Migration Patterns and the Growth of High-Poverty Neighborhoods, 1970–1990[1]

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Using geocoded data from the Panel Study of Income Dynamics, this article examines why the number of high-poverty neighborhoods in American cities has increased since 1970. The main findings are (1) the migration of the nonpoor away from moderately poor neighborhoods has been a key process in forming new high-poverty neighborhoods, although in the early 1980s increasing poverty rates were also important; and (2) African-Americans have moved into predominately white neighborhoods at a pace sufficient to increase their numbers there, but neighborhoods with increasing black populations tend to lose white population rapidly. Implications for theories of poor neighborhoods are discussed.

William Wilson's book *The Truly Disadvantaged* (1987) first pointed out that, starting in the 1970s, areas of concentrated urban poverty increasingly took on a different character than they had earlier in the century. Like the ethnic ghettos that have long interested urban sociologists, dwellers in modern poor urban neighborhoods are almost all members of minority races or ethnicities. Unlike older ethnic ghettos, however, Wilson argues that the minority-populated urban neighborhoods of the 1970s and

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1980s contained an especially high concentration of poor families. He hypothesizes that one cause of this trend is that middle-class blacks in the 1970s and 1980s increasingly relocated to predominately white suburbs, leaving behind neighborhoods composed largely of poor or near-poor families.

Wilson's work leads empirical researchers to examine data to confirm or deny these suspicions. Investigations by Jargowsky (1994, 1997) have confirmed some of Wilson's hypotheses, finding that the proportion of the urban population living in census tracts in which at least 40% of the population is poor increased from 3% of the urban population in 1970 to 4.5% in 1990 (Jargowsky 1997, p. 38). Tests of Wilson's hypotheses about why this has occurred have been contradictory, and there remains a considerable debate about why poor urban neighborhoods have expanded so sharply.

An increase in the number of extremely poor neighborhoods can be thought of as resulting from a combination of two proximate causes: change in the number of poor persons and change in the tendency for persons of like poverty status to live close to each other. I decompose flows of persons among neighborhood and poverty status categories over time to examine how each of these proximate causes has influenced the number of high-poverty neighborhoods. This procedure sheds light on several explanations of the increase in neighborhood poverty.

Along the way, I consider evidence relevant to debates about the role of racial segregation in explaining concentrated urban poverty. I argue that studies of the role of racial segregation in forming high-poverty neighborhoods have not always clearly separated evidence about change over time from evidence about cross-sectional variation and have not fully considered the dynamics of neighborhood change. Research has found that racial segregation in American cities remains very high, even for high-income black families (Denton and Massey 1988; Massey and Denton 1993). This has been interpreted as inconsistent with Wilson's claims that middle-class blacks are migrating into white neighborhoods. A central finding of this article is that, when considered as part of a dynamic metropolitan setting, these apparently contradictory findings can be reconciled. Middle-class blacks have been moving into white neighborhoods at rates high enough to increase their numbers there, but declining white populations in neighborhoods with substantial black populations have prevented a large increase in the share of blacks in white nonpoor neighborhoods.

PAST THEORY AND RESEARCH

Three explanations predominate in the literature on the causes of high-poverty neighborhoods. These are that high-poverty neighborhoods result

from black middle-class flight from mixed-income neighborhoods, that high-poverty neighborhoods are the result of racial segregation, and that high-poverty neighborhoods are the result of the poor job prospects of inner-city workers (Massey, Gross, and Shibuya 1994). After defining a high-poverty neighborhood, I review each of these explanations with regard to what it can tell us about why the number of poor neighborhoods has increased over time. Then I turn to my own data analysis of patterns of migration to provide clues about these three theories.

Most prior research has defined high-poverty neighborhoods by a fixed cutoff based on the percentage of persons living in families with income below the federal poverty line, usually 30% or 40% (Wilson 1987; Jargowsky and Bane 1991). Defining poor neighborhoods based on a fixed cutoff point makes theoretical sense if there are thresholds in neighborhood poverty rates beyond which neighborhoods become substantially less livable. Jargowsky and Bane (1991) toured a number of cities, comparing block census maps showing poverty percentages to their impressions based on visual appearances. Areas with more than 40% poverty rates contained more dilapidated housing stock and seemed significantly more distressed than neighborhoods with poverty rates of 20%–40%, which had a more working-class character.[2] Following their work, I consider an extremely poor neighborhood to be a census tract in which more than 40% of persons are in families with incomes below the official poverty line.[3]

Black Middle-Class Flight

In *The Truly Disadvantaged,* Wilson (1987) argues that one of the key forces that led to the increase in the number of extremely poor neighborhoods was the movement of middle-class residents, especially middle-class African-American residents, from mixed-income neighborhoods to suburban, white neighborhoods. With the departure of middle-class blacks from inner-city, mixed-income neighborhoods, the population left behind was

[2] Areas that were more than 40% poor also corresponded well to areas local census officials considered "ghettos." This standard has also been adopted by the U.S. Census Bureau, which refers to areas where more than 40% of the population is poor as "extreme poverty areas" (U.S. Bureau of the Census 1995).

[3] Census tracts are small population units of 2,500–8,000 residents (average about 4,000) that are designed to be homogeneous with respect to population characteristics, economic status, and living conditions. They are drawn in such a way as to correspond roughly to what is normally thought of as a small neighborhood by people familiar with the local geography. For a discussion of how census tract boundaries are drawn and the advantages and disadvantages of considering census tracts as neighborhoods, see White (1987, pp. 18–20, 286–300).

"a much higher concentration of the most disadvantaged segments of the black urban population" (1987, p. 49). Wilson supports this conclusion by citing data on predominately African-American neighborhoods in Chicago that shows that from 1970 to 1980 the number of middle-class black families declined, but the absolute number of poor families remained roughly the same.

Several lines of research have investigated aspects of Wilson's claim. Studies of changes in the population of census tracts with increasing poverty rates come to conclusions broadly consistent with middle-class black out-migration. Studies in changes in racial segregation and the relationship between racial segregation and socioeconomic status (SES), on the other hand, have come to conclusions that seem inconsistent with middle-class black out-migration. I discuss these lines of research below and discuss possible explanations of the differences between the findings of these studies.

First, several studies have examined population changes associated with neighborhoods that became poorer between decennial censuses, and these studies support a connection between depopulation and increases in poverty rates. Case studies of the increase in high-poverty neighborhoods find that census tracts that had their poverty rate increase to beyond 40% poor usually show population losses, mostly due to a shrinking number of nonpoor families (Jargowsky and Bane 1991; Jargowsky 1997). Greene (1991) shows that there is a strong connection between loss of population and increase in tract poverty rates. Gramlich, Laren, and Sealand (1992) find that rates of migration among tracts imply that poor urban areas are gradually becoming poorer, blacker, and less densely populated. This research does not definitely establish that middle-class black out-migration is a cause of increases in the number of poor neighborhoods, but it is consistent with the possible importance of this factor.

The black out-migration thesis, however, has been challenged in a number of articles on residential racial segregation by Douglas Massey, Nancy Denton, and their colleagues. Using census extracts from major cities, they conclude that blacks of high SES (measured by income, education, or occupation) are only slightly less segregated from whites than low SES blacks (Massey 1979; Denton and Massey 1988). Furthermore, they show that SES is not related to greater suburbanization among blacks, a pattern different from Asians and Hispanics (Massey and Denton 1987). These studies demonstrate that African-Americans live largely in separate communities than whites, even at high levels of SES. This leads Massey and Denton (1987, p. 823) to conclude that "if the black middle class has abandoned the black poor, it has not been by moving to Anglo neighborhoods, at least not on a significant scale. Most blacks continue to reside in pre-

dominately black neighborhoods, even in cities with relatively large and affluent black middle classes."

These results leave open the possibility that middle-class blacks fled from inner-city, mixed-income areas to predominately black upper-income or middle-income areas. If this is the case, then we should see an increase in income segregation among blacks in the 1970s and 1980s. Several researchers have investigated this hypothesis, and the majority of these studies conclude that income segregation among blacks has been increasing (Massey and Eggers 1993; Jargowsky 1996).[4] These results support Wilson's hypothesis if we alter it to note that middle-class blacks are moving to middle-class black neighborhoods rather than white neighborhoods.

Yet the insights of most of these studies have been limited by the fact that they rely on static snapshots of the population from decennial census results. A few studies use longitudinal data from the Panel Study of Income Dynamics (PSID) to address urban poverty issues, but they are not studies designed to look at why the number of high-poverty neighborhoods has increased over time (e.g., Gramlich et al. 1992; South and Crowder 1997).[5] The decline in the number of middle-class residents of neighborhoods that became poorer could be because middle-class blacks migrated out *or* because the out-migration of poor and middle-class blacks was combined with the movement of many middle-class residents into poverty. This would show up in decennial census results as an increase in poverty rates and a decline in the number of middle-class blacks; yet, there would be no stronger a tendency for middle-class persons to migrate out of poor black neighborhoods than for poor persons. Thus, studies using cross-sectional samples at two points in time are ambiguous about the sources of the growth in poor neighborhoods because both poverty status and residence can change over time (Hughes 1990; Jargowsky and Bane 1991). To separate these and in general to provide a more complete view of the processes causing changes in neighborhood poverty rates, we need longitudinal data on families and the neighborhoods in which they reside.

[4] Farley (1991) is the one study that dissents from this conclusion. His study is the smallest in terms of number of metropolitan statistical areas (MSAs), and his measure of income segregation suffers from confounding changes in the black income distribution with changes in the degree of sorting into neighborhoods among black families, as discussed by Jargowsky (1996).

[5] I discuss the one study that uses longitudinal data to address some of these questions at length below.

Importance and Limitations of Racial Segregation Explanations

Massey and Denton's (1993) criticisms of the black out-migration thesis are part of their wider criticism of Wilson's views on urban poverty. Their main point is that Wilson has neglected the key role of racial segregation in creating extremely poor neighborhoods. Indeed, one only needs to examine statistics on the racial disparities in the population of high-poverty neighborhoods to become convinced that there is a connection between racial segregation and extremely poor neighborhoods. In 1990, about 14% of the black urban population and 9.5% of the Hispanic urban population lived in extremely poor neighborhoods. By contrast, only about 1% of the non-Hispanic white urban population lived in extremely poor urban neighborhoods (Jargowsky 1997).

