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WHITE FLIGHT FROM RACIALLY INTEGRATED NEIGHBORHOODS IN THE 1970s: THE CLEVELAND EXPERIENCE

BY

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WHITE FLIGHT FROM RACIALLY INTEGRATED NEIGHBORHOODS IN THE 1970s: THE CLEVELAND EXPERIENCE

by

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ABSTRACT

White Flight from Racially Integrated Neighborhoods in the 1970s:
The Cleveland Experience

An econometric model of 1970-1980 turnover rates for white households is estimated for census tracts in Cuyahoga County (Cleveland), Ohio. Results indicate that 1970 tract percentage black, interacted with estimated segregationist sentiment for white residents, was the dominant explanatory variable, although the relationship was highly nonlinear. The maximum loss of whites occured in neighborhoods that were 18% black or above 52% black in 1970, with magnitude of loss directly related to tract segregationist sentiment. Application of the results to estimating the Schelling model of neighborhood racial transition indicated that white "tipping-out points" varied from 98% to 46% white, within a standard deviation from the mean level of segregationist sentiment. High-racial flight tracts were characterized by a bi-modal frequency distribution of whites' individual tipping-out points, with disproportionate numbers of highly intolerant whites at one extreme. Integration maintenance policies conducted by the Shaker Heights and Cleveland Heights jurisdictions during the period did not succeed in altering this pattern of white flight. On the contrary, *ceteris paribus*, Heights tracts had 12% greater white turnover rates.

White Flight from Racially Integrated Neighborhoods in the 1970s: The Cleveland Experience

Whether a significant number of white households "flee" neighborhoods that become racially integrated has been hotly debated by scholars over several decades. Several early studies (Mayer 1960; Wolf 1963; Damerell 1968) have supported the widely held view that the migration of successively more nonwhites into a neighborhood encouraged progressively more whites to move out of the area who otherwise would have remained. Opinion poll evidence (Farley et al. 1978; Wurdock 1981) also has indicated that many whites would become "uncomfortable" and would consider moving if their neighborhood became occupied by larger and larger percentages of nonwhites. But other work has concluded that white mobility propensities in integrating areas were no higher than what would normally have been expected in the absence of integration (Rapkin and Grigsby 1960; Molotch 1969, 1972; Wolf and Lebeaux 1969; Guest and Zuiches 1971).[1] In the most sophisticated study to date, Wilson (1983) discovered that white out-migration rates from integrated tracts in ten large SMSAs during the 1960's were significantly higher than from all-white ones, but only for those tracts that would have been predicted to have low turnover in any event. The differential progressively disappeared when tracts of successively higher predicted turnover were contrasted.[2]

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[1]Regression studies that have examined more aggregate population flows between central cities and suburbs (Marshall 1979; Frey 1979; Goodman and Streitweiser 1983) have concluded similarly that whites' suburban mobility propensities were not correlated with central city racial composition.

[2]Other recent multivariate studies have investigated neighborhood racial changes but have not disaggregated in- and out-migrations of whites; see (Steinnes 1977; Guest 1978; Schwab and Marsh 1980; White 1984).

Furthermore, it is unclear whether any patterns of "white flight" that have been identified prior to 1970 still persist in the more contemporary scene. There have been several important developments since 1970 which spawn this uncertainty. First, there has been a decrease in the rate of nonwhite population growth in most large SMSAs, compared to that evidenced from 1940-1970, perhaps reducing thereby white fears of inevitable, overwhelming black housing demands upon integrated areas. Second, exceptional numbers of black households achieved conventional criteria for "middle class status," thereby rendering themselves more desirable potential neighbors.[3] Third, the expressed toleration of whites toward residential integration has accelerated (Taylor, Sheatsley and Greeley 1978; Converse et al. 1980; Schuman et al. 1985). Fourth, in many cities, community organizations have been established with the explicit goal of encouraging stable, racially integrated neighborhoods, what I will call "integration maintenance" (Saltman 1978).

It is the purpose of this paper to investigate empirically white out-migration responses to neighborhood racial integration in this contemporary psychological, demographic, and institutional context. The first section describes an econometric model that explains white turnover rates observed for census tracts over the course of a decade. The specificaton is unique in its treatment of white racial attitudes and of explicit community integration maintenance strategies as explanatory variables. The parameters are then estimated empirically for 1970-1980 using tracts in Cuyahoga County, the principal county in the Cleveland, OH, SMSA. Discussion of these results and their

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[3] See the opinion poll evidence reviewed by Pettigrew (1973) and Schuman et al. (1985).

[4] For a complementary rationale why the 1970s represent a new context for racial change, see Taub et al. (1984: ch. 1).

implications for the "tipping" model of neighborhood succession follows.

A MODEL OF WHITE OUT-MIGRATION FROM NEIGHBORHOODS

Overview

The rate at which whites move out of a neighborhood during a given period is determined both by racially motivated and non-racially motivated sources. The former is influenced by white residents' perceptions and evaluations of the current and expected future racial composition of their neighborhood. These subjective assessments are, in turn, a function of the specific racial and ethic context of the area, white residents' attitudes toward integration, and the effectiveness of integration maintenance policies. The latter, non-racially motivated sources are influenced by demographic and tenure features of white residents.[5] Each of these explanatory factors is discussed and modeled below.

Data

All data used for estimating parameters of the model were gathered for Cuyahoga County, the principal county of the Cleveland, OH, SMSA. Blacks constituted 23% of the total population and 93% of the minority (including Hispanic) population of the county in 1980. In this context, therefore, racial dynamics can be thought of as white-black interactions.[6]

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[5]For reviews of supporting evidence on the determinants of intraurban mobility, see Porell (1982: ch. 2) and Galster (1987a: ch. 8).

[6]From 1970-1980 the Cuyahoga County white population declined from

Since a primary goal of this research is to explore the significance of white racial attitudes, only those Cuyahoga County tracts for which data might be viewed as indicative of white population characteristics were selected. The specific sampling rule was to select all tracts for which specific data for blacks were available[7] (these could then be subtracted from totals to obtain proxies for data pertaining to whites only), plus all tracts with whites comprising a majority.[8] The resultant sample had N=257.

Cuyahoga County was selected for study not only because of its comparatively simple, two-group interactions that take archetypical ecological forms, but because it represented a "natural experiment." As explained further below, prior to 1970 two of its sizable suburban municipalities adopted policies designed to promote and maintain stable, integrated neighborhoods. There is, therefore, a rare opportunity to investigate whether such policies had any impact on the observed out-migration rates of white households residing within these municipalities during the 1970s.

