

## **The Geography of Metropolitan Opportunity: A Case Study of Neighborhood Conditions Confronting Youth in Washington, DC**

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### *Abstract*

This article uses tabular and mapping presentations of 1990 census tract data to investigate variations in adverse socioeconomic conditions across Washington, DC, neighborhoods. It also examines the levels of exposure of youth of different races or ethnicities to these adverse conditions. Underlying this analysis is the premise that aggregate neighborhood conditions related to poverty and welfare status, educational attainment, out-of-wedlock births, employment, drug use, and crime serve as proxies for resident youth's perceptions of the opportunity structure as filtered through the local social network.

Empirical analyses show two distinct clusters of indicators that vary consistently across Washington neighborhoods; one is related to socioeconomic status, drug use, and fertility, and the other is related to crime rates. Both sets vary systematically by the racial-ethnic composition of youth in the neighborhood. Youth in black, female-headed families are exposed to the most negative neighborhood conditions.

### **Introduction**

The conceptual framework presented in the companion article (Galster and Killen 1995) attempted to explain how youth would make different choices regarding work, welfare, crime, and fertility based on their perceptions of the prospective payoffs of these alternatives. Their perceptions, in turn, were modeled as reflecting the "reality" of the opportunity structure—the markets, institutions, and systems confronting youth—as filtered through local social networks. The discussion left two key questions unanswered, however. (1) To what extent do quantifiable dimensions of the perceived opportunity structure, as they are apprehended by youth, vary across neighborhoods? (2) Does their variation coincide with residential patterns so that youth of different races and ethnicities typically perceive very different opportunity structures? This article addresses these questions through the examination of Washington, DC, census tract data.

We first present data that reflect the neighborhood environments in which youth are raised and make choices. These data measure census tract levels of out-of-wedlock births, educational attainment, nonemployment, poverty and public assistance, violent and property crimes, and drug use. We take these measures as indicators of the opportunity structure as perceived by youth. We then explore the patterns of racial and ethnic residential segregation faced by children, female-headed families with children, and male-headed families with children. Finally, we assess the spatial congruence between the indicators of perceived opportunity structure and children of different racial or ethnic backgrounds who live in various household configurations.

Our work builds on three closely related strands of literature. One strand has documented the increasing concentration of poverty in certain inner-city neighborhoods, particularly the rise of “underclass” communities (e.g., Coulton, Pandey, and Chow 1990; Jargowsky 1994; Kasarda 1993; Ricketts and Sawhill 1989; Wiener and Mincy 1991). The second strand has described urban spatial variations in various indicators of “social distress” and related them to the racial or socioeconomic composition of neighborhoods (e.g., Coulton and Pandey 1992; Massey, Condran, and Denton 1987). The third strand has explored correlations between neighborhood concentrations of poverty and particular outcomes such as out-of-wedlock birthrate, labor force participation, and infant mortality (e.g., Massey and Kanaiupuni 1990; Massey, Gross, and Eggers 1991; Wacquant and Wilson 1989).

In this article we focus on the neighborhood conditions faced by children in different racial-ethnic categories. Furthermore, unlike the literature mentioned above, which focuses solely on the poverty of urban residents, we consider Washington’s neighborhood residential environment in multiple dimensions. This study is premised on the claim that neighborhood conditions affect the choices that individuals make, especially as those conditions define youth’s developmental context, as the evidence reviewed in the companion article (Galster and Killen 1995) suggests. Our task here is not, however, to test this proposition further, but to quantify aspects of youth’s perceived opportunity structure that vary at the census tract level and to exhibit them for a particular city.

### **Operationalizing opportunity structure**

The fundamental challenge in operationalizing the notion of opportunity structure is to distinguish measures of causal inputs

from behavioral outputs. It is extremely difficult as a practical matter to distill independent measures of the characteristics of markets, institutions, and systems apart from people's behavioral choices made in response to their perceptions of these factors. One could, in principle, develop indicators of how well a particular market was performing in a certain neighborhood, for example, but actual data of this sort are rare.

This problem is particularly acute when one tries to understand the relationship between *aggregations* of individual behaviors and neighborhood-level socioeconomic conditions that affect the behaviors of *individuals*. One can, for instance, observe large numbers of "discouraged workers" who are no longer seeking employment and high percentages of families in poverty in the same neighborhood, but causation is blurred. Are individual workers discouraged because the concentrated poverty around them limits their access to job information networks, or is poverty so high in the area because so many people are not employed?<sup>1</sup>

Much of the longitudinal empirical literature on neighborhood effects cited earlier in the companion article (Galster and Killen 1995) finesses this problem by examining behaviors of *individuals* over time in a neighborhood context defined by the aggregation of preexisting behaviors of others nearby. In this article, we do not have the luxury of individual observations, but the logic of the previous approach can be applied nonetheless.

From the perspective of any individual youth, his or her residential environment, local social networks, and thus perception of the opportunity structure will be defined in part by the aggregation of adult behaviors in the neighborhood. Variables measuring aggregations of adult choices vis-à-vis the opportunity structure are imperfect measures of that structure, for reasons explained above. This is not true if the focus remains on youth, however, and if the focus is on subjective spatial variations in the perceived opportunity structure as opposed to objective spatial variations in markets, institutions, and systems (see Galster and Killen 1995). This is the focus we use in this article.

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<sup>1</sup> Precisely this ambiguity arises in the literature. For instance, Massey, Gross, and Eggers (1991) find a positive correlation between tract poverty rates and the probability that males ages 20 to 35 are not working. They interpret this as evidence that "neighborhood effects" are causing males not to work. An alternative explanation is that there will be higher poverty rates in neighborhoods in which many males do not work.

We would argue that much of the image of the opportunity structure acquired by youth comes secondhand through family and adult neighbors. Adults communicate their perception of the opportunity structure both intentionally and unintentionally. As adults intentionally tell children what the world is like, they are infusing the communication with their values, aspirations, and experiences as they have been molded by their interface with the opportunity structure. Inasmuch as actions often speak louder than words, adults also may be unintentionally communicating powerful lessons to children through their own choices. In sum, variables that measure in aggregate the choices and outcomes experienced by adults in the neighborhood (out-of-wedlock birthrates and poverty rates, for example) should be reasonable proxies for the subjective impressions regarding the opportunity structure and the normative commentary on alternative choices that youth receive from adults in their neighborhoods. Put in terms defined in the companion article (Galster and Killen 1995), what we will measure here is the content of the messages that youth receive about the opportunity structure from one important part of their local social networks.

