PUBLIC HOUSING AND LETHALVIOLENCE: AN ANALYSIS OF THE EFFECT OF THE PRESENCE OF PUBLIC HOUSING ON HOMICIDE RATES

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ABSTRACT

Public Housing and Lethal Violence: An Analysis of the Effect of the Presence of Public Housing on Homicide Rates

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After the Second World War, the Department of Housing and Urban Development (HUD) provided funding to local housing authorities to build large scale public housing developments in many cities across the United States. Unfortunately, most of those housing projects were beset with a host of problems as time progressed, including deteriorating building structures, concentrated poverty, racial segregation, and crime. In perhaps no city is this story more heavily studied than in Chicago. Chicago's public housing tribulations are legendary and are well documented in the academic literature. Many of Chicago's projects were large high-rise projects located in disadvantaged, isolated, and residentially distinct neighborhoods with strong gang, drug, and crime presence. However, relatively little research has examined the association between Chicago's public housing and homicide. Specifically, it is uncertain as to whether the unique physical and social environments of public housing developments have an independent effect on lethal violence or whether the high rates of homicides occurring in public housing areas are influenced predominately by neighborhood conditions. Utilizing the Chicago Homicide Data set, this dissertation disentangles the effects of public housing on lethal violence. This study, first, estimated negative binominal regression models to determine the effect of the presence of public housing on

tract level rates of homicide. The results of these analyses indicate that the presence of public housing is not a significant predictor of the rates of lethal violence and neighborhood conditions are driving the high rates of homicides occurring in public housing areas. Secondly, the nature of lethal violence occurring in public housing areas was determined by using negative binominal regression and bivariate analyses. Homicides, disaggregated by motive, do not occur at higher rates or disproportionately in Chicago's tracts with public housing compared to tracts without. The findings from this dissertation indicate that public housing areas do not seem to be micro places that influence a specific type of violence and that neighborhood conditions are driving the high rates of homicide occurring in public housing areas rather than the unique physical and social environments of public housing developments.

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CHAPTER 1

INTRODUCTION

After the Second World War, with the help of federal funding from the Housing Acts of 1937, 1949, and 1954, the Department of Housing and Urban Development (HUD) provided funding to local housing authorities to build large scale public housing developments in many cities across the United States. Unfortunately, most of those housing projects were beset with a host of problems as time progressed, including deteriorating building structures, concentrated poverty, racial segregation, and crime. In perhaps no city is this story more heavily studied than in Chicago. Chicago's public housing tribulations are legendary and are well documented in the academic literature (see Bickford & Massey, 1991; Massey & Kanaiaupuni, 1993; Popkin, Gwiasda, Olson, Rosenbaum, & Buron, 2000; Venkatesh, 2000). Scholars have examined a myriad of problems and programs pertaining to Chicago's public housing, including mobility experiments, relocation programs, resident perceptions, health issues, unemployment, education, and crime prevention. Additionally, ethnographic research provides vivid accounts of deteriorating project buildings, strong gang presence, drug markets, and concentrated poverty in Chicago's largest housing projects (Popkin et al., 2000; Venkatesh, 2000).

It is fair to conclude that a great deal is known about the issues surrounding public housing and the literature analyzing the relationship between public housing and crime is continually growing. In particular, more research has been conducted to examine the impact that public housing revitalization and transformation has on crime occurring in and around public housing areas (see Popkin, Rich, Hendey, Hayes, & Parilla, 2012).

However, there are still gaps in the present literature regarding the relationship between public housing and lethal violence.

One such area in need of further exploration is the influence that public housing has on tract level homicide rates. Theoretically, the effect of public housing on lethal violence is explained by extreme levels of neighborhood disadvantage, social isolation, and the physical environment (see Bickford & Massey, 1991; Jeffery, 1971; Massey & Denton, 1993; Massey & Kanaiaupuni, 1993; Newman, 1972; Newman & Franck, 1980; Wilson, 1987). Empirically, it has been established that neighborhood disadvantage and social isolation are significant predictors of lethal violence (Land, McCall, & Cohen, 1990; Lee, 2000; Morenoff, Sampson, & Raudenbush, 2001; Peterson & Krivo, 1993; Peterson, Krivo, & Harris, 2000; Sampson, 1987; Shihadeh & Flynn, 1996; Shihadeh, 2009). However, it is uncertain whether the physical and social environment of public housing influences homicide rates, when controlling for neighborhood disadvantage, social isolation, and residential composition (see Peterson et al, 2000).

This dissertation will address some of the gaps in previous research by disentangling the relationship between public housing and local homicide rates. In order to accomplish this, three research questions will be addressed. First, this dissertation will determine whether the presence of public housing in communities influences their homicide rates, when controlling for neighborhood disadvantage, social isolation, and residential composition. Secondly, it will be determined whether the presence of public housing influences type specific homicide rates, net of neighborhood disadvantage, social isolation, and residential composition. Finally, this dissertation will determine if the differences in neighborhood disadvantage, social isolation, residential composition, and

the physical environment across tracts with public housing influences the amount and nature of lethal violence observed in these communities.

For this dissertation, neighborhood disadvantage is conceptualized as structural conditions of a neighborhood including conditions of poverty, ethnic heterogeneity, and residential mobility and social isolation is conceptualized as both racial and class isolation. The physical environment of public housing is conceptualized as the size, architectural design, and externality of the project. Whereas the social environment is conceptualized as the conditions and characteristics that could have an influence on social life in the projects, such as poor management, housing policies, organizational issues, and insufficient building security (see Bryne, Day, & Stockard, 2003; Fagan, Dumanovsky, Thompson, & Davies, 1998; Popkin et al., 2000; Schill, 1993; Venkatesh, 2000). Additionally, previous research has indicated that residential composition can vary across public housing developments and this could potentially have an influence on the amount of crime occurring in these areas (see Fagan et al., 1998; Thompson & Saegert, 1998). Therefore, residential composition, conceptualized as educational attainment and enrollment, gender distribution, and vehicle access of a neighborhood's population will also be controlled for in this dissertation.

Public housing communities experience high rates of crime and violence relative to communities devoid of public housing (Davies, 2003, 2006; Dunworth & Saiger, 1993; Fagan & Davies, 2000; McNulty & Holloway, 2000). However, public housing developments are typically located in extremely disadvantaged communities (Bickford & Massey, 1991; Holloway, Bryan, Chabot, Rogers, & Rulli, 1998; Massey & Kanaiaupuni, 1993) and community disadvantage has been shown to be positively correlated with

homicide rates and other types of violent crime (Krivo & Peterson, 1996). Previous research has not definitively determined whether the high rates of homicide occurring in public housing communities can be explained by conditions of neighborhood disadvantage, social isolation, and residential composition or if the physical and social environment of public housing, independent of neighborhood characteristics, influences the rates of homicide in public housing (see Peterson et al., 2000). Thus, this dissertation will examine whether the presence of public housing has an additive effect on lethal violence by comparing the rates of homicide in census tracts that contain public housing to the rates of homicide in census tracts that do not contain public housing, while controlling for neighborhood disadvantage, social isolation, and residential composition. The presence of public housing in a tract will be used as a proxy for public housing characteristics and will indirectly determine the influence that the physical and social environment of public housing has on homicide rates.

