Population Trends and Residential Segregation since 1960

Special censuses for 13 cities reveal increasing concentrations of highly segregated Negroes.

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"A great tide of migration is segregating American life, as most of us live it, faster than all of our laws can desegregate it" (*1*). A national concern with civil rights developed in the late 1950's in part as a response to the problems engendered by momentous demographic change, but the change itself was largely unrecognized. The 1960 census eventually produced evidence of the absolute loss of white population and gain of Negro population in many large central cities (*2*). In many other cities, there was net outmigration of whites, particularly in the young adult ages, but the natural increase prevented decline in total numbers and masked the magnitude of change. Census results also documented the wider spread of Negro urbanization. As news stories were subsequently to reveal, Negro population was increasing rapidly, not only in New York and Chicago, but in Los Angeles, Syracuse, Boston, Milwaukee, and most other large cities.

The 1960 decennial census provided the most recent reliable basis for detailed assessment of population trends. No comprehensive data for localities are available for any subsequent date, and results of the 1970 census are several years in the future. Fortunately, the Bureau of the Census from time to time conducts special censuses in various cities. Some are taken at the request and expense of local areas which need current data; some are conducted to pretest census methodologies; and some are conducted under congressional mandate (for example, the Voting Rights Act of 1965). These special censuses provide the best available information about population change, migration patterns, and trends in residential segregation since 1960.

We have assembled data for all 13 cities in which a special enumeration conducted after 1960 reported a total population of at least 100,000 and a Negro population of at least 9000, and for which the 1960 and later census tract grids are reasonably comparable (*3*). These cities, their populations, and their growth rates are shown in Table 1.

Population Change

Seven of the 13 cities experienced a decline in total population, as much as 10 percent in Providence and Buffalo. In each city the Negro population grew more rapidly or—in the case of Shreveport—decreased less rapidly than the white population. As a consequence the percentage of Negroes rose after 1960. This occurred in the southern cities and in Sacramento as well as in the northern cities.

National sample surveys conducted by the Bureau of the Census document on an aggregate basis the prevalence of the demographic change observed in the 13 cities (*4*):

> In the first six years of the 1960's, the Negro population in large cities increased by more than 2 million while the white population in the same areas decreased by 1 million. The survey of March, 1966, confirms that, to an increasing extent, Negroes are living in metropolitan areas, and, within these areas, in the central cities. Between 1960 and 1966, the Negro population living in metropolitan areas increased by 21 per cent, from 12,198,000 to 14,790,000, and almost all of this increase occurred within central cities. The white population living in metropolitan areas increased by 9 per cent, from 99,688,000 to 108,983,000, and all of this metropolitan increase occurred outside central cities.

Migration Patterns

Special census tabulations, like those from the decennial census, show the population by age, sex, and color. From these data estimates of net migration were calculated. As a first step, survival ratios from a national life table for 1962 were applied to the 1960 population of each city (specifically for age, sex, and color) to estimate its population at the special census date (*5*). This estimated population was then compared to the population enumerated by the special census and the difference represented net migration. Table 2 presents the estimated net migration, by color, and the net migration per 100 original population by age and color. Except for Sacramento, at least 94 percent of the nonwhites in each city are Negroes.

From 11 of the 13 cities there was a substantial net out-migration of whites in the post-1960 period. Cleveland had the highest rate of migration loss, 110,000 people or 18 percent of the white population, in a 5-year span. Buffalo's migration loss was 15 percent during a 6-year period, and Shreveport, Memphis, and Providence also had net outmigration of more than 10 percent in the 5- to 7-year period.

Migration losses were proportionately greatest among whites aged 20 to 29 at the start of the period. The 30- to 39-year-olds also had high migration losses, and the 0- to 9-year-olds migrated along with their parents. For eight cities there was a net migration balance into the city among whites aged 10 to 19. These results are consistent with a variety of other migration data indicating a continued attractiveness of central cities to young adults, but a marked out-movement during the family-expansion stage of the life cycle (*6*). In all cities there was a net out-migration of older white population, giving no evidence of a "back-to-the-city" movement among those whose children are grown.

Migration patterns for nonwhites are diverse. Among those aged 20 to 29 in 1960, there tends to appear the pattern long thought to be typical: net outmigration from southern cities and net in-migration to northern cities. But there is no simple way to summarize the patterns among other age groups. In some northern cities with large

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Negro populations (Buffalo and Cleveland), net migration during the early 1960's was slight. In northern cities with smaller Negro populations, net migration was sometimes large (Rochester and Providence) and sometimes small or negative (Des Moines and Evansville). Some southern cities had a net gain of Negro population through migration (Greensboro, Memphis, Louisville, and Raleigh), but some lost (Shreveport). The early 1960's may represent a transitional period in Negro migration. As Negro migrants seek out a variety of urban destinations, the earlier pattern of movement from southern cities to a few large northern cities may no longer be a dominant feature (*7*).

