

From Prison to the Community: Assessing the Direct, Reciprocal, and Indirect Effects of Parolees on Neighborhood Structure and Crime

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Alyssa W. Chamberlain¹

Abstract

This study examines the direct, reciprocal, and indirect effects of parolees on neighborhoods, including residential vacancies, property sales, public assistance, and crime. Cross-lagged autoregressive models are estimated using a unique data set containing annual neighborhood information on parolees, crime rates, and neighborhood structure in the city of Cleveland, Ohio, between 2000 and 2008. Results suggest parolees degrade neighborhood structure, and these effects are direct, reciprocal, and indirect. Understanding how the presence of parolees can contribute to changes in neighborhood processes linked to crime will broaden our understanding of the effects that parolees have on communities and highlight additional areas for intervention.

Keywords

reentry, neighborhood change, crime, parolees

¹Arizona State University, Phoenix, AZ, USA

Corresponding Author:

Alyssa W. Chamberlain, School of Criminology & Criminal Justice, Arizona State University, 411 North Central Avenue, Suite 600, Phoenix, AZ 85004, USA.

Email: Alyssa.Chamberlain@asu.edu

Introduction

A consequence of mass incarceration is the unprecedented numbers of prisoners returning to the community either on parole or after their sentences have been completed. More than 600,000 inmates are released onto parole each year (Durose, Cooper, & Snyder, 2014), and ex-offenders and the communities to which they return must navigate through the many challenges associated with offender reintegration. The proliferation of parolees can contribute to neighborhood change in a variety of ways, including positive outcomes such as family reunification (Braman, 2004), increasing informal social control in neighborhoods (Hipp & Yates, 2009), and improving economic prospects for families (Braman, 2004). However, prior studies have also linked the presence of parolees to increases in local crime (Hipp & Yates, 2009), residents' fear of crime (Clear, Rose, & Ryder, 2001), and even residential out-migration (Clear et al., 2001). What these studies have failed to evaluate, however, is the impact that parolees have on neighborhood characteristics *besides crime*. How might parolees influence neighborhood dynamics? Might the volume of ex-offender reentry change community characteristics and alter quality of life for residents? These questions remain underexplored.

Parolees may be a source of ecological change in a variety of ways beyond just increasing neighborhood crime. Returning parolees might disrupt aspects of neighborhood structure: aspects of the economic structure of neighborhoods, such as the amount of poverty, occupancy status, and residential stability (Bursik & Grasmick, 1993). Importantly, parolees can influence neighborhood structure in direct, reciprocal, and indirect ways. First, parolees can *directly* impact neighborhood structure. For example, parolees exacerbate levels of poverty and unemployment in the neighborhoods they return to because ex-offenders often have difficulty securing employment after release due to inadequate education and job skills (Western, 2006) and the stigma of incarceration (Pager, 2003). Furthermore, because parolees tend to cluster in certain (generally disadvantaged) neighborhoods (Chamberlain & Wallace, 2016), the weakening of neighborhood structural characteristics may be particularly pronounced in high-return communities. Second, the population of parolees in a neighborhood may have a reciprocal, or cyclical, relationship with neighborhood structure. That is, disadvantaged neighborhoods often attract parolees, who are either returning home or because these areas are more accessible to ex-offenders (Roman, Kane, & Giridharadas, 2006). The clustering of parolees in a neighborhood decreases neighborhood desirability (Clear et al., 2001; Travis, 2005), degrading neighborhood structure by increasing vacancy, poverty, and residential instability, all factors associated with disadvantage that likely attracted the parolees in the first place. Third, parolees might also alter neighborhood structure *indirectly* through

crime. That is, through parolees' direct engagement in criminal activity, they indirectly worsen residential instability as residents may respond to increases in crime by moving out of the neighborhood (Cullen & Levitt, 1999; Morenoff & Sampson, 1997). Furthermore, the presence of parolees may indirectly contribute to neighborhood poverty as high-crime neighborhoods are unable to attract more affluent households (Schwartz, Susin, & Voicu, 2003). As a consequence, lower income, minority residents are more likely to move in to these neighborhoods (Coulton, Chow, & Pandey, 1990; Hipp, 2011; Morenoff & Sampson, 1997). As these examples illustrate, parolees might affect neighborhood structure in both direct and indirect ways, fostering increased disadvantage in a neighborhood. This suggests that parolees' relationship with neighborhoods is complex and multidimensional. A better understanding of parolees' influence on neighborhood structure may help inform interventions that can reduce neighborhood disadvantage and crime.

This study examines the interrelationship between parolees, neighborhood structure, and crime using a unique data set combining annual neighborhood information on parolees, crime rates, and measures of neighborhood structure in Cleveland, Ohio, between 2000 and 2008. By analyzing these relationships in conjunction with one another, I am able to examine the consequences of reentry as part of a larger system affecting both neighborhood structure and crime. First, I assess the *direct* effect parolees have on neighborhood structure, including aspects of residential stability, vacancy, poverty, and crime. Second, I examine whether there are *reciprocal* relationships between parolees and neighborhood structure. Third, I assess the *indirect* effects parolees have on neighborhood structure—that is, does the presence of parolees indirectly influence neighborhood structural characteristics through parolees' direct contribution to neighborhood levels of crime? Exploring the interrelationship between parolees, crime, and neighborhood structure is necessary for understanding how parolees contribute to neighborhood decline beyond just increasing crime. By understanding the reciprocity of parolees' relationship with neighborhoods, we are in a better position not only to help parolees as they exit prison but also to help neighborhoods absorbing reentrants.

Parolees' Direct Effects on Neighborhood Structure

Parolees do not return to neighborhoods at random; rather, they generally return to the neighborhoods from which they came or neighborhoods with similar characteristics as their home neighborhood (Harding, Morenoff, & Herbert, 2013). These neighborhoods tend to be more disadvantaged (La Vigne, Thompson, Visher, Kachnowski, & Travis, 2003), and parolees likely

intensify these characteristics by impacting neighborhood structure. Disadvantaged neighborhoods provide little support for reentry and already have significantly higher percentages of vacant housing, unemployment, and poverty (La Vigne et al., 2003; Lynch & Sabol, 2001); thus, an influx of parolees in disadvantaged neighborhoods might further erode neighborhood structure.

First, parolees might degrade neighborhood structure by increasing rates of poverty. Parolees themselves likely increase poverty due to their inability to acquire employment. Parolees are generally given little in terms of assistance when they exit prison. In Ohio, for example, parolees receive up to US\$75 in gate money plus any accumulated funds or property during their incarceration (Center for Public Policy Research, 2007). Employment is an important aspect of successful reentry; however, most parolees are unable to secure stable employment. For example, only approximately 45% of male parolees are employed following release (Visser, Debus-Sherrill, & Yahner, 2011). Employment prospects are often damaged by incarceration: A prison stay erodes job skills (Western, 2006), disrupts social networks that may be important for connecting former prisoners with employment opportunities (Western, 2006), and results in discrimination by employers who are less likely to hire individuals with a prior criminal record (Pager, 2003). Importantly, the difficulties associated with getting a job may be compounded by race (Pager, 2003; Western, 2006) or by residing in disadvantaged neighborhoods, which often lack employment opportunities (Chamberlain, Boggess, & Powers, 2016). Parolees who are able to secure employment likely find opportunities in the secondary labor market, where jobs are typically low-paying and unstable, and conditions are poor (Bluestone, 1970; Piore, 1970). Thus, parolees may affect levels of poverty and joblessness in neighborhoods due to their own rates of unemployment and limited financial resources.

Parolees might also affect the economic stability of other residents within the communities they live, particularly among family members. Families of incarcerated persons are also often poor and are typically saddled with the substantial costs associated with keeping in touch with an inmate (Braman, 2004; Grinstead, Faigles, Bancroft, & Barry, 2001). Family members might also be forced to deal with the legal debts accrued by parolees (Harris, Evans, & Beckett, 2010), further diminishing economic resources. As a result, families who have an incarcerated loved one are more likely to seek public assistance, such as food stamps and Medicaid, to offset these financial strains (Sugie, 2012). Parolees' period of incarceration reduces the financial resources of loved ones, and the process of reentry compounds these issues, as family members must continue to compensate financially to support

returning prisoners who generally struggle to find employment (Visser et al., 2011). Thus, although it is costly for families to keep up with loved ones behind bars, so too is facilitating the reentry process for parolees who receive little or no training on the inside (Chamberlain, 2012) and have few resources to help on the outside—and they are doing so in already weakened financial circumstances (Sugie, 2012). This weakens the financial capital of families and, in disadvantaged neighborhoods, might increase overall levels of poverty.

