16
ROBB	4.58	4.37	4.01	4.14	4.03	4.71	4.31	-0.02
ASLT	6.71	5.53	6.49	5.67	5.41	5.73	5.92	-0.32
BURG	5.68	5.87	5.61	5.00	5.28	5.56	5.50	-0.28
LARC	7.70	6.76	6.95	6.23	5.28	5.35	6.38	-0.51
MVTH	5.92	6.52	4.66	3.53	3.81	3.87	4.72	-0.45
PERS	5.46	4.88	5.03	4.71	4.69	5.31	5.01	-0.15
PROP	6.86	6.44	6.27	5.56	5.13	5.26	5.92	-0.51
INDX	6.71	6.28	6.14	5.48	5.08	5.26	5.83	-0.51
NIND	7.98	6.79	6.71	5.60	5.94	5.01	6.34	-0.50
TOTL	7.32	6.53	6.41	5.54	5.49	5.13	6.07	-0.52
STATE - JUV ARR PERCENTAGES								
MURD	0.12	0.16	0.13	0.12	0.23	0.20	0.16	
RAPE	0.41	0.45	0.36	0.32	0.52	0.78	0.47	
ROBB	3.70	3.61	3.38	3.92	4.09	4.06	3.79	
ASLT	4.21	4.12	4.42	4.28	4.38	5.13	4.42	
BURG	25.01	27.06	26.65	25.37	26.77	27.75	26.44	
LARC	58.73	54.21	57.80	59.80	56.89	55.16	57.10	
MVTH	7.82	10.40	7.26	6.18	7.12	6.92	7.62	
PERS	8.44	8.34	8.29	8.64	9.22	10.18	8.85	
PROP	91.56	91.66	91.71	91.36	90.78	89.82	91.15	
INDX	48.17	49.28	50.71	51.73	48.29	50.28	49.74	
NIND	51.83	50.72	49.29	48.27	51.71	49.72	50.26	
TOTL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

* Slopes are normalized to permit comparisons across crime types.

	72	73	74	75	76	77	AVG.	SLOPE*
STATE - ADLT ARRESTS								
MURD	674	895	879	869	964	777	843	
RAPE	728	823	846	1,031	1,165	1,175	961	
ROBB	3,578	3,596	4,400	4,695	4,371	3,281	3,987	
ASLT	4,738	5,237	5,730	6,241	6,280	5,704	5,655	
BURG	9,034	9,001	11,727	12,228	11,333	9,367	10,448	
LARC	23,146	23,047	30,394	34,611	34,259	27,047	28,751	
MVTH	1,928	2,064	1,947	2,062	2,068	1,832	1,984	
PERS	9,718	10,551	11,855	12,836	12,780	10,937	11,446	
PROP	34,108	34,112	44,068	48,901	47,660	38,246	41,183	
INDX	43,826	44,663	55,923	61,737	60,440	49,183	52,629	
NIND	210,870	223,148	225,201	227,851	249,682	221,563	226,386	
TOTL	254,696	267,811	281,124	289,588	310,122	270,746	279,015	
STATE - AD ARR RATE								
MURD	69.92	82.79	75.13	83.40	96.30	91.09	83.11	0.45
RAPE	27.53	25.99	25.10	29.65	35.51	33.22	29.50	0.43
ROBB	13.67	14.09	14.35	14.51	14.45	13.77	14.14	0.14
ASLT	23.29	22.77	23.16	24.24	26.00	22.97	23.74	0.22
BURG	6.33	6.33	6.79	7.06	7.50	6.77	6.80	0.38
LARC	9.36	9.30	10.05	10.57	10.67	9.48	9.90	0.24
MVTH	4.50	4.19	3.44	3.45	3.71	3.70	3.83	-0.36
PERS	19.38	19.99	19.78	20.50	21.78	20.62	20.34	0.42
PROP	7.88	7.76	8.29	8.73	9.03	8.08	8.29	0.30
INDX	9.07	9.08	9.45	9.91	10.30	9.34	9.53	0.32
NIND	48.23	47.67	42.74	40.07	46.43	40.55	44.28	-0.35
TOTL	27.67	27.89	25.13	24.30	27.58	25.24	26.30	-0.25
STATE - AD ARR PERCENTAGES								
MURD	1.54	2.00	1.57	1.41	1.59	1.58	1.62	
RAPE	1.66	1.84	1.51	1.67	1.93	2.39	1.83	
ROBB	8.16	8.05	7.87	7.60	7.23	6.67	7.60	
ASLT	10.81	11.73	10.25	10.11	10.39	11.60	10.81	
BURG	20.61	20.15	20.97	19.81	18.75	19.05	19.89	
LARC	52.81	51.60	54.35	56.06	56.68	54.99	54.42	
MVTH	4.40	4.62	3.48	3.34	3.42	3.72	3.83	
PERS	22.17	23.62	21.20	20.79	21.14	22.24	21.86	
PROP	77.83	76.38	78.80	79.21	78.86	77.76	78.14	
INDX	17.21	16.68	19.89	21.32	19.49	18.17	18.79	
NIND	82.79	83.32	80.11	78.68	80.51	81.83	81.21	
TOTL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

* Slopes are normalized to permit comparisons across crime types.