Dependent Variables

The dependent variable in the model is the white turnover rate (WTURNOVER), defined as:

1.38 to 1.13 million, and the black population rose from 328 to 341 thousand. This resulted in an increase in the percentage of County population black from 19.1% to 22.6%. The pre-1970 history of neighborhood racial change in the Cleveland area has been traced by Taeuber and Taeuber (1965: ch. 5, Appendix D) and by Schwab and Marsh (1980). For descriptive statistics of racial dynamics in the 1970s in Cleveland, see Lee (1985) and Kain (1985).

[7]That is, tracts have 400 or more blacks in 1970.

[8]In fact, only four tracts chosen under the second criterion had black percentages in excess of 10%. Thus, there is confidence that data reflect characteristics of the white population.

(1) WTURNOVER = 100 x [1 - (# W households in tract in 1970 still there in 1980 / # W households in tract in 1970)]

If all white households initially in a tract moved out during a decade, the above parenthetical term would equal zero, and WTURNOVER would take the value 100. Conversely, if no whites changed their residence, WTURNOVER would equal zero.[9]

Independent Variables

White Racial Attitudes. The key attitude for the study of racially motivated turnover relates to whites' aversion to residential integration; what I will call "segregationist sentiment." An aggregate, tract-level indicator of such sentiment was generated for this study through the following two-step procedure. The first step involved estimating a regression model that explained individual responses to the questions posed by National Opinion Research Center (NORC) interviewers concerning residential integration.[10] Explanatory variables included age, education, income, sex, marital status, employment status, national origin, region, and indices of status

[9]This turnover measure has been employed by Wilson (1983). The sample extremes of WTURNOVER were 0 and 100, with a mean of 62. Note that WTURNOVER is not identical to the white out-moving rate, since it overlooks those whites who both move in and leave during the decade.

[10]The three NORC items investigated were: 1) "White people have the right to keep blacks out of their neighborhoods if they want to, and blacks shoud respect that right," 2) "A homeowner has the right to sell his/her home to whomever s(h)e wants, even if s(h)e prefers not to sell to blacks," and 3) "Blacks shouldn't push themselves where they are not wanted." Each item was used in a separate regression, and coefficient estimates were very similar acrosss the three models. The specific coefficient estimates employed in this paper were based on item 1).

discrepancy, alienation, and authoritarianism. Parameters were estimated using ordinary least-squares (OLS) for the combined 1972-1983 NORC sample, stratified to include only whites living in SMSAs of 250,000 or more.[11]

The second step employed the coefficients of all the socioeconomic and demographic variables (estimated over the NORC sample of individuals) to form weights for the tract index of segregationist sentiment. The key logic employed was this. All these variables were specified as categorical dummies. For any individual, one need, therefore, only insert the correct zero's and one's into the appropriate positions and multiply by their respective coefficients, in order to obtain the expected value of the attitude for the "average" person with the given characteristics. For an aggregation of whites in a census tract, one can extend the above interpretation in a straightforward way. By simply inserting the *mean* values for whites in the tract (i.e., proportions) as values for these categorical dummies, one generates the expected response for the "average white" in the tract as a whole. This expected value was used to define the extent of segregationist sentiment in the tract (SEG).[12]

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[11]Detailed regression results are available upon request; they corresponded closely to those of comparable studies (e.g. Middleton 1976; Wilson 1984).

[12] The equation used was:

SEG = -1.533 + .162(% with less than h.s. diploma) - .362(% with college degree) + .168(% with 1970 income below $5,000) - .295 (% with 1970 income over $20,000) + .043(median age) - .061 (% females) - .079(% unemployed) + .023(% foreign born)

where all variables refer to whites and SEG is scaled so that the tract with the least segregationist sentiment has SEG=0. Of course, there are no census data on alienation, authoritarianism, or status discrepancy. Nevertheless, their inclusion in the first stage regression served to reduce the potential bias (from omitted variables) of the coefficients that were employed in the second stage. Of course, whenever employing aggregate proxies for individual data the specter of the ecological fallacy arises. But there is independent micro-evidence in this case which supports the contention that the

Racial/Ethnic Neighborhood Context. The racial composition of a tract at the beginning of the decade is measured by the percentage of the population that is black (%BLACK), and its squared (%BLACK^2) and cubed (BLACK^3) values. In addition, the dummy variable ADJACENTB takes the value one if one or more adjacent tracts have 50% or more black population in 1970 or become so during the 1970's (zero otherwise). It serves as a proxy for the threat associated with being located near a predominantly black area.

Both the percentage of blacks in the neighborhood at the beginning of the decade and the existence of an adjacent, predominantly black area should be associated with an abetted sense on the part of white residents that the neighborhood has or soon will become integrated to an undesirable extent, and concomitantly with greater propensities for racially motivated turnover. The literature suggests that, while such white perceptions would be positively correlated with neighborhood black percentage, the precise relationship may be nonlinear. That is, a given difference in %BLACK is likely to produce different turnover rates, depending on the initial %BLACK. To allow for the greatest flexibility, both the squared and cubed values are, therefore, included.

Of course, these indicators of neighborhood racial context should not produce similar effects upon all white residents. Rather, their power should be directly related to the relevant whites' aversion to residential integration. Thus, the above four racial context variables are multiplied by the aforementioned segregationist sentiment index

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aforementioned characteristics do correlate with racial attitudes that, in turn, are related to actual mobility behavior. Leven et al. (1976:ch. 5) found that the only white out-movers who cited the primary cause as "racial change" were those who had lower educations and incomes.

(SEG) to produce the final proxies for neighborhood racial context effects. Thus, for example, the variable %BLACK x SEG measures the stimulus to turnover generated by a particular percentage of blacks in an area with a particular level of whites' segregationist sentiment. A given %BLACK should produce greater turnover in an area with stronger segregationist sentiment; its coefficient thus depends on the associated value of SEG.

One other adjustment to the relationship between neighborhood racial context and white turnover is mandated. A dummy variable NOBLACKS is specified that takes the value one if the tract had less than 0.1% black population in 1970 (zero otherwise). The inclusion of NOBLACKS in the specification allows the relationship between %BLACK and WTURNOVER to have an intercept other than the origin. Otherwise, the model would force mathematically the conclusion that racial turnover occurs whenever the percentage of blacks is positive (assuming the coefficient of %BLACK is positive). One would expect that racial turnover only begins after some threshold percentage of blacks is exceeded (as will be discussed in detail below). Thus, a negative coefficient sign for NOBLACKS would be expected.[13]

Finally, white ethnicity is measured by the percentage of whites in the tract who identify countries in southern or eastern Europe as their national origin (%ETHNIC). Higher percentages of white ethnics in an area would be predicted to be associated with lower turnover rates, presuming an attractive power for specialized cultural institutions and collective solidarity sentiments.

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[13]With this specification, the coefficient of %BLACK can be positive, but if that for NOBLACKS is negative, the net indicator of when racially motivated turnover begins will be at a positive %BLACK value.