Second, an influx of parolees in a neighborhood might contribute to residential instability. Parolees and their family members might relocate to a new neighborhood to help the parolee escape criminal influences or to reduce the stigma a parolee may experience by other residents (Clear et al., 2001; Rose & Clear, 2003; Rose, Clear, & Ryder, 2001). Family members might also relocate as they too might experience stigma as a result of their loved one's incarceration (Rose et al., 2001). Furthermore, families experiencing an increased financial burden as a result of supporting a parolee may leave the neighborhood in search of more affordable housing (Drakulich, Crutchfield, Matsueda, & Rose, 2012; Pritikin, 2008; Rose, Clear & Ryder, 2001). This out-migration may be captured by high rates of home sales as residents leave the neighborhood (Boggess & Hipp, 2010; Hipp, Tita, & Greenbaum, 2009). Others may relocate due to parole supervision requirements. For example, sex offenders are precluded from residing near schools or day care centers (Turner, Chamberlain, Jannetta, & Hess, 2015), and parolees supervised through electronic monitoring must ensure their residence has the necessary electronic capabilities to transmit the data to those monitoring their supervision (Harding et al., 2013).

The presence of a large number of parolees in a neighborhood may also directly affect mobility decisions among non-family residents who relocate due to the community stigmatization associated with concentrated reentry (Travis, 2005). Parolees tend to return to a small number of neighborhoods. In Cleveland, the majority of prisoners return to only five of 36 communities (La Vigne et al., 2003), and in Chicago, returning prisoners concentrate in five of 77 communities (Visser & Farrell, 2005). As such, neighborhoods with returning parolees may become stigmatized (Travis, 2005), and neighborhoods that develop a reputation for being high-return neighborhoods might also attract other undesirable elements, such as homelessness and prostitution (Clear et al., 2001; Rose & Clear, 2003). At the same time, the stigma may mean that non-residents will be less likely to move in (Clear et al., 2001). If those residents moving out are not replaced, or vacant units are not occupied because potential homebuyers

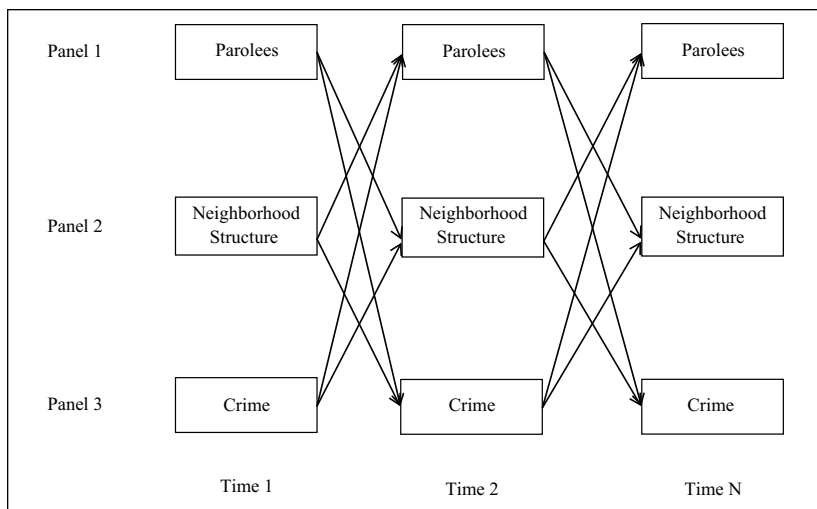


Figure 1. Path model depicting direct and indirect relationships between parolees, neighborhood structure, and crime.

Note. For ease of reference, the spatial and control variables are not included in the above figure. However, all spatial lags and control variables are estimated to have a direct effect on each endogenous outcome variable at each time point. In addition, the temporal trend pathways, where the lag of the outcome variable is regressed on its respective outcome variable, is also omitted for simplicity.

are deterred from entering the neighborhood, it is likely that vacancies will increase as the number of residents exiting the neighborhood occurs at a faster rate than those entering the neighborhood. Indeed, Clear and colleagues (2001) found that high-return neighborhoods were viewed negatively by outsiders, and this perception negatively affected housing decisions, employment opportunities, existing businesses, and new business development.

To help understand these complex relationships, Figure 1 below presents the predicted theoretical relationship between parolees (Panel 1) and neighborhood structure (Panel 2). Parolees at Time 1 and Time 2 are predicted to have a direct effect on neighborhood structure at Time 2 and at subsequent time points ("Time N"); this is depicted by the arrows from parolees to neighborhood structure. For instance, if the neighborhood structure variable were vacancy, the model would suggest that as parolees increase at one time point, vacancy might increase at a subsequent time point as residents leave the neighborhood. Thus, a change in the number of parolees in a neighborhood will manifest a change in neighborhood structure.

Parolees' Indirect and Reciprocal Effects on Neighborhood Structure

The relationship between parolees, structure, and crime is complex and interconnected. This suggests both reciprocal and indirect effects. There are three important cyclical relationships within this system, which provide the means for subsequent indirect effects. First, the relationship between parolees and neighborhood crime is cyclical. Prior research has found that parolees affect neighborhood crime, generally finding a positive association (Dhondt, 2012; Hipp & Yates, 2009; Kovandzic, Marvell, Vieraitis., & Moody, 2004; Raphael & Stoll, 2004). For example, some studies have found that parolees might increase crime directly by taking advantage of criminal opportunities in the neighborhood (Dhondt, 2012; Hipp & Yates, 2009), or increasing the pool of crime targets (Rosenfeld, Wallman, & Fornango, 2005). Another perspective suggests that parolees reactivate old or establish new criminal networks, thereby increasing crime (Clear, Rose, Waring, & Scully, 2003; Dhondt, 2012; Drakulich et al., 2012).

Although parolees affect crime, it is likely that high-crime neighborhoods lead to more parolees. Most offenders return to the same or similar neighborhoods, which are more likely to be disadvantaged and high crime (Harding et al., 2013); this will increase the number of parolees in these types of neighborhood, thereby fueling the process of coercive mobility (Clear, 2007). Furthermore, parolees by their very status are subject to law enforcement supervision, which means that there may be an increase in the overall presence of police in the neighborhood (Fagan, West, & Holland, 2003). As more individuals are arrested because of the increased police presence, this increases the number of parolees who will subsequently return to these neighborhoods. In part, crime can also affect the presence of parolees in a neighborhood because high-crime neighborhoods attract parolees. High-crime neighborhoods may offer more opportunities to an offender, tend to be more affordable, and may provide cover as returning parolees try to reintegrate into society. This reciprocal relationship is shown with the arrows from Panel 1 to Panel 3, and the arrows from Panel 3 to Panel 1 in Figure 1.

Second, crime and neighborhood structure are also cyclical. Crime can influence neighborhood structure (Hipp, 2007; Krivo & Peterson, 1996; Pratt & Cullen, 2005; Sampson & Groves, 1989). For instance, crime can increase residential instability as residents exit the neighborhood to more desirable low-crime neighborhoods (Jargowsky, 1997; Massey & Denton, 1993), which contributes to overall population loss (Morenoff & Sampson, 1997) and higher vacancy rates (Skogan, 1990). Similarly, crime decreases residential neighborhood satisfaction (Harris, 2001; Skogan, 1990), which can also

lead to out-migration (Deane, 1990; Speare, Kobrin, & Kingkade, 1982). Because residents with more economic resources can more easily relocate (Crowder, 2001; Dugan, 1999), they are likely replaced by households with fewer economic resources (Crowder, 2001; South & Crowder, 1998; Wilson, 1987), further increasing the concentration of poverty. Thus, increases in crime contribute to more neighborhood decline. Furthermore, there is a long and well-established line of research demonstrating that structural factors such as poverty, residential instability, and racial/ethnic heterogeneity lead to increases in crime (Bellair, 1997; Sampson & Groves, 1989; Shaw & McKay, 1942; Warner & Pierce, 1993). Taken together, crime and neighborhood structure are intrinsically linked such that an increase in one will invariably lead to an increase in the other. This relationship is also depicted in Figure 1 by the arrows from Panel 2 to Panel 3, and then the arrows from Panel 3 to Panel 2.

