The Coaction of Neighborhood and Individual Effects on Juvenile Recidivism

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Abstract

Ecological approaches to explaining juvenile delinquency emphasize the importance of spatial influences on patterns of delinquency. Studies of recidivism among juvenile offenders, on the other hand, have rarely taken neighborhood influences into account. Moreover, conventional statistical approaches adapted for investigating spatial neighborhood effects, such as hierarchical linear modeling (HLM), are typically subject to assumptions regarding the nature of the spatial relationships under investigation that may, in fact, mask relevant neighborhood influences on individual outcomes. The study discussed in this article applied geographic analysis to the analysis of adjudicated juvenile delinquents assigned to court-ordered programs by the Family Court of Philadelphia, Pennsylvania. We examined the simultaneous effects of neighborhood and individual (including family) characteristics on juvenile recidivism using local spatial clustering of probabilities of reoffending. Geographic Information Systems provided the technology to integrate diverse spatial data sets, quantify spatial relationships, and visualize the results of spatial analysis. In the context of juvenile recidivism, this approach provided new insights on how and why recidivism rates vary from place to place. We found not only that recidivism was concentrated in specific areas of the city, but also that types of recidivism offenses were spatially concentrated. Importantly, the findings also show that predictors of reoffense vary from place to place.

Introduction

Criminologists, sociologists, geographers, and psychologists have long known that the environment in which an individual lives shapes behavior patterns, attitudes and preferences, and interpretations of the behaviors of others. On a macrosocial scale, Shaw and McKay (1942) found that spatial patterns of crime were associated with neighborhoods occupied by recent immigrants. They theorized that families and individuals that had recently arrived in Chicago were disconnected socially, and that social disorganization prevented informal social controls from curbing antisocial behavior. More recent research supports the conclusion that opportunities to engage in delinquency are greater in neighborhoods with weak social organization and little in the way of social controls (Sampson and Groves, 1989).

Bronfenbrenner's ecological systems theory (1981) also underscored the value of the external social and physical habitat in which an individual lives. His theory outlines four nested systems that surround individuals, beginning with the most proximate, the microsystem (for example, the family), and ranging out to the macrosystem, or the larger social and cultural context of our immediate environs. Sampson (2001, 1997) argues that social disorganization is not only an attribute of macrosystems, such as cities, but also is a way of looking at microsystems. Certain characteristics of microsystems, such as families and neighborhoods characterized by frayed relationships, lack the means to inhibit deviant behavior.

A competing theoretical perspective, differential association, rests on the work of Sutherland and Cressey (1992). This perspective attributes involvement in delinquency to the influences of norms, values, and expectations of people most intimately involved in an individual's life. To the extent that the values, norms, and behavioral expectations communicated by intimates support certain deviant behaviors, the individual will adopt patterns of delinquent behavior that are not considered morally wrong. Akers (1998) extended this theory by adding a social learning component that explains the process by which deviant values and behaviors are embraced. The concept of peer contagion is another expression of this theory, but is one that has primarily evolved to explain how residential programs designed to reduce delinquency can produce adverse effects (Dishion and Dodge, 2005), although recent evidence also suggests cross-neighborhood peer contagion effects in delinquency and recidivism (Mennis et al., 2011).

Although these spatial perspectives speak to the environments in which individuals reside or in which they carry on routine activities, none of them speak to the concept of place. Place-based analyses regard places as distinct entities that tell their own stories. Visual representations and spatial clustering of target variables across a geographically defined area can produce information not otherwise observable and facilitate the development of complex and useful research questions. These questions can then be tested with both qualitative and quantitative social science methods.

It is also worth noting that examinations of recidivism differ in a critical way from research on delinquency. When studying delinquency, researchers begin with the general population of youths and predict which youths will become delinquent. Studies of recidivism, such as this one, begin with known delinquents and seek to differentiate persistent from short-term delinquents. Many of the factors known to predict delinquency may have already been accounted for in the selection of this offender population; thus, correlates of delinquency may not be relevant to predicting further offending among known delinquents.

A number of studies have identified individual-level predictors of recidivism. These factors include criminal history, age at first arrest, substance abuse, and education (Elliot, Huizinga, and Ageton, 1985; Farrington and Hawkins, 1991; Frederick, 1999; Snyder and Sickmund, 2006; Yoshikawa, 1994). In addition, current age, negative peer relations, family problems, emotional distress, and previous treatment facility placement have been identified as individual-level attributes that increase the risk of juvenile recidivism (Baird, 1984; Marczyk et al., 2003; Snyder and Sickmund, 2006; Wiebush et al., 1995).

Studies examining the effects of neighborhood-level variables on rates of juvenile recidivism, however, are less common. Kubrin and Stewart (2006: 167) noted that "we know very little about how the ecological characteristics of communities influence the recidivism rates of this population." Previous research on recidivism is largely framed in terms of program evaluation, a literature that rarely acknowledges neighborhood context. Several meta-analyses of juvenile treatment programs have determined that the level of success and effective components of juvenile treatment differ between institutional and noninstitutional programs (Lipsey, 1999; Lipsey and Wilson, 1998). Lipsey and Wilson (1998), in their meta-analysis of 200 programs for serious and violent juvenile offenders, concluded that community-based programs garnered larger effects than did institutional programs.

The purpose of this study is to address this gap in the literature regarding neighborhood effects on juvenile recidivism. We examine this effect using a variety of methods that each contribute to a more complex and useful understanding of how place and individual characteristics interact to produce continued involvement in delinquency.

Philadelphia

Philadelphia is bounded on the east by the Delaware River and bisected by the Schuylkill River in its western environs. At the approximate time of the data collection used in this study, the city's population of approximately 1.44 million was 45 percent White, 43 percent African American, 8.5 percent Hispanic, and 4.5 percent Asian.

Philadelphia neighborhoods, even those characterized by poverty, social isolation, and crime, differ in their ability to protect their young residents from making contact with the juvenile justice system. Evidence of these differences is found in a study conducted by Jones et al. (2001), which reported that ZIP Code best predicted which first-time offenders who were expected to become chronic offenders actually went on to become chronic offenders (accruing three or more arrests). Using the Program Development and Evaluation System (ProDES) database (described in the Data section), the authors developed a risk instrument identifying the characteristics of chronic offenders at the time of their first contact with the juvenile court. Of the youths who had chronic-prone characteristics, none of the youths living in the 19144 ZIP Code (Germantown) went on to become chronic offenders. On the other hand, more youths in the 19143 (Kingsessing) ZIP Code became chronic offenders than were predicted. The authors concluded that these extreme differences were likely a result of differential access to neighborhood resources.

Fader (2003), in her study of youths in juvenile aftercare, used the ProDES data and an inventory of community-based youth serving programs. Although she found no systematic neighborhood effects, she did identify a neighborhood (North Philadelphia East–19133) in which aftercare clients

were at a very high risk for unsuccessful transition back into the neighborhood. A second related finding, because it involves the same general area, is that aftercare programs were not producing the same degree of positive results for Hispanic clients as for youths of other racial groups. The youths in this study were concentrated in a specific area of the city.

Our study follows a similar line of inquiry. The two questions addressed in this article are (1) Why is recidivism more common in some neighborhoods than others? and (2) Why are certain types of reoffending (offense type) more common in some neighborhoods than others?

We employ a place-based perspective that can yield hypotheses about causes of recidivism likely overlooked in past research.