Public housing areas are distinctive from the surrounding community, which make them micro-places within the larger social environments of a community. During the 1980s and 1990s, Chicago's public housing areas consisted of many large high-rise and low-rise developments that were plagued by gangs, drugs, inadequate management, and policies which reduced safety and the quality of life in the projects (see Hunt, 2009; Popkin et al, 2000; Venkatesh, 2000, 2008). Additionally, these projects were often located in extremely disadvantaged and isolated areas (see Bickford & Massey, 1991; Hunt, 2009; Massey & Kanaiaupuni, 1993; Popkin et al. 2000; Venkatesh, 2000). Yet, it is uncertain if these distinctive characteristics of Chicago's projects influence specific types of violence. With the exception of Griffiths and Tita's (2009) analysis, previous

research has aggregated homicides occurring in public housing, which prohibits in-depth analysis of the nature of lethal violence occurring in public housing areas. Therefore, this dissertation will determine whether certain types of motivations for homicide occur at a greater rate in Chicago's census tracts containing public housing than in tracts without public housing, when controlling for neighborhood disadvantage, social isolation, and residential composition. When controlling for these neighborhood conditions, I predict that the physical and social environment of tracts with public housing will be more conducive to gang and drug motivated homicides due to the unique situations which occurred in many of Chicago's projects in the 1980s and 1990s (see Popkin et al., 2000; Venkatesh, 2000, 2008). Many of Chicago's projects were known for their presence of gangs, who controlled the drug markets in these areas (see Popkin et al., 2000; Venkatesh, 2000, 2008). I predict that the physical and social environment of public housing allowed the gangs to engage in criminal behavior with little threat of intervention from the community and law enforcement.

Not all tracts with public housing experience similar conditions and characteristics of neighborhood disadvantage, social isolation, residential composition, and the physical environment. Some tracts with public housing experience moderate levels of neighborhood disadvantage and social isolation, while other tracts experience extreme levels (Bickford & Massey, 1991; Massey & Kanaiaupuni, 1993). Residential composition can also vary across tracts with public housing (Fagan et al., 1998; Thompson & Saegert, 1998). In some tracts with public housing, there may be greater percentages of distressed residents who are isolated, unemployed, and uneducated (Thompson & Saegert, 1998). While in other tracts, there may be greater percentages of

residents who are involved in the community, employed, and enrolled in school (Thompson & Saegert, 1998). Similarly, the physical environment of public housing can vary tremendously, especially in the size, the architectural design, and the externality of the project (Jeffery, 1971; Newman, 1972; Newman & Franck, 1980). That is, some are smaller developments while others are larger, some are high rise buildings while others take different forms, and some are located adjacent to another tract that contains public housing while others are not. Variation in these conditions and characteristics can influence the social dynamics and the nature of crime occurring in tracts containing public housing. This dissertation will explore how differences in neighborhood disadvantage, social isolation, residential composition, and the physical environment across Chicago's tracts with public housing influence the amount and nature of homicide occurring in Chicago communities between 1985 and 1995.

Regression analyses will be used in this dissertation to examine the relationship between the presence of public housing and homicide rates. Specifically, negative binominal regression will be used to determine if the presence of public housing (i.e. physical and social environment) has an independent influence on the total homicide rate, when controlling for conditions of tract disadvantage, isolation, and residential composition. This same methodological approach will also be used to examine the nature of lethal violence occurring in tracts with public housing by determining whether the presence of public housing is a significant predictor of type-specific homicide rates, when controlling for neighborhood conditions.

One of the issues with regression analysis is the overestimation of the strength of the true relationship between the independent and dependent variables due to the

inclusion of outliers in the models. To determine if the presence of outliers in the models are having an influence on the results, the tracts experiencing the most extreme conditions of neighborhood disadvantage, social isolation, and residential composition will be identified. The data will then be trimmed to exclude the top 5% and 10% of outlier tracts experiencing the most adverse neighborhood conditions. Concentrated disadvantage and isolation have been shown to be positively correlated with lethal violence; therefore, there is the possibility that the outlier tracts may have an influence on the rates of homicide (Land et al., 1990; Lee, 2000; Morenoff et al., 2001; Peterson & Krivo, 1993; Peterson et al., 2000; Sampson et al., 1997; Sampson, 1987; Shihadeh & Flynn, 1996; Shihadeh, 2009). Removing the outlier tracts will determine whether the characteristics associated with these tracts are influencing the rates of lethal violence.

Removing the top 5% and 10% of extremely disadvantaged, isolated, and residentially distinct tracts, regardless public housing status, will determine the influence that the presence of public housing has on the rates of homicide, net of these neighborhood conditions. If the outlier tracts without public housing were left in the models, their neighborhood conditions will be different from the rest of the sample and these extreme conditions could have an influence on the results. Therefore, by excluding these tracts without public housing, we can ensure that the extremely disadvantaged, isolated, and residentially distinct tracts without public housing are not having an influence on lethal violence. However, some of Chicago's tracts containing public housing have been shown to be some of the most disadvantaged tracts in the United States (see Massey & Kanaiaupuni, 1993). Therefore, I predict that the subset of outlier tracts will mostly comprise of tracts with public housing than tracts devoid of public

housing. Additionally, these outlier tracts with public housing are predicted to be predominately of the large, high-rise design, and located in close proximity to a host of other public housing projects.

After the removal of the outlier tracts, negative binominal regression models will be re-estimated without these tracts, which will determine whether the outliers have any effect on the rates of lethal violence. If dissimilar results are found between the two sets of negative binominal regression analyses, then the variation in the characteristics between the subset of outlier tracts and the rest of the sample of tracts likely accounts for differences in the findings. Specifically, the outlier tracts with public housing are predicted to differ from the non-outlier tracts with public housing not just on conditions of neighborhood disadvantage, social isolation, and residential composition, but also on the physical environment characteristics. Therefore, based on these predicted differences, I will conduct bivariate analyses of the percentages and scores of neighborhood disadvantage, social isolation, residential composition, and physical environment variables to determine the key factors that distinguish the outlier tracts with public housing from the non-outlier tracts with public housing.

The findings from this dissertation could influence both policy and future research. Mixed-income and housing choice vouchers are becoming the standard form of public housing across the United States. The knowledge gained from this study can determine what is influencing violence in family based public housing and future efforts can be directed to address these issues in other types of public housing. By so doing, the redeveloped projects will not inherit the same problems associated with family based developments. For instance, if the rates of homicide in public housing areas are found to

be associated with neighborhood disadvantage and social isolation, then housing authorities should strive to build new mixed-income housing projects in less disadvantaged neighborhoods, rather than renovating existing family projects in the same disadvantage area. On the other hand, if public housing is shown to have an independent effect on the rate of homicide, then efforts should be made to address the significant causes that might be influencing homicides occurring in public housing areas, such as the physical design of the project and/or some of the characteristics which may influence the social environment of the area. If the physical and social environment of public housing is shown to explain homicides occurring in public housing areas, then, concentrated efforts should be made to address these problems, so they are not inherited with the new developments. For instance, if the physical and social environment characteristics are explaining the rates of domestic motivated homicides occurring in public housing areas, then the issues that are influencing this type of homicide should be resolved.

