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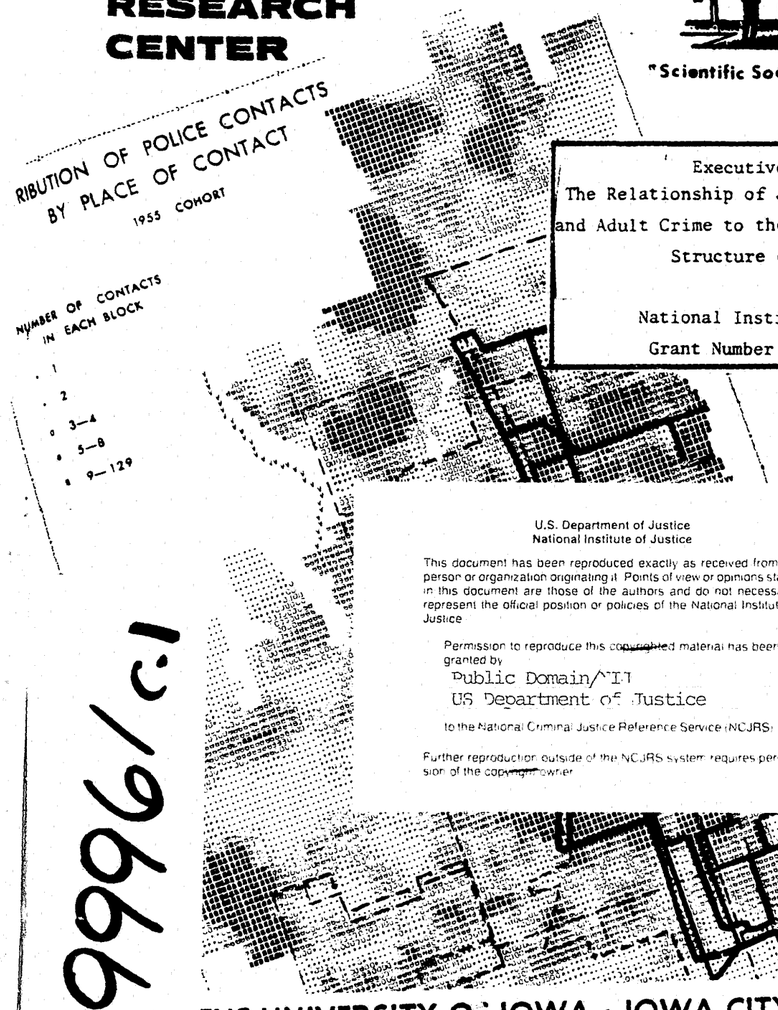

Executive Report
The Relationship of Juvenile Delinquency and Adult Crime to the Changing Ecological Structure of the City

National Institute of Justice
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THE UNIVERSITY OF IOWA · IOWA CITY, IOWA

EXECUTIVE REPORT

The Relationship of Juvenile Delinquency and Adult Crime to the Changing Ecological Structure of the City

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EXECUTIVE REPORT

THE COMPLEX NATURE OF THE PROBLEM

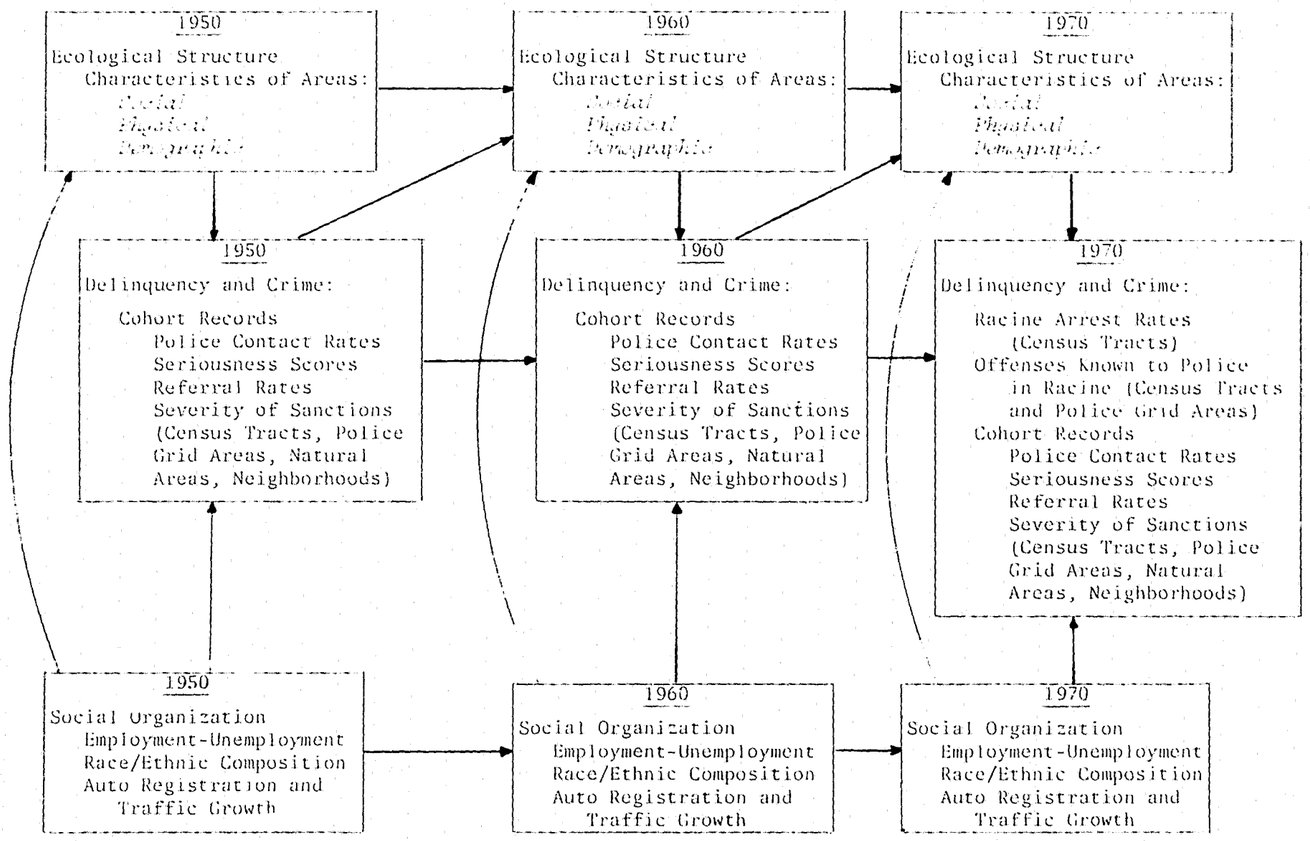
Introduction

The aim of this research is to provide more precise information about the relationship between types of ecological areas, changes in the social, physical, and demographic composition of these areas which are significant enough to alter the ecological structure or pattern of neighborhoods in the city, and the changing spatial distribution of juvenile delinquency and adult crime and police and court responses to them (see Diagram 1).

Inherent in this research is the premise that delinquency and crime are products of the ongoing social life of the community. Rather than having some single or underlying antecedent or cause, different types of delinquency and crime are generated in different social milieus and are as normal to their setting as other behaviors more highly valued in the larger society.

Those areas with the physical, institutional, and demographic characteristics (deteriorated and overcrowded housing, abandoned buildings, commercial-industrial establishements, numerous taverns, and a population neither integrated into the economy nor into the broader social organization of the community) which have long marked them as areas productive of delinquency and crime, will continue to be productive of delinquency and crime as long as they and their residents are unchanged. Furthermore, as these areas expand or as new areas develop with similar characteristics, the spatial distribution of delinquency and crime should expand as well. At the same time, this

DIAGRAM 1. MODEL OF THE RECIPROCAL EFFECTS OF DELINQUENCY AND CRIME AND ECOLOGICAL STRUCTURE AND SOCIAL ORGANIZATION OVER TIME



combination of physical, institutional, and demographic characteristics and high rates of delinquency and crime may generate population movement which further exacerbates the problem of these areas in terms of physical deterioration, institutional change, and the breakdown of social controls. That is, those adults who lend some stability to the area, whether they be White, Black, or Chicano, move to more desirable areas, taking with them their sometimes miscreant children whose behavior, rather than changing, merely results in an enlarged or modified shape of the areas which have high rates of delinquency and crime.

The Changing City

In order to understand changing patterns of delinquency and crime we must understand how social organization and ecological structure change so that areas that once had lower rates of delinquency and crime have become settings in which higher rates of delinquency and crime are now generated and perpetuated. These areas may have acquired commercial establishments which are targets for those who disvalue law-abiding behavior or may have developed attractions or facilities which transform them into arenas for troublesome behavior by persons who have not been integrated into the larger society. Thus, delinquent and criminal areas persevere and expand, the cycle of population movement, residential deterioration, and changing institutional land use continues to generate ever-expanding and new areas whose social and demographic characteristics are productive of even higher rates of delinquency and crime. It follows that unless counter-measures to integrate youth and young adults into the world of work and responsibility had been taken, unless

steps to reduce population movement, property deterioration, and institutional change that would break the cycle had been taken, larger and increasing numbers of areas of the city would become multi-problem areas. Since measures of this nature had not been taken, it was hypothesized that the cyclical effect would be present. In short, the relationship between crime and ecological structure is dynamic and self-perpetuating. Understanding it requires the analysis of changes over time in both ecological structure and the distribution of delinquency and crime in the city.

The social organization of the community refers to the economic base of the community, the types of employment available, the race/ethnic composition of the population, and the distribution of each group within the various sectors of the economy. Changes in social organization are indicated by changes in the proportion of the population employed in various sectors of the economy, the unemployment rate, the race/ethnic composition of the population, etc. The ecological structure of Racine has been developed for the years 1950, 1960, and 1970 (and to a limited extent for 1980) from block data aggregated into various statistical units or subareas, census tracts, police grid areas, natural areas, and neighborhoods.