Data

Data on juvenile delinquents were acquired from the ProDES database, which was developed by the Crime and Justice Research Institute at Temple University under a contract with the city of Philadelphia. The ProDES database tracks juveniles assigned to court-ordered programs by the Family Court of Philadelphia. It was designed to evaluate all programs used by the city of Philadelphia for its delinquent youths, monitoring program outcomes from 1994 to 2004. ProDES collected data at four points in time: (1) at the point of commitment to a program, (2) at program intake, (3) at discharge from the program, and (4) 6 months after program discharge (charges for new offenses, including adult charges).

Youths were ordered to attend 1 of 26 community-based programs scattered throughout Philadelphia at the discretion of the judge. These programs include after-school programs, alternative schools, and mentoring programs that youths attend while living at home. Of the 26 programs, 14 were after-school programs that combined tutoring, group counseling, and recreational services; 3 were alternative schools; 2 combined alternative schooling with after-school activities; and 4 were classified as mentoring programs. Of these programs, 3 also provided after-school group counseling. Finally, 2 programs were classified as counseling programs; these programs, which specialized in services to sex offenders or youths with substance-abuse problems, engaged youths in individual and group therapy 3 to 5 hours a week.

The records in ProDES were geocoded based on the home address given at the point of program commitment. Of those records, we eliminated records of females from the analysis, because the literature and our own preliminary analyses suggested that the causes of female juvenile recidivism differ from those of male juvenile recidivism. We also eliminated from our analysis any period of commitment to a residential treatment program (which would thus render environmental characteristics of the juvenile's residence location moot). Youths in aftercare programs, however, were included. The data set used for the present analysis included 7,166 case records, where each record comprises a youth's characteristics and offense history at the point of adjudication as well as data on the first subsequent offense (recidivism offense), if any.

The Philadelphia Police Department also provided data for this study. These data included type and location of all crime in the city of Philadelphia from 2000 to 2002, excluding rape, and contain 321,785 crime events occurring during that 2-year period. The data were divided into

eight crime types: homicide, robbery, assault, burglary, theft, vehicle theft, weapon violation, and drug crime. Of the 321,785 crime events in the police data, 299,855 were successfully geocoded, for a success rate of more than 93 percent—well above the 85-percent minimum success rate for geocoding crime data set forth by Ratcliffe (2004).

The neighborhood-level data included 2000 Census data. In addition, we used the neighborhood boundaries delineated by the Philadelphia Health Management Corporation (PHMC), which exhaustively partitions the city into 45 neighborhood polygons. The PHMC biannually surveys a sample of Philadelphia residents within each of the 45 neighborhoods and includes items related to neighborhood safety and perceptions.

We considered several outcome variables based on different recidivating offense types: drug offenses, person (violent) offenses, and property offenses. Recidivism was defined as the filing of a petition in Family Court for a new offense. Tracking of recidivism started at the point of disposition for the instant offense and ended 6 months after program discharge. Each of the three outcomes is dichotomous—whether the juvenile reoffended with an offense of that type. Of the 7,166 juveniles in the data set, 1,030 (14 percent) recidivated with a drug offense (selling or possession), 725 (10 percent) recidivated with a person offense, and 794 (11 percent) recidivated with a property offense. Recidivism with other offense types (for example, sex offenses, weapons offenses) was less common. The number of juveniles recidivating with any offense type was 2,881 (40 percent).

Four types of explanatory variables are used in this study to address the theoretical mechanisms described in the literature review: (1) background characteristics of the individual juvenile, (2) the initial offense that the juvenile committed upon entry to the Family Court system (referred to as the "instant offense"), (3) social disorganization in the neighborhood within which the juvenile resides, and (4) indicators of overall delinquency and recidivism nearby the juvenile's residence (referred to as "contagion" variables). Exhibits 1 and 2 report descriptive statistics for all the categorical and continuous predictor variables used in this study, respectively.

In keeping with the theme of this issue of *Cityscape*, this article focuses primarily on findings related to predictors of recidivism that have to do with place characteristics, as opposed to predictors related to the individual juvenile.

Exhibit 1

Descriptive Statistics for Categorical Variables (N = 7,166)

Predictor Variable	N	Percent
Race		
White	818	11
African American	5,252	73
Hispanic	943	13
Other	153	3
Public assistance	2,271	32
Parental crime	1,149	16
Prior institutional living arrangement	2,553	36
Out-of-home placement ever	545	8
Instant drug offense	1,691	24
Instant person offense	2,571	36
Instant property offense	2,280	32

Exhibit 2

Descriptive Statistics for Continuous Variables (N = 7,166)

Predictor Variable	Mean	Standard Deviation
Age (years)	15.7	1.7
Number of prior arrests	0.8	1.3
Drug sale density (per km^2)	214	316
Percent female head of household with children	20%	8%
Percent vacant housing	15%	10%
Percent high school graduate	59%	14%
Area juvenile count	183	100
Area any recidivism rate	0.40	0.68
Area drug recidivism rate	0.15	0.54
Area person recidivism rate	0.10	0.34
Area property recidivism rate	0.11	0.36

Methods

In this section, we focus on findings produced by applying hot spot analysis, hierarchical linear modeling (HLM) (Raudenbush and Bryk, 2002), logistic regression, and mapping of results, with an emphasis on the usefulness of mapping. GIS was used to integrate the individual and spatial data sets, conduct hot spot analyses, and visualize the results of logistic regression analyses that included neighborhood attributes. We conducted hot spot analysis using the locations of the residences of each youth in the sample. By differentiating youths in terms of recidivism, we revealed concentrations of recidivists. This analysis aided in the development of our research questions. HLM is form of regression analysis that is used when some data are nested in other data, such as individuals who reside in the same neighborhood. Because we can assume neighborhood characteristics affect recidivism of all the delinquent youths in the neighborhood in the same way, we need to account for these factors independently of characteristics of the individuals.

In a subsequent analysis, logistic regression was used with neighborhood and local deviant influences, measured at the individual level as a function of distance from each youth's place of residence. To aid in the interpretation of the statistical results, we also investigated local spatial clustering of probabilities using the G_i^* statistic (Getis and Ord, 1992; Ord and Getis, 1995), which measures the degree to which the observations within a specific distance from a geographic point (for example, 1 kilometer from each youth's place of residence) have values distinctly similar to, or different from, the mean for all persons in the sample.[1]

[1] Consider the spatial weights matrix $\{w_{ij(d)}\}$ such that $w_{ij(d)} = 1$ if location i is within distance d of location j, and $w_{ij(d)} = 0$ if it is not. In this study, $d = 1$ km, chosen as a compromise between minimizing the distance over which we hypothesize peer contagion to occur while also allowing for a sufficient number of observations to be collected for calculation of G_i^*. If $W_i^* = \sum_j w_{ij}(d)$ and $S_{1i}^* = \sum_j w_{ij}(d)$, and if $\bar{z}$ and s^2 denote the sample mean and variance, respectively, then

$$G_i^*(d) = \frac{\sum_j w_{ij}(d) z_j - w_i^* \bar{z}}{s\{[(nS_{1i}^*) - W_i^{*2}]/(n-1)\}^{1/2}}$$

Findings

Philadelphia is a city of distinct neighborhoods, although the boundaries of these neighborhoods are ambiguously defined. We can characterize these neighborhoods in a number of ways, but because we refer to the PHMC definitions in this study, the map in exhibit 3 shows these 45 neighborhoods along with their commonly used names. We use these labels in the discussions that follow.