As Douglas Massey, Nancy Denton, and their colleagues have made clear in a number of articles, the disproportionate burden of ghetto poverty on nonwhites is the result of two factors: the high degree of residential segregation of nonwhites from whites and racial disparities in poverty rates (see, e.g., Massey 1990). Nonwhite neighborhoods tend to have high poverty rates because of the high rate of poverty among nonwhites. In the population as a whole, about 10% of non-Hispanic whites are poor, compared to about 30% of blacks and 25% of Hispanics. This means that in a city with complete residential segregation, and no income segregation, blacks would experience about a 30% neighborhood poverty rate—already a fairly high level of neighborhood poverty contact. In this racially segregated city, even a low level of income segregation among African-Americans is sufficient to create some neighborhoods with 40% or more of their population with incomes below the poverty line. Whites in the perfectly segregated city, in contrast, would experience only a 10% neighborhood poverty rate. Although high levels of income segregation could still lead to white neighborhoods that are at least 40% poor, in modern American cities, levels of income segregation simply do not occur at high enough levels to create more than a handful of extremely poor white neighborhoods.

While racial segregation is critical to understanding the existence of ghetto poverty, it is less clear that racial residential segregation can explain the change in the number of poor neighborhoods *over time*. Change in racial segregation cannot explain the growth in the number of high-poverty neighborhoods, because racial segregation declined slightly in the United States from 1970 to 1990, while the number of high-poverty neighborhoods increased (Jakubs 1986; Farley and Frey 1994). Massey and Eggers (1990) and Massey and Denton (1993) argue that the effects of economic changes has especially strong impacts on black neighborhoods because of racial segregation. Although the empirical evidence on this

point is debatable, their simulations and theoretical arguments are convincing.[6] The *timing of the increase* in black neighborhood poverty rates, however, cannot be explained by changes in racial segregation.

Economic Changes and Poverty Rates

Wilson (1987) hypothesizes that a second cause of increases in the number of high-poverty neighborhoods is economic change that worsened the employment and earnings prospects of blacks in inner-city neighborhoods. Wilson's later work (1996) emphasizes these demand-side economic factors as the fundamental causes of increasing urban poverty. His analysis is based on two theses from prior work on urban poverty. The spatial mismatch hypothesis, initially proposed by John Kain (1968), argues that jobs have increasingly moved away from urban central cities to suburban areas, leading to higher unemployment rates among blacks who live in inner-city neighborhoods. The deindustrialization hypothesis, associated with the work of several authors (e.g., Harrison and Bluestone 1981; Kasarda 1990), argues that there has been a decline in the number of inner-city factory jobs. As a result, wages and employment rates of inner-city residents have fallen relative to the wages and employment of suburban dwellers.

Although these theories are simple, they have been difficult to test. Several studies have tried to establish whether or not distance from available jobs contributes to unemployment (see Holzer [1994] and Teitz and Chapple [1998] for reviews). These studies have been primarily cross-sectional, often trying to estimate the relationship between measures of job access and unemployment and the extent to which racial differences in spatial mismatch can explain racial differences in unemployment rates. They do not establish the extent to which spatial mismatch and deindustralization can explain change in the unemployment rate of inner-city areas.

Studies that have considered changes in employment trends over time (e.g., Kasarda 1990) have been hampered by their inability to distinguish increases in rates of unemployment or poverty from the migration out of the employed or the nonpoor. Jencks and Mayer (1990, p. 220) conclude the failure to deal with class-selective migration has been "probably the single most important reason why we have learned so little about this subject in the two decades since Kain first advanced the spatial mismatch

[6] Massey and colleagues have argued that there is an interaction of changes in racial segregation and increasing poverty rates that has led to the increase in ghetto poverty (see, e.g., Massey and Eggers 1990). A reanalysis of Massey and Eggers's (1990) empirical evidence for this claim (Korenman, Sjaastad, and Jargowsky 1995), however, finds little evidence to support the presence of this interaction.

hypothesis." Solving this problem demands longitudinal data that can separate changes in employment or earnings resulting from demand-side job changes from changes in employment or earnings resulting from class-selective migration.

Massey, Gross, and Shibuya's "Migration, Segregation, and the Concentration of Poverty"

One previous study, Massey et al.'s "Migration, Segregation, and the Concentration of Poverty" (1994), examines forces contributing to the growth of high-poverty neighborhoods, and Wilson's middle-class black out-migration thesis, using longitudinal data. I carefully consider these results here because my own work follows that of Massey, Gross, and Shibuya closely. Their article concludes that racial segregation is the central cause of ghetto poverty and that middle-class out-migration is at most a minor contributing factor. On this basis, they claim that Wilson was incorrect in asserting that black middle-class out-migration has significantly increased the concentration of poverty.[7]

Massey et al.'s (1994) investigation starts with an examination of transition probabilities among neighborhood types. The transition probabilities Massey et al. compute are the probabilities that a respondent will move to another neighborhood type conditional on their tract type of origin and destination and their race and poverty status. These probabilities indicate that poor blacks are moving out of poor neighborhoods at higher rates than nonpoor blacks, which, they argue, contradicts the black middle-class out-migration thesis.[8]

The results shown in Massey et al. (1994) are instructive in telling us about racial differences in patterns of movement among neighborhoods

[7] In discussing Wilson's thesis, they do not separate black migration into white neighborhoods from black migration into predominately black neighborhoods. Instead, they consider the importance of black migration into nonpoor neighborhoods overall.

[8] A problem with this result as a test of Wilson's middle-class out-migration thesis, however, is their definition of a movement "out." Massey et al. (1994) count any movement from a poor tract to any other tract as a movement out. Table 3 in Massey et al. (1994) shows that most of these moves are from one poor black tract to another poor black tract. As they point out, poor blacks move out more often than nonpoor blacks largely because they tend to be renters and therefore tend to move more often. But this is not a test faithful to Wilson's intent: When Wilson refers to black "out" migration he is almost surely referring to movements out of the ghetto and into nonpoor areas, not any move originating in a poor census tract. A more reasonable way to adjudicate Wilson's hypothesis would be to compare a nonpoor and a poor black respondent on the probability that, if they live in a poor neighborhood at time t, they will reside in a nonpoor tract at time $t + 1$ (Jargowsky 1997).

TABLE 1

Transition Matrix for a Hypothetical Population Distributed between Two Tract Types

Origin Neighborhood Type	Destination Neighborhood Type	
	Nonpoor	Poor
Nonpoor	.45	.55
Poor	.3	.7

Note.—Numbers represent the probability of being in the column tract type at time $t + 1$ given residence in row tract type at time t.

of different types. Yet they have a sharp limitation in that these rates alone do not tell us about change in the population over time. Massey et al.'s analysis tests Wilson's hypothesis only as it applies to cross-sectional changes, not to explaining change in the number of poor neighborhoods over time.

To understand why this is true, consider the hypothetical population in table 1. This table shows a matrix of transition rates among two neighborhood types. The numbers represent the probabilities of moving to the column neighborhood type given the row origin neighborhood type. In this example, there are only two neighborhood types: poor and nonpoor.[9] Table 2 shows the proportion of the population living in each neighborhood type given at a hypothetical starting point and then after one application of the transition matrix, three applications of the transition matrix, and, finally, the stable distribution that the population will approach given repeated application of the transition matrix.[10] In the example, although the probability of moving into a poor neighborhood is greater than the probability of exiting it for both residents of poor and nonpoor neighborhoods, the proportion of the population residing in the poor neighborhood type is *declining* over time. Because most of the population lives in poor neighborhoods to begin with, even a low probability of moving to a nonpoor area is compatible with an increase in the proportion of the population in nonpoor neighborhoods.

Massey et al. (1994) find that the nonpoor blacks are less likely to enter

[9] These results generalize to N neighborhood types.

[10] For discussions of rates and the stable population they imply see Rogers (1968), Keyfitz (1977), or Boudon (1973).

TABLE 2

CHANGE IN POPULATION DISTRIBUTION OVER TIME AS TRANSITION MATRIX RATES ARE APPLIED

	NEIGHBORHOOD TYPES	
	Nonpoor (%)	Poor (%)
Starting population distribution (time t)	20.0	80.0
Population distribution at time $t + 1$	33.0	67.0
Population distribution at time $t + 3$	35.2	64.8
Stable population distribution	35.3	64.7

nonpoor areas than poor areas. The implication of the example in tables 1 and 2 is that their result is consistent with the possibility that the number of blacks in white neighborhoods is increasing over time. If there are sufficiently few blacks in white neighborhoods to begin with, then even a low probability of black migration to a nonpoor white neighborhood can be consistent with an increase in the size of the black nonpoor population in white neighborhoods over time. More generally, because population change is a complex function of both the rates of change and the population distribution at a given point in time, we can say nothing definitive about how a population is changing over time just by looking at transition rates. Nor can we conclude that because group A has a lower rate of entry to a neighborhood than group B, group A is declining in size in that neighborhood relative to group B. A better way to examine the implications of these rates for the distribution of people across neighborhood types is to examine flows, a method I use below.[11]

The other technique Massey et al. (1994) rely on is a simulation. They begin with a hypothetical city composed of neighborhoods of economic and racial composition similar to the city of Chicago. They then "age" the population five years by applying transition probabilities, estimated from the PSID, five times. They show that giving blacks and whites equal destination probabilities has a much larger impact on the average poverty rate experienced by blacks than eliminating middle-class black out-migration

[11] Preston and Campbell (1993) made a related point in discussing how differences in rates of fertility among people of different IQ classes will result in changes in the distribution of IQ over time. Another way to examine change over time based on rates is to compute the stable population distribution implied by the rates and then compare this to the observed population distribution.

from poor areas or eliminating socioeconomic mobility. On this basis, they conclude that racial segregation is ultimately more important than black out-migration in explaining the concentration of black poverty.

