

Rental Housing and Crime: The Role of Property Ownership and Management

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Abstract

Previous studies suggest a connection between neighborhood rental occupancy rates and crime. This paper explores characteristics of rental properties with disturbances, assaults, and drug use and distribution. It examines police department incident reports for privately owned rental dwellings. Results show that a small percentage of properties account for all the reports for rental dwellings. Count model regressions indicate that residence of owner, size of rental property holdings, tenant Section 8 voucher use, and neighborhood owner-occupied housing rates are associated with reported violations. The paper concludes with recommendations about local government policies that could help to reduce crime in rental housing.

1 Intro

In towns and cities across the country, the so-called “absentee” landlord and urban “slumlord” is viewed as a major source of problems, such as crime and neighborhood blight, that plague distressed neighborhoods. According to conventional wisdom, non-resident landlords are less likely to inspect and improve their properties, less likely to screen their tenants, less likely to manage and maintain properties properly, and less likely to have an interest in the wellbeing of the surrounding neighborhood and community (Mayer 1981; Dymowski 2001). The growth in external ownership and the problems associated with it have also been identified as sources of middle class flight from cities (Dymowski 2001).

Given the preponderance of strong feelings on the issue, there is a surprising lack of empirical data to support the contention that rental property ownership and management arrangements contribute to property deterioration and crime. A number of studies link homeownership and various types of positive outcomes (Dietz and Haurin 2003). These outcomes include lower crime (Alba, Logan and Bellair 1994; Glaeser and Sacerdote 1999; Rephann 1999); higher property values (Rohe and Stewart 1996; Coulson, Hwang and Imai 2002; Coulson, Hwang and Imai 2003), better building maintenance (Mayer 1981), more civic-minded neighbors (Rohe and Stewart 1996; DiPasquale and Glaeser 1999; Rohe, Van Zandt and McCarthy 2002) and better educated and well-adjusted children (Haurin, Parcel and Haurin 2001; Harkness and Newman 2002; Rohe et al. 2002; Harkness and Newman 2002). Therefore, it would seem on the surface that rental ownership qualities including the physical proximity of a landlord or management entity may matter in a rental setting as well.

Recent dramatic decreases in the national crime rate and impressive increases in the percentage of national housing stock that is owner-occupied suggest that growth and qualities of rental properties are not a major contributor to recent nation-wide crime trends. Furthermore, crimes occur in a variety of settings, including public streets and commercial areas, and can occur because of a variety of motives, including economic as well as affective considerations. They may also be triggered by lowered inhibitions to conducting mischief caused by consumption of alcoholic beverages and drugs. Therefore, diverse theories must be invoked to explain the complicated phenomenon.

Still, additional attention to this issue is merited for at least three reasons. First, there is an ongoing public perception that non-local landlords and poor property management are a cause of many local crime problems. Even within criminology and the social sciences, there is a growing recognition that researchers should “pay closer attention to the economics of property ownership and the management of places” (Eck and Wartell 1998). Second, evidence suggests that the “absentee owned” share of the national rental inventory is increasing (Apgar 2004). With the growth of Internet real estate marketing, it has become much easier for individuals to research, purchase, and rent apartments without ever actually visiting them. Third, high rates of tenancy can often be found in many neighborhoods with higher crime levels. Therefore, understanding the characteristics of these types of properties could help in crafting appropriate policies to revitalize neighborhoods.

This study examines the incidence and frequency of certain types of crimes that occur in privately owned rental properties, including disturbances, assaults, and drug possession and distribution. These crimes were selected because they are more frequently found in a residential setting and are often considered important measures or indicators of neighborhood “quality of life.” Characteristics of rental properties are examined with the aid of multivariate count regression models which incorporate property, tenant, and neighborhood variables includ-

ing residence of owner, size of landlord property holdings, tenant HUD Section 8 voucher use, and neighborhood socioeconomic characteristics. It is hypothesized that problem properties are more likely to be found when the owner resides further away from the property, when the owner owns multiple units, when tenants receive public housing assistance, and when neighborhood measures of residential mobility and disadvantage are greater.

The first section contains a review of literature which draws on routine activities theories of crime to explain intra-metropolitan or intra-urban variation in criminal activity. The third section describes the study region of Cumberland, Maryland. The fourth section explains how the study data were assembled using several sources of municipal and U.S. Census data. The fifth section details the working research hypotheses which motivate this study. The sixth section explains the count regression techniques used. The seventh section presents and discusses the empirical results. The paper concludes with a summary and policy recommendations.

2 Literature Review

Whether stated explicitly or not, many studies of the geographical distribution of crime are motivated by Routine Activities Theory. Rather than examining the economic or psychological aspects of the individual's decision to commit a crime, Routine Activities Theory focuses on the "criminology of places," that is to say the situational aspects such as the physical, locational, functional, and management characteristics of the properties themselves (Cohen and Felson 1979). The theory recognizes three factors that contribute to crime occurrence: (a) a motivated offender, (b) an attractive target, and (c) level of guardianship for the target. Assuming that supply of motivated offenders is constant, variations in crime occurs because of differences in the availability of targets and differences in levels of target guardianship.

Places differ in terms of the presence of factors that contribute to crime commission. For instance, for the crime of larceny, shopping centers are likely to be viewed as more attractive targets than residences because of the abundance of new merchandise. Places also differ with respect to the level of guardianship – for example, some stores employ better security measures (e.g., alarms, surveillance cameras and security personnel). Furthermore, the available supply of motivated offenders – typically young males drawn from disadvantaged socioeconomic backgrounds—may differ from locale to locale. Before introducing the model used in this study, it may be useful to review some of the variables that have been found important in the literature.

2.1 Local Built Environment Characteristics

Certain aspects of the local built environment have been found to be important in determining the attractiveness of a target and its level of guardianship.

The suitability of a target may vary with ease of access. Residential locations with “multiple access points,” on corner lots, and in close proximity to highways are more vulnerable than others (Fishman, Hakim and Shachmurove 1998; Hakim, Rengert and Shachmurove 2001). Furthermore, the layout of housing subdivisions, including the presence of dead-end streets and cul-de-sacs, can potentially decrease the attractiveness of a target by increasing the costs of criminal travel and increasing the odds of detection. Remoteness, however, is a double edged sword. As property lots increase in size, residents and neighbors may be less likely to detect criminal activity. Also, proximity to wooded areas impedes criminal detection possibilities (Fishman et al. 1998; Hakim et al. 2001).

Physical design and layout of grounds and buildings may also be important. For instance, the design of public housing high rise buildings is thought to contribute to less community cohesiveness and lower levels of guardianship (Mazerolle and Terill 1997). Physical barriers such as fences, gates, walls and landscaping may impede criminal movement, while improved visibility for parking lots, play areas, and pedestrian areas can improve crime detection. Zelinka and Brennan 2001 suggests a variety of urban design features to foster a sense of community, improve citizen perceptions of safety, and increase possibilities for criminal detection arranged around the principles of (a) providing better pedestrian orientation, (b) increasing possibilities for citizen socialization and interaction, (c) promoting citizen ownership of spaces, and (d) increasing visibility.

2.2 Security Characteristics

Certain types of security enhancements can help prevent crime. Fishman et al. 1998 define four types of precautionary security measures that help to “harden” property targets. They include (a) deterrent measures that “create the physical illusion that somebody is in the house” such as a car parked in a driveway, lights turned on, or appliances such as radio or television running”, (b) managerial measures that are “physical indicators that reduce the impression that no one is in house” such as having the newspaper delivery stopped when residents are on vacation, (c) preventive measures that “make actual entry more difficult” such as locked doors and windows, and (d) detection measures that “transmit signals when a burglary attempt is made” such as a burglar alarm. Security enhancements are associated with lower likelihood of victimization and relatively inexpensive fixes such as leaving a car in the driveway, installing light timers and/or motion sensors, or having neighbors collect mail and newspapers can

have a measurable deterrent effect (Fishman et al. 1998; Hakim et al. 2001). Commercial security investments such as lighting and alarm systems are also associated with a lower likelihood of burglary (Hakim and Shachmurove 1996).