Philadelphia is also widely known to be racially and ethnically segregated. Exhibit 4, which shows maps created by the city's Planning Commission, clearly shows that the Hispanic population is concentrated in an area within and surrounding the neighborhood of Hunting Park-Fairhill. Many of the north-center and southwestern neighborhoods have largely African-American populations. Neighborhoods with largely White populations are concentrated in the far northeast and far northwest, along the east border, and spanning two neighborhoods in South Philadelphia: Grey's Ferry-Passyunk and Eastwick-Elm. These racially and ethnically demarcated areas emerged as central to our conclusions regarding the nature of juvenile recidivism.

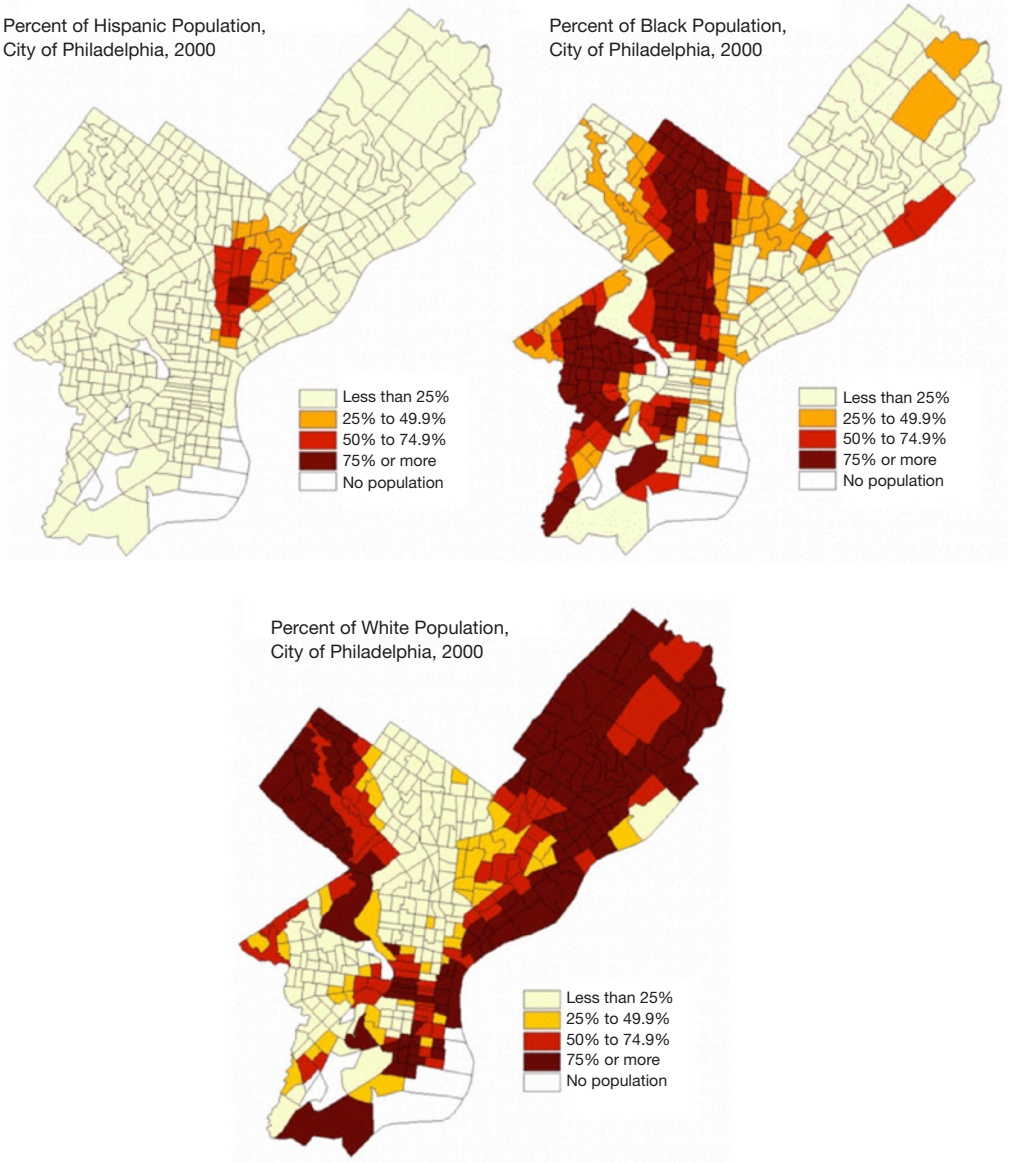
Exhibit 3

Philadelphia's Neighborhoods

Source: Philadelphia Health Management Corporation

Exhibit 4

Racial and Ethnic Segregation of Philadelphia's Population by Census Tract



Source: Philadelphia City Planning Commission at www.philaplanning.org

As indicated by the locations of points in exhibit 5, which maps z-scores of the G_i* applied to juvenile recidivism rates, the residences of juvenile offenders are clustered geographically, with 10 percent of the total from Hunting Park, 6 percent from Paschall/Kingsessing, and about 5 percent each from Mill Creek, Nicetown/Tioga, Olney, Overbrook, and Strawberry Mansion (see exhibit 3). Furthermore, exhibit 5 shows that recidivism is also highly concentrated. For example, among delinquent youths living in the adjacent neighborhoods of Hunting Park-Fairhill, Juniata Park-Harrowgate, and Upper Kensington, recidivism rates are more than double the rate for the city as a whole.

We found the PHMC-defined neighborhoods, which were useful descriptively, to be too large to capture with sufficient granularity differences among the places where these delinquent youths were living. Consequently, much of the analysis involved tracts or local spatial clustering with the G_i* statistic, a method we used to capture the characteristics of other delinquents within a defined distance from each youth's place of residence.

In addition, we found that when recidivism was examined in terms of type of recidivism offense (person, property, or drug), patterns of recidivism were markedly more place specific. Exhibit 6 shows final models from the logistic regression analyses of individual and census tract data. Previous behavior is a strong predictor of future behavior, so the effect of number of previous arrests on recidivism was expected. Similarly, we find a positive relationship between previous institutional placement and any recidivism.

