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Residential Preferences and Neighborhood Racial Segregation: A Test of the Schelling Segregation Model

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The debate over the role of the forces that create the patterns of residential separation has identified neighborhood preferences as one of the explanatory variables, but although we possess some empirical data on the nature of neighborhood racial preferences, the theoretical contributions have received only limited empirical evaluation. Among the theoretical statements, Schelling's model of the effects of small differences in preferences on residential patterns has provided a basic building block in our understanding of preferences, choices, and patterns. Several recent surveys of residential preferences provide the data with which to evaluate the underpinnings of the Schelling model. The preference/tolerance schedules that are derived from the data have a different functional form from that suggested by Schelling, but confirm the view that stable integrated equilibria are unlikely.

Despite evidence of declines in the levels of segregation in the 1980s, especially in medium-sized cities and in the west, most large cities still have separate black and white residential areas (Massey and Denton 1987). A number of studies reiterate the continuing levels of separation of blacks and whites, especially when separation is measured across several dimensions (Massey and Denton 1989). Even the studies showing modest declines in segregation emphasized such declines do not necessarily indicate greater interracial contact (Jakubs 1986).

Explanations of these patterns of separation invoke economic differences between racial and ethnic groups, housing affordability, preferences for different neighborhood racial and ethnic composition, the nature of the urban structure (including job location), and public and private discrimination. In the debate about the relative role of these forces, the consensus is that the patterns of separation have a multifaceted explanation; no one factor explains those patterns (Clark 1986, 1987; Galster 1988). Among the explanatory factors, neighborhood composition preferences have been singled out as a critical variable both by economists, who view preferences from the perspective of consumer behavior theory, and by geographers and sociologists, who use preferences and expectations as elements of models of residential choice within cities and neighborhoods.

Two decades ago Schelling (1971) suggested that minor variations in nonrandom preferences (or choices) can lead in the aggregate to distinct patterns of segregation in society. Schelling developed a model in which the notion of slight differences in preferences could lead to strikingly polarized results. Thus, individual behavior based on quite minor differences in the particular combination of races or ethnic groups that individuals prefer

culminates in aggregate results that are strikingly different—in fact, with areas that are largely white or largely black.

Schelling developed a bounded neighborhood model that includes a common definition of neighborhood and its boundaries. Everyone is concerned about the composition of the neighborhood; there is one combination that everyone prefers to the alternatives. Households (persons) will stay in the area until the composition changes such that a threshold is reached, and then the individuals or households will choose another location. This model is at the center of the present paper, which examines the Schelling concept in some detail and provides empirical support for his abstract formulations. First, however, the paper sets the context of studies of neighborhood segregation and residential preferences, followed by a reiteration of the Schelling thesis and an analysis of data from several surveys. These preliminary steps allow us to estimate directly the theoretical distributions proposed by Schelling.

Context and Literature

In the past 20 years, several empirical studies have evaluated the role of preferences in residential choice (Armor 1980; Farley 1978), but until the later 1970s, most studies of racial preference were either national surveys (Pettigrew 1973) or individual studies of neighborhoods and schools (Fauman 1957). Such opinion studies of racial preferences have been conducted in national opinion polls since the 1940s. This evidence has been the basis for the arguments 1) that racial residential preferences kept the races segregated, and 2) more recently, that changes in these preferences by both whites and blacks provided the impetus for racial integration in the 1970s and 1980s. Pettigrew's (1973) extensive review of racial preference suggested that blacks on the whole favor integration, although whites are somewhat less enthusiastic about interracial housing.

The question of integrated neighborhoods hinges on the issue of the percentages of black and white. It is fairly clear that white households are willing to live in "integrated" neighborhoods that contain only a small proportion of black households, and that there has been some positive trend in the proportion of white households willing to live in integrated housing. At the same time, responses to questions on the *proportion* of black households, and answers to questions about willingness to vote for integrated housing, are much more conservative. Analyses of the question "Would you move if colored people came to live in great numbers in your neighborhood?" show very little change over time. The proportion who said they would not move remains quite small, varying between 20% and 25% from the late 1950s to the late 1960s. Similar responses are given to questions on open housing laws and on the question of aggressive behavior of black households (Bobo, Schuman, and Steel 1986; Pettigrew 1973).

Yet, there is evidence that the previous notions of neighborhoods always changing from white to black may be overstated. Lee (1985) argues that racial shifts no longer appear to have a single answer; in particular that younger, growing, and western cities have "mixed neighborhoods" in which the trend is not uniformly from white to black. Although the results may be complicated by the inclusion of Hispanics as "whites" in white-versus-black analyses, the results suggest that stable neighborhoods exist and that racial transition is more complex than postulated previously.

White responses show a dichotomy. On the one hand, it is quite clear that white households are unwilling to discriminate against small numbers of equal-status black households. On the other hand, they are reluctant to make it possible for blacks to enter the housing market aggressively (Taylor 1979). One can suggest that only a small proportion of the white population objects to a new black neighbor (one or two households in a

neighborhood) of equal income and education, but larger numbers of black neighbors, even of the same status, are seen as threatening to white households.

The view that small numbers of minority households are acceptable is held nearly unanimously because it does not imply giving up any rights to maintain relative neighborhood homogeneity. The amount of integration implied is quite low, and the question reminds respondents that integration generally occurs along equal class lines. Integration is more likely to be opposed when the number (or the prospective number) of black families is much higher and when the integration may involve groups of different social status. This is especially the case when whites fear that housing projects will be built in middle-class and upper middle-class parts of the city (Taylor 1979). In fact, this latter issue is at the heart of many of the problems of neighborhood transition. We find large-scale neighborhood transitions when black households of lower status approach areas of higher status. Yet we must also recognize that change occurs both through in-movement and through out-movement, and that relative demand is a critical aspect of rates and levels of change. If it could be established that the process of integration occurred among persons of equal status by income and education, the neighborhood transition and the white abandonment that presently occur would be less likely.

A decade-old study of preferences and their potential role in neighborhood transition exemplifies the attempt to investigate specific housing situations. The results of this study confirm the general conclusions postulated by Taylor and put them into a specific housing context (Farley 1978). The Farley study investigated the relative proportions of black and white households who expressed preferences for varying combinations of black and white neighbors. Most blacks expressed preferences for racially mixed neighborhoods, while most white households (79%) said they would be very comfortable in neighborhoods that were not more than 20% black. Only 18% said they would be very comfortable, and 26% said they would be somewhat comfortable, in neighborhoods that were 30% black. Essentially this information confirms the results already reported in the preference studies, but relates them specifically to neighborhood housing composition.