The conceptualization of the social environment of public housing includes the policies that shape social life in these areas. One such policy is the "one-strike" policy, which evicts the entire family living in public housing, if a crime is committed by a member of the household (Popkin, Buron, Levy, & Cunningham, 2000; Popkin, Cunningham, & Woodley, 2003; Ready, Mazerolle, & Revere, 1998; Roman & Travis, 2004). In cases of domestic violence, the victim may be unwilling to seek outlets due to fear of eviction. With the Violence Against Women Act of 2005, legal eviction of victims of domestic violence does not occur under the "one-strike" policy (Laney, 2010). However, many residents may misconstrue the legal terms and may be fearful that if they seek intervention from law enforcement, then they will be evicted due to the actions of

their abuser. Therefore, if something inherent in public housing such as the physical and social environment is having an influence on homicides occurring in public housing areas, then efforts should be made to address these issues. Using domestic violence as an example, efforts should be made to address the misunderstandings with housing policies that may prohibit intervention and efforts should also be made to expand protections for victims living in public housing.

Analyzing disaggregated homicides can add to our knowledge pertaining to the social dynamics and nature of lethal violence that occurs in public housing areas. The knowledge gained from this analysis will help to determine the differences between tracts with and without public housing. If public housing has an independent effect, with tracts containing public housing being associated with higher rates of certain types of homicides compared to tracts without public housing, then we can determine that there are social and/or physical differences between the two areas that influence a specific type of violence. Previous studies have shown that Chicago's public housing areas experience a strong gang and drug presence (Popkin et al., 2000; Venkatesh, 2000; 2008). If the tracts containing public housing experience higher rates of gang and/or drug motivated homicides compared to tracts without public housing, we can infer that the physical and social environments of public housing areas are more conducive to gang and drug violence. Additionally, if the findings show that domestic or robbery motivated homicides occur at a similar rate in tracts with and without public housing, then this indicates that the physical and social environments of public housing areas are not more conducive to domestic or robbery motivated violence. The findings from this analysis will further distinguish public housing areas from non-public housing areas and will be

beneficial in determining the underlying reasons for violence in these areas. Finally, this dissertation could potentially influence future criminological research. If a subset of extremely disadvantaged, isolated, and residentially distinct tracts has an influence on the findings, then future research should further examine the variation that exists across different types of public housing areas.

This dissertation will consist of seven additional chapters. Chapter 2 provides the theoretical framework on which this dissertation is based. This chapter presents an overview of the criminological perspectives that are relevant for understanding the extent and nature of homicides occurring in public housing areas. Chapter 3 reviews the relevant research pertaining to public housing and Chapter 4 specifies the analytical methods and strategies used in this dissertation. The results of this dissertation are divided among three chapters. Chapter 5 determines if the presence of public housing affects homicide rates and Chapter 6 presents the results of the analyses determining whether the presence of public housing influences type specific homicide rates. The results of the bivariate analyses comparing the outlier tracts with public housing to the non-outlier tracts with public housing will be presented in Chapter 7. Finally, Chapter 8 will conclude this dissertation with a discussion of the implications of this research.

CHAPTER 2

THEORETICAL FRAMEWORK

The theoretical framework for understanding the relationship between crime and public housing is based on two sets of theoretical perspectives: situational theories and social structural theories. The first set of theoretical perspectives used to understand crimes occurring in public housing projects are based on the situational factors that facilitate criminal behavior. These situational theories focus on the environment and the situational settings in which crime occurs, and assume that individuals are motivated to commit criminal acts (Clarke, 1997). Essentially, Clarke (1997) proposes that specific circumstances influence the commission of certain types of crimes. For example, a major complaint from Chicago's public housing residents was the broken or nonworking lights in the hallways and stairwells of the projects (Popkin et al., 2000). This lack of lighting could have provided opportunities for predatory crimes because of the reduction in defensible space, social control, and guardianship in the dark hallways and stairwells of the projects. At a basic level, situational theories suggest that crime occurring in public housing can be attributed to the physical environment of the project and the presence of crime facilitators, such as drugs and firearms, which provide the opportunity for a crime to take place.

The second set of theoretical perspectives used to understand crimes occurring in public housing are the social structural theories of crime. Social structural theories seek to explain why there are high rates of crime in certain geographic areas. For example, public housing projects are often located in areas of cities that already contain high-rates of poverty, family disruption, racial isolation, and class isolation (Bickford & Massey,

1991; Massey & Kanaiaupuni, 1993; Popkin et al., 2000). These structural characteristics of public housing neighborhoods are thought to reduce social control of the area, which can increase crime both in and around the housing projects.

Similar to the theoretical interaction posited by Griffiths and Tita (2009), this dissertation proposes that crime occurring in public housing projects cannot be understood with one distinct theoretical perspective, but can be understood through an interaction of the situational and social structural environments of the projects. The situational theories that will be outlined below encompass defensible space theory and Crime Prevention through Environmental Design (CPTED). The social structural theories that have significance in explaining crime in public housing include social disorganization and social isolation.

Situational Theories

Defensible Space

Crime in public housing was first explained by the lack of defensible space in and around project buildings (Newman, 1972). There are three basic components of Newman's defensible space theory: territoriality, natural surveillance, and image. Territoriality refers to the creation of physical and symbolic boundaries that enable residents to exert control over an area and establish a shared set of norms for public behavior (Newman, 1972). By exerting this control and establishing norms, norm violating behavior can be identified and discouraged by the residents. Secondly, natural surveillance refers to the capability of the physical design of the housing project to provide opportunities for residents to watch over their territory. Newman (1972) suggests that the building of homes or apartments facing one another will increase

resident guardianship of public spaces. This increase in surveillance is thought to decrease the opportunities for crimes to take place given the elevated informal social control of the area. Further, the increase of surveillance provides a sense of security, which promotes usage of defended spaces. This heightened usage, in turn, increases the desire for residents and users to continue to defend the space. Finally, image or milieu refers to the appearance of the defended space, which portrays an image of the inhabitant's lifestyle. If the defended space has an orderly, clean, and safe appearance, then the image that will be portrayed to criminals is that the space is protected; this discourages deviant behavior. If a space is disorganized, dirty, and has an unsafe appearance, then the image that will be presented to the criminals is that the space is unprotected and vulnerable to deviant behavior.

