Poverty Concentration Measures and the Urban Underclass

Richard Greene

Economic Geography, Vol. 67, No. 3 (Jul., 1991), 240-252.

Stable URL:
http://links.jstor.org/sici?sici=0013-0095%28199107%2967%3A3%3C240%3APCMATU%3E2.0.CO%3B2-M

Economic Geography is currently published by Clark University.

POVERTY CONCENTRATION MEASURES AND THE URBAN UNDERCLASS

RICHARD GREENE

Northern Illinois University

The population in poverty in American cities has become confined to a subset of areas known as extreme poverty areas. These areas are the home of what has become known popularly as the urban "underclass." Many definitions of the underclass are based on nonspatial measures of poverty concentration that do not adequately describe geographic confinement. A unique data set comprised of geographic coordinates attached to extreme poverty areas for 30 large American cities in 1970 and 1980 makes it possible to measure the changing spatial extent of poverty concentrations. Spatial statistics are used to derive descriptive measures of the changing size, form, and distribution of extreme poverty areas in different regional settings.

Researchers have become increasingly interested in the effects of concentrated poverty in central city neighborhoods [*3; 5; 6; 13; 16*]. The term "concentrated poverty" refers to the confinement of the poor to a subset of neighborhood locations rather than their dispersion across all parts of an urban area. It is argued that the most harmful outcome of this spatial concentration is the isolation of the poor from the social and economic mainstream. Isolation is seen as a consequence of concentration because the poor are less likely to interact with the nonpoor if they are confined to neighborhoods from which the nonpoor are absent or almost absent. Some researchers argue that the concentration and isolation of poor people in central city neighborhoods have led to the emergence of an urban "underclass" [*12; 14; 16; 23*]. Underlying this argument is the idea that the character of a neighborhood is likely to influence the behavior and opportunities encountered by residents of that neighborhood [*7*]. On the basis of this latter assumption, poverty researchers ascribe certain social pathologies among the poor to their geographic confinement and social isolation from the mainstream.

The focus of this paper is on a fundamental issue of the underclass debate, namely the measurement of poverty concentration [*5; 13; 15; 17*]. The conventional measure of poverty concentration, adopted in the leading study by Jargowsky and Bane [*5*], has been the proportion of the poor population living in census tracts with a high poverty rate (usually above 20 percent). If a relatively high proportion of a city's poor population resides in census tracts with high poverty rates, then the poor are said to be highly concentrated. Researchers who employ this conventional method, however, assume that census tracts with high poverty rates are independent and self-contained settlements and that the degree to which the inhabitants of the tracts are socially isolated from the nonpoor is not affected by whether the poverty tracts are scattered throughout the city or clustered close together. Massey and Eggers' [*13*] recent extension of the poverty concentration literature with the application of the well-known index of dissimilarity does not address the importance of poverty tract clustering. In this study, census tracts with high poverty rates are referenced to a geographic coordinate system so that a spatial measure of poverty concentration can be estimated.

Background

Although poverty researchers have not agreed on a universal definition of the term "underclass," they would agree that eco-

TABLE 1

DEFINITIONS OF THE UNDERCLASS BASED ON CONCENTRATION OF POVERTY OR BEHAVIORAL DEVIANCY WITHIN CENSUS TRACTS

Author of Study	Definition	Number in Underclass	% of U.S.
Isabel V. Sawhill, 1986	Poor living in poverty areas: census tracts with poverty rates above 40 percent in the 100 largest MSAs.	1.8 million in 1979	.8%
Peter Gottschalk and Sheldon Danziger, 1986	Long-term welfare recipients living in poverty areas: defined as in the Sawhill study.	less than 1 million in 1984	0.4%
Richard P. Nathan, 1986	Black and Hispanic poor living in poverty areas: tracts with poverty rates above 20 percent.	4.1 million in 1979	1.8%
Erol R. Ricketts and Isabel V. Sawhill, 1986	People living in census tracts with high proportions of: high school dropouts, welfare recipients, female heads, and prime-age males not regularly attached to the labor force.	2.6 million in 1979	1.0%

Source: Ricketts, Erol R. and Isabel V. Sawhill. *Defining and Measuring the Underclass*. The Urban Institute: Washington, D.C. (December, 1986).

nomic poverty is a characteristic that is shared by virtually all members of this class. The differences arise when authors are confronted with the task of distinguishing the underclass from the population in poverty. Two recent conceptual works provided the basis for recent empirical studies of the urban underclass. The first of these, *The Underclass* by journalist Kenneth Auletta [*1*], defined the underclass as those who suffer from behavioral as well as income deficiencies and who operate outside the mainstream. Auletta adopted a "culture of poverty" hypothesis by suggesting that there is a sub-population of the poor sharing individual characteristics and values that restrict them to a cycle of poverty.

A more recent conceptual work on the underclass, *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy* by William Julius Wilson, defined the underclass as a socially dislocated group that emerged as a result of central city deindustrialization trends and the exodus of middle class blacks from ghetto communities [23]. Wilson described the inhabitants of this newly transformed ghetto as the "underclass" [23, p. 8]:

> Today's ghetto neighborhoods are populated almost exclusively by the most disadvantaged segments of the black urban community, that heterogeneous grouping of families and individuals who are outside the mainstream of the American occupational system. Included in this group are individuals who lack training and skills and either experience long-term unemployment or are not members of the labor force, individuals who are engaged in street crime and other forms of aberrant behavior, and families that experience long-term spells of poverty and/or welfare dependency. These are the populations to which I refer when I speak of the underclass.

Wilson's definition of the underclass broke from "culture of poverty" interpretations by extending the underclass concept to include a description of the structural transformation of American central cities as the process that accounts for a new ghetto context. Wilson and others have noted that the most deleterious consequence of the economic transformation of the central city has been the creation of a locational mismatch between residence and employment [*4; 9*].