Exhibit 5

Juvenile Recidivism Hot Spots

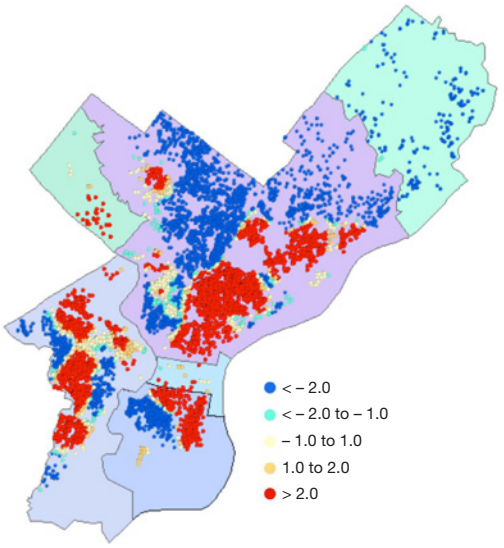


Exhibit 6

Stepwise-Forward Logistic Regression of Offense-Specific Recidivism: Final Models (N = 7,166) (1 of 2)

Predictor Variables	Recidivism	Drug Offense	Person Offense	Property Offense
Individual				
Age	—	1.13*** (24.05) C.I. 1.08–1.19	0.93*** (8.66) C.I. 0.89–0.98	—
White	0.88 (2.24) C.I. 0.74–1.04	0.66*** (8.35) C.I. 0.50–0.88	—	1.00 (0.00) C.I. 0.80–1.26
Hispanic	0.98 (0.07) C.I. 0.84–1.14	1.20 (3.35) C.I. 0.99–1.45	0.74* (5.17) C.I. 0.56–0.96	—
Public assistance	1.09 (2.34) C.I. 0.98–1.21	—	—	
Parental crime	1.17* (5.27) C.I. 1.02–1.33	—	1.37*** (9.80) C.I. 1.12–1.66	—
Number of prior arrests	1.22*** (90.67) 1.17–1.27	1.09*** (10.34) C.I. 1.03–1.14	1.13*** (17.27) C.I. 1.06–1.19	1.17*** (39.57) C.I. 1.12–1.23
Prior institutional placement	1.50 *** (58.99) C.I. 1.36–1.67	1.59*** (38.79) C.I. 1.38–1.84	—	—
Instant Offense Type				
Drug offense	1.29*** (15.78) C.I. 1.14–1.47	2.11*** (97.95) C.I. 1.82–2.44	—	0.67*** (12.56) C.I. 0.54–0.84
Person offense	—	—	1.30*** (9.44) C.I. 1.10–1.53	—
Property offense	1.20*** (9.01) C.I. 1.06–1.34	—	—	1.49*** (21.85) C.I. 1.26–1.76
Neighborhood Social Disorganization				
Area drug sale density (ln)	—	—	—	—
Area percent female household with children (ln)	1.01 (0.05) C.I. 0.91–1.13	—	—	—
Area percent vacant housing (ln)	—	0.98 (0.08) C.I. 0.87–1.11	—	—
Area percent high school graduate (ln)	—	—	—	—
Contagion Effects				
Area juvenile count (ln)	—	—	—	—
Area any recidivism rate (ln)	4.01*** (67.84) C.I. 2.88–5.59	—	—	—
Area drug recidivism rate (ln)	—	2.57*** (70.34) C.I. 2.06–3.21	—	—
Area person recidivism rate (ln)	—	—	3.07*** (74.65) C.I. 2.38–3.96	—
Area property recidivism rate (ln)	—		—	3.30*** (74.26) C.I. 2.51–4.33
Constant	1.49 (2.40)	0.10*** (21.84)	3.67** (7.28)	1.43 (1.33)

Exhibit 6

Stepwise-Forward Logistic Regression of Offense-Specific Recidivism: Final Models (N = 7,166) (2 of 2)

Predictor Variables	Recidivism	Drug Offense	Person Offense	Property Offense
Nagelkerke R2	0.08	0.12	0.04	0.06
Area under ROC curve	0.64*** C.I. 0.63–0.66	0.71*** C.I. 0.69–0.72	0.63*** C.I. 0.61–0.65	0.65*** C.I. 0.63–0.67

ln = natural log of the variable; ROC = receiver operating characteristic

**p < 0.05. **p < 0.01. ***p < 0.005.*

Notes: A dash (—) indicates a variable that was allowed to enter that model but was not included by the stepwise procedure. Cell values indicate odds ratios. Wald statistic shown in parentheses. C.I. indicates confidence interval at 95 percent confidence.

The pattern for the other three offense types presents us with some indication that the type of offense matters. Our finding that delinquent youths tend to specialize in the types of offenses they commit is consistent with previous research (Armstrong, 2008; Blumstein et al., 1988; Piquero et al., 1999). For each offense type, some degree of specialization was found. This tendency, however, is far stronger for those who committed drug offenses. A previous drug offense more than doubles the probability of a drug reoffense. These findings suggest that the causal mechanisms underlying drug offending differ from those influencing other types of offending.

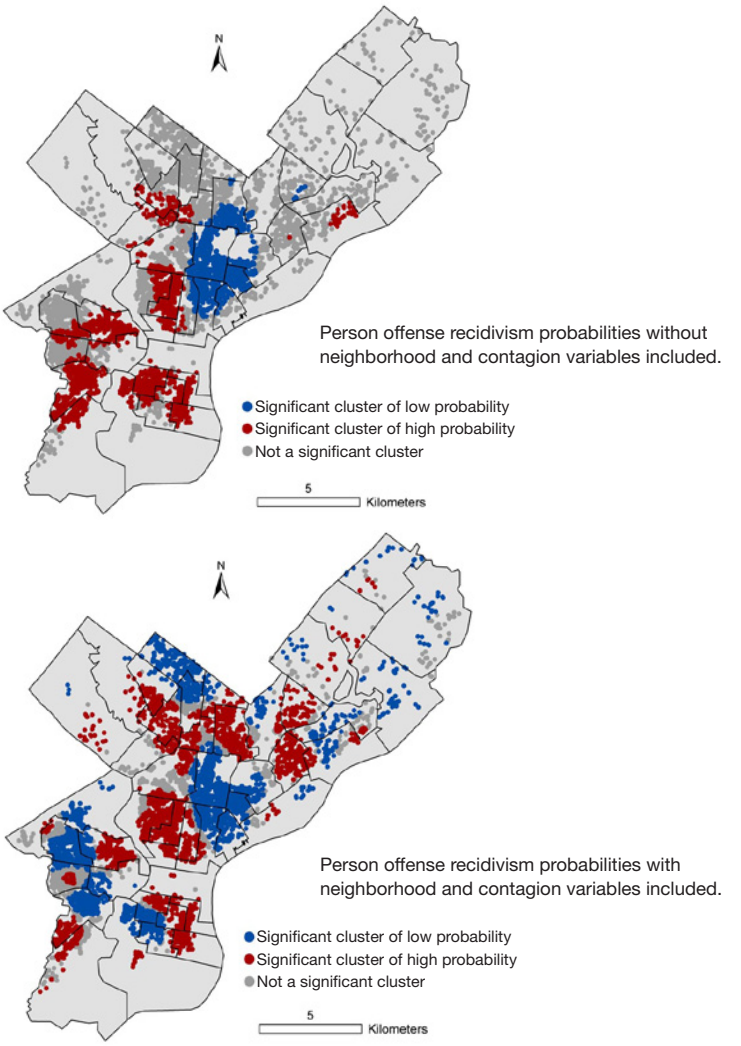
Looking at environmental effects, we find that our measure of neighborhood disorganization was not influential after accounting for other predictors, but that high rates of juvenile recidivism in the neighborhood surrounding individual youths greatly increased the likelihood of recidivism in individual offenders. This finding suggests a spatial contagion effect that is consistent with the effect of delinquent peers as a factor mediating the effect of neighborhood structural factors and parental behavior (Cattarello, 2000; Chung and Steinberg, 2006). To further investigate the influence of the contagion variables, we compared maps of the local spatial clustering of probability of recidivism from models that include individual level data only and models that include individual and census tract variables for each outcome variable. In keeping with the theme of this issue of *Cityscape*, we focus this discussion on just two of the outcomes: drug offense recidivism and person offense recidivism. These results were the most interesting of all modeled offense types.