According to defensible space theory, crime occurs in public housing due to the inadequacies of the physical design of the project. The inadequate physical design of public housing reduces territoriality, surveillance, and portrays a sense of disorder, which reduces social control over public areas. Many of these projects contain numerous residential buildings and have large resident populations, which may reduce the residents' ability to recognize strangers and defend their neighborhood from crime. Therefore, in order to reduce crime, defensible space must be created. Specifically, the architectural design must be altered to create territory, natural surveillance, and to provide an image of a defended space. In theory, changing the design of public housing should increase informal social control, which makes it uninviting for offenders.

Research pertaining to the design-crime relationship has shown that design alone does not have a significant effect on crime (see Taylor and Harrell, 1996). For example,

Holzman, Kudrick, and Voytek (1996) analyzed the relationship between crime and physical design of public housing and found that high-rise public housing is not as criminogenic as suggested by Newman (1972). According to Holzman and his colleagues (1996), residents of high-rises were less likely to be concerned about crime and were less fearful of crime compared to residents of low-rise and town-home projects. Nonetheless, many housing authorities, with help from Federal programs such as Homeownership and Opportunity for People Everywhere (HOPE VI), are tearing down older high-rise and large family developments. These large high-rise projects create extreme concentrations of poverty due to the groupings of large populations of low-income residents in a neighborhood. Following Newman's thesis (1972), the redevelopment of public housing from large high-rise and low-rise developments to mixed-income town-home designs should increase social control by creating opportunities for residents to defend their homes and surrounding public spaces. Additionally, incorporating mixed-income residences should reduce concentrated poverty in the neighborhood.

The main purpose of creating defensible space is to prevent crime from occurring and to provide a safe environment for the residents of the community. In Chicago's public housing projects, gangs used these non-defensible spaces to their benefit (see Hagedorn, 2005, 2008). The lobbies and court-yards of the projects were controlled by local gangs, who organized these spaces as drug markets (Hagedorn, 2005, 2008; Popkin et al., 2000; Venkatesh, 2000). The deficiencies in the physical design of Chicago's high-rise projects prohibited residents from establishing terrority, surveillance, and presenting an image that the public spaces were protected. The inability of public

housing residents to defend their public spaces allowed gangs to establish their own terrority, surveillance, and provide an alternate image that the area was controlled by gangs. Hagedorn (2005, 2008) posits that gangs used these spaces for their own purposes, which allowed them to become permanent fixtures who were institutionalized into the fabric of the projects.

CPTED

Jeffery's (1971) Crime Prevention through Environmental Design (CPTED) suggests that the design of housing and the physical environment can affect fear of crime and modify the number of criminal incidents occurring in the area (Crowe & Zahm, 1994). Ultimately, this reduction in the number of criminal offenses, and the drop in fear of crime, improves the quality of life for residents (Crowe & Zahm, 1994). Drawing on similar concepts as defensible space theory, CPTED includes three basic components: access control, surveillance, and territorial behavior. The premise of access control is to discourage non-sanctioned parties from entering the area by using natural barriers such as doors, trees, fences, and gates. Surveillance, the second component of CPTED, refers to the placement of windows in locations that allow residents or users of the property to see and be seen, thereby increasing their ability to exert control over the area. Part of the surveillance component includes sufficient lighting and landscaping to provide unobstructed views, which allows potential offenders to be observed. Territorial behavior refers to the use of sidewalks, landscaping, porches, and garages to designate the boundaries between public and private spaces.

There are three strategies used to activate the components of CPTED: natural, organized, and mechanical strategies (Crowe, 2000). Natural strategies include the

aforementioned window placements and barriers such as trees, shrubs, doors, and gates. Organized strategies involve the use of tenant or neighborhood watches. Another example of an organized strategy is the use of security or police patrols, which can reduce crime and fear of crime (Crowe, 2000). Finally, mechanical strategies include the use of alarms or cameras to create access control, surveillance, and territory (Crowe, 2000).

According to Davies (2003), the impact and evaluation of CPTED initiatives are relatively unknown in terms of its influence on crime occurring in public housing. However, many of Chicago's public housing projects lacked the fundamentals of crime reduction proposed by CPTED (Popkin et al., 2000). Effectively incorporating the concepts of CPTED in Chicago's public housing projects could have reduced crime in these areas.

Discussion of Situational Theories

Situational theories of crime suggest that the characteristics of the environment and the social setting facilitate criminal behavior (Clarke, 1997). The underlying premise of these theories is the rational choice perspective, which suggests that a decision making process is involved when committing crime (Cornish & Clarke, 1986). Rational choice theory maintains that certain situations facilitate the criminal decision making process (Cornish & Clarke, 1986). Offenders will commit crime if the situational characteristics present opportunities for successful completion of the act (Cornish & Clarke, 1986). Offenders who are presented with situations where the risk of being apprehended is low and the potential rewards are high, the odds increase that the offender will commit the act (Cornish & Clarke, 1986).

The situational environment of public housing, whether it is the lack of defensible space or guardianship, influences the nature and extent of crime occurring in these areas. The key elements of both defensible space and CPTED perspectives manipulate the decision making process of offenders. A major issue of Chicago's public housing was the inadequate lighting of the stairwells and hallways in the projects (Popkin et al., 2000). The windowless and poorly lit hallways and stairwells prohibited defensible space and surveillance of these semi-public spaces. Offenders notice this lack of guardianship in the project's hallways and stairwells, and a decision is made based on the cost and reward of committing the offense.

The existing research pertaining to design and crime does not support the notion that the physical design of a building or neighborhood can have an independent effect on crime and other problems. According to Taylor and Harrell (1996), the effectiveness of defensible space or CPTED initiatives depends on the setting for which the initiative occurs, particularly the social, cultural, and organizational characteristics of the neighborhood. Therefore, the existing literature indicates that the physical design of a building or neighborhood interacts with the social environment to influence crime. Thus, the broader social environment also needs to be included for a more complete understanding of crime occurring in public housing projects.

Social Structural Theories

Social Disorganization Theory

Social disorganization theory evolved out of the Chicago School and is based on Burgess' "concentric zone model." Park and Burgess (1925), in their study of the social ecology of Chicago, suggested that cities consisted of five zones or circles, with each

zone having distinctive characteristics. The Central Business District (CBD), the first concentric circle, refers to the location in the city where many of the industries and businesses were located. Adjacent to the CBD was the transitional zone, which housed recent immigrant groups and was characterized by deteriorating multi-family housing. The transitional zone experienced frequent social change with high rates of poverty and migration. The next concentric circle was the working class zone, which was comprised of single family tenements and housing. Adjoining the working class zone was the residential zone. The residential zone consisted of single family homes with small yards and garages. The farthest away from the CBD was the commuter zone, which was characterized as the suburbs. As immigrants found jobs and became more established in the United States, they were expected to migrate successively from the transitional zone to the outer zones of the city (Park and Burgess, 1925).

Drawing on the concentric zone framework, Shaw and McKay (1942) found that juvenile crime rates were not evenly dispersed across the city of Chicago. Instead, juvenile crime rates were the highest in the transitional zone. The transitional zone was characterized by high levels of poverty, ethnic heterogeneity, and residential instability. These characteristics contribute to a neighborhood being socially disorganized. Therefore, social disorganization theory proposes that areas experiencing high rates of poverty, ethnic heterogeneity, and residential instability tend to have higher rates of crime.