2.3 Commercial Land and Building Uses

Commercial properties are at greater risk of property-based crime such as theft and burglary. Hakim and Shachmurove 1996 finds that retail stores have the highest likelihood of burglary followed by wholesale establishments. Service and manufacturing businesses are less likely to be burglarized. Within the commercial sector, certain types of establishments, such as bars, fast food restaurants, shopping centers, fast food restaurants, and hotels have been found to attract more crime than others (Sherman, Gartin and Buerger 1989; Roncek, Bell and Francik 1981; Olligschlaeger 1997). The enticements of cash and goods are in greater abundance in these establishments and the flow of people greater. Moreover, the “time at risk” is often higher because they are open longer (Sherman et al. 1989). Taverns and pubs provide a more fertile environment for crime because their clientele is more likely to include potential offenders and the effect of consuming intoxicating beverages is likely to alter patrons’ behavior and judgment (Roncek et al. 1981).

2.4 Law Enforcement/Legal Characteristics

For areas that encompass several different political jurisdictions, differences in law enforcement quality and legal penalties could potentially account for differences in local crime rates. Routine Activities theory may motivate the incorporation of some variables representing law enforcement surveillance capabilities such as amount of police presence (measured in terms of police officers per capita and expenditures per capita) and police response times. However, the inclusion of legal penalty variables more often reflects an economic model of crime in which criminal decision-makers compare the expected benefits of acquiring more loot to the expected costs of imprisonment. Variables of interest include, probability of arrest (e.g., ratio of arrest to offenses), probability of conviction (e.g., ratio of convictions to arrests), probability (e.g., percentage of convictions that lead to prison sentences), and severity of sentences (Cornwell and Trumbull 1994).

Evidence for the effectiveness of law enforcement variables varies. Mixed results for police presence have been obtained in part because of differences in the efforts to rectify two econometric problems. Measures of police size/expenditures are often endogenous—that is to say, improved police surveillance can reduce crime but areas that have higher crime rates have a need to invest more in law enforcement (Hakim, Ovadia, Sagi and Weinblatt 1979; Cornwell and Trumbull

1994). Also, criminal displacement may occur when police presence increases (Hakim et al. 1979). This problem is likely to be more pronounced when smaller geographical units are used (Sorenson, Trumbull and Cornwell 1996). Therefore, spatial autocorrelation may hinder interpretation of the significance of law enforcement coefficients.

It has generally been assumed that increases in likelihood of arrest and punishment is a more effective deterrent to crime than longer or more severe sentencing (Sullivan 1990). However, the magnitude and ordering of these effects have been called into question by second generation studies that use more advanced econometric techniques (Cornwell and Trumbull 1994).

2.5 Property Ownership/ Management Characteristics

Property ownership and management characteristics are often associated with crime. Roncek et al. 1981 note that commercial bar establishments with management and security deficiencies experience more crime. Among residential households, homeownership may help foster conditions less favorable to crime (Alba et al. 1994; Glaeser and Sacerdote 1999; Rephann 1999).

There are several reasons that homeowners might be both less likely to be victimized as well as less likely to commit crime. First, homeowners are less mobile than tenants (Rohe and Stewart 1996; Dietz and Haurin 2003). They are less likely to move because of financial factors such as incurring transaction costs from buying and selling. Because they are less mobile, they may have a heightened awareness of any changes in their surroundings, have established better social networks such as involvement in neighborhood associations, and interact with and have more familiarity with neighbors (Rohe and Stewart 1996; DiPasquale and Glaeser 1999; Rohe et al. 2002). Second, homeowners are more likely to be sensitive to decreases in property values and any changes in underlying quality of life factors such as crime that might detract from property values. Their interests in preserving the value of properties creates a “vested interest in neighborhood conditions” (Rohe and Stewart 1996), a greater likelihood of investing in property maintenance (Rohe and Stewart 1996) and possibly security (Dietz and Haurin 2003). Third, homeownership has been connected to better child outcomes (Haurin et al. 2001; Rohe et al. 2002; Harkness and Newman 2002; Dietz and Haurin 2003). This relationship may exist in part because homeowners exhibit lower household mobility which in turn fosters a more stable home environment. Therefore, homeowners may produce children who are less likely to engage in juvenile crime. Fourth, homeownership has been linked to better physical and mental health outcomes (Rohe et al. 2002; Dietz and Haurin 2003). Therefore, homeowners may be more resilient when faced by stressful situations and less likely to react violently or unpredictably.

While rental properties often have more crime activity than owner-occupied

dwellings, differences have been found among rental properties. Public ownership has been found to be associated with more crime (Roncek et al. 1981; McNulty and Holloway 2000). This finding may in part or whole simply reflect other factors correlated with public housing such as tenant socioeconomic disadvantage and social isolation (McNulty and Holloway 2000), certain aspects of the built environment (Mazerolle and Terill 1997) or apartment complex scale (Roncek et al. 1981; Santiago, Galster and Pettit 2003).

Recent work emphasizes the importance of rental property management in controlling crime through tenant selection and managing tenant behavior. Eck and Wartell 1998 find that “drug dealers select places that have weak management.” Weak management is often distinguished by lower levels of property maintenance, less frequent visits by the owners and managers to the property, and fewer efforts to screen tenants. Clarke and Bichler-Robertson 1998 suggest that when new property management is upgraded at slumlord owned apartment dwellings, crime is reduced through applicant screening, eviction and improved security.

Management quality is not directly observable and that presents a difficulty for empirical hypothesis testing. Since poorly managed properties receive less maintenance, and will exhibit signs of greater physical deterioration, the appearance of the exterior may provide a visual clue. Ownership characteristics may also be important indicators. Apgar 2004 notes that many part-time “mom-and-pop” rental property investors lack the skills to manage and maintain rental housing. The challenges of managing these properties may grow as the size of holdings expand. Physical distance may also serve as a managerial impediment. More remote owners may find it difficult to monitor the conditions that exist at their properties. On the other hand, nearby owners will have both a greater stake in property conditions because of its effect on their own living space (Mayer 1981) or surrounding neighborhood.

2.6 Neighborhood Characteristics

Neighborhood socioeconomic characteristics are sometimes invoked as explanatory variables for crime. Often variables measured in aggregated geographical units are used because of the absence of microdata. However, there are also valid theoretical rationales for introducing neighborhood effects in micro models (e.g., contagion theories, the collective socialization model, competition theory, relative deprivation theory, and game theory) (Dietz 2002).¹

¹Dietz (2002) argues that these variables are often introduced in a casual way without consideration of wider modeling and econometric ramifications including: (a) the reflection problem, (b) omitted variable bias, and (c) endogenous regressors. He finds that most studies which include them do so with a lack of econometric precision and tend to overestimate their importance. Neighborhood effects often dissipate when these additional corrective measures are employed.

Within a Routine Activities framework, neighborhood housing, demographic and socioeconomic variables can be used to gauge place differences in the supply of potential offenders, the attractiveness of targets, and/or the levels of guardianship. For instance, areas with larger percentages of unemployed young males might be expected to have a larger pool of potential offenders.² Neighborhoods with higher home values might represent more attractive targets for property crime. Neighborhoods with low levels of homeownership or high levels of mobility could have more difficulty establishing local social networks needed to foster better guardianship.

Although theoretical rationales often differ, there is some commonality in the types of neighborhood variables used to explain crime variation. They include poverty (Alba et al. 1994; Olligschlaeger 1997; Miles-Doan 1998; Baumer, Horney, Felson and Lauritsen 2003), female headed households with children (Roncek et al. 1981; Olligschlaeger 1997; Miles-Doan 1998; McNulty and Holloway 2000; Baumer et al. 2003), racial demographics (Roncek et al. 1981; Alba et al. 1994; Miles-Doan 1998; McNulty and Holloway 2000; Baumer et al. 2003), age demographics (Alba et al. 1994; Olligschlaeger 1997; Miles-Doan 1998), unemployment rates (Miles-Doan 1998; McNulty and Holloway 2000; Baumer et al. 2003), public assistance (Miles-Doan 1998; Baumer et al. 2003) housing values (Roncek et al. 1981; Miles-Doan 1998), household income (Alba et al. 1994; Olligschlaeger 1997), homeownership (Alba et al. 1994), and education levels (Alba et al. 1994; Miles-Doan 1998).