The evidence of actual relocation behavior confirms in general the opinions expressed in the Farley study and presents a pervasive pattern of white movement away from the expanding black residential neighborhoods. The patterns of mobility support the attitudinal evidence of white preference for largely white neighborhoods. The majority of black households tend to relocate within areas that are more than 50% black, and almost no white households move into heavily concentrated minority areas (Clark 1980, 1986, 1988). Massey and Mullan (1984) also noted the avoidance of residential contact with blacks by whites and Hispanics. Spain and Long (1981) found that even though blacks were moving to white tracts when they moved to the suburbs, virtually no whites moved to black tracts.

The arbitrage model of residential change places household preferences at the center of the evaluation process (Levin, Little, Nourse, and Read 1976). Although it is straightforward to recognize that preferences are an important component of the choices made by households and are important in understanding the behavior of households, the codification of measures of preference and the introduction of those measures into analytic models of residential choice have been limited. Residential preferences have the strongest influence not on when to move but on where to move. Within this context the issue of preferences is central. A review of studies of preference (Clark 1980) suggested that the differences in the concepts of an integrated neighborhood are a central issue in racial residential preferences, and are at the heart of the problem of integrating residential areas. Although whites are *willing* to live in integrated neighborhoods and blacks *prefer* integrated neighborhoods, the two concepts of "integrated" are quite different.

The arbitrage and border models suggest that the expressions of preference and willingness relate to white households' fear with respect to property values (Bailey 1966;

King and Mieszkowski 1973). Farley (1978) reported that "three-quarters of the whites who think that blacks take less care of their house and yard than whites, say they would move out of a racially integrated neighborhood." Whether households are evaluating the present or, as others (Levin et al. 1976) have suggested, the expectation of future change, the evidence points to the central role of preferences and tolerance.

White (1977) found complete housing segregation even in a situation in which neither blacks nor whites had a "taste for discrimination" (the economic interpretation of unwillingness to live with blacks rather than illegal acts). In these instances the separation is simply a result of whites' higher incomes. When models with white prejudice (preference) are introduced, the racial separation increases. Kern (1981) took a slightly different approach, but obtained comparable results. Whenever preferences for white neighbors are stronger among whites than among blacks, integrated equilibrium is unstable, but there is a stable segregated equilibrium (p. 171). Kern finds this scenario most likely, but he notes that discrimination still could exist. It would occur in situations where the stable segregated equilibrium without discrimination is upset persistently by the demands of black households in which blacks outbid whites for sites in the segregated community, inducing prejudiced whites to seek to protect their neighborhoods via pressure on landlords and causing sellers to exclude willing black entrants. Anas (1980) however, believes it is not necessary to invoke an assumption of prejudicial market behavior. He states that income differences, population growth, and other socioeconomic factors are sufficient to generate separation. Others observers suggest that discrimination can play a role in creating separated patterns (Rose-Ackerman 1975), but even Yinger, a consistent advocate of the power of discriminatory forces (1976), yields to own-race preference as a major explanation fo' separation.

The Schelling Thesis

Schelling begins with the simple notion that "people get separated along many lines and in many ways. There is segregation by sex, age, income, language, religion, color, taste . . . and the accidents of historical location" (1971, p. 143). He suggests that separation or segregation[1] "can result from discriminatory individual behavior" (p. 144), but he uses "discriminatory" to mean "*an awareness*, conscious or unconscious, of sex or age, or religion or color or whatever" which influences decisions on where to live. He does not examine organized discriminatory action, nor does he introduce income differences as they affect separation. Of course, because income is correlated both with race and with residence, it is not surprising to find that even if residential choices were unconstrained by racial residential preferences, ethnic groups would not be distributed randomly in the city.

Schelling's Models of Segregation

The notion of slight differences in preferences is central to Schelling's models. These slight differences account for patterns of segregation in urban areas. "In some cases, small incentives, almost imperceptible differentials, can lead to strikingly polarized results" (Schelling 1971, p. 146). Unorganized individual behavior with slightly different preferences (or "tolerances"—a term Schelling uses interchangeably with "preferences") can lead to highly structured aggregate results. Even though the Schelling model is well known in general terms, his notions are worth reiterating because of their insights on the potential for creating patterns of separation within urban areas.

The initial approach assumes a population divided into two groups based on color and postulates that the individuals in the groups care about the color of the people among whom they live; they can observe the proportions of the types. These individuals are in a fixed location at any moment, but can move if they are dissatisfied. Schelling develops his ideas first with a linear arrangement of "stars and circles" and shows that with only minor variations in "preferred combinations" of neighbors, separated patterns arise along the line.

Variations in the model can include changing 1) the preferred proportions of one's own-race, 2) the proportion (or size) of the two segments of the population, 3) rules governing movement, and 4) neighborhood size (the number of units within which choice occurs). As stated earlier, this paper takes a particular interest in the "bounded neighborhood model," which includes a common definition of neighborhood and its boundaries. Everyone is concerned about the "ethnic" composition of the neighborhood, and there is one combination (one bounded area) that everyone prefers to the alternatives. Households (persons) will stay in the area until the composition changes such that a threshold is reached; then the individuals or households will choose another location. Each person or household has their own limit, or what Schelling calls tolerance. Tolerance is a comparative measure and is identified with the area or the bounded neighborhood.

In order to find out what bounded neighborhoods might look like (i.e., their proportions of blacks and whites), Schelling experiments with frequency distribution of preferences or tolerance. I will derive these distributions for actual situations, but first I will make some observations on the frequency curves. Schelling assumes that preferences go in the same direction (i.e., the ethnic proportion reaches an upper limit before individuals go elsewhere), that there are no minority-seeking individuals, and that information is perfect (1971, pp. 167–68). To demonstrate the model he uses a simple explanatory scheme with a distribution of 100 whites and 50 blacks, identical distributions of preference/tolerance schedules for blacks and for whites (the same underlying cumulative density function), and straight-line preference or tolerance schedules. In this example, in the straight-line distribution of tolerance, the horizontal axis measures the number of whites (or blacks) and the vertical axis measures the ratio of blacks to whites, or the upper limit of an individual's tolerance (see Figure 1).

