



Racial Change and Crime: The Traditional City

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## Racial Change and Crime: The Traditional City

### ABSTRACT

I examine the effects of changes in racial composition on the incidence of crime for all the residential city blocks in Cleveland over the 1970-1980 decade. In doing so, the focus is on the white-black transition because of the amount of concern and controversy which this type of change generates. The analysis begins by discussing the link between racial composition and crime in 1980 using multiple regression. This linkage is then decomposed into effects due to the persistence of the residential differentiation of the city over time and the effects due to changes which occurred. High levels of crime in 1980 depend on the past characteristics of the blocks in 1970, including their past levels of crime. Changes in crime levels, however, derive from both historical persistence and changes in the characteristics of the residential areas. Racial change has only small effects on 1980 crime and changes in crime over the decade compared to the effects of other characteristics.

The topic of racial change in cities generates much controversy. Almost simultaneously with the first massive migration of blacks from the south to northern cities, fear of the irreversible neighborhood turnover was widespread. Even some scholarly works (Duncan and Duncan, 1957) discuss the inevitability of neighborhoods converting to all black occupancy after the in-movement of a certain percentage of black residents. The concept of "tipping point" refers to the threshold after which racial succession in neighborhoods becomes irreversible.

Undoubtedly, several influences account for the concerns of white residents seeing the in-movement of blacks into their residential areas for the first time. In a number of northern cities, as Taeuber and Taeuber (1965) show, the confluence of specific housing market conditions and patterns of population growth provides examples in which racial succession occurs rapidly and seems inevitable. Yet, the Tauebers show that rapid change from all white to all black occupancy depends on specific historical and situational conditions. They conclude that complete racial change is not inevitable after the first entry of black residents.

Fears over losses in property values and increases in crime dominate the concerns of white residents experiencing the initial in-movement of blacks into their residential areas. Much sociological work shows that there is little basis for the first fear. Taeuber and Taeuber (1965) find that the first blacks moving into a formerly all-white residential area are often of higher socioeconomic status than the white residents. Molotch (1969) also finds that property values do not necessarily decline with the transition from white to black occupancy. Taub et al. (1984) argue that the varying market demand for housing in different areas determines the pace of racial change and the effects on property values. Detrimental effects on property values, when they occur,

result from the nature of the housing market for a particular neighborhood rather than from its racial composition.

While the general process of racial change and its effects on property values are the subject of comprehensive research as illustrated by the above-mentioned studies, far less research is available on the relationship between ethnic change and crime, particularly white-black change. Shaw and McKay's (1942) work is still in many ways the most definitive research on the effects of ethnic change on criminal behavior. The thrust of their detailed findings for Chicago as well as those of the companion studies of their colleagues indicate that rates of juvenile delinquency and adult arrests remain virtually constant despite changes in the ethnic composition of the neighborhoods.

Shaw and McKay's findings are widely-accepted despite the repeated findings from cross-sectional research of relatively strong relationships between the racial composition of residential areas and crime or delinquency (Bordua, 1959; Chilton, 1964; Lander, 1954; Schmid, 1960a,b; Boggs, 1965; Roncek, 1981). The contrast in findings does not seem to have attracted much attention until recently. It is only with the work of Bursik and Webb (1983) and Kobrin and Scheurman (1982) that serious doubt emerges about the generalizability of Shaw and McKay's findings to the present. The most direct challenge is from the work of Bursik and Webb (1983). Also studying Chicago (although with different units of analysis than used by Shaw and McKay), they find a positive relationship between white-black racial change and delinquency rates. Kobrin and Scheurman's findings also parallel those of Bursik and Webb, although their study is not intended to replicate directly the work of Shaw and McKay as is the Bursik and Webb study.

The controversy further intensifies with even more recent work by Roncek (1985b;1986) and Roncek et al. (1986). In both studies of San Diego over the

1970-1980 decade, Roncek (1985b;1986) finds that changes in racial composition are far less important for explaining recent crime levels and changes in crime than the effects of population increase, regardless of race. In their study of 1980 Chicago murders, Roncek et al. (1986) find that the frequency of murder is highest in what Taueber and Taueber (1965) refer to as Established Black Areas (areas which have had 90% or more black residents at both the beginning and the end of the decade) in which the amount of racial change is minimal.

Some of the discrepancies among the findings of these recent studies and with those of Shaw and McKay must be a product of the many differences in research design. There is hardly any comparability in the units of analysis across the studies which range from the thousands of city blocks for Roncek (1985b; 1986), several hundred census tracts for Roncek et al. (1986), 140 neighborhood areas (the original definitions cannot be identified) for Shaw and McKay, census tracts and clusters of tracts for Kobrin and Scheurman (1982), and the 75 Community Areas (aggregates of tracts) of Chicago for Bursik and Webb (1983). Different cities are studied at different points in time. Most importantly, the dependent variables differ. The studies by Roncek, including the one with his colleagues, use the location of crime incidents regardless of the age of offender or the location of his or her residence. Shaw and McKay, Kobrin and Scheurman, and Bursik and Webb use juvenile delinquency rates which are arrest rates and indicate the locations of the residences of the apprehended juveniles.

Simply accepting differing findings as being due to differences in research design without further inquiry can result in not adequately understanding important social patterns. The current situation with regard to examining the effects of racial change on crime and delinquency is almost the obverse of the situation at the time when concern was just emerging with the

general process of racial change. Prior to the Taeubers, the irreversibility and inevitability of racial change seemed self-evident. It was they who showed that this need not be the case and they did so by increasing the range of cities and time periods examined with a common methodology. They were able to show that cities experiencing different types of population changes had different types of racial change occurring. In the study of urban crime and delinquency, there is very little consensus on the effects of racial change and much diversity in study design. One first step in attempting to bring some order to the current situation is to replicate more closely previous work. The choice of which design to replicate must rest on methodological considerations as well as others.

The central issue in much of the racial change controversy actually concerns how many criminal events will take place within an area after it begins to experience racial transition. For crime prevention and police planning, it is important to understand the number of events to which social control agencies must respond. Addressing these two concerns requires using information on the location of criminal events and on as many of these events as can be known, regardless of whether an offender is apprehended or not. These considerations argue for the use of offense rather than offender data.

Second, Roncek (1979) shows that, for crime, the results obtained and the inferences that are drawn depend on the size of the unit of analysis. Using 1970 Cleveland data, he demonstrates that, when using census tract characteristics to predict the amount of property crime, the regression coefficients and variance explained indicate that almost two-thirds of the variation explained is due to the racial composition. Redoing the analysis with the same variables for city blocks, he finds a marked decline in the effects of racial composition on property crimes. Much other work (Hannan,

1971; Hammond, 1973) also identifies how problems of aggregation error increase with the use of large units of analysis. For informed policy as well as the correct understanding of the effects of racial change, it is necessary that precise and meaningful units of analysis be used. City blocks answer this need. These two considerations suggest the usefulness of replicating the design of the San Diego studies (Roncek, 1985b;1986).

To provide a wider basis of knowledge for a city at a different stage of development than San Diego, this analysis will use data for Cleveland. The work of Taeuber and Taeuber (1965) indicates that patterns of racial change can differ dramatically for cities at different points in their development. Cleveland with its dramatic loss of population over the decade, especially in its white population, has the set of conditions which approximate those in which the overall process of racial change gave rise to rapid racial turnover and fueled public fears of racial change.

The efforts to understand crime and delinquency in urban areas and generally have led to a multiplicity of theoretical perspectives. Recently, Cohen and Felson (1979), implicitly drawing upon ideas also present in the work of Wirth (1938) and Fischer (1976), formulate what has come to be called the "routine activities approach to crime." Central to their position is that three elements are necessary for crime to occur. There must be both a potential offender, a potential victim or target and both of these must be copresent in an environment which allows the activities called crime to occur. The central concept which underlies the interaction of these three conditions is what they call "guardianship." This idea refers to the level of social control in an environment generated by the activities of the people who use the environment and the facilities of the environment. Certain settings and activities make social control more difficult and different types of households

and people have different activity patterns.

Discussing the city as a whole, Wirth (1938) and Fischer (1976) note the problems for social control caused by the large number of people within the urban setting. Wirth (1938) refers to the change in the nature of interaction as causing problems of social control because of increasing anonymity. His focus on anonymity is almost the exact counterpart of Cohen and Felson's notion of guardianship. Roncek (1981) extends these ideas developed at the macro-level to urban residential areas and finds strong support for the idea of increased anonymity or decreased guardianship as being the basic process which accounts for the selective emergence of criminal activity across the residential areas of cities. The critical task for this analysis is to identify the extent to which changes in racial composition, controlling for other features of the city blocks, are associated with changes in the amount of criminal activity in these places. A simple principle seems to underlie the "routine activities approach." Examine first the effects of who and what are in an area on what occurs there. I extend this principle in two ways. First, examine the effects of who and what was where in the past on the present. Second, examine how changes in who and what are in different locations affect the present. In the analysis to follow, I will examine not only how the changing characteristics of Cleveland's city blocks affect crime in 1980 and changes in crime over the decade, but I will also trace the persisting effects of the past characteristics. As Choldin, et al. (1980) and Roncek (1986) show, much of what takes place in urban residential areas results from the persisting effects of the earlier differentiation of the city.

#### DATA

##### 1. The City.

Selecting Cleveland results from the importance that the Taeubers ascribe



to city selection for the view one obtains of the process of racial change. Much of the concern generated by racial change appears to result from the focus on older, northern, industrial cities used in past studies. These cities had the right combination of housing conditions and population growth to provide a basis for fears about racial transition. Given the small effects of racial change for San Diego (Roncek, 1986), which is increasing both its white and black populations over the decade, it is important to identify whether detrimental effects on crime occur for a city which resembles those in which racial change proceeded rapidly. From 1970 to 1980, Cleveland's population decreases from 751,000 residents to 574,000. During this period, its white population decreases from 458,000 to 322,000 or by almost 30%. Its black population also decreases from 288,000 to 251,000 or by almost 13%. As a consequence, the average percentage black in the city increased from 38.3% to 43.8%.