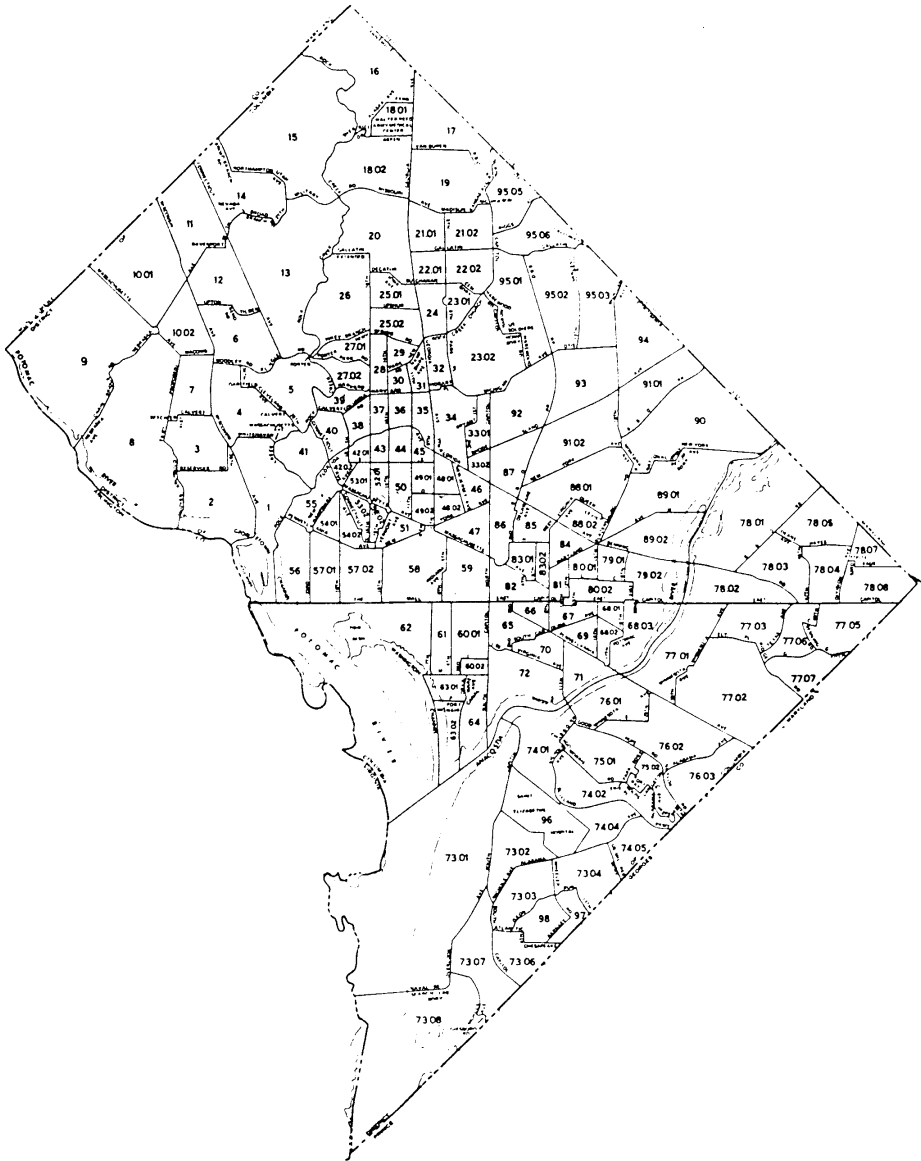
## **Data, hypotheses, and empirical methods**

### *Data sources*

Data for this article were obtained from the 1990 *Census of Population* (Census Tracts), the DC Police Department's Office of Criminal Justice Plans and Analysis, and the Division of Research and Statistics of the DC Commission of Public Health. All 1990 data apply to census tracts in the District of Columbia, not the outlying areas of the metropolitan statistical area. It would have been instructive to compare outlying areas as well, but data on crime, drug use, and out-of-wedlock birthrates at the tract level were not available. The District was chosen for analysis instead of another city because our preliminary reconnaissance revealed that it had the widest array of variables available at the census tract level.

We coded our data into census tracts according to the 1970 tract boundary definitions specified for the District of Columbia (figure 1) because the initial collection of data by the Washington, DC, government offices corresponded to 1970 tract boundaries. Only the 139 tracts that are predominantly residential and noninstitutional are analyzed here.

Figure 1. 1970 Washington, DC, Census Tract Boundaries



### *Hypotheses*

Our working hypotheses for Washington, DC, census tracts are listed below:

1. Significant spatial variations exist in the neighborhood characteristics analyzed.
2. High correlations exist between various neighborhood characteristics analyzed.
3. Significant spatial variations exist in the location of households with children who differ by race or ethnicity.
4. Significant spatial congruence exists between neighborhood characteristics and the location of households with children of particular races or ethnicities. (Households with black children face the least desirable neighborhood characteristics, on average.)

### *Empirical methods: Maps and indices*

Our approach is to display in a descriptive fashion statistics that allow us to test each of the hypotheses above. The four hypotheses are tested, respectively, by displaying the following:

1. The spatial distribution of selected neighborhood (census tract) characteristics related to disadvantageous dimensions of youth's opportunity structure
2. The cross-tract correlations among these dimensions
3. The residential distribution of children by race and ethnicity and by three types of household categories
4. The residential exposure by race and ethnicity of each of these household categories to the aforementioned neighborhood characteristics

For the first two tests, we calculate summary statistical measures of dispersion, compute correlations, and map variations for our selected census tract characteristics. For the third test, involving racial-ethnic group residential variations, we use two conventional indices of residential segregation: a *dissimilarity* index  $D$  and an *exposure* index  $P^*$  (also called an *interaction* index.)

The dissimilarity index is defined as follows:

$$D(b) = \frac{1}{2} \sum_i \left| \frac{b_i}{B} - \frac{w_i}{W} \right|, \quad (1)$$

where  $w_i$  and  $b_i$  are the populations in particular subgroups  $w$  and  $b$  residing in tract  $i$ , and  $W$  and  $B$  are the total populations in the subgroups  $w$  and  $b$  residing in all tracts.  $D$  checks how closely the given subgroup  $b$ 's distribution across tracts matches that of the  $w$  population. If, at one extreme, group  $b$  were to have the same proportion of its population in every tract as the  $w$  population, then  $D$  would be 0, meaning no dissimilarity. If, at the other extreme, group  $b$  were to have 100 percent of its population concentrated in tracts in which none of the other group lived,  $D$  would be 1, meaning maximum dissimilarity.

The exposure index of group  $b$  to group  $w$  would be

$${}_b P_w^* = \sum_i \left( \frac{b_i w_i}{B W} \right), \quad (2)$$

where  $b_i$ ,  $w_i$ ,  $t_i$  are the populations of group  $b$ , group  $w$ , and the total across all groups residing in tract  $i$ , and  $B$  corresponds to the total number of group  $b$  members in all tracts. The exposure index is simply a weighted average: It shows the proportion of tract population in group  $w$  for the "average"  $b$  person's tract. Thus, it can vary from 0 (no cross-group exposure) to 0.999 (each  $b$  person is the only member of group  $b$  living in a tract that is otherwise inhabited solely by  $w$  people).

We calculated both indices because they measure conceptually and empirically distinct aspects of segregation (Massey and Denton 1988; Stearns and Logan 1986). The  $D$  index measures how similarly spread spatially the two groups being compared are; the  $P^*$  index measures the average mixture in a neighborhood resulting from the degree of spatial spread. For more on the features of these indices, see Lieberson and Carter (1982) and Page (1988).

Finally, to analyze how households with children face different sorts of neighborhood environments according to their race and ethnicity, we calculated modified exposure indices. But instead of using them in the traditional way to estimate the exposure of one household group ( $b$ ) to another, we used them to estimate

the exposure of one household group to a particular neighborhood (scalar) condition  $C$  (such as poverty rate or crime rate in the tract). Thus, in this application our *neighborhood condition exposure index* ( ${}_bE_c$ ) is computed as

$${}_bE_c = \sum_i \left( \frac{b_i}{B} C_i \right), \quad (3)$$

where all symbols are as defined above. This index ranges from a minimum equal to the minimum value of  $C$  observed in the sample of tracts to a maximum equal to the maximum value of  $C$  observed in the sample of tracts. The interpretation of this index is the value of neighborhood characteristic  $C$  in the “average”  $b$  person’s tract.