There are two caveats to the results from the simulation. First, although the procedure of assigning black probabilities to whites is an interesting hypothetical, it, again, does not address historical trends over time. Massey et al. (1994) do not examine what actual rates of movement from white to black tracts or vice-versa imply about change over time in the distribution of blacks in poor neighborhoods. A second limitation is that they begin their simulation with a hypothetical city with a racial and economic distribution of neighborhoods similar to Chicago. Since the degree of change toward the equilibrium distribution is related to the difference between the starting and stable distribution, choosing a city with a different degree of segregation as the starting point would lead to different results. In any event, it is difficult to know if the results would be different enough to change their conclusions without reanalyzing the data with different starting distributions.

To summarize, the results Massey et al. (1994) present are persuasive for illustrating the existence of great racial differences in patterns of movement between neighborhood types and for illustrating the crucial importance of racial segregation for maintaining extremely poor urban areas. Like other studies of transition rates, however, their results do not provide much insight into questions about changes in racial segregation over time or the possible sources of the increase in high-poverty neighborhoods in the 1970s and 1980s. In what follows, I perform a number of different analyses to determine what the PSID data implies about the growth in high-poverty neighborhoods in the 1970s and 1980s.

Cross-Sectional and Temporal Explanations of Urban Poverty

The two explanations of high-poverty neighborhoods most directly relevant for looking at change over time are black middle-class flight (Wilson 1987) and the worsening economic circumstances of inner-city workers (Wilson 1987, 1996). Racial segregation (Massey and Denton 1993) is an important background condition that is a prerequisite for the existence of high-poverty neighborhoods, but in itself it is not an explanation of why there has been a growth in the number of high-poverty neighborhoods. The strengths of these explanations reflect the tendency of Wilson and Massey to address slightly different dependent variables: Wilson's work focuses on explaining change in the number of poor neighborhoods over time, while Massey and his colleagues' work focuses more on explanations of the existence of ghetto poverty overall, in most cases using statistical

methods that explain cross-sectional variation. In light of their slightly different emphases, it is not surprising that their opposing theses have not yet resulted in an enlightening synthesis.

For reasons I have spelled out above, empirical work leaves many unanswered questions about how these factors have influenced the growth in high-poverty neighborhoods. Most empirical research has either relied on cross-sectional snapshots, and suffers some attendant limitations, or has focused on explaining cross-sectional variation rather than change over time. Below, I analyze longitudinal data from the PSID to examine what it tells us about changes over time in the number of poor neighborhoods.

METHODS

My basic strategy is to decompose changes in the number of nonpoor whites, poor whites, nonpoor blacks, and poor blacks in the PSID living in poor neighborhoods into three sources of change: movement, neighborhood change around respondents who do not move, and change in poverty status among stayers. I also separately consider respondents who both changed poverty status and switched neighborhood type.

Data

To investigate the causes of the growth in concentrated urban poverty, I rely on data from the PSID. The PSID has followed approximately 5,000 families and their descendants with yearly interviews since 1968. To study changes in neighborhoods over time, I have matched data on PSID respondents to data on census tract characteristics from the 1970, 1980, and 1990 censuses.[12] The PSID sample originally included an oversample of poor families; I employ the PSID sampling weights for all analyses in this article to make the results representative of the U.S. population.

Unfortunately, the PSID address tapes for 1969, 1975, 1977, and 1978 were missing when my data extract was compiled. Although geocodes for 1975, 1977, and 1978 are now available, they are only available using 1990 census geography. Since 1990 is 12–15 years later than 1975–78, using this data to represent tract characteristics for 1975–78 would probably be highly unreliable, and instead I exclude the years 1975–78. As a result, my PSID extract uses data from 1970–74 and 1979–90.

The PSID data and census geocodes are available for respondents at single-year intervals. Data on the neighborhoods in which these respon-

[12] See n. 2 above for more information on census tracts.

dents live, however, is only available from the census at 10-year intervals. This leaves the problem of how to impute neighborhood characteristics for years between censuses. The imputation procedure is discussed at greater length in the next section.

Since the PSID sample before 1990 has very few Latinos or Asians, I examine black and white PSID sample members only. I divided the respondents into four groups: white nonpoor, white poor, black nonpoor, black poor. I consider a PSID respondent to be poor if they are a member of a family whose three-year average posttransfer income is less than 125% of the federal government poverty needs standard.[13] I use a three-year moving average of income to needs because much of the transitory fluctuation in income is measurement error. In addition, many families whose income is below the poverty line in only one year are not "poor" in any meaningful sense since they have sufficient assets and social support to avoid hardship during their period of low income (Rodgers and Rodgers 1993).

To analyze the relation between individual and neighborhood characteristics, I create three income categories: nonpoor (less than 20% of population in the tract is in households below the federal poverty threshold), moderately poor (20%–39.9% poor), and extremely poor (40%+ poor). I also create three racial tract types: white (less than 30% of population black), mixed (less than 70% black), and black (70%–100% black). Cross-categorizing the neighborhood poverty and racial types forms nine cells. In addition, I add a tenth cell for nonmetropolitan residence and an eleventh cell for individuals who live in metropolitan areas but do not have tract addresses because they live in a nontracted metropolitan area or because they provided an address that the PSID was unable to assign to a single tract.

The number of respondents in some of these 11 neighborhood types, however, was too small to support an analysis. As a result, I further collapsed these 11 categories down to eight categories. In so doing, I collapsed together white moderately poor and extremely poor neighborhoods (there are very few white extremely poor neighborhoods). I also collapsed all poverty levels of racially mixed neighborhoods into one category, racially mixed (30%–70% black). Table 3 shows the weighted percentage of person years for each neighborhood type separately for the four race by poverty status categories using the full pooled sample (1970–74, 1979–90). The unweighted number of person years is also shown in table 3.

[13] Since there is less underreporting of income in the PSID than in the census, using the 125% poverty line poverty rates in the PSID sample are comparable to poverty rates in the census or CPS using the 100% poverty line (Hill 1992).

TABLE 3

PERCENTAGE AND NUMBER OF PERSON YEARS BY NEIGHBORHOOD TYPE, POOLED PSID 1970–74 AND 1979–90 DATA

NEIGHBORHOOD TYPE	WHITE NONPOOR		WHITE POOR		BLACK NONPOOR		BLACK POOR	
	% of Person Years	Person Years	% of Person Years	Person Years	% of Person Years	Person Years	% of Person Years	Person Years
White nonpoor*	47.2	45,964	21.9	2,166	11.3	4,919	5.0	1,814
White moderately poor and white extremely poor†	3.0	3,126	10.1	1,039	3.2	1,059	2.1	668
Racially mixed‡	1.5	1,896	2.8	403	19.8	7,655	15.2	4,077
Black nonpoor§	.1	99	.1	17	10.4	5,805	4.2	1,886
Black moderately poor‖	.2	300	.5	153	20.4	12,142	17.6	8,384
Black extremely poor#	.0	107	.0	12	6.9	4,593	13.9	7,190
Nonmetropolitan	36.7	38,310	53.4	5,136	20.3	8,727	33.9	8,047
Nontract metropolitan	11.3	12,450	11.1	1,322	7.6	4,502	8.2	3,498
Total	100.0	102,252	100.0	10,248	100.0	49,402	100.0	35,564

NOTE.—Numbers are based on imputing tract characteristics for intercensal years based on tract-to-tract matching; see methods section. "% of person years" are given as weighted and "person years" as unweighted.

* 0%–30% black; 0%–20% poor.

† 0%–30% black; 20%–100% poor.

‡ 30%–70% black; 0%–100% poor.

§ 0%–30% black; 0%–20% poor.

‖ 70%–100% black; 20%–40% poor.

70%–100% black; 40%–100% poor.

Imputation of Intercensal Years

One of the goals of this article is to measure the impact of neighborhood changes around PSID respondents on movement among census tract types. This requires some care because many census tracts' boundaries change between censuses, and the method of interpolation for these tracts may influence results. To deal with this problem, I tried three different methods of imputing census tract racial makeup and poverty makeup for intercensal years.

In the first method, I assign neighborhood characteristics to PSID respondents based on the nearest census year. Tract characteristics for 1971–74 are assigned based on 1970 tract data, tract characteristics for 1979–84 are assigned based on 1980 tract data, and characteristics for 1985–89 are assigned based on 1990 census tract data. This procedure treats tract characteristics as if they are fixed at particular census years. I call this the "nearest-census-year" method.

In the second method, I matched all census tracts that did not change or that only had minor changes in their boundaries from 1970 to 1980 using the Census Bureau's 1970–80 census tract match file (U.S. Bureau of the Census 1983*a*). I similarly matched census tracts in 1980 with the corresponding tracts in 1990 using the Census Bureau's 1980–90 tract match file (U.S. Bureau of the Census 1992*a*).[14] Then I filled in values for years between censuses for the matched tracts using linear interpolation. For years that a respondent is a resident of the approximately 15% of tracts that had more than minor boundary changes between censuses, tract data is missing. Person years in these tracts are excluded from the analysis. This method I call "tract-to-tract interpolation" because it is based on matching tracts that did not change significantly; it is the basic method used in the tables shown in the results section.

The potential problem with this method is possible selection bias in excluding tracts that have had boundary changes. Given the Census Bureau's rules for drawing tract boundaries, one would guess that census tracts that had boundary changes were also the tracts that had large changes in the demographic makeup of their neighborhood populations.[15] Excluding these tracts might tend to systematically underestimate the ef-

[14] "Minor changes" are defined following the Census Bureau's definition in the tract matching files. For 1970 and 1980, minor changes are those that involved a gross population shift of less than 100 persons (U.S. Bureau of the Census 1983*b*). For 1980 and 1990 minor changes are those that affected less than 2.5% of the 1990 population of the tract (U.S. Bureau of the Census 1992*b*).

[15] The rules and procedures for drawing tract boundaries are summarized in White (1987, app. B).

fect of neighborhood changes because it eliminates many of the neighborhoods that had the most radical demographic shifts. To deal with this problem, I compared results using the tract-to-tract method with results employing a third method less sensitive to this problem.