Third, relatedly, neighborhood structure also affects the presence of parolees for similar reasons as parolees are attracted to high-crime neighborhoods. For example, a poor neighborhood might attract more parolees because the parolees came from there (Harding et al., 2013) and they can only afford to live there (La Vigne et al., 2003). This ultimately leads to a cyclical pattern. Neighborhood structure is associated with increases in the parolee population, but more parolees erode neighborhood desirability (Clear et al., 2001; Rose & Clear, 2003; Travis, 2005), which leads to increases in vacancy, poverty, and residential instability. More disadvantaged neighborhoods—those with more vacancy, poverty, and residential instability—are more accessible to parolees (La Vigne et al., 2003), thereby restarting the process of parolees–neighborhood decline—more parolees. This relationship is shown with the arrows from Panel 1 to Panel 2, and the arrows from Panel 2 to Panel 1.

Given the interrelated nature of parolees, neighborhood structure, and crime, it is also possible that there are indirect relationships. First, parolees likely indirectly affect neighborhood structure through their direct effect on crime: If crime is corrosive to neighborhood structure, and parolees are contributing to neighborhood crime, parolees' effect on neighborhoods may be more consequential than previously thought. Thus, parolees might indirectly compound the negative effects of crime on neighborhood structure through their direct contribution to crime. Indeed, prior research has found that recidivism rates among ex-offenders are higher in disadvantaged communities (Kubrin & Stewart, 2006). Yet, we lack an understanding as to the extent to which *parolees* might be driving these larger neighborhood processes.

To clarify this, the indirect effect of parolees on neighborhood structure through their effect on crime is shown in Figure 1. First, the direct effect of parolees on crime is shown by the arrow from parolees at Time 1, Panel 1, to

crime at Time 2, Panel 3. Second, the upward arrow from crime at Time 2, Panel 3, to neighborhood structure at Time N, Panel 2, captures the way through which parolees affect neighborhood structure indirectly. This figure highlights how parolees, crime, and neighborhood structure are interrelated components of a larger system affecting neighborhoods.

Second, crime likely degrades neighborhood structure indirectly through parolees: If high-crime neighborhoods are more likely to attract parolees, and a population of parolees are corrosive to neighborhood structure, then the effects of crime on neighborhood structure might be particularly deleterious when these processes unfold in high-return neighborhoods (Chamberlain & Wallace, 2016; La Vigne et al., 2003). This suggests that the combination of high crime and a concentration of parolees may be particularly devastating for neighborhoods, fueling a process of decay and decline.

To clarify this process, the indirect effect of crime on neighborhood structure through their effect on parolees is shown in Figure 1. First, the direct effect of crime on parolees is shown by the arrow from crime at Time 1, Panel 3, to crime at Time 2, Panel 1. Second, the upward arrow from parolees at Time 2, Panel 1, to neighborhood structure at Time N, Panel 2, captures the mechanism through which crime affects neighborhood structure indirectly. Thus, parolees, neighborhood structure, and crime both affect and affect one another in a complex system that ultimately worsens neighborhoods.

Current Study

In an era of mass reintegration, it is important to understand the impact of parolees on neighborhoods. The current study fills a critical gap in the extant reentry literature by examining whether parolees elicit changes in the structure of neighborhoods. Given the interrelationship between parolees, neighborhood structure, and crime, this requires examining reentry as part of a larger system that has both short- and long-term consequences for neighborhoods. First, I examine the direct influence that the concentration of parolees has on neighborhood structure, including property sales, vacancies, public assistance, and crime. Isolating the independent effects of parolees on crime and neighborhood structure allows me to understand how each of these factors, both individually and collectively, contribute to a general process of neighborhood decline. Second, I assess the extent to which parolees' reciprocal relationship with crime might indirectly alter neighborhood structural characteristics (Figure 1). In doing so, I can examine the contribution of parolees on neighborhood structure as part of a larger, interrelated system. This enables a better understanding of the extent to which parolees facilitate changes both directly and indirectly in neighborhood structure.

Data and Method

The data for this study are all paroled inmates released from Ohio prisons and returning to the city of Cleveland between January 2000 and December 2008. A total of 13,530 individuals were released onto parole¹ and returned to Cleveland over the 9-year study period, with a total of 19,668 release incidents (which capture recidivism). Information pertaining to inmate profiles, criminal histories, risk level, addresses, parole violations, and reincarceration was obtained from databases owned and maintained by the Ohio Department of Rehabilitation and Correction (ODRC). Data come from both institutional records and post-release supervision files.

Address data were used to document where offenders on parole returned. The address data were geocoded using ArcGIS 9.3 and placed in the appropriate census block group, the operational definition of neighborhood, for the time period at the specific address.² After excluding missing or incorrect addresses, 90% of the addresses provided were successfully matched. Because a parolee might change addresses over the course of a year, the data were weighted so that the presence of a parolee in a neighborhood accounted for the possibility of spending a partial year at a particular address. The weighted data were then aggregated annually to the block group for each year for a total number of parolees per block group.³

Multiple sources of publicly available data were used to contextualize the communities to which offenders return. Data from the 2000 U.S. Census were used to capture some neighborhood characteristics for the 535 block groups in Cleveland; however, to examine the impact returning prisoners have on neighborhood change, more fine-grained measures of ecological characteristics are needed. The Center on Urban Poverty and Social Change (NEO CANDO) provides *annual* data from several sources (described below) on neighborhood characteristics for the northeast Ohio region (Cuyahoga county [Cleveland] and surrounding areas). Because these data capture short-term neighborhood fluctuations, they were used to examine annual changes within neighborhoods across time between 2000 and 2008. Annual crime data for Cleveland were made available from the Cleveland Police Department and also obtained from NEO CANDO between 2000 and 2008. Therefore, this study examines how annual changes in *neighborhood* levels of parolees influences annual⁴ changes in neighborhood structure and crime.

Outcome (Endogenous) Variables

To examine the complex system of parolees, crime, and neighborhood effects, multiple outcome variables were used in the analysis. First, to account for the

presence of parolees in neighborhoods, a measure capturing the *percent of parolees* in a block group in a given year was constructed.⁵ This was calculated by taking the number of parolees residing in a particular block group in a given year and dividing this number by the total census block group population, then multiplying by 100.⁶

Second, to model neighborhood structure, three variables were created. The data for these variables are available annually, which allowed me to test how the presence of parolees in 1 year might affect neighborhood structure the following year. These variables are based on the annual neighborhood change measures collected from NEO CANDO. These variables are collectively referred to as the *neighborhood structure* variables. First, I include a measure of the percent *residential housing sales*. This provides a measure of residential instability (Boggess & Hipp, 2010) and comes from the Cuyahoga County Fiscal Office. *Residential vacancies* capture both a lack of guardianship (Miethe & Meier, 1994; Reynald, 2011) in the community and locations that foster criminal opportunities (Skogan, 1990; Spelman, 1993) both of which can contribute to social disorganization and crime. Furthermore, if the presence of parolees in a neighborhood has a stigmatizing effect, vacancies might increase if exiting residents are not replaced or replaced at a slower rate (Skogan, 1990). Vacancy data come from the U.S. Department of Housing and Urban Development (HUD). Finally, a measure of *public assistance* was included to account for increased financial stress in neighborhoods with high incarceration and return rates (Sugie, 2012). This measure was based on a factor score using principle components, which combined the percent receiving public assistance and the percent receiving Aid to Families with Dependent Children and Temporary Assistance for Needy Families (AFDC/TANF).⁷ These data come from the Cuyahoga County Employment and Family Services Department.