Growth of Negro population and increases in Negro percentages are not dependent on continued in-migration of Negroes. Negro populations in most cities are youthful, with many women in the childbearing ages and many more about to enter those ages. White populations not only have a significant out-migration, but their more elderly age structures are less conducive to high rates of natural increase. For instance, in Providence in 1965 the median age of whites was 35 years, of Negroes 19 years. In Buffalo in 1966 the median age of whites was 35 years, of Negroes 21 years. In Rochester in 1965, 17 percent of the whites, but 44 percent of the Negroes, were under age 15. Differential natural increase and white out-migration from cities are sufficient for continued increases in Negro percentages regardless of the pace of Negro migration to cities.

Table 1. Population change and racial composition, 1960 to mid-decade. The data are taken from reference *3*.

City	Date of special census	Total population (thousands)		Change 1960 to later (%)		Negroes (%)	
		1960	Later	White*	Negro	1960	Later
Buffalo	4-18-66	535	481	−13.5	15.7	13.2	17.0
Providence	10- 1-65	208	187	−11.9	24.5	5.4	7.4
Rochester	10- 1-64	319	306	− 7.1	34.6	7.4	10.4
Cleveland	4- 1-65	876	811	−14.7	10.2	28.6	34.1
Des Moines †	4-28-66	209	206	− 1.5	6.3	4.9	5.3
Evansville †	10-20-66	142	143	0.4	6.2	6.6	6.9
Fort Wayne	1-24-67	155	160	0.2	39.8	7.5	10.2
Greensboro	1-25-66	120	132	8.8	13.9	25.8	26.7
Louisville †	5-14-64	391	387	− 3.0	11.7	17.9	20.2
Memphis †	3-27-67	491	497	− 6.8	14.8	37.6	42.6
Raleigh	1-25-66	94	105	12.2	12.7	23.4	23.4
Shreveport †	6-15-66	158	147	− 9.1	− 2.2	33.1	34.7
Sacramento †	10- 9-64	189	192	− 0.8	29.7	6.5	8.3

* Includes "other races." † Areas annexed after 1960 are excluded.

Table 2. Estimated net migration, by color and age, 1960 to mid-decade. The data are taken from Table 1 and reference *5*.

Color	Net migration	Net migration per 100 persons in age group in 1960							
		Total	0–9	10–19	20–29	30–39	40–49	50–64	65+
				Buffalo					
White	− 68,565	− 15	− 19	− 9	− 26	− 16	− 11	− 12	− 13
Nonwhite	+ 574	+ 1	+ 3	0	+ 6	+ 1	− 6	− 2	− 7
				Providence					
White	− 24,292	− 12	− 19	+ 3	− 31	− 17	− 11	− 8	− 8
Nonwhite	+ 1,125	+ 9	+ 13	+ 23	+ 13	+ 2	− 1	+ 5	*
				Rochester					
White	− 22,477	− 8	− 12	+ 8	− 19	− 14	− 9	− 8	− 16
Nonwhite	+ 4,210	+ 17	+ 12	+ 29	+ 23	+ 10	+ 3	+ 3	*
				Cleveland					
White	− 110,893	− 18	− 33	− 5	− 38	− 32	− 19	− 18	− 20
Nonwhite	+ 1,878	+ 1	+ 3	+ 3	+ 4	− 5	− 2	+ 2	− 3
				Des Moines					
White	− 12,973	− 7	− 12	+ 6	− 17	− 11	− 5	− 4	− 2
Nonwhite	− 306	− 3	+ 1	− 9	− 3	− 1	− 1	− 2	*
				Evansville					
White	− 6,824	− 5	− 7	− 7	− 4	− 5	− 5	− 2	− 5
Nonwhite	− 363	− 4	+ 1	− 24	*	+ 1	− 2	+ 26	*
				Fort Wayne					
White	− 9,311	− 6	− 11	+ 8	− 15	− 10	− 7	− 5	− 6
Nonwhite	+ 1,806	+ 15	+ 16	+ 29	+ 19	+ 7	+ 3	*	*
				Greensboro					
White	+ 941	+ 1	− 1	+ 15	0	− 2	− 5	− 6	− 4
Nonwhite	+ 954	+ 3	+ 6	+ 26	− 24	+ 1	− 14	− 1	*
				Louisville					
White	− 23,030	− 7	− 14	+ 3	− 20	− 11	− 5	− 4	− 2
Nonwhite	+ 2,483	+ 4	+ 4	+ 9	+ 5	+ 3	+ 5	+ 6	− 2
				Memphis					
White	− 35,991	− 12	− 20	+ 4	− 22	− 16	− 11	− 7	− 5
Nonwhite	+ 2,266	+ 1	+ 4	− 5	− 10	0	− 3	+ 7	− 7
				Raleigh					
White	+ 3,875	+ 5	0	+ 39	− 27	− 2	− 4	− 6	− 5
Nonwhite	+ 1,333	+ 6	+ 5	+ 23	− 6	+ 3	+ 1	+ 4	*
				Shreveport					
White	− 13,351	− 13	− 21	− 6	− 23	− 16	− 11	− 4	− 1
Nonwhite	− 9,420	− 17	− 18	− 26	− 24	− 16	− 14	+ 1	− 11
				Sacramento†					
White	− 5,264	− 3	− 4	+ 1	− 11	+ 2	− 1	− 4	− 6