From 1970 to 1980, the incidence of the seven traditional Index Crimes with the exceptions of murder and auto theft increased. Although not generally regarded as one of the most dangerous cities, it is also not regarded as one of the safer cities in the U.S. either. The largest increases in crime are for rape, assault and burglary for which the increases are over 50% of their 1970 levels.

## 2. The Units of Analysis.

The residential city blocks of Cleveland are the units of analysis. A city block is a "well-defined rectangular piece of land bounded by streets or roads. However, it may be irregular in shape or bounded by railroad tracks, streams, or other features." They are the smallest geographical units for which data on population and housing characteristics may be obtained. Their use with criminal event data is particularly critical for avoiding problems

with aggregation error (Hannan, 1971) which often plagues past research.

Using city blocks for longitudinal research in a city is often difficult. As population shifts, and zoning plans are enacted, some streets are eliminated and, sometimes, new streets are created and as a result new blocks. Yet, longitudinal analysis requires exactly identical units of analysis at both points in time. Thus, each change in block boundaries must be identified and the data for the blocks recombined to yield consistent boundaries. Bell and Roncek (1982) describe the details of this procedure. The results of completing this process yields 3,525 exactly identical residential blocks for the two time points.

### 3. The Dependent Variables.

The number of incidents of each of the seven original Part I Index crimes, as well as the total of the four violent crimes and the total of the three property crimes, actually occurring on each block are the dependent variables. The violent crimes are murder, rape, robbery and aggravated assault. The property crimes are burglary, grand theft, and auto theft. Arson became the fourth property crime in 1979. Its patterns will not be analyzed since 1970 arson data are not available. The crime data are offenses known to the police and, although they typically underestimate the "true" amount of crime because of underreporting, they are the best data available on a city-wide basis (Nettler, 1974:44). Roncek and Faggiani (1985) provide a detailed discussion of why victimization data cannot be used for city blocks.

Victimization data for Cleveland indicate that rates of reporting remain stable over time and official records of the number of incidents over the decade show a smooth and steady rise in the amount of crime occurring without any sharp breaks which would indicate important changes in reporting or recording practices. The address at which each crime occurred in each year was

obtained directly through the Cleveland Police Department. Addresses were assigned census tract and block numbers using Census Bureau computer programs. The crimes were then tallied by type for each block, merged with the census data for the appropriate year, and then blocks were combined when necessary to yield a file of exactly identical blocks at both time points.

The frequencies of crimes per block and the changes in the number of incidents per block over the decade are the dependent variables rather than rates per resident population for several reasons. First, blocks with many crimes can have low rates per resident population if the size of the resident population is large. These rates can be lower than for those for smaller blocks with fewer crime incidents but much smaller resident populations. Second, the size of the resident population of a block does not represent the population at risk of being victimized. People become victims in areas other than those in which they live. Third, the frequency of crime is a rate. It is a rate per block. This is meaningful because these are the units concerning which various public policy decisions are made.

#### 4. Independent Variables.

Three sets of independent variables represent the social composition, residential environment, and other demographic characteristics of the blocks which could affect the incidence of crime. The selection of these variables results from their centrality to past theoretical arguments, their importance in differentiating residential areas within cities from each other, and the findings of significant effects for these measures in past studies.

Each independent variable is measured twice. For 1970, each variable is a static measure of that characteristic of the block for this year, e.g., the percentage black for 1970 is the percentage of black residents on each of the blocks in 1970. Second, each variable is also represented as a change score,

e.g., the change in the percentage black from 1970 to 1980. The reason for this is that both crime in 1980 and changes in crime over the decade derive from the characteristics of the blocks at the beginning of the decade and the changes which they experience over time. Using change scores rather than the characteristics of the blocks in 1980 as predictors of both crime in 1980 and changes in crime avoids certain methodological problems (See Kessler and Greenberg, 1981).

The first four independent variables represent the dimensions of family status, ethnic status, and socioeconomic status identified by much work in urban sociology as the primary dimensions of differentiation across cities' residential areas. The percentage of primary individuals is the main indicator of family status or household composition. Primary individuals are household heads who do not live with relatives. The importance of focusing on these households is explained by Cohen and Felson (1979). Past studies (Schmid, 1960a,b; Boggs, 1965; Roncek, 1981) find strong effects for this variable on the amount of crime in residential areas.

The percentage of black residents and the percentage of Spanish residents are the indicators of ethnic status. For 1970, the percent Spanish is actually the percentage of Spanish persons in the tract in which a block is located. The 1970 Census does not report the number of Spanish persons on blocks. For 1980, the percent Spanish is actually the percentage of Spanish residents on each block. The change in the percent Spanish is actually the difference between the percentage of Spanish persons on the blocks in 1980 and the percentage of Spanish residents in their census tracts in 1970.

The only measures of socioeconomic status available for blocks are the values of owned and rented housing. The values of owned housing are the indicators for these analyses because mortgagors will not allow households to

overallocate income to housing as can occur with rental housing. To avoid missing data, the value of owned housing for blocks with suppressed data is estimated by using the coefficients from regressions predicting housing value from rental value for all blocks with both values reported and by substituting the value of rental housing in these equations for each year.

Three variables represent the residential environment. They are 1) the percentage overcrowded--the percentage of residents living in housing units with 1.01 or more persons per room, 2) the percentage of housing units in structures with ten-or-more housing units (% Apartments), 3) the vacancy rate per 100 year-round housing units. Past studies use all three measures and frequently find that they have statistically significant effects on crime.

Four independent variables reflect demographic aspects of the blocks which can also affect crime: 1) the percentage of female-headed families, 2) the percentage of males aged eighteen to twenty-four, 3) the percentage of persons over age 60, and 4) the size of the resident population for 1970. All the changes in these variables are also used. Including the size of the resident population in 1970 controls for the tendency of crime to depend on the size of the block.

Finally, the number of crimes of each type in 1970 will be independent variables for predicting 1980 crimes of the same type and the changes in these crimes. The amount of crime in 1980 and the changes in it depend partially on the levels of crime at the beginning of the decade (Kobrin and Scheurman, 1982). For Cleveland, including 1970 crime measures in the same regressions using other independent variables does not produce collinearity problems. Variance Inflation Factors were examined for all regressions to ensure that this is the case (Fisher and Mason, 1981).

METHOD

The bulk of the analysis will rely on one or more variants of multiple regression. After briefly reviewing the cross-sectional effects of racial composition on crime in Cleveland in both 1980 and 1970, the first task will be identify the effects of past urban structure, including racial composition and 1970 crime incidence, on the amount of crime occurring in 1980. This task precedes others because 1970 characteristics are temporally prior to the changes which the residential areas experience over the decade. Furthermore, several studies show that the past characteristics of urban subareas have persisting effects over time (Choldin et al., 1980; Roncek and Block, 1985; Roncek, 1986; Roncek et al. 1986).

Next, the analysis will examine the effects of changes in the characteristics of residential areas on crime in 1980. In all of the analyses of change in crime, ordinary change scores will be used. Kessler and Greenberg (1981: 11-24) show that the previous reluctance to use change scores has no mathematical basis. Ordinary change scores have simple and direct interpretations and do not impose the difficulties of interpretation associated with other approaches to the study of change. Third, the combined effects of past characteristics and change will be assessed on both 1980 levels of crime and changes in crime.

I will then examine the effects of white-black racial change on crime using the typology of racial change developed by Taeuber and Taeuber (1965). A regression coefficient indicates the average effect of change in an independent variable on a dependent variable. It does not permit assessing the differential impact of different levels of an independent variable on a dependent variable. Since the Taeuber typology, as originally developed, is for census tracts, it is necessary to redefine parts of it so that it can be

used for city blocks. The original criterion for including a census tract within the typology is that the tract must contain 250 or more blacks in the terminal year of the decade. This criterion cannot be applied to city blocks which often have far fewer than 250 total residents. The first use of the Taeuber typology will include all blocks containing more than 40.03% black residents in the 1980. This is the average percentage of blacks on blocks in 1980. Since this figure is relatively high, I will also re-examine the blocks with the typology using the criterion of 10% or more blacks in 1980.

To ensure that multicollinearity is not a problem, the Variance Inflation Factors (Fisher and Mason, 1981) were examined for all independent variables in all regressions. All the VIFs were substantially below 4.00 the criterion which Fisher and Mason identify as the critical value for serious distortion of regression coefficients. All regressions were tested for the presence of autocorrelation with the Durbin-Watson test. None exhibit any problem. Roncek and Montgomery (1986) note that the use of this test is controversial, but point out that the research using other approaches (Loftin and Ward, 1982; Doreian, 1980) have never been able to demonstrate that the test fails to identify autocorrelation in an ecological context. Roncek and Fladung (1983) and Roncek and Robinson (1984), however, are able to show that when autocorrelation is artificially created in an urban data set, the Durbin-Watson test successfully identifies it in every instance. The reluctance to use the Durbin-Watson test for autocorrelation on ecological data sets stems from the tendency of investigators studying counties or states to collect their data in alphabetical order and to create data files which are in alphabetical order rather than in even a partial geographical order. The situation is quite different for city blocks. City blocks are ordered within tracts and census tracts and, particularly in Cleveland, they are numbered so that their order

in the data file closely corresponds to their position in space. It is also worth noting that the tests proposed by Doriean (1980) cannot be applied to large data sets with thousands of cases because the tests depend on inverting a  $N \times N$  matrix where  $N$  is the number of cases (Doriean, 1985).