### *Youth and household categories and neighborhood characteristics considered*

We consider three demographic categories defined by census that involve children; each is subclassified by race and ethnicity, as follows:

1. Persons under age 15: black and white
2. Female-headed families with children under age 18: black, white, and Hispanic
3. Male-headed families with children under age 18: black, white and Hispanic

If it had been possible, we would have conducted our statistical calculations in household configurations that were defined unambiguously by mutually exclusive racial and ethnic categories: Hispanic, non-Hispanic white, and non-Hispanic black. Unfortunately, census tract data do not permit such classifications for children or for various household configurations. Persons under age 15 are tabulated only by racial categories (black, white, and other); no identification of Hispanic ethnicity is provided. Female- and male-headed family counts do designate Hispanic ethnicity but do not give breakdowns of ethnicity by race. None of the data allowed us to distinguish non-Hispanic blacks or whites. Thus the “black” and “white” designations include some

Hispanics and the “Hispanic” designation includes both blacks and whites, among other possible racial designations.<sup>2</sup>

We consider nine characteristics of census tracts in 1990 that we believe represent key elements of the messages youth receive about the opportunity structure through their neighborhood social networks:

1. The number of out-of-wedlock births per 100 females over age 15
2. The percentage of youth ages 16 to 21 not graduated from or enrolled in high school (a proxy for dropouts)
3. The percentage of males over age 15 who are not employed
4. The percentage of families in poverty
5. The percentage of families on public assistance<sup>3</sup>
6. The percentage of persons arrested who test positive for drug use
7. The number drug sale and possession arrests per 100 population
8. The number of property crimes (larceny, vandalism, burglary, auto theft) per 100 population
9. The number of violent crimes (homicide, rape, robbery, aggravated assault) per 100 population

Five of these variables are conventional and are constructed from Bureau of the Census data. The other four are unconventional; indeed, it was their unique availability at the tract level that led us to analyze the District of Columbia. The DC Commission of Public Health’s Division of Research and Statistics provided data on the number of births registered during 1990 for mothers residing in the District who were unmarried, aggregated to the census tract level. The DC Police Department’s Office of Criminal Justice Plans and Analysis provided data on reports of

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<sup>2</sup> Hispanics may be counted twice. See Tobin (1993) for a detailed explanation of this circumstance.

<sup>3</sup> Public assistance is defined as payments by state or federal welfare agencies to low-income elderly (65 years or older), blind, or disabled persons; Aid to Families with Dependent Children; and general assistance.

various categories of crimes that occurred during 1990, with census tract locators appended to each. That office also tabulated 1990 arrests involving the sale or possession of illegal drugs and recorded the results of drug tests routinely administered to persons arrested for serious offenses, coded by census tract of residence.<sup>4</sup>

## **Empirical results**

### *Spatial distribution of neighborhood characteristics*

Descriptive statistics for our nine neighborhood characteristics are presented in table 1. As can be quickly seen by examining standard deviations, coefficients of variation, and extreme values, all variables vary dramatically across the sample of 139 census tracts. Four indicators have coefficients of variation (i.e., standard deviations divided by means) between 0.83 and 0.93; indicators for drug arrests, property crime, and violent crime show even more variation, with coefficients of variation from 1.87 to 4.48.

There are high statistically significant correlations between most of the indicators (table 2). Out-of-wedlock birthrates, drug use, and public assistance rates generally show the highest correlations with all the other indicators (except for property crime rates). Another nexus of high correlations occurs among drug arrests, property crimes, and violent crimes. What is less expected is that high school noncompletion rates have comparatively low (0.30–0.35) correlation with nonemployment, public assistance, and drug use rates and (statistically insignificant but) negative correlations with all three types of crimes. Similarly, property crime rates are not significantly correlated with any indicators other than drug arrest rates and violent crime rates. These results suggest strong spatial similarities in a cluster of variables describing neighborhood residents' socioeconomic status, drug use, and out-of-wedlock fertility behavior. They also suggest a second cluster of indicators related to crime that varies across neighborhoods in a pattern different from that of the first cluster.

Certain neighborhoods experience high levels of all of the indicators. In figures 2 through 10, the data are shown in graphic

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<sup>4</sup> Tests were given for cocaine, methamphetamine, opiates, phencyclidine (PCP), and methadone. However, not all persons arrested were tested for drug use.

**Table 1. Spatial Distribution of Selected Neighborhood Characteristics Related to Youth's Opportunity Structure, Washington, DC, 1990**

Condition	Mean	SD	SD/ Mean	Mini- mum	Maximum
Out-of-wedlock births/100 females over age 15	3.39	3.14	0.93	0.0	16.61
Percent ages 16–21 not graduated or enrolled in high school*	15.46	13.49	0.87	0.0	73.68
Percent nonemployed males over age 15	35.81	13.21	0.37	0.0	77.85
Percent families in poverty	19.41	11.28	0.58	3.02	53.88
Percent families receiving public assistance	10.79	8.94	0.83	0.0	45.36
Number arrested testing positive for drugs/100 population	2.08	1.74	0.84	0.01	9.0
Drug sale and possession arrests/100 population	2.29	10.26	4.48	0.0	120.28
Property crimes/100 population	19.87	57.66	2.90	2.64	462.76
Violent crimes/100 population	3.95	7.39	1.87	0.10	66.75

Note:  $n = 139$  census tracts except as indicated. SD = standard deviation.

\* $n = 138$ .

form, using a gradation scheme in which darker shades indicate greater rates of a characteristic. (Unshaded areas represent tracts that have no resident population or are overwhelmingly institutionalized.)

Space does not permit a discussion of all the comparisons one might make among the figures, so only some salient ones will be noted here. The maps reveal several dramatic patterns:

1. The markedly higher rate of arrests for drug sales and possession in a few tracts centered on the central Northeast and central Southeast sectors (due to either a spatial concentration in these markets or their selective targeting for drug enforcement activities)

Table 2. Correlations between Neighborhood Characteristics, Washington, DC, 1990

Conditions	Out-of-wedlock births/100 females over age 15	% ages 16-21 not graduated or enrolled in high school*	% non-employed males over age 15	% families in poverty	% families receiving public assistance	Number arrested testing positive for drugs/100 population	Drug sale and possession arrests/100 population	Property crimes/100 population	Violent crimes/100 population
Out-of-wedlock births/100 females over age 15	1.00 (0.0)	0.38 (0.0001)	0.55 (0.0001)	0.68 (0.0001)	0.79 (0.0001)	0.84 (0.0001)	0.46 (0.0001)	0.12 (0.17)	0.35 (0.0001)
Percent ages 16-21 not graduated or enrolled in high school*		1.00 (0.0)	0.31 (0.0003)	0.44 (0.0001)	0.35 (0.0001)	0.30 (0.0003)	-0.03 (0.70)	-0.12 (0.16)	-0.03 (0.69)
Percent nonemployed males over age 15			1.00 (0.0)	0.56 (0.0001)	0.48 (0.0001)	0.59 (0.0001)	0.18 (0.03)	-0.11 (0.19)	0.08 (0.37)
Percent families in poverty				1.00 (0.0)	0.78 (0.0001)	0.66 (0.0001)	0.16 (0.055)	0.01 (0.98)	0.19 (0.03)
Percent families receiving public assistance					1.00 (0.0)	0.76 (0.0001)	0.31 (0.0002)	0.03 (0.70)	0.23 (0.006)
Number arrested testing positive for drugs/100 population						1.00 (0.0)	0.31 (0.0002)	0.08 (0.32)	0.31 (0.0002)
Drug sale and possession arrests/100 population							1.00 (0.0)	0.69 (0.0001)	0.76 (0.0001)

Table 2. Correlations between Neighborhood Characteristics, Washington, DC, 1990 (continued)

Conditions	Out-of-wedlock births/100 females over age 15	% ages 16-21 not graduated or enrolled in high school*	% non-employed males over age 15	% families in poverty	% families receiving public assistance	Number arrested testing positive for drugs/100 population	Drug sale and possession arrests/100 population	Property crimes/100 population	Violent crimes/100 population
Property crimes/100 population								1.00 (0.0)	0.92 (0.00001)
Violent crimes/100 population									1.00 (0.0)

Note: n = 139 census tracts except as indicated. Figures in parentheses are p values.  
\*n = 138.