* Rate not calculated because denominator is less than 1000. † No migration rates for nonwhites were calculated for Sacramento since 40 percent of the nonwhites in this city were Orientals.

Trends in Residential Segregation

The growing Negro populations in many cities have expanded into housing outside the previously established Negro residential areas. Inspection of census tract data reveals this type of change. Census tracts are small areas, containing on the average about 4000 persons, for which basic census data are tabulated. In Buffalo, for example, in 1960 most Negroes lived in a belt of tracts extending south and west of downtown. By 1966 this belt had grown to include several more tracts. In Cleveland tracts were added to the principally Negro areas on the east side. Almost all of Cleveland's Negroes, in both 1960 and 1965, lived east of the Cuyahoga River in a broad belt stretching from downtown to the city limits. Local estimates indicate the development of several predominantly Negro residential areas in the eastern suburbs (*8*). Few Negroes lived on the other side of downtown: in 1965 the special census counted 300,000 Clevelanders west of the Cuyahoga, of whom more than 99 percent were white.

The other cities were lacking in such extensive established Negro areas in 1960, but solidly Negro residential areas have developed. In Rochester, areas southwest and immediately north

of the central business district became increasingly Negro. In Providence, Negroes replaced whites in tracts in the Federal Hill area and south of downtown along the Providence River. In each of the 13 cities the development and spread of predominantly Negro residential areas can be traced.

It is also possible to use these data to calculate summary indices of the degree of residential segregation. In contrast to the detailed descriptions of Negro residential patterns obtained from maps, such indices facilitate comparisons among cities and through time.

Using city block data for a large number of U.S. cities, the Taeubers assessed trends in residential segregation from 1940–1960 (*9*). In cities of all sizes and in every part of the country, Negroes and whites were found to be residentially segregated. From 1940 to 1950, the housing market was very tight. Existing segregation patterns were maintained and additional white and Negro population was housed in a highly segregated pattern. Residential segregation generally increased. During the 1950's there was an increased availability of housing. A multiple regression analysis for 69 cities relating changes in segregation to changes in other characteristics suggested that in many northern cities "the growing Negro populations, together with the demand for improved housing created by the improving economic status of Negroes, were able to counteract and in many cases to overcome the historical trend toward increasing residential segregation. In southern cities Negro population growth was slower and economic gains were less. The long-term trend toward increasing segregation slowed but was not reversed" (*10*).

Dissimilarity Index

The Taeubers' measure of segregation was the dissimilarity index, calculated from city block data on the number of housing units occupied by whites and by nonwhites. For assessment of post-1960 trends, we shall use the dissimilarity index calculated from census tract data on the number of Negroes and non-Negroes. The magnitude of the index depends on the areal units from which it is calculated, and the indices shown here are not directly comparable with the Taeubers' (*9*). Calculation of the index requires a percentage distribution of Negroes across all the census tracts of a city, and a similar percentage distribution of non-Negroes.

Table 3. Indices of residential segregation, 1960 and mid-decade. The data are taken from reference *3*.