Empirical attempts to demonstrate the growth of an urban underclass have established a weak link to the various con-

TABLE 2

PERCENTAGE OF CITY'S POVERTY POPULATION LIVING IN CENSUS TRACTS CLASSIFIED BY ALTERNATIVE POVERTY RATES: 1980

	City Census Tracts by Poverty Rate Ranges			
City	0 - 19.99	20 - 29.99	30 - 39.99	40 +
New York City	29%	17%	20%	34%
Chicago	29%	18%	21%	32%
Los Angeles	39%	28%	24%	9%

Source: U.S. Bureau of the Census. "1980 Census of Population: Subject Reports; Poverty Areas in Large Cities," PC (2)-9B. Washington, D.C.: Department of Commerce, 1980.

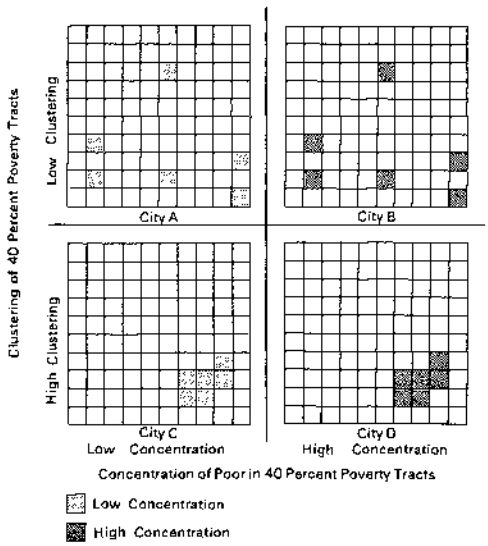

Fig. 1. Hypothetical spatial patterns of extreme poverty tracts.

ceptualizations of the term underclass. Authors who have examined the links between neighborhood concentrations of poverty and the rise of an urban underclass have used some variant of the Census Bureau's concept of a poverty area as a means of defining concentration thresholds [*19; 20*] (Table 1). The definitions shown in Table 1 differ in two respects but are very similar in a third. First, the definitions differ with respect to the characteristics of persons used to define an underclass. Some authors use only an income criterion for delimiting the underclass, whereas others use demographic variables highly correlated with poverty. Second, the definitions differ with respect to the selection of a concentration threshold. For instance, the first two definitions in Table 1 are based on a 20 percent poverty rate, while the third is based on a 40 percent poverty rate. The definitions are similar in that the census tract is used as the geographic base over which a group is calculated to be concentrated. It is this last aspect of the concentration formula that deserves closer inspection, because the degree to which concentration plays a role in the isolation of a group ultimately depends on the area over which concentration is estimated.

AN ALTERNATIVE POVERTY CONCENTRATION MEASURE

To summarize, many authors (Table 1) share the hypothesis that high levels of poverty concentration are associated with high levels of isolation of the poor from the social and economic mainstream. The hypothesis that concentration and isolation are related is plausible in that a spatially concentrated or segregated group would be expected to have less contact with other groups than would one whose members were evenly distributed throughout a geographic area. The prevailing method of measuring poverty concentration restricts the analysis to examining ratio differences within poverty tracts, however, and ignores the concentration effects that are imposed by the spatial organization of the poverty tracts themselves.

The conventional measure of poverty concentration has been defined as the proportion of a city's poor who live in census tracts with high poverty rates (poverty tracts). For example, in Table 2 the census tracts of three cities have been classified into four poverty categories based on poverty rate ranges. These data show that a relatively high proportion of the poor in New York City and Chicago are in 40 percent poverty tracts (extreme poverty tracts), whereas the poor in Los Angeles are more concentrated in tracts with lower poverty rates. An interpretation of the above measure of poverty concentration would suggest that the poor in New York City and Chicago are more isolated from the nonpoor than are the poor in Los Angeles.

A spatial definition of poverty concentration should take into account the spatial configuration of the poverty tracts (Figure 1). For example, Figure 1 depicts poverty concentration as a two-dimensional phenomenon with the conventional measure, degree of concentration, shown across the horizontal axis and degree of clustering shown along the vertical. Four hypothetical cities are depicted in Figure 1, each illustrating a different level of poverty concentration and poverty tract clustering. The poor in city A are not highly concen-

trated in poverty tracts (shaded squares), and its poverty tracts are dispersed throughout the city. The poverty tracts in city B are just as dispersed as those in city A, but the poor in city B are more concentrated in poverty tracts. The poor in city C are not highly concentrated in poverty tracts, but the poverty tracts are highly clustered. City D represents the worst case, where the poor are highly concentrated in highly clustered poverty tracts. The current method of measuring poverty concentration does not distinguish among these cases.

RESEARCH METHOD

In this paper, extreme poverty tracts (EPTs) are defined as those tracts that had a poverty rate of 40 percent or higher in 1970 and/or in 1980. Census tract poverty rates were extracted from subject reports published by the United States Census Bureau for the 100 largest central cities in 1980 and the 50 largest central cities in 1970 [*19; 20*]. For comparative purposes, a selection of cities was drawn from a pool of 50 cities that had comparable poverty data available for 1970 and 1980. An additional criterion, that a city had to have at least ten EPTs in 1980, was imposed on the sample, so that the focus of analysis would be on cities that had a significant number of EPTs (Table 3). The 30 cities that met these criteria are listed in Table 3 along with the proportion of their tracts in three poverty level categories. An additional data requirement was a set of geographic coordinates for the EPTs. Latitude and longitude coordinates representing the 1980 population centroid of census tracts were assigned to all EPTs [*18*].