#### RESULTS

For Cleveland both in 1970 and 1980, the percentage of black residents has statistically significant effects on the amount of crime on its residential city blocks. In 1970, Roncek (1981) finds that it has the third most important effect on the total of property crimes and the most important effect on the total of violent crimes in his trimmed models. In 1980, Roncek (1985a) finds substantially less important although still statistically significant effects. For both property and violent crimes it declines in to seventh in importance among 10 predictors. In 1980, its b-coefficients are one-third the size of the 1970 coefficients. Regardless, these cross-sectional effects still parallel those of other cities at other times in indicating a linkage between the racial composition of residential areas and their crime incidence.

The first task in tracing the how urban crime patterns change over time involves identifying the effects of past composition on current crime. Unfortunately, urban crime theory is not sufficiently well-developed to guide this process and the distributions of the different crime types and of many of the independent variables are skewed. Thus, I examine four different types of regressions for each of the seven individual crimes and the two crime totals. They are: 1) ordinary linear regressions; 2) regressions using the logarithm of 1980 crime on the ordinary independent variables (This regression can correct for severe skewness in the dependent variable.); 3) double-log regressions which use the logarithms for both 1980 crime and the 1970 independent variables; and 4) regressions using the natural metric of 1980 crimes and the



logarithms of the 1970 characteristics. The regressions are computed twice, once excluding 1970 crime levels and then including them as predictors of 1980 crime.

The results of these regressions clearly indicate that ordinary multiple regression in which both the dependent variable and the independent variables are in their natural metric provides the best fitting model for statistically predicting 1980 crime. Without 1970 crime in the equations, the ordinary linear model has the strongest variance explained for four of the seven individual crime types and five of the nine crime types including the totals. For the regressions including 1970 crime as a predictor, the ordinary linear is the strongest for six of the seven individual crime types and for eight of the nine types including the totals. These results parallel Roncek (1985a) who finds that, by 1980, crime in Cleveland has decentralized so that it more closely approximates a normal distribution than in 1970. This decline in skewness reduces the usefulness of any of the logarithmic models for explaining crime. To confirm whether these results could be an artifact of using only a single year's crime data for the dependent variables, all regressions were rerun using the total of each crime type for each block for the 1979-1981 period. The results are virtually identical when the three-year crime totals are used as dependent variables. This further supports the linear regression model as the best functional form for modelling the effects of 1970 block characteristics on 1980 crime.

Choosing the final form of the regressions also requires checking the effects of changes in the independent variables on crime to determine whether substantial error would be generated by choosing the model which has the best fit for the 1970 characteristics. This task requires examining only two regressions for each crime type, one using the dependent variable in its

natural metric and one using the logarithm of each crime. The changes in the independent variables can and do take negative values because Cleveland loses population over the decade. Thus, it is not possible to use the logarithms of changes in the independent variables because logarithms are not defined for negative numbers. The two types of equations differ little in the amount of variance explained for any of the crimes. Furthermore, the total variances explained by all the changes in the independent variables are far smaller than those explained by the 1970 characteristics. Thus, even though the logarithmic form is slightly more powerful than the linear, additive form when only changes in the blocks' characteristics predict 1980 crime, converting the crimes to logarithms and regressing them on the linear 1970 characteristics would entail substantial losses in the predictability of 1980 crime. Thus, the best functional form for examining 1980 crime must use crimes in their natural metric to avoid loss of explanatory power from 1970 characteristics. Since the only specification possible for the changes in the independent variables is the linear one, the remaining analyses will use the linear, additive or ordinary multiple regression.

Having decided the functional form for the equations in the analysis, it is now time to turn to the details of the examining the effects of history and change on crime in 1980. The first task is to identify the effects of past characteristics on the amount of crime on the blocks in 1980. Table 1 has these regression results for predicting 1980 crime from the 1970 characteristics of the blocks including 1970 crime.

-Table 1 about here-

The effects of the past on crime which takes place a decade later are substantial, as the proportions of explained variances in the last row of Table 1 show. Only for murder and rape are the explained variances less than 30%,

but, even for these crimes, the equations are statistically significant. It is also important to note that several of the characteristics of the blocks in 1970 have statistically significant effects on 1980 crime. The percentage of primary individuals, the percentage black, housing value, and the 1970 population of the blocks have significant and, at times, important effects on the different crimes. Past crime levels, while important, do not completely determine crime levels a decade later. Although not reported in a table, including 1970 crime in these regressions increases the explained variance from .1% for murder to 15.4% for auto theft.

In contrast to the overall effects of the past, the legacy of past racial composition is complex. The percentage black only has positive and statistically significant effects for murder, rape, and assault. Its effect on the three property crimes and their total is negative and statistically significant. These latter effects depart substantially from the findings of cross-sectional studies which tend to find that racial composition has positive effects on all crime types. Yet, concern over the effects of racial change only partially concerns the past. Its main focus is with how changes over time affect the future. To begin addressing this issue, attention will now turn to the effects of changes in the characteristics affect crime in 1980. The results of the regressions examining the effects of changes are in Table 2.

-Table 2 about here-

The proportions of variance explained in each type of crime in 1980 due to the changes which the blocks experienced are much smaller than those due to their past characteristics. Comparing the squared multiple correlations in the last row of Tables 1 and 2 confirms the importance of the past for understanding the present. Yet, understanding the changes which residential areas undergo is also important for understanding what happens in them later.

The differences in the effects of changes in racial composition and in changes in the number of residents on the blocks underscore this point. In contrast to the effects of the past composition, the change in the percentage of black residents has positive and statistically significant effects on every crime type in 1980. This seems to imply that the findings of cross-sectional research which typically also find such effects at one point in time can be generalized to longitudinal processes. Caution, however, is necessary before doing so because the effects of change have not been controlled for the effects of history which are substantial.

Tables 3A and 3B have the results of regressions predicting 1980 crime from both 1970 characteristics and the changes in these characteristics. As expected, combining both sets of predictor variables increases the proportion of variance explained for each crime. The variance explained for each crime, except for murder and rape, is substantial given the small size of city blocks in terms of both population and physical size.

-Tables 3A and 3B about here-

The importance of simultaneously examining the effects of both history and change are clear from the regressions in these two tables. Particularly clear is the importance of controlling the effects of racial change and population change for the effects of past characteristics. In Table 2, changes in racial composition have positive and significant effects on every type of crime. Yet, controlling for past composition alters the effects of racial change substantially. Increases in the percentage black are no longer associated with a higher incidence of rape in 1980. In addition, the effects of the racial change, measured with either standardized (except for murder which has a slightly larger beta) or unstandardized coefficients, are considerably smaller than when they are not controlled for historical effects. After statistical

control, increases in the number of residents on the blocks is now positively associated with higher crime levels in 1980. The original negative effect in Table 2 stems from the fact that, over the decade, Cleveland as a whole and, as a consequence, its residential subareas lost population.

To clarify further how the effects of history and change combine to account for crime levels in 1980, I reestimate each of the equations in Tables 3A and 3B by eliminating variables with insignificant effects. Although all the Variance Inflation coefficients indicate that no serious distortion occurs for the coefficients of any of the variables, it is possible that small changes in the effects of one or more variables may change their level of statistical significance. The independent variables are correlated with each other. This is the reason for using multiple regression. If they were uncorrelated, one could simply add together the squares of the zero-order correlations and this would equal the variance explained. With completely uncorrelated variables, the beta weights controlling for other variables would be the same as the zero-order correlations. Eliminating insignificant independent variables allows any common variance which they share with other independent variables and the dependent variable to be reassigned to independent variables which remain in the equations. Beginning with the weakest and least statistically significant variable, I eliminate variables one at a time from each equation until only statistically significant ones remain. Although tedious, this procedure is much safer than eliminating all statistically insignificant variables at once or in large groups because any common variance is allowed to shift before all but the weakest variables are eliminated. Tables 4A and 4B have the results of these trimmed regressions.

-Tables 4A and 4B about here-

Eliminating very weak variables produces little change in the amount of

variance explained for any of the crimes, as expected. Similarly, there are only very minor changes in the regression coefficients. Changes in racial composition continue to have positive and statistically significant effects on all the crime types except rape and grand theft. This finding again parallels the findings of much cross-sectional work and suggests that there may be some basis for the fears of residents whose areas are experiencing racial change. Yet, further examination of the strength of the effects of racial change is necessary. First, the beta weights for racial change are relatively small. None of them is even as large as .1 and none of them is ever the largest in any of the regressions. There are other variables reflecting both the past and other changes which have stronger standardized effects than does racial change. For example, the standardized effects of the change in the number of residents on the blocks are several times larger than those for racial change with the sole exception of murder. Second, all the unstandardized or b-coefficients for racial change are small. The largest b-coefficient for racial change is for the total of all three property crimes and it equals .025. This value means that, in an area which went from having no black residents to 100% black occupancy over the decade, such massive racial change by itself would produce an additional 2.5 property crimes of all types in 1980. The additional crime in 1980 that would be produced by such change for the other crime types is even less. Comparable changes in the vacancy rate, which is also measured as the differences in percentages, would have greater impact than changes in racial composition. Thus, while racial change in Cleveland does have detrimental effects on the amount of crime occurring at the end of the period, this effect is quite small. It cannot serve as a legitimate basis for the very negative reactions which people have had to the inmovement of new black residents.