The third method takes advantage of the fact that the PSID provides both 1970 and 1980 geocodes for PSID respondents for the period 1970–85. I fill in intercensal years using linear interpolation between the census tract that the respondent's dwelling was in using the 1970 geocode and the census tract that the respondent's dwelling was located in using the 1980 geocode. If the respondent's census tract changed between censuses, then the 1970 and 1980 tracts will have different boundaries. If boundaries of tracts really represent neighborhoods, then changes in tract boundaries represent change in neighborhood boundaries, and this method of imputation probably makes sense. If local census tract committees are drawing tract boundaries more arbitrarily, on the other hand, then this procedure would probably overstate the extent of neighborhood change because many apparent neighborhood changes are really arbitrary shifts in boundaries. This procedure I call "place-to-place interpolation," because it is based on interpolation between the tracts that include addresses in different censuses years (which in some cases are different tracts).

I have computed the basic results for this article using all three methods. The tables show the results using matching based on the tract-to-tract method of imputation. The disadvantage of place-to-place interpolation is that the geocodes needed to do it are not available for the years 1985–90. Tables showing flows using the tract-to-tract and the place-to-place method, broken down in the three basic periods (1970–74, 1979–84, and 1985–90), are available from the author upon request.

The results using the place-to-place method are generally very similar to results using the tract-to-tract method and in no way alter the substantive results of this article.[16] Estimated flows due to neighborhood change tend to be slightly larger using the place-to-place method than the tract-to-tract method.

A Method to Study Change over Time: Flows

In the literature review above, I argued that simply examining transition rates and their correlates is not a method well suited to tell us about

[16] The nearest-census-year method estimates sometimes differ by a larger amount because they do not account for changes in neighborhoods over time. This is what we would expect if neighborhoods are changing over time and suggests that conclusions of studies using the nearest-census-year method to study change over time may be misleading.

changes over time. There is no way to tell if the number of persons living in a particular neighborhood type is increasing or decreasing just by perusing rates. A better method is to consider flows. The flow is the probability of changing to another neighborhood (or making whatever other transition) times the size of the population that is at risk—that is, the flow is the size of the population moving in or out. Flows have the advantage that they are unambiguous about change over time. Positive net flows indicate the population in an area is increasing over time, negative net flows that it is decreasing over time.

Using the PSID, I examine the net flows of respondents based on their race and poverty status into and out of the eight neighborhood types. The net flow into a particular state is the share of the population that enters that state minus the share of the population that exits that state. To define it more precisely, first define a consecutive person year (CPY) as a sequence of two years in which we observe a PSID respondent and have valid data on neighborhood characteristics based on PSID geocoding. Then we can define in_{nptr} as the flow into neighborhood type n (the eight neighborhood types are listed in table 1) for persons of poverty status p (nonpoor, poor) and racial group r (black, white) in time period t (1970–74, 1979–84, 1985–90). Define the flow as equal to

$$\text{in}_{nptr} = \text{entrances}_{nptr}/\text{CPY}_{tr},$$

where entrances_{nptr} is the number of consecutive person years that move respondents who are members of neighborhood n and poverty status p out of that state (by exiting neighborhood type n, poverty status p, or both). CPY_{tr} is the total number of consecutive person years observed for members of racial group r during time period t. Thus, the flows I am using are normalized to be a percentage of all consecutive person years observed by members of the racial group during the given period. We can interpret in_{nptr} as the average proportion per year of the rth racial group (blacks or whites) that entered neighborhood type n and poverty status p in period t. In a similar way, we can define movements out as

$$\text{out}_{nptr} = \text{exits}_{nptr}/\text{CPY}_{tr},$$

where exits_{nptr} is the number of consecutive person years that move respondents who are in both neighborhood type n and poverty status p out of neighborhood type n or poverty status p, and CPY_{tr} is the total number of consecutive person years observed for members of racial group r during time period t. We can interpret out_{nptr} as the average proportion per year of racial group r (blacks or whites) that exited neighborhood type n and poverty status p in period t.

Define the net flow, f, as the difference between these two quantities:

$$f_{nptr} = \text{in}_{nptr} - \text{out}_{nptr},$$

where f is the net flow into (or out of, if the number is negative) the nth neighborhood type for persons in the pth poverty status for persons of race r during time period t. The net flow is the number presented in the tables below. It can be interpreted as the average percentage per year of the racial group that moves in or out of the race by poverty status state in the specified period; a positive percentage indicates net movement in, a negative percentage a net movement out. For many PSID respondents, more than one consecutive person year is counted in computing a total for a given time period—if two consecutive person years are observed for a given individual during a period, then each of these consecutive person years is counted separately in computing the flow totals. This does not bias these estimates of population change, but it does create special problems in computing accurate standard errors of the flows, a problem I deal with at greater length in the next section.

An example might help illustrate the calculation. If 2% of the consecutive white person years in the PSID data are moves into a white nonpoor neighborhood by a white nonpoor person, and 1.5% of the consecutive white person years in the PSID are moves out of a white nonpoor neighborhood by a white nonpoor person, then the net flow into the neighborhood type by white nonpoor persons would be .5%.

I calculate flows separately for residents of each of the six basic neighborhood types, and I calculate net flows as percentages of the racial group separately for nonpoor blacks, poor blacks, nonpoor whites, and poor whites.

We can further decompose the flows based on entries or exits for particular reasons. I separately consider four ways in which PSID respondents can switch among neighborhood types. First, they can simply move from one neighborhood type to another neighborhood type. Second, they can stay still while the neighborhood type changes around them. Neighborhoods can become poorer or blacker (or less poor or more white) while the respondent does not move. Third, respondents can change poverty status while staying in their current neighborhood type. That is, they can become poor or become nonpoor, thus entering or exiting these subpopulations. Finally, respondents can both change poverty status (enter or exit poverty) and change their neighborhood because of moving or neighborhood change. When both of these events occur between PSID interviews, I cannot distinguish which occurred first; accordingly, I consider these events simultaneous and put people experiencing simultaneous events into their own category. I break down the flows into these four component sources of change. The total net flow of a neighborhood type is equal to the sum of its net flows due to each of these four reasons.

Several other sources of population change can also influence the size of populations in poor neighborhoods but are not accounted for in these

models. For example, births and deaths are not accounted for. Entries into institutions also are not included because the PSID does not gather data on people in institutions.[17] Flows of people who enter or exit neighborhoods for these reasons are not counted as consecutive person years. Changes in the population composition of neighborhoods because of these processes remain potential areas to investigate in future research.

Inferential Statistics

Using formulas that assume simple random sampling to compute standard errors is clearly inappropriate for computing standard errors for the flows calculated in this article. There are a number of reasons why this is the case. First, the PSID sample was initially drawn using a stratified and clustered design and so was not a simple random sample to begin with (Hill 1992). Second, the transitions that are used to compute flows for each period often include multiple transitions for a single individual, violating the assumption that the observations are independent. Third, by definition, individuals within the same family unit reside at the same location and share the same poverty status. There is perfect clustering within families on these attributes. Standard error calculations using simple random-sample formulas with these data are likely to be substantial underestimates (Wolter 1985).

To deal with this problem, I used variables identifying stratum and sampling-error computation units in the PSID to compute corrected standard errors using the Taylor series linearization (or delta) method (Kalton 1979; Wolter 1985). The estimates do not make any assumptions about the structure of the errors within the clusters.[18] Since all the person years of a particular individual and of their family members are within the same cluster, this method effectively accounts for the clustering caused by multiple observations on individuals and family members. The standard er-

[17] Institutions include armed forces barracks or quarters, college dorms, hospitals, prisons, and residential communities for members of religious orders. Between 1.5% and 3% of the PSID sample in any given year is in one of these institutions (Survey Research Center 1998).

[18] This was done using the survey data commands in the statistical package Stata 5.0. Because these estimates make no assumption about correlations among observations within the first-stage probability sampling units (and thus do not use information about randomness introduced into the design by sampling at later stages), they probably are slightly upwardly biased. In a sense, these estimators take the approach that the only randomness in the sample is introduced by stratum/probability sampling unit selection (see StataCorp 1997, sec. 36.2.1). The standard errors do not, however, account explicitly for the interpolation procedure used to fill in intervening census tract years.

TABLE 4

AVERAGE NET POPULATION FLOWS AMONG NEIGHBORHOOD TYPES DUE TO MOVEMENT AND NEIGHBORHOOD CHANGE POOLED DATA FROM 1970–74 AND 1979–90

	MOVEMENT		NEIGHBORHOOD CHANGE	
NEIGHBORHOOD TYPE	Nonpoor	Poor	Nonpoor	Poor
Blacks:				
White nonpoor	.337*	.018	−.275*	−.072
	(.0519)	(.0646)	(.0748)	(.0404)
Racially mixed	.094	.122	.102	.110
	(.1525)	(.0670)	(.1038)	(.1599)
Black nonpoor	−.110	.055	−.265*	.011
	(.0736)	(.0341)	(.1300)	(.0556)
Black moderately poor	−.147	−.093	.253	−.173*
	(.0979)	(.0925)	(.1821)	(.0644)
Black extremely poor	−.089	−.046	.176*	.239*
	(.0490)	(.1071)	(.0604)	(.0913)
Whites:				
White nonpoor	.028	.019	−.191*	−.014*
	(.0392)	(.0126)	(.0517)	(.0057)
White moderately and extremely poor	−.062*	.004	.096*	.005
	(.0233)	(.0133)	(.0184)	(.0057)
Racially mixed	−.033	−.002	.087*	.004
	(.0418)	(.0049)	(.0318)	(.0044)

NOTE.—The tables includes only consecutive person years in which poverty status for the respondent did not change. The figures are given in percentages of the total black population or white population, respectively. So a .5 in the movement section of the top panel, for instance, represents .5% more of the black population moving into the neighborhood type than moving out. SEs are in parentheses.

* = flow/SE > 2.

rors computed this way were on average about 2–2.5 times larger than standard errors computed under the assumption of simple random sampling.