Integration Maintenance Policies. During the 1970s, only two municipalities in Cuyahoga County had implemented comprehensive policies designed to create and maintain racially integrated neighborhoods of high quality: Shaker Heights and Cleveland Heights. These two communities are adjacent to Cleveland on the east, border on the contiguous clustering of predominantly black tracts in Cleveland, and lie in the historical path of black neighborhood sectoral expansion (Taeuber and Taeuber 1965: ch. 5; Schwab and Marsh 1980). During the 1960s, both towns voluntarily initiated roughly comparable, publically funded, comprehensive plans for integration maintenance. Components of the plans included: 1) information dessemination designed to convince blacks that the communities welcomed integration and to convince whites that integration would not lead to racial transition; 2) aggressive enforcement of tough fair-housing laws; 3) stringent housing codes coupled with home maintenance subsidies; 4) enhancment of public service quality (especially education); 5) housing brokerage services that explicitly attempted to allocate vacancies in ways which created and maintained racial balances in all neighborhoods.[14]

To discover whether these integration maintenance plans had any effect on white turnover rates, first a dummy variable HEIGHTS is given the value one if a tract lies in either of the two above jurisdictions (zero otherwise). Independent of the current neighborhood context, it is conceivable that whites living anywhere in the Heights who disliked the (likely) prospect of more integration would be more prone to move out before the prospect became a reality.

But the potential impacts of integration maintenance are far too complex to be captured adequately by a simple dummy variable. The

[14]The last was practiced in Shaker Heights only.

plans' desired effect on potential white out-movers was to reduce their fear that integration meant inevitable neighborhood transition and resegregation. That is, if successful, the integration maintenance programs in the Heights should have produced a different white out-migration reaction to the same neighborhood racial context than would be evidenced elsewhere. To put this in terms of variables defined above, the coefficients of the variables (SEG x %BLACK), (SEG x %BLACK^2), (SEG x %BLACK^3) and (SEG x ADJACENTB) should all be permitted to differ between tracts in the Heights and elsewhere.

This is accomplished simply by creating three new variables that multiply each of the above by the HEIGHTS dummy variable. In the resultant specification, the relationship between the particular independent variable and white turnover rates in the Heights is given by the *sum* of the coefficients from the given variable and from the same variable interacted with HEIGHTS; for non-Heights tracts only the former is relevant.

Given the various possible consequences of integration maintenance, it is impossible to predict coefficient signs of the above four HEIGHTS-interacted variables in the turnover equation. If, for example, the policies completely voided the impact of racial composition on white turnover, one would predict that the coefficients of the three HEIGHTS-interacted percentage black variables would be opposite in sign and equal in magnitude to their counterparts in the non-interacted ones, thereby producing a nil net effect in the Heights. Or, if the policies tended to encourage more turnover of whites living in initially low- percentage black areas but had no effects elsewhere, the coefficient of (SEG x %BLACK x HEIGHTS) would be positive and statistically significant, whereas those of the other two would not be

statistically significant. Similarly, if integration maintenance successfully allayed fears generated by proximity to majority black areas, the coefficient of (SEG x ADJACENTB x HEIGHTS) would be negative. But, if the policies made it more certain that such border areas would become integrated, its coefficient would be positive.

Demographic/Tenure Characteristics. Several attributes of white households are controled for, based on received theory concerning non-racially motivated, intra-urban mobility propensities. Younger households tend to move more frequently, and aged ones are more likely to vacate their dwellings due to changes in physical capabilities and marital status, compared to those in middle life-cycle stages. The percentage of whites in the tract who are under age 25 (%YOUNG) and over age 64 (%ELDERLY) serve as respective proxies for these two aspects. Those who have occupied their home for a longer period are less likely to move in the future, thus the percentage of white households in the tract who have lived in their 1970 residence for ten years or more (%PRE1960) is included. Finally, because homeowners move less often than renters, the percentage of white households in the tract who are owner-occupants (%OWNERS) is employed as a control variable.

Other Non-Racial Control Variables. Although undoubtedly a host of unspecified factors are involved, there are two particular reasons why white turnover in City of Cleveland tracts would have been unusually high during the 1970s: court-ordered busing to achieve school desegregation and extreme fiscal distress, as epitomized by the municipal bond default of 1979. To test for the impact of these events, a dummy variable (CLEVELAND) is included that takes the value one for all tracts located in the Cleveland jurisdiction (zero otherwise).

Given that the average black homeseeker has less purchasing power than the typical white one, it may be that whites living in neighborhoods comprised of more expensive properties will feel less threatened by integration. That is, integration of higher-priced white areas may be less likely to induce turnover if whites believe that the magnitude of demand by blacks is limited by financial constraints. The median 1970 value of single-family homes in the tract (MEDVALUE) is included in the model to control for this possible effect.

Summary of the Specification

Given the aforementioned discussion of variables, the model to be estimated may be expressed in summary symbolic form:

$$(2)\ \text{WTURNOVER} = c + (\text{SEG} \times \%\text{BLACK}) \pm? (\text{SEG} \times \%\text{BLACK}^2) \pm? (\text{SEG} \times \%\text{BLACK}^3) + (\text{SEG} \times \text{ADJACENTB}) - \text{NOBLACKS} - \%\text{ETHNIC} + \%\text{YOUNG} + \%\text{ELDERLY} - \%\text{OWNERS} - \%\text{PRE1960} + \text{CLEVELAND} - \text{MEDVALUE} \pm? (\text{SEG} \times \%\text{BLACK} \times \text{HEIGHTS}) \pm? (\text{SEG} \times \%\text{BLACK}^2 \times \text{HEIGHTS}) \pm? (\text{SEG} \times \%\text{BLACK}^3 \times \text{HEIGHTS}) \pm? (\text{SEG} \times \text{ADJACENTB} \times \text{HEIGHTS}) \pm? \text{HEIGHTS} + e$$

where c is a constant, e is a random error terms with the usual assumed properties, signs represent the expected correlation (if any) between the paricualr pair of independent and dependent variables, and all acronyms are as defined in text above.

EMPIRICAL RESULTS

The parameters for equation (2) as estimated via OLS are presented in Table 1, along with means and standard deviations of all independent variables. Overall, the equation explained over 60% of the sample variation in the dependent variable, and no coefficients proved statistically significant that had signs opposite stong *a priori* predictions.