**Figure 2. Out-of-Wedlock Births per 100 Women over Age 15, Washington, DC, 1990**

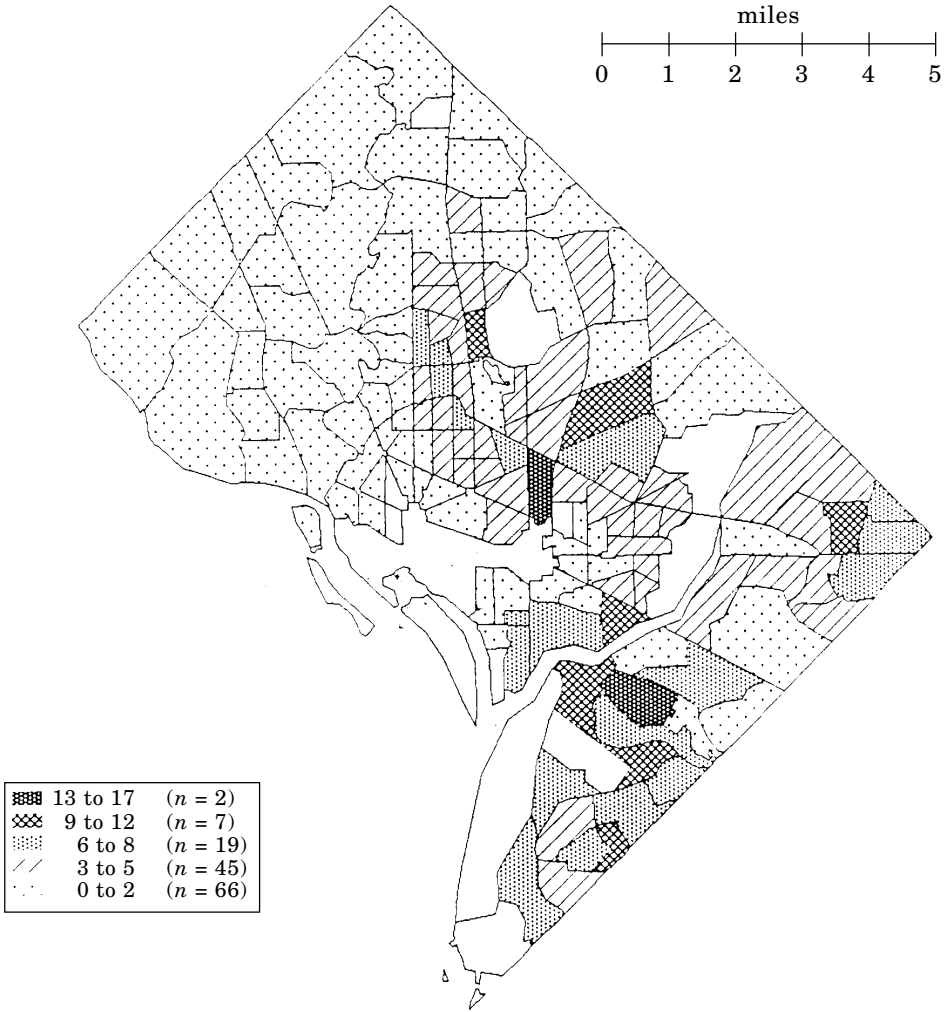
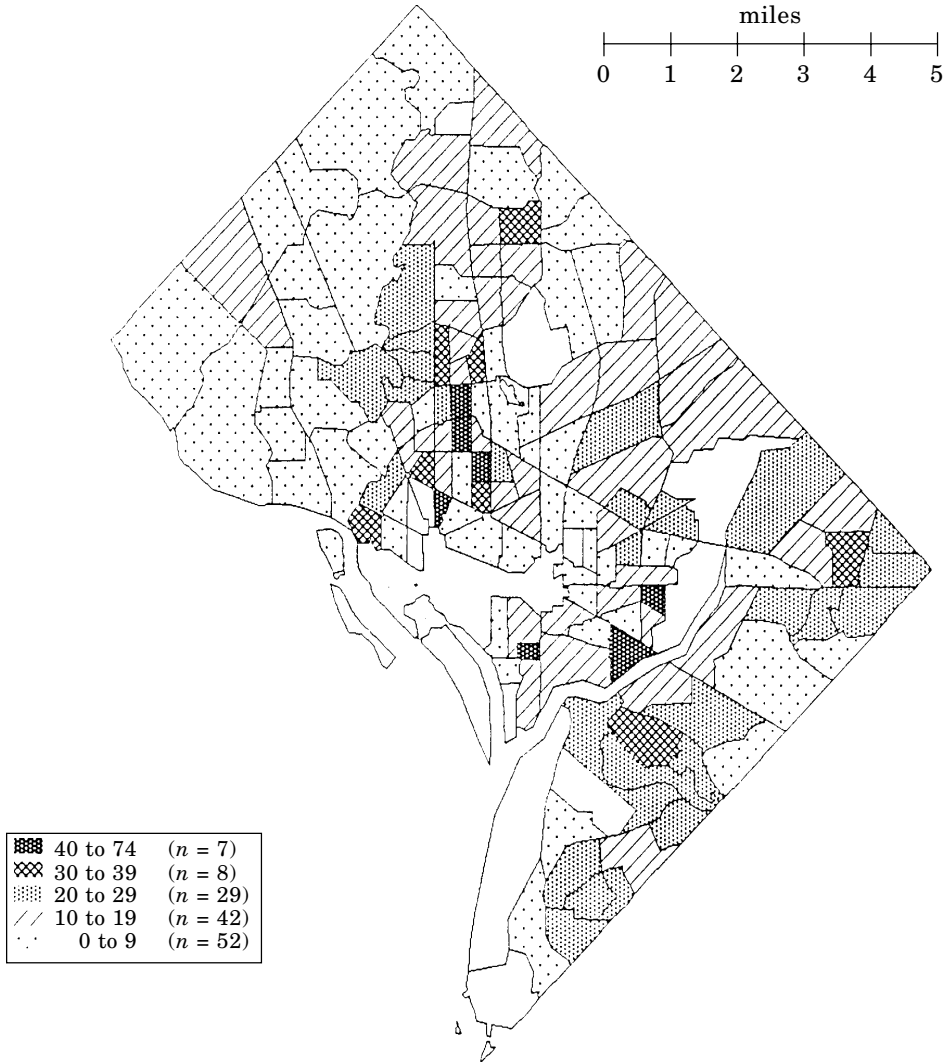
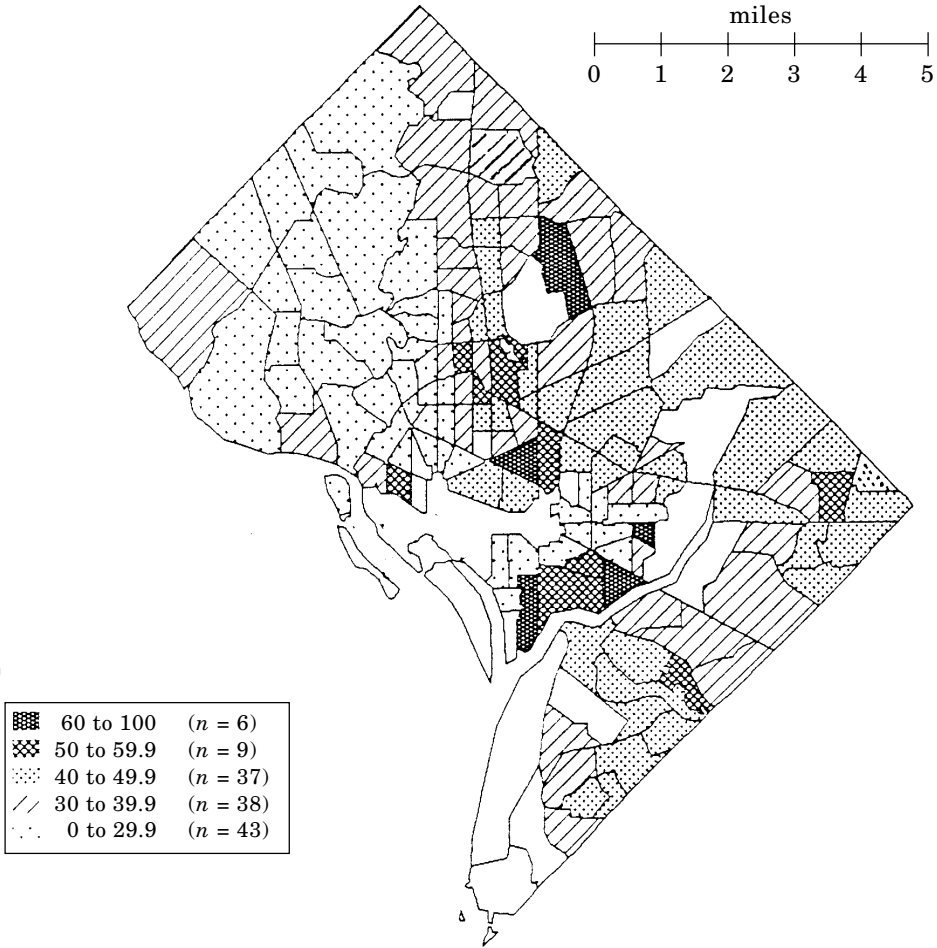