City	Dissimilarity index		Replacement index		Homogeneity index			
					Negro		White*	
	1960	Later	1960	Later	1960	Later	1960	Later
Buffalo	84.5	85.1	19.4	24.0	65	74	95	95
Providence	64.2	70.3	6.6	9.6	23	30	96	94
Rochester	76.7	79.3	10.5	14.8	44	53	96	95
Cleveland	85.2	87.2	34.8	39.2	81	86	92	92
Des Moines	76.7	77.3	7.1	7.8	35	40	97	97
Evansville	76.9	80.5	9.5	10.3	54	61	97	97
Fort Wayne	79.8	79.2	11.1	14.5	38	52	95	95
Greensboro	83.8	89.1	32.1	34.9	83	88	94	96
Louisville	78.6	81.2	23.1	26.2	68	73	93	93
Memphis	79.3	83.7	37.2	40.2	79	86	88	89
Raleigh †	75.0	78.0	26.9	28.0	72	74	92	93
Shreveport	82.5	85.1	36.5	38.6	81	85	90	92
Sacramento	58.2	57.2	7.1	8.7	24	29	95	94

* Includes "other races." † Indices were calculated from data for 19 tracts lying entirely within the city and 11 tracts lying across the city boundary.

The index is one-half the sum of absolute differences between the two percentage distributions. The numerical value of the index indicates the minimum percentage of Negroes (or of non-Negroes) whose census tract of residence would have to be changed to obtain an areally homogeneous distribution of the two groups. A value of 100 indicates complete segregation; of zero, no segregation.

Dissimilarity indices for the 13 cities for 1960 and the special census dates are shown in the first two columns of Table 3. The differences indicate a pattern of increasing residential segregation. Only in Fort Wayne and Sacramento did Negroes and non-Negroes become less segregated from one another during the early 1960's. There is no evidence in these data of an acceleration or even continuation of the trend toward decreasing segregation observed for northern cities from 1950–60.

The 13 cities are not a random sample, and we cannot claim to show that residential segregation in American cities is generally increasing. Putting these results together with those for 1940–60, there is strong evidence that the pervasive pattern of residential segregation has not been significantly breached. Whether the temporal trend for a particular city has been up, down, or fluctuating, the magnitude of the change has usually been small. Stability in segregation patterns has been maintained despite massive demographic transformation, marked advances in Negro economic welfare, urban renewal and other clearance and resettlement programs, considerable undoubling of living quarters and diminished room-crowding, high vacancy rates in many of the worst slums, and an array of federal, state, and local anti-discrimination laws and regulations.

The analysis of census data points to stability in segregation patterns, with some preponderance recently of small increases in a segregation index. How may these results be reconciled with the rapidly increasing segregation perceived by most civil rights groups and many other observers? Such observers are likely to be looking at something more than simply the patterns of housing segregation.

For example, consider the problems of *de facto* educational segregation faced by a city with a small but completely segregated Negro population. Negroes live in only a few areas of the city, but there are not enough Negroes to make an extensive "ghetto." One or two elementary school districts may be solidly Negro, but no high school district is solidly Negro. If the Negro population increases, and continues to be housed in a segregated manner, additional elementary school districts will become all Negro, and one or more high school districts may become all Negro. If the white population is declining (the total city population is constant or declining), the Negro percentage in the city will be increasing rapidly. Hence the magnitude of the desegregation task will increase. Yet the basic segregated residential pattern is merely persisting, not worsening. If this example is modified slightly so that the initial segregation pattern is one of great rather than complete racial segregation, we have an approximation to the actual situation in many U.S. cities. It is the increasing number and proportion of Negroes in most central cities that account for the increasing visibility of segregation-induced

problems, not any change in the residential pattern.

Composite indices may be formulated which combine measures of the proportion Negro with measures of residential segregation. Because the two components are not highly correlated, the Taeubers argued against use of a composite index for comparisons between cities (*9*, p. 195). Nevertheless, we believe there may be heuristic value to the calculation of selected composite indices. From among the many that have been proposed, two seem particularly well formulated to represent, respectively, the magnitude of the desegregation problem and magnitude of the segregation problem.

Desegregation Problem

By the desegregation problem, we refer to the proportion of the population that would have to be moved to effect complete residential desegregation. The index of dissimilarity gives a superficial answer to this problem. It specifies the desegregation problem on the assumption that persons of only one race are to be moved, from areas in which they are overrepresented to areas of underrepresentation. Moving persons of only one race is unrealistic in the sense that it would depopulate many areas and require substantial additional housing in others. More realistic is a series of exchanges of white and Negro households, accomplishing desegregation while maintaining existing housing stock. The minimum percentage of the total population that would be moved by such a procedure is given by

$$2q(1 - q)D$$

where q is the proportion Negro in the total population, and D is the index of dissimilarity. This measure has been called the replacement index (*11*).