The percentage of blacks in a tract in 1970 demonstrated a potent relationship with subsequent white turnover rates. Indeed, the linear, squared, and cubed racial context variables had the three largest beta coefficients in the model, and were at least three times the magnitude of the next largest beta. But, as expected, the apparent marginal impact of different percentages of blacks was not constant. Rather, as shown by the coefficients of (SEG x %BLACK), (SEG x %BLACK^2) and (SEG x %BLACK^3), this impact rose to a local maximum at 18% black, then fell to a local minimum at 41% black, and rose progressively thereafter to the sample maximum 64% black. This relationship between the decadal turnover rates for whites and the initial percentage black can be termed a "white-flight function." Several are portrayed in Figure 1.[15]

The role played by white segregationist sentiments (SEG) in shaping reactions to a given neighborhood racial context can be investigated by examining the estimated white-flight function for different values of SEG. For instance, line A in Figure 1 shows the white-flight function generated with SEG at its mean value; B and C do the same for SEG one standard deviation above and below the mean, respectively. For a tract having whites with average segregationist

[15]Note that lines A-C are drawn only for the range of %BLACK values actually represented in the sample: 0-64%.

sentiment (line A), racially motivated turnover appears to begin when the percentage of blacks exceeds 2.5%;[16] negative values for turnover rates before this point have no behavioral meaning. Turnover rates reach 5.9% at 18% black, taper off, then slowly rise again until they exceed 5.9% at percentages above 52% black, *ceteris paribus*. For tracts with higher levels of SEG (line B), racial turnover begins at 1.2% black and reaches a local maximum of 11.9% at 18% black. For tracts with lower levels of SEG (line C), there appears to be no racially motivated turnover unless the initial percentage of blacks exceeds 53%.

Demographic and tenure characteristics of tracts were consistently strong correlates of white turnover rates in a manner as predicted. These rates were greater, the larger the percentages of young or elderly white residents, and the smaller the percentages of homeowners and those who had moved in prior to 1960. Turnover rates were 4.6 percentage points higher in Cleveland tracts, and were 3.2 percentage points lower in tracts having $10,000 higher median values, *ceteris paribus*.

Finally, the results for the integration maintenance variables indicated that, regardless of local racial context, a tract located in the Heights could be expected to have a 12.2 percentage point higher turnover rate, *ceteris paribus*. The responses to particular racial contexts were not significantly different in the Heights than elsewhere, however.

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[16]For comparison, the Detroit opinion poll of Farley et al. (1978) finds that 7% of white households say that they would wish to move if the percentage black in the surrounding 15-house area reached 7%; 24% say they would do so if it reached 20%. The comparable figures for whites who did move during the decade, as estimated from line A in Figure 1, are 3% and 6%, respectively. This suggests either that actual white flight in a real situation is much less than prospective flight in a comparable hypothetical situation, and/or that reactions to integration in smaller "neighborhoods" are stronger than those related to integration at the census-tract level.

DISCUSSION

The Dynamics of Neighborhood Racial Transition

Schelling (1972) developed a model of the dynamics of neighborhood racial change based on whites moving out of the integrating area in response to their perception that it had become "too black."[17] The central construct of this model is that each white has a maximum percentage of blacks (or, equivalently, a minimum percentage of whites) that will be tolerated in the neighborhood before out-migration will be triggered; what could be called an individual white's "tipping-out" point.[18] An accumulation of such individual points, from "most tolerant" to "least tolerant" white, produces a cumulative distribution showing for any given neighborhood racial composition the percentage of (original) white residents who would tolerate that percentage of whites. One such illustrative function is shown as the dotted line O-X in Figure 2.

Now so long as this cumulative percentage exceeds the actual percentage of whites in the neighborhood (i.e., any time O-X is above the dashed 45° reference line in Figure 2), no racially motivated white turnover will ensue. But if such is not the case, those whites whose tipping-out points were currently being surpassed would move out. This, in turn, would further decrease the percentage white in the neighborhood,[19] thereby triggering additional white flight. This

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[17]For other formulations of neighborhood racial dynamics, see Schnare and MacRae (1978) and Taub et al. (1984:ch. 7).
[18]The term "tipping" was first employed by Grodzins (1958).
[19]Assuming that the proportion of new in-movers who would be white is less than the current percentage of whites.

spasmodic white out-migration would cease only if and when there was a group of whites who would tolerate comprising a small minority in the neighborhood (i.e., if O-X crosses the 45° line from below), or the area became all-black. The percentage of whites below which such mutually reinforcing dynamics inexorably transpire (i.e., where O-X initially crosses the 45° line) may be termed the neighborhood's "white tipping-out point."

The parameters presented in Table 1 permit a test of the degree to which white racially motivated out-migration is accurately described by the Schelling model. As suggested above, observed white racial turnover rates should be a function of the relationship between the neighborhood's cumulative distribution of white tipping-out points and its actual racial composition. Let p be the percentage of whites in a neighborhood and F(p) be the cumulative distribution of tipping-out points for whites, which is a function of p. Now for any p where F(p) is less than p, the proportion of the neighborhood's current whites who will tolerate p is given by F(p)/p; the proportion who will not by 1-F(p)/p. The whites' racially motivated turnover rate observed over the subsequent period should be identical to this latter proportion, who will not tolerate the begining-of-period percentage white.[20] If this intolerant proportion is non-positive (i.e., if F(p) is greater than or equal to p), the observed racial turnover will be zero. Extending this logic to the racial turnover functions portrayed in Figure 1, it is assumed that any positive value of the observed 1970-1980 turnover rate associated with any given 1970 p equals the unobserved 100[1-F(p)/p],

[20]Assuming, of course, that the period is lengthy enough to allow household adjustments. Since a decade is employed here, the condition is undoubtedly fulfilled.

and that any negative value equals zero rate of racial turnover.[21] Since the white racial turnover rates are known for each p, F(p) can be calculated directly.

Three calculated F(p) functions, corresponding to the three neighborhood segregationist sentiment values portrayed by racial turnover functions A, B, C in Figure 1, are presented in Figure 2 as functions A, B, C, respectively. Note that the above procedure cannot calculate precisely the shape of the F(p) function for p ranges where racial turnover is nonpositive. An arbitrarily smoothed function is thus drawn in these ranges. Analogously, none of the functions are drawn for values of p outside the sampled range (0-64% black).

Note in Figure 2 the contrast between the estimated white-flight functions and Schelling's theoretical construct. Initially, it appears to be the case that tipping-out points can, indeed, be identified once a particular degree of white segregationist sentiment in the neighborhood has been identified. Estimates here suggest that with such sentiment at or above the sample mean, these tipping-out points occur at only a few percentage points of black residents. However, with segregationist sentiments well below the mean, there is a strong likelihood that no white racial turnover will ensue, even with roughly equal racial proportions present. This variability of tipping-out points, according to neighborhood whites' attitudes, helps explain why previous researchers have been unable to identify a *single*, universal tipping point (see the review by Goering 1978). It also contrasts

[21]The use of a decadal measurement period unavoidably adds some ambiguity since the turnover spawned by intra-decade changes in racial composition cannot be isolated explicitly from that generated by 1970 values. A similar procedure for deducing tipping-out points from observed racial changes is employed by Hansen (1984), although no multivariate statistical techniques are used to isolate racially induced mobility from other types, and no distinction is made between in- and out-mobility decisions by blacks and whites.

strongly with the claims of Taeuber and Taeuber (1965: ch. 1) and Taub, et al. (1984: ch.7), which minimize the role played by racial attitudes in the neighborhood racial transition process.