Early social disorganization research only tested the indirect causes of disorganization on crime. Over time, scholars were able to examine a more complete conceptualization of social disorganization by incorporating the mediating variables

between social structural characteristics and crime rates. This conceptualization of social disorganization included the inability of a neighborhood to achieve common goals and to maintain social control (Bursik and Grasmick, 1993; Kornhauser, 1978; Sampson & Groves, 1989).

Sampson and Groves (1989) developed arguably the most complete two stage model of social disorganization based on their research using the British Crime Survey (BCS) (Sun, Triplett, & Gainey, 2004). In this model, the first stage involves the well-known exogenous social disorganization variables such as poverty, ethnic heterogeneity, residential mobility, family disruption, and urbanization. The second stage of the model includes the mediating social control variables, which had never before been included in empirical tests of social disorganization theory. These mediating variables, such as local friendship networks, unsupervised youths, and participation in neighborhood groups, were used to operationalize community organization which in turn influences the level of social control for an area. Sampson and Groves (1989) found a significant negative relationship between the social structural variables (poverty, ethnic heterogeneity, residential mobility, family disruption, and urbanization) and the social control variables (friendship networks, unsupervised youths, and neighborhood group participation). Accordingly, as the structural disadvantages of the neighborhood increases, there is a reduction in local friendship networks, more unsupervised teenage groups, and less neighborhood involvement. Thus, social disorganization limits the ability of a neighborhood to exhibit social control and the resulting lack of social control increases the rate of crime for the area. Further tests of this social disorganization model show

modest support for the mediating social control variables influence on crime (Sun et al., 2004; Veysey & Messner, 1999).

Sampson, Raudenbush, and Earls (1997) added the notion of collective efficacy to the social disorganization framework. Essentially, collective efficacy is the ability of residents to agree upon common goals and join together for the common good. A community that exhibits collective efficacy has residents who share similar values, trust one and other, and are willing to intervene for the benefit of the neighborhood. Examples of residents joining together for the common good include the monitoring of juvenile groups, the willingness of residents to intervene with truant juveniles or loitering individuals in their neighborhood, and confronting individuals who are being delinquent in the public spaces (Sampson et al., 1997). There is a negative relationship between social structure and collective efficacy, with collective efficacy mediating social structure and violent crime. Generally, neighborhoods with high rates of poverty, family disruption, and residential mobility experience low levels of collective efficacy. In turn, neighborhoods exhibiting low levels of collective efficacy, experience high levels of violence (Sampson et al., 1997).

Social Isolation

African Americans often face differing neighborhood conditions compared to whites. Many inner-city black neighborhoods are plagued by social problems, such as high rates of single headed households, unemployment, poverty, and crime (Bickford & Massey, 1991; Massey & Denton, 1993; Wilson, 1987). Specifically, there is a "racial-spatial divide" (see Peterson & Krivo, 2010) between whites and racial/ethnic minorities in the United States. Typically, whites are at the top if the spatial and socio-economic

pecking order, while racial minorities are often at the bottom, living in disadvantaged neighborhoods with little opportunity for social and economic advancement (Peterson & Krivo, 2010). This divide between racial groups generates imbalanced social conditions, which in turn, leads to differing rates of crime and violence between racially distinct neighborhoods (Peterson & Krivo, 2010). The difference between white and black neighborhoods for rates of crime and other social problems may be attributed, then, to the social isolation of some black inner-city neighborhoods (Massey & Denton, 1993; Peterson & Krivo, 2010; Wilson, 1987). Social isolation is defined as the lack of contact with mainstream society; therefore, isolated residents have few opportunities to interact with people of other races and social classes.

Many of Chicago's largest projects were not just socially isolated, but physically isolated as well. These physically isolated projects were located next to major highways and lacked adequate access to public transportation, thereby, forcing residents to remain physically isolated in their neighborhood (Bickford & Massey, 1991; Massey & Kanaiaupuni, 1993; Popkin et al., 2000). This isolation often required residents to travel long distances to receive medical treatment, to buy groceries, and to go to work (Popkin et al., 2000; Venkatesh, 2000).

Social isolation also limits the number and types of jobs that are available to the residents of public housing. Wilson (1987) indicates that residents of socially isolated neighborhoods are excluded from job networks, which reduces their opportunities for employment. A lack of job opportunities propels the socially isolated individuals into the underground economy to seek other alternatives to gain income (Venkatesh, 2006; Wilson, 1987). Similarly, social isolation can influence crime and violence (Anderson,

1999; Sampson & Wilson, 1995). In some instances, residents of socially isolated neighborhoods must adopt certain mechanisms to survive and one such mechanism is violent behavior (Anderson, 1999; Sampson & Wilson, 1995). As this mechanism becomes adopted with more frequency, the rate and intensity of violence in a neighborhood can increase (Anderson, 1999; Sampson & Wilson, 1995).

There are two main perspectives pertaining to the social isolation-crime relationship. The first perspective suggests that social isolation is caused by the movement of non-poor black families from inner city neighborhoods (Wilson, 1987). This movement of middle class and upper class black families from city centers reduced the class integration of African American neighborhoods. With diminishing class integration, a social buffer between poor black families and the rest of society was lost. In socially isolated urban areas, there is high unemployment, a lack of positive role models, local institutions such as churches and schools are non-existent or hindered by inadequate resources, and ultimately little social control (Wilson, 1987). Wilson suggested that the migration of the black middle class from predominately African American neighborhoods helped to create the necessary conditions for the urban ghetto and the development of the underclass.

The second perspective of the social isolation-crime relationship is based on the segregation of black neighborhoods. In contrast to Wilson (1987), Massey and Denton (1993) theorize that it was not the migration of middle class African Americans from inner city neighborhoods, but it was residential segregation that helped to create the underclass. The urban ghetto evolved from discriminatory real estate and banking practices that prevented black families from moving to predominately white

neighborhoods (Bickford & Massey, 1991; Massey & Denton, 1993). Thus, black families were often forced to live in less desirable neighborhoods. Massey and Denton (1993) argue that black families were socially isolated from mainstream society because of their residence in poor black neighborhoods. Black and white residential segregation deprives African Americans access to conventional economic and social opportunities by anchoring their daily lives in disadvantaged and isolated neighborhoods. This barrier to social mobility may be a causal factor for the high rates of violence occurring in racially isolated neighborhoods (Shihadeh & Flynn, 1996; Shihadeh, 2009).