Third, I include a measure of crime. This captures how parolees' direct effect on crime might have subsequent ramifications for neighborhood structure. These data come from the Cleveland Police Department. Crime was aggregated into yearly totals for violent and property crime. *Violent crime* includes murder, robbery, and aggravated assaults, and *property crime* includes burglary, larceny, and motor vehicle theft. Each crime type was translated into a rate per 1,000 residents by dividing the total number of crimes by the residential population and multiplying by 1,000; the crime variables were logged to account for the skewed distribution.

Spatial Effects

In addition to incorporating the endogenous variables, a spatially lagged version of each outcome variable was included for each time point. Spatial lags

were created for *percent parolees*, the three neighborhood structure measures—*property sales*, *residential turnover*, and *public assistance*—and both *violent* and *property* crime. Including a spatially lagged version of the dependent variable captures the influence of other processes not directly included in the model. Although it is likely the endogenous spatial lags have an effect on an endogenous variable in the focal neighborhood, including all of those spatial factors would result in collinearity, thus biasing the model. Instead, including a spatially lagged version of the dependent variables captures the indirect effects of these other variables.

Spatially lagged variables were created using a distance decay method. The literature suggests that individuals do not travel great distances to commit crimes, with an average distance offenders will travel to commit an offense between 1 and 2.5 miles from their neighborhood (Pyle, 1974). Given that the median census tract was about 1.4 miles across in 2000 (Hipp, 2007), a distance decay effect was calculated at 2 miles. Thus, the neighborhood structure variables, the presence of parolees and crime characteristics located in neighborhoods more than 2 miles from the focal neighborhood, were estimated to have no effect. This was accomplished by calculating a weight matrix (W), which was then row-standardized. The endogenous variables were then multiplied by this W matrix to create spatially lagged versions of these measures.

Independent (Exogenous) Variables

A number of additional time-invariant control variables were also included in the models. These variables were included to control for other neighborhood characteristics that are likely important for both neighborhood structure and crime, and therefore, their inclusion prevents any spurious effects that may be detected in the analyses. These variables were based on data from the 2000 Census. Three key constructs were calculated to account for the role neighborhood characteristics may play. In line with social disorganization theory, measures of residential stability and concentrated disadvantage⁸ were calculated. To account for *residential stability*, a factor analysis using principle components was used to combine three measures: (a) average length of residence, (b) percent of households that moved into their residence within the last 5 years, and (c) percent homeowners. Following Hipp et al. (2010), a measure of *concentrated disadvantage* was created based on a factor analysis using five measures: (a) percent of residents below poverty, (b) percent unemployed, (c) single parent households, (d) median home value, and (e) median income, where the first three variables loaded positively and the latter two variables loading negatively. To take into account relative inequality, the *Gini coefficient* was used.

The racial distribution in Cleveland was predominantly African American (51%) and highly segregated. As such, the racial composition of neighborhoods could be controlled for by accounting for the presence of Whites or African Americans; therefore, percent *African Americans* was included in the models. Summary statistics for all variables included in the analysis are shown in Table 1.

Analytic Approach

To model the complex and multidimensional relationships between parolees, neighborhood structure, and crime, a series of simultaneous equations were estimated (Bollen, 1989) to tease apart both indirect and direct effects. An autoregressive cross-lagged (ACL) model was used to examine the parolees, neighborhood structure, and crime system (Curran & Bollen, 2001; Hipp et al., 2009). ACL models are appropriate because they are adept for analyzing the potential directions of causal flow between multiple constructs at the same time. To examine the interrelationship between parolees, neighborhood structure, and crime, I model 1-year lags between my endogenous variables while controlling for time-invariant factors.

The theoretical and statistical model is presented in Figure 1, which depicts how each outcome variable—parolees, neighborhood structure, and crime—both affect and are affected by one another. First, the direct paths are examined by assessing how each outcome variable affects another. For example, the model asserts that parolees directly affect neighborhood crime (Panel 1-Panel 3) or neighborhood structure (Panel 1-Panel 2). Second, the reciprocal paths examine how one particular outcome variable might affect and be affected by one other outcome variable. For instance, the reciprocal relationship between parolees and neighborhood structure suggests that parolees have a direct effect on neighborhood structure, and, in turn, the erosion of neighborhood structure results in the presence of more parolees. Note the spatial variables and controls are modeled on parolees and structure at all time points. A similar reciprocal relationship is tested between crime and neighborhood structure.

Third, indirect effects examine the impact of one variable on another as that variable influences one or more intervening variables (Hoyle & Kenny, 1999). This assumes that some of the relationship between parolees and neighborhood structure is decomposed by a third variable, in this instance, crime. In structural equation modeling (SEM), this is accomplished by specifically estimating the pathways through which the indirect relationship might occur. This is done by estimating a direct path between the independent variable and the dependent variable, as well as a direct path between the independent variable

Table 1. Summary Statistics.

	<i>M</i>	<i>SD</i>
Crime measures		
Violent crime (logged)	6.681	1.704
Property crime (logged)	8.565	0.765
Neighborhood measures		
Percent parolees	1.334	2.606
Residential stability		
Length of residence 2000	12.077	3.928
Percent homeowners 2000	49.442	23.225
Percent living in same house for 5 years 2000	55.664	11.468
Concentrated disadvantage		
Percent poverty 2000	26.296	16.628
Percent unemployment 2000	12.329	7.856
Average household income 2000	34,969.43	12,823.980
Average home value 2000	58,602.98	30,955.500
Percent single parent households	30.06	17.701
Inequality (Gini)	42.985	7.773
Percent Black	50.947	41.486
Neighborhood structure measures		
Residential vacancies	5.312	3.546
Property sales	4.125	2.432
Public assistance		
Percent receiving Welfare	5.775	3.979
Percent receiving Food Stamps	31.623	20.210
Spatially lagged measures		
Spatial lag of violent crime	7.232	0.709
Spatial lag of property crime	8.814	0.648
Spatial lag of parolees per capita	1.344	0.790
Spatial lag of residential vacancies	5.270	3.725
Spatial lag of property sales	4.139	1.059
Spatial lag of public assistance		
Percent receiving Welfare	5.907	2.362
Percent receiving Food Stamps	32.102	15.049
Individual parolee characteristics		
Percent male	91.32	28.140
Percent African American	69.3	46.100
Percent White	20.85	40.624
Average age	37.46	10.284
Percent convicted of violent crime	57.55	49.420
Percent convicted of property crime	32.98	47.015
Percent convicted of drug crime	32.69	46.900
Average length of incarceration (years)	3.35	
Average number of priors	1.07	1.512

and the intervening variable, and the intervening variable and the dependent variable. The SEM framework provides a flexible approach for assessing indirect relationships, as it allows for the relationships between my endogenous variables to occur across multiple pathways. Finally, each construct is regressed on its own lagged score (each variable at the previous year), as well as the lagged score of the other constructs of interest (not pictured in Figure 1). Hence, the construct at *Time 2* represents the change in that construct between *Time 2* and *Time 1*, or the change in that construct at *Time 2* due to the level of the other constructs at *Time 1* (Schlueter, Schmidt, & Wagner, 2008).