Patterns of crime and delinquency are measured by official police data for the years 1949 through 1979 for the entire city and for three cohorts of persons (born in 1942, 1949, and 1955) on whom more detailed data have been obtained. Thus, the findings from age-by-age cohort data on delinquency and crime may be compared with annual data for similar periods obtained from the Racine Police Department's offenses committed and arrest data,

in each case transforming the data into comparable analytic units (ecological and temporal). The analysis concentrated on how change in the demographic, housing, and institutional characteristics of areas is related to change in indices of delinquency and crime. Rather than having only one set of units, the relationship of change in one set of variables to change in another set of variables was explored with a variety of units. It was thus possible to determine if the same or similar results are obtained utilizing various measures, spatial units, and cohorts vs. year-by-year statistics for the total population, i.e., if there are different relationships based on the measures utilized.

Measures of delinquency and crime neither rose nor fell with fluctuations in the economy or in a pattern lagging somewhat behind economic trends. One might expect, however, that crimes against property would have a strong economic determinant, but neither property offenses in general nor theft alone followed unemployment rates or other measures of the economy's ability to provide jobs so as to support an economic explanation of the rising and falling crime rate (of which property offenses play the largest part) in Racine. At the same time it became very apparent that the city had undergone rapid growth during the 1950's, growth that carried on into the 60's, and that this growth had been accompanied by increasing individual mobility, as evidenced by automobile registrations and traffic counts, both of which had increased disproportionaly to the city's population growth.

The Cyclical Nature of Phenomena

Numerous other changes in the social organization of the community

had taken place. As Racine's residential and commercial-industrial areas grew it became obvious that many of the changes taking place could lead to increased involvement of the police with both juveniles and adults. The more that the growth and development of the city is considered the easier it is to see how delinquency and crime became part of a cyclical pattern of change which, while it involved decline and deterioration in the inner city and interstitial areas, was likewise an outgrowth of population movement to and commercial and recreational development in peripheral areas.

Rather than be surprised and mystified by increases in delinquency and crime and changing spatial patterns for these phenomena, the acute observer sees them as natural and expected. Having recognized the cyclical nature of the phenomena, the next step is to develop an understanding of the complex interrelationship of variables that keeps the process going. Not until more is known about this process and which are the crucial variables can we effectively go about breaking the cycle of decline, deterioration, delinquency, crime, further population movement, and so on.

We must also be aware that the problem may be conceptualized at a level which would preclude action, e.g., we might conclude by saying that the whole society must be reorganized. This advice is about the same as no advice because it, for all practical purposes, provides no viable alternative program of action for those on the firing line. At another level of conceptualization, although not likely to occur when the problem has been placed in an ecological framework, focus is on the individual and his/her behavior so that programs aimed at breaking the cycle aim at breaking the delinquent

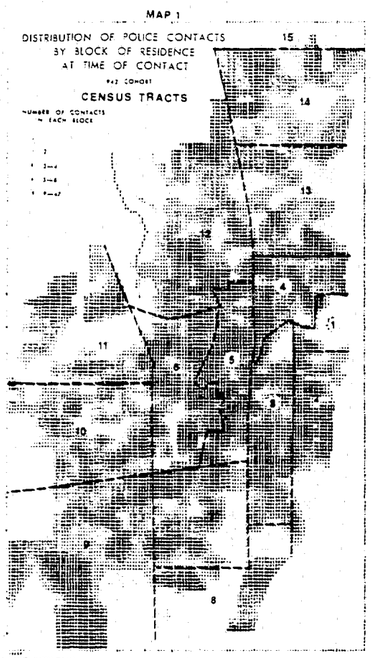
and criminal as the solution. This type of approach makes the error of assuming that if the delinquent and criminal element are removed from the community the cycle is broken. It disregards the normality of most delinquent and criminal behavior, behavior which will continue to be a part of the community because others will take the place of those who are removed.

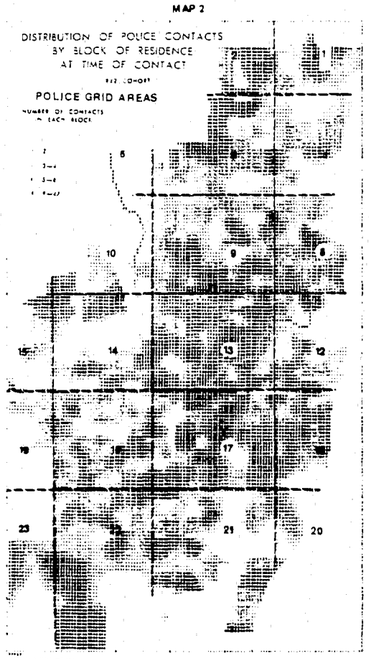
THE ECOLOGY OF THE CITY

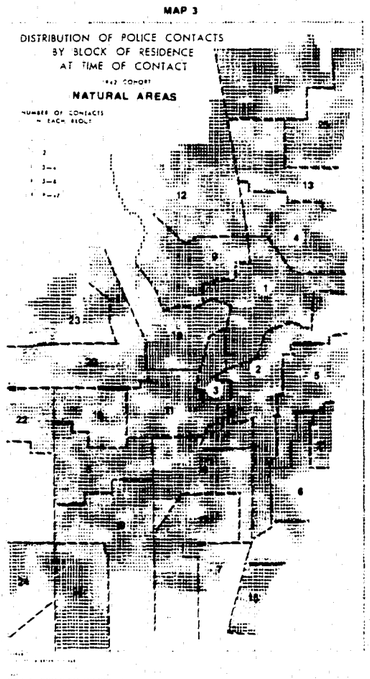
One major concern was methodological. It had been proposed that a variety of spatial systems or sets of units should be utilized to determine if the same findings would be made regardless of unit of measurement, census tracts, police grid areas, natural areas, or neighborhoods. Also, would neighborhoods present a more precise picture of changing patterns of delinquency and crime and be more sensitive to changes in the social organization of the community than were larger spatial units (see Maps 1-4).

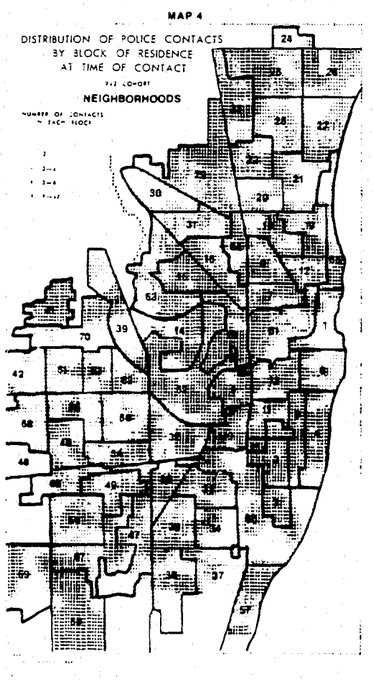
There were numerous analytic and statistical problems so that in the end only a few of the 38 different land use, housing characteristics, and population variables (mainly those available on a block basis) were used in determining how the units of each spatial system should be characterized. Each variable was regarded as one which would be productive of or associated with delinquency and crime in an area or generated by the residents of areas (wherever they might engage in it). These variables and their hypothesized effects provided a rationale for placing spatial units in relatively homogeneous groups.

Considerable time could be spent in describing the various groupings of units within each spatial system. Let it suffice to say that the classical









inner city may be delineated with each of the systems presented (see Map 5). Areas in transition more or less (depending on the unit of analysis, with the smaller units better suited for this purpose than larger units) separate the inner city from older and newer stable residential areas which, in turn, are more or less surrounded by developing suburban fringe areas. Beyond that it was found that variations in the behaviors and attitudes of people are not entirely congruent with spatial variation in the characteristics that have been utilized in differentiating units into groups within the four systems.

While heterogeneity was found within groups and within the units of each group in each spatial system, these spatial units (in spite of their heterogeneity) may be used to capture change in the social organization of the city which is related to change in the spatial distribution of delinquency and crime. Heterogeneity reduces the correlations but does not eliminate findings that are generally positive and supportive of the model of interrelatedness of behavior and the social and physical milieu. The variable congruency of the inner city and interstitial areas, land use, and housing quality scores is shown on Map 6.

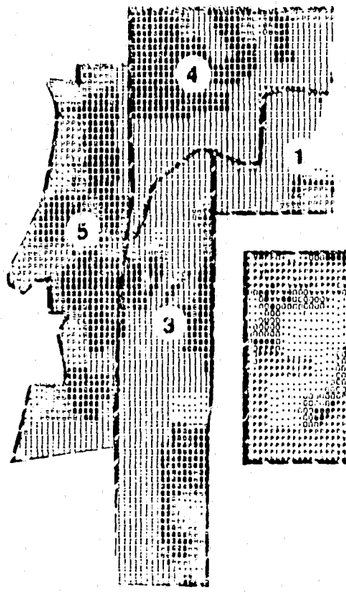
MEASURES OF DELINQUENCY AND CRIME

Changing rates and patterns of Part I offenses are described by place of offense for Census Tracts (1970-78) and Police Grid Areas (1968-1979). Changing rates and patterns of arrests for Part I and II offenses are described by place of residence of the person arrested for Census Tracts (1966-1978). Examples of how rates fluctuated over the years in census tracts and police grid areas are shown in Graph 1 (Racine and high rate tracts) and