	72	73	74	75	76	77	AVG.	SLOPE*
STATE - TOT ARRESTS								
MURD	714	945	926	910	1,033	833	894	
RAPE	862	962	976	1,140	1,320	1,392	1,109	
ROBB	4,778	4,711	5,630	6,034	5,590	4,404	5,191	
ASLT	6,103	6,508	7,336	7,700	7,587	7,126	7,060	
BURG	17,146	17,356	21,416	20,885	19,321	17,051	18,863	
LARC	42,195	39,787	51,406	55,017	51,232	42,323	46,993	
MVTH	4,464	5,275	4,586	4,172	4,191	3,747	4,406	
PERS	12,457	13,126	14,868	15,784	15,530	13,755	14,253	
PROP	63,805	62,418	77,408	80,074	74,744	63,121	70,262	
INDX	76,262	75,544	92,276	95,858	90,274	76,876	84,515	
NIND	245,764	254,931	260,538	259,690	281,627	248,946	258,583	
TOTL	322,026	330,475	352,814	355,548	371,901	325,822	343,098	
STATE - TOT ARR RATE								
MURD	74.07	87.42	79.15	87.33	103.20	97.66	88.14	0.45
RAPE	32.60	30.39	28.96	32.79	40.23	39.36	34.05	0.41
ROBB	18.25	18.46	18.36	18.65	18.48	18.48	18.45	0.32
ASLT	29.99	28.29	29.65	29.90	31.41	28.70	29.66	0.08
BURG	12.01	12.20	12.39	12.06	12.78	12.33	12.30	0.31
LARC	17.05	16.06	17.00	16.81	15.95	14.83	16.28	-0.39
MVTH	10.42	10.71	8.10	6.98	7.53	7.56	8.55	-0.44
PERS	24.85	24.87	24.81	25.20	26.47	25.93	25.35	0.44
PROP	14.74	14.21	14.56	14.29	14.15	13.34	14.21	-0.44
INDX	15.79	15.35	15.60	15.39	15.39	14.61	15.35	-0.43
NIND	56.21	54.46	49.44	45.67	52.37	45.56	50.62	-0.40
TOTL	34.99	34.42	31.54	29.84	33.07	30.37	32.37	-0.39
STATE - TOT ARR PERCENTAGES								
MURD	0.94	1.25	1.00	0.95	1.14	1.08	1.06	
RAPE	1.13	1.27	1.06	1.19	1.46	1.81	1.32	
ROBB	6.27	6.24	6.10	6.29	6.19	5.73	6.14	
ASLT	8.00	8.61	7.95	8.03	8.40	9.27	8.38	
BURG	22.48	22.97	23.21	21.79	21.40	22.18	22.34	
LARC	55.33	52.67	55.71	57.39	56.75	55.05	55.48	
MVTH	5.85	6.98	4.97	4.35	4.64	4.87	5.28	
PERS	16.33	17.38	16.11	16.47	17.20	17.89	16.90	
PROP	83.67	82.62	83.89	83.53	82.80	82.11	83.10	
INDX	23.68	22.86	26.15	26.96	24.27	23.59	24.59	
NIND	76.32	77.14	73.85	73.04	75.73	76.41	75.41	
TOTL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

* Slopes are normalized to permit comparisons across crime types.

APPENDIX D

Matrix of difference scores based on crime rates for robbery.

Monroe	24																						
St. Clair	3	27																					
Calhoun	69	93	66																				
Ottawa	66	42	69	135																			
Jackson	33	57	30	36	99																		
Muskegon	40	64	37	29	106	7																	
Berrien	65	89	62	4	131	32	25																
Kalamazoo	60	84	57	9	127	27	20	4															
Saginaw	223	247	220	154	290	191	184	159	163														
Washtenaw	92	116	89	23	158	59	52	27	31	132													
Ingham	50	74	47	19	117	18	11	14	10	173	41												
Kent	34	58	31	35	101	2	5	30	26	189	57	16											
Genesee	151	175	148	82	217	118	111	86	91	72	59	100	116										
Macomb	25	49	22	44	92	7	14	39	35	198	66	25	9	125									
Oakland	85	109	82	15	151	52	45	20	24	139	7	34	50	66	59								
Wayne	763	787	760	693	829	730	723	698	702	539	671	712	728	612	737	678							
State - 83	233	257	230	163	299	200	193	168	172	9	141	182	198	82	207	148	530						
17 Large	314	338	311	245	380	281	274	249	254	90	222	263	279	163	288	229	449	81					
66 Small	57	33	60	127	9	90	97	122	118	281	149	108	92	208	83	142	820	290	371				
Alger	73	49	76	142	7	106	113	138	133	297	165	124	108	224	99	158	836	306	387	16			
Mason	57	33	60	126	10	89	96	121	117	280	148	107	91	207	82	141	819	289	370	1	17		
Van Buren	29	5	32	98	38	62	69	93	89	252	120	79	63	180	54	113	791	261	343	29	44	28	
Wexford	59	35	62	128	7	92	99	124	119	282	151	109	93	210	84	144	822	292	373	2	14	2	30
	Bay	Mon	StC	Cal	Ott	Jac	Mus	Ber	Kal	Sag	Was	Ing	Ken	Gen	Mac	Oak	Way	83	17	66	Alg	Mas	Van

Robbery crime rate differences between all pairs of counties. Large counties ordered according to increasing population.

END