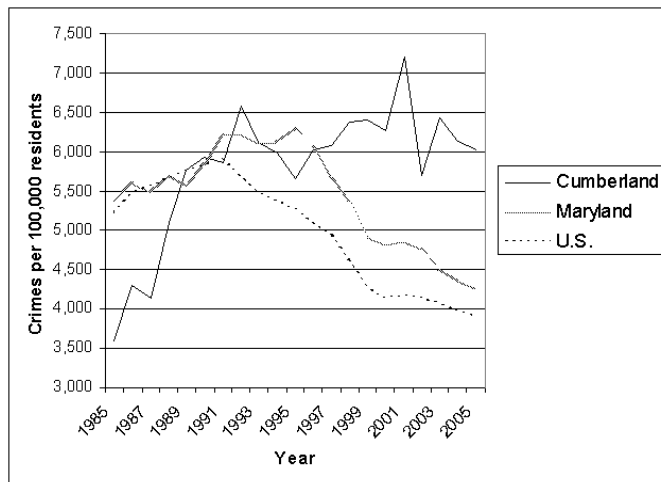
3 The Study Area

The study area is the small city (population 21,518) of Cumberland located in the rugged Appalachian mountain region of Western Maryland. Cumberland is approximately two hours driving time from three major metropolitan areas including Washington, DC, Baltimore, MD, and Pittsburgh, PA. It is the county seat of Allegany County which experienced a rapid decline in well-paying manufacturing jobs in the 1970s and 1980s from which it still has not fully recovered. Therefore, measures of well-being, such as per capita income, dropped from about 75% of State per capita income in 1969 to 61% in 2004.

The City has experienced a significant increase in the crime rate during the past 20 years that has abated slightly only recently (see Figure 1). While the crime rate has decreased in the State at large, this pattern has not been pronounced in Cumberland. As a result, the crime rate now stands significantly higher than the state average and the reputation of the area as being a safe

²Neighborhood boundaries are less likely to adequately capture the pool of available offenders because criminals are able to travel to the target. Therefore, spatial econometric methods are sometimes recommended to correct for the influence of proximate neighborhoods.

Figure 1: Cumberland Crime, 1985-2005



rural community has begun to be called into question. In part, this may reflect a nationwide phenomenon of urban /rural convergence in crime rates or "metropolitan spillover" (Rephann 1999). It may also reflect problems associated with the recent deindustrialization, including the kind of neighborhood blight and social decay that has been attributed to crime rate increases in small cities elsewhere in the rustbelt region (Ackerman and Murray 2004). Other significant local developments that may have contributed to crime increases were the designation of an Interstate highway through the heart of the city and the opening of two medium security prisons (WCI a state prison and FCI a federal prison) in the vicinity.

Compared to the U.S. and Maryland, the City of Cumberland has a relatively low rate of home occupancy that has changed very little in the past 40 years. According to the 2000 Census, approximately 58% of occupied housing units are owner occupied compared to 67.7% for Maryland and 66.2% for the U.S. Much of the rental stock is located in the central older and more distressed areas of town (see Figure 2). Over half of the units are owned by those who reside outside city limits (see Table 1). Fewer than one in five property owners lives on the same premises as the rental unit; this compares with one in four in a national survey (Savage 1998). Neighborhood crime indicators such as the number of disturbance incident reports filed per 100,000 residents (see Figure 3) are positively associated with neighborhood rental occupancy rates.

Figure 2: Cumberland Percentage Owner-Occupied Housing

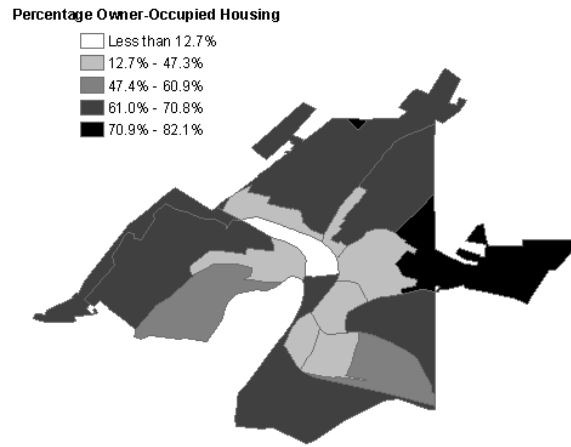


Figure 3: Cumberland Disturbances Rate

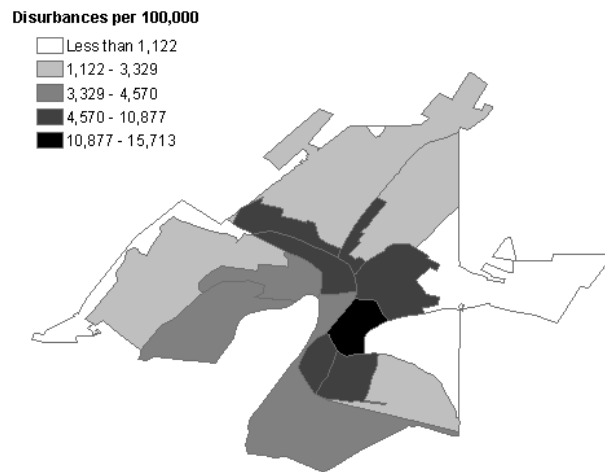


Table 1: Apartment properties and units by address of owner

Residence	# properties	%	Cum %	# units	%	Cum %
Same property	289	18.68	18.68	472	16.07	16.07
Same neighborhood	207	13.38	32.06	392	11.01	27.08
Same city	336	21.72	53.78	736	20.68	47.76
Same zip code	297	19.20	72.98	620	17.42	65.18
Within 60 miles	223	14.41	87.39	469	13.18	78.36
Within 500 miles	157	10.15	97.54	677	19.02	97.38
500 miles or greater	38	2.46	100.00	93	2.62	100.00
Total	1,547	100.00		3,559	100.00	

4 Data Assembly and Characteristics

4.1 Data Sources

Data for this study are derived from several sources:

City of Cumberland Police Department Incident Report Database.

This database records incidents filed by City Police. For calendar year 2005, it contains information on approximately 25,000 incident reports (IRs) based on emergency hotline calls and police observations including criminal incidents, traffic reports, and service calls. Each incident report record contains an address, brief description of the nature of the call, time of call, investigating officer, and disposition of the case (e.g., closed, open, arrest).

The incident reports are based on call data and police surveillance. They are not to be confused with actual criminal reports which form the basis for the statistics reported in the Uniform Crime Report. However, such data may still be useful (Sherman et al. 1989). It may be more comprehensive than Uniform Crime Report data because victims may be willing to make a call but not to file a criminal report. In addition, it provides the only way to find the locations of crimes because this information is not retained by Uniform Crime Report reports. At the same time, these data have certain weaknesses (Sherman et al. 1989). For instance, it is not possible to determine whether the location given in the report is the actual location of the crime, the callers' location, or the place where police officers are dispatched. In addition, there is no way to ascertain the veracity of the report—false alarms or mistakes may be reported along with genuine crimes.

City of Cumberland Rental Unit Database. This data contains information on 3,134 privately owned registered rental units representing 1,480 properties within the City of Cumberland. Rental registration is required to comply with City Ordinance. Registered units are subject to an annual regis-

tration fee and must be inspected when an apartment unit changes tenants.³ Not all city rental units are represented in this database. It does not include records for publicly owned rental units, privately owned rental units that utilize Section 8 vouchers, or units that are rented/leased by agencies through programs that are sponsored by the state. These units are exempted by ordinance because they are subject to other housing agency inspections.

There are approximately 430 public housing units in the city, 436 Section 8 units, and 411 other exempt units. The total number of registered and exempt units is 4,411 which exceeds the 2000 Census count of 4,084 renter-occupied units. However, this discrepancy can be accounted for by new apartment construction since the 2000 census (at least 120 units), owner-occupied to rental dwelling conversions, and some overlap between section 8 registration and regular rental registration systems. Nonetheless, these figures suggest that there is a relatively high rate of compliance with the city rental registration program.

City of Cumberland HUD Section 8 Voucher Database. This database contains the addresses and owner/manager address of approximately 436 HUD Section 8 vouchers. The Section 8 program is administered differently than the Rental unit Database and records are filed differently.