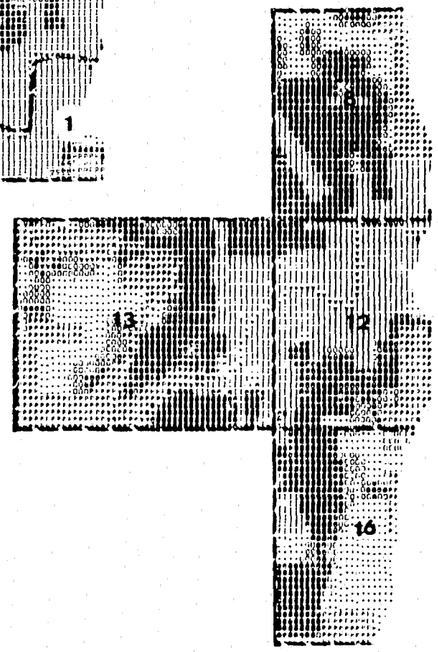
MAP 5

INNER CITY AREAS OF FOUR SPATIAL SYSTEMS

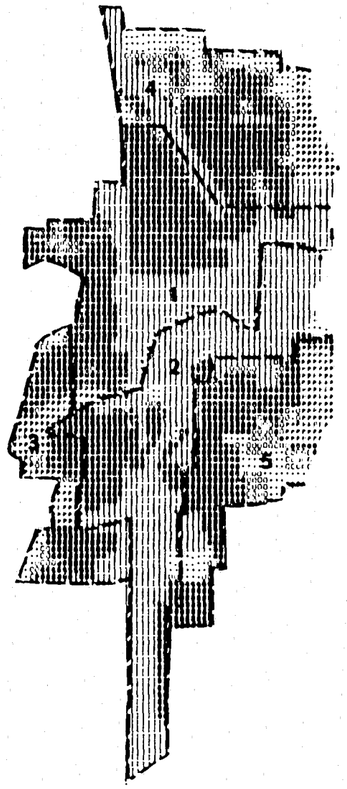
CENSUS TRACTS



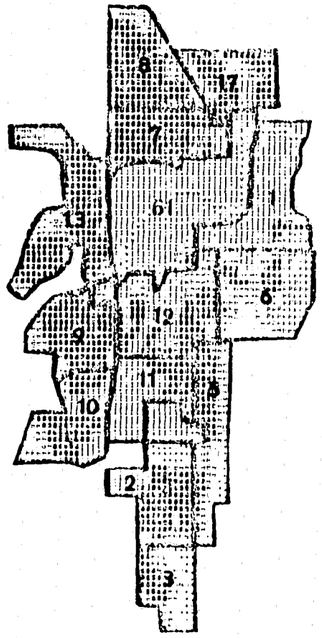
POLICE GRID AREAS



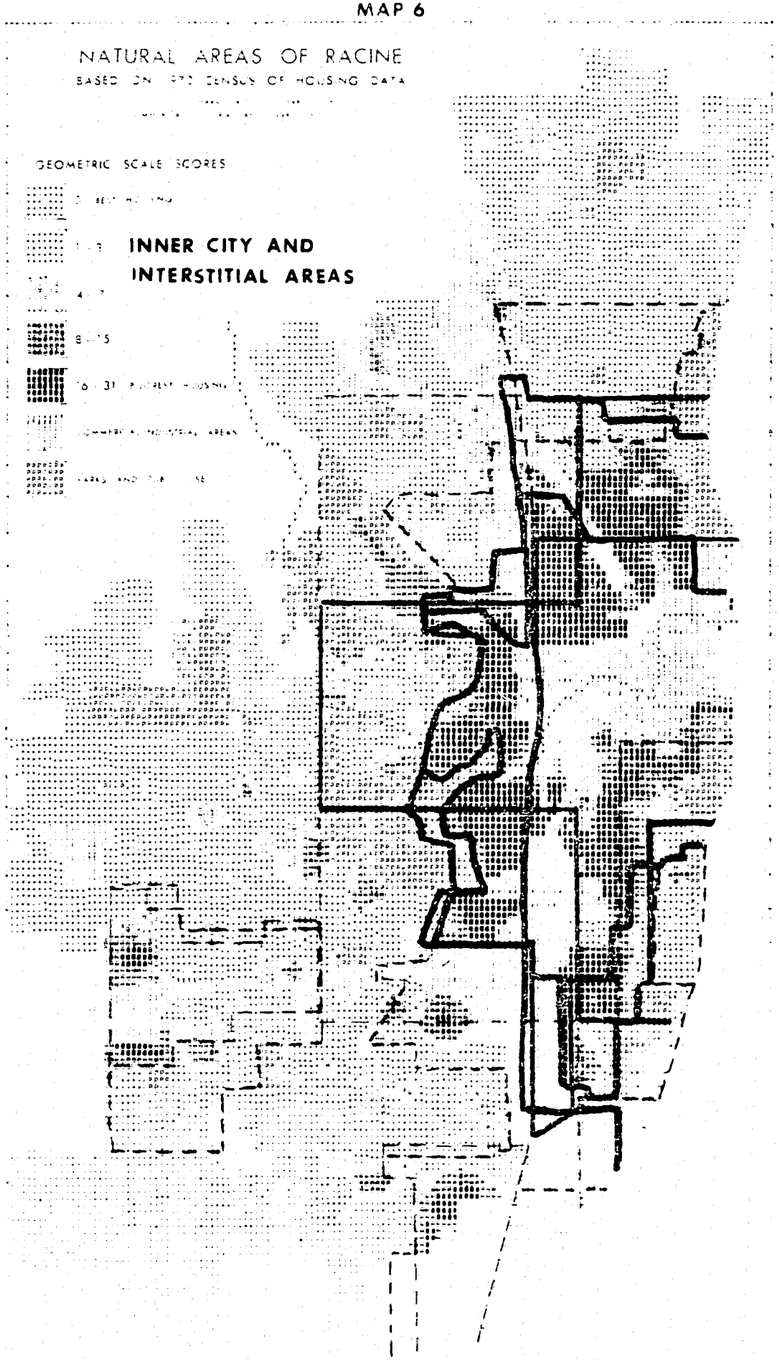
NATURAL AREAS



NEIGHBORHOODS



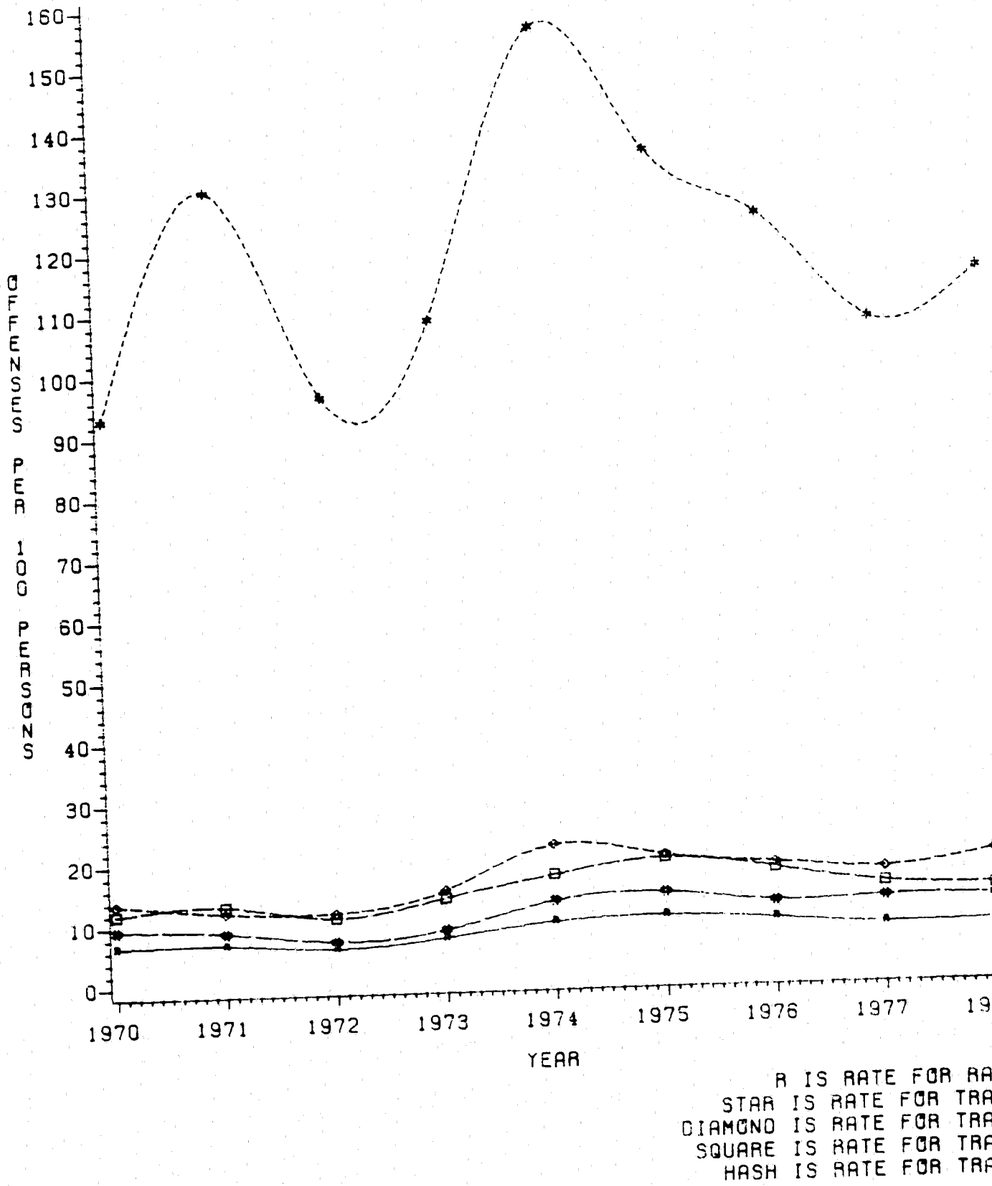
MAP 6


NATURAL AREAS OF RACINE
GEOMETRIC SCALE SCORES
INNER CITY AND
INTERSTITIAL AREAS

GRAPH 1.

PART I OFFENSES PER 100 PERSONS

TRACTS 1, 3, 4, 5 AND RACINE



Graph 11 (Racine and medium rate grids). How arrest rates fluctuated by place of residence is shown in Graph 8 (Racine and low rate tracts).

Offenses and Arrests in Census Tracts and Police Grid Areas

Property offenses per 100 persons had a rate of 5.75 in 1970 for the city of Racine, increased to a high of 8.64 in 1975, and declined to 6.98 in 1978. Offenses against persons had a rate of .89 in 1970, increased to 1.41 in 1974, and declined to 1.25 in 1978. This pattern of increase and decline was found for each of the crimes against property and persons, almost without exception.