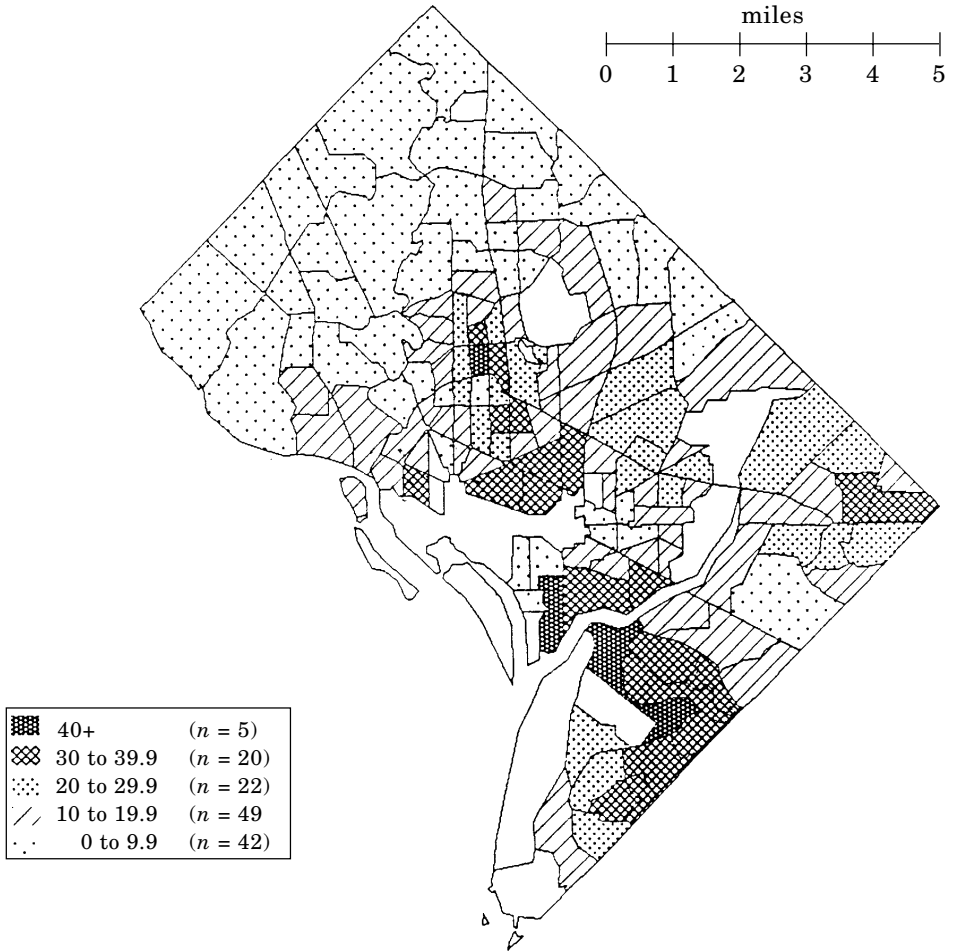
Figure 3. Percentage of Population Ages 16 to 21 Not Graduated or Enrolled in High School, Washington, DC, 1990



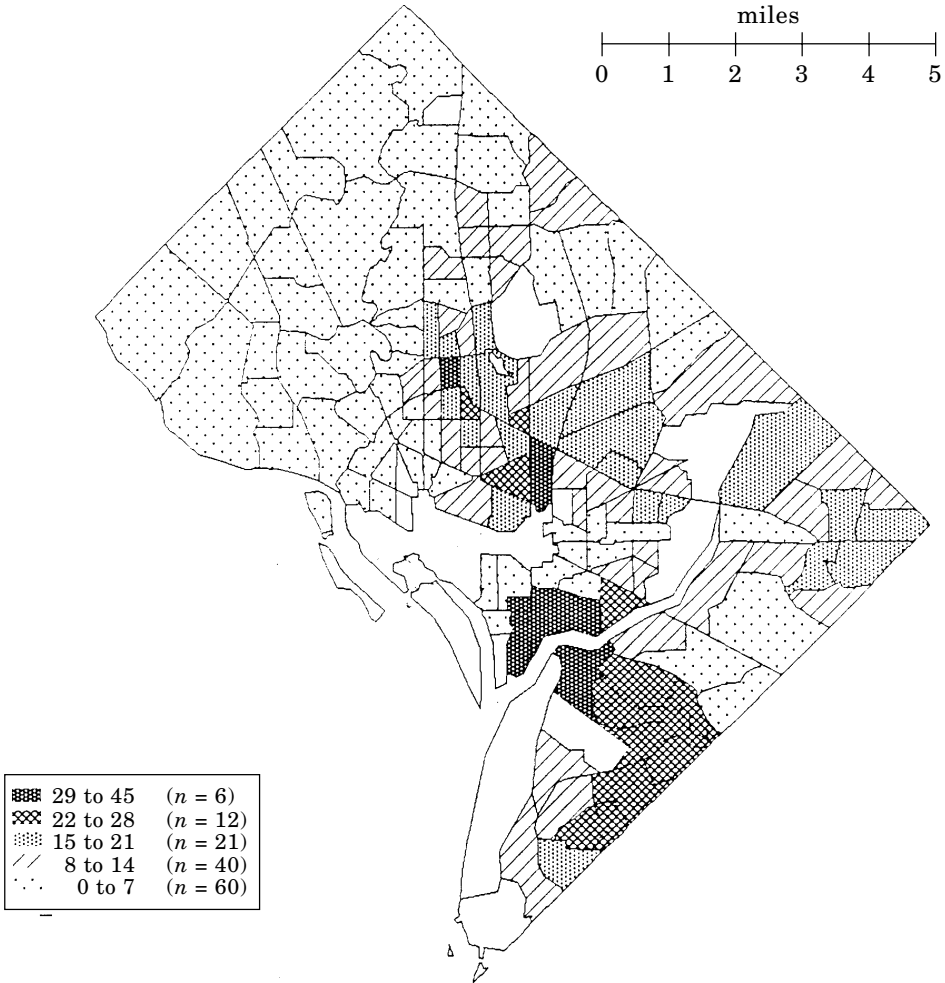
*Figure 4. Nonemployment Rate for Males over Age 15 (percent), Washington, DC, 1990*