Maryland Office of Planning Property View. This database compiles information from the Department of Assessments and Taxation on all private and public real property. It includes information on various characteristics of the property including street location, physical location in terms of latitudinal and longitudinal coordinates, Census Block Group identification code, lot size, dwelling age, enclosed area, structure condition code, and assessable value.

U.S. Census 2000 of Population and Housing. This data contains Census Block Group level data on various population and housing characteristics that were used to generate neighborhood indicators of socioeconomic levels and housing quality.

4.2 Data Assembly

Geographical Information Systems (GIS) technology has greatly assisted efforts to map and model crime patterns. Sherman et al. 1989 was one of the earliest studies to use this methodology to identify criminogenic places, and the problems they encountered are still relevant today. Incident report data is used to keep a record of police activity for internal monitoring and legal reference. It is not usually designed to be used for research and analysis. Therefore, geographical information contained in individual records ranges in quality.

³Ideally allowance would be made for the amount of time that each rental unit was occupied. Rental units that were registered were not necessarily rented out for the entire year. However, data were not available on the exact times of tenant occupancy.

In reviewing the incident report data for this study, a variety of problems were observed. In many cases, incident locations were not assigned an exact street address. For example, some incidents were identified as “Cumberland Area” because a suspect may have been observed in the city at an unknown location. In other cases, intersections were identified (e.g., corner of Columbia Avenue and Valley Street) or establishments were identified by name (e.g., a popular pub). When street addresses were found, errors are not uncommon. Sometimes, addresses were misspelled. In other instances, incorrect street numbers were assigned – (e.g., Columbia Street runs from 100-400 blocks and Columbia Avenue from 500-800 blocks but sometimes an incident report would identify, say, “212 Columbia Avenue” and “514 Columbia Street” which don’t exist).

Because of these kinds of problems, it was necessary to review individual records for accuracy and revise them manually in instances where the entry was clearly in error. Street addresses found in Maryland Property View were used as the reference point and street abbreviations and addresses were modified so that the two datasets would mesh using street address as the temporary key. Since the rental registration records utilize the same property identifier number used in Property View, it was possible to make a direct correspondence between these records (with a handful of manual modifications to correct data entry errors) and the remaining rental registration records.

It was not necessary to geo-code the addresses obtained above. In addition to providing various property attributes used in assessing real property, Property View includes the longitudinal and latitudinal coordinates and census block group identifications for each property parcel. Geographical location information obtained via this route is better than what could be obtained from geo-coding via ARGIS using a TIGER base map. The TIGER base map lacked a complete street inventory for the City and geo-coding is done by interpolation of the street arc (Olligschlaeger 1997) which measures parcel centroids less accurately than the polygon methods employed by Property View.

The relatively high degree of incomplete addresses meant that it was impossible to assign every police incident report to a street number. Approximately 73% of all criminal incident data had street addresses and 93% of these were successfully merged with the PropertyView data for an overall success rate of 68%. However, this rate falls short of the levels achieved in some other studies. For instance, Miles-Doan (1998) obtains 84% for Duval County, Florida (which contains Jacksonville) and Olligschlaeger (1997) achieves 97% in Pittsburgh. However, there are differences in the type, quality, and research purpose for the data. The data for those studies was collected by larger metropolitan police departments that have more advanced data entry, query, and reporting systems. Finally, this study is concerned with crime that occurs on private property. So, crime occurring in public spaces such as street intersections or places that cannot be assigned are of less interest.

5 Research Hypotheses

The Uniform Crime Reports distinguishes between property and violent crimes. This distinction is useful in as much as it highlights the severity of the crime as well as suggests possibly differing explanatory models. Another distinction is sometimes made between “predatory or exploitive crimes” and “crimes that are mutualistic, competitive and individualistic” (Roncek et al. 1981). Arguments between familiar parties such as assaults would constitute “competitive” crimes whereas burglary would be considered “exploitative.”

The role of place is likely to differ depending on the type of crime. Sherman, Gartin and Buerger (2000) argue that “predatory stranger” crimes are much more dependent on place than “competitive” crimes. The presence of competitive crimes like domestic assaults and disturbances at certain residences “may simply indicate that certain buildings are receptors for the kind of people most likely to experience, or at least call police about, domestic problems; such calls might occur at the same rate no matter where they lived.”

Eck and Wartell (1998) argues that place characteristics such as property management may help explain variation in these kinds of problems as well. When residents are more likely to engage in disruptive behavior, loose property management and low levels of property surveillance may be accessory factors. If disturbances and other nuisance conditions originate in a particular rental unit and no attempt is made to notify the occupant that the behavior is disruptive to the harmony and tranquility enjoyed by other tenants and/or neighborhood residents, one can conclude that the property has weak guardianship.

In the case of owner-occupied residential properties, guardianship is clear – the owner-occupant lives in the property and assumes principal responsibility for its maintenance and the conduct of its residents. For tenant occupied residential properties, guardianship is often less clear cut. Ownership may be local or external to the community. In the case of the latter contacting the owner or his local agent may be more challenging. Furthermore, the non-local owner will have fewer opportunities for directing, inspecting and monitoring the property. Ownership may also be more diffuse in the case of legal ownership forms such as partnerships and corporations. Management skills may differ based on years of rental management experience and the number of properties which are managed.

Since management quality is not directly observable, this paper tests for several hypothetical correlates of property management (see Table 2). It is hypothesized that local owners that reside on the property (LEVEL1) are likely to be more effective property managers than those who live further away (LEVEL2-LEVEL7). Moreover, because of the higher transactions costs associated with management from a distance, the effect is hypothesized to weaken with each increment in distance from the property. In addition, it is hypothesized that there are rather immediate diseconomies of scale in the management of proper-

ties (OWNUNITS). As the number of units registered by the landlord increases, the effectiveness of property management is hypothesized to decrease.

Additional property, tenant, and neighborhood level variables are introduced to control for other explanations for residential crime variation (see Table 2). The number of apartment units (UNITS) in a dwelling would be expected to increase the likelihood of observing crime there because of the greater number of households residing there. It may also increase the likelihood of detection because of the relatively close proximity of other tenants. The only tenant level indicator available for this study is a dummy variable indicating whether a tenant of the property uses a HUD section 8 voucher to pay for rent (HUDUNIT). This variable is used to control for tenant socioeconomic status. A disadvantaged socioeconomic level is associated with a greater likelihood of criminal activity. Therefore, the coefficient for this variable would be expected to be positive. On the other hand, the Section 8 voucher program “one strike” policy places certain restrictions on its tenants. Local program administrators may revoke a tenants Section 8 voucher for “any criminal activity that threatens the health, safety, or right to peaceful enjoyment of the premises by other residents; any criminal activity that threatens the health, safety, or right to peaceful enjoyment of their residences by persons residing in the immediate vicinity of the premises; any criminal activity that threatens the health, or safety of any on-site property management staff responsible for managing the premises; or any drug related criminal activity on or near such premises, engaged in by the resident, any member of the resident’s household, or any guest or other person under the resident’s control.”

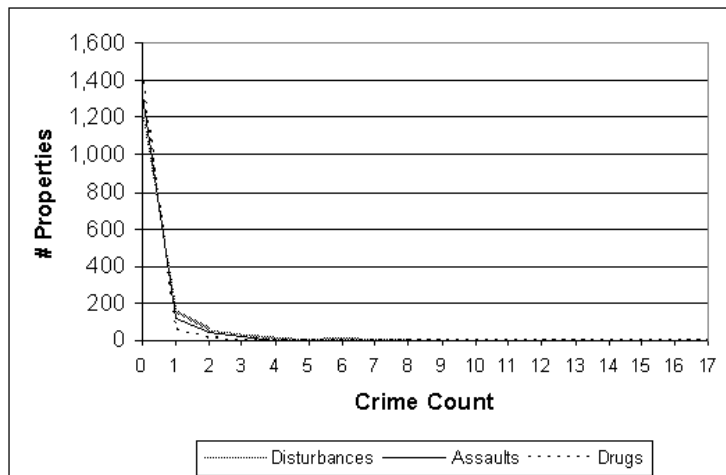
Based on the criminal literature review, selected neighborhood variables are used as control variables. In defining the boundaries of neighborhoods, this study uses Census Block Groups from the 2000 U.S. Census—a convention used for practical reasons rather than “thoughtful theoretical considerations” (Dietz 2002). The neighborhood variables include measures of residential stability (RESSTAB) and home ownership (OWNOCC) which are expected to be negatively associated with rental unit crime as noted previously, measures of socioeconomic deprivation such as the percentage of households headed by female householders with children (FFHH), poverty rate (POVRATE), minority population percentage (MINPOP), unemployment rate (UNEMP), percentage of households receiving public assistance (PUBASS), and median household income (HHINC) and demographic factors which indicate populations with varied propensities to criminal activity such as the percentage of residents that is young males (MALEPOP), percentage of teenagers that is ‘drifters’ (YOUNGUN), and percentage of residents that is college educated (COLLPOP).