A diagram adopted from Schelling helps us to understand this important concept. These numbers (100 whites and 50 blacks) are for illustration only; other combinations will generate different parabolas. In the lowest part of the diagram in Figure 1, the X axis is the translation of the white tolerance/preference schedule; while the Y axis is the translation of the black tolerances/preferences. The dashed lines are simply indications of the way in which the points on the tolerance schedules are "translated" into the parabolic curves. The white relationship creates the larger parabola; and the black relationship creates the smaller parabola.[2]

Following Schelling, the white tolerance/preference schedule (in the upper section of the diagram) is such that the number of blacks whose presence whites prefer (or will tolerate) is equal to their own (whites') number times the corresponding ratio on the schedule of tolerance (Schelling 1971, p. 169). If the median white is willing, or chooses, to live with an equal number of blacks, we can say that 50 whites will live with 50 blacks, a ratio of 1:1 or greater. Thus 50 whites can tolerate 50 blacks (1 to 1), 75 whites can tolerate 37.5 blacks, half their number (.5 to 1), and so on. In this way the straight line generates the parabolic curve. For blacks, 25 blacks prefer (will tolerate) 25 whites (1 to 1), five blacks prefer (will tolerate) nine whites (1 to 1.8), and so on. The most tolerant white will accept a neighborhood that is two-thirds minority and one-third white, and 25 whites will accept a combination of more blacks than whites. Conversely, there are whites who will accept fewer blacks. To reiterate, the dashed line on the graph links the point on the

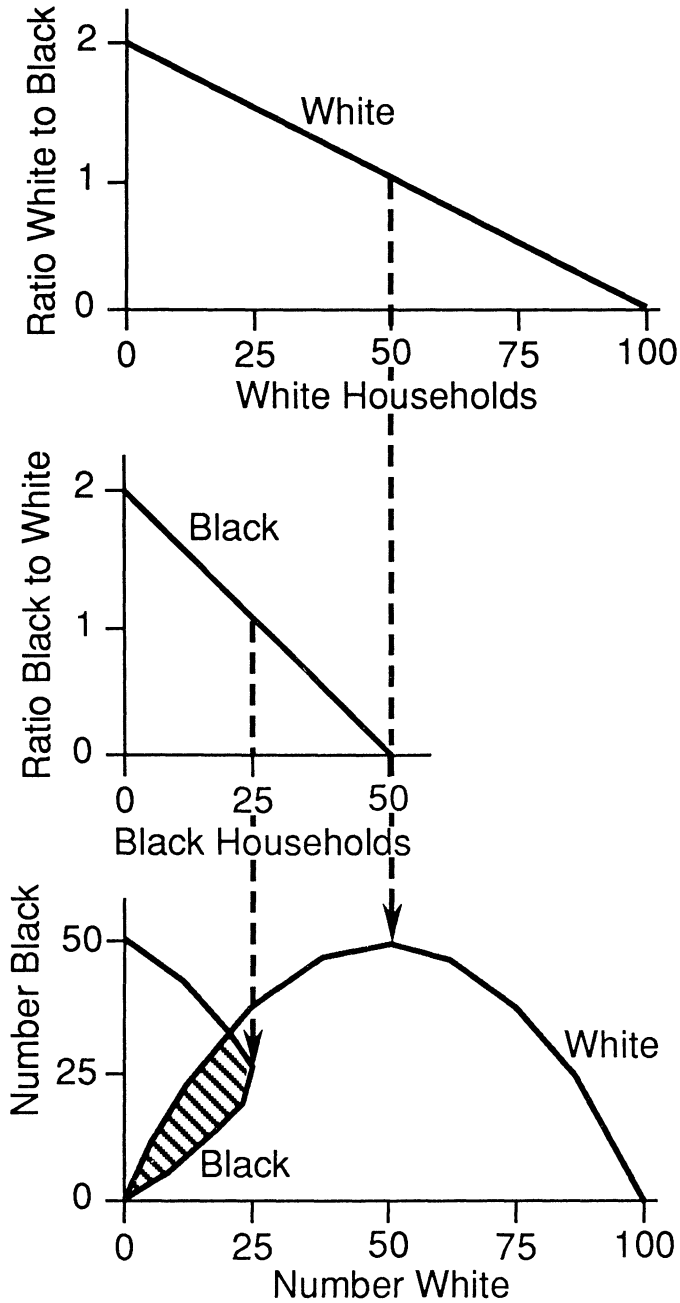

Figure 1. Preference/tolerance distributions for blacks and whites with the same preference schedules

straight-line tolerance schedule with the parabolic curves for whites. Similarly, the black tolerance schedule can be linked to the parabolic curve for blacks.

Obviously some whites and some blacks can satisfy their preferences for neighborhood composition. In fact, the intersecting areas of the parabolas measure an area where the two groups would be willing to live together. Thus the combination of the two parabolas denotes a statically viable combination of whites and blacks. A point under the white curve but to the right of the black curve represents satisfied whites but not satisfied blacks. Outside both curves, neither all whites nor all blacks are satisfied. Some members of each group are dissatisfied.

The introduction of behavioral responses provides a dynamic translation of the model. Schelling assumes that if some but not all members of a group are satisfied, those who are not satisfied will attempt to enter (or move into) the overlapping area. The directions in which groups might move are indicated by small numbered arrows. Whites who are outside the area of satisfaction (the neighborhood of their preference) will attempt to enter the area where they would be satisfied; and similarly, those in the area who are not content will attempt to leave. Similar decisions will be made by black households.

The arrows in Figure 2 indicate the directions of change— that is of the directions of movement. In the area of overlap both blacks and whites are increasing (Arrow 1), within the black parabola blacks are increasing (Arrow 3) and entering (Arrow 4), and within the white parabola whites are increasing (Arrow 2) and entering (Arrow 5). Schelling concludes that the dynamics are inherently unstable, and the only stable equilibria are the situations of all white and all black. In some special circumstances, however, other equilibria are possible.

Now consider a situation where the number of black and of white households is equal (125 households each) and the tolerance schedule is steeper. The tolerance schedule for blacks and for whites is the same, and is illustrated in Figure 3a. As in the previous example, the tolerance schedule can be translated into parabolas (see Figure 3b). Equal numbers and a steeper tolerance schedule create a stable integrated equilibrium at 80 whites and 80 blacks, as indicated by the arrows directed to that point, as well as the stable segregated equilibria of all whites and all blacks. As in the earlier figure, the arrows indicate the directions of black and white moves, where blacks and/or whites are entering or increasing. As long as the mixtures tend towards 50% (but are over 40%), there is a tendency to convergence at 80/80, given equal population. In addition, the segregated

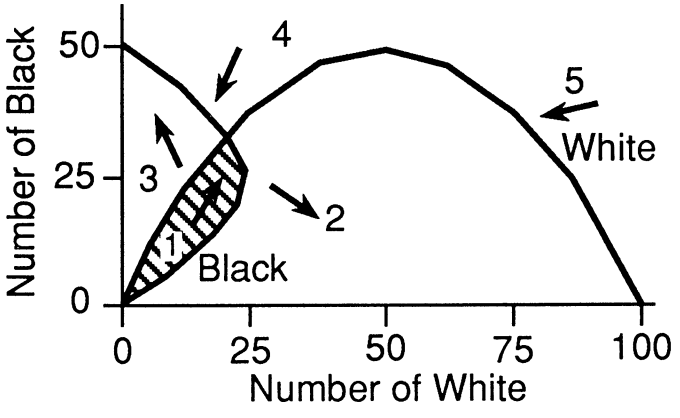

Figure 2. Ilustration of the movements of blacks and whites in order to achieve their preference schedules (See text for a discussion of the vector directions.)