RESULTS

Tables 4 and 6 contain estimates from the PSID sample of the net population flows resulting from movement, neighborhood change, and poverty status change. The results are shown separately for four groups: black nonpoor, black poor, white nonpoor, and white poor. Estimates were computed for each of the eight neighborhood types shown in table 3. However, I do not show results for neighborhood types that contained too few cases to permit an analysis (African-Americans in white poor neighborhoods, whites in black neighborhoods) or that contained no results of relevance

(nonmetropolitan areas, nontract metropolitan areas). The PSID sample size is not extremely large and is clustered; thus, many of the sample estimates are somewhat imprecise. Unless a net flow is substantial, it will not show up as statistically significant in the tables.

Table 4 shows estimates of average net flows of whites and black PSID respondents among neighborhood types resulting both from movement and neighborhood change. The flows due to movement are shown in the two left-most numeric columns. The numbers are given as percentage of the black or white population, respectively. For instance, in the top half of table 4, the .337 in the white nonpoor row indicates that on average .337% more of the black nonpoor population moved into that neighborhood type in each year than moved out. A positive number in table 4 indicates that the flow into the neighborhood is increasing the size of the group over time (more entrances than exits), while a negative flow indicates that the flow contributes to a decline in size over time (more exits than entrances).

Table 4 shows the movement and neighborhood change flows pooled across years because the flows usually did not differ by time period. Instances where the flows did differ by time period are discussed in the text. The full tables showing all flows broken down separately by time period (1970–74, 1979–84, and 1985–90) are available from the author upon request.

Movement

The results in the two left-most columns of table 4 show the net flows resulting from geographical movement to a different neighborhood type. This allows me to assess which neighborhood types have had more PSID respondents move in than move out and vice-versa. Only moves that take a respondent to a different neighborhood type are counted as movement for purposes of this statistic; relocation to another dwelling within the same neighborhood type is not counted as moving.

The largest population flow is the movement of nonpoor blacks into white nonpoor neighborhoods. Substantially more nonpoor blacks move into white nonpoor neighborhoods each year than move out. From table 4, on average about .337% more of the African-American population moves into white nonpoor neighborhoods each year than moves out. Although this might not seem like a large flow at first glance, over a 10-year period if the flow remains constant this represents a movement of about 3.3% of the black population into white nonpoor neighborhoods. Since about 11% of the black nonpoor population lives in white neighborhoods in the PSID sample, this would represent about a 32% increase in the share of nonpoor blacks living in white neighborhoods over 10 years.

TABLE 5

MOVEMENT OF AFRICAN-AMERICANS INTO AND OUT OF WHITE NONPOOR NEIGHBORHOODS, AVERAGE NET FLOWS AND PROBABILITIES BY PERIOD

	FLOW INTO OR OUT OF WHITE NONPOOR NEIGHBORHOODS		PROBABILITIES OF MOVING INTO A WHITE NONPOOR NEIGHBORHOOD		PROBABILITIES OF MOVING OUT OF A WHITE NONPOOR NEIGHBORHOOD	
PERIOD	Nonpoor Blacks	Poor Blacks	Nonpoor Blacks	Poor Blacks	Nonpoor Blacks	Poor Blacks
1970–74	−.054	−.089	.012*	.004*	.095*	.146
	(.1556)	(.1112)	(.0018)	(.0013)	(.0303)	(.0931)
1979–84	.407*	.007	.031*	.012*	.094*	.208*
	(.1148)	(.0302)	(.0062)	(.0046)	(.0149)	(.0368)
1985–90	.503*	.088	.036*	.010*	.094*	.128*
	(.0647)	(.0903)	(.0071)	(.0011)	(.0135)	(.0142)

NOTE.—Flows are as a percentage of the total black population; see notes to table 4 for an explanation of population figures. The entrance columns give the probability that a black respondent not residing in a white nonpoor neighborhood will enter a white nonpoor neighborhood during the next year from any other neighborhood type. The exit columns give the probabilities that a black respondent in a white nonpoor neighborhood will exit during the next year. SEs are in parentheses.

* = coefficient/SE > 2.

These results support Wilson's (1987) contention that nonpoor blacks are moving out of black metropolitan areas into predominately white neighborhoods at a pace sufficient to increase their numbers there.

Flows for poor African-Americans are shown in the top half of table 4. The net flow shown in the movement row is close to zero (.018) and not statistically significant. Unlike for nonpoor blacks, poor blacks are moving into white nonpoor neighborhoods about as often as they are moving out. These results support Wilson's contention that nonpoor blacks are becoming more spatially separated from poor blacks because nonpoor blacks are relocating to white areas faster than poor blacks.

Table 5 provides more detail on the movement of African-Americans into and out of white nonpoor neighborhoods. The table shows a breakdown of the flow for white nonpoor neighborhoods by time period and probabilities of entry and exit. There is a net positive flow into white nonpoor neighborhoods for 1979–84 and 1985–90 but not for 1970–74. This suggests that the flow of African-Americans into white neighborhoods increased during the late 1970s, but because the 1970–74 flow estimate is imprecise and fragile to the method of imputation, this conclusion cannot be made with high confidence.[19]

[19] The estimated flow of nonpoor blacks into white neighborhoods for 1970–74 is one of the only flows that changed notably depending on the method of imputation of tract

The probabilities of entry and exit given in table 5 show that the probability a black nonpoor family will enter a white nonpoor neighborhood is about three times greater in the later two periods (1979–84 and 1985–90) than the earlier period (1970–74).[20] The results also show nonpoor blacks are substantially more likely to move into white nonpoor neighborhoods than poor blacks in all three time periods. Again, these results are consistent with Wilson's hypothesis of increasing spatial separation of poor and nonpoor blacks. More tentatively, the results suggest that the rate of movement of blacks into white neighborhoods increased in pace during the late 1970s.

If nonpoor blacks have net positive movement into white nonpoor neighborhoods, what neighborhood types are they moving from? The net positive flow because of movement of nonpoor blacks into white nonpoor neighborhoods originates from several neighborhood types. The point estimates in table 4 show negative flows from black nonpoor, moderately poor, and extremely poor tracts. Although the individual coefficients in table 4 are not statistically significant at conventional levels, the sum of the flows out of black poor neighborhoods is statistically significant ($P < .05$).

The movement patterns for whites are also shown in table 4. Like for African-Americans, the results suggest that whites are moving out of poor neighborhoods and into nonpoor neighborhoods. The size of the flows are not nearly as large for whites as for African-Americans, though, and some flows are not statistically significant.

Overall, there is clear evidence that both nonpoor black and white PSID respondents have tended to move out of poor neighborhoods and into nonpoor white neighborhoods. By far, the most substantial flow is of nonpoor blacks, who are moving into white nonpoor neighborhoods at a rate sufficient to substantially increase their numbers there in a 10-year period. The most likely interpretation of these flows is that nonpoor blacks are moving in patterns to avoid neighborhoods with moderate to high rates of poverty, a path that often takes them into white neighborhoods. This migration is probably intended to avoid problems associated with high rates of neighborhood poverty such as high rates of crime, poor physical upkeep of the neighborhood housing stock, and inadequately funded gov-

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characteristics. Flows based on the nearest-census-year method show a movement of nonpoor blacks into white nonpoor neighborhoods of .479% per year for 1970–74 ($P < .05$); flows using the tract-to-tract method show a flow in of .233 (not statistically significant). The conclusion that the increase in the probability of entry into white neighborhoods occurred between 1974 and 1979 should be regarded with caution because of uncertainty about the 1970–74 flow.

[20] The caveats about the 1970–74 flow in n. 19 apply to the 1970–74 probabilities of moving in as well.

ernment services (Krivo and Peterson 1996; Morenoff and Sampson 1997; Skogan 1990).

Neighborhood Change

Just examining the movement of PSID respondents leaves out the other important way in which persons can switch census tracts. As I discussed in the methods and data section, individuals can change from one neighborhood type to another in two ways: by moving to a new neighborhood type or by staying put while the neighborhood type changes around them. Net flows among tract types due to neighborhood change around respondents are shown in table 4 under the heading "neighborhood change."

As is true for movement, the most substantial net flow because of neighborhood change in the table is for nonpoor blacks living in white nonpoor neighborhoods. In the "neighborhood change" row of the top half of table 4, .275% more of the nonpoor population is exiting white nonpoor neighborhoods each year than entering, because their neighborhoods become blacker around them. For the nonpoor African-American population, changes in neighborhoods are a cause of net movement out of white nonpoor census tracts. In fact, these flows out due to neighborhood change largely counteract the movement of African-Americans into white nonpoor neighborhoods.

Neighborhoods that switch out of the white nonpoor neighborhood category can do so either by becoming white poor neighborhoods or racially mixed neighborhoods. We can break down this total net flow out of white nonpoor neighborhoods of .275% into net neighborhood change with each of these two neighborhood types (appendix table A1 shows a complete breakdown). The net neighborhood change flow of African-Americans from white nonpoor to white poor neighborhoods due to neighborhood change is .082, while the net neighborhood change flow of African-Americans from white nonpoor to racially mixed neighborhoods is .194 (.194 + .082 = .275, shown in table 4). Therefore, about three-quarters of the neighborhood change flow of African-Americans out of white nonpoor neighborhoods is because neighborhoods become racially mixed. Many African-Americans who live in white nonpoor neighborhoods exit because their neighborhoods become blacker around them.

What do these patterns imply? The movement results indicate that *if* the neighborhoods nonpoor African-Americans are moving into would stay white and nonpoor after they move in, then the proportion of nonpoor blacks in white neighborhoods would rise considerably. But at the same time, some of the white nonpoor neighborhoods that had moderate concentrations of black families changed so that more than 30% of their popu-

lation was black, making them racially mixed neighborhoods. In other words, whites are moving out and blacks are moving in at a rate that is fast enough to keep the proportion of nonpoor blacks in white neighborhoods constant or slowly increasing, even though nonpoor African-Americans continue to have high net positive migration into white nonpoor areas.