TABLE 3

CENTRAL CITY POVERTY TRACTS AS A PERCENTAGE OF ALL CITY TRACTS

City	# of Tracts	Percent of all tracts, by percentage of tract population in poverty: 0-19.99	20-39.99	40 and Over
1. Atlanta	116	36	34	30
2. Baltimore	206	49	34	17
3. Birmingham	93	54	32	14
4. Boston	163	57	37	6
5. Buffalo	92	53	33	14
6. Chicago	861	56	29	15
7. Cincinnati	127	61	21	18
8. Cleveland	205	44	36	20
9. Columbus	204	70	21	9
10. Dallas	235	72		
11. Detroit	344	48	39	13
12. Houston	373	79	17	4
13. Jacksonville	110	74	15	11
14. Kansas City	213	70	25	5
15. Los Angeles	745	69	27	4
16. Louisville	117	59	27	14
17. Memphis	144	50	28	22
18. Milwaukee	220	66	25	8
19. Nashville	94	70	18	12
20. New Orleans	178	43	40	17
21. New York	2184	64	22	14
22. Newark	97	24	38	38
23. Norfolk	87	63	25	12
24. Philadelphia	358	59	27	14
25. Phoenix	181	83	11	6
26. Pittsburgh	180	65	25	10
27. San Antonio	157	64	27	9
28. St. Louis	113	48	39	13
29. Tampa	84	67	21	12
30. Toledo	101	68	22	10

It was demonstrated earlier that the conventional method of measuring poverty concentration fails to distinguish between dispersed and clustered poverty settlements. Debates over the exact poverty threshold or demographic characteristics that should be used for identifying distressed neighborhoods were not dismissed as unimportant [*4; 15; 16*]; instead, it was argued that the spatial arrangement and extent of these neighborhoods play a significant role in the degree to which the poor are isolated from the social and economic mainstream. A large number of statistical methods have been developed that are particularly appropriate for addressing exactly this question concerning the spatial arrangement of EPTs. Perhaps the most appropriate techniques are centrographic methods [*2; 8; 10; 11*], which can summarize large quantities of spatial data and can be simultaneously represented on a map. Spatial segregation measures addressed by White [22] consider the clustering issues raised earlier, but lack the interpretive advantages of centrography with its cartographic representation. The specific centrographic statistic used in this paper is known as the standard radius. Its value summarizes the dispersion of an EPT distribution around its mean center and is directly analogous to a standard deviation in univariate statistics. The standard radius statistic is derived in three steps.

First, in order to report the findings in their metric equivalents, latitude and long-

TABLE 4

CHANGE IN DISPERSION INDEX RANKINGS: 1970 TO 1980

Central cities ranked by degree of dispersion in 1980	1970 DI	1970 # of tracts	1980 DI	1980 # of tracts	change in dispersion
1. Kansas City	555	4	1780	10	+
2. Milwaukee	1159	10	1824	18	+
3. Newark	974	9	1895	37	+
4. Norfolk	2329	13	2090	10	-
5. Tampa	2453	10	2265	10	-
6. Toledo	797	3	2301	10	+
7. Cleveland	2413	19	2429	42	+
8. Boston	3261	13	2446	10	-
9. Buffalo	.	1	2553	13	+
10. St. Louis	2118	10	2698	15	+
11. Cincinnati	2882	16	2808	22	-
12. Louisville	2082	16	2827	17	+
13. New Orleans	3275	33	3028	29	-
14. Baltimore	2604	24	3033	36	+
15. Phoenix	3522	7	3202	11	-
16. Birmingham	4161	16	3255	13	-
17. Nashville	1882	5	3394	11	+
18. Columbus	4796	9	3516	19	-
19. Pittsburgh	2352	13	3739	18	+
20. Atlanta	3376	19	3785	35	+
21. San Antonio	6256	19	4215	14	-
22. Dallas	5205	11	4320	17	-
23. Philadelphia	3119	23	4798	51	+
24. Los Angeles	7650	25	5166	30	-
25. Detroit	4464	26	5207	45	+
26. Chicago	4245	47	6709	134	+
27. Jacksonville	8892	7	6989	12	-
28. Houston	7890	11	7938	13	+
29. New York City	8746	71	8936	312	+
30. Memphis*	.	28	.	31	

DI: dispersion index, calculated as the standard radius of the distribution of extreme poverty tracts.

+ Poverty tracts became more dispersed between 1970 and 1980.
- Poverty tracts became more clustered between 1970 and 1980.
* UTM coordinates not available at time of study.

itude coordinates were converted to Universal Transverse Mercator (UTM) coordinates. The east/west UTM coordinates are presented as Eastings (x) and the north/south coordinates as Northings (y). The Easting distances are presented in meters from an east/west reference axis and the Northings in meters from the equator.

Second, a mean center of the poverty tract distribution is calculated, which is defined as the intersection of the (x) and (y) mean values of the UTM coordinates:

$$XO = \bar{X} = \frac{\Sigma X_i}{N}$$

$$YO = \bar{Y} = \frac{\Sigma X_i}{N} \qquad (1)$$

where X_i is the Easting of the population centroid of an EPT and Y_i is the Northing of the population centroid of an EPT.

Third, a standard radius of the distribution, defined as the square root of the mean of the sum of the squared distances of the observations from the center of the EPTs, is calculated:

$$sr = \left(\frac{\Sigma d_i^2}{N} \right)^{1/2} =$$

$$\left(\frac{\Sigma (X_i - XO)^2 + \Sigma (Y_i - YO)^2}{N} \right)^{1/2} \qquad (2)$$

where d_i is the distance from the mean center to the ith point and N is the number of EPTs in a central city.

SPATIAL PATTERN IN 1980

The 1980 standard radii (dispersion indices), one for each of the 30 cities, have been arranged in descending order from the most clustered pattern in 1980 to the most dispersed pattern in 1980 (Table 4).