The analysis to this point focuses on the amount of crime on residential

city blocks at the end of the decade. Much of the concern over racial change, however, relates to changes in crime incidence rather than only the level of crime after racial change begins. Fortunately, because the best functional form for the regression predicting 1980 crime is additive and linear, there is a mathematical equivalence between regressions predicting the amount of crime at the end of the decade and those predicting changes in crime. Kessler and Greenberg (1981: 11-24) show that when an additive, linear regression predicting the final state of a dependent variable includes the prior value of a dependent variable as a predictor, the unstandardized effects of independent variables other than the prior state of the dependent variable predicting the final state are the same as their unstandardized effects on changes in the dependent variable. In other words, the b-coefficient for racial change predicting any 1980 crime equals its b-coefficient predicting change in a particular crime. Thus, the b-coefficients for all variables except 1970 crime in Tables 3 and 4 are the same as the b-coefficients for predicting changes in crime.

The effects of 1970 crime on changes in crime are equal to the number obtained when the value of 1.00 is subtracted from the b-coefficient for 1970 crime predicting 1980 crime. Because all the b-coefficients for 1970 crime are less than 1.00, all the effects of 1970 crime on changes in crime are negative. This means that the blocks with the highest levels of crime in 1970 experienced either smaller increases in crime or greater decreases in crime over the decade than did blocks with lower levels of crime. Initially, some researchers (Bohrnstedt, 1969) treated such findings as artifactual and referred to them as "regression towards the mean." What is taking place is indeed regression towards the mean, but it is not artifactual. Regression towards the mean can be artifactual when the dependent variable has an imposed upper value, such as

the highest category for an attitude survey item. The amount of crime occurring on a city block, however and unfortunately, has no such limit. The smaller or negative changes which city blocks experience in terms of crime represents the effects of actual social processes.

The exact numerical values of the standardized effects of the independent variables on changes in crime differ from those for their standardized effects on 1980 crime because the b-coefficients are standardized using the standard deviation of change in crime rather than the standard deviation of 1980 crime. The transformation, however, is a linear one, and the relative order of importance of the different independent variables does not change. Instead of dividing the product of the b-coefficient and the standard deviation of the variable to which it refers by the standard deviation of 1980 crime, each of these products is divided by the standard deviation of the change in crime. Because of this mathematical equivalence, presenting separate tables for the effects of history and change on changes in crime is not necessary. Such regressions were examined and the calculations above were done to ensure that the equivalences Kessler and Greenberg (1981) show to be true mathematically are true for these data. The calculations produce exactly what Kessler and Greenberg say they should.

Regression coefficients measure the average effect of change in an independent variable on a dependent variable. They, however, can conceal several aspects of a relationship. With regard to racial change, much more concern seems to focus on the first increases in black occupancy than on similar amounts of change after the majority of residents are black. To examine the consequences of different types of racial change affect crime and changes in crime I use Taueber and Taeuber's (1965) typology of racial change.

Among the many insights in the Taeubers work are two which bear most



directly on this research. First, they demonstrate that racial change is not unidirectional. The concentration of blacks in residential areas can decrease or remain stable. Second, they show that there is more than one way in which racial composition may change. Invasion and succession are not the only processes. The Taeubers examine the process of racial change for all census tracts with 250 or more blacks in the terminal year of a decade. This criterion is the number below which the Census suppresses certain data which were necessary for some of the Taeubers' analysis. No such pragmatic criterion exists for city blocks. To parallel the kinds of areas that they study which have a substantial number of black residents at the end of the decade while using city blocks, I use two sets of blocks. The first set consists of all residential blocks on which the percentage of blacks equals or exceeds the average percent black for all blocks in the city, i.e., all blocks having more than 40.03% of their residents classified as black in 1980. Because this number is relatively high and using it as a criterion would mean that areas would not be classified as invasion areas unless they had 40.03% or more black residents in 1980 and this does not fit well with the connotation of the term invasion which implies relatively small initial inmovement, I also examine and focus on all blocks with 10% or more black residents in 1980. This number roughly approximates the percentage that effectively corresponds to the 250 black resident criterion for census tracts and is more consistent with the connotation of invasion or initial inmovement.

The Taeubers divide their census tracts and I divide the city blocks into four groups. Those meeting the 1980 criteria in which the percentage of blacks increases over the decade are Consolidation Areas. Those experiencing decreases in the percentage of blacks are Displacement Areas. Established black Areas have 90% or more black residents in 1980 and 1970. Stable

Interracial Areas have little change in the percentage of blacks and nonblacks. Following the Taeubers, I define little change as less than 10% for both populations and increases or decreases of less than either one hundred people for either racial group. For comparison, I also present results for areas which remained all white over the decade.

The Taeubers subdivide Consolidation and Displacement areas. There are four types of Consolidation Areas. Invasion Areas increase their percentage of blacks to more than the 1980 criterion due to increases in the number of black residents and decreases in nonblack residents and have less than either 32.65% black residents (This is average percent black across all the residential blocks in 1970 and the figure used with the 40.03% criterion.) or less than 10% black residents in 1970 for the 10% criterion analysis. Succession areas also increase in the percentages of black residents due to increases in the number of black residents occurring simultaneously with decreases in the nonblack population. Succession areas are equal to or above the criterion (32.65% or 10%) for the percentage of blacks in 1970. The third type of Consolidation area is the Growing Area. In these, the percentage black increases due to increases in both the black and nonblack populations with the black population increasing more than the nonblack population. The final type is the Declining Area. Such areas lose both blacks and nonblacks with the black population remaining stable or decreasing slower than the nonblack population.

Displacement areas have declines in the percentage of black residents although they still meet the criterion for the percentage of blacks in 1980. The Taeubers define three subtypes. The first are "Pure" Displacement Areas. In these, the percentage black decreases due to declines in the number of black residents and increases in the nonblack population. The final two types of Displacement Areas are the Growing Displacement Areas and the Declining

Displacement Areas. These are analogous to their Consolidation counterparts.

Table 5 has the results of examining each of the nine types of crime by each of the nine types of racial change and for all white areas for all city blocks which had more than 40.03% black residents in 1980. Presenting this table allows maintaining consistency with similar work done using Chicago (Roncek, et al. 1986) and San Diego (Roncek, 1986) in which the average percentage of blacks in 1980 is the criterion for examining the effects of racial change. Presenting it also allows seeing the small number of blocks which fall into many of the racial change types for the Cleveland data. For each crime for each type of change, there are three numbers in each cell. The topmost for each cell is the average change in the amount of crime for a particular crime for a particular type of racial change across the blocks experiencing that type of racial change. The middle number is the average amount of 1980 crime on the blocks within each group. The bottommost is the average amount of 1970 crime. The last column has the number of blocks experiencing each type of racial change. Table 6 has the results of using the 10% criterion and is the table on which the following discussion will focus because at least a few of the groups of blocks increase in size so that the estimates of the crime effects are more stable than with the 40.03% criterion. As can be seen, the numbers in the cells follow the same general pattern, but are less extreme due to the greater stability of the estimates of the crime averages.

-Tables 5 and 6 about here-

Turning to the results for invasion and succession first, Table 6 shows that areas experiencing these types of change do not have the largest increases in crime. Both of these areas have far smaller increases than do Growing Consolidation Areas. While the conditions in these areas are not as bad as in

the latter, they are not unproblematical. For seven of the nine crimes, the second highest increase in crime occurs either in either invasion or succession areas. This finding contrasts strongly with findings from similar analysis by Roncek (1986) for San Diego and Roncek, et al. (1986) for Chicago.

The findings for Cleveland in a way mirror the controversy over racial change that the Taeubers addressed. Prior to their work, the view that racial change was inevitable and proceeded through invasion and succession was pervasive. The Taeubers do not claim or argue that complete racial change does not occur through the processes of invasion and succession, but show that it does not always occur in this fashion. Indeed, they find that several cities did experience racial transition primarily through the mechanisms of invasion and succession. They, however, point out that this process occurs only under certain conditions. The parallel is that in other cities (San Diego and Chicago) experiencing different types of change, the impact of invasion and succession on crime is relatively unimportant, just as for many cities that the Taeubers studied racial transition did not occur through invasion and succession. Cleveland, on the other hand, paralleling the cities for which the Taeubers find racial change to proceed by invasion and succession, has its invasion and succession areas experiencing relatively important increases in crime. Again, however, while relatively important the increases are in no way as large as those found in the Growing Consolidation Areas.

The findings for Invasion Areas must also be viewed in the context of the impact which these changes in crime have on the levels of crime in 1980. Invasion areas never have more than the third highest crime levels for any type of crime out of a possible ranking of ten when all white areas are also considered. They are only seventh out of nine (one tie) in terms of the amount of rape in 1980 and sixth out of ten for Grand Theft. Generally,

Invasion areas occupy the middle position among the different types of areas in how much crime occurs in them.

Succession areas in Cleveland also do not fare very well compared to their counterparts in Chicago and San Diego. They have the second largest increases in assault, burglary, and grand theft. In 1980, they have the second highest average incidence for the total of all violent crimes, murder, assault, the total of all property crimes, and burglary. Again, these findings must be viewed in the context of the high increases and high levels of crime in Growing Consolidation Areas. While crime in Succession Areas is more of a problem than in most other areas, it is still far lower and increases much less than in the Growing Consolidation Areas. Population growth in both races simultaneously with increasing racial composition is what produces the most change in crime and highest 1980 crime levels in Cleveland.

These findings must also be understood in terms of the broader changes which Cleveland experiences through this decade. Not only did it experience loss in its more affluent white population, but also it has decreases in its black population. These changes set the context what occurs within its residential areas. These broad changes depart dramatically from the experience of San Diego which has increases in both populations and as a consequence has almost as many blocks classified as "Pure" displacement Areas as Cleveland has classified as Invasion Areas. In San Diego, it is population growth both in Growing Consolidation Areas and Growing Displacement Areas in which the crime problem is most severe. With a loss of almost 30% of its white population over the decade, it is not surprising that there are only two blocks which are Growing Displacement Areas. The white population of Cleveland declines dramatically and, thus, the possibilities for problems emerging in Growing Displacement Areas, as occurred in San Diego, are extremely limited because

such areas hardly exist within Cleveland. To the extent which change is disruptive, negative consequences will follow for the areas which are changing. This is what occurs in Cleveland. At different stages in the cycle of a city's development, disruptions will occur in different types of areas.