The point estimates of neighborhood change for poor blacks in white nonpoor neighborhoods (−.072) also suggest neighborhood change moves poor blacks out of white nonpoor neighborhoods, but the flow is less substantial than for nonpoor blacks. This is largely because the number of poor blacks in white nonpoor neighborhoods is small to begin with.

As for nonpoor white neighborhoods, there is also a considerable net flow out of black nonpoor neighborhoods because of neighborhood change. Table 4 shows that .265% of the black nonpoor population moves out of black nonpoor neighborhoods each year due to neighborhood change. In a single year, a black nonpoor neighborhood can change to or from either a racially mixed neighborhood or a black poor neighborhood. We can, then, break down the net neighborhood change flow of African-Americans out of black nonpoor neighborhoods into flows into or out of racially mixed and black poor neighborhoods (shown in appendix table A1). There is a net neighborhood change flow of .172 into black nonpoor neighborhoods from racially mixed neighborhoods. Some racially mixed neighborhoods become black nonpoor neighborhoods. On the other hand, there is a population flow out of black nonpoor neighborhoods of .436 due to neighborhoods becoming poorer. Overall, the net neighborhood flow (difference) is .265 out of black nonpoor neighborhoods.

This suggests that nonpoor black neighborhoods often do not stay nonpoor but tend to lose nonpoor and gain poor residents until more than 20% of their population is poor. Many nonpoor black neighborhoods are in transition toward becoming black moderately poor neighborhoods. Table 4 shows correspondingly positive flows of nonpoor blacks into moderately (.253) and extremely poor (.176) black neighborhoods because of neighborhood change.

The patterns of neighborhood change for whites are also shown in the bottom portion of the two right-most columns of table 4. Neighborhood change appears to move nonpoor whites out of white nonpoor tracts (−.191) and into poor (.096) and racially mixed tracts (.087). This direction of change is similar to the pattern for African-Americans, but the size of the population flows, again, is smaller for whites.

For both blacks and whites, table 4 shows that neighborhood change around respondents appears to increase the share of the population in black and poor neighborhoods. The flows resulting from neighborhood change, however, are much larger for blacks than whites. There is no

evidence that neighborhood change around PSID respondents has moved substantial numbers of persons into nonpoor neighborhoods.

The neighborhood change results, combined with the results from the movement section, lead to two main conclusions: First, Wilson is correct that nonpoor African-Americans are moving in patterns that, if it was the only population movement, would increase their representation in white areas substantially—estimates suggest by about 30% in 10 years. But white flight and the increase in the black population in these neighborhoods are too rapid to allow for an overall increase in the proportion of the African-American population living in white nonpoor neighborhoods. Massey and Denton's finding that high SES African-Americans are only slightly more likely to live in white neighborhoods than low SES African-Americans, and Wilson's contention that nonpoor blacks are moving into white neighborhoods, then, are both supported by the data. Second, the proportion of the population residing in poor neighborhoods has increased substantially because of neighborhood change. This is especially the case for the African-American population. Combined with the earlier result that nonpoor persons migrate away from poor neighborhoods, this suggests that migration of the nonpoor away from the poor is a key mechanism leading to increases in the number of poor neighborhoods. Neighborhoods tend to deteriorate more often than they gentrify; the predominant path to a less poor neighborhood is to move into it.

Are Poverty Rates among Stayers in Poor Neighborhoods Increasing?

The spatial mismatch and deindustrialization hypotheses imply that we should observe increases in poverty rates among residents of poor neighborhoods because the decline in inner-city manufacturing and the increasing frequency of spatial mismatches between jobs and people worsened the job prospects of inner-city workers during the 1970s and 1980s. Flows relevant to this hypothesis are presented in table 6. Unlike table 4, here the results are broken down into three periods, 1970–74, 1979–84, and 1985–90. I showed the pooled results in table 4 because the results for movement are generally the same across time periods; the flows into and out of poverty are not. Table 6 shows the net flow into (positive numbers) or out of (negative numbers) poverty among stayers in different neighborhood types. Again, the number can be interpreted as a portion of the total population by race, so the positive .020 indicates that on average .02% more of the black population lived in a white nonpoor neighborhood and entered poverty per year than exited it.

There is no systematic tendency in the data for more entrances into poverty than exits from poverty among residents of poor neighborhoods. In fact, for 1970–74 and 1985–90, poverty rates among African-American

TABLE 6

AVERAGE NET POPULATION MOVEMENT INTO POVERTY BY PERIOD AND NEIGHBORHOOD TYPE, CONSECUTIVE STAYER PERSON-YEARS ONLY

	1970–74	1979–84	1985–90
Blacks:			
White nonpoor	.020	.046	.069*
	(.1249)	(.0590)	(.0288)
Racially mixed	−.074	.246	−.159
	(.1051)	(.1783)	(.1503)
Black nonpoor	−.069	.018	−.064
	(.1439)	(.0415)	(.1206)
Black moderately poor	−.142	.466*	−.131
	(.2355)	(.2153)	(.1135)
Black extremely poor	−.168	−.054	−.241
	(.1346)	(.1524)	(.1475)
Whites:			
White nonpoor	−.192*	.191*	−.083*
	(.0952)	(.0389)	(.0349)
Racially mixed	−.030	−.003	−.021
	(.0244)	(.0251)	(.0197)
White moderately and extremely poor	−.036	.031	−.029
	(.0370)	(.0244)	(.0308)
Racially mixed	−.030	−.003	−.021
	(.0244)	(.0251)	(.0197)

NOTE.—The figures are given in percentages of the total black population (top half) or white population (bottom half). So a .5 in the top half, e.g., represents .5% more of the black population entering than exiting poverty and living in the given neighborhood type. Positive numbers indicate net flows into poverty; negative numbers indicate net flows out of poverty. SEs are in parentheses.

* = flow/SE > 2.

stayers in poor neighborhoods appear to be declining, although the decline is not statistically significant. Thus, there does not appear to be any consistent increase in the poverty rate among stayers in poor neighborhoods over time.[21] This is inconsistent with the idea that either growing spatial mismatch or increasing deindustrialization of industry had a strong, consistent impact on the poverty rates of residents of extremely poor neighborhoods for 1970–90.

This finding is not, however, conclusive evidence against the deindustrialization or spatial mismatch hypotheses. Nonpoor blacks might be moving into white nonpoor neighborhoods in part because they are following job prospects, in which case migration might be the proximate

[21] By a "stayer," I mean a consecutive person year in which a respondent does not change tract type.

cause of an increase in black poverty rates but changing economic opportunities would be the ultimate cause. Firmer tests of these theories will require data on the locations of jobs relative to people or interview data on why respondents are moving from one neighborhood to another.

Rather than conforming to a monotonic trend, the poverty-rate changes among stayers in table 6 is consistent with overall change in U.S. poverty rates. For most neighborhood types, the poverty change coefficients for 1970–74 and 1985–90 indicate decreases in the number of stayers who are poor (negative numbers), while those for 1979–84 indicate increases in the number of stayers who are poor (positive numbers). The individual coefficients are not usually statistically significant, but the result is quite consistent across the different neighborhood types. This corresponds basically to changes in the poverty rate in the United States during these periods: The poverty rate was declining or about holding steady in 1970–74 and 1985–90, while the poverty rate was increasing from 1979 until about 1983 (Lamison-White 1997).

Research has consistently found that black unemployment and poverty rates fluctuate more with business cycles than do white unemployment and poverty rates (Jaynes and Williams 1989; Freeman 1991), but it has not compared the experiences of persons living in different neighborhood types. Table 6 provides some evidence that residents of poor and black neighborhoods may have disproportionately born the brunt of the increase in poverty rates during the 1979–84 period. In table 6, there is a substantial increase in the number of poor African-Americans living in black, moderately poor neighborhoods during the 1979–84 period—on average .466% more of the black population entered poverty than exited it per year. African-Americans in the other neighborhood types do not register a similarly large increase. This suggests that the increase in poverty rates in the early 1980s was larger among blacks living in black and moderately poor neighborhoods than blacks living in other neighborhood types.

The finding that the increase in poverty during the early 1980s appears to have been especially concentrated among African-Americans living in moderately poor black neighborhoods suggests that the increase in poverty rates in the early 1980s contributed to the increase in the number of high-poverty neighborhoods. In fact, the increase in poverty rates was spatially distributed in such a way as to increase the number of extremely poor neighborhoods by a large amount, because the biggest increase in the poverty rate was concentrated in neighborhoods that were already moderately poor to begin with. The residents of moderately poor neighborhood may be more likely than residents of nonpoor neighborhoods to be at the bottom of the labor queue and thus to be most likely to be influenced by cyclical variations in labor demand.

This is a possible reason why Jargowsky (1997) finds such a strong relationship between changes in a metropolitan area's overall poverty rate and the number of extremely poor neighborhoods. If changes in poverty rates tend to be disproportionately concentrated in neighborhoods with moderately high rates of poverty to begin with, then cyclical variations in a metropolitan area's economy will tend to be strongly related to the number of extremely poor neighborhoods.

The Relative Importance of Migration and Poverty Status Changes

A final result comes from comparing the flows that we observe in table 6 to the flows that we observe in table 4. An important conclusion from table 4 is that neighborhood change has led to an increase in the number of whites and, especially, blacks living in poor neighborhoods over time. This is true in all three time periods (1970–74, 1979–84, 1985–90). Net flows resulting from changes in poverty status (table 6), on the other hand, indicate that changes in poverty status among persons in moderately poor neighborhoods are likely to have increased the number of extremely poor neighborhoods substantially during the early 1980s recession but not at other times. Except during the early 1980s recession, movement and neighborhood change appear to have played a larger role in increasing the number of poor neighborhoods over time than changes in poverty status.

Completing the Decomposition

Thus far I have considered flows of persons who move, flows of persons whose neighborhood changed type around them, and flows of persons who change poverty status. This leaves out persons who experienced both a change in poverty status and a change in neighborhood type between PSID interviews. Flows of these persons are shown in appendix table A2. It is a somewhat unusual event for a respondent to change both their neighborhood type and poverty status in the same year. As a result, the flows of persons who experience both changes in poverty status and neighborhood type in a given year tend to be small and statistically insignificant.