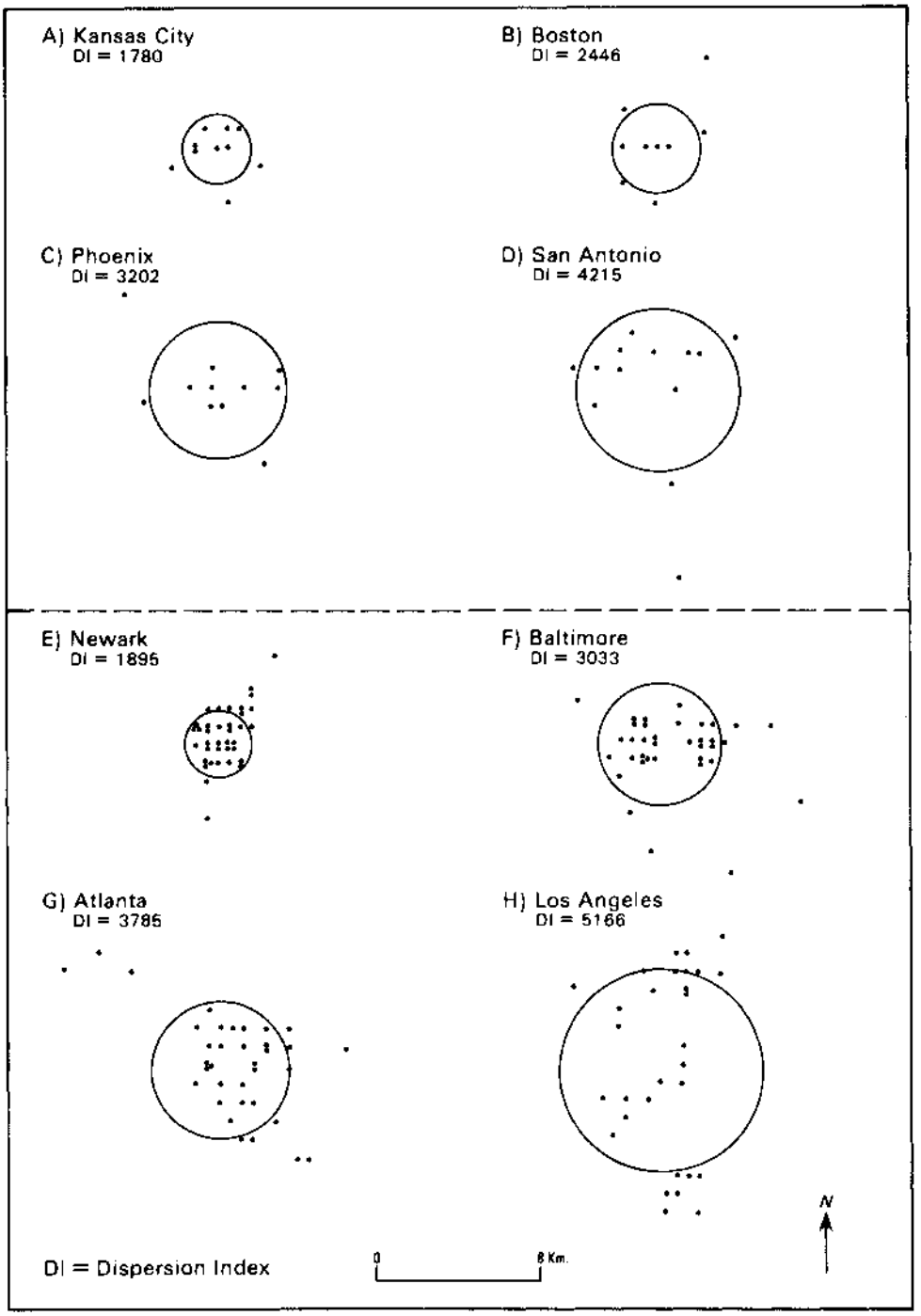

Fig. 2. Geographic representation of 1980 dispersion index in selected cities.

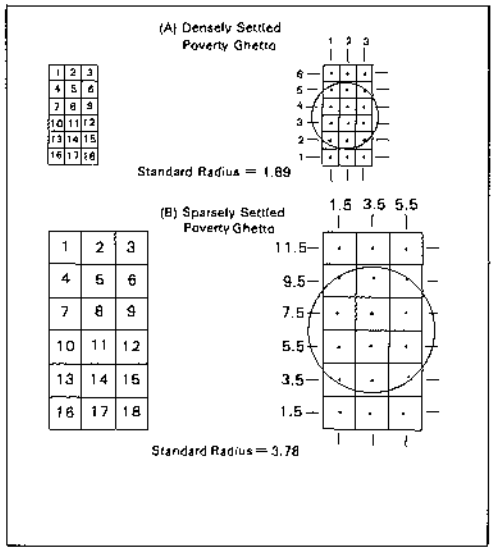

Fig. 3. Spatial measurement of poverty tract arrangements and variations in the size of census tracts.

The indices ranged from 1,780 meters for a very tight cluster of EPTs in Kansas City to 8,936 meters in New York City, which had a large number of EPTs concentrated in multiple clusters.

Separating some selected cities into groups according to their number of EPTs illustrates substantial variation in the dispersion indices across cities (Figure 2). In the first group (ten to fifteen EPTs), Kansas City's ten EPTs formed the most clustered pattern (Figure 2A). Boston, on the other hand, had just as many EPTs as Kansas City, but they were much more dispersed (Figure 2B). Phoenix and San Antonio had approximately the same number of EPTs as Boston and Kansas City, but the EPTs were much more spread out (Figure 2C,D). In the second group (30 to 40 EPTs), Newark had the most clustered distribution of EPTs (Figure 2E). Los Angeles had 30 EPTs, which were more dispersed than those in any other city in its size category (Figure 2H). Los Angeles' high dispersion index is attributable, in part, to the concentration of these EPTs in three main clusters. Baltimore and Atlanta were also cities where there was more than one cluster of EPTs (Figure 2F,G).

A factor that may account for some of the regional variation observed in the dispersion index measure is the variation in population density across cities. Older cities in the Northeast tend to have high population densities in their cores, whereas the population densities in city cores of the South and West are relatively low. Theoretically, census tracts are delimited according to a set population threshold, but in reality they may range in population from 2,500 to 8,000 [21]. Accordingly, small census tracts represent dense population settlements, whereas large census tracts represent sparsely populated settlements. A consequence of the variation in the size of census tracts across cities is that the dispersion indices may not be directly comparable from one place to the next (Figure 3). The variability in EPT population densities is much higher across cities than it is within cities, however, so that plotting the geographic representation of the dispersion index along with the EPT distributions gives a reasonable account of the clustering of EPTs within a given city.