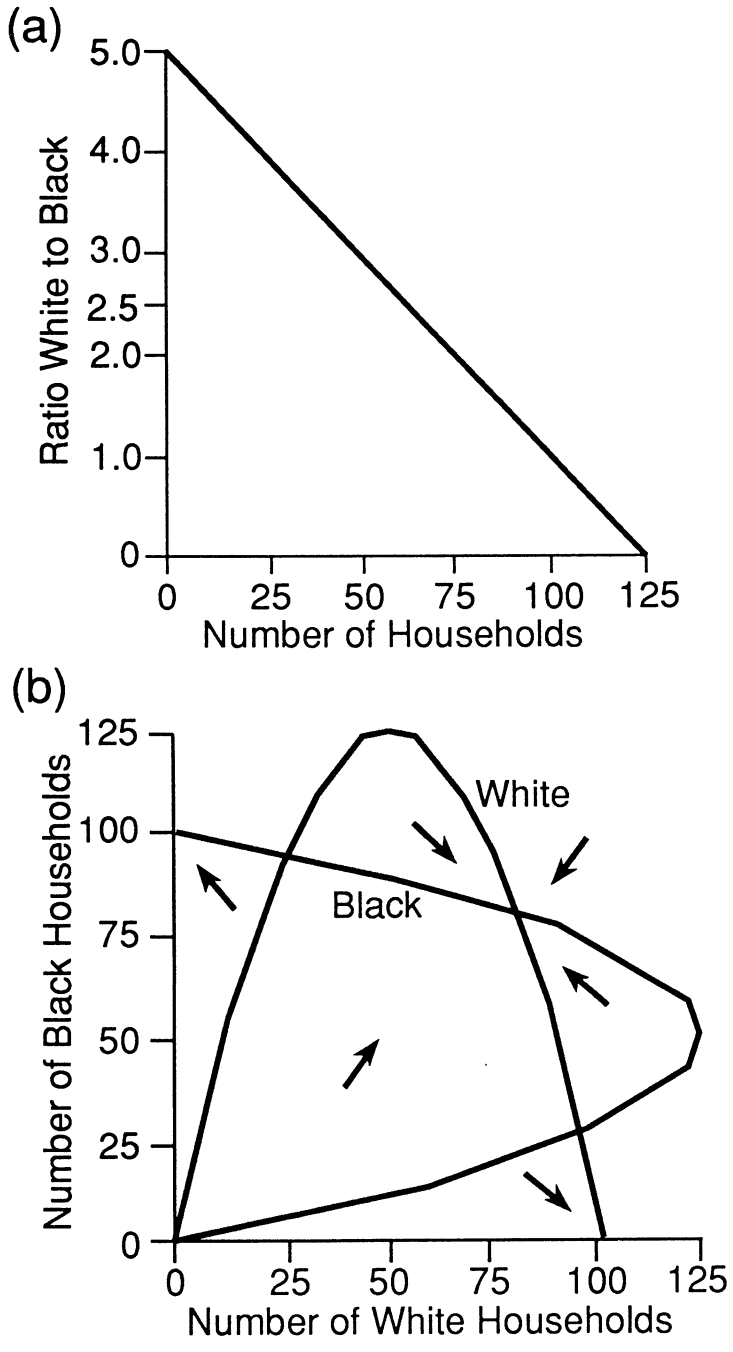

Figure 3. Translated preference/tolerance schedules for approximately equal populations of blacks and whites

equilibria are stable against perturbations. The stable equilibria disappear, however, when ratios of two to one in total population are approached.

Even though this presentation of Schelling's key concepts is necessarily truncated, it is sufficient to prepare us for a discussion of preferences and parameter estimates of the functions.

The Preference Gap

As an introduction to the evaluation of the Schelling model, we can examine empirically the gap between black and white preferences that was discussed in the previous section. The data are taken from telephone surveys conducted in Omaha, Kansas City, Milwaukee, Cincinnati and Los Angeles as part of litigation related to desegregation cases. The respective sample sizes and response rates are 600 and 67% for Omaha, 924 and 77% for Kansas City, 2145 and 77.3% completed for Milwaukee, 1050 and 82% for Cincinnati, and 2644 and 71.2% for Los Angeles. Except for the Omaha survey data, the nonresponse rates are well within accepted levels for telephone surveys. Moreover, the response rates are calculated with the most conservative standards, whereby all refusals and inability to complete because of language difficulties were included in the base. Individuals who said "it would make no difference" were allocated proportionally across the preference categories.

The evaluation of responses against actual choices of neighborhoods suggests that individuals think in terms of spatial neighborhoods, even though the sizes of these units are not defined by the survey question. In addition, the methodology is supported by the consistency of the results of these studies with studies of preference in living arrangements in other surveys. All but the Omaha survey were conducted by Amrigon, a national survey company based in Michigan. Standard CATI (computer assisted telephone interviewing) training and techniques were used. (The data used to construct the curves are available from the author.) The specific question posed in the Kansas City, Milwaukee, Cincinnati, and Los Angeles was

> Now suppose you have been looking for a house or apartment and have found a nice place you can afford. It could be located in neighborhoods with different racial groups. What mixture of people would you prefer? Would you prefer a neighborhood that is . . . (combinations of 100% white, 90% white and 10% black, and so on through 100% black were read to respondents).

The data from these surveys confirm other analyses of preferences from individual and household surveys. They yield simple frequency distributions or counts of the kinds of neighborhoods preferred by whites and by blacks. Whites express preferences for neighborhood combinations of at least 80/20—that is, neighborhoods that are 80% white and 20% black. Black individuals prefer neighborhoods that are 50/50, where the racial mixture is half black and half white.