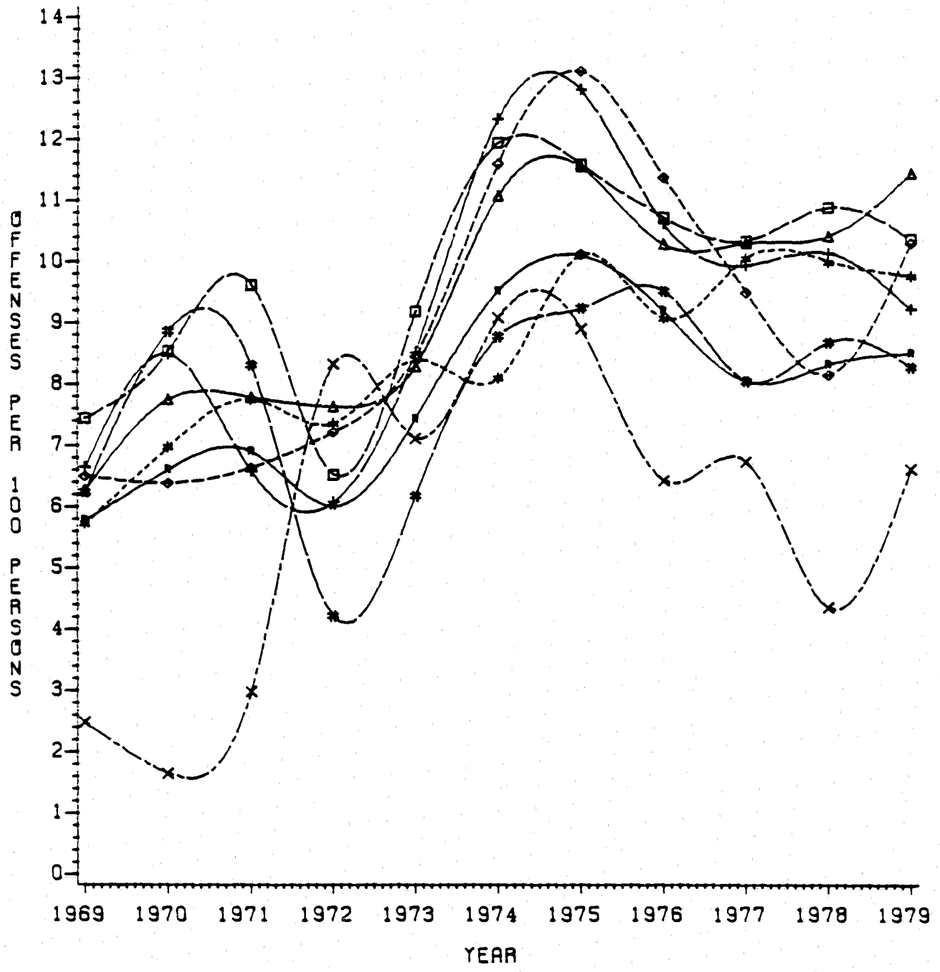
There were 3.02 arrests per 100 population in Racine in 1966, rising to a peak of 6.08 in 1975 and declining to 3.90 in 1978. There was considerably more variation by tracts in year of peak arrest rates by place of residence than for place of offense, and while there was variation in arrest rates by tract, it was not as great as that by place of offense.

Race/ethnic differences were also apparent. Among the White juveniles, the percent of all arrests from the three inner city tracts declined from 35.8% to 14.8% between 1966 and 1978. The adult decline was from 34.6% to 26.8%. While most Blacks arrested were from the inner city tracts in 1966 (91.4% of adult arrests and 97.3% of juvenile arrests) the proportion of the Blacks arrested who resided in these tracts had declined for both by 1978, moreso for the juveniles than the adults (75.7% of the adult and 68.3% of juvenile arrests were of those who resided in these tracts). Decline in the proportion of Chicano arrests from these tracts followed a similar pattern, from 71.2% to 55.5% for adults and 82.0% to 56.7% for juveniles. Nevertheless, inner city rates generally remained higher than those

GRAPH 11.

PART I OFFENSES PER 100 PERSONS

IN POLICE GRIDS 5, 9, 13, 15, 16, 17, 19 AND RACINE

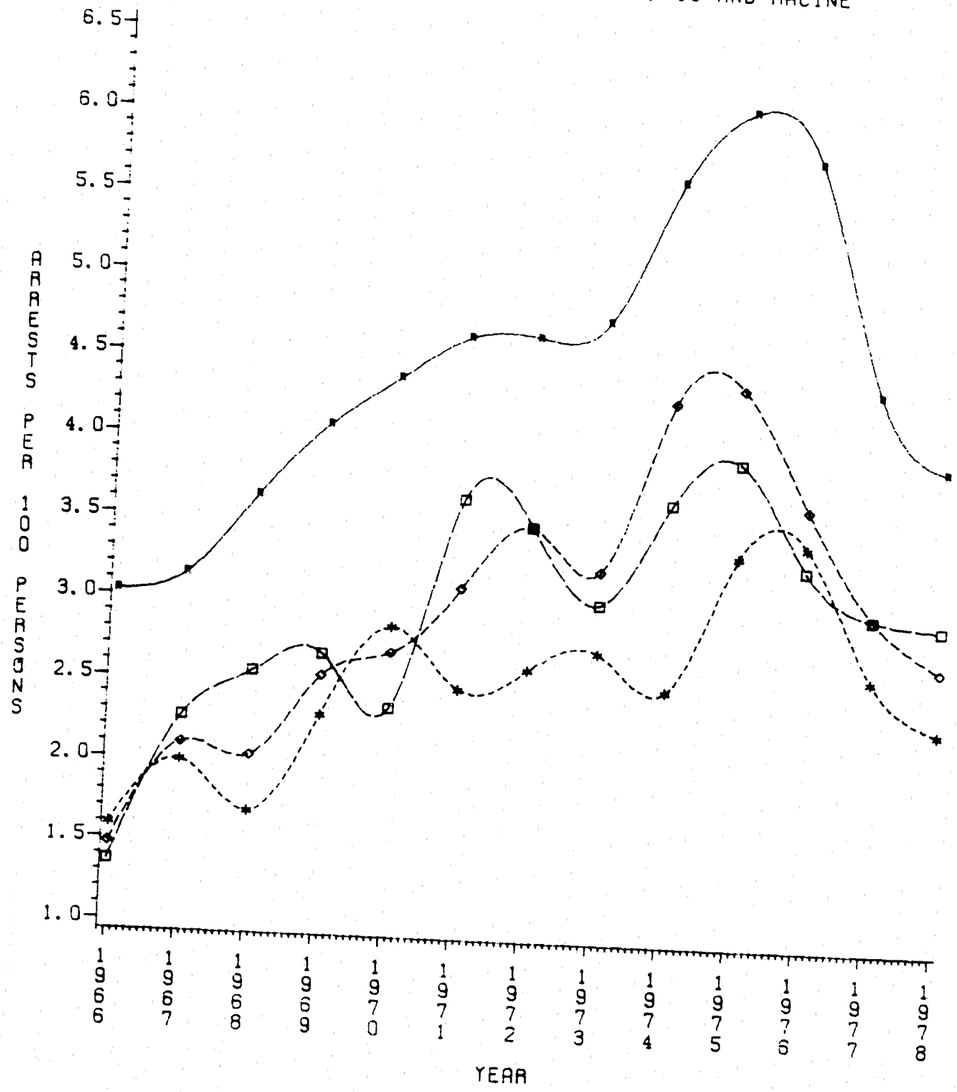


R IS RATE FOR RACINE
STAR IS RATE FOR GRID 5
DIAMOND IS RATE FOR GRID 9
SQUARE IS RATE FOR GRID 13
HASH IS RATE FOR GRID 15
PLUS IS RATE FOR GRID 16
TRIANGLE IS RATE FOR GRID 17
X IS RATE FOR GRID 19

GRAPH 8.

PART I-II ARRESTS PER 100 PERSONS

RESIDING IN CENSUS TRACTS 10, 12, 13 AND RACINE



R IS RATE FOR RACINE
STAR IS RATE FOR TRACT 10
DIAMOND IS RATE FOR TRACT 12
SQUARE IS RATE FOR TRACT 13

in other areas.

As in the case of tracts, most grids peaked in 1975, offense rates commencing at 5.65 in 1968, peaking at 10.10 in 1975, and declining to 8.49 in 1979. Offenses against the person and property were correlated .9047. Assault and rape were correlated .9211 and burglary and theft .8796, the latter being the two offenses with the greater frequency of occurrence, followed by assault. Although some of the less frequently occurring offenses had relatively low or inverse correlations with other offenses, the basic trend for crime within police grid areas is well represented by total Part I offenses regardless of type.

The Cohort Data

Three cohorts of male and female juveniles totalling 6,127 persons were selected from the files of the Racine Unified School District.[1] Their names have been followed through the Records Division of the Racine Police Department in order to ascertain the total number and nature of police contact of each person in each cohort.[2] Court dispositions were also coded

[1] The first cohort, born in 1942, consists of 1,352 persons, the second, born in 1949, consists of 2,099, and the third, born in 1955, consists of 2,676. The married names of females in each cohort were obtained from the records of the County Health Department.

[2] Whether a delinquent career consists of a single or several offenses, the number of offenses is not a satisfactory measure of the seriousness of a career. Exactly how to combine different types of offenses with different rates of occurrence and different orders of priority has been a question of theoretical and practical concern for many years. Each of 26 police contact categories (reasons for police contact) was arranged in six levels of seriousness in terms of whether or not the contact was classified as a felony against the person, a felony against property, a major misdemeanor, a minor misdemeanor, a juvenile condition (status offenses), or a contact for suspicion, investigation, or information. While this may seem to be a more or less arbitrary arrangement, it is consistent with police reporting and decisions of the Records

and added to each persons's record.

The length of time each juvenile resided in the community was determined in order to be able to control for those with only partial careers.[3] To facilitate time-period analyses, place of residence was coded into a convenient set of time periods, 1950 through 1959, 1960 through 1969, and 1970 up to 1976. Thus there is a usual place of residence for most people in the cohort (even if they had no contacts) that corresponds to the periods for which areas have been characterized with data from the U.S. Census.

This did not solve all of the problems but it at least gave some idea of the extent to which members of the cohorts moved about the community and permitted determining if the cohorts were distributed over the years in a manner which was roughly proportional to the distribution of Racine's population within each spatial system.

The extent of the mobility problem is revealed by the fact that even after collapsing census tracts into six groups of similar tracts, 52.1% of the 1942 Cohort had moved to a different SES level tract between 1950 and 1960 and 38.5% of the 1949 Cohort had done so. When police grid areas were collapsed in six similar levels the figures were 53.5% for the 1942 Cohort and 35.8% for the 1949 Cohort. Slightly larger figures were obtained when the natural areas and neighborhoods were collapsed into seven levels.