The results from examining crime with the Taeuber typology also reflect the changing distribution of crime in the city over time. For 1970, regression equations using the logarithm of crime and the logarithms of the independent variables are necessary to provide the best fitting regressions (Roncek, 1981;1985a). For 1980, linear regressions must be used. This required change in analysis technique stems from the distribution of crime changing from one which is highly skewed to one which more nearly approximates a normal curve. This changing distribution implies the decentralization of crime within the city so that more blocks in 1980 have average levels of crime than in 1970 and the most crime-ridden blocks in 1980 differ less from other blocks than they did in 1970. One consequence of this change is apparent from examining the crime figures for Established Black Areas in Table 6. There are decreases in the amount of crime on these blocks for six of the nine crime types. Further the ranking of these areas in terms of how much crime they have relative to those experiencing other types of change have either remained stable over time or decreased.

In sum, the past history of residential areas has important effects on the levels of crime they have a decade later. These effects combine with those of changes in their characteristics to influence how much crime occurs over time. Among those changes influencing crime at the end of the decade is the changing racial composition of the residential areas. Yet, three caveats require stress. First, these effects emerge within a context of dramatic population loss in both the black and nonblack populations. Second, while such effects

are present, they are substantially smaller than the effects of the variables reflecting the past characteristics of the blocks and smaller than changes in other characteristics. It is worth reiterating that, for the same change in percentage, increases in the vacancy rate have a greater impact than similar increases in the percentage of black residents. Also, despite the overall declines in both the black and nonblack populations over the decade, the relative importance of racial change is still vastly less than that of simple increases in the number of residents on the blocks. The disruptions occurring as a result of increasing the size of the residential population of the blocks manifest themselves in the crime experiences of Growing Consolidation areas and in the strong standardized effects of population change on crime. Third, even though racial change through invasion and succession have negative consequences for crime in Cleveland, the causal effect of racial change in the regressions is only larger than that found for San Diego in which invasion and succession are not very important for murder and robbery. For all other crimes, racial change in Cleveland has less impact on increasing crime over the decade than it does in San Diego.

#### DISCUSSION

The topic of racial change is controversial, partly because of prejudice and partly because, at least on the surface, racial change in urban neighborhoods seemed often to be associated with negative consequences. Fears of the loss of a sense of community, losses in property values, and fears of increased crime often dominate the views of white residents whose neighborhoods experience the first inmovement of blacks. While research by Taeuber and Taeuber (1965), Molotch (1969), and Taub, et al. (1984) show that fears of declines in property values are not a necessary consequence of racial change, the findings from much urban crime research, at least on the surface, do not

provide the basis for alleviating fears of increased crime.

The work of Shaw and McKay (1942) has for a long period of time been the definitive work in the area of urban crime even though it focuses on the arrests of juveniles and adults. Its comprehensiveness, longitudinal design, and inclusion of findings for several cities make it a model which researchers desire to emulate but often cannot because of the lack of appropriate data. Shaw and McKay's basic finding that delinquency rates in city neighborhoods remain virtually constant despite repeated changes in the ethnic composition of these places is frequently cited by researchers in attempting to allay the fears of white urban residents. This finding, however, contrasts with the results of much cross-sectional research which repeatedly finds an association between the concentration of minorities in city neighborhoods and rates of delinquency and crime. Until recently, this discrepancy could be ignored on the basis of the differences between cross-sectional and longitudinal research. The findings of Kobrin and Scheurman (1982) and Bursik and Webb (1983) no longer permit this discrepancy to be ignored.

Of these two studies, Bursik and Webb (1983) is the closest to replicating Shaw and McKay. They restudy Chicago which is the city to which Shaw and McKay devote the bulk of their attention and they use delinquency rates as do Shaw and McKay. Bursik and Webb (1983) find as do Kobrin and Scheurman (1982) that higher rates of delinquency occur as areas change from white to black occupancy. For Bursik and Webb (1983) these effects of changing racial composition are particularly strong for the periods from 1950 to 1960 and 1960 to 1970. Yet, several aspects of Bursik and Webb's study as well as many other studies of delinquency patterns, including the work of Shaw and McKay, limit the usefulness of such work for addressing the fears of residents in areas experiencing racial change and for public policy.



First, delinquency rates are arrest rates and they depend on the successful apprehension of a juvenile. Second, these rates are based on the residence of the apprehended offender and not on the location where the juvenile act occurs. Thus, they are not a measure of how much criminal activity occurs in an area because they ignore the location of this activity unless it accidentally coincides with the area of the residence of the offender. In terms of public policy for crime prevention, such rates also have serious limitations. They ignore offenses for which a juvenile is not apprehended or for which no offender is apprehended. As rates, they cannot serve as an indicator of how many times police will have to respond to activity in an area. Third, to provide stable rates, juvenile delinquency is often measured for census tracts, which usually average about four thousand residents and may be near a square mile in size, or for larger areas. Bursik and Webb (1983), for example, use the 75 Community Areas of Chicago as their units of analysis. Each of these has an average approximately 40,000 residents and their average size is three square miles, although many are smaller than this. The problem with rates based on such large areas is that they ignore internal variation within these places. This can produce misleading inferences because of aggregation error. In general, as the size of the unit of analysis increases the correlations among the independent variables and with the dependent variable increase. The increased magnitude of the correlations among the characteristics of urban subareas also makes statistical control more difficult because of the increased danger of multicollinearity and can distort the estimates of the effects of the independent variables. For example, Roncek (1979) finds that the effect of the percentage of black residents on crime is much smaller when city blocks are the units of analysis is much smaller than when census tracts are the units of analysis. Given these findings, it is

necessary to question whether this recent work could overestimate the effects of racial change.

Taeuber and Taeuber's (1965) study also provides an important insight which must be kept in mind in any discussion of the process or effects of racial change. They find that cities at different stages of growth and decline experience different patterns of racial change within their residential areas. The thrust of much of their analysis is that residential areas do not always undergo transition to complete black occupancy after the initial inmovement of black residents. Yet, such rapid change does occur under certain conditions, specifically low or negative growth in the total white population of the city and rapid growth in the black population of the city. Given that the process of racial change can vary within cities, it is reasonable to question whether the effects of racial change also vary. This question becomes particularly salient for crime because Roncek (1986) finds that racial change, particularly invasion and succession, is unimportant for explaining changes in crime for San Diego's city blocks over the 1970-1980 decade. This result conflicts markedly with the findings of Bursik and Webb (1983). Part of the discrepancy could be due to the differences in research design, particularly the dependent variables, but this may be too simplistic.

To examine whether the San Diego findings (Roncek, 1986) should be interpreted as mostly a product of the stage of development of the city, I replicate this study using data for Cleveland. Using the same variables, the same units of analysis (city blocks), and the same time period (1970-1980). In doing so, I follow Roncek's (1986) strategy of examining both the effects of the past characteristics of the city blocks and the changes in them on crime in 1980 and change in crime over the decade. The first major finding which emerges is that there is considerable persistence of both crime levels and the

effects of the 1970 characteristics on the amount of crime on the blocks in 1980. Indeed, the variance explained in each of the crimes by past characteristics is considerably larger than that explained by changes in these. These findings parallel those for San Diego (Roncek, 1986). Thus, as Choldin, et al. (1980) argue, there is considerable persistence or inertia in the structure and pattern of social life within cities.

Although racial change has relatively powerful standardized effects on 1980 crime in the regressions using only the changes in the block characteristics, these effects diminish considerably once the effects of the past characteristics of the blocks are controlled. They remain statistically significant for all crimes except rape and grand theft, but are much smaller in size than several other variables particularly the number of residents on the blocks in 1970, the amount of crime in 1970, the 1970 concentration of primary individuals, and the change in the number of residents on the blocks. These findings also parallel those for San Diego.

The unstandardized effects of racial change reflect its small impact on crime at the end of the decade and changes in crime over this period. The largest b-coefficient for racial change is for the total of all property crimes and has the value of .025. Thus, holding other variables constant, an additional 2.5 crimes would occur in 1980 on city blocks experiencing complete racial change from all white to all black occupancy. This number is considerably less than the standard deviation in property crimes which is 9.96. This amount of additional change is substantially less than would occur given a comparable change in vacancy rates which are also measured as changes in percentages. The b-coefficient for changes in the vacancy rate for the total of all property crimes is .042. The small b-coefficients for racial change also parallel the findings for San Diego.

To this point, there are relatively close parallels between the sets of findings for the two cities, despite dramatic differences in their experiences over the 1970-1980 decade. There are, however, some differences in the pattern of racial change which emerge more clearly when 1980 crime and changes in crime are examined for the nine different types of racial change identified by Taeuber and Taeuber. In San Diego, initial inmovement (invasion) and succession were quite unimportant for either high crime levels in 1980 or changes in crime. In San Diego, what the Taeubers call Growing Areas have the highest crime levels and the most important changes in crime. Growing Areas are those in which the number of residents is increasing over time. Yet, it is both Growing Consolidation Areas which are increasing their concentration of blacks and Growing Displacement Areas which have decreasing concentrations of blacks in which crime problems were most severe.