There is considerable variation in the structure of the curves that represent the percentage of black or white respondents who prefer particular neighborhood compositions (see Figure 4). All the black preference curves peak at 50/50 and are distributed approximately normally around that peak. The distributions of white preferences are more variable, although they are also consistent with one another. The variations relate to the proportion of white respondents who want all-white or nearly all-white neighborhoods. Some of the variation may be related to the existing neighborhood spatial combinations. In Cincinnati, for example, where there are greater numbers of black households in inner-city

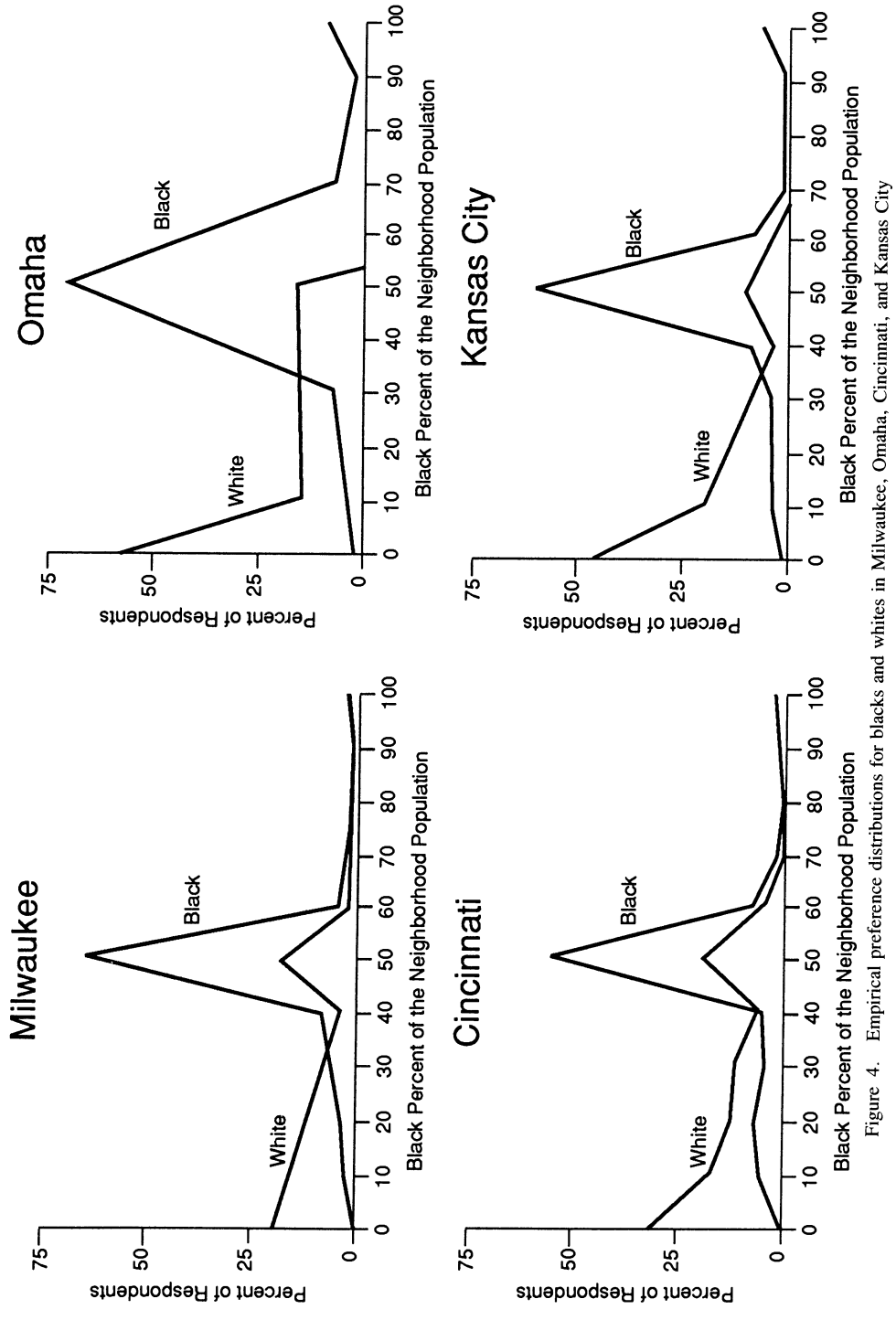

Figure 4. Empirical preference distributions for blacks and whites in Milwaukee, Omaha, Cincinnati, and Kansas City

neighborhoods, there seems to be a greater willingness to prefer neighborhood combinations other than all white or 90% white. The cities also show varying proportions of white households who want a 50/50 neighborhood, although this proportion is never greater than 20% or 25% of the sample. Overall these simple preference distributions confirm the general view of the preference/tolerance gap that is the basis for the Schelling model. In fact, the gap is much greater than Schelling suggests is necessary to generate quite separate patterns.

The data from Los Angeles, which has a multiethnic structure, provides additional insights into the preference distributions (see Figure 5). All of the results for white/black, black/Hispanic, and white/Hispanic distributions are based on pairwise comparisons. First, both black and Hispanic respondents show a marked preference for 50/50 neighborhoods, but the Hispanic preference for 50/50 Hispanic/black neighborhoods is lower than the preference for Hispanic/white neighborhoods, and Hispanics' own-race preference is stronger in black/Hispanic settings. In addition, there is some mild indication of a parallelism between whites and Hispanics in Hispanic/white preferences for the proportion Hispanic. Yet despite the differences in detail, the distributions convey a message of strong own-race preference in all situations.

Estimating Tolerance Schedules

To test the Schelling model, we now use the data to define tolerance/preference schedules. These schedules are translated into parabolic distributions (see Figures 6 and 7). These curves can be read in the same way as in Figures 1 and 3—that is, the number of whites (or blacks) who prefer (will tolerate) a certain number of blacks. Each curve shows "the limits of tolerance" (Schelling 1971, p. 169) for each racial group. To reiterate, the place where the two curves overlap represents a "statically viable combination" (Schelling 1971, p. 170) of blacks and whites. A point inside the white curve but outside the black curve represents a mix in which the whites, but not the blacks are "content" (the reverse situation also holds). A point outside both curves shows that neither group is satisfied with the mixture. Because the data initially were collected as equal-sized or nearly equal-sized samples of blacks and of whites, they have been adjusted to reflect the proportions of those groups in the total SMSA population. Thus the differing numbers of households reflect the different sizes of the cities.

To ensure familiarity with creation of the Schelling parabolas, I have outlined a complete analysis of one case study (see Table 1). The table is the result of converting the number of respondents who "preferred" (for example) a 50/50 neighborhood into a preference ratio, in this case 1:1. Similarly, a set of respondents who preferred 90% black to 10% white would have a ratio of 9:1, and so on. When the data in Table 1 for whites and for blacks are plotted (last panel of Figure 6 and left-hand panel of Figure 7), we can see how the data produce the parabolas. Thus the curve for blacks is produced by plotting the cumulative number of blacks against the number of whites in each instance; we proceed similarly for the curve for whites.