Division of the Racine Police Department as to whether or not the act should be considered a felony or a misdemeanor.

[3] The address at which the offender lived at time of contacts and addresses where contacts occurred were coded for each contact so that addresses of offender and place of contact could be computer-related to or mapped with controls for any other variable.

THE RELATIONSHIP OF CRIME AND DELINQUENCY TO THE ECOLOGY OF THE CITY: AN ANALYSIS OF CENSUS TRACTS AND POLICE GRID AREAS

The analysis commenced with an expectation of offense and arrest rates and trends for each census tract and grid based on the liklihood that crime and delinquency are generated at higher rates in one kind of milieu than in another and are the product of people in circumstances which make them look upon conventional behavior as only one of many possible responses to life situations.

Analysis by Census Tracts

Four different measures of the characteristics of census tracts and police grid areas were selected, target density, percent commercial-industrial, percent residential vacancy, and factor analytic housing scores, each for 1950, 1960, and 1970, with change between these periods for each measure, and compared with arrest rate and offense rate changes for selected years. The inner city census tracts had similar arrest and offense rates, physical characteristics, and population characteristics. Although there are some anomalies, it is evident that the cycle of deterioration and movement out of inner city areas was followed by increasing delinquency and crime and that they in turn were followed by further deterioration and removal of people and targets from the area.

Two other groups of tracts consisting of those which had made an early transition to higher arrest rates and those which had made a transition to medium arrest rates turned out to be a mixed bag with less consistency in the relationship of physical and population characteristics to arrest and offense rates. Tracts in still another group, those with low and stable

arrest rates, had numerous similarities but were not homogeneous.

When tracts were rearranged in four groups according to their residential and land use characteristics rather than their delinquency and crime rates, the inner city group remained the same. Tracts surrounding the inner city group and characterized by lower target densities, lower commercial-industrial use, lower residential vacancy rates, and better housing scores had arrest rates generally lower than those of the inner city tracts, and the better residential areas on the periphery of the city generally had the lowest arrest or offense rates.

What is most apparent, however, is that even with tracts organized into somewhat similar groupings there are several patterns of arrest and offense rates and changes in rates within each group outside of the inner city. At the same time, these heterogeneous census tracts reveal that the process of deterioration, decline, and increasing delinquency and crime is followed by further decline, the historic process which we have sought to document in a quantitative fashion.

Analysis by Police Grid Areas

Similarly, as the years went by, every inner city and interstitial police grid area plus those outlying areas which would draw people to them for reasons that might eventuate in delinquent or criminal behavior had high offense rates. Only one of the police grid areas that had a high offense rate by 1975 had a low target density, only one had a low percent commercial-industrial, only two had low residential vacancy, and only three were characterized as having good housing. While the total pattern suggested hetero-

geneity, a close look indicates that the evolving pattern of areal characteristics is indeed related to high in-area offense rates.

When police grid areas were arranged as if characteristics of areas were the determinants of in-area offense rates, the inner city areas remained in the same group. These and the transitional areas eventually had high in-area offense rates, but there were other areas with quite different characteristics which also had high offense rates.

The Classical Finding

It was obvious that high offense and arrest rates were characteristics of the inner city and interstitial areas and that low rates were (with explainable exceptions) associated with the middle and higher socioeconomic status areas on the periphery of the city whether census tracts or police grid areas were utilized. But the heterogeneity of other areas in Racine resulted in a pattern that was far less than perfect. At the same time, it was evident that progression in offense and arrest rates from the inner city and interstitial areas had taken place and that changes in the characteristics of tracts and police grid areas were related to them. The pattern of change was not the same for all variables selected nor could one discern a neat pattern of cyclical change in variables from age period to age period. Instead, there were a variety of combinations and permutations characterizing the tracts and grids between the inner city and the highest socioeconomic status areas on the periphery and it was clear that offense rates and arrest rates were rising throughout most years of the study. And, following 1974 or 1975, they commenced to decline in even the inner city. It was also

apparent that general trends in offense and arrest rates, trends of an historical nature, overshadow the trends in some tract and police grid areas.

DYNAMIC ASPECTS OF THE CHANGING SPATIAL DISTRIBUTION OF CRIME AND DELINQUENCY

Arrest Rates of Residents of Tracts

The results of a series of regression analyses of arrest rates and tract characteristics revealed that whether the tract characteristics measure be for 1950 or 1960 and the arrest rate be for 1966 or 1969, target density and housing quality scores accounted for more variance than the other variables. In other words, low SES of residents as represented by poor quality housing in an area and a high incidence of targets were the two most powerful "predictors" of the arrest rates of residents of census tracts. (The causal nexus is really not known so that it is best to use the term predictors.)

Similar analyses of change from 1966 to 1969 in arrest rates and change in the characteristics of census tracts between 1950 and 1960 and between 1960 and 1970 found little or no impact of change in tracts on change in arrest rates. Only one correlation was significant and that was for percent residential vs. manufacturing, increasing manufacturing being associated with increasing arrest rates. It appeared that the basic arrest rate in tracts followed from the characteristics of tracts and that arrest rate changes (with one exception) were unrelated to changes in the characteristics of tracts. In other words, there did not appear to be a change in impact beyond those characteristics of the area itself (with the exception of the impact of change in the percent of primary land use from residential housing to

manufacturing on the logarithm of arrest rate change with earlier arrest rate held constant).

A series of analyses going from area characteristics to arrest rates and arrest rates to area characteristics showed a continuing relationship between the characteristics of tracts and the arrest rates of persons who resided therein. When the same analysis was conducted for arrest rates for 1970 and 1974 and change in arrest rates 1970-1974 and tract characteristics for 1960 and 1970 and tract change 1960-1970, a set of relationships more or less comparable to the first set was obtained. The major difference was that by 1970 all of the tract characteristics now had some relationship to arrest rates in 1970 and 1974. But again, there was little evidence of a dynamic kind of relationship, an impact of the amount of change in the characteristics of areas on the amount of change in arrest rates, arrest rate in 1970 held constant.

Another way to describe it would be to say that the characteristics of an area help explain its arrest rate but that the amount of change in these characteristics is not such an additionally powerful determinant that it correlated with immediate change in arrest rates independent of the arrest rate at the beginning of the period for which change is measured.

Offense Rates in Tracts

Parallel analyses of offense rates in tracts revealed that change in tract characteristics accounted for significant amounts of the change in offense rates within tracts with offense rates held constant at the beginning of the change period, a finding inconsistent with the parallel analysis for arrest rates, but arrest rates had not followed the same pattern of

change between 1970-74 as did offense rates so one would not have expected identical findings.

The crux of the analyses is that there has been a developing relationship between the characteristics of census tracts and offense and arrest rates. Year by year the characteristics of tracts account for much of the variation in tract offense and arrest rates. Contrary to our expectations, however, controlling for position at the start of change, that is, only considering that which was disproportional to the position of a tract at the start of a change period, added little further to "explaining" differences in arrest rates between two points in time.

Police Grid Areas

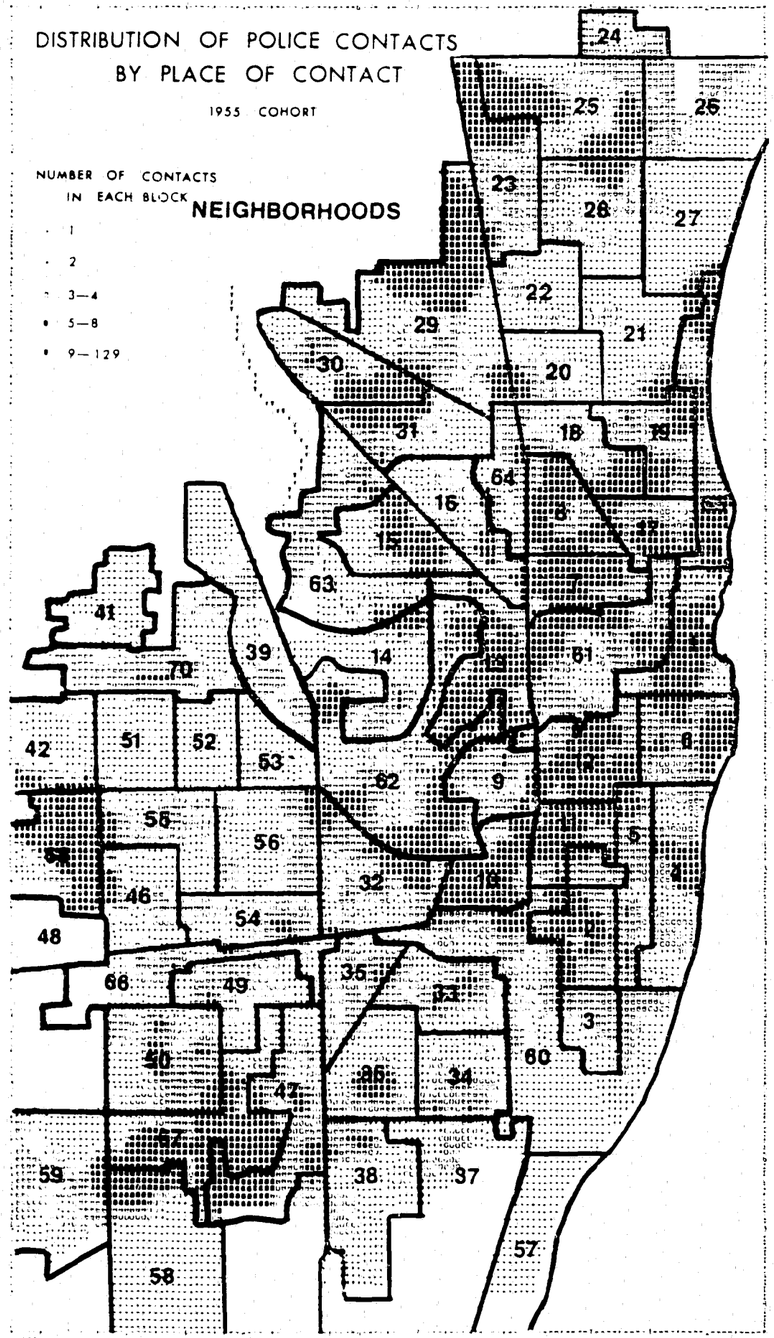
Whatever the findings with census tracts as the units of a spatial system, would they be the same utilizing police grid areas? There were almost two completely different sets of correlations. And there was a more dynamic aspect to change in the independent variables and change in offense rates. Our position had been that a variety of spatial systems must be used with the same basic data in order to find out exactly how the findings differ. However, since offense rates in tracts and grids differed somewhat because of compilation procedures, we held a final conclusion on this matter in abeyance until the cohort data on delinquency and crime had been compared with the characteristics of areas in each of the four spatial systems. When exactly the same independent and dependent variables had been utilized with different spatial systems with the same results we could be sure that the findings are not an artifact of the spatial system.