The most severe crime problems in Cleveland are in the Growing Consolidation Areas, but substantial problems also exist in Invasion and Succession Areas. As explained, Cleveland has almost no Growing Displacement Areas. This is as expected in a city which loses almost 30% of its nonblack population over the decade. This finding reflects the differences which emerge among what happens to the areas within cities as a result of the broader changes they are experiencing within the national urban system. Just as the Taeubers find that, under certain conditions, complete racial change can and does occur rapidly after initial inmovement of the first black residents, so also can crime problems become more severe. Yet, it is important that this finding be set in the broader context of the changes occurring to the city as a whole. Just as the experiences of some U.S. cities in undergoing racial change should not be generalized to all cities at all times, so also must not the effects of initial racial change for one city for one period be generalized

without taking into account its stage of development.

The fundamental dynamics which account for the patterns of change in Cleveland as well as San Diego center on the change in the number of people living in the residential subareas. Yet, it is crucial to include the persisting effects of the past in any consideration of the effects of change. Residential areas are part of the differentiated organization of the city and serve as sites for a pattern of differentiated activities, including crime, over time. This pattern can and does change, but slowly. The effects of the past both in Cleveland and San Diego dominate the effects of change.

The results for Cleveland point to the importance of returning to some very basic notions within urban theory and within what has come to be called the "routine activities approach to crime." As Wirth (1938) suggests with regard to the city as a whole and is reemphasized by Fischer (1976), having a greater number of people available for interaction will affect the number, intensity, and kinds of activities which take place. Crime is one of these activities. Social control becomes more difficult when more people must be controlled. As Cohen and Felson (1979) emphasize, the difficulties of social control and opportunities for crime depend on the characteristics of different settings, including which kinds of people are in them and which kinds of places they are. The strong effects from the concentration of primary individuals in 1970 parallel their concern with the activity patterns of certain types of people that decrease levels of guardianship or in Wirth's terms increase anonymity. An environmental parallel emerges from the consistent effects of changes in the vacancy rate. In guiding future research, these results point to the importance of looking first at the simplest and most obvious features of a city's residential areas.

For crime prevention, the results also point to the same maxim. Over

time, problems in the most crime-ridden areas will be less serious, but they will not dissipate entirely. Crime persists over time and the past is a good guide to the future. Key characteristics to identify for places in which to expect increasing problems over time are increases in the number of residents in an area and increases in the vacancy rate. These two may seem contradictory, but this need not be the case.

At a broader level of public policy, the results for Cleveland provide little basis for any pervasive fear that racial change in and by itself is or will be the cause of dramatic changes in crime. Under certain conditions, crime problems may increase, but these increases are a reflection of the overall changes which a city experiences. They need not, as the San Diego findings demonstrate in particular and the Cleveland results continue to support partially, be associated with initial racial change. The importance of racial change for higher levels of crime is relatively small compared to the effects of other features of the urban environment.

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Table 1. Linear 1980 Cleveland Crime Regressed on Linear 1970 Block Characteristics and on 1970 Linear Crime.

Ind. Vars.	Crimes								
	Total Violent	Murder	Rape	Robbery	Assault	Total Property	Burglary	Grand Theft	Auto Theft
	beta	beta	beta	beta	beta	beta	beta	beta	beta
1. % Pr. Ind.	.137*	.069*	.105*	.148*	.129*	.108*	.142*	.097*	.088*
2. % Black	.013	.054*	.084*	.010	.053*	-.110*	-.056*	-.111*	-.049*
3. % Spanish	.014	.011	-.006	.012	.023	.003	.024	.004	-.027
4. House Val.	-.058*	-.063*	-.042*	-.027	-.093*	.032*	-.032*	.028	.076*
5. % Overcr.	-.017	-.005	-.010	.008	-.025	-.022	-.031*	-.012	-.018
6. % Apts.	.018	.016	.046*	.084*	-.051*	-.036*	-.086*	.032	.053*
7. Vac. Rate	-.024	-.003	-.025	-.017	.035*	-.041*	-.023	-.013	-.029
8. % Fem. Hd.	.044*	.016	.057*	.036*	.067*	.016	.040*	.014	.003
9. % Over 60	.029	.010	.008	.020	.026	-.001	.013	-.007	-.038*
10 % Male 1824	-.008	-.0002	-.021	-.008	-.013	-.006	-.009	-.004	-.001
11 Res. Pop.	.316*	.125*	.238*	.249*	.429*	.358*	.544*	.294*	.179*
12 1970 Crime	.371*	.029*	.038*	.311*	.124*	.498*	.222*	.331*	.482*
Ind. Vars.	b	b	b	b	b	b	b	b	b
1. % Pr. Ind.	.066*	.003*	.006*	.044*	.026*	.145*	.097*	.035*	.050*
2. % Black	.001	.0003*	.0008*	.0005	.002*	-.025*	-.007*	-.007*	-.005*
3. % Spanish	.013	.0008	-.0007	.006	.009	.008	.031	.003	-.029
4. House Val	-.00005*	-.000004*	-.000004*	-.00001	-.00003*	.00007*	-.00004*	.00002	.00007*
5. % Overcr.	-.005	-.0001	-.0004	.002	-.003	-.019	-.014*	-.003	-.007
6. % Apts.	.004	.0003	.001*	.012*	-.005*	-.024*	-.028*	.005	.015*
7. Vac. Rate	-.015	-.0001	-.002	-.006	.009*	-.070*	-.020	-.006	-.021
8. % Fem. Hd.	.017*	.0005	.003*	.009*	.011*	.018	.022*	.004	.001
9. % Over 60	.012	.0003	.0004	.005	.004	-.001	.008	-.002	-.018*
10 % Male 1824	-.009	-.00002	-.003	-.005	-.006	-.018	-.013	-.004	-.0008
11 Res. Pop.	.008*	.0002*	.0007*	.004*	.004*	.024*	.019*	.005*	.005*
12 1970 Crime	.336*	.029	.064*	.301*	.183*	.547*	.325*	.432*	.383*
R	.652*	.207*	.350*	.569*	.562*	.734*	.667*	.551*	.621*
R <sup>2</sup>	.425*	.043*	.122*	.324*	.316*	.539*	.444*	.304*	.385*

\* Significant at the .05 level (N = 3525)

Table 2. Linear 1980 Cleveland Crime Regressed on 1970-1980 Changes in Block Characteristics.

Ind. Vars.	Crimes								
	Total Violent	Murder	Rape	Robbery	Assault	Total Property	Burglary	Grand Theft	Auto Theft
	beta	beta	beta	beta	beta	beta	beta	beta	beta
1. % Pr. Ind.	.020	-.005	-.026	.049*	-.016	.047*	.014	.058*	.058*
2. % Black	.106*	.085*	.038*	.101*	.081*	.118*	.109*	.064*	.109*
3. % Spanish	-.037*	-.005	-.055*	-.033*	-.022	-.021	-.038*	.001	-.005
4. House Val.	-.195*	-.060*	-.120*	-.151*	-.201*	-.082*	-.121*	-.027	-.031
5. % Overcr.	.011	-.002	.020	.000	.021	.035*	.026	.024	.036*
6. % Apts.	.075*	-.018	.065*	.063*	.071*	.064*	.065*	.044*	.046*
7. Vac. Rate	.005	.038*	.006	.004	-.003	-.009	.004	-.008	-.022
8. % Fem. Hd.	.009	-.011	.015	-.009	.032	.004	.040*	-.034	-.018
9. % Over 60	-.062*	-.014	-.031	-.041*	-.075*	-.061*	-.088*	-.031	-.020
10 % Male 1824	-.030	-.011	-.001	-.029	-.027	-.019	-.035*	-.011	.002
11 Res. Pop.	-.150*	-.086*	-.036*	-.108*	-.176*	-.144*	-.172*	-.066*	-.094*
Ind. Vars.	b	b	b	b	b	b	b	b	b
1. % Pr. Ind.	.010	-.0002	-.002	.015*	-.003	.064*	.010	.021*	.033*
2. % Black	.021*	.001*	.0009*	.012*	.007*	.065*	.031*	.009*	.025*
3. % Spanish	-.022*	-.0002	-.004*	-.012*	-.005	-.035	-.032*	.0006	-.004
4. House Val	-.00008*	-.000002*	-.000006*	-.00004*	-.00004*	-.0001*	-.00007*	-.00001	-.00002
5. % Overcr.	.003	-.00004	.0007	.00001	.003	.029*	.011	.005	.013*
6. % Apts.	.032*	-.0006	.003*	.017*	.013*	.077*	.040*	.014*	.023*
7. Vac. Rate	.002	.001*	.0003	.001	-.0006	-.011	.002	-.002	-.010
8. % Fem. Hd.	.003	-.0003	.0006	-.002	.005	.003	.020*	-.009	-.007
9. % Over 60	-.023*	-.0004	-.001	-.010*	-.012*	-.064*	-.047*	-.009	-.009
10 % Male 1824	-.026	-.0007	-.0001	-.015	-.010	-.047	-.043*	-.007	.003
11 Res. Pop.	-.007*	-.0003*	-.0002*	-.003*	-.003*	-.019*	-.012*	-.002*	-.005*
R	.307*	.158*	.171*	.244*	.322*	.230*	.287*	.124*	.160*
R <sup>2</sup>	.094*	.025*	.029*	.059*	.104*	.053*	.082*	.015*	.026*

\* Significant at the .05 level (N = 3525)

Table 3A. Linear 1980 Cleveland Violent Crimes  
 Regressed on Linear 1970 Block Characteristics, 1970 Crime, and  
 on 1970-1980 Changes in Block Characteristics.