DISPERSED VS CLUSTERED POVERTY SETTLEMENTS

Figure 2 demonstrated that most EPTs are adjacent to other EPTs and often represent a fraction of the area of a larger EPT cluster. On the other hand, some EPTs are located substantial distances from clustered EPTs. The maps of Jacksonville and Houston illustrate the influence exerted on the dispersion index by just one outlying EPT (Figure 4A,B). Jacksonville had an EPT that was 21 kilometers east of the outer edge of a large EPT cluster. Houston had an EPT that was 24 kilometers north of the peripheral edge of its large EPT cluster. The outlying EPTs in Jacksonville and Houston illustrate dispersed types of poverty settlements, where, in terms of physical distances, the poor are not nearly as isolated from the nonpoor as are the poor in highly clustered EPTs.

The dispersion index of a city was also shown to be affected by multiple clusters of EPTs. The multiple cluster effect on the dispersion measure is perhaps best illustrated by the large EPT distributions of Chicago and New York City (Figure 4C,D).

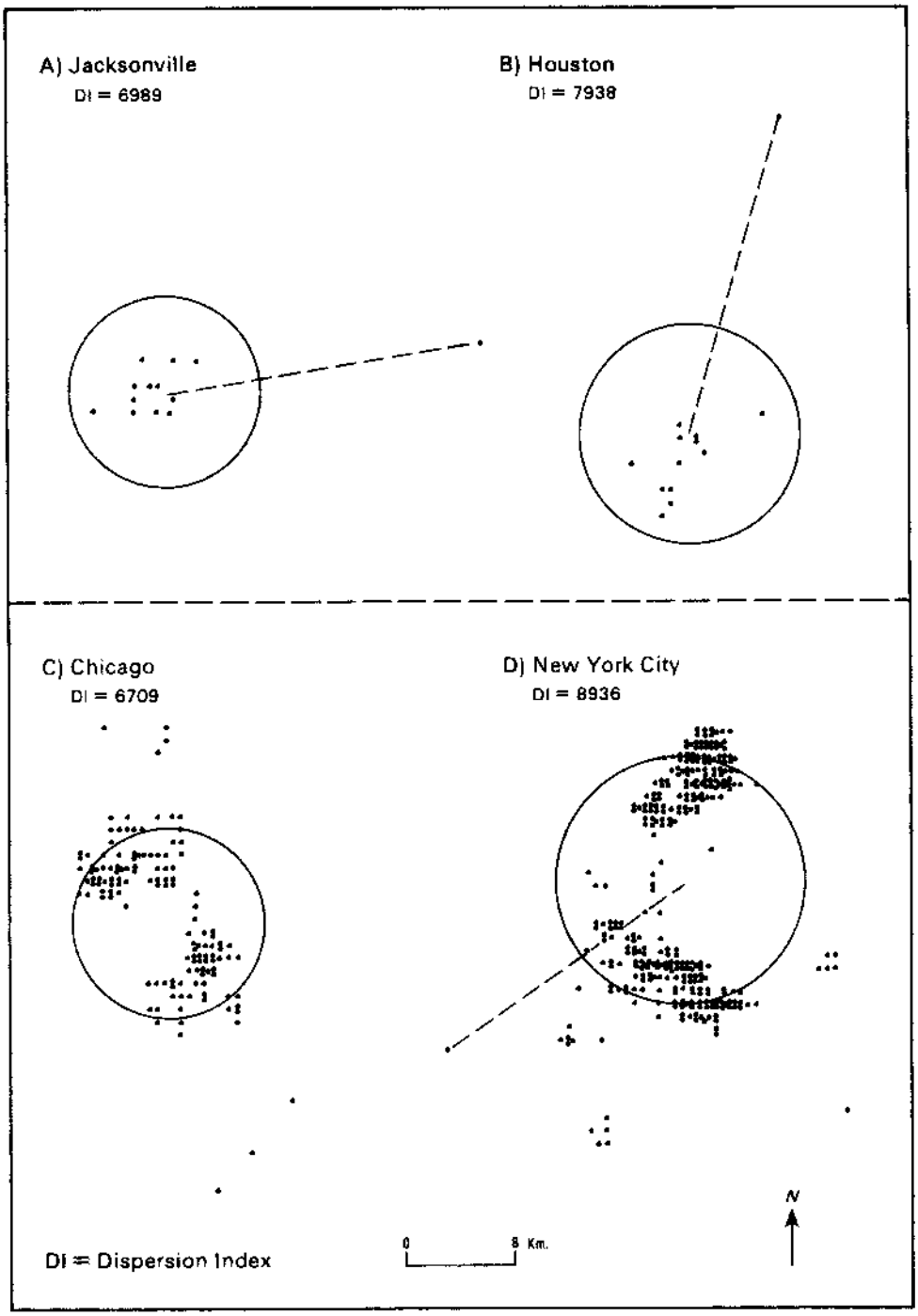

Fig. 4. Effect of outlying EPTs and multiple poverty clusters on the dispersion index of selected cities.

On the map of Chicago, we find that the EPTs are concentrated in four main clusters (Figure 4C). Chicago's two largest clusters coincide with the south and west sides of the city. New York City also has two very large EPT clusters (Figure 4D). The northern New York City cluster coincides with the South Bronx and Harlem, and the southern cluster coincides with northern Brooklyn and the Lower East Side. The large geographic representation of the dispersion index on each of these maps demonstrates the influence of a multimodal distribution in the measurement of the dispersion of these tracts.

CHANGE IN SPATIAL PATTERN: 1970 TO 1980

All 30 cities experienced some degree of change in the spatial organization of their EPTs between 1970 and 1980 (Table 4). The dispersion index for 18 cities (a majority) increased during this period, which was due in part to an overall increase in the total number of EPTs. By 1980, 527 EPTs were added to the 1970 EPT inventories of the 30 central cities. All of the cities that had their dispersion index increase over the ten-year period experienced growth in their stock of EPTs. A decrease in the dispersion index, however, did not always coincide with a loss in EPTs. In six of the 12 cities where the EPTs became less dispersed between 1970 and 1980, there was a loss or no gain in EPTs, whereas the other six cities with less dispersion experienced gains in their number of EPTs.