Further comparisons in Figure 2 reveal that the curvature of the estimated white-flight functions generally is not that envisioned by Schelling.[22] Most importantly, their slopes are considerably less at p values immediately past the tipping-out point. This means that, for wide ranges of racial compositions (for example, between 40% and 70% white, using function A in Figure 2), there is very little difference between the actual percentage of whites in a neighborhood and the percentage of them who tolerate the current racial composition. Put differently, the *rate* of white flight apparently does not accelerate greatly, once the tipping-out point has been exceeded.

The final thing which can be deduced from Figure 2 is information concerning the distribution of individual whites' tipping-out points. By simply calculating $F(p_i)-F(p_{i+1})$ for all integer values of p where F(p) is defined (i.e., p_i = 100, 99,...,36), the frequency distribution f(p) of such individual tipping-out points can be approximated. Three such distributions are portrayed in Figure 3, each corresponding to the assumed neighborhood mean level of segregationist sentiment as defined by A, B, and C above. For values of p where F(p) could not be defined, a uniform distibution is portrayed.

Figure 3 shows that tracts evidencing stronger overall segregationist sentiment and, therefore, a higher neighborhood tipping-out point (such as shown by line B) are characterized by a more

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[22]To generate a shape like O-X in Figure 2, the white turnover rate function in Figure 1 must begin at a positive value of %BLACK, and thereafter rise monotonically at an increasing rate. This, in turn, means that the regression coefficients for NOBLACKS and %BLACK are positive, and those for either $\%BLACK^2$ and/or $\%BLACK^3$ are positive (either can be zero; neither negative).

extremely bi-modal distribution of individual tipping-out points. By contrast, the more tolerant, low racial turnover tracts (line C) have a more uniform distribution, or a bell-shaped one if values of F(p) greater than p are arbitrarily smoothed.[23]

This implication of bi-modality in high racial turnover tracts is interesting, because it suggests that a sizable presence of extremely tolerant whites is insufficient to prevent cumulatively unstable, white-flight dynamics if there are enough extremely intolerant whites there as well.[24] However, once past the neighborhood tipping-out point, bi-modality also implies (as noted above)that the *rate* of white flight will be rather modest: at most, a 12 percentage point higher decadal turnover rate than if no tipping-out occurred, even in the least-tolerant tracts. Conversely, the results suggest that a neighborhood with a wide but rather uniform distribution of tolerances for racial compositions can avoid white tipping out over large percentage ranges of blacks. Given the aforementioned close correlation between segregationist sentiments and socioeconomic status, the implication is that the ecological separation of such status groups within U.S. metropolitan areas contributes to the difficulty of achieving stable, racially integrated neighborhoods.

Integration Maintenance Policies and White Flight

[23]If the smoothed portion of line C in Figure 2 were to rise almost vertically to F(p)=100%, it would yield a corresponding f(p) function C in Figure 3 having virtually all individual tipping-out points for p greater than 47% clustered between 47-60%. Such a case would represent the extreme contrast to the uniform distribution portrayed.

[24]In such cases there may be a region of stability when the neighborhood has become predominantly black, but the limitations of the sample to tracts of 36% white or more precludes investigating this possibility.

The results presented in Table 1 allow one to make inferences about how successful the Heights communities were in defusing archetypical patterns of white racial flight. There is no evidence that the integration maintenance programs succeeded in altering the responses of whites to a given percentage of neighborhood blacks, since none of the three (SEG x %BLACK) coefficients were significantly different in the Heights than elsewhere. Furthermore, the policies apparently did not allay the fears of many whites originally residing in the Heights that an "open community" (perhaps eventually) meant one with an intolerably high percentage of black neighbors. A 12 percentage point higher white turnover rate was demonstrated in the Heights, *ceteris paribus*, with possibly even higher rates in tracts adjacent to established black neighborhoods. This result, however, may not be general for successive periods, if much of the turnover observed in the 1970s was due to whites with especially segregationsit sentiments fleeing the Heights soon after their policies were enacted. Now that the Heights have established a "track record" of relatively stable, integrated neighborhoods,[25] the turnover patterns evidenced during the 1980s may be significantly different. Of course, the above findings should not be interpreted as a general condemnation of the Heights' policies, since their impacts on white as well as black in-migration patterns have not been analyzed in this paper.

CONCLUSION

Despite many changes in the context in which racial integration occurs, the out-migration of many whites from neighborhoods, based

[25]Only one Heights tract became majority black in the 1970s.

purely on their racial composition, continued in the 1970s, at least in the Cleveland metropolitan area. The highest rates of racially motivated turnover of whites occured in tracts initially containing either 18% blacks or more than 52% blacks. The absolute magnitudes of these rates, however, were comparatively small in contrast to some conventional views of the racial tipping process. Communities which adopted strategies to encourage the creation of stable, integrated neighborhoods evidenced even higher degrees of white flight. This result may, however, have been a reaction to the initiation of the integration maintenance policies, not to their ongoing operation.

Cross-tract variations in white racial attitudes continued to make major differences in the degree of racially motivated turnover observed over the decade. Specifically, neighborhoods with a disproportionate number of whites who would not tolerate even small percentages of black neighbors evidenced tipping-out points of over 95% white, even if they also contained numerous tolerant whites. This was the case even though (presuming Cuyahoga County followed national trends) the overall incidence of those expressing segregationist sentiments dropped dramatically before and during the period.[24] Nevertheless, the results offer support to the hypothesis that a long-term withering of whites' segregationist attitudes (especially the most extreme ones) would substantially encourage the future stabilization of racially diverse communities. Furthermore, once tipping-out points were exceeded, the rate of white flight was relatively modest, compared to the conventional view.

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[24]Converse et al. (1980:Table 2.8), e.g., note that such incidence dropped from 26.5% to 8.3% nationally in 1964-76. A 1985 Cleveland Plain Dealer poll found that 54% of respondent whites "favored integration of their neighborhood," while only 23% opposed it.

Of course, it remains for future investigations to assess whether these results are more general across other metropolitan regions. The Cleveland SMSA is, after all, one of the most segregated in the nation (Taeuber et al. 1984) and evidences atypically few stable, racially diverse neighborhoods (Lee 1985). There are regional differences in patterns of racial ecological change as well (Taeuber and Taeuber 1965: ch.5).