	Crimes				
	Total Violent	Murder	Rape	Robbery	Assault
Linear 1970					
Ind. Vars.	beta	beta	beta	beta	beta
1. % Pr. Ind.	.112*	.053	.065*	.131*	.092*
2. % Black	.015	.081*	.073*	.024	.038
3. % Spanish	.018	.018	-.008	.018	.017
4. House Val.	-.028	-.061*	-.034	-.011	-.043*
5. % Overcr.	.016	-.020	.037	.023	.013
6. % Apts.	.034	.010	.082*	.095*	-.028
7. Vac. Rate	.003	.018	.009	.008	.071*
8. % Fem. Hd.	.052*	.004	.071*	.036	.084*
9. % Over 60	-.001	.006	-.000	.001	.001
10 % Male 1824	-.031*	-.005	-.028	-.026	-.036*
11 Res. Pop.	.460*	.138*	.361*	.370*	.552*
12 1970 Crime	.384*	.031	.048*	.307*	.151*
1970-1980					
Changes in					
Ind. Vars.	beta	beta	beta	beta	beta
1. % Pr. Ind.	.055*	.005	-.008	.058*	.031
2. % Black	.059*	.088*	.016	.050*	.051*
3. % Spanish	.016	.017	-.016	.013	.019
4. House Val.	-.040*	.027	-.017	-.031	-.046*
5. % Overcr.	.007	-.019	.031	-.010	.021
6. % Apts.	.018	-.029	.044*	.032*	.009
7. Vac. Rate	.044*	.056*	.046*	.036*	.075*
8. % Fem. Hd.	.026	-.018	.030	.005	.052*
9. % Over 60	-.049*	-.002	-.014	-.025	-.053*
10 % Male 1824	-.025	-.006	-.006	-.016	-.032
11 Res. Pop.	.281*	.023	.243*	.223*	.249*
Linear 1970					
Ind. Vars.	b	b	b	b	b
1. % Pr. Ind.	.054*	.002	.004*	.039*	.019*
2. % Black	.001	.0005*	.0007*	.001	.001
3. % Spanish	.016	.001	-.0008	.010	.007
4. House Val.	-.00002	-.000004*	-.000003	-.000005	-.00001*
5. % Overcr.	.005	-.0005	.001	.004	.002
6. % Apts.	.008	.0002	.002*	.014*	-.003
7. Vac. Rate	.002	.0008	.0007	.003	.018*
8. % Fem. Hd.	.021*	.0001	.003*	.009	.014*
9. % Over 60	-.0005	.0002	-.00001	.0001	.0002
10 % Male 1824	-.035*	-.0004	-.004	-.018	-.017*
11 Res. Pop.	.011*	.0003*	.001*	.005*	.006*
12 1970 Crime.	.347*	.031	.081*	.297*	.222*
1970-1980					
Changes in					
Ind. Vars.	b	b	b	b	b
1. % Pr. Ind.	.027*	.0002	-.0005	.018*	.006
2. % Black	.012*	.001*	.0004	.006*	.004*
3. % Spanish	.009	.0007	-.001	.005	.005
4. House Val.	-.00002*	.000001	-.000001	-.000008	-.000008*
5. % Overcr.	.002	-.0004	.001	-.002	.003
6. % Apts.	.008	-.001	.002*	.008*	.002
7. Vac. Rate	.018*	.002*	.002*	.009*	.013*
8. % Fem. Hd.	.009	-.0005	.001	.001	.008*
9. % Over 60	-.019*	-.00006	-.0006	-.006	-.008*
10 % Male 1824	-.021	-.0004	-.0007	-.008	-.011
11 Res. Pop.	.013*	.00008	.001*	.007*	.005*
R	.700*	.229*	.410*	.604*	.612*
R <sup>2</sup>	.490*	.052*	.169*	.365*	.375*

\* Significant at the .05 level (N = 3525)

Table 3B. Linear 1980 Cleveland Property Crimes Regressed on Linear 1970 Block Characteristics, 1970 Crime, and on 1970-1980 Changes in Block Characteristics.

	Total Property	Crimes		
		Burglary	Grand Theft	Auto Theft
Linear 1970				
Ind. Vars.	beta	beta	beta	beta
1. % Pr. Ind.	.095*	.112*	.073*	.091*
2. % Black	-.087*	-.061*	-.085*	-.014
3. % Spanish	.010	.024	.009	-.014
4. House Val.	.035*	.001	.015	.064*
5. % Overcr.	.015	.003	.022	.006
6. % Apts.	-.033*	-.080*	.034	.051*
7. Vac. Rate	-.005	.022	.024	-.016
8. % Fem. Hd.	.020	.058*	.000	-.007
9. % Over 60	-.031*	-.030	-.013	-.051*
10 % Male 1824	-.015	-.043*	-.001	.013
11 Res. Pop.	.563*	.735*	.472*	.311*
12 1970 Crime	.485*	.245*	.344*	.459*
1970-1980 Changes in				
Ind. Vars.	beta	beta	beta	beta
1. % Pr. Ind.	.070*	.076*	.036*	.055*
2. % Black	.046*	.064*	.003	.037*
3. % Spanish	.007	-.001	.009	.019
4. House Val.	-.015	-.034	-.009	-.001
5. % Overcr.	.002	-.001	.003	.002
6. % Apts.	-.020	-.028*	-.000	.003
7. Vac. Rate	.038*	.078*	.037*	-.001
8. % Fem. Hd.	.010	.052*	-.024	-.022
9. % Over 60	-.044*	-.072*	-.004	-.016
10 % Male 1824	.006	-.043*	.021	.043*
11 Res. Pop.	.368*	.378*	.332*	.221*
Linear 1970				
Ind. Vars.	b	b	b	b
1. % Pr. Ind.	.128*	.079*	.026*	.051*
2. % Black	-.020*	-.007*	-.005*	-.001
3. % Spanish	.027	.031	.006	-.015
4. House Val.	.00008*	.000001	.000009	.00006*
5. % Overcr.	.013	.001	.005	.002
6. % Apts.	-.021*	-.026*	.006	.014*
7. Vac. Rate	-.008	.019	.011	-.011
8. % Fem. Hd.	.022	.032*	.00006	-.003
9. % Over 60	-.036*	-.017	-.004	-.025*
10 % Male 1824	-.046	-.070*	-.001	.018
11 Res. Pop.	.038*	.025*	.008*	.009*
12 1970 Crime	.533*	.359*	.448*	.365*
1970-1980 Changes in				
Ind. Vars.	b	b	b	b
1. % Pr. Ind.	.096*	.053*	.013*	.032*
2. % Black	.025*	.018*	.0004	.009*
3. % Spanish	.011	-.0009	.004	.013
4. House Val.	-.00002	-.00002	-.000003	-.0000003
5. % Overcr.	.001	-.0004	.0006	.0007
6. % Apts.	-.024	-.017*	-.0001	.002
7. Vac. Rate	.044*	.045*	.011*	-.0004
8. % Fem. Hd.	.010	.025*	-.006	-.009
9. % Over 60	-.046*	-.038*	-.001	-.007
10 % Male 1824	.014	-.053*	.013	.044*
11 Res. Pop.	.049*	.026*	.012*	.012*
R	.792*	.742*	.607*	.649*
R <sup>2</sup>	.627*	.551*	.368*	.421*

\* Significant at the .05 level (N = 3525)

Table 4A. Trimmed Linear 1980 Cleveland Violent Crimes Regressed on Linear 1970 Block Characteristics, 1970 Crime, and on 1970-1980 Changes in Block Characteristics.

	Total Violent	Crimes			
		Murder	Rape	Robbery	Assault
Linear 1970 Ind. Vars.	beta	beta	beta	beta	beta
1. % Pr. Ind.	.131*	.074*	.073*	.137*	.074*
2. % Black		.068*	.079*		
3. % Spanish					
4. House Val.		-.052*	-.044*		-.048*
5. % Overcr.				.036*	
6. % Apts.			.075*	.090*	
7. Vac. Rate					.073*
8. % Fem. Hd.	.065*		.087*	.043*	.094*
9. % Over 60					
10 % Male 1824					-.038*
11 Res. Pop.	.461*	.132*	.363*	.367*	.547*
12 1970 Crime	.392*		.047*	.310*	.152*
1970-1980 Changes in Ind. Vars.	beta	beta	beta	beta	beta
1. % Pr. Ind.	.064*			.047*	
2. % Black	.052*	.074*		.053*	.044*
3. % Spanish					
4. House Val.	-.063*			-.047*	-.059*
5. % Overcr.					
6. % Apts.			.039*	.032*	
7. Vac. Rate	.045*	.045*	.044*	.034*	.077*
8. % Fem. Hd.	.037*		.050*		.055*
9. % Over 60	-.048*				-.048*
10 % Male 1824					-.035*
11 Res. Pop.	.279*		.246*	.221*	.254*
Linear 1970 Ind. Vars.	b	b	b	b	b
1. % Pr. Ind.	.063*	.003*	.004*	.041*	.015*
2. % Black		.0004*	.0008*		
3. % Spanish					
4. House Val.		-.000003*	-.000004*		-.00002*
5. % Overcr.				.007*	
6. % Apts.			.002*	.013*	
7. Vac. Rate					.018*
8. % Fem. Hd.	.026*		.004*	.010*	.015*
9. % Over 60					
10 % Male 1824					-.018*
11 Res. Pop.	.011*	.0002*	.001*	.005*	.005*
12 1970 Crime.	.354*		.081*	.300*	.224*
1970-1980 Changes in Ind. Vars.	b	b	b	b	b
1. % Pr. Ind.	.031*			.014*	
2. % Black	.010*	.001*		.007*	.004*
3. % Spanish					
4. House Val.	-.00003*			-.00001*	-.00001*
5. % Overcr.					
6. % Apts.			.002*	.009*	
7. Vac. Rate	.018*	.001*	.002*	.009*	.013*
8. % Fem. Hd.	.013*		.002*		.008*
9. % Over 60	-.018*				-.007*
10 % Male 1824					-.013*
11 Res. Pop.	.013*		.001*	.006*	.005*
R	.698*	.221*	.408*	.603*	.611*
R <sup>2</sup>	.487*	.049*	.166*	.363*	.373*

\* Significant at the .05 level (N = 3525)

Table 4B. Trimmed Linear 1980 Cleveland Property Crimes Regressed on Linear 1970 Block Characteristics, 1970 Crime, and on 1970-1980 Changes in Block Characteristics.