One exception to the small size of the flows is that there is a moderate and statistically significant flow of African-Americans who both move out of poverty and into white nonpoor neighborhoods in the same year (.084). If this flow is added to the flow of nonpoor African-Americans who move into white nonpoor neighborhoods without changing their poverty status, then this further strengthens the case that nonpoor blacks are moving into white nonpoor neighborhoods more often than they are moving out.

CONCLUSIONS

Some expected and some surprising results have emerged from this analysis.[22] The basic conclusions follow:

1. The transition probabilities in the PSID data indicate that blacks, especially nonpoor blacks, move into white nonpoor neighborhoods more often than they move out. The difference is large enough to substantially increase the presence of nonpoor blacks in white neighborhoods over time.
2. When flows into white neighborhoods are considered simultaneously with flows resulting from neighborhood change, however, the share of blacks living in white nonpoor areas remains constant or increases slightly. These results suggest that if neighborhoods would stay predominately white as nonpoor blacks move in, then the proportion of nonpoor blacks living in white nonpoor neighborhoods would increase. But white populations tend to drop as blacks move in, and they do so at a fast enough rate to keep the proportion of black families in predominately white neighborhoods from increasing.
3. The population in black and poor tracts is increasing primarily because neighborhoods tend to become poorer and blacker around their residents, especially their black residents, not because of net positive movement of persons into poor neighborhoods.
4. There is no indication in the PSID data that stayers in black or poor neighborhoods experienced increases in their poverty rates in the 1970s and 1980s, except during the early 1980s recession. During the early 1980s recession, increases in the poverty rate among the nonpoor were spatially concentrated in black moderately poor neighborhoods. Since these neighborhoods were already moderately poor to begin with, this suggests that increasing poverty rates in the early 1980s had a strong effect in increasing the number of extremely poor neighborhoods.

Probably the most significant empirical contribution of this article is to provide an explanation of the contradictory results of tests of Wilson's

[22] A suggestion that has been made to me on several occasions is that I should calculate the flows in this article separately for different regions of the country. Unfortunately, the PSID sample size is not sufficient to allow for this analysis. Greene (1991) shows that there is an association between increases in neighborhood poverty rates and population loss even in Western cities such as Los Angeles, suggesting that the basic migration patterns described here hold for predominately black and white poor neighborhoods in all regions (but do not hold for predominately Hispanic tracts). The patterns for poverty change are more likely to vary by region, given that different regions have fared quite differently from one another in recent business cycles.

black middle-class out-migration thesis. I find that nonpoor African-Americans are moving into white areas fairly rapidly, as Wilson suggests. But the numbers of nonpoor African-Americans in white and nonpoor areas have not increased much over time, as Massey and Denton (1993) have shown, because of the decline in white population in these neighborhoods.[23] When considered as part of a dynamic system, the movement of blacks into white nonpoor neighborhoods and high continuing rates of racial segregation are not mutually exclusive.

Because poor blacks have not been moving into white neighborhoods as quickly as nonpoor blacks, the migration of nonpoor blacks out has been one factor contributing to the growing concentration of poverty in urban areas. This does not necessarily contradict the result of Massey et al. (1994) that middle-class black migration out of black neighborhoods is less important than racial segregation (or for that matter other factors) in explaining the existence of concentrated urban poverty, because factors that are relatively unimportant in explaining cross-sectional variation may be relatively important in explaining change over time.[24]

The analysis here particularly focuses on patterns for African-Americans and the white response to them. The data here does not include a sufficient number of other minority groups to allow for an analysis, but I think it unlikely that all of the same patterns would apply. Two factors make the situation of African-Americans unique relative to other racial and ethnic groups. First, negative stereotypes about other racial and ethnic groups are often not as strong. Evidence suggests that whites are not likely to go to nearly as great a lengths to avoid coresidence with members of other racial and ethnic groups as they are to African-Americans (e.g., Massey and Denton 1987). Second, there is less migration into black urban neighborhoods from international destinations than is the case for Hispanic or Asian neighborhoods.

DISCUSSION

The results in this article suggest that migration of the nonpoor away from the poor has played a key role in forming new poor urban neighborhoods

[23] A likely cause of this decline in white neighborhood population is white flight, but it could also be accomplished by reductions in the number of whites moving in even if the number of whites moving out remains stable. It is also possible that whites are moving out largely because of characteristics that are correlated with large black neighborhood populations rather than a purely racial motivation (e.g., Harris 1997).

[24] Because theoretical models imply nonlinear and interactive relationships among these variables, it is difficult to measure their relative importance. Past research assessing the causes of high-poverty neighborhoods has often not fully grappled with this problem.

during the 1970s and 1980s. Increases in poverty rates among persons living in moderately poor neighborhoods also contributed significantly to the increase in the number of extremely poor neighborhoods but did so *only* during the early 1980s recession. Migration by the nonpoor away from the poor, on the other hand, has been an important factor in increasing the number of neighborhoods with high rates of poverty *throughout* the 1970s and 1980s.

The patterns of migration discussed here do not displace or contradict existing theories about poor neighborhoods, such as those developed by Wilson (1987, 1996) or Massey and Denton (1993). Instead, the results further specify their models by suggesting that migration has been a key mechanism through which the middle class and affluent have sought to segregate themselves from the poor, whites have sought to avoid black neighbors, and workers have adjusted to changes in urban job markets. The desire of the nonpoor to avoid poor neighborhoods and of whites to avoid black neighbors can be thought of as push migration factors motivating moves by the middle class and whites. The migration patterns described in this article are likely to have resulted from these push factors combined with three historical changes: the increasing ability of many African-American families to move into white neighborhoods, improvements in intraurban transportation, and the growing suburbanization of employment.

Before about 1970, racial violence against blacks in white neighborhoods and explicitly discriminatory practices in housing markets were extremely strong barriers faced by black families who might consider moving into a white neighborhood (Massey and Denton 1993). Racial disparities in the probability of moving into a white neighborhood that Massey et al. (1994) document and the results of the fair housing audits (Yinger 1995) demonstrate that these barriers remain significant. But the results here suggest that during the 1970s and 1980s these barriers were not so strong as to prevent the movement of significant numbers of blacks into white neighborhoods.[25] If it were not for the continuing movement of whites away from neighborhoods with increasing black concentrations, the proportion of the nonpoor black population living in white neighborhoods would have increased substantially.

[25] Studies of changes in neighborhoods before 1970 suggest the movement of blacks into white neighborhoods in the 1950s and 1960s largely reflects the enormous demand for housing in black areas relative to the limited supply caused by massive migration of blacks into urban areas (see Aldrich [1975] for a review). This led to much higher rents for housing in black areas than for comparable housing in white areas and made racial turnover potentially a very profitable proposition for landlords and real estate agents.

As barriers to blacks entering white neighborhoods have weakened, middle-class blacks have increasingly sought to avoid neighborhoods with high poverty rates by moving to middle-class and often white neighborhoods; whites have likewise sought to achieve segregation from blacks by moving out of neighborhoods with increasing black populations. Inner-city manufacturing jobs were once a strong factor pulling migrants into central cities, but the suburbanization of employment and improvements in transportation have meant this is no longer the case. The result has been the emptying out of poor neighborhoods. Neighborhoods in transition to high-poverty status empty first of whites, then of many middle-class blacks, leaving more disadvantaged and less populous areas. This is consistent with decennial census results that show that poor neighborhoods have been increasing in geographic size and falling in population density (Jargowsky and Bane 1991; Jargowsky 1997).

Compared with descriptions of poor neighborhoods in earlier historical periods, the results suggest an important historical change in how poor neighborhoods have formed. Accounts of racial succession of neighborhoods in the 1950s found that neighborhoods undergoing racial transition tend to increase in population density, especially in passing through a late phase in racial succession referred to as "piling up" in which previously white-owned homes and apartments are subdivided into smaller dwellings to accommodate the housing demands of black immigrants (Duncan and Duncan 1957). During the 1950s and 1960s, the pull of good inner-city jobs for low-skilled workers dominated, leading to the migration of large numbers of black and poor immigrants into inner-city neighborhoods. Although the affluent have always made efforts to segregate themselves from the poor, migration into cities was proceeding at too rapid a pace to allow inner-city neighborhoods to drop substantially in population as part of this process. With the decline of inner-city industrial employment and the corresponding end of black migration into urban areas, poor African-American neighborhoods have changed from densely packed communities of recently arrived immigrants to areas gradually abandoned by the nonpoor. The cessation of the flow of black immigrants to the nation's cities, and the corresponding decline in the population density of poor neighborhoods, may be one unexplored factor responsible for the change in the nature of poor African-American neighborhoods in the early 1970s that Wilson (1987) describes.

APPENDIX

TABLE A1

FLOW BREAKDOWNS FOR WHITE AND BLACK NONPOOR NEIGHBORHOODS BY ORIGIN AND DESTINATION, AFRICAN-AMERICAN RESPONDENTS

	Flow into Nonpoor Neighborhood (from Specified Type)	Flow out of Nonpoor Neighborhood (into Specified Type)	Net Flow into Nonpoor Neighborhood (Difference of Columns)
White nonpoor neighborhoods:			
Neighborhood change flow between nonpoor white neighborhoods and white poor neighborhoods	.002	.084	−.082
	(.0011)	(.0358)	
Neighborhood change flow between nonpoor white neighborhoods and racially mixed neighborhoods	.056	.250	−.194
	(.0211)	(.1037)	
Average net flow (sum of differences, matches net flow shown in table 4)			−.275
			(.0748)
Black nonpoor neighborhoods:			
Neighborhood change flow between nonpoor black neighborhoods and racially mixed	.234	.062	.172
	(.0485)	(.0400)	
Neighborhood change flow between nonpoor black neighborhoods and poor black neighborhoods	.081	.517	−.436
	(.0446)	(.1163)	
Average net flow (sum of differences, matches net flow shown in table 4)			−.265
			(.1300)

NOTE.—The flows are given as a percentage of the total black population. SEs are in parentheses. Differences do not sum to the total net flow due to rounding error.