The units of observation used in this study are individual properties with dwellings that are represented in Property View. Usually, these properties are single family homes, but in some instances they are attached structures such as residential duplexes, row houses, and condominium/apartment units within

Table 2: Variable Definitions

Variable	Description
<i>Independent</i>	
DISTURB	Number of reports filed for disturbances
ASSAULT	Number of reports filed for assault (including domestic)
DRUG	Number of reports filed for CDS possession/distribution
<i>Tenant</i>	
HUDUNIT	Dwelling tenant uses Section 8 voucher
<i>Rental Dwelling</i>	
UNITS	Number of registered rental units in dwelling
<i>Ownership</i>	
LEVEL1	Owner lives in same dwelling
LEVEL2	Owner lives beyond LEVEL1 but in same neighborhood
LEVEL3	Owner lives beyond LEVEL2 but in City of Cumberland
LEVEL4	Owner lives beyond LEVEL3 but in same zipcode
LEVEL5	Owner lives beyond LEVEL4 but within 60 miles of City
LEVEL6	Owner lives beyond LEVEL5 but within 500 miles of City
LEVEL7	Owner lives at least 500 miles from City
OWNUNITS	Total number of units owned by landlord
<i>Neighborhood</i>	
FFHH	% of households that are female headed with children
RESSTAB	% of residents 5 years and older who live in sa
MINPOP	% of residents that is black
MALEPOP	% of residents that is male 18-24 years of age
COLLPOP	% of residents 25 years and older that is college educated
YOUNGUN	% of residents 16-19 years not in school,not graduate, and unemployed
UNEMP	Unemployment rate
PUBASS	Percentage of households receiving public assistance income
POVRATE	Poverty rate
OWNOCC	Percentage of housing units owner-occupied
HHINC	Median household income
RENT	Median contract rent

Figure 4: Observed Crime Counts



larger structures.

The dependent variables used in this study are the number of incident reports filed for individual properties for three separate categories of criminal incidents during the 2005 calendar year: disturbances, assault (including domestic assault), and use or distribution of controlled dangerous substances including cocaine, opiates, marijuana and barbiturates.

Typically, a very small percentage of properties account for a relatively high percentage of crimes. For instance, Sherman, Gartin, and Buerger (1989) finds that in Minneapolis over half of the police calls are generated by 3.3% of addresses. Moreover, domestic disturbance and assault calls are even more concentrated – all disturbance calls occur at 9% and all assaults at 7% of places. The data here show similar patterns. Figure 4 shows the relative frequency of incident report counts for the three types of incidents. Twenty-one percent of rental residences generate all of the disturbance incidence reports; thirteen percent account for all of the assault reports, and five percent all of the drug related reports.

6 Model

The dependent variable is a count which is best modeled using count regression models which take into account the discrete nature of the data and truncation at zero. These models have advantages over linear regression because they con-

form more closely to the pattern of data generation observed, produce positive predictions, and offer the possibility of efficiency improvements over the linear regression model (Grogger 1990).

The reference point for developing count models is the Poisson distribution. The Poisson distribution represents the probability of a count y of discrete events occurring during a designated time period as follows:

$$\text{Pr}_1(y) = \frac{e^{-\mu} \mu^y}{y!} \quad y = 0, 1, 2, \dots, N.$$

In order to incorporate independent explanatory factors, Poisson regression allows μ to vary with each observation. Independent variables are invoked to explain the variation in μ_i . This can be represented as follows:

$$\mu_i = E(y_i|x_i) = e^{\mathbf{x}_i\boldsymbol{\beta}} = e^{\beta_1 + \beta_2 x_{2i} + \dots + \beta_k x_{ki}}$$

The Poisson regression model (PRM) is somewhat restrictive because it has the property that both the mean and variance are the same – $E(y) = V(y) = \mu$ – a condition referred to as equidispersion. Relatedly, Poisson count regressions also often result in lower predictions of zero counts than are realized in the data. This problem can often be attributed to equation misspecification (Cameron and Trivedi 2006). Selecting other count regression models which allow the variance to exceed the mean (a condition referred to as overdispersion) can often rectify the problem too.

Three such models are examined here. The first, the Negative Binomial regression model (NBRM), adjusts the Poisson model by introducing a random error (ε_i) that is independent of the independent variables (x_i). That is to say:

$$\mu_i = E(y_i|x_i) = e^{\mathbf{x}_i\boldsymbol{\beta}} = e^{\beta_1 + \beta_2 x_{2i} + \dots + \beta_k x_{ki} + \varepsilon_i}$$

Assuming that $E(e^{\varepsilon_i})$ is equal to one (equivalent to the assumption that the expected value of the error term equals zero in the linear regression model) and that e^{ε_i} is drawn from a gamma distribution ($\Gamma(\cdot)$) leads to a negative binominal distribution:

$$\text{Pr}_2(y) = \frac{\Gamma(y+\alpha^{-1})}{y!\Gamma(\alpha^{-1})} \left(\frac{\alpha^{-1}}{\alpha^{-1}+\mu} \right)^{\alpha^{-1}} \left(\frac{\mu}{\alpha^{-1}+\mu} \right)^y$$

where $V(e^{\varepsilon_i}) \equiv \alpha$. This results in $E(y) = \mu$ and $V(y) = \mu(1 + \alpha \mu)$. So, α influences the degree of dispersion – and if $\alpha = 0$ the model is equivalent to the Poisson regression model.

The zero-inflated count (ZIP) model and zero-inflated Negative Binomial model (ZINB) achieve overdispersion by in effect mixing bi-variate and count models. One assumes that observations can be divided into two latent groups. The first group has no probability of event occurrence, perhaps because of some intrinsic qualities of the observation (e.g., in the example provided by this study,

a rental dwelling is empty). The other group has a probability of events occurring with frequency greater or equal to zero.

Probabilities for the model are computed as a weighted average of estimated probabilities of occurrence according to a bi-variate regression process (for instance logit or probit) and estimated probability of the number of occurrences according to count regression models described above. This can more formally be represented as follows:

$$\Pr_j(y) = \begin{cases} \Pr(0) + (1 - \Pr(0)) \Pr_i(0) & \text{if } y=0 \\ (1 - \Pr(0)) \Pr_i(k) & \text{if } y \geq 1 \end{cases} \quad \text{where } j = 3, 4$$

$\Pr(0)$ is the binary model computed probability of zero occurrences and $\Pr_i(0)$ and $\Pr_i(k)$ are the count model computed probabilities of zero occurrences and k occurrences respectively. For $i=1$ (where the count model is the Poisson), the model corresponds to the ZIP and for $i=2$ (where the count model is the Negative Binomial) the model is the ZINB. The variables used in estimating the binary regression may differ from those used in the count regression.

7 Results

Regressions and diagnostic tests were conducted using STATA software's count model procedures POISSON, NBREG, ZIP, ZINB, additional count model diagnostic programs LISTCOEF and COUNFIT (Long and Freese 2006), and collinearity diagnostic routine COLDIAG2 (Hendrickx 2004). In order to form a more parsimonious set of explanatory variables, linear regression diagnostics such as the condition index, variance inflation factor (VIF), and pairwise correlations were examined for values that were unusually high. Five variables were culled from the analysis including POVRATE, RENT, RESTAB, HHINC, and UNEMP resulting in a condition index of 25, a maximum VIF of less than two, and pairwise correlations below .53 in absolute value.

Tables 3 and 4 present the results of the four different regression models of disturbances counts: Poisson, Negative Binomial, zero inflated Poisson, and zero inflated negative binomial. The tables show the estimated coefficients, t test statistics⁴, and exponentiated coefficients⁵ for each of the models. Since ZIP and ZINB are mixed models as explained above, they estimate two equations. The second estimated equation represents the overall probability of a zero count; the first represents the probability for a non-zero count. The same set of independent variables are used in estimating each equation.