In addition, there are several other areas in which the present analysis could be expanded upon. Beginning-of-decade tract racial composition is, of course, only an imperfect proxy for the sorts of racial patterns that may ensue at the block level during the decade. Furthermore, it is not clear whether racial composition per se, or other attributes and expectations popularly (but often erroneously) associated with it, are the source of white flight (Wolf 1963; Taub et al. 1984:ch. 7). The role of housing market discrimination has not been investigated here. That is, whites may not choose to flee in the face of prospective integration, but may "fight to protect their turf" through the erection of discriminatory barriers (Galster 1987b). A more definitive investigation into the role of racial attitudes in the racial turnover process would require disaggregated, explicit survey information on the opinions of individual whites in various racial contexts. Finally, the decade under investigation encompasses only the start-up period for the Heights' integration maintenance policies, and thus the results may reflect transitory adjustments that may not be representative of the impacts of these programs during the 1980s. The conclusion is that, far from being an obsolete phenomenon, white racial flight remains a provocative topic worthy of further sophisticated, policy-oriented investigations.

TABLE 1

STATISTICS AND REGRESSION COEFFICIENTS FOR WHITE TURNOVER MODEL

Independent Variables	Mean (Std. Dev.)	Coefficient (t-ratio)
SEG x %BLACK	1.71 (5.43)	2.32 (2.53)[A]
SEG x %BLACK^2 (÷10)	4.82 (23.7)	-.933 (2.16)[B]
SEG x %BLACK^3 (÷100)	19.1 (129.4)	.106 (2.15)[B]
SEG x ADJACENTB	.144 (.269)	-5.34 (1.40)[C]
NOBLACKS	.478 .500	-2.61 (1.60)[C]
%ETHNIC	13.9 (7.96)	-12.1 (1.29)
%YOUNG	19.5 (5.00)	.744 (3.77)[A]
%ELDERLY	11.3 (5.08)	.527 (2.74)[A]
%OWNERS	61.0 (23.5)	-.160 (3.40)[A]
%PRE1960	35.8 (11.5)	-.249 (3.25)[A]
CLEVELAND	.440 (.497)	4.64 (2.38)[A]
MEDVALUE (÷10,000)	2.18 (9.45)	3.17 (2.69)
SEG x %BLACK x HEIGHTS	.161 (1.01)	1.27 (0.25)
SEG x %BLACK^2 x HEIGHTS	2.70 (28.0)	-.113 (0.25)
SEG x %BLACK^3 x HEIGHTS	70.5 (644.5)	.002 (0.19)
SEG x ADJACENTB x HEIGHTS	.018 (.094)	12.0 (1.23)
HEIGHTS	.089 (.286)	12.2 (2.54)[B*]
Constant	NA	65.5 (7.67)[A*]
R^2	NA	.634
(adjusted)		.607
F (18,239)	NA	518.7

[A], [B], [C] = coefficient statistically significant at 1%, 5%, and 10% levels, respectively (one tail test)