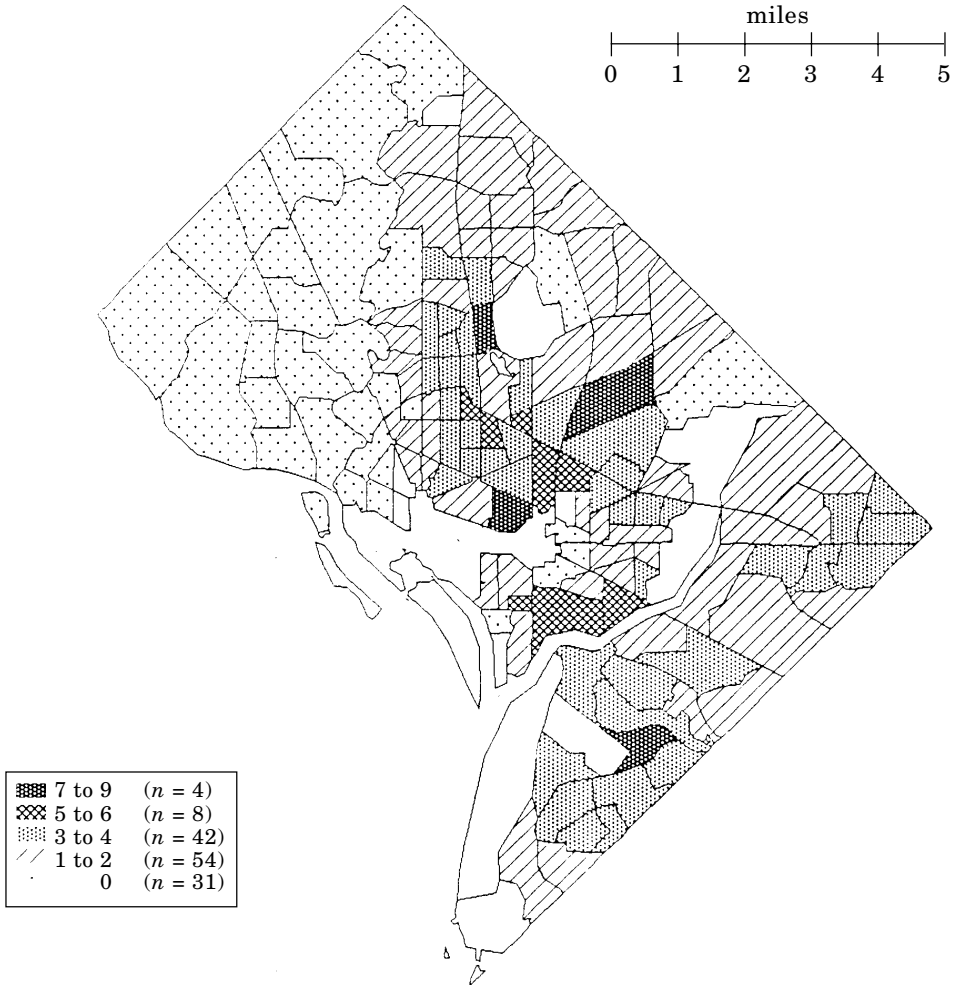
**Figure 5. Poverty Rate (percent),  
Washington, DC, 1990**



*Figure 6. Percentage of Families Receiving Public Assistance, Washington, DC, 1990*