TABLE A2

AVERAGE NET POPULATION FLOW AMONG NEIGHBORHOOD TYPES, CONSECUTIVE PERSON YEARS IN WHICH THE RESPONDENT CHANGED POVERTY STATUS AND NEIGHBORHOOD TYPE, POOLED DATA FROM 1970–74 AND 1979–90

Neighborhood Type	Nonpoor	Poor
Blacks:		
White nonpoor	.084*	.003
	(.0127)	(.0257)
Racially mixed	−.026	−.037
	(.0399)	(.0211)
Black nonpoor	−.007	−.037
	(.0368)	(.0321)
Black moderately poor	.028	.025
	(.0434)	(.0182)
Black extremely poor	−.026	.039
	(.0093)	(.0244)
Whites:		
White nonpoor	−.033*	.010
	(.0064)	(.0150)
White moderately and extremely poor	.013	.014*
	(.0124)	(.0060)
Racially mixed	.001	−.000
	(.0039)	(.0038)

NOTE.—The flows are given as a percentage of the total white or black population, respectively. See notes to table 4 for an explanation of population figures. SEs are in parentheses.

* = flow/SE > 2.

REFERENCES

Aldrich, Howard. 1975. "Ecological Succession in Racially Changing Neighborhoods: A Review of the Literature." *Urban Affairs Quarterly* 10 (3): 327–48.

Boudon, Raymond. 1993. *Mathematical Structures of Social Mobility.* San Francisco: Jossey-Bass.

Denton, Nancy A., and Douglas S. Massey. 1988. "Residential Segregation of Blacks, Hispanics, and Asians by Socioeconomic Status and Generation." *Social Science Quarterly* 69 (4): 797–817.

Duncan, Otis Dudley, and Beverly Duncan. 1957. *The Negro Population of Chicago: A Study of Residential Succession.* Chicago: University of Chicago Press.

Farley, Reynolds. 1991. "Residential Segregation of Social and Economic Groups among Blacks, 1970–80." Pp. 274–98 in *The Urban Underclass,* edited by Christopher Jencks and Paul E. Peterson. Washington, D.C.: Brookings Institution.

Farley, Reynolds, and William Frey. 1994. "Changes in the Segregation of Whites from Blacks during the 1980s: Small Steps toward a More Integrated Society." *American Sociological Review* 59:23–45.

Freeman, Richard. 1991. "Employment and Earnings of Disadvantaged Young Men in a Labor Shortage Economy." Pp. 103–21 in *The Urban Underclass,* edited by C. Jencks and P. Peterson. Washington, D.C.: Brookings Institution.

Gramlich, Edward, Deborah Laren, and Naomi Sealand. 1992. "Moving into and out of Poor Urban Areas." *Journal of Policy Analysis and Management* 11 (2): 273–87.
Greene, Richard. 1991. "Poverty Area Diffusion: The Depopulation Hypothesis Examined." *Urban Geography* 12 (6): 526–41.
Harris, David R. 1997. "'Property Values Drop when Blacks Move In, Because . . .': Racial and Socioeconomic Determinants of Neighborhood Desirability." Research Report no. 97-387. Population Studies Center, Ann Arbor, Mich.
Harrison, Bennett, and Barry Bluestone. 1981. *The Great U-Turn: Corporate Restructuring and the Polarizing of America.* New York: Basic Books.
Hill, Martha. 1992. *The Panel Study of Income Dynamics: A User's Guide.* Newbury Park, Calif.: Sage.
Holzer, Harry J. 1994. "Black Employment Problems: New Evidence, Old Questions." *Journal of Policy Analysis and Management* 13 (4): 699–722.
Hughes, Mark Alan. 1990. "Formation of the Impacted Ghetto: Evidence from Large Metropolitan Areas: 1970–1980." *Urban Geography* 11:265–84.
Jakubs, John F. 1986. "Recent Racial Segregation in the U.S. SMSAs." *Urban Geography* 7:146–63.
Jargowsky, Paul A. 1994. "Ghetto Poverty among Blacks in the 1980s." *Journal of Policy Analysis and Management* 13 (2): 288–319.
———. 1996. "Take the Money and Run: Economic Segregation in U.S. Metropolitan Areas." *American Sociological Review* 61:984–98.
———. 1997. *Poverty and Place: Ghettos, Barrios, and the American City.* New York: Russell Sage Foundation.
Jargowsky, Paul A., and Mary Jo Bane. 1991. "Ghetto Poverty in the United States, 1970–1980." Pp. 235–73 in *The Urban Underclass,* edited by Christopher Jencks and Paul E. Peterson. Washington, D.C.: Brookings Institution.
Jaynes, Gerald David, and Robin M. Williams, eds. 1989. *A Common Destiny: Blacks and American Society.* Washington, D.C.: National Academy Press.
Jencks, Christopher, and Susan Mayer. 1990. "Residential Segregation, Job Proximity, and Black Job Opportunities." Pp. 187–222 in *Inner-City Poverty in the United States,* edited by Lawrence E. Lynn and Michael McGeary. Washington, D.C.: National Academy Press.
Kain, John F. 1968. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *Quarterly Journal of Economics* 82:175–97.
Kalton, Graham. 1979. "Practical Methods for Estimating Survey Sampling Errors." *Bulletin of the International Statistical Institute* 47 (3): 495–514.
Kasarda, John. 1990. "Urban Industrial Transition and the Underclass." *Annals of the American Academy of Political and Social Science* 501:26–47.
Keyfitz, Nathan. 1977. *Applied Mathematical Demography.* New York: John Wiley & Sons.
Korenman, Sanders, John Sjaastad, and Paul A. Jargowsky. 1995. "Explaining the Rise of Ghetto Poverty in the 1980s: A Replication and Extension." Manuscript. University of Minnesota, Humphrey Institute for Public Affairs.
Krivo, Lauren, and Ruth D. Peterson. 1996. "Extremely Disadvantaged Urban Neighborhoods and Urban Crime." *Social Forces* 75 (2): 619–50.
Lamison-White, Leatha. 1997. "Poverty in the United States: 1996." Current Population Reports, Series P60-198. Washington, D.C.: Government Printing Office.
Massey, Douglas S. 1979. "Effects of Socioeconomic Factors on the Residential Segregation of Blacks and Spanish Americans in U.S. Urbanized Areas." *American Sociological Review* 44:1015–22.
———. 1990. "American Apartheid: Segregation and the Making of the Underclass." *American Journal of Sociology* 96:329–57.
Massey, Douglas S., and Nancy A. Denton. 1987. "Trends in the Residential Segrega-

tion of Blacks, Hispanics and Asians." *American Sociological Review* 52:802–25.
———. 1993. *American Apartheid: Segregation and the Making of the Underclass.* Cambridge, Mass.: Harvard University Press.
Massey, Douglas S., and Mitchell L. Eggers. 1990. "The Ecology of Inequality: Minorities and the Concentration of Poverty, 1970–1980." *American Journal of Sociology* 95:1153–89.
———. 1993. "The Spatial Concentration of Affluence and Poverty during the 1970s." *Urban Affairs Quarterly* 29 (2): 299–315.
Massey, Douglas S., Andrew Gross, and Kumiko Shibuya. 1994. "Migration, Segregation, and the Geographic Concentration of Poverty." *American Sociological Review* 59:425–45.
Morenoff, Jeffrey D., and Robert J. Sampson. 1997. "Violent Crime and the Spatial Dynamics of Neighborhood Transition: Chicago, 1970–1990." *Social Forces* 76 (1): 31–64.
Preston, Samuel H., and Cameron Campbell. 1993. "Differential Fertility and the Distribution of Traits: The Case of IQ." *American Journal of Sociology* 98 (5): 997–1019.
Rodgers, Joan R., and John L. Rodgers. 1993. "Chronic Poverty in the United States." *Journal of Human Resources* 28 (1): 25–53.
Rogers, Andrei. 1968. *Matrix Analysis of Interregional Population Growth and Distribution.* Berkeley: University of California Press.
Skogan, Wesley. 1990. *Disorder and Decline: Crime and the Spiral of Decay in American Neighborhoods.* Berkeley and Los Angeles: University of California Press.
———. 1997. *Stata Statistical Software Release 5.0 User's Guide.* College Station, Tex.: Stata Press.
South, Scott J., and Kyle D. Crowder. 1997. "Escaping Distressed Neighborhoods: Individual, Community, and Metropolitan Influences." *American Journal of Sociology* 102 (4): 1040–84.
Survey Research Center, Economic Behavior Program. 1998. *A Panel Study of Income Dynamics: 1968–1993 Individual Data Codebook.* University of Michigan, Inter-University Consortium for Political and Social Research.
Teitz, Michael, and Karen Chapple. 1998. "The Causes of Inner-City Poverty: Eight Hypotheses in Search of Reality." *Cityscape* 3 (3): 33–70.
U.S. Bureau of the Census. 1983*a.* Census of Population and Housing, 1980: 1980–1970 Tract Comparability File. Washington, D.C.: Bureau of the Census.
———. 1983*b.* Census of Population and Housing, 1980: 1980–1970 Tract Comparability File Technical Documentation. Washington, D.C.: Bureau of the Census.
———. 1992*a.* Census of Population and Housing, 1990: Tiger/Census Tract Comparability File. Washington, D.C.: Bureau of the Census.
———. 1992*b.* Census of Population and Housing, 1990: Tiger/Census Tract Comparability File Technical Documentation. Washington, D.C.: Bureau of the Census.
———. 1995. Poverty Areas. Statistical Brief 95-13. Washington, D.C.: Bureau of the Census.
White, Michael J. 1987. *American Neighborhoods and Residential Differentiation.* New York: Russell Sage.
Wilson, William Julius. 1987. *The Truly Disadvantaged.* Chicago: University of Chicago Press.
———. 1996. *When Work Disappears: The World of the New Urban Poor.* New York: Alfred A. Knopf.
Wolter, Kirk M. 1985. *Introduction to Variance Estimation.* New York: Springer-Verlag.
Yinger, John. 1985. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination.* New York: Russell Sage.