*=two tail test if no predicted sign or opposite predicted sign

NA=not applicable

FIGURE 1

WHITE 1970-80 TURNOVER RATES AND 1970 TRACT PERCENTAGE BLACK

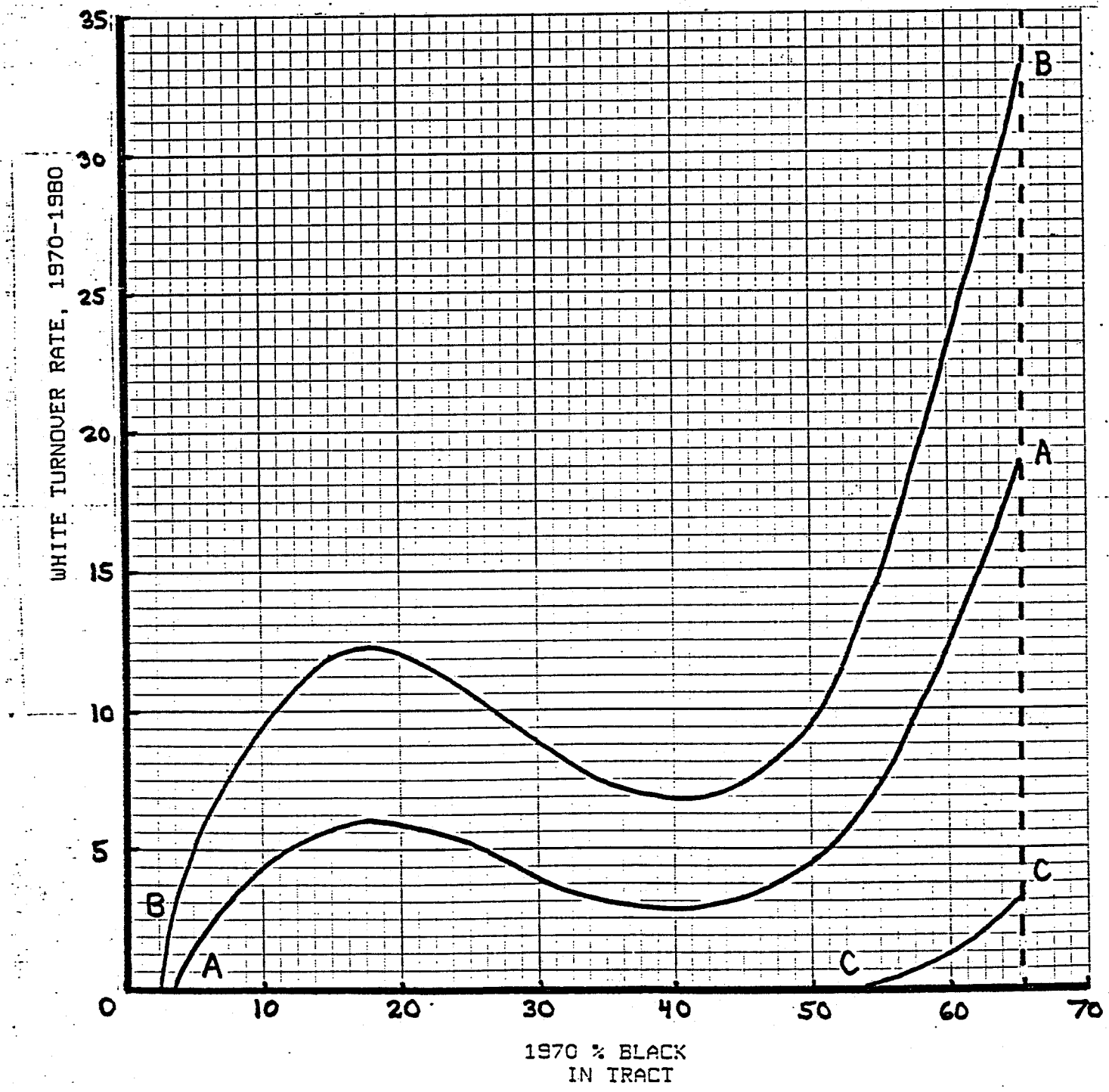


FIGURE 2

CUMULATIVE DISTRIBUTION OF INDIVIDUAL WHITE "TIPPING-OUT" POINTS

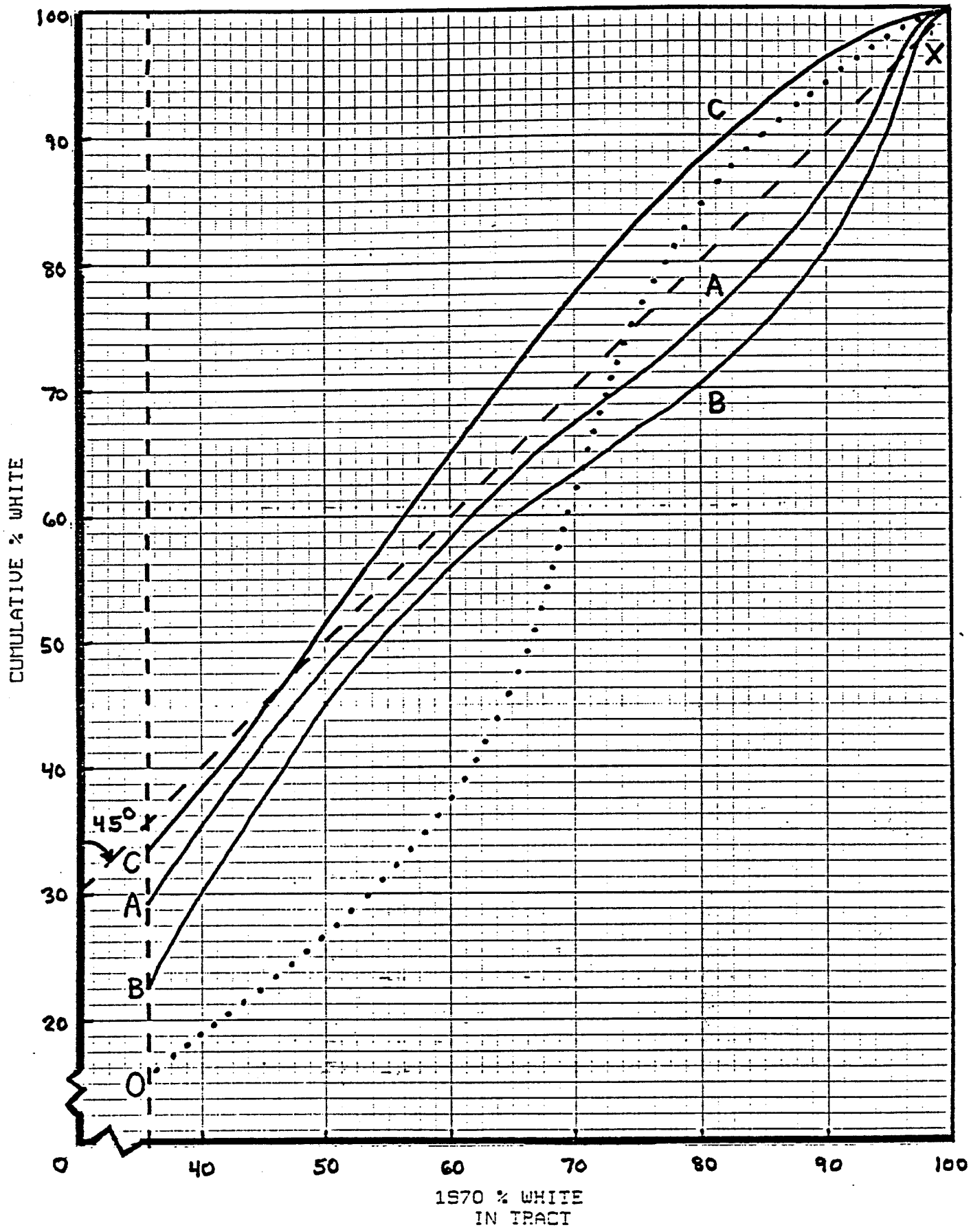
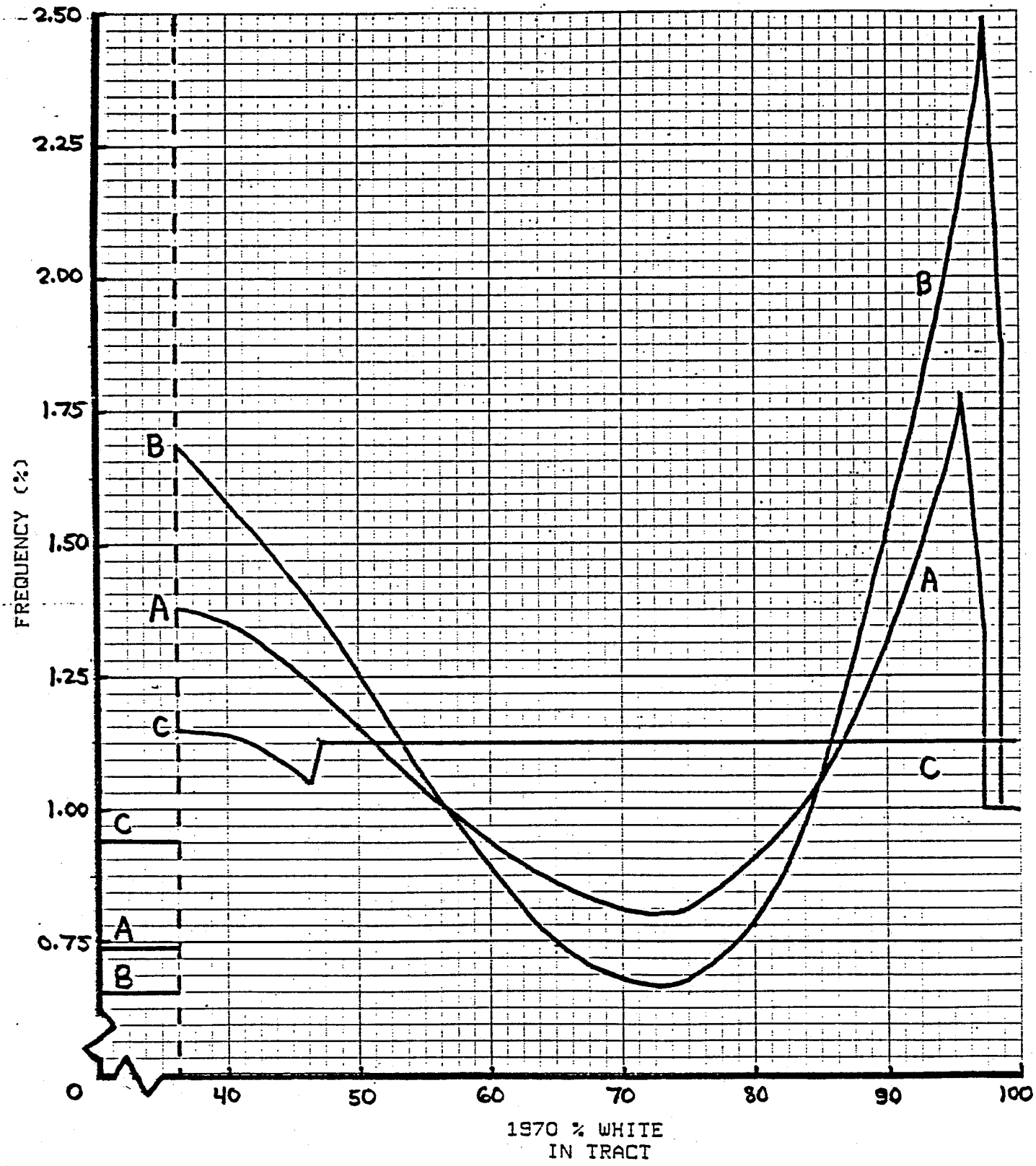