Exhibit 7 shows two maps of juvenile delinquents, where each point in the maps represents the home location of an individual juvenile and the color of the point indicates significant local spatial clustering of the probability of person offense recidivism. These maps were created from the probabilities generated by the analysis of two different models of person offense recidivism using the variables shown in exhibit 6, where the map on the top excludes the neighborhood and contagion effect variables and the map on the bottom includes them. Using the resulting probability data, the G_i^* statistic was calculated for each juvenile location, using a bandwidth of 1 kilometer. Significant local clusters of high and low probability of recidivism are shaded light and dark, respectively. (See the color version of this map in the online version of *Cityscape* at www.huduser.org.)

These clusters of high and low probability of recidivism stand in stark contrast to the locations of programs that serve these youths. Exhibit 8 shows program locations and relative program sizes,

Exhibit 7

Spatial Clustering of Modeled Person Offense Recidivism Probabilities for Models Without (top) and With (bottom) Neighborhood and Contagion Variables

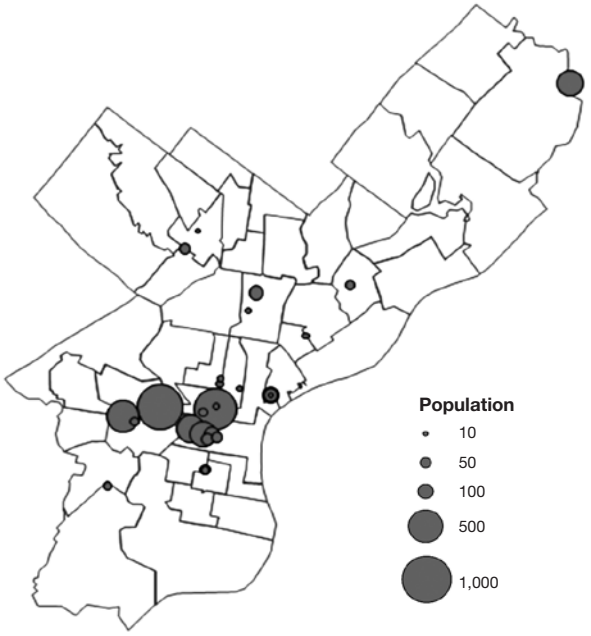


measured in terms of numbers of clients. As this map indicates, most programs are located in the center city business district; one program is situated on the far northeast border of the city.

The maps in exhibit 7 on the top and bottom are markedly different, with the map on the top showing low predicted probability of person offense recidivism for the neighborhood of Hunting Park-Fairhill and vicinity (exhibit 3), with high probabilities in several African-American neighborhoods in North and West Philadelphia. In contrast, the map on the bottom shows that including the neighborhood and contagion variables in the model allows for low predicted probability in several other neighborhoods, as well as other high-probability neighborhoods in areas of Northwest Philadelphia and lower

Exhibit 8

Locations and Population Size of Community-Based Programs



Northeast Philadelphia with predominantly White populations (see exhibit 4). These results suggest the interaction of spatial contagion with race in producing person offense recidivism outcomes.

Analogous maps of modeled probabilities of drug offense recidivism demonstrate further evidence of the interaction of contagion characteristics with race (Mennis and Harris, 2011). In this case, a single cluster of high probability of drug offense recidivism is located in the Hunting Park-Fairhill and Juniata Park-Harrowgate neighborhoods, extending down into the Poplar-Temple and Lower Kensington neighborhoods. This cluster of drug offense recidivism overlaps neatly with the area of Philadelphia with the highest concentration of Hispanic residents (exhibit 4), and, without including neighborhood and contagion variables, Hispanic race at the individual level is a highly influential factor in the likelihood of drug offense recidivism. Without the inclusion of spatial variables, one could easily conclude that drug selling is an Hispanic phenomenon. Exhibit 6 shows that the inclusion of neighborhood and contagion variables renders Hispanic identity nonsignificant, suggesting a mediating causal pathway where neighborhood and contagion effects can be seen to operate through race.

What is additionally remarkable from comparing the maps in exhibit 7 with analogous maps of drug offense recidivism is the clear physical separation of drug and person offense recidivism in Philadelphia. Each spatial pattern is also distinct from spatial patterns of the recidivism rate for all types of offenses (exhibit 5). The drug-offending neighborhood of Hunting Park-Fairhill referenced previously is also a cluster of very low levels of person offending. Similarly, in the areas surrounding this drug-offending area, we find clusters of person offending but little in the way of drug offending.

In contrast, although drug offending and person offending are somewhat separated in the Cobbs Creek and Haddington-Overbrook neighborhoods (see exhibit 3), evidence suggests that violence and drug offending are more likely to be colocated in these southwestern neighborhoods than in the drug-offending area to the north.

Discussions with the Criminal Intelligence Unit of the Philadelphia Police Department have added more to this picture. According to the chief of this unit, drug selling in the Hunting Park-Fairhill and Juniata Park-Harrowgate neighborhoods of the city is highly structured under one or very few large drug-selling organizations. Individuals are employed by this organization to work regular hours at a specific hourly rate. Given that this area is largely Hispanic, highly segregated, and economically depressed, employment options for adolescents and young adults are limited. In contrast, drug selling in the areas of Cobbs Creek and Haddington-Overbrook is associated with turf gangs that use violence to protect their markets. The population of these economically depressed neighborhoods is largely African American, although the larger area is racially diverse.

The interaction of race, neighborhood characteristics such as concentrated disadvantage, and spatial/peer contagion in producing recidivism outcomes for various offense types can be interpreted within the framework of urban settlement patterns of Philadelphia. Like many industrial cities in the Northeast and Midwest United States, Philadelphia has seen substantial population decline since the 1950s as many manufacturing industries that provided substantial employment in Philadelphia have either shut down or moved out of the city. Population decline has been associated with "White flight," where many of the White residents who worked in manufacturing left the inner city for the suburbs, leaving behind an aging and increasingly dilapidated housing stock around the old industrial core of the city. Consequently, African Americans, and later Hispanics (primarily from Puerto Rico until relatively recently), moved into these more affordable neighborhoods. As jobs and commercial development fled these neighborhoods over the ensuing decades, however, housing values stagnated and concentrated poverty became entrenched.

The intense pattern of racial segregation observed in exhibit 4 is a vestige of this economic and residential history of the city and has been aided by historical redlining and other discriminatory practices that encouraged residential segregation. As shown in exhibit 4, the African-American population is strongly concentrated in the poor, inner-city neighborhoods of North Philadelphia and parts of West Philadelphia and South Philadelphia. Outside of Center City and University City, which serve as the primary business and university districts, the White population is concentrated most heavily in relatively affluent Northwest Philadelphia and in middle- and working-class Northeast Philadelphia. Some White working-class neighborhoods in the inner city remain from the manufacturing past, in neighborhoods in the lower northeast, from Frankford to Port Richmond, in Manayunk and Roxborough, and in parts of South Philadelphia.