All the graphs are of similar form (see Figure 6). The curve for whites is similar to that postulated by the Schelling model. The curve for blacks, however, has an extreme tail yielding an almost z distribution because a very small number of blacks say they prefer or will tolerate any number of whites. Hence the curve does not touch zero. The amplitude of the whites' curve is small, denoting that the whites tend to be relatively intolerant of any situation in which blacks are in a majority. The whites' curve can be viewed as ranging from most to least tolerant: thus in Kansas City, for example, the 70 most tolerant whites in a

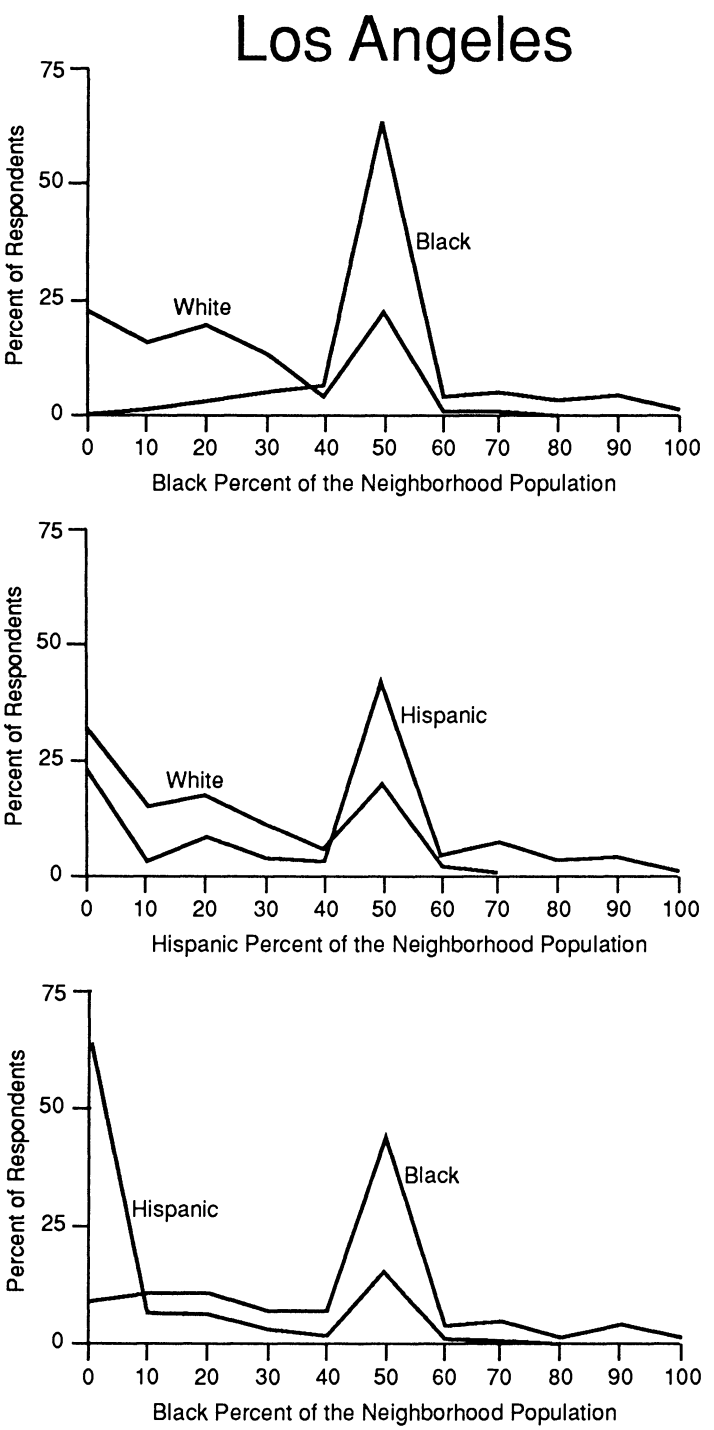

Figure 5. Empirical preference distributions for blacks, whites, and Hispanics in Los Angeles

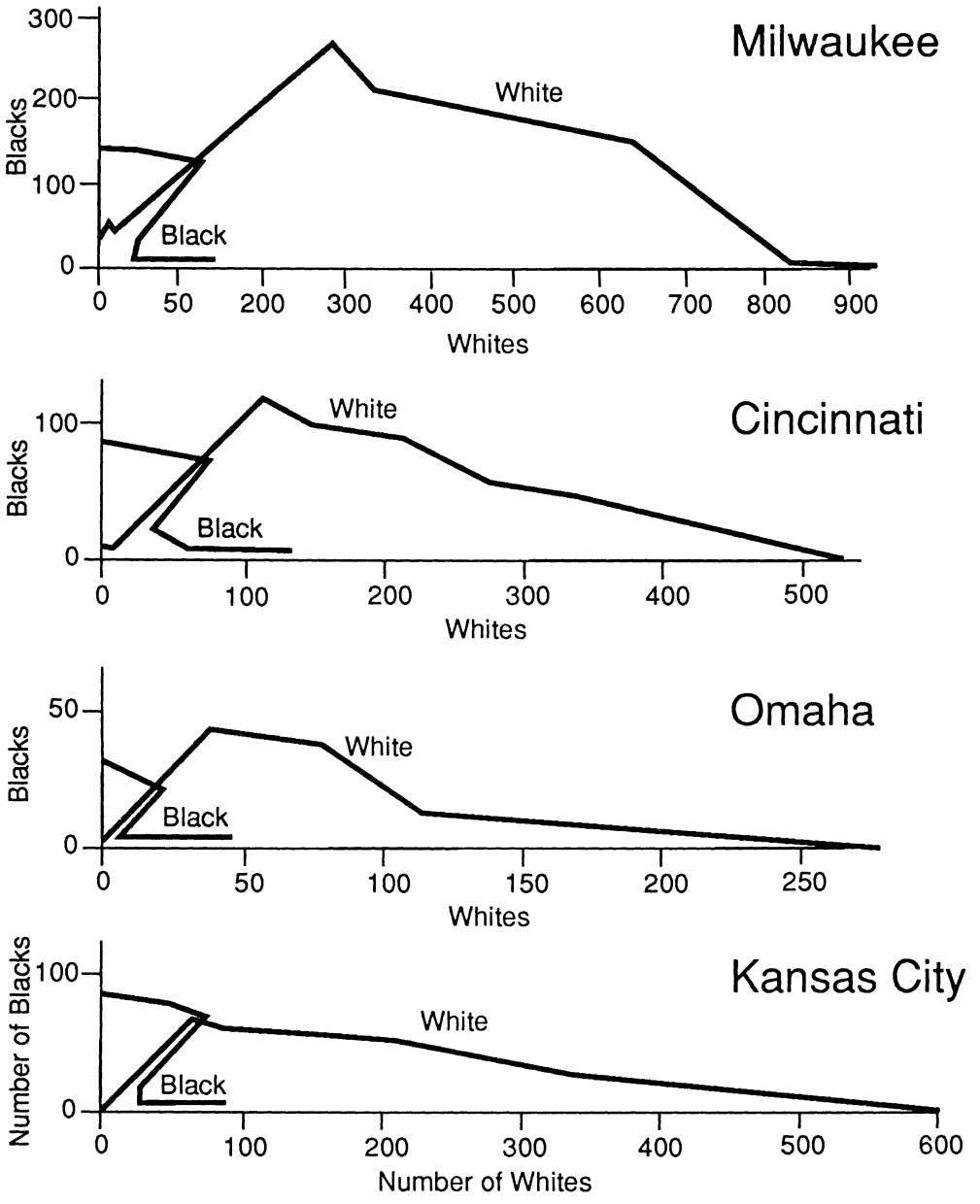

Figure 6. Translated preference/tolerance schedules for Milwaukee, Cincinnati, Omaha and Kansas City

sample of 86 (see the numbers on the graph and refer to Table 1) can tolerate at least a 1:1 mix — i.e., 70 blacks.