FIGURE 3

FREQUENCY DISTRIBUTION OF INDIVIDUAL WHITE "TIPPING-OUT" POINTS



REFERENCES

Cleveland Plain Dealer (1985) "Races Split on Housing Integration." (Dec. 23): 1, 16A.

Converse, Phillip, Jean Dotson, Wendy Hoag and William McGee (1980) American Social Attitudes Data Sourcebook. Cambridge: Harvard University Press.

Damerell, R. (1968) Triumph in a White Suburb. NY: William Morrow.

Farley, Reynolds, H. Schuman, S. Bianchi, D. Colasanto, S. Hatchett (1978) "'Chocolate City, Vanilla Suburbs': Will the Trend Toward Racially Separate Communities Continue?" Social Science Research 7:319-344.

Frey, William (1979) "Central City White Flight." American Sociological Review 44:425-248.

Galster, George (1982) "Black and White Preferances for Neighborhood Racial Composition." American Real Estate and Urban Economics Association Journal 10:39-66.

-----(1987a) Homeowners and Neighborhood Reinvestment. Durham: Duke University Press.

-----(1987b) "The Ecology of Racial Discrimination in Housing." Urban Affairs Quarterly 22:

Goering, John (1978) "Neighborhood Tipping and Racial Transition." Journal of the American Institute of Planners 44:68-78.

Goodman, John and Mary Streitweiser (1983) "Explaining Racial Differences: A Study of City-to-Suburb Residential Mobility." Urban Affairs Quarterly 18:301-325.

Grodzins, Morton (1958) The Metropolitan Area as a Racial Problem. Pittsburgh: University of Pittsburgh Press.

Guest, Avery (1978) "Changing Racial Composition of Suburbs, 1950-1970." Urban Affairs Quarterly 14:195-206.

Guest, Avery and James Zuiches (1971) "Another Look at Residential Turnover in Urban Neighborhoods." American Journal of Sociology 77;457-467.

Hansen, Julia (1984) "Segregation and Racial Transition in Urban Housing Markets." Unpublished Ph.D. dissertation, Department of Economics, University of California, Berkeley.

Kain, John (1985) "Black Suburbanization in the Eighties" in J. Quigley and D. Rubinfeld (eds.) American Domestic Priorities. Berkeley; University of California Press.

Lee, Barrett (1985) "Racially Mixed Neighborhoods During the 1970s" Social Science Quarterly 66:346-364.

Leven, Charles, James Little, Hugh Nourse and R. Read (1976) Neigborhood Change. N.Y.: Praeger.

Marshall, Harvey (1979) "White Movement to the Suburbs." American Sociological Review 44:975-994.

Mayer, Albert (1960) "Russell Woods: Change Without Conflict." in N. Glazer and D.McEntire (eds.) Studies in Housing and Minority Groups. Berkeley: University of California Press.

Middleton, Russell (1976) "Regional Differences in Prejudice." American Sociological Review 41:94-117.

Molotch Harvey (1969) "Racial Change in a Stable Community." American Journal of Sociology 75:226-238.

----- (1972) Managed Integration. Berkeley: University of California Press.

O'Brien, David and Jeffrey Lange (1986) "Racial Composition and Neighborhood Evaluations." Journal of Urban Affairs 8:43-62.

Porell, Frank (1982) Models of Intrametropolitan Residential Relocation. Boston: Kluwer-Nijhof.

Rapkin, Chester and William Grigsby (1960) The Demand for Housing in Racially Mixed Areas. Berkeley: University of California Press.

Saltman, Juliet (1978) Open Housing: Dynamics of a Social Movement. NY: Praeger.

Schelling, Thomas (1972) "A Process of Residential Segregation: Neighborhood Tipping." in A. Pascal (ed.) Racial Discrimination in Economic Life. Lexington: D. C. Heath/Lexington Books.

Schnare, Ann and Duncan MacRae (1978) "The Dynamics of Neighborhood Change," Urban Studies 15:327-332.

Schuman, Howard, Charlotte Steeh and Lawrence Bobo (1985) Racial Attitudes in America. Cambridge: Harvard University Press.

Schwab, W. and E. Marsh (1980) "The Tipping Point Model: Prediction of Change in the Racial Composition of Cleveland, Ohio,Neighborhoods, 1940-1970." Environment and Planning A 12:385-398.

Steinnes, Donald (1977) "Alternative Models of Neighborhood Change." Social Forces 55:1043-1057.

Taeuber, Karl and Alma Taeuber (1965) Negroes in Cities. Chicago: Aldine.

Taeuber, Karl, Franklin Monfort and Perry Massey (1984) The Trend for

Metropolitan Racial Residential Segregation. Madison: Center for Demography and Ecology, University of Wisconsin.

Taub, Richard, D. Garth Taylor and Jan Dunham (1984) Paths of Neighborhood Change. Chicago: Univesity of Chicago Press.

Taylor, D. Garth, Paul Sheatsley and Andrew Greeley (1978) "Attitudes Toward Racial Integration." Scientific American 238:42-49.

White, Michael (1984) "Racial and Ethnic Succession in Four Cities." Urban Affairs Quarterly 20:165-183.

Wilson, Thomas (1983) "White Response to Neighborhood Racial Change." Sociological Focus 16:305-318.

----- (1984) "Urbanism and Racial Attitudes." Urban Affairs Quarterly 20:201-209.

Wolf, Eleanor (1963) "The Tipping Point in Racially Changing Neighborhoods." Journal of the American Institute of Planners 29:217-222.

Wolf, Eleanor and Charles Lebeaux (1969) Change and Renewal in an Urban Community. NY: Praeger.

Wurdock, Clarence (1981) "Neighborhood Racial Transition." Urban Affairs Quarterly 17:75-89.