TABLE 5

SPATIAL DIMENSIONS OF DISJOINT POVERTY CLUSTERS IN 1980: THIRTY CENTRAL CITIES

Central Cities	Area of Standard Radius (sq. kilometers) Cluster 1	Cluster 2	Cluster 3	Cluster 4
1. New York City	23	45	69	59
2. Chicago	26	25	12	40
3. Buffalo	20	-	-	-
4. Newark	11	-	-	-
5. Baltimore	.	17	20	-
6. Atlanta	25	6	-	-
7. Birmingham	.	12	6	-
8. Jacksonville	.	17	-	-
9. Boston	.	10	-	-
10. Kansas City	7	5	-	-
11. Norfolk	.	8	-	-
12. Tampa	.	8	-	-
13. Toledo	16	-	-	-
14. Columbus	.	25	-	-
15. Pittsburgh	.	.	25	-
16. Louisville	24	10	-	-
17. Milwaukee	.	7	-	-
18. Cincinnati	.	9	2	-
19. Los Angeles	3	18	13	-
20. New Orleans	.	18	3	-
21. Detroit	.	73	-	-
22. Cleveland	19	-	-	-
23. Philadelphia	.	.	37	-
24. St. Louis	.	15	-	-
25. San Antonio	26	24	-	-
26. Phoenix	.	.	14	-
27. Nashville	36	-	-	-
28. Dallas	.	1	17	-
29. Houston	.	.	21	-
30. Memphis	*	*	*	*

. One tract
- Not applicable
* Not available

In order to observe the changing spatial form of EPT clusters between 1970 and 1980, an average linkage clustering algorithm was used to identify disjoint EPT clusters within cities. The clustering routine identified 67 disjoint poverty clusters for the 30 central cities in 1980 (Table 5). Some of these disjoint poverty clusters consisted of a single EPT, whereas other clusters like those in Chicago and New York City encompassed much larger areas of the city (Figure 5A,B). Both Chicago and New York City had four large disjoint EPT clusters. Chicago's south side cluster was estimated to be 25 square kilometers, and Chicago's west side cluster was about 26 square kilometers (Table 5). New York City's EPT clusters also consisted of large tracts of land (Figure 5B). The Bronx-Harlem cluster was estimated to be about 23 square kilometers, and the Brooklyn-Lower East Side cluster was about 45 square kilometers.

The geographic representation of the dispersion indices associated with the new disjoint EPT clusters illustrates why many of the dispersion indices increased between 1970 and 1980 (Figure 6). In Figure 6, the 1970 and 1980 EPT distributions are overlaid on each other for New York City and Chicago. In 1970, Chicago had two large EPT clusters, the west and south sides of Chicago (Figure 6A). The new EPTs of 1980 were added to the outer edges of these two large 1970 EPT clusters, thereby extending the south side EPT cluster farther south and the west side EPT cluster farther west and north. Only a few of Chicago's 1970 EPTs were no longer

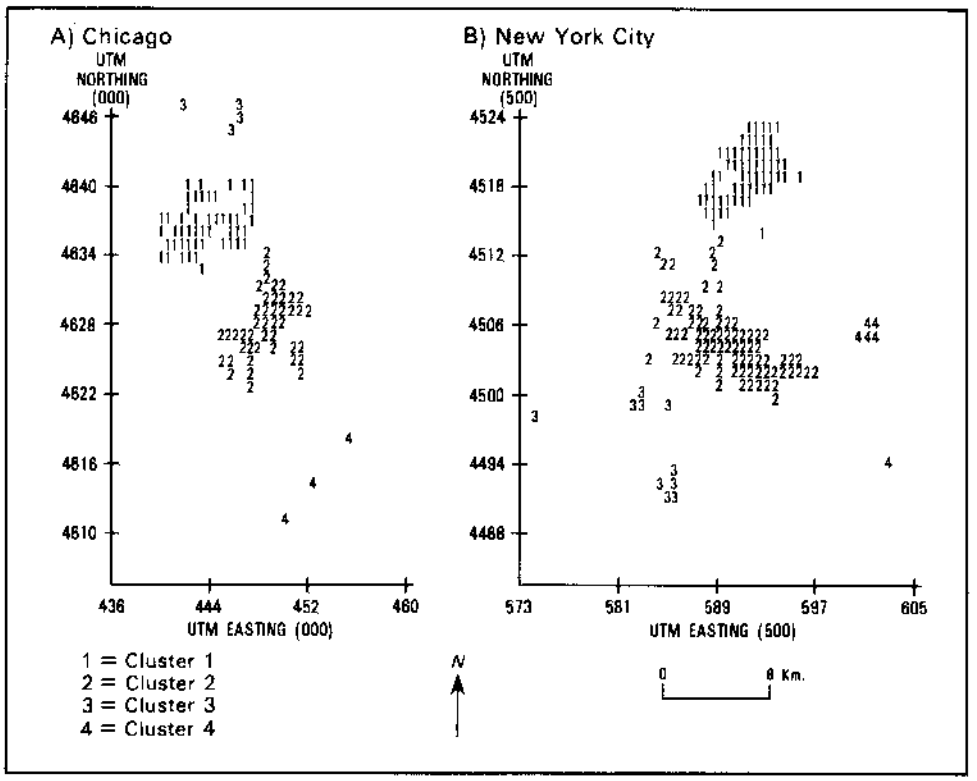

Fig. 5. Chicago and New York City poverty clusters in 1980.

classified as EPTs in 1980, and these exceptions were concentrated close to Chicago's downtown. There were also two new extreme poverty tract clusters beginning to form by 1980 at the northern edge and southern edges of the Chicago city limits.