⁴*** $\alpha = .01$, ** $\alpha = .05$, * $\alpha = .10$

⁵The exponentiated coefficient ($e^{\beta_k \delta}$) is equal to the factor increase in the expected count when x_k increases by δ , holding all other variables constant. That is to say:

$$\frac{E(y|\mathbf{x}, x_k + \delta)}{E(y|\mathbf{x}, x_k)} = e^{\beta_k \delta}$$

Table 3: Count Model Results for Disturbances: Poisson and Negative Binomial

	PRM			NBRM		
	β	t	e^{β_k}	β	t	e^{β_k}
<i>Ownership</i>						
LEVEL2	-0.0575	-0.33	0.944	0.1171	0.42	1.124
LEVEL3	0.0286	0.19	1.029	0.2543	1.05	1.289
LEVEL4	0.3834	2.73***	1.467	0.3586	1.53	1.431
LEVEL5	0.5436	3.85***	1.722	0.6565	2.65***	1.928
LEVEL6	0.8278	5.75***	2.288	0.7898	2.93***	2.203
LEVEL7	0.5466	2.54**	1.727	0.6743	1.43	1.963
OWNUNITS	0.0150	4.58***	1.015	0.0190	2.38***	1.019
<i>Tenant</i>						
HUDUNIT	1.0525	13.89***	2.865	0.9561	5.44***	2.601
<i>Rental Dwelling</i>						
UNITS	-0.0018	-0.38	0.998	0.0486	1.24	1.050
<i>Neighborhood</i>						
FFHH	0.0375	2.00**	1.038	0.4625	1.43	1.047
MINPOP	0.0483	2.86***	1.050	0.0356	1.05	1.036
YOUNGUN	0.0197	3.28***	1.020	0.0147	1.36	1.015
MALEPOP	-0.0365	-0.95	0.964	-0.0483	-0.69	0.953
COLLPOP	-0.0219	-2.86***	0.978	-0.0142	-1.26	0.0986
OWNOCC	-0.0119	-3.87	0.988	-0.0124	-2.32**	0.988
CONSTANT	-1.2685	-3.87***		-1.4592	-2.55**	
Mean Diff	0.019			0.001		
BIC	3447.839			2551.449		

Table 4: Count Model Results for Disturbances: Zero Inflated Poisson and Negative Binomial

	ZIP			ZINB		
	β	t	e^{β_k}	β	t	e^{β_k}
LEVEL2	-0.0535	-0.25	0.948	0.3807	0.95	1.463
LEVEL3	-0.3315	-1.80*	0.718	-0.1810	-0.56	0.834
LEVEL4	-0.3594	-2.08**	0.698	-0.0381	-0.12	0.963
LEVEL5	0.1246	0.74	1.133	0.3645	1.12	1.440
LEVEL6	0.0707	0.41	1.073	0.5256	1.56	1.691
LEVEL7	0.2719	0.98	1.312	0.8326	1.65*	2.299
OWNUNITS	-0.0043	-0.81	0.996	-0.0061	-0.79	0.994
UNITS	0.1416	8.06***	1.152	0.006	0.04	1.001
FFHH	0.0507	2.15**	1.052	0.0479	1.15	1.049
MINPOP	0.0128	0.63	1.013	-0.0168	-0.46	0.983
YOUNGUN	0.0056	0.74	1.006	0.004	0.03	1.000
MALEPOP	0.0053	0.11	1.005	0.0619	0.68	1.064
COLLPOP	0.0032	0.37	1.003	-0.0277	-.198**	0.973
OWNOCC	-0.0082	-2.16**	0.992	-0.0109	-1.60	0.989
CONSTANT	0.1908	0.49		-0.1307	-0.19	
LEVEL2	0.1948	0.59	1.215	0.8084	1.55	2.244
LEVEL3	-0.5575	-1.98**	0.573	-0.7069	-1.28	0.493
LEVEL4	-0.8616	-3.18***	0.422	-0.5535	-1.18	0.575
LEVEL5	-0.6200	-2.31**	0.538	-0.4061	-0.85	0.666
LEVEL6	-0.7639	-2.59**	0.466	-0.3298	-0.62	0.719
LEVEL7	-0.3804	-0.74	0.684	1.0198	1.03	2.773
OWNUNITS	-0.0325	-3.03***	1.033	-0.1114	-2.81***	0.895
HUDUNIT	-1.0865	-6.21***	0.337	-0.3768	-0.62	0.686
UNITS	0.0321	1.89*	0.968	-0.4423	-2.33**	0.643
FFHH	0.0078	0.21	1.008	-0.0077	-0.10	0.992
MINPOP	-0.6325	-1.68*	0.939	-0.1337	-1.75*	0.875
YOUNGUN	-0.0168	-1.37	0.983	-0.0332	-1.35	0.967
MALEPOP	0.0715	0.91	1.074	0.2026	1.35	1.225
COLLPOP	0.0323	2.39**	1.033	-0.0090	-0.33	0.991
OWNOCC	-0.0005	-0.01	1.000	-0.0059	-0.55	0.994
CONSTANT	1.7674	2.68***		2.2566	1.72*	
Mean Diff	0.005			0.002		
BIC	2776.957			2596.039		

The results for the different estimation methods show certain similarities. The coefficients for dummy variables LEVEL2-LEVEL7 generally grow in magnitude indicating that crime increases as the property owner lives further away from a given rental property. There are also statistically significant differences in incident report counts for those variables indicating landlords who live in close proximity to their properties versus those residing outside the immediate area. This finding provides support for the hypothesis that management qualities differ between local and non-local landlords. Larger rental property holdings (OWNUNITS) are also associated with higher counts, suggesting diseconomies of scale in managing rental properties. Other factors are relevant as well. Having tenants in a rental property who use Section 8 vouchers (HUDUNIT) is associated with a greater frequency of incident reports as are neighborhoods with a lower percentages of owner-occupied units (OWNOCC). Disturbances may be exacerbated in neighborhoods where lower levels of residential stability and stake-holding exist. Alternatively, problem properties may be concentrated in neighborhoods with low owner occupancy – an identification problem which suggests the use of instrumental variable (IV) techniques.

Several diagnostic tests recommend the Negative Binomial regression model over the alternatives. A likelihood ratio test rejects the null hypothesis that $\alpha = 0$ and provides evidence that the data is overdispersed, thereby disqualifying the Poisson model. A visual inspection of Figure 5 shows that the mean predicted probability of the Negative Binomial model provides a better fit to the observed data than the other models. This is further supported by the average residual of observed and average predicted counts (Mean |Diff|).⁶ The Bayesian Information Criterion (BIC) model selection test statistic also supports the choice of the Negative Binomial regression model.

Table 5 shows the results of Negative Binomial regressions for disturbances, assaults, and drugs. For all three types of incidents, the magnitude of the estimated coefficients grow with the owner’s remoteness from the rental property. This “ownership distance gradient” for crime is illustrated in Figure 6. Section 8 voucher use at the rental property is also associated with more incident reports in each category. In two of the three regressions (disturbances and drugs), neighborhood owner-occupation rates are associated with lower activity.

$${}^6 \text{Mean|Diff|} = \frac{\sum_{i=0}^M |\text{Pr}_{\text{observed}}(y=i) - \frac{1}{N} \sum_{j=1}^N \text{Pr}_{\text{predicted}}(y_j=i)|}{M+1}$$

where $\text{Pr}_{\text{observed}}$ is the observed probability, $\text{Pr}_{\text{predicted}}$ is the estimated probability, N is the number of observations, and M is the maximum count.