THE ADVANTAGE OF MAPPING

While some people grasp the nature of the changes that have been described from the narrative or from statistical analyses, others find maps showing the distribution of place of police contacts vs. place of residence of those contacted more helpful, especially if maps are arranged in order to show change through time. This we did for each of the cohorts and each spatial system. These maps were also helpful in showing how high place of contact and place of residence of persons contacted areas were more precisely delineated by neighborhood boundaries than by census tracts, police grid areas, or the larger natural areas. These maps, Maps 7 and 8, for example, clarified what was meant by the concentration of contacts in the inner city and interstitial areas and an apparent hardening of the inner city at the same time that high contact areas and areas whose residents either frequently had contacts or contained persons with many contacts were developing in more peripheral areas. Differences in patterns based on rates vs. sheer numbers were also apparent, emphasizing the point that public concern may well focus on patterns based on numbers alone which, in some ways, differ from those based on rates calculated with the number of blocks in an area or the population of the area as the denominator.

However the data were presented, it was clear that a highly disproportionate number of the police contacts took place in the inner city and by residents of the inner city and that roughly 10% of the blocks in the city accounted for about 40% of the contacts by place of contact or place of residence.

MAP 7



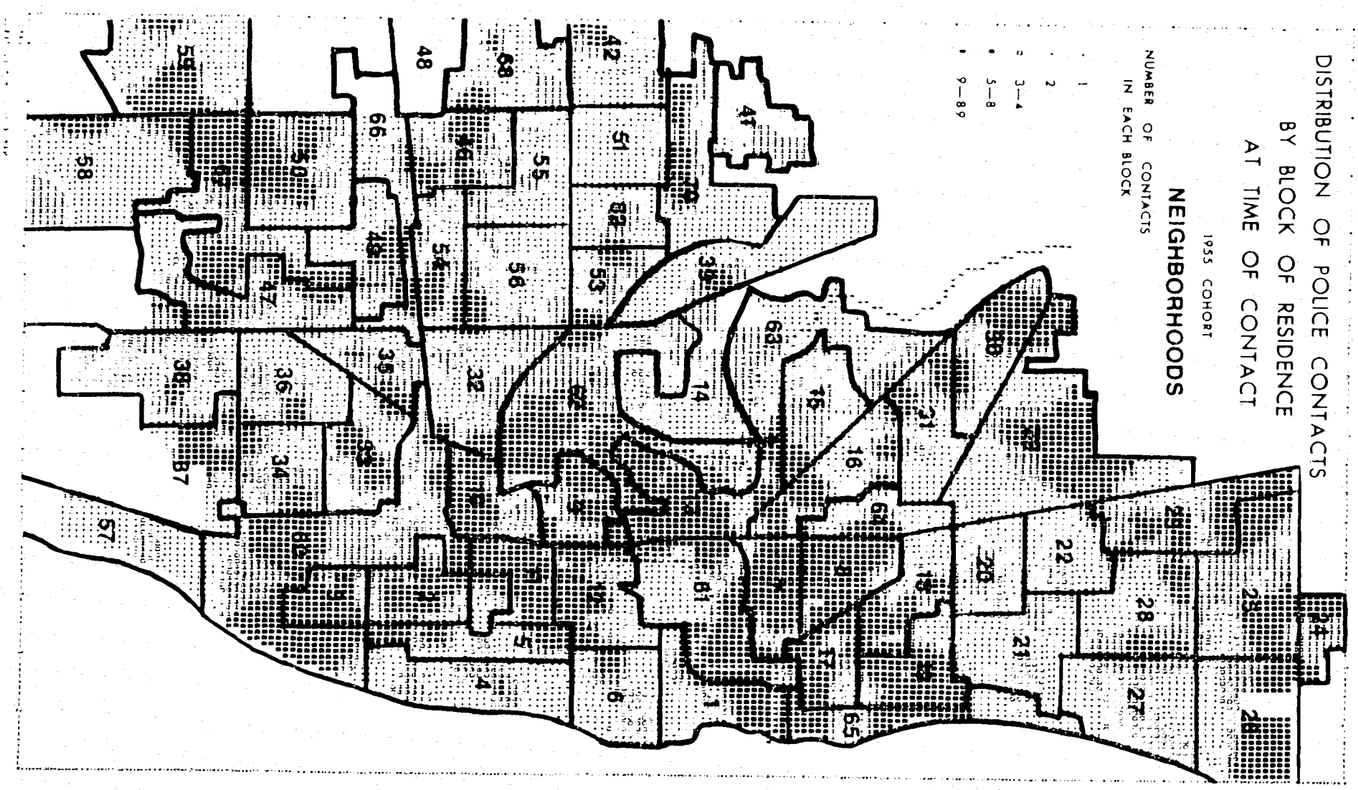


DIAGRAM 1. TYPES OF OFFENSE RATE VARIATION IN THREE RACINE COHORTS

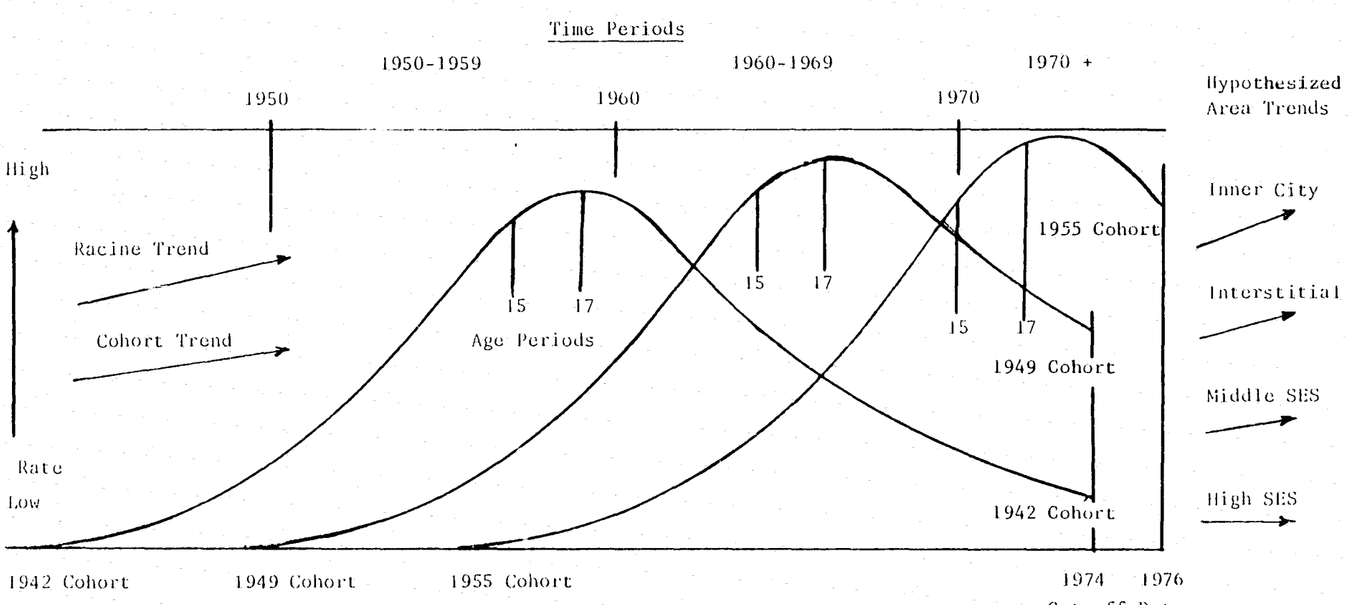
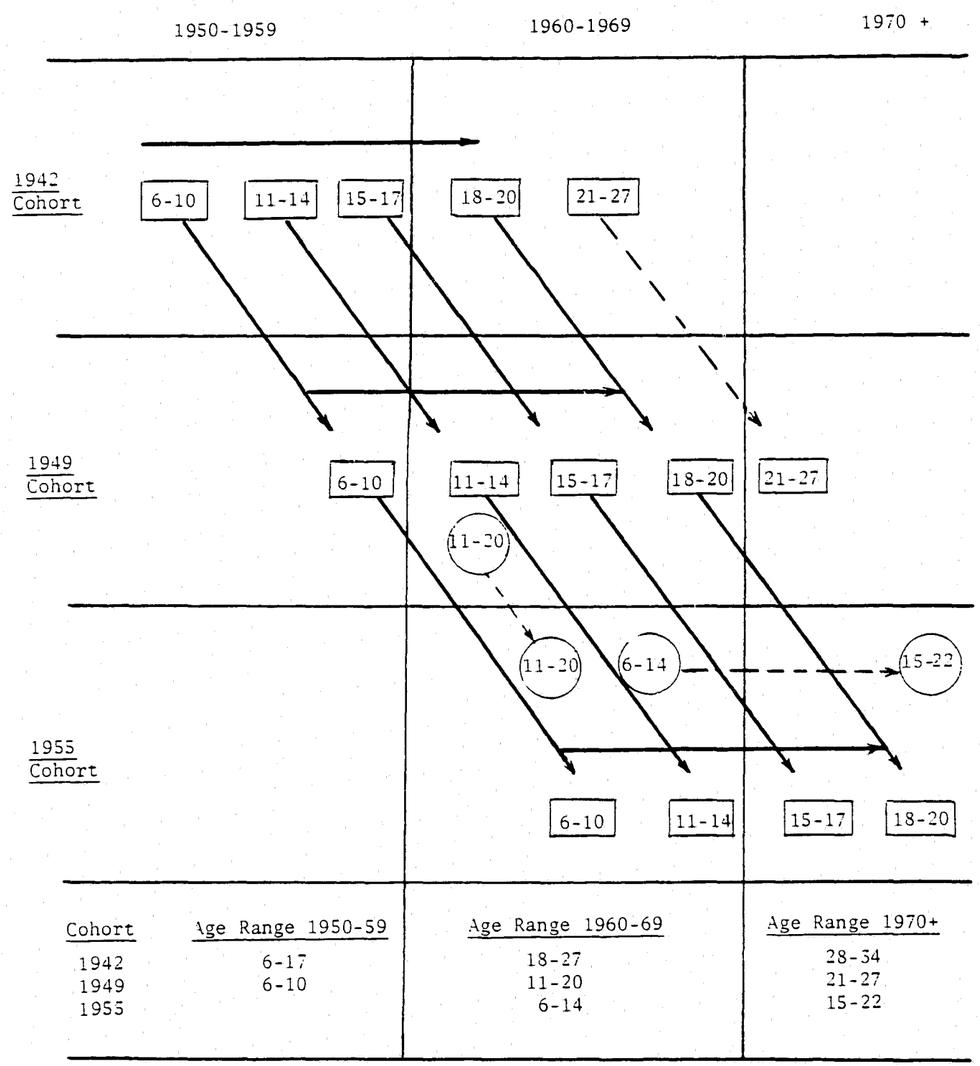