New York City also had two large EPT clusters in 1970 (Figure 6B). In the north, the South Bronx and Harlem joined to form the first cluster. In the south, the Lower East Side of Manhattan and northern Brooklyn on the opposite side of the East River joined to form the second cluster. Like Chicago's, New York City's new 1980 EPTs formed on the outer edges of the two large 1970 EPT clusters. Most of New York City's 1970 EPTs remained classified as EPTs in 1980. The few that did change status were located substantial distances from the persistent EPTs. The same patterns that were observed in Chicago and New York City were repeated in the remaining 28 cities (Figure 7).

CONCLUSION

Within cities, EPTs arrange themselves in varied forms. Two different types of EPT distributions, however, can be identified in American cities. One type of EPT settlement is dispersed. In some cities, these EPTs are located substantial distances from other EPTs. As noted earlier, Jacksonville had an EPT that was located 21 kilometers from its nearest neighboring EPT. Nucleated EPT clusters are a second type of poverty settlement, composed of an EPT core area that persists through time and an outer area represented by EPTs that have formed only recently. The latter type is illustrated by Chicago, where two poverty clusters have grown over time to cover a large area of the city. These findings suggest that not only are the poor becoming more concentrated in EPTs, but the EPTs in which they live are being added to much larger poverty settlements. The areal

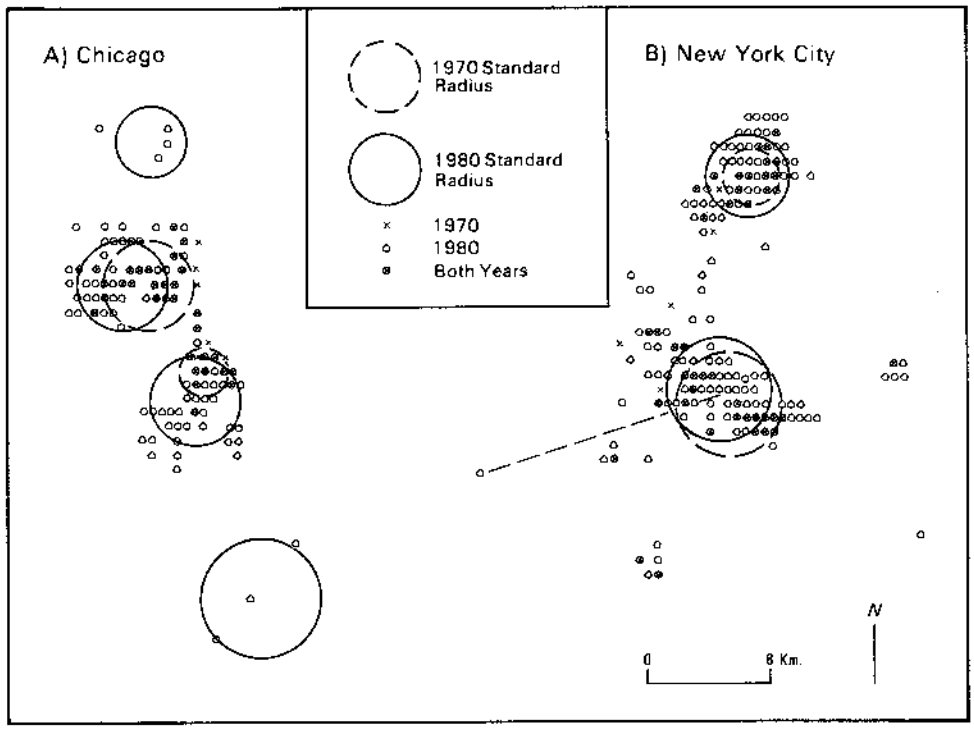

Fig. 6. Changing areal magnitude and direction of movement of poverty distributions in New York City and Chicago.

growth of large poverty settlements in cities does indeed provide a necessary but not a sufficient condition for the existence of an "underclass," as suggested by Wilson.

LITERATURE CITED

1. Auletta, K. *The Underclass*. New York: Random House, 1982.
2. Bachi, R. "Standard Distance Measures and Related Methods for Spatial Analysis," *Papers, Regional Science Association*, 10 (1963), pp. 83-132.
3. Danziger, S. H. and P. Gottschalk. "Earnings Inequality, the Spatial Concentration of Poverty and the Underclass," *American Economic Review*, 77 (1987), pp. 211-15.
4. Hughes, M. A. "Misspeaking Truth to Power: A Geographical Perspective on the Underclass Fallacy," *Economic Geography*, 65 (1989), pp. 187-207.
5. Jargowsky, P. A. and M. J. Bane. "Ghetto Poverty: Basic Questions," *Inner-City Poverty in the United States*. Edited by L. E. Lynn and M. G. H. McGeary. Washington, D.C.: National Academy Press, 1990.
6. Jencks, C. "Deadly Neighborhoods," *The New Republic*, June 13, 1988, pp. 23-32.
7. Jencks, C. and S. E. Mayer. "The Social Consequences of Growing Up in a Poor Neighborhood," *Inner-City Poverty in the United States*. Edited by L. E. Lynn and M. G. H. McGeary. Washington, D.C.: National Academy Press, 1990.
8. Jones, B. G., D. M. Manson, and H. N. Coccossis. "Applications of Centrographic Techniques to the Study of Urban Development: The Growth of Atlanta, 1940-1975." Ithaca, N.Y.: Program in Urban and Regional Studies, Cornell University, Task III Report, 1978.
9. Kasarda, J. D. "Structural Factors Affecting the Location and Timing of Urban Underclass Growth," *Urban Geography*, 11 (1990), pp. 234-64.
10. Lee, D. B. "Analysis and Description of Residential Segregation: An Application of Centrographic Techniques to the Study of the Spatial Distribution of Ethnic Groups in Cities." Ithaca, NY: Center for Housing and Environmental Studies, Cornell University, 1967.
11. Lefever, D. W. "Measuring Geographic Concentration by Means of the Standard Deviational