A series of models were estimated for the parolee, neighborhood structure, and crime outcome variables. Each equation estimates the effects of the exogenous and endogenous variables on each outcome variable. This implies the relationships depicted in Equations 1.1, 1.2, and 1.3, which are all estimated simultaneously:

$$\begin{aligned} X_{it} = & \alpha_i + \beta_{xt-1}x_{i,t-1} + \beta_{Wxt-1}Wx_{i,t-1} \\ & + \beta_{yt-1}y_{i,t-1} + \beta_{zt-1}z_{i,t-1} + \mathbf{X}_i\Gamma_1 + \varepsilon_{1t}, \end{aligned} \quad (1.1)$$

$$\begin{aligned} Y_{it} = & \alpha_i + \beta_{yt-1}y_{i,t-1} + \beta_{Wyt-1}Wy_{i,t-1} \\ & + \beta_{zt-1}z_{i,t-1} + \beta_{xt-1}x_{i,t-1} + \mathbf{X}_i\Gamma_1 + \varepsilon_{2t}, \end{aligned} \quad (1.2)$$

$$\begin{aligned} Z_{it} = & \alpha_i + \beta_{zt-1}z_{i,t-1} + \beta_{Wzt-1}Wz_{i,t-1} \\ & + \beta_{yt-1}y_{i,t-1} + \beta_{xt-1}x_{i,t-1} + \mathbf{X}_i\Gamma_1 + \varepsilon_{3t}, \end{aligned} \quad (1.3)$$

where X at Time t for Block Group i represents a particular neighborhood structure variable; Y at Time t for Block Group i represents a property or violent crime; t represents time (1 year lag); Z at Time t for Block Group i represents the percent of parolees; $\mathbf{X}_{i,t-1}$ is a matrix of the neighborhood structure variables; Γ_1 is a vector of the coefficients for the effect of the community characteristics (exogenous variables) on X , Y , or Z ; and ε represents the disturbance term. Note that for each equation, all three of the dependent (endogenous) variables appear on the right-hand side of the equation at the previous time point, in addition to the spatial lags and control variables. Separate models were tested for property sales, residential vacancies, and public assistance for both violent and property crime.

Results

Before discussing the model results, I briefly discuss some of the individual characteristics of the parolees in the sample (Table 1). Although these

characteristics are not included in the model, it helps contextualize the parolee population. A vast majority of parolees were African American (69%), and most had been convicted of a violent crime. More than 90% of parolees were male and had an average age of 37. Most parolees had at least one prior incarceration and on average had spent more than 3 years in prison. Most neighborhoods experienced some reentry, although a small minority (18) did not receive any parolees between 2000 and 2008 and 18% of the parolees were located in just 5% of neighborhoods in Cleveland, suggesting some concentration. On average, returning parolees represented 1.3% of the neighborhood population over the study period with an average 0.87% increase in parolees from year to year. Some neighborhoods received large percentages of parolees. For example, in 2007, one neighborhood had a parolee population of 65%, although the average high from 2000 to 2008 was 39%.

Direct Effects

In this section, I present the models examining the direct effects of parolees on my three indicators of neighborhood structure and crime. The results with violent crime are presented in Table 2, and the findings for property crime are shown in Table 3.

First, I look at the direct effects of parolees on the neighborhood structure variables—vacancies, property sales, or public assistance—while controlling for violent or property crime. These results are presented in the top third of Table 2 (controlling for violent crime) and Table 3 (controlling for property crime) with the “neighborhood structure” outcome, and reflect the results for Equation 1.1. The results indicate that more parolees are significantly associated with increases in residential vacancies (Model 1, Table 2). If a neighborhood experiences a 1% increase in parolees in the previous year, there will be a .026% increase in the residential vacancy rate the following year. There is a similar pattern when controlling for property crime (Model 1, Table 3).

Parolees also have a direct effect on property sales (Models 2 in Tables 2 and 3): A 1% increase in percent parolees results in a .025% increase in property sales in the violent crime models and a .017% increase in the property crime models (albeit at $p < .10$).⁹ Although parolees were anticipated to lead to increases in poverty, there is no such evidence that an increase in the percentage of parolees in the previous year contributes to greater public assistance (Models 3, Tables 2 and 3). Note that in all models, the lagged value of the specific neighborhood structure variable has a significant and positive effect; therefore, the changes associated with the parolee population are above and beyond the effect of the variable in the previous year. Furthermore, property crime in the prior year affects property sales, but

Table 2. ACL Model Examining the Direct, Reciprocal, and Indirect Relationships Between Parolees, Neighborhood Structure, and Violent Crime.

	Model 1: Residential vacancies	Model 2: Property sales	Model 3: Public assistance
Outcome: Neighborhood structure			
1-year lag of percent residential vacancies	0.967** (0.006)		
1-year lag of percent property sales		0.747** 0.019	
1-year lag of public assistance			0.968** (0.023)
1-year lag of violent crime (logged)	0.004 (0.019)	0.004 0.015	0 (0.003)
1-year lag of percent parolees	0.026* (0.011)	0.025** 0.009	0.008 (0.008)
Concentrated disadvantage	0.03 (0.058)	-0.019 0.033	
Residential stability	0.105† (0.057)	0.163** 0.036	0.003 (0.006)
Inequality (Gini)	0.015** (0.006)	-0.003 0.003	-0.001 (0.001)
Percent Black	0 (0.001)	0.001† 0.001	0 (0.000)
Spatial lag of residential vacancies	0.032** (0.012)		
Spatial lag of percent property sales		0.303** 0.029	
Spatial lag of public assistance			-0.014 (0.020)
Spatial lag of violent crime (logged)	0.152† (0.081)	0.107* 0.047	0.004 (0.015)
Spatial lag of parolees	-0.086 (0.061)	0.055 0.041	0.002 (0.012)
Outcome: Violent crime (logged)			
1-year lag of violent crime (logged)	0.88** (0.010)	0.878** 0.01	0.872** (0.019)
1-year lag of percent parolees	0.011** (0.004)	0.01** 0.004	0.011** (0.003)
1-year lag of percent residential vacancies	-0.001 (0.001)		
1-year lag of percent property sales		0.006 0.005	

(continued)

Table 2. (continued)

	Model 1: Residential vacancies	Model 2: Property sales	Model 3: Public assistance
I-year lag of public assistance			0.056** (0.020)
Concentrated disadvantage	0.052** (0.015)	0.047** 0.014	0.028 (0.017)
Residential stability	0.002 (0.015)	-0.01 0.016	-0.005 (0.015)
Inequality (Gini)	-0.002 (0.002)	-0.001 0.002	-0.001 (0.002)
Percent Black	0.001* (0.000)	0.001** 0	0† (0.000)
Spatial lag of violent crime (logged)	0.108** (0.024)	0.108** 0.024	0.096** (0.031)
Spatial lag of parolees	-0.035* (0.017)	-0.034† 0.017	-0.027† (0.015)
Outcome: Percent parolees			
I-year lag of percent parolees	1.116** (0.009)	1.122** 0.009	1.117** (0.047)
I-year lag of violent crime (logged)	0.021* (0.010)	0.023* 0.01	0.019† (0.010)
I-year lag of percent residential vacancies	0.009** (0.002)		
I-year lag of percent property sales		0.009 0.007	
I-year lag of public assistance			0.099 (0.060)
Concentrated disadvantage	-0.047† (0.026)	-0.035 0.026	-0.074 (0.068)
Residential stability	-0.076** (0.027)	-0.067* 0.027	-0.077† (0.045)
Inequality (Gini)	-0.016** (0.003)	-0.015** 0.003	-0.017 (0.011)
Percent Black	0 (0.000)	0 0	0 (0.001)
Spatial lag of violent crime (logged)	0.028 (0.036)	0.04 0.036	0.014 (0.050)
Spatial lag of parolees	-0.005 (0.032)	0.006 0.032	0.021 (0.030)

Note. ACL = autoregressive cross-lagged.

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Standard errors are in parentheses.

Table 3. ACL Model Examining the Direct, Reciprocal, and Indirect Relationships Between Parolees, Neighborhood Structure, and Property Crime.