DIAGRAM 2. AGGREGATION OF THE AGE-BY-AGE DATA SET FOR AGE PERIOD AND COHORT DIFFERENCE ANALYSIS



Cohort	Age Range 1950-59	Age Range 1960-69	Age Range 1970+
1942	6-17	18-27	28-34
1949	6-10	11-20	21-27
1955		6-14	15-22

One other point that is made clear by presentation of maps is that predominantly commercial-industrial and parks-playgrounds areas generate a large proportion of each cohort's police contacts. In short, the maps tend to dramatize the concentration of contacts in areas where they are expected and where the people reside whom we had hypothesized would account for a disproportionate share of the police contacts.

The shortcoming of the maps was the fact that each cohort had a different age composition; therefore, part of the patterned differences bewteen cohorts was based on differences in place of contact that are associated with age.

THE CHANGING RELATIONSHIP OF JUVENILE DELINQUENCY AND ADULT CRIME IN THREE COHORTS TO THE ECOLOGY OF THE CITY

Aggregating the Data

The basic question to be answered with the cohort data was whether there was spatial variation from cohort to cohort and within cohorts over time that followed the general pattern of spatial variation found with other data sets.

It was necessary to aggregate the age-by-age data in such a way that age groups did not overlap time periods for which principal places of residence had been established for cohort members and in such a way that cohort change could be measured within these time periods for meaningful age categories. Diagram 1 facilitates comprehension of the general problem. Since the relationships obtained in every analysis conducted have been less than perfect, we assume that individual differences in people for which we have considerable data would, if incorporated into the model, increase its explanatory pooer.

Diagram 2 shows how the age-by-age data sets were aggregated for analysis. The heavy arrows show the age groups for which rates were computed and change

between age and cohorts have been measured and described in this research. Comparisons for which rates have been computed but with which we have not here dealt are shown by lighter lines.

Exactly which measure of any given phenomenon is best is always a question for debate. If the problem is one of prediction, then that measure of the independent variable which results in the best prediction of the dependent variable is the best measure as long as everyone is satisfied that the dependent variable has been appropriately measured. Since we were involved in the description of relationships and changing relationships and not in maximizing predictive efficiency, several measures of each variable were presented in order to determine the extent to which findings vary depending upon the measure of cohort delinquency and crime utilized.

Inner city areas were expected to be higher on each measure for each cohort and during each age period. The interstitial and transitional areas were expected to move upward cohort by cohort and to show an age group transformation following a different pattern from that for the city as a whole and a markedly different transformation from that shown for stable residential aras. The complexity of expectations was also increased by the fact that persons at a given age in one cohort might be residing in the area when it had somewhat different characteristics than it had when persons from another cohort were residing there. This involves the element of time period change and compounded the difficulty of making comparisons between cohorts for persons aged 11-14 in the 1942 and 1949 Cohorts but did not affect comparisons for the 11-14 age group between the 1949 and 1955 Cohorts, as can be readily discerned from Diagram 6. Comparisons of the age group 15-17

for the three cohorts was most difficult because this group was in a different time period in each cohort.

Time Period Variation by Place of Contact and Place of Residence

When time period rates were developed to eliminate historical effects based on a Racine population in-area model and a cohort population model, whichever was used it was again clear that inner city areas had higher rates of police contact than did others (with some explainable deviations such as those accompanying transition in interstitial areas or those related to developing rates in some peripheral areas).

Similar findings were made when rates were computed for place of residence, followed by seriousness scores, referral rates, and severity of sanctions. What was apparent in this case was that the inner city was more sharply differentiated from other areas by seriousness scores than by number of contacts. Comparisons of this nature were even further heightened in the 1970's. This general pattern was present regardless of the spatial system employed although neighborhoods were most helpful in delineating the specific areas which were undergoing change.

A DYNAMIC MODEL OF COHORT AND AGE PERIOD VARIATION BY PLACE OF RESIDENCE

We were concerned, however, not with simply whether police contact rates, seriousness rates, referral rates, and severity of sanctions were highest in the inner city and lowest in the peripheral areas, but with whether those inner city and interstitial areas could be characterized as having progressively higher rates cohort-by-cohort, age period by age period, and time period by time period. A cohort and age period typology was constructed representing the combination of rates expected for inner city, transitional,

stable, and outlying areas. There were 12 different types including one for areas that could not be classified. What we found was that regardless of the spatial system utilized, inner city areas were distinctly different from other areas of the community. The areas in each system that had been characterized as interstitial or transitional were generally more similar to the inner city areas than were the remainder, but not all fit one of the transition models that had been proposed. Most other areas revealed little evidence of transition in police contact rates, seriousness rates, referral rates, or in severity of sanctions rates. If the inner city tract, grid, natural area, or neighborhood with the highest rates was selected, each was very similar to the other in their age period and cohort-by-cohort pattern. If peripheral areas were selected from each spatial system, their age period and cohort characteristics were similar.

When seriousness types, referral types, and severity of sanctions types were substituted for contact rate types there was a general pattern of progression from inner city to peripheral areas with somewhat more deviation for severity of sanctions patterns than for others. It was concluded that while the transition typology approach was useful, additional work was called for, e.g., a computer technique for determining which type a given set of rates best fitted.

FURTHER ATTENTION TO THE QUESTION OF HARDENING OF THE INNER CITY

Early and Continuous Involvement

Our concern with the trend toward hardening of the inner city led to further examination of the data, first in terms of the proportion of each cohort that had contacts with the police at each age in the areas within

each spatial system and second in terms of the linkage between high seriousness rates in areas, age period by age period, as seriousness built up in each cohort.

Because persons on the firing line do look at year-by-year statistics and are concerned about year-by-year and age-by-age trends in the behavior of people, the cohort data were analyzed on this basis for each of the spatial systems. These data for each cohort for each age revealed a more or less gradual but steady increase in the percent of the persons who have had a contact. For example, for persons from the 1949 Cohort in a typical inner city census tract the percent with contacts increased from the age of 6 (2.0%) to the age of 16 (30.7%) and remained at that level to the age of 24, varying no more than 8%. Similar patterns of progression were found for other inner city tracts, grids, and natural areas. While the highest proportion of persons from the 1955 Cohort with a police contact from any tract at age 19 was 38.2%, the highest proportion from a police grid area was 40.7%, the highest proportion from a natural area was 37.8%, and the highest proportion from a neighborhood was 51.6%, a neighborhood within the aforementioned natural area. The regularity of progression in percent of those who resided in any area was related, of course, to the number of persons residing in the area (progression percentages were smoother year-by-year for areas with large populations) so that even though most neighborhoods had a peak proportion of their cohort members involved with the police in the late teens, trends for neighborhoods within cohorts and cohort comparisons were more difficult to specify.

The Impact of Seriousness of Careers on Severity of Sanctions

Regression analysis provided further evidence of the hardening of the inner city areas for it was evident that seriousness of reasons for police contact had uniformly high ecological correlations for the 1949 and 1955 Cohorts from age period to age period, particularly during the age periods 15 through 17 and 18 through 20. Areas with high mean seriousness scores by members of the cohort residing there continued to have high mean seriousness scores and to the extent that these correlations were not higher it was because seriousness of reasons for police contacts had at the same time increased in some interstitial and peripheral transitional areas, a phenomenon which was fairly congruent with increasing numbers of contacts in peripheral areas. When the mean seriousness of all earlier age periods was regressed on seriousness 18 through 20 the impact of the period 15 through 17 on the latest period was significant for three out of four spatial systems. Further analysis showed that sanctions fail to have a deterrent effect on the future behavior of persons who reside in areas which receive the most severe sanctions.

A MODEL OF ECOLOGY AND CRIME: NEIGHBORHOOD CHARACTERISTICS AND CRIME RATES 1950-1970

Having presented the data in a variety of ways so that the reader would become familiar with the characteristics of areas in the various spatial systems and the basic kinds of relationships which existed, we concluded with a series of lagged multivariate regression analyses. These analyses were crucial because they revealed the influence of the hypothesized causal factors net other variables in the model and incorporated the reciprocal influences of ecological characteristics and delinquency and crime over a 30-year period.

What one could note, although it only reinforces findings from the more aggregated data previously presented, is that the inner city tracts showed early involvement of persons in each cohort reaching the point that 30% or more of the cohort was having police contacts each year by the age of 16 or 17. This level of involvement continued with some variation up and down so that by the ages of 30 or 31 for the 1942 Cohort, 24 for the 1949 Cohort, and 21 for the 1955 Cohort approximately 30% or more of each cohort residing in these areas was still having at least one police contact per year. Similar results were obtained for police grid areas and natural areas.