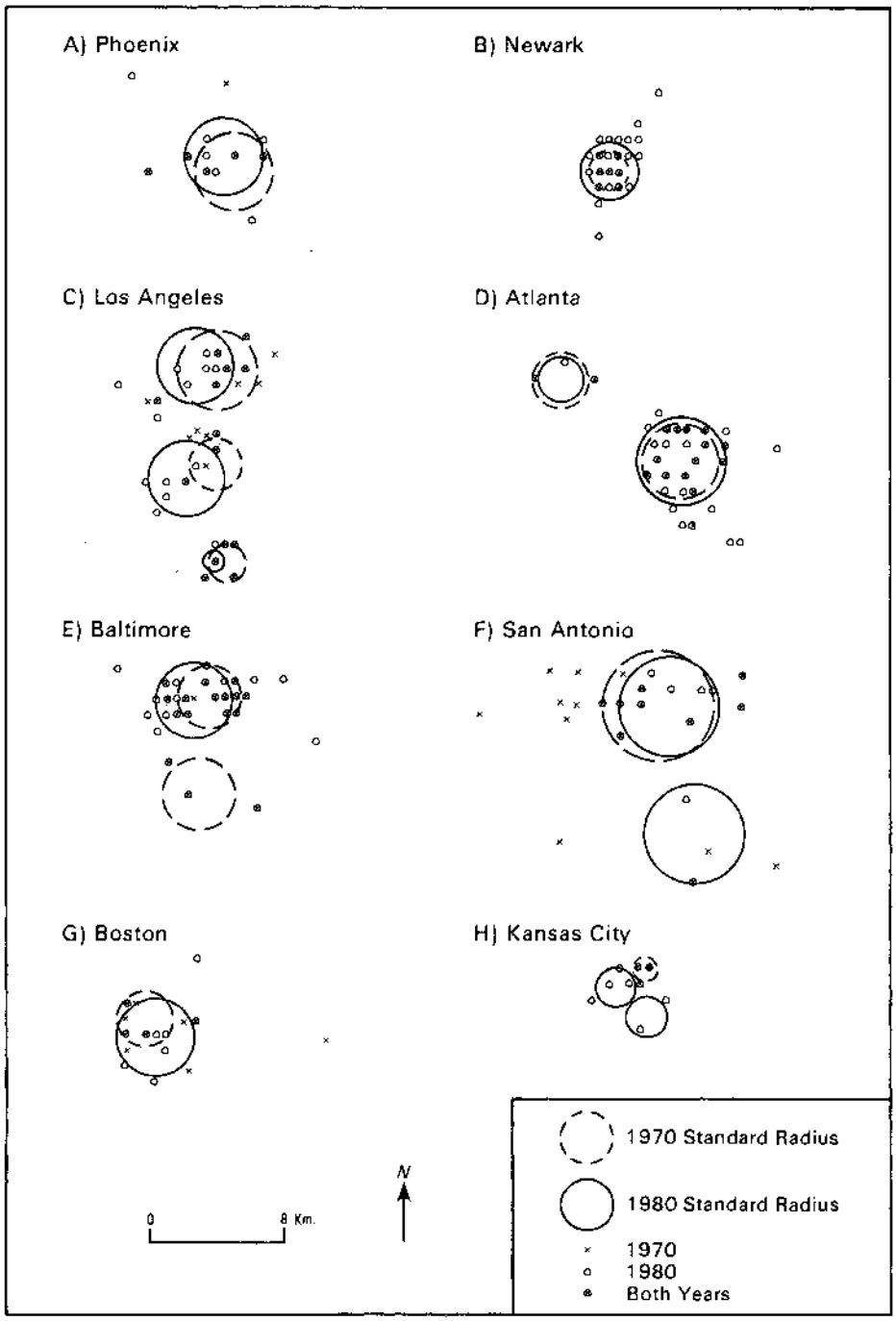

Fig. 7. Changing areal magnitude and direction of movement of EPTs in selected cities.

Ellipse," *American Journal of Sociology*, 32 (1926), pp. 88-94.

12. Martinez-Vazquez, J. and R. Saposnik. "A Contagion Model of Underclass Neighborhoods." Atlanta, GA: College of Business Administration, Georgia State University, Policy Research Program, Research Paper #6, 1990.

13. Massey, D. S. and M. L. Eggers. "The Ecology of Inequality: Minorities and the Concentration of Poverty, 1970-1980," *American Journal of Sociology*, 95 (1990), pp. 1153-88.

14. Massey, D. S. "American Apartheid: Segregation and the Making of the Underclass," *American Journal of Sociology*, 96 (1990), pp. 329-57.

15. Mincy, R. B., I. V. Sawhill, and D. A. Wolf. "The Underclass: Definition and Measurement," *Science*, 248 (1990), pp. 450-53.

16. Ricketts, E. R. and I. Sawhill, "Defining and Measuring the Underclass," *Journal of Policy Analysis & Management*, 7 (1988), pp. 316-25.

17. Sjoquist, D. "Concepts, Measurement, and Analysis of the Underclass: A Review of the Literature." Atlanta, GA: College of Business Administration, Georgia State University, Policy Research Program, Research Paper #7, 1990.

18. U. S. Bureau of the Census. "Census of Population and Housing, 1980: Master Area Reference File (MARF) 2 [Machine-Readable Data File]," Washington, D.C.: Department of Commerce, 1983.

19. U. S. Bureau of the Census. "1980 Census of Population: Subject Reports, Poverty Areas in Large Cities (And Addendum)." PC80-2-8D. Washington, D.C.: Department of Commerce, 1985.

20. U. S. Bureau of the Census. "1970 Census of Population: Subject Reports; Low-Income Areas in Large Cities," PC (2)-9B. Washington, D.C.: Department of Commerce, 1973.

21 U.S. Bureau of the Census, "Census 80: Continuing the Fact Finder Tradition," Washington, D.C.: Department of Commerce, 1980.

22. White, M. J. "The Measurement of Spatial Segregation," *American Journal of Sociology*, 88 (1984), pp. 1008-18.

23. Wilson, W. J. *The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy*. Chicago: University of Chicago Press, 1987.