	Crimes			
	Total Property	Burglary	Grand Theft	Auto Theft
Linear 1970				
Ind. Vars.	beta	beta	beta	beta
1. % Pr. Ind.	.063*	.122*	.055*	.089*
2. % Black	-.077*	-.062*	-.085*	
3. % Spanish		.028*		
4. House Val.				.071*
5. % Overcr.				
6. % Apts.		-.078*	.041*	.048*
7. Vac. Rate			.032*	
8. % Fem. Hd.		.062*		
9. % Over 60	-.029*	-.033*		-.041*
10 % Male 1824		-.044*		
11 Res. Pop.	.558*	.731*	.471*	.313*
12 1970 Crime	.481*	.248*	.343*	.455*
1970-1980 Changes in				
Ind. Vars.	beta	beta	beta	beta
1. % Pr. Ind.	.056*	.077*	.039*	.058*
2. % Black	.045*	.066*		.035*
3. % Spanish				
4. House Val.		-.037*		
5. % Overcr.				
6. % Apts.		-.028*		
7. Vac. Rate	.042*	.069*	.041*	
8. % Fem. Hd.		.054*		
9. % Over 60	-.046*	-.071*		
10 % Male 1824		-.043*		.038*
11 Res. Pop.	.364*	.372*	.328*	.227*
Linear 1970				
Ind. Vars.	b	b	b	b
1. % Pr. Ind.	.085*	.083*	.020*	.050*
2. % Black	-.018*	-.007*	-.005*	
3. % Spanish		.036*		
4. House Val.				.00007*
5. % Overcr.				
6. % Apts.		-.026*	.007*	.013*
7. Vac. Rate			.014*	
8. % Fem. Hd.		.035*		
9. % Over 60	-.033*	-.019*		-.020*
10 % Male 1824		-.070*		
11 Res. Pop.	.038*	.025*	.008*	.009*
12 1970 Crime	.528*	.363*	.448*	.362*
1970-1980 Changes in				
Ind. Vars.	b	b	b	b
1. % Pr. Ind.	.077*	.054*	.014*	.034*
2. % Black	.025*	.018*		.008*
3. % Spanish				
4. House Val.		-.00002*		
5. % Overcr.				
6. % Apts.		-.017*		
7. Vac. Rate	.042*	.040*	.014*	
8. % Fem. Hd.		.026*		
9. % Over 60	-.048*	-.038*		
10 % Male 1824		-.053*		.039*
11 Res. Pop.	.048*	.025*	.012*	.013*
R	.791*	.742*	.606*	.648*
R <sup>2</sup>	.625*	.550*	.367*	.419*

\* Significant at the .05 level (N = 3525)



Table 5. 1970-1980 Changes in Crime, 1980 and 1970 Crime for Cleveland by Type of Racial Change, 40.03% Criterion.

	Violent	Murder	Rape	Robbery	Assault	Property	Burglary	Grand Theft	Auto Theft	N
CONSOLIDATION										
Invasion	1.687	0.157	0.193	0.907	1.067	5.333	4.600	0.907	-0.173	150
	3.773	0.147	0.220	2.087	1.320	12.187	6.260	2.027	3.900	
	2.087	0.040	0.027	1.180	0.253	6.853	1.660	1.120	4.073	
Succession	0.000	-0.048	-0.024	-0.214	1.048	1.333	3.095	0.857	-2.619	42
	2.810	0.095	0.119	1.357	1.238	11.119	5.738	2.000	3.381	
	2.810	0.143	0.143	1.571	0.190	9.786	2.643	1.143	6.000	
Growing	8.000	0.286	0.571	5.286	3.857	1.000	8.000	1.857	-8.857	7
	15.000	0.286	0.857	9.571	4.286	35.286	11.000	8.714	15.571	
	7.000	0.000	0.286	4.285	0.429	34.286	3.000	6.857	24.429	
Declining	-1.316	-0.105	0.105	-1.263	1.000	-1.737	-0.105	0.684	-2.316	19
	3.158	0.000	0.263	1.421	1.474	9.053	4.368	1.737	2.947	
	4.474	0.105	0.158	2.684	0.474	10.789	4.473	1.053	5.263	
DISPLACEMENT										
"Pure"	0.000	0.000	1.000	-1.000	0.000	-2.000	0.000	-1.000	-1.000	1
	2.000	0.000	1.000	1.000	0.000	2.000	2.000	0.000	0.000	
	2.000	0.000	0.000	2.000	0.000	4.000	2.000	1.000	1.000	
Growing	-11.500	0.000	0.000	-7.500	-3.000	-9.000	-4.500	-2.000	-2.500	2
	1.000	0.000	0.000	1.000	0.000	8.000	1.500	2.500	4.000	
	12.500	0.000	0.000	8.500	3.000	17.000	6.000	4.500	6.500	
Declining	-3.250	-0.125	0.125	-1.875	-0.375	-6.750	-2.125	-2.500	-2.125	8
	1.875	0.000	0.250	1.375	0.250	3.625	1.875	0.500	1.250	
	5.125	0.125	0.125	3.250	0.625	10.375	4.000	3.000	3.375	
ESTABLISHED BLACK	-1.185	-0.052	0.084	-0.422	0.181	-1.831	0.268	-0.069	-2.030	810
	3.081	0.100	0.221	1.599	1.162	8.798	4.774	1.309	2.715	
	4.267	0.152	0.137	2.021	0.980	10.628	4.506	1.378	4.744	
STABLE INTERRACIAL	-2.000	0.000	0.000	-1.318	-0.091	-0.455	1.136	0.818	-2.409	22
	2.227	0.000	0.182	1.364	0.682	6.955	3.545	1.727	1.682	
	4.227	0.000	0.182	2.682	0.773	7.409	2.409	0.909	4.091	
ALL WHITE	0.267	0.018	0.029	0.265	0.228	1.862	1.571	0.569	-0.277	1537
	0.798	0.023	0.040	0.439	0.297	4.628	2.316	1.030	1.283	
	0.531	0.005	0.010	0.174	0.068	2.766	0.745	0.461	1.560	

Table 6. 1970-1980 Changes in Crime, 1980 and 1970 Crime for Cleveland by Type of Racial Change, 10.00% Criterion.

	Violent	Murder	Rape	Robbery	Assault	Property	Burglary	Grand Theft	Auto Theft	N
CONSOLIDATION										
Invasion	1.290	0.070	0.145	0.849	0.753	4.790	3.753	0.688	0.349	186
	2.930	0.091	0.177	1.699	0.962	11.129	5.301	1.849	3.978	
	1.640	0.021	0.032	0.849	0.210	6.339	1.548	1.161	3.629	
Succession	1.037	0.061	0.098	0.232	1.268	3.354	4.256	1.232	-2.134	82
	3.549	0.171	0.183	1.744	1.451	11.963	6.488	2.232	3.244	
	2.512	0.110	0.085	1.512	0.183	8.610	2.232	1.000	5.378	
Growing	5.700	0.100	0.400	4.100	2.700	7.900	6.600	6.200	-4.900	10
	11.500	0.200	0.600	7.700	3.000	38.800	9.600	12.900	16.300	
	5.800	0.100	0.200	3.600	0.300	30.900	3.000	6.700	21.200	
Declining	-0.960	0.000	0.080	-0.920	0.920	0.400	0.680	0.880	-1.160	25
	3.160	0.080	0.240	1.400	1.440	10.440	4.600	2.280	3.560	
	4.120	0.080	0.160	2.320	0.520	10.040	3.920	1.400	4.720	
DISPLACEMENT										
"Pure"	0.000	0.000	0.500	-0.500	0.000	0.500	0.000	0.000	0.500	2
	1.000	0.000	0.500	0.500	0.000	2.500	1.000	0.500	1.000	
	1.000	0.000	0.000	1.000	0.000	2.000	1.000	0.500	0.500	
Growing	-11.500	0.000	0.000	-7.500	-3.000	-9.000	-4.500	-2.000	-2.500	2
	1.000	0.000	0.000	1.000	0.000	8.000	1.500	2.500	4.000	
	12.500	0.000	0.000	8.500	3.000	17.000	6.000	4.500	6.500	
Declining	-4.700	-0.100	0.200	-3.200	-0.300	-6.700	-0.900	-3.400	-2.400	10
	2.800	0.000	0.300	2.200	0.300	7.800	3.300	1.300	3.200	
	7.500	0.100	0.100	5.400	0.600	14.500	4.200	4.700	5.600	
ESTABLISHED BLACK	-1.185	-0.052	0.084	-0.422	0.181	-1.831	0.268	-0.069	-2.030	810
	3.081	0.100	0.221	1.599	1.162	8.798	4.774	1.309	2.715	
	4.267	0.152	0.137	2.021	0.980	10.628	4.506	1.378	4.744	
STABLE INTERRACIAL	-1.028	0.111	0.028	-0.750	0.194	1.111	1.528	0.861	-1.278	36
	2.222	0.111	0.167	1.139	0.806	8.028	3.750	2.083	2.194	
	3.250	0.000	0.139	1.889	0.612	6.917	2.222	1.222	3.472	
ALL WHITE	0.267	0.018	0.029	0.265	0.228	1.862	1.571	0.569	-0.277	1537
	0.798	0.023	0.040	0.439	0.297	4.628	2.316	1.030	1.283	
	0.531	0.005	0.010	0.174	0.068	2.766	0.745	0.461	1.560	