Figure 5: Count Model Prediction Residuals

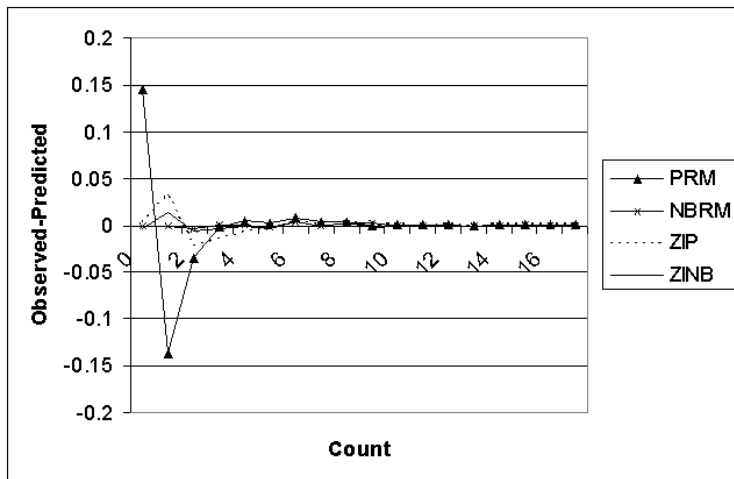
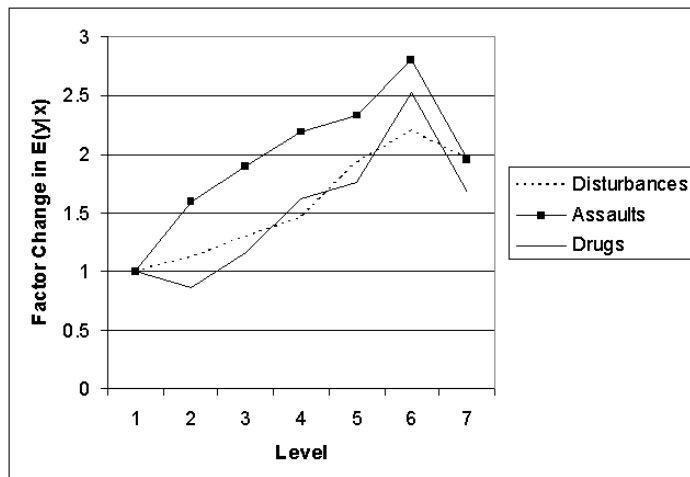


Table 5: Negative Binomial Regression Model Results for Disturbances, Assaults, and Drugs

	Disturb		ASSAULT		DRUG	
	β	e^{β_k}	β	t	e^{β_k}	t
<i>Ownership</i>						
LEVEL2	0.1171	1.124	0.4656	1.35	1.593	-0.1097
LEVEL3	0.2543	1.290	0.6410	2.08**	1.898	0.33
LEVEL4	0.3586	1.431	0.7853	2.65***	2.193	1.14
LEVEL5	0.6565	2.65***	0.8466	2.73***	2.332	1.29
LEVEL6	0.7898	2.93***	1.0311	3.10***	2.804	2.05**
LEVEL7	0.6743	1.963	0.67051	1.23	1.955	0.73
OWNUNITS	0.0190	1.019	0.01304	1.61	1.013	0.18
<i>Rental Dwelling</i>						
UNITS	0.0486	1.24	-0.0091	-0.44	0.991	0.66
<i>Tenant</i>						
HUDUNIT	0.9561	5.44***	1.2261	7.02***	3.408	5.36***
<i>Neighborhood</i>						
FFHH	0.0463	1.43	0.0240	0.65	1.024	-0.6474
MINPOP	0.0356	1.05	0.0444	1.15	1.045	2.17**
YOUNGUN	0.0147	1.36	0.0046	0.38	1.005	1.96**
MALEPOP	-0.0483	-0.69	-0.0062	-0.08	0.994	-1.23
COLLPOP	-0.0142	-1.26	-0.0283	-2.02**	0.972	-1.36
OWNOCC	-0.0123	-2.32**	-0.0003	-0.04	1.000	-2.10**
CONSTANT	-1.4592	-2.55**	-2.8741	-4.25***		-1.66
Pseudo R ²	0.0490		0.0597			0.1069

Figure 6: Ownership Distance Crime Gradients



There are also notable differences among the results. In contrast to disturbances, the size of landlord rental property holdings is not associated with more assault and drug incident reports. In addition, for assaults and drugs, other neighborhood correlates are observed – percentage of college educated residents (COLLPOP) for assaults and minority population and young males (YOUNGUN) for drugs. These results suggest, perhaps, that the exacerbating neighborhood conditions differ depending on the nature of the crime.

One way of viewing the contribution of absentee ownership to disorderly properties is to predict the number of criminal incidents emanating from private rental dwellings assuming that all the rental properties have a landlord living on the site. In this situation, the landlord is more likely to be selective of the tenants he chooses, less accommodating to behavior and lifestyles which disturb the peace and harmony of the neighborhood, and more attentive to security. By setting the LEVEL variables equal to zero (i.e., landlord lives in rental dwelling), one finds that the total number of disturbances drops from 776 to 512 (a 34% decrease), the number of assaults goes from 313 to 159 (a 49% decrease), and the number of drug incidents declines from 79 to 54 (a 32% decrease).⁷ While

⁷Boardman et al (1997) suggest monetizing the impact of crime using imputed costs. They report estimates of the cost of assault (in 1994 \$ terms) that varies from \$6,700-\$26,700 per crime and cost of drug crimes at \$6,400 per crime. Assuming each of the incidents reflects a real crime, the total costs of absentee ownership would range between \$1,185,400 to \$4,265,400. For reference purposes, even the lower range of these figures far outstrips the city property tax and fee revenues generated by the rental properties in question (property tax base \$59,989,680 times .9479 per \$100 assessed value)=\$568,642.

Alternatively, the municipal fiscal impact of external rental ownership can be estimated by multiplying police department expenditures by the percentage of additional crime attributable to external ownership. Approximately thirty percent (30%) of all criminal incident reports

it might be assumed that these activities would merely be displaced to other properties in the city or move outside the city boundaries, evidence suggests that there is real deterrence value in better property management and that the total number of crimes will decrease (Sherman, Gartin and Buerger 1989; Clarke and Bichler-Robertson 1998; Eck and Wartell 1998).

8 Summary and Conclusions

Several studies relate neighborhood homeownership patterns to lower levels of crime. The converse of this statement is that a rise in the share of tenant properties may contribute to higher crime. This paper shows that this generalization is not entirely useful because only a relatively small percentage of rental properties are sources of criminal activity.

By focusing on three categories of criminal incidents (disturbances, assaults, and drugs) that residents often cite as detracting from a neighborhood's quality of life, certain patterns are evident. Foremost, property ownership and management characteristics such as owner's remoteness from his properties is positively associated with reported criminal activity. It is suggested here that this association is in part causal because such owners often exhibit weaker management and have less of a stake in maintaining the harmony of the surrounding neighborhood. They may be less selective in the choice of tenants, more accommodating of behavior and lifestyles that they would not accept if it were located 'next door' to their own residence, and less likely to institute surveillance and security measures. In instances such as this, there may be a role for local government to provide better information, education, and enforcement to improve landlord awareness and management capabilities.

The results here suggest a role for proper local government stewardship as well. HUD Section 8 voucher recipients agree to certain restrictions when they accept publicly subsidized housing that other private renters do not. In situations where enforcement is lax, there is an opportunity for Local Housing Authorities to leverage their position as a subsidy provider to improve tenant behavior. Better enforcement would involve greater coordination between local police departments and housing assistance offices to identify disorderly and criminal tenants.

Neighborhood based correlates of criminal activity are much less amenable to local government control than the aforementioned variables. But, the results here suggest that neighborhood homeownership may have a ameliorative effect on crime. Promoting homeownership, especially among residents who lack the

are filed at rental units. If one assumes that the lower end (32%) estimate of reduction in crime is evident across other criminal incidents, that would translate into an approximately 10% reduction in crime or potential savings of \$420,000.

financial assets, credit history, income, or life skills (e.g., balancing a check book, parenting) is a challenging process. Moreover, homeownership is not for everybody – especially frequent movers and younger people. However, only 41% of renters rent as a matter of choice (Fannie Mae 2001), most renters see renting as not being a very positive experience (Fannie Mae 2003), and homeowners are “more satisfied than renters with their dwelling units” (Rohe and Stewart 1996). Therefore, programs designed to improve tenant transition to homeownership may deserve additional resources.