**Figure 7. Positive Drug Tests per 100 Persons Arrested, Washington, DC, 1990**



**Figure 8. Arrests for Drug Sales or Possession per 100 Persons, Washington, DC, 1990**

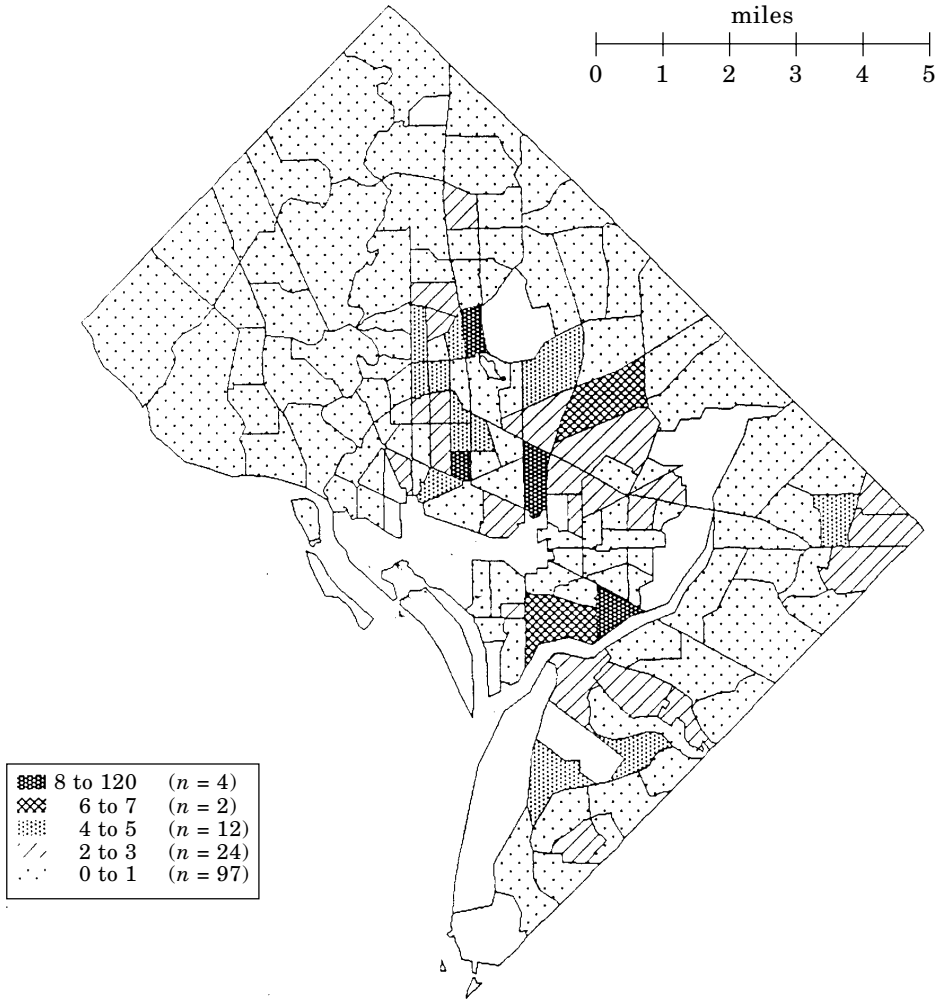


Figure 9. Property Crimes per 100 Persons, Washington, DC, 1990

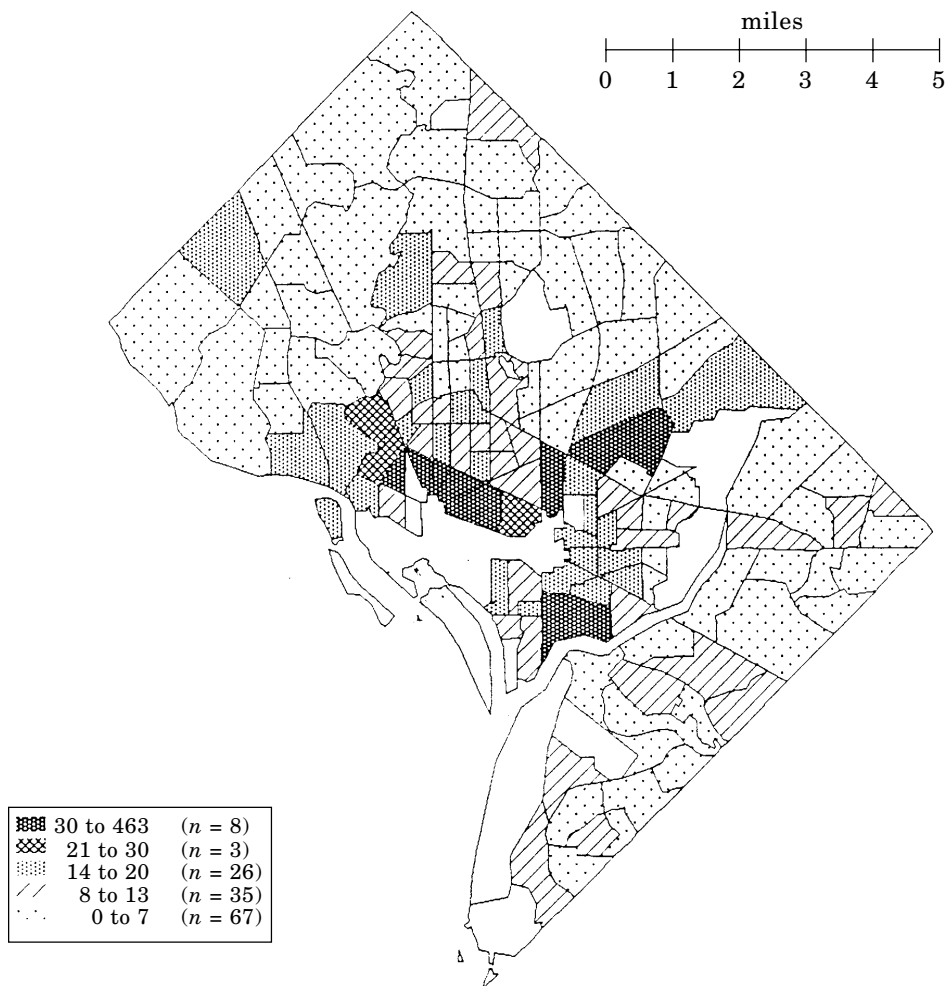
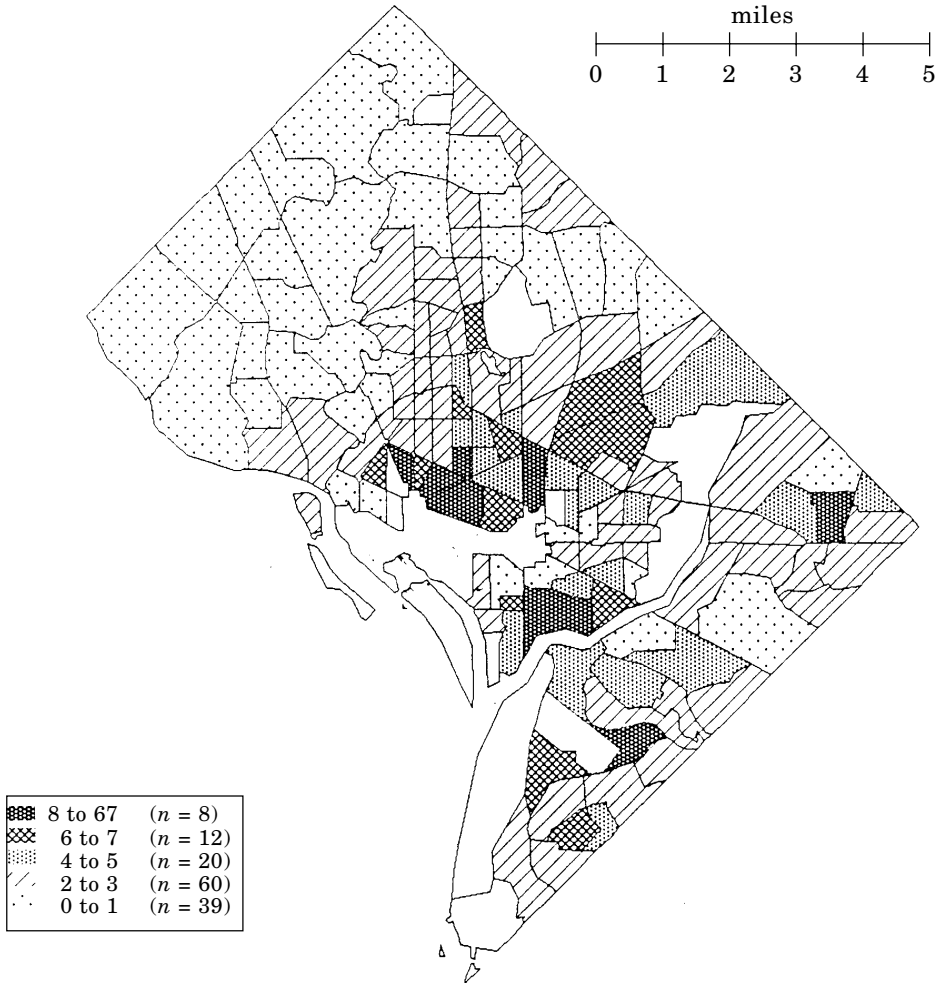


Figure 10. Violent Crimes per 100 Persons, Washington, DC, 1990



2. The markedly higher rate of property and violent crime concentrated adjacent to the federal office district on the Mall (partly due to the prevalence of nonresidential structures there)<sup>5</sup>
3. The markedly higher rates of multiple indicators in three areas: Anacostia (in outer Southeast), North Central (in central Northwest and central Northeast), and outer Northeast

Certain census tracts have high rates of almost all the indicators. For instance, tracts 86 (central Northeast, adjacent to Union Station) and 71 (central Southeast, on the Anacostia River) both have poverty rates over 30 percent and rank among the top 20 tracts citywide on six other indicators of disadvantage. (See figure 1 for location.)

But an additional point must be made: Tract poverty rates are not a completely satisfactory predictor of all types of disadvantage. Poverty rates are poor predictors of drug, property, and violent crimes, for instance (table 2); this is apparent in the maps. Tracts 74.04 (Anacostia, Southeast) and 36 (North Central, Mt. Pleasant) have considerably higher poverty rates than tracts 86 and 71, yet they rank among the top 20 tracts citywide on only three or four indicators. One implication of this finding is that neighborhood poverty rates are an imperfect proxy for several important dimensions of the environment in which youth are maturing and making life decisions, especially those related to crime.<sup>6</sup>

### *Residential distribution of household groups*

Summary indices for the spatial patterns of residences containing youth are presented in table 3. The table provides dissimilarity indices and exposure indices for three groupings—

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<sup>5</sup> The high variation for property and violent crime rates is caused by high rates in four predominantly nonresidential census tracts: 51, 53.02, 58, and 86. These tracts have property crime rates over 187, whereas the rate for the next-highest tract is 55, and violent crime rates over 25, whereas the rate for the next-highest tract is 10. As few children live in these tracts, however, the effect on exposure indices is minimal.

<sup>6</sup> We hasten to add that locational data on crime refer to where the crime was committed, not where the perpetrators lived. Thus, the data provide little indication of where a subculture supporting crime as a way of life may flourish.

*Table 3. Residential Distribution of Various Household Groups by Race, Washington, DC, 1990*

Household group	Dissimilarity	Exposure
Youth, age 0–14*		
White—black	0.82	0.25
Black—white		0.04
Female-headed families with children under 18		
White—black	0.83	0.34
White—Hispanic	0.59	0.22
Black—Hispanic	0.75	0.03
Black—white		0.02
Hispanic—black		0.60
Hispanic—white		0.33
Male-headed families with children under 18		
White—black	0.85	0.23
White—Hispanic	0.54	0.27
Black—Hispanic	0.81	0.05
Black—white		0.03
Hispanic—black		0.35
Hispanic—white		0.27

Note:  $n = 139$  census tracts. Hispanics can be of any race.

\*Youth ethnicity was not recorded by the census.

youth, female-headed families with children, and male-headed families with children—subdivided by racial-ethnic category.

As noted above, our data did not permit the creation of three mutually exclusive racial-ethnic categorizations of either youth or household types. Thus, data for whites (and to a lesser extent blacks) include some Hispanics who designate themselves as belonging to these racial categories.<sup>7</sup> The implication is that all segregation measures reported here will understate the degree of segregation for non-Hispanic white, non-Hispanic black, and Hispanic comparisons.

Youth of different racial-ethnic groups (especially blacks and whites) were highly segregated in Washington in 1990, regardless of whether they lived in female- or male-headed households (table 3). The  $D$  index for white and black children had a narrow range, from 0.82 to 0.85, regardless of household type. Similarly, white and Hispanic children in female-headed families were only moderately more segregated ( $D = 0.59$ ) than those in male-headed families ( $D = 0.54$ ). Comparing black and Hispanic children, those in female-headed families ( $D = 0.75$ ) were somewhat less segregated than those in male-headed ones ( $D = 0.81$ ).

<sup>7</sup> Most Hispanics designate themselves as “other” on the census race question.

The intergroup exposure rates were highly asymmetric, given the predominance of the black youth population in Washington. That is, white youth were exposed to substantial fractions (25 percent, on average) of black youth living in the same tracts. Indeed, only six tracts contained no black youth, and these contained only 1,142 of the total 12,885 white youth. This pattern held true for both female- and male-headed families with children. Hispanic male-headed families had substantially less exposure to their black counterparts than Hispanic female-headed families did to black female-headed families. On the other side of the coin, black youth were relatively isolated from youth in other groups, given the preponderance of exclusively black-occupied tracts. For example, 37 tracts contained no white youth, but 35,503 of the total 77,826 black youth lived in these tracts. The typical black youth's tract had 5 percent or fewer white or Hispanic youth or households with children. These exposure indices, like the dissimilarity indices above, attest to the extreme concentration of black youth in homogeneous enclaves in the District.