Social Structure and Homicide

The research determining the effect of social structure on crime and violence is plentiful. This research has shown that neighborhoods experiencing high rates of structural disadvantage, disorganization, and economic deprivation, experience high rates of homicide (Morenoff et al., 2001; Sampson et al., 1997; Sampson, 1987). Poverty has been shown to be a significant predictor of homicide (Land et al., 1990; Lee, 2000; Shihadeh & Ousey, 1998) and other measures of social structure are also correlated with homicide. Specifically, there is a significant positive relationship between homicide and residential mobility, population density, and family disruption (Land et al, 1990.; Morenoff & Sampson, 1997). But, the research determining the relationship between ethnic heterogeneity and homicide is not as clear. Generally, research has measured ethnic heterogeneity as the percentage of black residents in a neighborhood, with findings showing a positive correlation between percentage of black residents and homicide rates (Messner & Tardiff, 1986; Sampson, 1985; Shihadeh & Flynn, 1996). Therefore, neighborhoods that are composed of large percentages of African American and non-

white residents experience a higher rate of homicide than neighborhoods that are composed of a mixture of racial and ethnic groups. Overall, scholars have determined that social structure is related to homicide rates, particularly with poverty, residential mobility, population density, and family disruption being positively correlated.

Research indicates that both racial isolation and class isolation are associated with homicide (Lee, 2000; Peterson & Krivo, 1993; Shihadeh & Flynn, 1996; Shihadeh, 2009). In studying the effects of segregation on African American homicide in large U.S. cities, Peterson and Krivo (1993) found a positive relationship between black and white segregation and homicide in cities across the United States. Similarly, Shihadeh and Flynn (1996) discovered that African American homicide is higher in cities with black populations that experience limited interactions with whites. Lee (2000) found that spatial isolation of poor residents from non-poor residents is a determinate of homicide for a sample of U.S. cities. Finally, Shihadeh (2000) analyzed the type of isolation that has the most influence on violence in neighborhoods: class or racial isolation. Shihadeh (2000) found that class isolation tended to increase violence, while racial isolation did not influence violent crime in neighborhoods.

Conclusion

There are two sets of theoretical perspectives that can be used to understand crime occurring in public housing projects: situational theories and social structural theories. There are many theories that fall under the realm of these two perspectives, but the theories that are particularly germane to understanding crime in public housing include defensible space, CPTED, social disorganization, and social isolation. Situational theories seek to understand crime occurring in public housing by suggesting that design

characteristics influence the social control of the projects, which ultimately facilitates criminal behavior. Social structural theories seek to understand crime occurring in public housing by determining why a geographic area experiences high or low crime rates. In part, these social structural theories suggest that poverty, family disruption, residential mobility, and/or social isolation from middle and upper class society can influence the rate of crime for a given area.

Both situational and social structural theories can be independently applied to understand crime occurring in the projects, but previous research indicates that no single specific theory can adequately understand the unique dynamic that occurs in public housing (Griffiths & Tita, 2009). From reviewing the relevant literature, the physical design of public housing is not the sole factor influencing crime in these neighborhoods. Research has shown that factors such as the social environment and neighborhood conditions must also be taken into account (see Taylor & Harrell, 1996). This suggests that an interaction of design and social factors influence crime and violence occurring in a neighborhood. It is clear that public housing developments often experience characteristics and conditions that are distinctive from the surrounding areas. These differences can be comprised of the physical and the social environment, which includes the size and building design of the developments, housing policies, management problems, and insufficient building security (see Bryne et al., 2003; Popkin et al., 2000; Popkin et al., 2003; Schill, 1993; Venkatesh, 2000). However, what remains unclear is if these characteristics associated with public housing has an independent additive influence on homicide rates, once neighborhood conditions are controlled.

CHAPTER 3

REVIEW OF LITERATURE

This chapter will examine the relevant literature pertaining to public housing. First, a review of what we know about Chicago's public housing will be covered. Specifically, the characteristics of Chicago's projects and a brief historical review of the Chicago Housing Authority (CHA) will be provided. Additionally, the variation across Chicago's projects will be explored, along with a review of the research studying the relationship between Chicago's public housing and gangs. To conclude this chapter, research analyzing crime and homicides occurring in public housing across the United States will be examined.

Chicago's Public Housing

There are many different types of public housing, with the size and the architectural design of the projects varying both across and within cities. Chicago, the third largest city in the United States, had a population of close to 2.8 million in 1990 (U.S. Census). With about 17 percent of Chicago's population living below the poverty line, there was a need for projects of varying size and design. The public housing scene in Chicago from 1985 to 1995 was composed of large high-rise and low-rise projects, alongside smaller family developments and scattered site housing (see Appendix A). From 1985 to the fall of 1995, public housing in Chicago remained relatively unchanged. Starting in September of 1995, the CHA and HUD began to tear down some of the vacant buildings located in the Cabrini-Green housing project. Since the mid 1990s, Chicago's public housing has undergone drastic redevelopment and renovation.

The CHA, which is the third largest housing authority in the United States, constructed high-rise buildings during the 1950s and 1960s. High-rise projects are structures containing a large number of housing units, often 10 or more stories high. Many of Chicago's high-rise projects were socially isolated from shopping, businesses, hospitals, and schools. In some cases, major highways and thruways, further structurally isolated the high-rise residents from other neighborhoods in the city (Bickford & Massey, 1991). A second style of public housing is the low-rise family development. Low-rise family developments are composed of several two to three story multi-family dwellings in a common area. Chicago's large low-rise family developments were built during the 1940s and 1950s. Finally, scattered site housing is often of the low-rise or town-home design, but there are fewer than 15 housing units in a specific area and the small developments are generally "scattered" throughout a city. The CHA started to build scattered site housing in 1966.

During the public housing boom of the 1950s and 1960s, a major concern of Chicago's white middle class citizens and the CHA was over the future locations for the proposed housing projects (Bickford & Massey, 1991). Initially, architects and the CHA sought to build the housing projects in predominately white middle and working class neighborhoods to reduce the isolation and segregation facing many of the poor minority families (Bickford & Massey, 1991). However, white residents were resistant to the construction of minority public housing in their neighborhoods and efforts were made to prevent the projects from being built. Bickford and Massey (1991) contend that white middle class resistance forced public housing projects to be constructed on vacant land in

"ghetto" neighborhoods. The projects were often located only a short distance from where the minority residents already lived (Bickford & Massey, 1991).

In addition, local investors or elites were concerned about the vitality of their businesses and institutions because of white suburbanization, black migration from the rural south to northern cities, and inner city decay (Bickford & Massey, 1991; Hirsch, 1983). Thus, these white elites sought to create a social barrier around the businesses and institutions. The elites purchased slum areas around their businesses and institutions at low costs, redeveloped them, and then "flipped" the areas for large profits (Bickford & Massey, 1991; Hirsch, 1983). The residents of the redeveloping slum areas were forced to move into public housing located in the poor black neighborhoods. The blockage of public housing in white neighborhoods and the renewal of slum areas helped to develop a "second ghetto" (Hirsch, 1983).

Despite the creation of this "second ghetto," social problems such as crime and concentrated disadvantage were not a major issue facing the "newly" created public housing projects of the 1950s and 1960s. Conley (2000) in New York and Cook (2008) in Newark provide images of public housing that was organized, integrated with mainstream society, and had lower rates of crime. Similar to public housing in New York and Newark, Chicago's housing projects were not always in a state of disorder (Popkin et al., 2000). Popkin and her colleagues (2000) indicate that politics and the ineffectiveness of the CHA attributed to the downfall of public housing in the 1970s and 1980s.