Although trends were more difficult to identify, some inner city neighborhoods had very early involvement of high proportions of their youth. The most extreme example in the 1942 Cohort was a neighborhood where at the ages of 18 and 19 over 70% of the youth had at least one police contact and had high involvement through the age of 26 by its young adults. What the neighborhood data do is make it possible to pinpoint areas which initially showed little involvement for cohort members who resided there at that age but which at a later period and for another cohort displayed high involvement. When these changes are congruent with changes in the distribution of targets and other changes in the neighborhood we can see how increasing youthful involvement with the police is part of a larger transitional process that may be captured better with units of observation smaller than census tracts and police grid areas, even though there are analytic problems involved when too few cohort members are found in some areas.

While the ecological characteristics of neighborhoods had significant effects on various crime rates and the total delinquency and crime rate, these effects were not constant over time. They were, however, generally stronger than the effects of crime on ecological characteristics, which were not only weak but inconsistent over time. Perhaps most important, and consistent with findings by other researchers, was the relationship between several ecological variables indicative of social class and delinquency and crime rates. In sum, there were changes in the relationships between ecological structure and crime during the period(s) that the city had been experiencing the transition from a generally low delinquency and crime rate to a high delinquency and crime rate.

These findings also supported the position that there has been a hardening of the inner city at the same time that delinquency and crime rates have been increasing in some more peripheral and outlying areas. And to repeat, other analyses have strongly suggested that the reaction of the community to increasing delinquency and crime has also contributed to the hardening of the inner city and the further expansion of high offense areas. This is so important that we shall now turn back to it again.

OFFICIAL RESPONSES TO POLICE CONTACTS AND THE HARDENING OF THE INNER CITY

Having had a contact with the police, one of several things may happen to the juvenile or adult, depending on the seriousness of the reason for interruption of the officer, the area of the community in which the officer was patrolling, the characteristics of the alleged offender, including demeanor at the time of contact, the reasons that the officer made the contact, i.e., did the officer see the actor do it or was the officer answering a com-

plaint that had been communicated from the police station, the characteristics of the complainant if known to the officer, the time of day or night, the general policy of the police department on street-level handling rather than referral, the officer's receptivity to departmental policy, and, of course, the overall attitude of the officer toward miscreants encountered on patrol. Although we have a considerable amount of official data describing the circumstances of police contacts and interview data about respondents' perception of their contacts with the police and what happened, the data have not yet been analyzed within the ecological framework but it is possible that variation within the areas of each spatial system would be so great on something as complex as this that little would be added to our understanding of how the referral phenomenon varies within each spatial system.

It sufficed for our purposes to determine if those who resided in the inner city and interstitial areas were more likely to be referred than were those who resided in other areas and if this pattern was changing. We were also concerned about the average number of referrals per person in each area and the average number of referrals for those who have at least one referral. Since persons living in those areas in which a larger proportion of the cohort have police contacts and in which the mean number of police contacts is high have a larger probability of referral, these statistics should result in separation of the inner city and interstitial areas even more clearly than did contacts and seriousness scores. Even if seriousness of reason for police contact is not the only deciding factor in the decision to refer, research has shown it to be so important that the referral pattern for each area should place it in essentially the same category as did average seriousness.

Inner city tracts, as was noted, had referral rates and age period/cohort patterns that even more sharply differentiated them from other tracts than in simpler comparisons. All inner city police grid areas were either characterized by relatively high referral statistics for all cohorts or had made the transition to high proportions with referrals and high mean numbers of referrals. Inner city natural areas were consistently above other areas on every measure of referrals. It became fairly obvious in the course of examining the multitude of tables that had been produced that at each step from police contacts, to seriousness of contacts, to referrals, the inner city and interstitial areas differed more and more from other areas and that there had also been an increasing focus on youthful offenders.

Assuming that the focus of attention on youthful offenders continued one step further, even more distinct differences would be expected between inner city and interstitial areas and other areas. It was not surprising that high contact rates, seriousness scores, and referral rates produced comparatively more severe sanctioning for those who were sanctioned from inner city and transitional areas than from others. The consequences of this are likewise not surprising for we had hypothesized that delinquency and crime areas move outward from the inner city with population movement and change in the organization of society. Concern with youthful offenders had resulted in comparatively more juveniles being sanctioned than would be expected from the 1955 Cohort from some areas considering the position of these areas on the measures of contacts and severity of reasons for contact.

We have tentatively concluded: 1) that age period/cohort sanctions patterns do not coincide perfectly with other contact, seriousness, and referral

patterns for the inner city and interstitial areas when in fact they should be a logical outgrowth of them; 2) that concerns about the problems of juvenile delinquency and youthful crime have led to the application of more severe sanctions in the most recent time period to juveniles in the late teenage group (an age period emphasis on severity of sanctions as a deterrent to future criminality); 3) that this has resulted in the involvement of a disproportionate number of juveniles with the justice system from some areas outside the inner city and interstitial areas; 4) that deviations from the transition model for other measures of delinquency and crime may be fostered by changes in the social organization of the city as manifested in the changing characteristics of areas; and 5) that the cyclical nature of events in the justice system (the consequences of sanctions on further behavior) has probably played a part in creating deviations from the inherently spatial nature of the expected patterns of contacts and seriousness of offenses cohort-by-cohort and time period by time period.

WHAT DOES IT MEAN?

The Temptation to Strike Back

Varying proportions of the population profess the almost certain "knowledge" that increasing youthful and adult misbehavior must be followed by swift and sure action. Institutionalization for juveniles and incarceration (incapacitation is popular now) for adults is considered the final step. While no research exists which supports the effectiveness of such an approach, there is abundant evidence that it neither deters potential offenders because they fear that the same thing will happen to them nor serves as a corrective measure for those who are sanctioned.

With the community's current concern the danger lies in presuming that a policy of increasing severity of sanctions will serve as a deterrent. The ecological and other data suggest that this is not correct -- if sanctions have a deterrent effect the consequences should be seen and responded to in the area where the sanctioned person is known. There is little evidence of this.

Areas of delinquency and crime are being solidified and there are other areas in the process of transition to high delinquency and crime. What has been done in response has only made the situation worse.

Hasty Conclusions by Well-Intentioned People

The position that there is a cyclical type of process with areas changing in all major respects followed by increasing delinquency and crime probably states the case too strongly. If a variety of indicators are selected some will account for more of the variance than others with one spatial system and others will account for more with another spatial system, and, of course, some will appear to be powerful determinants no matter which spatial system has been selected. Another error is to conclude that if an indicator seems to account for much of the variance no matter which spatial system has been selected it is a specific causal variable. It may well be that it is simply one of many indicators of something more general that is present in the area, something which lies behind the indicator and is the real antecedent of delinquency and crime, the factor that is basic to the cyclical process with which we are concerned.

That target density and residential vacancy accounted for significant amounts of the variance in offense and arrest rates by census tracts and police grid areas tells us that a large segment of the offenses in an area

are probably target-related, directly or indirectly, and that arrest rates by place of residence are also high in these areas. It does not tell us that a policeman at the door of every store is the answer, or that a soldier on every corner, and so on, will reduce or eliminate offenses and arrests.

Similarly, that residential vacancy is high and becomes higher in these areas does not tell us that eliminating residential vacancies will have an impact on delinquency and crime rates. (Residential vacancies in an outlying developing area mean one thing and in the inner city and transitional areas another). It is what these vacancies represent that is most important. In some areas they represent an attitude and a change in population and population composition that are aspects of an area that make delinquent and criminal behavior more normal or at least more available as alternate forms of behavior.

Cities grow and develop and there are always residential and commercial vacancies. The locations of targets change and, while large areas of vacant buildings are undesirable, people are going to take their targets (places of business) to areas where people are or where they are expected to be very shortly. It would be, therefore, an oversimplification to take the results of the research literally and to assume that whatever differences in housing or other variables are found between the inner city and interstitial high delinquency and crime rate areas and other areas should be dealt with as a solution to the problem of delinquency and crime.

WHERE TO BREAK THE CYCLE

Large areas of major cities are wastelands and for a multitude of

reasons it would be desirable to see them rebuilt, whether or not this impacts on delinquency and crime. If crime and delinquency rates decline, so much the better. But if total rebuilding of the inner city and transitional areas is not politically or economically feasible, what can be done?

Non-Response as an Intelligent Response

Probably the most reasonable step at this time would be to slow down the trend toward official handling of juvenile delinquency and youthful crime, i.e., encourage street-level handling of minor offenses rather than referral to the juvenile bureau or the juvenile court intake. This involves training police officers to better understand the varieties of human behavior. Official statistics on police contacts and referrals generate a societal response as it is and the more that juveniles are contacted and referred (and this will happen more in areas that are defined as delinquent and criminal areas) the greater the attention to that area will be.

The second step would be to resist the tendency to increase the severity of sanctions for youthful offenders. If severe sanctions are followed by increasingly serious delinquency and crime this too speeds up the cycle, for this serious delinquency and crime is followed by ever more severe sanctions. Areas of delinquency and crime are further distinguished from other areas of the community as the population continues to leave them; subcultural differences increase and socially acceptable patterns of behavior, particulary among youth, become more diverse. The rationale for delinquency and crime is there and the socialization of youth into the larger society becomes increasingly difficult.

Saving to Spend vs. Spending to Spend More

Having resisted the argument of those who believe that increasing severity of sanctions and sanctioning more of our youth earlier will have a favorable impact on the problem of crime and delinquency, the next step would be to determine through social accounting how extensive the savings from such a policy would be (in the billions every year if the trend toward severity of sanctions continues). It is not just the cost of institutionalization as the extreme of sanctions with which we are concerned but the cost of processing from time of referral (including detention and court dispositions) that must be taken into consideration. The cost to victims is sometimes very small - stolen wheelcovers, etc. Institutionalization, if the end result, is another increasingly expensive increment. Money saved from a reduction in formal dispositions and expensive sanctioning could be used to create opportunities through revitalization programs in the inner city and transitional areas. Most of the attempts to integrate youth into the larger society through work programs have failed because they were obviously make-work programs. They did not produce a product, the making of which could be seen by youth as an achievement. The creation of opportunities that are appealing to the disenchanted is not easy, but if we can consider spending billions on intervention that does not produce the change desired but only creates a greater problem, is it completely naive to suggest that we couldn't be worse off if more creative approaches are tried? For sure, the impact of a positive approach will not have the negative and increasingly expensive consequences that have been shown for traditional punitive approaches.

END