### *Residential exposure of youth to neighborhood conditions*

Using equation (3), we calculated neighborhood exposure indices for youth (table 4), female-headed families with children (table 5), and male-headed families with children (table 6) vis-à-vis the nine neighborhood characteristics. It is immediately apparent that the spatial pattern of neighborhood conditions conjoins with the spatial pattern of residence in such a way that youth face substantially different neighborhood characteristics depending on their race and ethnicity. For most of the nine indicators, black youth (and both household types containing them) face the highest rate of negative neighborhood conditions, followed by Hispanic youth, followed by white youth.

Here the caveat regarding overlapping racial-ethnic categories is less worrisome. The interpretation of Hispanic families' exposure to various neighborhood conditions is unambiguous: For almost every indicator, Hispanic exposure is lower than for blacks and higher than for whites. Thus, assuming that black Hispanics and white Hispanics have exposures similar to those of all Hispanics, and knowing that both the black and white groups contain some Hispanics, we can interpret the black families' exposure indices as underestimates of the exposures borne by non-Hispanic black families and the white families' exposure indices as overestimates. Thus, the proportional differentials reported below

for white and black youth likely understate the differentials for non-Hispanic youth in these categories.

The magnitude of difference in table 4 is often staggering. For instance, compared with white youth, black youth face the following in their “average” census tract:

1. Seven times the rate of out-of-wedlock births
2. Six times the rate of drug use
3. Six times the rate of drug arrests
4. Five times the rate of public assistance
5. Almost three times the rate of violent crime
6. Almost three times the rate of poverty
7. Two-and-a-half times the rate of high school dropouts
8. One-and-a-half times the rate of male nonemployment

Comparisons across household types are equally revealing. Black families with children, both female- and male-headed, have higher rates of exposure to almost all indicators than comparable households that are white or Hispanic. Black female-headed families with children have higher rates of exposure to all indicators, except poverty rates, than black male-headed families. This pattern is dramatically reversed for white and Hispanic

*Table 4. Residential Exposure of Youth Ages 0–14 to Neighborhood Conditions, by Race, Washington, DC, 1990*

Condition	Black <sup>a</sup>	White <sup>b</sup>
Out-of-wedlock births/100 females over age 15	5.63	0.85
Percent ages 16–21 not graduated or enrolled in high school <sup>a</sup>	21.27	8.06
Percent nonemployed males over age 15	41.23	25.77
Percent families in poverty	25.02	9.22
Percent families receiving public assistance	17.00	3.51
Number arrested testing positive for drugs/100 population	3.14	0.54
Drug sale and possession arrests/100 population	2.20	0.38
Property crimes/100 population	8.27	8.14
Violent crimes/100 population	3.11	1.14

<sup>a</sup>*n* = 134 census tracts.

<sup>b</sup>*n* = 138.

families. White male-headed families with children have a greater exposure than similar female-headed families to all indicators except property and violent crime rates (see tables 5 and 6). Hispanic male-headed families with children have a greater exposure than similar female-headed families to all indicators except public assistance and poverty rates. These findings strongly suggest that a black youth in Washington who has a single, female parent will confront many more negative neighborhood conditions than a comparable white or Hispanic youth.

**Table 5. Residential Exposure of Female-Headed Families to Neighborhood Conditions, by Race and Ethnicity, Washington, DC, 1990**

Condition	Black	Hispanic	White
Out-of-wedlock births/100 females over age 15	5.01	2.89	1.10
Percent ages 16–21 not graduated or enrolled in high school*	19.90	19.34	9.76
Percent nonemployed males over age 15	41.77	28.03	26.41
Percent families in poverty	24.32	17.50	8.57
Percent families receiving public assistance	16.29	8.57	4.13
Number arrested testing positive for drugs/100 population	2.64	1.68	0.73
Drug sale and possession arrests/100 population	1.81	1.47	0.53
Property crimes/100 population	8.53	8.40	10.42
Violent crimes/100 population	3.32	2.24	1.66

Note:  $n = 139$  census tracts except as indicated.

\* $n = 138$ .

**Table 6. Residential Exposure of Male-Headed Families to Neighborhood Conditions, by Race and Ethnicity, Washington, DC, 1990**

Condition	Black	Hispanic	White
Out-of-wedlock births/100 females over age 15	4.25	2.99	1.57
Percent ages 16–21 not graduated or enrolled in high school*	18.46	20.15	11.82
Percent nonemployed males over age 15	39.96	28.33	26.94
Percent families in poverty	26.58	17.49	11.95
Percent families receiving public assistance	13.59	8.06	4.79
Number arrested testing positive for drugs/100 population	2.36	1.72	0.90
Drug sale and possession arrests/100 population	1.56	1.84	0.78
Property crimes/100 population	8.71	8.44	7.95
Violent crimes/100 population	2.82	2.46	1.64

Note:  $n = 139$  census tracts except as indicated.

\* $n = 138$ .

## Conclusion

The conceptual framework that underlies this article is that we can understand the choices youth make regarding their fertility, education, work, and criminal activities by understanding the differences they perceive in the spatially variant set of constraints they face from the markets, institutions, and systems operating in their places of residence. This framework makes an implicit assumption that the perceived opportunity structure faced by youth varies substantially across an urban area, which explains variations in youth's observed behaviors.

We believe that youth's perceptions of the opportunity structure, as filtered through the local social network, can be proxied by a series of aggregate indicators describing their census tracts of residence. These indicators reflect the result of adults' assessment of and treatment by the opportunity structure. Although causation would be blurred if we used these indicators as independent measures of the opportunity structure facing adults, for the most part this is not the case from the perspective of youth, whose decisions are not yet reflected in the aggregate data described.<sup>8</sup>

Using this conceptual foundation, we have attempted to quantify various neighborhood components of youth's perceived opportunity structure, using Washington, DC, in 1990 as a case study. We used nine indicator variables associated with negative attributes of neighborhood (census tract) conditions. These indicators varied substantially across census tracts in the District, and extreme values of the indicators tended to cluster in particular geographic areas. High correlations were found between indicators in two distinct clusters (crime and socioeconomic status), indicating that multiple components of the perceived opportunity structure often vary in the same spatial patterns at the census tract level.

We also analyzed the spatial patterns of where youth lived, differentiated by their racial-ethnic status and type of household head. We found high degrees of segregation among all racial-ethnic categories of youth and families with children. The

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<sup>8</sup> We recognize that some of the indicators, including crime, school dropouts, and out-of-wedlock births, might be partially or even largely influenced by the actions of youth, especially those in their older teens. To the degree that this is the case, our indicators of the perceived opportunity structure will commingle cause and effect of behaviors for these older teenagers.

segregation of blacks was especially high on both dissimilarity and exposure indices.

Finally, we explored the juxtaposition of neighborhood conditions and residence of youth in different groups. We found that, on almost every indicator, black youth face a substantially more disadvantageous opportunity structure than Hispanic or, especially, white youth. Black youth in female-headed families were most disadvantaged of all.

This study is exploratory and partial and may not be generalizable. Several potentially important aspects of the opportunity structure, such as the quality of public education and the vitality of local churches and associations, were not measured. And certainly there is no reason to believe that the patterns observed in Washington apply uniformly elsewhere. Our analysis was confined to the District of Columbia; it is plausible that an even greater variation in opportunity structures confronting youth might be observed if we could obtain data for the entire metropolitan area.

Our tentative conclusions are as follows. Several dimensions of the opportunity structure as youth are likely to perceive them (through local social networks) can be measured at the census tract level. These dimensions vary significantly across space and in consistent patterns (at least in Washington, DC), and they present themselves differently depending on race and ethnicity. These findings have sobering implications in juxtaposition with the evidence presented in the companion article (Galster and Killen 1995). Our findings here suggest that urban space is organized in such a fashion that it encourages youth of different races and ethnicities to make different life decisions—decisions that ultimately perpetuate racial-ethnic social inequalities.

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