Variation across Chicago's Public Housing

Neighborhood Disadvantage and Social Isolation

Massey and Kanaiaupuni (1993) found that Chicago's public housing experienced some of the greatest levels of concentrated poverty in the United States. In addition to concentrated poverty, public housing areas are often characterized as being socially disorganized and isolated (Bickford & Massey, 1991; Holloway et al., 1998; Massey & Denton, 1993; Massey & Kanaiaupuni, 1993; Wilson, 1987). Although public housing has almost become synonymous with disadvantage, public housing projects can experience differing conditions of disadvantage and isolation. For instance, by the 1990s, the William Green Homes census tract was one of the most disadvantaged tracts in Chicago with high levels of neighborhood disadvantage and social isolation. Because William Green Homes experienced such extreme conditions, there were no comparable tracts without public housing that were characterized by similar conditions. However, other Chicago tracts containing projects, such as Le Claire Courts or Lowden Homes, experienced moderate levels of disadvantage and isolation, for which there were comparable tracts devoid of public housing but experiencing similar levels of neighborhood disadvantage and social isolation in the late 1980s and early 1990s.

Neighborhood disadvantage and social isolation have been shown to be positively correlated with crime and violence (see Krivo & Peterson, 1996; Lee, 2000; Peterson & Krivo, 1993; Shihadeh & Flynn, 1996; Shihadeh, 2009). As an example, areas that experience severe conditions of neighborhood disadvantage and social isolation will tend to have a higher crime rate than those areas that experience moderate levels of neighborhood disadvantage and social isolation. Since public housing developments can

experience differing conditions, it seems likely that this variation in conditions across public housing areas will have an influence on the crime and violence rates, with severely disadvantaged and isolated project areas experiencing higher rates.

Physical Environment

Architectural Design

The physical environment of a public housing project can encompass many different characteristics including the size and externality of a project; however, the key characteristic is architectural design. The high-rise design is frequently associated with crime (Newman, 1972; Newman & Franck, 1980). Chicago's high-rise projects, such as Robert Taylor Homes, were noted for their gang presence, violence, and crime. Nonetheless, the research examining the relationship between high-rise public housing and crime has failed to produce consistent results (Holzman et al., 1996). Newman found a strong relationship between high-rise public housing and crime; however, Holzman and his colleagues (1996) found that high-rise public housing is not any more criminogenic than other designs of public housing. In fact, the residents living in high-rise public housing were less fearful of crime and violence than those living in low-rise public housing (Holzman et al., 1996).

Although, the empirical evidence is mixed when it comes to the relationship between the architectural design of public housing and crime, research conducted in Chicago's high-rises indicate that these were places that were plagued by crime and violence (Popkin et al., 2000; Venkatesh, 2000, 2008). In Chicago, high-rise projects such as Robert Taylor Homes, Cabrini-Green, and Henry Horner Homes received most of the attention from the media and the police when it came to social problems such as

crime, disorder, and other issues. Yet, the CHA also managed nineteen low-rise and scattered site public housing developments. The architectural design of Chicago's public housing projects could have an influence on the rates of crime and violence in public housing areas, with high-rise projects experiencing greater vulnerability to crime and violence. Chicago's high-rise projects experienced problems with elevators, poor lighting in enclosed hallways and stairwells, and fewer public spaces for residents to exert social control (Popkin et al., 2000; Venkatesh, 2000, 2008). These design characteristics of high-rise projects could have provided more opportunities for crime to occur (see Newman, 1972; Newman & Franck, 1980). With Chicago, in particular, the high-rise projects often experienced many social issues such as poor management and lack of building security, which could have interacted with the design conditions to contribute to a reduction in social control, which can have an influence on the occurrence of crime.

Size

Previous research examining the association between the size of a project and crime has shown a strong and consistent relationship. This research has found that large public housing projects tend to experience greater rates of crime than smaller sized projects (Holzman et al., 1996; Newman, 1972; Newman & Franck, 1980; Roncek, Bell, and Francik, 1981). The size of Chicago's high-rise projects varied from large projects with over 4,000 housing units to relatively small high-rise projects with less than 150 housing units (see Appendix A). Additionally, Chicago's low-rise developments also varied in size, with housing units ranging from 120 units to 1,500 units.

Robert Taylor Homes, a high-rise project, was the largest housing development in the United States with 4,349 housing units. Up until the mid 1990s, there were eleven CHA high and low-rise public housing developments that had more than a 1,000 housing units. The CHA was well known for its large scale projects, but there were also nine projects that had fewer than 150 housing units. Therefore, housing developments do vary in their size and it is likely that this variation has an influence on the crime rate, with larger projects experiencing higher rates of crime (see Holzman et al., 1996; Newman, 1972; Newman & Franck, 1980; Roncek et al., 1981).

Externality

Externality refers to whether a public housing project is located in a tract that has a large concentration of public housing units and/or is adjacent to other tracts containing public housing. The interaction with mainstream society is reduced when individuals reside in areas with a high concentration of housing projects. For instance, Racine Courts was a relatively small public housing project comprised of 120 housing units. Racine Courts was located solely in one census tract and there were no other tracts containing a project adjacent to Racine's Courts location. There were an additional twelve projects in Chicago that were not located adjacent to other tracts containing public housing. By contrast, north of Racine Courts is what was known as the *State Street Corridor*, which was comprised of almost 8,000 public housing units located in just eight census tracts. The *State Street Corridor* area included Robert Taylor Homes, Hilliard Homes, Ickes Homes, Stateway Gardens, and Dearborn Homes. There were five other highly concentrated public housing areas in Chicago: the Horner-Rockwell Group, the Cabrini-Green Group, the ABLA Group, Wells Group, and the Lakefront Properties Group. The

externality of public housing in Chicago ranged from areas where large concentrations of public housing projects were located to relatively remote projects that were not surrounded by other public housing. Therefore, residents of Racine Courts may have had more opportunities to interact with mainstream society because they were not located among a host of other public housing developments, as were the residents of the Robert Taylor Homes.

Although previous research has not determined the impact that the externality of public housing has on crime, the effects of a large number of public housing units in a relatively small area have been shown to concentrate poverty and increase isolation (Bickford & Massey, 1991; Massey & Denton, 1993; Massey & Kanaiaupuni, 1993). Additionally, many of the areas in Chicago that contained large concentrations of public housing units were composed of predominately high-rise projects. The architectural design of these groupings of high-rises could have affected the overall social control for the area, with less social control being exerted due to the limited and defenseless public spaces of the high-rise projects. Therefore, one can hypothesize that a project located in an area surrounded by other public housing projects will have a higher crime rate than a project that is secluded from other public housing projects.