Figure 7 is introduced as an enlargement of two of the cities from Figure 6. It is much easier to read the numbers on these enlargements and to identify the 1:1 ratio. At the other end of the curve there are 268 whites (out of 602) who will tolerate no blacks (see Table 1). The blacks' curve can be read in the same manner: two blacks out of 86 will tolerate an

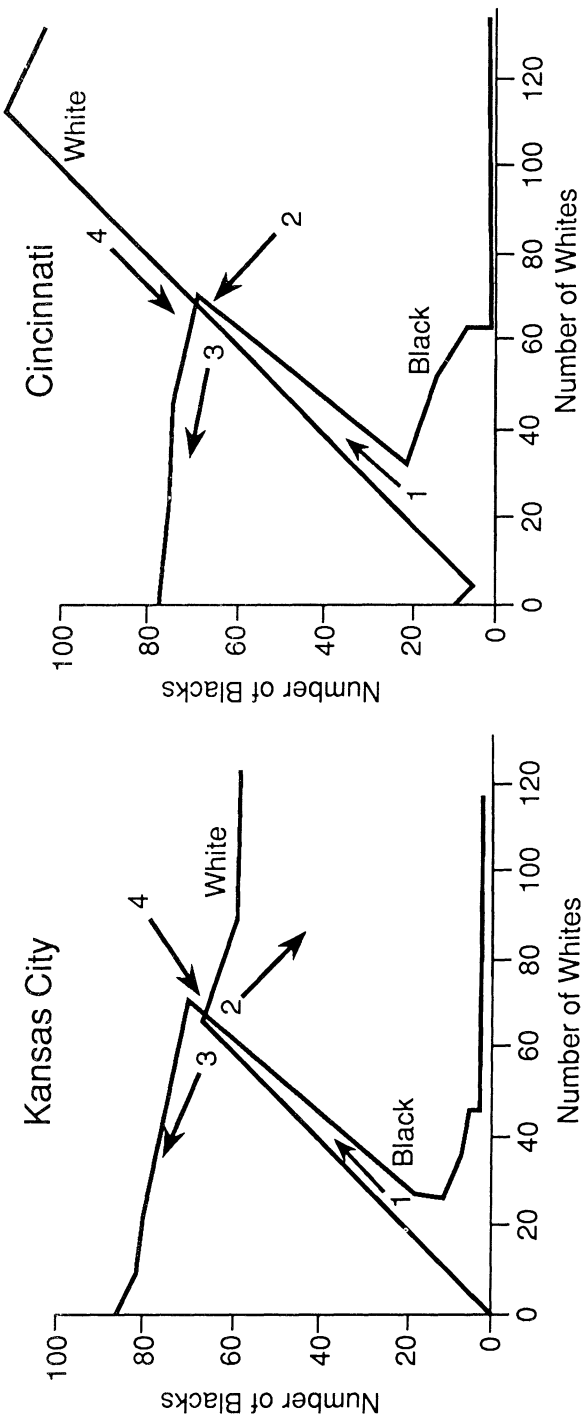

Figure 7. Enlarged preference/tolerance schedules for Kansas City and Cincinnati

Table 1. Data for Preference/Tolerance Schedule, Kansas City

Preferred Neighborhood Ratio by Whites				Preferred Neighborhood Ratio by Blacks*			
	Number whites	Cumulative	Number blacks		Number blacks	Cumulative	Number whites
All black	0	0	0	All white	2	2	∞
9:1	0	0	0	9:1	3	5	45
4:1	0	0	0	4:1	3	8	32
2.333:1	0	0	0	2.333:1	3	11	26
1.5:1	3	3	5	1.5:1	7	18	27
1:1	63	66	66	1:1	52	70	70
.666:1	22	88	59	.666:1	7	77	51
.429:1	47	135	58	.429:1	2	79	34
.25:1	73	208	52	.25:1	1	80	20
.111:1	126	336	37	.111:1	1	81	9
All white	268	602	0	All black	5	86	0

* Sample adjusted to city size.

all-white neighborhood (denoted by a line parallel to the x-axis). The most popular choice is the 1:1 option, shown by the strong peak: 70 blacks can tolerate at least this ratio. Only 41/86 blacks will not tolerate the 1:1 option; and thus the blacks' curve is characterized by a sharp decline from the peak.

Again consider the two enlarged examples of the overlap area (Figure 7). These samples reinforce the general similarity with Schelling's hypothetical cases and make evident the lack of integrated equilibria. In each case arrows have been added to show the general directions of movement that we discussed in the early section and demonstrated in Figure 2. "Vectors of population change" (Schelling 1971, p. 170) show how the mix of a neighborhood may alter in the future. Thus within the overlapping area of the curves both blacks and whites will increase; within the whites' curve but outside the blacks' curve, the whites will increase and the blacks will decrease; and so on.

Because of the scale of the graphs, the vectors are added only to two enlarged graphs (Figure 7), but the results are the same for all cities. Coalescing arrows identify stable equilibria, and it is clear from our graphs that only all black and all white emerge as equilibria. Although the overlap denotes a compatible mix, the two groups' different rates of in-movement will cause that balance to be disturbed. The result will be the creation of a new composition mix which will be unacceptable to one group, and eventually one group or the other will dominate.

All the graphs, particularly the enlarged graphs, dramatize the small areas of overlap between whites' and blacks' curves. Unlike the Schelling graphs, which contain a large overlap, the graphs in this analysis contain no such area, especially in Figure 3. The strength of differences in preference suggests that unless some more substantial intervention occurs in the urban fabric, we should not expect any naturally occurring equilibria.

We also can extend our understanding of the effect of own-race preference by considering the Los Angeles multiethnic context (see Figure 8). These graphs demonstrate that the relationships between racial/ethnic groups seem to hold for all three groups: the relationship is similar for black/white, black/Hispanic, and Hispanic/white combinations. In the third case the Hispanic curve tends to be slightly more centered on 50/50 than the others, but all the minorities' curves have small areas of overlap with the white distributions.