As Massey and Denton (1993) pointed out, the intense residential segregation that can be observed in Philadelphia acts to reinforce concentrated disadvantage by limiting access to resources and opportunities for advancement out of poverty. For juveniles, we note that the combination of concentrated poverty and high levels of segregation may act to enhance peer contagion of learned criminal behavior while limiting contact with nondelinquent peers. Thus, neighborhood- and race-specific affiliation with certain offense types among juveniles may be in part a product of the spatial clustering of concentrated disadvantage and segregation that typify the spatial expression

of Philadelphia neighborhoods. The structural economic and discriminatory forces that have produced these highly segregated patterns of residential settlement may thus be seen as a primary mechanism in a chain of causation that produces social norms and practices in which juvenile offense specialization is allowed to develop and flourish. These patterns of offense specialization can then be detected at the neighborhood level as spatial clustering in offense type. In addition, we have found evidence that such neighborhood-level expertise in offending can then be exported to adjacent neighborhoods through the process of peer contagion based on proximity (Mennis et al., 2011).

Limitations

A major challenge to spatial and place-based analyses is the definition of spatial unit. As Sampson, Morenoff, and Gannon-Rowley (2002) and others have noted, the term "neighborhood" can mean many things. Researchers often use census tracts, block groups, or administratively defined areas such as police districts. In this article, we use more than one method of defining spaces for different analyses, but we make clear for each set of findings reported whether we are using PHMC-defined neighborhoods, census tracts, or a fixed distance from each youth's home location. We used both census tracts and point-level data in this study, but we recognize that the ways people interact daily with their environments shapes their perceptions of what is normal, permissible, and unacceptable.

Secondly, our followup period for tracking recidivism—6 months following program termination—may be regarded as too short. On average, these youths were at risk in the community for 13 months following disposition by the court, which is clearly sufficient time to be influenced by local forces. We note that more than 40 percent of the youths in this study recidivated during this period of time. Certainly, more youths recidivated after more than 6 months, but it is unlikely that the absence of these data biased our results.

We note, too, that an important social disorganization concept, collective efficacy, was missing even though we had access to this measure from the PHMC data. We chose to use a finer level of spatial aggregation than the 45 neighborhoods that improved on the overall predictive power of the data, sacrificing this important factor in the process. Thus, although we suggest at several points that social disorganization is not supported by our findings, we have not fully tested social disorganization theory. Other competing explanations for our findings are consistent with social disorganization theory; we have not ruled these out.

A fourth limitation has to do with offense specialization. Recent studies of offense specialization have employed longitudinal analyses, examining several offense transitions over time. We have analyzed only one offense transition; thus, we have not included previous offense transitions that may challenge our conclusion about offense specialization. Moreover, we have not examined changes in offending patterns with age or experience.

Conclusions

Juvenile offender recidivism plays an important role in policymaking and program evaluation. Nationally, juvenile reoffending rates have been found to be as high as 66 percent when measuring recidivism by rearrest and as low as 33 percent when measuring reoffending by reconvictions

within a few years of release (Mears and Travis, 2004). In fact, policymakers in juvenile justice are now implementing standards for measuring recidivism that do, in fact, acknowledge that program outcomes are spatially heterogeneous (Harris, Lockwood, and Mengers, 2009). Missing from this discussion, however, is a sense of how place determines not only whether recidivism rates are high or low, but also what kinds of offenses are committed and why youths are pulled back into further involvement in crime.

We draw four broad conclusions from the findings reported above:

1. Delinquent reoffending is spatially dependent rather than spatially diverse. This finding is strongest for drug offending, leading us to conclude that effective research on juvenile drug offending should incorporate neighborhood context.

2. For some types of offending, especially drug selling, juveniles are likely to specialize. This specialization is likely to be influenced by opportunities, constraints, and pressures present in the youth's neighborhood.

3. Recidivism offense type is spatially dependent. Residing in a high spatial concentration of any particular type of reoffending increases the chance that a delinquent youth will recidivate with that type of offense.

4. Geographically defined places provide influences that can increase and decrease the likelihood of recidivism, but the nature of these risk and protective factors vary widely from neighborhood to neighborhood.

We have found evidence that delinquent youths tend to specialize in committing offenses of a particular type, but that specialization is far more likely among drug offenders than youths committing nondrug offenses. Moreover, we contend that specialization is influenced by peer contagion. That is, youths tend to specialize in offenses in which other juveniles in their neighborhood specialize. This finding of spatially dependent specialization suggests that there are neighborhood dynamics at play that we do not fully understand. The association between ethnicity and drug offending is particularly strong, and we note the effect of historical patterns of segregated Hispanic communities on drug selling discussed elsewhere (see, for example, Bourgois, 2003). Other studies have found that peer influence plays a critical proximal role in decisions by youths to sell drugs. Their perceptions of the acceptability and profitability of drug dealing are influenced most directly by peers and young adults within their communities (Li and Feigelman, 1994; Ricardo, 1994; Whitehead, Peterson, and Kaljee, 1994). The spatial concentrations of drug selling are particularly strong, suggesting that youths in those areas are under significant pressure to participate in a business common to adult and juvenile neighbors. Their perceptions that "everyone is doing it" may be quite accurate in some of the neighborhoods we identify.

The predictors of person offense specialization, on the other hand, although also spatially dependent, are less clear. Family disruption (referring to Sampson and Groves, 1989), in the form of parental criminality, did affect person reoffending, but we do not know if family disruption is more likely in neighborhoods with high levels of person offending. On the other hand, parental criminality suggests an environment in which antisocial behavior can be learned. We know that aggression is a learned behavior (Bandura, 1969), suggesting support for a social learning explanation for the pattern we see.

Our findings, not all of which are reported in this article, suggest that neighborhood is a significant predictor of juvenile recidivism when offense type is ignored and when examining only drug offense recidivism. Economic disadvantage alone, however, does not play a significant role in juvenile recidivism once the individual characteristics of juveniles are accounted for. It should be noted, of course, that strong relationships exist between indicators of neighborhood social disorganization, such as crime and socioeconomic disadvantage, and indicators we captured at the individual level, such as race and public assistance. Moreover, we have not tested all of the elements of social disorganization noted in the literature.

Philadelphia is a city where historical patterns of industrial development, residential settlement, and suburbanization have created a deeply segregated residential pattern with concentrated poverty in inner-city minority neighborhoods. We note that some previous studies that ascribe a causal effect to neighborhood social disorganization used only spatially aggregated data (for example, Sampson and Groves, 1989; Veysey and Messner, 1999), thus making it difficult to distinguish the effect of those characteristics of social disorganization that may be measured at an individual level (for example, race) from those that are perhaps more characteristic of a neighborhood as a whole (for example, vacant housing rate—although no individual lives in a vacant house, the rate of vacant housing in a neighborhood is indicative of its character).

Our findings are inconsistent with those of Little and Steinberg (2006) who concluded that "adolescents who sold the most drugs were more likely to live in contexts characterized by high physical and social disorder…" (Little and Steinberg, 2006: 378). In addition, they found that drug activity increases violence within neighborhoods, net of their measures of social disorganization. Their conclusion that "traditional dimensions of social disorganization predict drug activity which, in turn, leads to higher levels of criminal violence," serves to tie drug and violent offending together in disadvantaged neighborhoods (Martínez, Rosenfeld, and Mares, 2008: 866). We find, instead, that areas with high concentrations of drug recidivism, where adult drug arrests are also concentrated, are not always the same as those areas where violence is concentrated. It would appear that in the area of Philadelphia where drug selling is most concentrated—an area that is isolated by economic disadvantage and ethnicity—is not an area where violence is prevalent. We did note an area in the southeastern section of Philadelphia where drug selling and violence are colocated. Again, spatial distinctions like these will facilitate improved prediction and program.