	Model 1: Residential vacancies	Model 2: Property sales	Model 3: Public assistance
Outcome: Neighborhood structure			
1-year lag of percent residential vacancies	0.968** (0.006)		
1-year lag of percent property sales		0.748** (0.020)	
1-year lag of public assistance			0.969** (0.022)
1-year lag of property crime (logged)	0.01 (0.052)	0.103** (0.034)	-0.006 (0.007)
1-year lag of percent parolees	0.026* (0.011)	0.017† (0.009)	0.008 (0.008)
Concentrated disadvantage	0.045 (0.056)	0.002 (0.033)	
Residential stability	0.089 (0.058)	0.177** (0.037)	0.001 (0.006)
Inequality (Gini)	0.016** (0.006)	-0.002 (0.003)	-0.001 (0.001)
Percent Black	0 (0.001)	0.001† (0.001)	0 (0.000)
Spatial lag of residential vacancies	0.035** (0.012)		
Spatial lag of percent property sales		0.302** (0.030)	
Spatial lag of public assistance			-0.013 (0.018)
Spatial lag of property crime (logged)	0.039 (0.089)	0.022 (0.050)	0.003 (0.015)
Spatial lag of parolees	-0.041 (0.064)	0.068 (0.041)	0.004 (0.013)
Outcome: Property crime (logged)			
1-year lag of property crime (logged)	0.957** (0.006)	0.955** (0.006)	0.956** (0.009)
1-year lag of percent parolees	0.004** (0.001)	0.004** (0.001)	0.004* (0.002)
1-year lag of percent residential vacancies	0 (0.000)		
1-year lag of percent property sales		0.004** (0.002)	
1-year lag of public assistance			0.013 (0.010)

(continued)

Table 3. (continued)

	Model 1: Residential vacancies	Model 2: Property sales	Model 3: Public assistance
Concentrated disadvantage	0.029** (0.005)	0.028** (0.005)	0.024* (0.010)
Residential stability	0.007 (0.006)	0.003 (0.006)	0.007 (0.006)
Inequality (Gini)	-0.001* (0.001)	-0.001* (0.001)	-0.001† (0.001)
Percent Black	0 (0.000)	0 (0.000)	0 (0.000)
Spatial lag of property crime (logged)	0.006 (0.008)	0.01 (0.008)	0.004 (0.010)
Spatial lag of parolees	0.002 (0.006)	0.003 (0.006)	0.004 (0.006)
Outcome: Percent parolees			
1-year lag of percent parolees	1.114** (0.009)	1.118** (0.010)	1.111** (0.048)
1-year lag of property crime (logged)	0.043† (0.025)	0.047† (0.025)	0.058 (0.051)
1-year lag of percent residential vacancies	0.009** (0.002)		
1-year lag of percent property sales		0.01 (0.007)	
1-year lag of public assistance			0.122 (0.074)
Concentrated disadvantage	-0.018 (0.026)	-0.014 (0.026)	-0.078 (0.069)
Residential stability	-0.061* (0.027)	-0.062* (0.028)	-0.071 (0.045)
Inequality (Gini)	-0.015** (0.003)	-0.014** (0.003)	-0.017 (0.010)
Percent Black	0 (0.000)	0.001 (0.000)	0 (0.001)
Spatial lag of property crime (logged)	-0.008 (0.036)	0.009 (0.037)	-0.015 (0.047)
Spatial lag of parolees	0.007 (0.033)	0.012 (0.033)	0.026 (0.032)

Note. ACL = autoregressive cross-lagged.

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Standard errors are in parentheses.

there is no other evidence that crime—either property or violent—affects neighborhood structure.

Second, I examine the direct effects of parolees on the violent and property outcome variables; these results are shown in the middle third of Tables 2 and 3 labeled "Violent Crime" and "Property Crime" outcomes, respectively, and reflect the results for Equation 1.2. Note that three models are estimated to account for the reciprocal relationships between crime and each neighborhood structure variable. In the violent crime models (Table 2), there is a consistent and stable relationship between the percent parolees and violent crime. Because crime is logged, a 1% increase in the percent of parolees in 1 year has a 1.1% increase in the logged violent crime rate the following year. Turning to the property crime outcomes (Table 3), there is also a consistent effect across all models, regardless of which neighborhood structure variable is also being estimated, although the magnitude of this effect is smaller. A 1% increase in parolees in 1 year results in a 0.4% increase in property crime the following year (Models 1-3 in Table 3). In all violent and property crime models, with the exception of one, concentrated disadvantage (or the percent on public assistance in Models 3) is significantly and positively associated with crime. The percent Black is positively related to violent crime, in Models 1 and 2 only. Few other neighborhood variables are significant.

Third, the last series of equations examine the effect that crime and neighborhood structure has on the prevalence of parolees in a neighborhood; this is the bottom third of Tables 2 and 3 with outcome listed as "Percent Parolees" and reflects the results for Equation 1.3. In the models estimating violent crime, the lagged parolee population is significant and positive on the future parolee population in a neighborhood. The residential vacancy rate is the only structural variable significantly and positively related to parolees: As the percent of vacant housing units in a neighborhood increases, the size of the parolee population also increases. The lagged violent crime rate exerts a positive and significant influence: Increases in violent crime in 1 year increase the percent of parolees in a neighborhood the following year regardless of the neighborhood structure variable included (Models 1-3). Weaker effects are detected in the models controlling for property crime (Models 1-3 in Table 3).

Reciprocal Effects

Next, I examine whether there are reciprocal effects between any of my endogenous variables. First, there is evidence to suggest a reciprocal relationship between neighborhood structure and parolees. There is a significant relationship between vacancies and parolees for both violent and property crime (the bottom third of Tables 2 and 3). At the same time, an increase in parolees

increases the percent of residential vacancies (the top third of Tables 2 and 3). Thus, neighborhood vacancies and parolees have a feedback loop.

Second, there is also a reciprocal relationship between violent and property crime and parolees, albeit a weaker relationship for property crime. Parolees contribute to increases in neighborhood crime, which subsequently results in an increase in returning parolees the following year. For instance, because crime is logged, a 1% increase in parolees results in a 1.1% increase in violent crime, whereas a 1% increase in violent crime results in a 0.0002%. In addition, the statistically significant coefficients between each outcome variable and the 1-year lags of these variables demonstrate the stability of both crime and parolees over time. Prior crime predicts future crime in neighborhoods, and the presence of parolees in a neighborhood in 1 year will predict their presence the following year. This indicates that the presence of parolees and crime concentrate in neighborhoods; both the concentration of parolees and crime in neighborhoods are self-perpetuating, which then fuels the reciprocal nature between these constructs.

Indirect Effects

Finally, I examine the indirect relationships between parolees, neighborhood structure, and crime. Recall that indirect effects occur when one variable (x) affects another (y) through its influence on a third intervening variable (z). Because all of the outcome variables are also predictors of each outcome variable (the cross-lag), the indirect effects can be assessed by following the causal paths in Tables 2 and 3. For ease of interpretation, the key results are summarized in Figures 2 to 4. First, there is an indirect relationship between percent parolees and property sales through property crime (Figure 2). Parolees have a marginally significant direct effect on property crime, but there is a strong direct effect between property crime and property sales ($\beta = .103$). Thus, parolees might increase property sales indirectly by increasing property crime. Parolees increase property crime ($\beta = .004$), and as an increase in property crime is associated with an increase in property sales ($\beta = .103$), this suggests that the relationship between parolees and property sales is indirectly influenced by property crime.

Second, there is an indirect relationship between violent crime and vacancies through parolees (Figure 3). As noted in the above discussion of direct effects, violent crime does not directly increase vacancy (Model 1 in the top third of Table 2). However, an increase in violent crime in 1 year results in an increase in the percent of parolees the following year ($\beta = .021$). At the same time, an increase in parolees results in increased residential vacancies ($\beta = .026$). This suggests that the effect of violent crime on residential vacancies

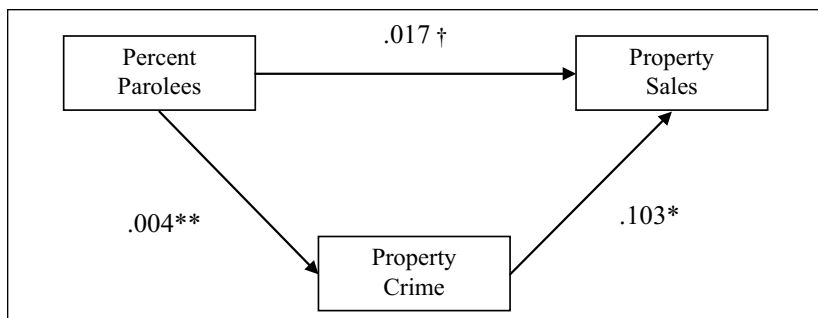


Figure 2. Indirect effects of parolees on property sales via property crime.

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$.