Sampson 2001 lists additional local government actions to lessen drug crimes committed in privately owned apartments. Some of these responses may help abate other types of nuisances. They include landlord centered efforts such as increased code enforcement activities to identify poorly managed properties, notification letters sent by the police department to landlords when criminal activity is detected in a rental dwelling, and mandatory landlord training to enhance management capabilities. Other approaches include establishing landlord licensing to disqualify poorly attentive landlords from operating rental properties, supporting the construction of professionally managed workforce housing projects to enhance the quality and availability of properly managed rental properties, and fostering the growth of neighborhood associations and crime watches to improve neighborhood crime detection and neighborhood social capital.

This study falls within the “first-generation” category of studies where econometric controls are relatively weak (Dietz and Haurin 2003). Several additional layers of empirical modeling would improve confidence in the results. First as alluded to previously, several independent variables are possibly co-determinants of disorderly property and property characteristics – particularly neighborhood covariates. Therefore, tests utilizing instrumental variable techniques are recommended. Second, this study utilized only a portion of the variables available for study. For instance, rental structure quality may provide evidence of rental maintenance management and the presence of other types of neglect like nuisance citations may help to identify poorly managed properties. Finally, additional insight may be gained by expanding the number of observations to include other publicly owned and publicly inspected rental properties.

References

- Ackerman, W. V. and Murray, A. T.: 2004, Assessing spatial patterns of crime in Lima, Ohio, *Cities* **21**(5), 423–437.
- Alba, R. D., Logan, J. R. and Bellair, P. E.: 1994, Living with crime: The implications of racial/ethnic differences in suburban location, *Social Forces* **72**(2), 395–434.

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- Apgar, W.: 2004, Rethinking rental housing: Expanding the ability of rental housing to serve as a pathway to economic and social opportunity, *Technical report*, Harvard University, Joint Center for Housing Studies.
- Baumer, E., Horney, J., Felson, R. and Lauritsen, J. L.: 2003, Neighborhood disadvantage and the nature of violence, *Criminology* **41**(1), 39–71.
- Cameron, A. C. and Trivedi, P. K.: 2006, *Regression analysis of count data*, Cambridge University Press, New York.
- Clarke, R. V. and Bichler-Robertson, G.: 1998, Place managers, slumlords and crime in low rent apartment buildings, *Security Journal* **11**(1), 11–19.
- Cohen, L. E. and Felson, M.: 1979, Social change and crime rate trends: A routine activity approach, *American Sociological Review* **44**(4), 588–608.
- Cornwell, C. and Trumbull, W. N.: 1994, Estimating the economic model of crime with panel data, *Review of Economics and Statistics* **76**(2), 153–174.
- Coulson, N. E., Hwang, S.-J. and Imai, S.: 2002, The value of owner occupation in neighborhoods, *Journal of Housing Research* **13**(2), 153–174.
- Coulson, N. E., Hwang, S.-J. and Imai, S.: 2003, The benefits of owner-occupation in neighborhoods, *Journal of Housing Research* **13**(1), 21–48.
- Dietz, R. D.: 2002, The estimation of neighborhood effects in the social sciences: An interdisciplinary approach, *Social Science Research* **31**(4), 539–575.
- Dietz, R. D. and Haurin, D. R.: 2003, The social and private micro-level consequences of homeownership, *Journal of Urban Economics* **54**(3), 401–450.
- DiPasquale, D. and Glaeser, E. L.: 1999, Incentives and social capital: Are homeowners better citizens?, *Journal of Urban Economics* **45**(2), 354–384.
- Dymowski, G. R.: 2001, Malicious landlords and problem properties: A white paper, *Technical report*, Metropolis St. Louis.
- Eck, J. E. and Wartell, J.: 1998, Improving the management of rental properties with drug problems: A randomized experiment, in L. Mazerolle and J. Roehl (eds), *Civil Remedies and Crime Prevention*, Vol. 9 of *Crime Prevention Studies*, Criminal Justice Press, Monsey, NY, pp. 161–185.
- Fannie Mae: 2001, Fannie mae national housing survey 2001: Examining the credit-impaired borrower.
- Fannie Mae: 2003, Fannie mae national housing survey 2003: Understanding america’s homeownership gaps.
- Fishman, G., Hakim, S. and Shachmurove, Y.: 1998, The use of household survey data—the probability of property crime victimization, *Journal of Economic and Social Measurement* **24**(1), 1–13.

- Glaeser, E. L. and Sacerdote, B.: 1999, Why is there more crime in cities?, *Journal of Political Economy* **107**(6), 225–258.
- Grogger, J.: 1990, The deterrent effect of capital punishment: An analysis of daily homicide counts, *Journal of the American Statistical Association* **85**(410), 295–303.
- Hakim, S., Ovadia, A., Sagi, E. and Weinblatt, J.: 1979, Interjurisdictional spillover of crime and police expenditure, *Land Economics* **55**(2), 200–212.
- Hakim, S., Rengert, G. F. and Shachmurove, Y.: 2001, Target search of burglars: A revised economic model, *Papers in Regional Science* **80**(2), 121–137.
- Hakim, S. and Shachmurove, Y.: 1996, Spatial and temporal patterns of commercial burglaries: the evidence examined, *The American Journal of Economics and Sociology* **55**(4), 443–456.
- Harkness, J. and Newman, S. J.: 2002, Homeownership for the poor in distressed neighborhoods: Does this make sense?, *Housing Policy Debate* **13**(3), 597–630.
- Haurin, D. R., Parcel, T. L. and Haurin, R. J.: 2001, The impact of homeownership on child outcomes, *Technical Report LIHO-01.14*.
- Hendrickx, J.: 2004, Coldiag2: Stata module to evaluate collinearity in linear regression.
- Long, J. S. and Freese, J.: 2006, *Regression models for categorical dependent variables using Stata*, Stata Press, College Station, TX.
- Mayer, N. S.: 1981, Rehabilitation decisions in rental housing: An empirical analysis, *Journal of Urban Economics* **10**(1), 76–94.
- Mazerolle, L. G. and Terill, W.: 1997, Problem-oriented policing in public housing: Identifying the distribution of problem places, *Policing* **20**(2), 235–255.
- McNulty, T. and Holloway, S. R.: 2000, Race, crime, and public housing in Atlanta: Testing a conditional effect hypothesis, *Social Forces* **79**(2), 707–729.
- Miles-Doan, R.: 1998, Violence between spouses and intimates: Does neighborhood context matter?, *Social Forces* **77**(2), 623–45.
- Olligschlaeger, A. M.: 1997, *Spatial analysis of crime using GIS-based data: Weighted spatial adaptive filtering and chaotic cellular forecasting with applications to street level drug markets.*, PhD thesis, Carnegie Mellon University.
- Rephann, T.: 1999, Links between rural development and crime, *Papers in Regional Science* **78**(4), 365–386.

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- Rohe, W. M. and Stewart, L. S.: 1996, Homeownership and neighborhood stability, *Housing Policy Debate* **7**(1), 37–81.
- Rohe, W. M., Van Zandt, S. and McCarthy, G.: 2002, Home ownership and access to opportunity, *Housing Studies* **17**(1), 51–61.
- Roncek, D. W., Bell, R. and Francik, J. M. A.: 1981, Housing projects and crime: Testing a proximity hypothesis, *Social Problems* **29**(2), 151–166.
- Sampson, R.: 2001, *Drug dealing in privately owned apartment complexes*, Problem-Oriented Guides for Police Series, U.S. Department of Justice, Office of Community Oriented Policing Series, Washington, DC.
- Santiago, A. M., Galster, G. C. and Pettit, K. L. S.: 2003, Neighborhood crime and scattered-site public housing, *Urban Studies* **40**(11), 2147–2163.
- Savage, H.: 1998, What we have learned about properties, owners, and tenants from the 1995 property owners and managers survey, *Technical Report H121/98-1*, U.S. Census Bureau.
- Sherman, L. W., Gartin, P. R. and Buerger, M. E.: 1989, Hot spots of predatory crime: Routine activities and the criminology of place, *Criminology* **27**(1), 27–55.
- Sorenson, D. J., Trumbull, W. N. and Cornwell, C.: 1996, Estimating the economic model of crime: Does space matter?, *Technical Report 9620*, Regional Research Institute.
- Sullivan, A. M.: 1990, *Urban economics*, Irwin, Boston.
- Zelinka, A. and Brennan, D.: 2001, *SafeScape: Creating safer, more livable communities through planning and design*, American Planning Association, Chicago.