It is likely that under conditions of specialization, different offense types require different causal explanations. If a single causal model were all that was needed, we would not expect to find spatial dependency of offense types. Instead, we find areas of Philadelphia in which juvenile recidivists are exhibiting specialization of a particular offense type. This pattern of specialization not only implies different causal models, but also suggests that neighborhood attributes must be part of the causal picture.

A number of our analyses produced findings that demonstrate that drug offending, as a form of recidivism, is different from person or property offending. Exhibit 6 indicates that drug offenders, compared with youths committing person and property reoffenses, were more likely to have committed a previous drug offense, to have had a previous institutional placement, and to have resided in a neighborhood with a high juvenile drug recidivism rate. In a separate analysis using HLM (not shown), we found that drug offenders were older than the mean at the time of their first arrest.

Our interpretation of these results is that juveniles who offend earlier in their lives are more likely to recidivate with person and property offenses, whereas drug offenders come to the attention of the justice system at a later age and are likely to continue selling drugs even after a period of residential placement. These findings suggest that the causal mechanisms underlying drug offending differ from those influencing other types of offending.

The extent of specialization among drug offenders, relative to other offender types, indicates a relatively organized neighborhood structure that supports involvement in this type of delinquency. That is, opportunities to gain access to drugs must be present, and reinforcement of the behavior must be likely. At the same time, the combination of poverty, Hispanic culture, and high rates of adult drug selling and specialization imply that opportunities to engage in legitimate employment are less available in Hispanic neighborhoods in Philadelphia. These findings are consistent with the argument raised by Baumer and Gustafson (2007), in reference to drug selling, regarding "the crime generating effect of a high level of commitment to monetary success goals combined with a low level of commitment to legitimate means for pursuing such goals" (p. 651). Our findings on the Hispanic neighborhoods add to this perspective by highlighting the potential for cultural responses to economic deprivation. Several studies conclude that the primary attraction of illicit drug selling is the potential income that is rarely attainable for youth in economically depressed neighborhoods (Reuter et al., 1990).

Implications for Theory

Different theories may be needed to explain place-based patterns of juvenile recidivism and to serve as foundations for program design. High levels of involvement in instrumental crimes that are prevalent among adults and juveniles in an economically disadvantaged neighborhood are indicative of norms and values consistent with those crimes and social learning mechanisms that pull youths into participation in those specific criminal activities. Our findings with respect to drug selling in particular suggest that a differential association/social learning theory such as that proposed by Akers (1998) best fits places where drug selling is embedded in the culture and normative behavior of a neighborhood.

Because high levels of violent offending are more ubiquitous than drug selling and are associated with poverty, it is more likely that violent offending occurs where social disorganization is greatest. The spatial separation of drug selling recidivism and an absence of social connectedness and informal social controls likely permit conflicts to escalate to violence and norms of toughness to dominate life on the street. Similarly, where violence and drug selling coexist, such as in the southwestern part of Philadelphia, research on gang involvement becomes relevant. In particular, Gordon et al. (2004) found that youths that joined gangs were already involved in delinquency and that their involvement in drug selling increased greatly upon joining a gang. In this case, social disorganization may explain the existence of gangs and the attraction to gangs, but involvement in drug selling may be facilitated by organization.

Implications for Policy

If different offense types require different causal explanations and if reoffense type is spatially dependent, then juvenile justice programs should be designed around the causal mechanisms involved and be created with specific neighborhoods in mind. This place-based perspective implies small, neighborhood-based programs, and, in the case of an Hispanic neighborhood, culturally specific in design. Undoubtedly, recidivism among delinquent youths is tied to other social problems in the same neighborhoods. Because these problems go beyond delinquency, policy changes are needed that include local public health, educational, recreational, cultural, and business organizations.

What we find in Philadelphia, however, is that community programs cluster in center city (exhibit 8), often far from their young clients, and that several of these programs are quite large and draw juveniles from many diverse parts of the city. These services tend to be divorced from the neighborhoods in which their clients reside. The place-based perspective suggested by this study implies that these programs should be decentralized, located where their clients reside, tailored to the characteristics of these local environments, and linked to other youth- and family-serving agencies in these same neighborhoods.

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References

Akers, Ronald L. 1998. *Social Learning and Social Structure: A General Theory of Crime and Deviance*. Boston: Northeastern University Press.

Armstrong, Troy A. 2008. "Are Trends in Specialization Across Arrests Explained by Changes in Specialization Occurring With Age?" *Justice Quarterly* 25 (1): 201–222.

Baird, Christopher. 1984. *Classification of Juveniles in Corrections: A Model Systems Approach*. Madison, WI: National Council on Crime and Delinquency.

Bandura, Albert. 1969. *Principles of Behavior Modification*. Oxford, United Kingdom: Holt, Rinehart & Winston.

Baumer, Eric P., and Regan Gustafson. 2007. "Social Organization and Instrumental Crime: Assessing the Empirical Validity of Classic and Contemporary Anomie Theories," *Criminology* 45: 617–664.

Blumstein, Alfred, Jaqueline Cohen, Somnath Das, and Soumyo Moitra. 1988. "Specialization and Seriousness During Adult Criminal Careers," *Journal of Quantitative Criminology* 4: 303–345.

Bourgois, Philippe. 2003. *In Search of Respect: Selling Crack in El Barrio*. New York: Cambridge University Press.

Bronfenbrenner, Urie. 1981. *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard University Press.

Cattarello, Anne M. 2000. "Community-Level Influences on Individuals' Social Bonds, Peer Associations, and Delinquency: A Multilevel Analysis," *Justice Quarterly* 17 (1): 33–60.

Chung, He Len, and Lawrence Steinberg. 2006. "Relations Between Neighborhood Factors, Parenting Behaviors, Peer Deviance, and Delinquency Among Serious Juvenile Offenders," *Developmental Psychology* 42 (2): 319–331.

Dishion, Thomas, and Kenneth Dodge. 2005. "Peer Contagion in Interventions for Children and Adolescents: Moving Towards an Understanding of the Ecology and Dynamics of Change," *Journal of Abnormal Child Psychology* 33: 395–400.

Elliott, Delbert S., David H. Huizinga, and Suzanne S. Ageton. 1985. *Explaining Delinquency and Drug Use*. Beverly Hills, CA: Sage.

Fader, Jamie J. 2003. *Unraveling the Web of Juvenile Justice: Formal and Informal Supports for Reintegrating Youths Returning From Placement*. Denver, CO: Annual Meeting of the American Society of Criminology.

Farrington, David P., and J. David Hawkins. 1991. "Predicting Participation, Early Onset and Later Persistence in Officially Recorded Offending," *Criminal Behavior and Mental Health* 1: 1–33.

Frederick, Bruce. 1999. *Factors Contributing to Recidivism Among Youth Placed With the New York State Division for Youth.* Albany, NY: New York State Division of Criminal Justice Services, Office of Justice Systems Analysis.

Getis, Arthur, and J. Keith Ord. 1992. "The Analysis of Spatial Association by Use of Distance Statistics," *Geographical Analysis* 24: 189–206.

Gordon, Rachel A., Benjamin B. Lahey, Eriko Kawai, and Rolf Loeber. 2004. "Antisocial Behavior and Youth Gang Membership: Selection and Socialization," *Criminology* 42 (1): 55–87.