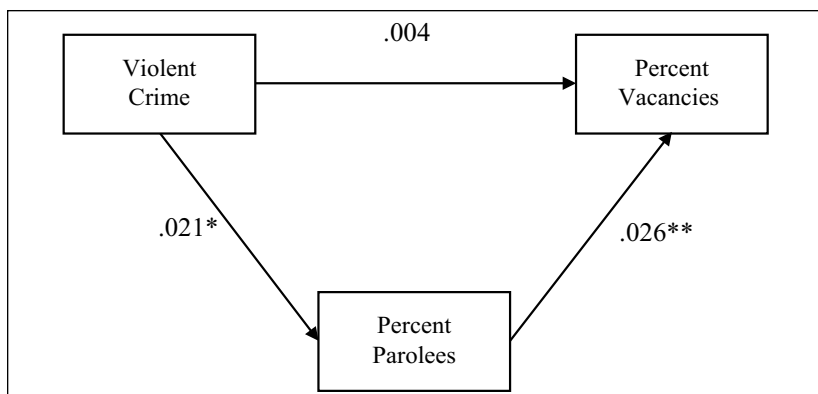


Figure 3. Indirect effects of violent crime on vacancies via percent parolees.

* $p \leq .05$. ** $p \leq .01$.

is indirectly influenced by its impact on parolees. Thus, violent crime in 1 year increases parolees the next year, which subsequently increases residential vacancies the following year.

Third, there is an indirect relationship between violent crime and property sales through parolees (Figure 4). The direct effect between violent crime and property sales is not significant (as discussed above); instead, it appears as though this relationship is indirectly influenced by the presence of parolees in a neighborhood. A rise in violent crime in 1 year results in an increase in parolees the following year ($\beta = .023$), and an increase in the percent of parolees increases property sales ($\beta = .025$). Thus, the relationship between

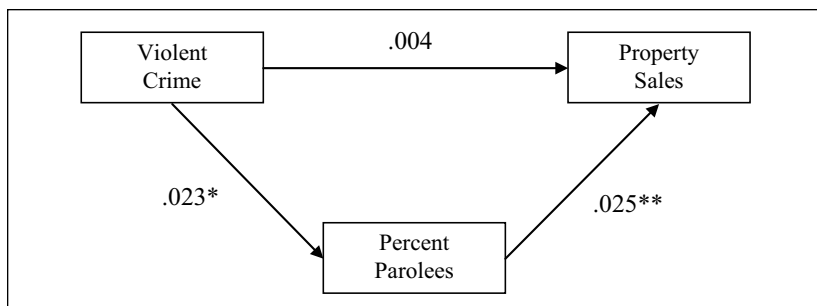


Figure 4. Indirect effects of violent crime on property sales via percent parolees.
* $p \leq .05$. ** $p \leq .01$.

violent crime and property sales is driven in large part by increases in parolees.

In sum, the relationship between parolees, neighborhood structure, and crime is complex and interconnected. First, parolees have a clear impact on aspects of neighborhood structure, over and above crime. Parolees are linked to increases in residential vacancies and property sales. In addition, parolees have a direct and positive effect on neighborhood violent and property crime. Importantly, the relationship between crime and parolees is reciprocal in nature. Second, parolees, neighborhood structure, and crime are interrelated in indirect ways. Parolees affect property sales indirectly through crime. Furthermore, violent crime is also linked to increases in both neighborhood vacancies and property sales, but these effects occur indirectly through parolees. Thus, parolees, neighborhood structure, and crime are an interrelated system that should be considered in tandem to better understand the extent to which parolees alter neighborhood structure both directly and indirectly.

Discussion and Conclusion

For the past several decades, the United States has drastically expanded its prison population, with little regard for the repercussions mass incarceration might have on communities or the individuals who have been imprisoned. A consequence of mass incarceration is large numbers of prisoners released back into the community. Although a handful of studies have examined the potential effects of parolees on neighborhood crime (Dhondt, 2012; Hipp & Yates, 2009) or parolee recidivism (Chamberlain & Wallace, 2016), these studies have failed to account for how parolees might affect changes in the broader neighborhood structure. The results from this study indicate that

parolees can have a significant impact on neighborhoods beyond just increasing crime. The key findings are discussed below.

The central finding of this study is that parolees change the structural characteristics of the neighborhood. Parolees can trigger these changes either *directly* due to their increased presence, or *indirectly* through their reciprocal relationship with crime. This suggests that parolees might contribute to neighborhood deterioration that is both more enduring and more pronounced than previously thought. Parolees decrease neighborhood quality by prompting increases in residential vacancies and property sales. This suggests that parolees may generate increased out-migration among residents (Bellair, 2000; Krivo & Peterson, 1996). The positive relationship between parolees and property sales suggests that individuals are able to sell their homes despite the increasing rate of crime. This is consistent with findings reported by Hipp et al. (2009), who found that increases in violent and property crime in census tracts in 1 year resulted in an increase in property sales, but a decrease in property values, the following year. Thus, the presence of parolees might place a downward pressure on both sales price and rents of homes on the market. Although property values were not assessed in the models examined here, future research should examine how increases in parolees might influence home prices. This might result in an in-migration of individuals with weakened financial circumstances to the neighborhood, which may increase levels of poverty and disadvantage.

If parolees affect neighborhood structure, there are a number of implications for the social processes in a neighborhood. For instance, high levels of residential mobility undermine the capacity of neighbors to establish social ties; increased ties among neighbors enhance the ability and willingness of residents to intervene as problems arise in the neighborhood (Sampson, Raudenbush, & Earls, 1997). Therefore, an influx of parolees might reduce levels of informal social control in a neighborhood. Furthermore, if exiting residents are not replaced by new residents, this might increase the number of vacancies in a neighborhood. Vacant properties lack guardianship (Spelman, 1993), typically increase levels of disorder in a neighborhood (Spelman, 1993; Wilson & Kelling, 1982), and might provide cover for illicit activity such as drug dealing, gambling, prostitution, or a place for potential offenders to congregate (Wilson & Kelling, 1982). This might expedite the physical decline of a neighborhood further reducing its desirability. Taken together, concentrated reentry may further stigmatize an already marginalized neighborhood and might further erode mechanisms important for self-regulation. Although the erosion of these social processes was not examined here, future research—possibly through qualitative interviews—should examine how high rates of reentry might undermine these factors.

In addition, as the percent of parolees in a neighborhood increases, both property and violent crime will increase the following year. This is consistent with prior research (Dhondt, 2012; Hipp & Yates, 2009). However, this effect is more pronounced on violent crime. These effects were detected even accounting for both the lag and spatial lag of crime, further bolstering the validity of the findings reported here. Furthermore, the relationship between parolees and crime is reciprocal in nature, suggesting that these processes are perpetuating one another. Parolees are increasing crime in places that already have fairly large crime problems. These increases, however, are not restricted to neighborhoods with high-crime levels; as such, this dynamic is possible in all neighborhoods. Most Cleveland neighborhoods experienced some levels of reentry. This study found that just a 1% increase in parolees in a neighborhood would result in a 1.1% increase in neighborhood violent crime. Using the crime incidents from 2006 provided by the Cleveland Police Department, Cleveland had a total of 4,306 reported robberies, 117 homicides, and 2,663 assaults. If the neighborhoods across the city of Cleveland experienced an aggregate increase in parolees of 10% that year, this would account for an additional 473 robberies, 13 homicides, and 293 assaults. Parolees themselves might be increasing crime by reengaging in criminal behavior as they represent an increase in the supply of motivated offenders. Alternatively, parolees may be reconnecting with criminal associates and reengaging in criminal activity. Nonetheless, parolees have an immediate effect on crime, and because parolees also compromise neighborhood structural characteristics, they likely perpetuate crime indirectly.

As evidence mounts with respect to the harmful effects parolees have on neighborhoods, it is critical to identify neighborhood resources and policies that can be leveraged to counteract these effects. Recent research has found that the placement of voluntary organizations in disadvantaged communities may lower rates of crime (Hipp & Yates, 2009; Slocum, Rengifo, Choi, & Herrmann, 2013). Disadvantaged neighborhoods with high levels of parolees have weakened informal social control; therefore, the development of *parochial* social control, such as social groups, employers, and religious organizations (Clear, Waring, & Scully, 2005), may facilitate the creation of informal social control. Increasing the number of organizations in neighborhoods would be a first step to enhancing neighborhood levels of informal social control that could lessen the effect of parolees on neighborhood structure and crime. For instance, Wallace and Papachristos (2014) show that recidivism increases when neighborhoods lose health care organizations, and Wallace (2015) demonstrates that recidivism increases when neighborhoods lose educational organizations. Increasing support for and the presence of community

groups might also address this void, while enhancing programs and support for ex-offenders.