By the segregation problem, we refer to the tendency of residential segregation to create racial homogeneity among neighborhood contacts (on the street and in stores, schools, and other neighborhood facilities). For an objective, census-based measure of this type, it is necessary to assume that contacts within an area (census tract, city block, school district) are made at random from among the resident population. For a Negro chosen at random from the city's population, the probability of residing in tract i is n_i/N, where n_i is the number of Negroes in tract i and N is the total number of Negroes in the city. The probability that another individual randomly chosen from tract i is also a Negro is $(n_i-1)/(t_i-1)$ where t_i is the total population in tract i. For convenience, this term may be approximated by n_i/t_i. If we take the joint probability of the two events, sum over tracts, and express the result in percentage scale, we have (*12*)

$$(100/N)\sum n_i^2/t_i.$$

This index may also be interpreted as the average percentage Negro in census tracts, weighted by the number of Negroes in the tract. From the Coleman report, some evidence may be adduced for the proposition that the educational achievement of Negro pupils is less the higher the percentage of Negroes in their schools (*13*). Calculating the index for schools would provide a measure of the average Negro percentage faced by Negro school children. More generally, the social-psychological consequences of residential segregation might be hypothesized to be some function of the average Negro percentage encountered by Negroes in their neighborhoods. It is in this sense that the index may be regarded as measuring the segregation problem. We designate it the Negro homogeneity index.

The dissimilarity and replacement indices are racially symmetrical. Negroes and non-Negroes are equally segregated from each other. The Negro homogeneity index is racially specific. The average Negro percentage encountered by Negroes may differ from the average white percentage (non-Negro) encountered by whites (the white homogeneity index). The complements of these measures are also of interest: the weighted average white percentage encountered by Negroes in tracts and the weighted average Negro percentage encountered by whites in tracts.

Values of the replacement and homogeneity indices are shown in Table 3. In contrast to the dissimilarity index, there is a wide range in magnitude of these indices. This reflects the wide range in values of q (the proportion Negro) and the additional variance introduced by the squared terms appearing in each composite index. The replacement and Negro homogenity indices are highly correlated. Both indices increased for each of the 13 cities between 1960 and the later date. For most cities, both segregation (D) and proportion Negro (q) increased, but the relative increase was small in the former compared to the latter. Trends in the composite indices are largely determined by trends in the Negro proportion.

We examined special census data for 13 cities to assess trends in population, migration, and residential segregation from 1960 to mid-decade. In these cities, the demographic trends of the 1950's are continuing. There is a net out-migration of white population, and in several cities a decline in total population. Negro population is growing rapidly, but natural increase rather than net in-migration increasingly is the principal source. The concentration of whites in the suburbs and Negroes in the central cities is continuing. Within the cities, indices of racial residential segregation generally increased. The combination of small increases in residential segregation and large increases in the Negro percentage has greatly intensified the magnitude of the problems of segregation and desegregation of neighborhoods, local institutions, and schools.

References and Notes

1. Editorial, Washington *Post*, 28 Dec. 1966.
2. L. F. Schnore, *The Urban Scene* (Free Press, New York, 1965), p. 255.
3. The 13 cities are listed in Table 1. Data for the later date were published as follows: U.S. Bureau of the Census, *Current Population Reports*, Ser. P-28, Nos. 1376, 1377, 1386, 1390, 1393, 1411, 1413, 1430, 1431, 1435, 1441, 1446, and 1453 (1964–7); data for 1960: U.S. Bureau of the Census, *Censuses of Population and Housing: 1960* PHC(1) (1961), Parts 21, 28, 39, 45, 49, 57, 83, 89, 122, 124, 127, 129, and 143.
4. U.S. Bureau of the Census, *Current Population Reports*, Ser. P-20, No. 157 (1966), p. 1.
5. U.S. National Center for Health Statistics, *Vital Statistics of the United States: 1962*, II, Section 5 (1964).
6. H. S. Shryock, *Population Mobility within the United States* (Community and Family Study Center, Chicago, 1964), p. 424.
7. K. E. Taeuber and A. F. Taeuber, *Amer. J. Sociol.* **70**, 429 (1965).
8. Regional Church Planning Office (Cleveland, Ohio), *Newsletter*, "Changes in the Nonwhite Population," No. 21 (1965).
9. K. E. Taeuber and A. F. Taeuber, *Negroes in Cities* (Aldine, Chicago, 1965).
10. K. E. Taeuber, *Sci. Amer.* **213**, 17 (1965).
11. D. Walker, A. L. Stinchcombe, M. J. McDill, *School Desegregation in Baltimore* (Johns Hopkins Center for the Study of Social Organization of Schools, Baltimore, 1967), p. 5.
12. W. Bell, *Social Forces* **32**, 357 (1954).
13. J. S. Coleman, E. Q. Campbell, A. M. Mood, *Equality of Educational Opportunity* (Government Printing Office, Washington, D.C., 1966), p. 21.

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