Harris, Philip, Jeremy Mennis, Zoran Obradovic, Alan Izenman, Heidi Grunwald, Brian Lockwood, Joe Jupin, and Laura Chisholm. 2009. Investigating the Simultaneous Effects of Individual, Program and Neighborhood Attributes on Juvenile Recidivism Using GIS and Spatial Data Mining. Final Report to the National Institute of Justice, Award No. 2006-IJ-CX-0022. Unpublished paper. Temple University.

Harris, Philip W., Brian Lockwood, and Liz Mengers. 2009. *A CJCA White Paper: Defining and Measuring Recidivism*. Braintree, MA: Council of Juvenile Correctional Administrators.

Jones, Peter R., Philip W. Harris, Jamie Fader, and Lori Grubstein. 2001. "Identifying Chronic Juvenile Offenders," *Justice Quarterly* 18 (3): 479–508.

Kubrin, Charis E., and Eric A. Stewart. 2006. "Predicting Who Reoffends: The Neglected Role of Neighborhood Context in Recidivism Studies," *Criminology* 44 (1): 165–197.

Li, Xiaoming, and Susan Feigelman. 1994. "Recent and Intended Drug Trafficking Among Male and Female Urban African-American Early Adolescents," *Pediatrics* 93 (6): 1044–1049.

Lipsey, Mark W. 1999. "Can Intervention Rehabilitate Serious Delinquents?" *Annals of the American Academy of Political and Social Science* 564 (1): 142–166.

Lipsey, Mark W., and David B. Wilson. 1998. "Effective Intervention for Serious Juvenile Offenders: Synthesis of Research." In *Serious and Violent Juvenile Offenders: Risk Factors and Successful Interventions*, edited by Rolf Loeber and David P. Farrington. London, United Kingdom: Sage Publications: 313–335.

Little, Michelle, and Lawrence Steinberg. 2006. "Psychosocial Correlates of Adolescent Drug Dealing in the Inner City—Potential Roles of Opportunity, Conventional Commitments, and Maturity," *Journal of Research in Crime and Delinquency* 43 (4): 357–386.

Marczyk, Geoffrey R., Kirk Heilbrun, Tammy Lander, and David DeMatteo. 2003. "Predicting Juvenile Recidivism With the PCL:YV, MAYSI, and YLS/CMI," *International Journal of Forensic Mental Health* 2 (1): 7–18.

Martínez, Ramiro, Richard Rosenfeld, and Dennis Mares. 2008. "Social Disorganization, Drug Market Activity, and Neighborhood Violent Crime," *Urban Affairs Review* 43 (6): 846–874.

Massey, Douglas S., and Nancy Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass.* Cambridge, MA: Harvard University Press.

Mears, Daniel, and Jeremy Travis. 2004. *The Dimensions, Pathways, and Consequences of Youth Reentry*. Washington, DC: The Urban Institute.

Mennis, Jeremy, and Philip Harris. 2011. "Contagion and Repeat Offending Among Juvenile Delinquent Recidivists," *Journal of Adolescence* 34 (5): 951–963.

Mennis, Jeremy, Philip Harris, Zoran Obradovic, Alan Izenman, Heidi Grunwald, and Brian Lockwood. 2011. "The Effects of Neighborhood Characteristics and Spatial Spillover on Urban Juvenile Delinquency and Recidivism," *The Professional Geographer* 63: 2, 174–192.

Ord, Keith J., and Arthur Getis. 1995. "Local Spatial Autocorrelation Statistics: Distributional Issues and an Application," *Geographical Analysis* 27: 286–306.

Piquero, Alex R., Raymond Paternoster, Paul Mazerolle, Robert Brame, and Charles W. Dean. 1999. "Onset Age and Offense Specialization," *Journal of Research in Crime and Delinquency* 36 (3): 275–299.

Ratcliffe, Jerry H. 2004. "Geocoding Crime and a First Estimate of a Minimum Acceptable Hit Rate," *International Journal of Geographical Information Science* 18 (1): 61–72.

Raudenbush, Stephen W., and Anthony S. Bryk. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods*, 2nd ed. Thousand Oaks, CA: Sage Publications.

Reuter, Peter H., Robert MacCoun, Patrick Murphy, Allan Abrahamse, and B. Simon. 1990. *Money From Crime: A Study of the Economics of Drug Dealing in Washington, DC.* Santa Monica, CA: RAND Corporation. http://www.rand.org/pubs/reports/R3894.

Ricardo, Izabel B. 1994. "Life Choices of African-American Youth Living in Public Housing: Perspectives on Drug Trafficking," *Pediatrics* 93: 1055–1059.

Sampson, Robert J. 2001. "How Do Communities Undergird or Undermine Human Development? Relevant Contexts and Social Mechanisms." In *Does It Take a Village? Community Effects on Children, Adolescents, and Families*, edited by Alan Booth and Nan Crouter. Mahwah, NJ: Lawrence Erlbaum: 3–30.

———. 1997. "The Embeddedness of Child and Adolescent Development: A Community-Level Perspective on Urban Violence." In *Violence and Childhood in the Inner City*, edited by J. McCord. Cambridge, United Kingdom: Cambridge University Press: 31–77.

Sampson, Robert J., and W. Byron Groves. 1989. "Community Structure and Crime: Testing Social-Disorganization Theory," *The American Journal of Sociology* 94: 774–802.

Sampson, Robert J., Jeffrey D. Morenoff, and Thomas Gannon-Rowley. 2002. "Assessing Neighborhood Effects: Social Processes and New Directions in Research," *Annual Review of Sociology* 28: 443–478.

Shaw, Clifford R., and Henry D. McKay. 1942. *Juvenile Delinquency and Urban Areas*. Chicago: University of Chicago Press.

Snyder, Howard N., and Melissa Sickmund. 2006. *Juvenile Offenders and Victims: 2006 National Report*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.

Sutherland, Edwin H., and Donald Cressey. 1992. *Principles of Criminology,* 11th ed. Lanham, MD: AltaMira Press.

Veysey, Bonita M., and Steven F. Messner. 1999. "Further Testing of Social Disorganization Theory: An Elaboration of Sampson and Grove's Community Structure and Crime," *Journal of Research in Crime and Delinquency* 36: 156–174.

Whitehead, Tony Larry, James Peterson, and Linda Kaljee. 1994. "The 'Hustle': Socioeconomic Deprivation, Urban Drug Trafficking, and Low-Income, African-American Male Gender Identity," *Pediatrics* 93 (6): 1050–1054.

Wiebush, Richard G., Christopher Baird, Barry Krisberg, and David Onek. 1995. "Risk Assessment and Classification for Serious, Violent, and Chronic Juvenile Offenders." In *A Sourcebook: Serious, Violent, and Chronic Juvenile Offenders*, edited by James C. Howell, Barry Krisberg, J. David Hawkins, and John J. Wilson. Beverly Hills, CA: Sage: 171–210.

Yoshikawa, Hirokazu. 1994. "Prevention as Cumulative Protection: Effects of Early Family Support and Education on Chronic Delinquency and Its Risks," *Psychological Bulletin* 115 (1): 28–54.

Additional Reading

Fader, Jamie J., Philip W. Harris, Peter R. Jones, and Mary E. Poulin. 2001. "Factors Involved in Decisions on Commitment to Delinquency Programs for First-Time Juvenile Offenders," *Justice Quarterly* 18 (2): 323–341.