We can make three summary descriptions of these distributions. First, although the

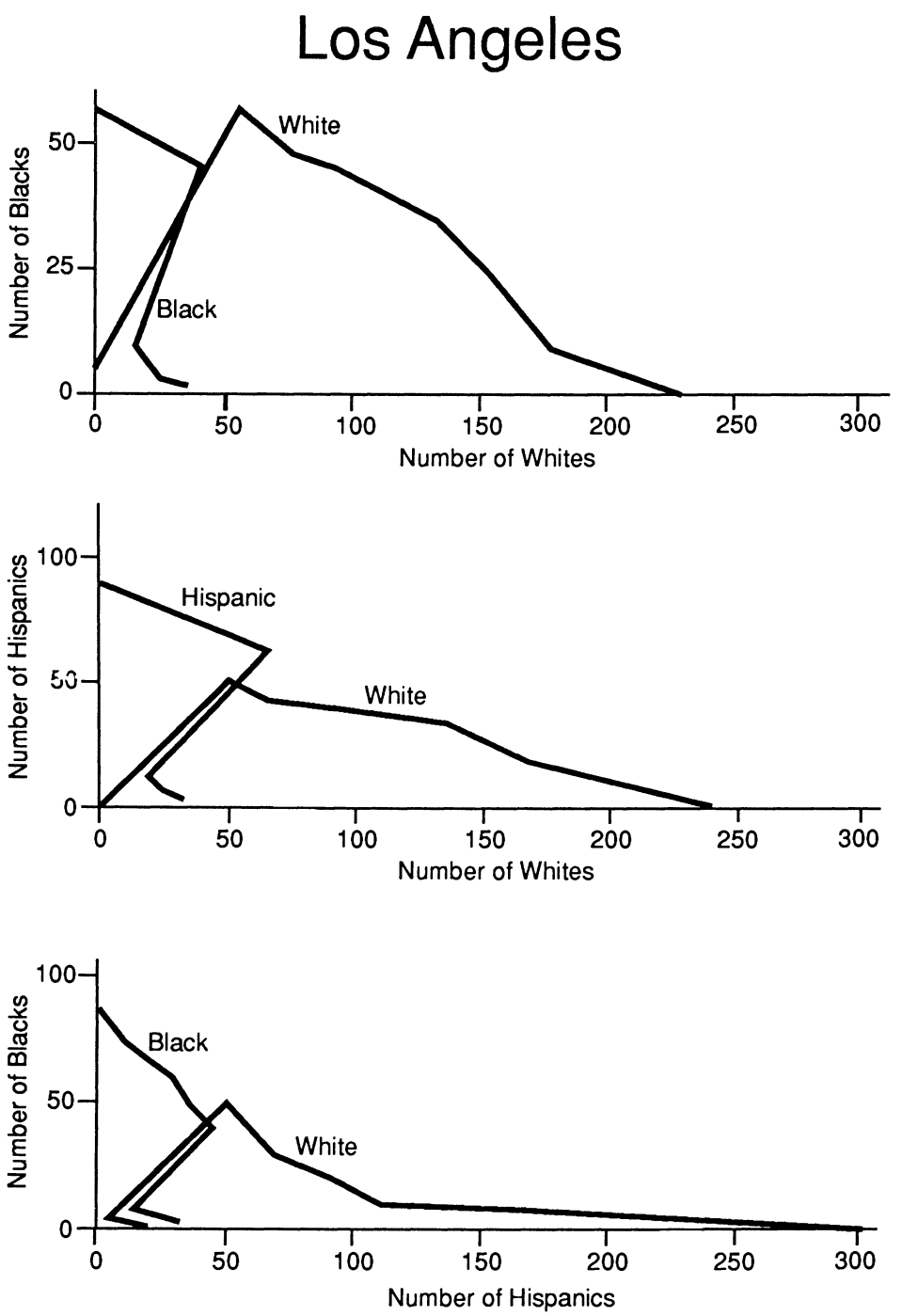

Figure 8. Translated preference/tolerance schedules for Los Angeles

parabolas bear an overall similarity to the theoretical distributions outlined by Schelling, they are less regular and more rectangular in shape than those suggested by Schelling. Second, all of the blacks' preference curves are bimodal, although the bimodality is largely related to the tolerance responses at the upper levels of blacks' response to white households. In these cases small numbers of blacks express preferences for large numbers of whites. Third, the areas of overlap containing satisfied members of both groups are small. At this point we can emphasize the general support for the Schelling functional distributions and the notion that the differences in preference *are significantly greater* than Schelling posited.

Conclusion

The gap between blacks' and whites' responses is a critical element underlying attempts to integrate society. Failure to recognize this gap ignores the realities of black/white (and other ethnic) choices. The patterns of separation are likely to be reinforced by preferences for living and socializing with neighbors of similar class and interests, and by mobility behavior that emphasizes short-distance relocations. This research confirms that the Schelling description of preferences is broadly correct but that the empirical curves are less regular than those posited by Schelling. The likelihood of equilibria is small, if it exists at all. Finally, the dynamics of change that come from preferences are determined more by whites' decisions than by blacks' or Hispanics' decisions, as witnessed in the last schedules of tolerance, although the large and growing number of Hispanics in Los Angeles County may change this last observation.

The questions posed in the survey analyses in this study are neither about general attitudes toward such issues as nondiscrimination and integration nor about actual steps the government might take to achieve integration. Because of the way the questions are posed, they are close to measures of what individuals are likely to choose in real situations. Even so, the fact that a number of individuals chose the *no difference* category suggests that these questions are difficult to answer[3] and lead to the differences in responses between attitude and implementation questions noted by Bobo et al. (1986). The questions come closer to measuring the individual response to social distance; to that extent the results, although much more detailed, are certainly consistent with those of Dyer, Vedlitz, and Worchel (1989). The latter also note that blacks and Mexican-Americans view Anglos as more acceptable than they view other minorities, but they maintain as much social distance between each other as between themselves and Anglos. (Dyer et al. 1989, p. 613).

The data in this analysis support the position that some degree of racial integration is acceptable, but it is unrealistic to expect large levels of integration across neighborhoods in view of the preferences reported here and the known differences in income and wealth. The urban mosaic is likely to change slowly and modestly; that is a reality of late twentieth-century urban experience.

Notes

[1] I use the term "separation" whenever possible because of the perjorative sense that has been attached to the word "segregation." Newby (1982) provides an evaluation of the various meanings that have been attached to "segregation."

[2] The ratios (assumed in this case for illustrative purposes) are the preferred combinations—half and half, one-quarter/three-quarters, and so on—expressed by each group.

[3] There are important questions about the degree of predictability of both whites' and blacks'

responses because of the possibility that social desirability may influence the responses and because of the way in which preferences may be "socialized by society" but these are topics for additional research projects.

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