There are some limitations to this study that should be noted. ODRC does not maintain records of all parolee moves but instead captures a snapshot of where a parolee lives every 6 to 12 months. The movements of this population are notoriously difficult to track, as parolees do not always report their current address. Although La Vigne and Parthasarathy (2005) have found most parolees remain at the same address for significant lengths of time, it would be ideal to have every address in chronological order. This study also assumed that all types of parolees equally contribute to crime; however, certain types of parolees may have a greater proclivity for reoffending. Future research should examine whether the clustering of different parolee characteristics has a differential effect on neighborhood crime (see Hipp & Yates, 2009). In addition, I am unable to include a measure capturing the incarceration rate of a neighborhood. Prior research has suggested an initial reduction in crime related to the neighborhood incarceration rate, followed by an increase in crime when there are high levels of removal and return (Clear et al., 2001; Clear et al., 2003). However, given that each model includes the lag and spatial lag for each neighborhood structural variable, crime and parolees, I capture the influence of other processes—such as the incarceration rate—that may not be directly included in the model (Wooldridge, 2009). This provides greater confidence in the results reported. Nonetheless, future research should consider how the return and removal of offenders work in concert to influence neighborhood structure and crime. Furthermore, given that parolees in Ohio represent less than 40% of all prison releases, parolees serve as a proxy for the larger ex-offender population. Finally, although I examined these changes across 1-year lags, it is possible that these changes may be more or less consequential across longer (or shorter) periods of time. This might be particularly true for the public assistance outcome, given the durability of poverty (Sampson & Morenoff, 2006). Future research should assess whether these processes unfold over shorter or longer periods of time.

Although the consequences of incarceration have been widely studied, research in this area has generally been limited to an examination of these consequences as they relate to the individual or, similarly, to the individual's family or community as a result of their removal from society (Clear, 2007; Rose & Clear, 1998). This study fills this gap, producing evidence to suggest that the effect of parolees on neighborhoods extends beyond crime, initiating changes in the broader social and economic context of neighborhoods. The changes generated by parolees have important implications for neighborhoods, signaling a general process of transition and decline that may pronounce and sustain disadvantage. Although public safety and crime control

are of interest among political actors, the broader impact that parolees, and ex-offenders more generally, will likely have on neighborhood structure and resident quality of life is largely minimized. Indeed, policy initiatives aimed to address the aftermath of a burgeoning prison population, such as California's Realignment (Krisberg & Taylor-Nicholson, 2011), may be short-sighted in terms of their repercussions on communities and the residents therein. The extent to which parolees may harm communities certainly underscores the importance of identifying and bolstering resources within neighborhoods and communities, such as social capital, that can prevent further decline in these communities. These findings provide important insights into a critical social issue, bringing to light additional areas for intervention and enhancement of local community resources to counteract these effects.

Author's Note

Points of views or opinions in this document are those of the author and do not necessarily represent the official position or policies of the Department of Housing and Urban Development.

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Notes

1. On July 1, 1996, the Ohio legislature enacted Senate Bill 2 (SB2), Ohio's truth in sentencing law. This eliminated sentence reductions for good time and required judges to impose a fixed term of incarceration (La Vigne, Thompson, Visher, Kachnowski, & Travis, 2003). Following the implementation of SB2, parole was

eliminated for offenses committed after July 1, 1996, and was replaced with a period of mandatory post-release control (PRC), which is typically required for serious offenders. PRC status is imposed by the judge at the time of sentencing. For ease of reference, all releases under post-release supervision (parolee and PRC) will be referred to collectively as parolees. The mixing of parolees and PRC subjects did not result in significant differences in the models tested here.

2. Addresses were updated for each parolee annually between 2000 and 2003, while addresses were available every 6 months beginning in 2004. To take advantage of the more detailed address data in later years, data reported on an annual basis were coded in 6-month intervals. Thus, parolees can have multiple addresses attached to them during their time under supervision capturing their movements while under supervision. Although addresses are updated frequently, the address updates may not capture all the moves a parolee makes while supervised. Although it would be preferable to have address data for each move a parolee makes, residing at a residence for a relatively short period of time reduces the likelihood that a parolee will have much effect on recidivism and overall parolee clustering. A weakness in all studies examining the movements of parolees is that it is extremely difficult to track where parolees are residing. However, there is some evidence that parolees are fairly stable with regard to their living situation; a recent study in Cleveland, Ohio, found that approximately 72% of a sample of parolees lived at the same location 1 to 2 years later (La Vigne & Parthasarathy, 2005).
3. Some parolees were designated as homeless in Ohio Department of Rehabilitation and Correction (ODRC) records. These individuals were scrubbed from the data, as no address information was available. Nonetheless, it is possible that an address was entered for a transient parolee, although this is unlikely to affect a significant proportion of individuals in the data. Furthermore, although I was able to eliminate homeless parolees from my sample, I was unable to determine whether a parolee was living in any type of group quarters, such as a halfway house. Depending on the prevalence of these types of institutions in a neighborhood, this might inflate the number of parolees in a neighborhood. Furthermore, it is possible that parolees living in transitional housing may have a different effect on neighborhood structure compared with those living in private residences. Future research should attempt to differentiate these effects.
4. The use of yearly time lags is consistent with prior research examining the relationship between parolees and neighborhood crime (Clear, Rose, Waring, & Scully, 2003). Although Hipp and Yates (2009) examine monthly changes in parolees and crime, the use of 1-month lags is likely too short to detect substantive changes in neighborhood structure.
5. Data restrictions do not facilitate knowing the location of offenders released from prison but who are not under correctional supervision. One possibility is that there is a non-parolee effect on neighborhood structure and crime; however, our current model likely accounts for this possibility. Because research suggests that ex-offenders generally cluster in only a few neighborhoods (Chamberlain &

- Wallace, 2016), non-parolees are likely similar to parolees in that they are returning to the same neighborhoods; as such, our current measures of parolee concentration would serve as a proxy for both parolees and non-parolees. Therefore, we capture the non-parolee effect in the current analysis.
6. Given that this measure only captures individuals on parole during the study period, this is likely a conservative estimate of these effects. However, this measure likely captures a population most at risk of recidivating.
 7. This latter measure was only available at the tract level; therefore, when this measure was included in the model, clustering was used to correct the standard errors.
 8. There is considerable conceptual overlap between my endogenous measure of public assistance and my exogenous measure of concentrated disadvantage, with a correlation more than .8. Although the measure of public assistance is more precise with respect to time, it is less precise with respect to unit of analysis, because it is a tract-level measure. Furthermore, inclusion of both constructs in the model results in a high degree of collinearity. Consequently, the measure of public assistance was only included when it was the outcome variable of interest. Otherwise, I used the measure of concentrated disadvantage.
 9. In ancillary models (not shown), interactions between percent parolees and disadvantage were tested to determine whether the relationship between percent parolees and neighborhood structure is conditioned by levels of disadvantage. A positive and significant effect was only detected for property sales for both the violent and property crime models. This suggests that the relationship between percent parolees and property sales is greater when parolees return to more disadvantaged neighborhoods. However, this relationship only holds for neighborhoods with an average or large percentage of parolees. In neighborhoods with a small percentage of parolees, there is a decrease in property sales as disadvantage increases, but this effect is not substantively meaningful. No such effect was detected for the other neighborhood structure outcomes.

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Author Biography

Alyssa W. Chamberlain is an assistant professor in the School of Criminology and Criminal Justice at Arizona State University. Her research interests focus on the nexus between neighborhood dynamics and crime, more specifically, the spatial and temporal relationship between neighborhood structural characteristics, social inequality, and crime, and how those factors shape neighborhood change over time. She also examines issues related to prisoner reentry and corrections.