Residential Composition

Just like there are differing characteristics of neighborhood disadvantage and physical environment, there is not just one type of public housing resident. Thompson and Saegert (1998) developed a typology of public housing residents and families to show the variability of residents who reside in public housing. In this typology, not all public housing residents can be classified as *distressed* residents who are unemployed,

uneducated, and isolated. Public housing developments house residents who are involved in the community, employed, and enrolled in school as well (Thompson & Saegert, 1998).

Leaseholders, non-leaseholders, and squatters all lived in Chicago's Robert Taylor Homes (Venkatesh, 2002, 2008). The leaseholders were occupants who were recognized as legal residents; they comprised 56% of all residents in the project (Venkatesh, 2002, 2008). Non-leaseholders, who comprised 27% of Robert Taylor's population, were subleasing families or individual boarders who resided with a leaseholder (Venkatesh, 2002, 2008). These non-leaseholders were often comprised of family, friends, or significant others of leaseholders. Non-leaseholders resided in public housing apartments "off-the-lease" for long periods of time without being an authorized resident (Venkatesh, 2002, 2008). Squatters, who comprised of 16% of the project's resident population, were occupants of apartments that had been recently vacated or officially designated as vacant by the CHA (Venkatesh, 2002, 2008). Venkatesh (2002, 2008) indicates that squatters normally paid management staff a monthly fee or carried out services for unofficial authorization to live in the building. Therefore, the official number of public housing residents reported by housing authorities may underestimate the actual number of residents who reside in the developments. Researchers should take into account the variability that exists between public housing residents, but this is often difficult to accurately accomplish because of the presence of non-leaseholders and squatters (Fagan, Dumanovsky, Thompson, & Davies, 1998).

The variation in the residential composition of a neighborhood can influence the social dynamics in the area and, ultimately, the crime rate. Research has shown that

unemployment, isolation, and school failure are correlated with crime and delinquency (Fagan, Piper, & Moore, 1986; Fagan & Pabon, 1990; Paternoster & Bushway, 2001; Sweeten, Bushway, & Paternoster, 2009). Residents of low income neighborhoods, who are unemployed, uneducated, and isolated, may seek criminal outlets to gain income and status. It is not that the residents are inherently more crime prone, but it is the interaction of the physical and social environment of public housing that may create more opportunities for crime to occur (Taylor & Harrell, 1996). With the ubiquitous presence of drug markets and underground economies in Chicago's public housing (Venkatesh, 2000; 2008), residents who lacked legitimate resources to gain income and status may have been drawn to these illicit markets.

Chicago's Public Housing and Gangs

Some of the most infamous public housing projects in Chicago experienced a strong gang presence (Popkin et al., 2000; Venkatesh, 2000, 2008). The environment of these housing developments allowed the local gangs to prosper. The physical design of the projects provided gangs with opportunities to engage in predatory crimes and the lack of informal social control by law abiding residents enabled the gangs to establish drug operations in the public spaces of the projects.

Ethnographic and survey research that was conducted in Chicago's public housing provides a glimpse into the relationship between project residents and street gangs. Popkin et al. (2000) conducted observational, interview, and survey research in three of the city's high-rise public housing projects: Henry Horner Homes, Harold Ickes Homes, and Rockwell Gardens. Part of this study included measuring the resident's perceptions of gangs and crime, both inside and outside of their "home" project. The results of this

study indicate that in all three housing projects, residents viewed gangs and drugs as a major problem. The percentage of residents reporting gangs and drugs as a major problem in their housing projects never dropped below 50% and often reached as high as 80% or 90%. All three of these large high-rise projects were notorious for their physical decay, concentrated poverty, and overall poor living conditions. It is likely that the physical and social conditions of these projects allowed gang and drug activity to flourish.

Sudhir Venkatesh (2000, 2008) conducted ethnographic research in Chicago's Robert Taylor Homes. Venkatesh (2000, 2008), over an 18 month period, studied the interactions between the Black Kings street gang and the residents of the project. Although gangs were often viewed negatively by the residents of Robert Taylor Homes, the gang and the residents maintained a symbiotic relationship. The Black Kings provided social control, organization, and protection by resolving resident disputes, hosting sporting events and escorting residents across the project's grounds. However, the residents were aware of the destruction that the gang caused and were often the victims of gang violence. Robert Taylor Homes was closed in the late 1990s and the closure of the project helped to disband the Black Kings gang. The breakup of the gang coinciding with the demise of Robert Taylor indicates that the physical and social environment of the project provided conditions ripe for the gang to flourish.

Public Housing and Crime

Public housing has become almost synonymous with crime. Yet the relationship between crime and public housing is often "taken on faith" instead of empirical evidence (Davies, 2006, p.7). The evidence that does exist has produced inconsistent results,

because measures of crime in public housing have been sporadic and unsystematic (Holzman & Piper, 1998). Nevertheless, more recent criminological research has generally shown that neighborhoods encompassing public housing tend to have higher rates of crime (see Davies, 2003, 2006; Fagan & Davies, 2000; McNulty & Holloway, 2000).

Early criminological studies of public housing produced mixed results in determining the criminogenic effects of public housing. An explanation for these mixed results could be due to the worsening conditions of many public housing developments across the United States. These changing conditions could have caused different results to be found between studies conducted in the 1980s compared to the 1990s. For instance, Roncek et al. (1981) analyzed public housing in Cleveland and, after controlling for socio-demographic and economic characteristics, proximity to public housing was not found to have a significant effect on violent crime. Likewise, Farley (1982) did not find a significant difference in the rates of crime between public housing and non-public housing neighborhoods in St. Louis. In contrast to the two aforementioned studies, Dunworth and Saiger (1993) analyzed crime in public housing projects in three cities: Los Angeles, Phoenix, and Washington, D.C. They discovered that rates of drug and violent offenses were higher in public housing in comparison to city-wide rates. Specifically, Los Angeles and Phoenix experienced rates that were twice as large as their respected city-wide rates (Dunworth & Saiger, 1993). Therefore, the declining conditions of public housing from the late 1970s to the 1990s may help to explain the inconsistent results produced in the early research pertaining to public housing and crime.

More recently, Fagan and Davies (2000) found that public housing developments in the Bronx have high rates of violence and generally these rates exceed those neighborhoods that do not have public housing. Furthermore, Fagan and Davies (2000) discovered that violent crime tends to migrate out from the housing projects to the surrounding neighborhoods. Many of the violent incidents that occurred in public housing took place within 200 yards of the projects. In their concluding remarks, Fagan and Davies (2000) suggested that theory is needed to explain crime occurring in public housing projects.

Drawing on this lack of theory, Davies (2003) applied informal social control theory to explain crime occurring in public housing. Informal social control theory is based on the components of social ecology and social disorganization, including economic deprivation, mobility, racial segregation, and family disruption. Public housing developments are often associated with these components, which coincide with a lack of informal social control. Davies (2003) found that violent crime was concentrated in public housing in the Bronx, with crime diffusing back and forth from public housing to the surrounding neighborhood, due to the lack of informal social control. According to Davies (2003), informal social control has the potential to prevent the diffusive effects of violence and other crimes in and around public housing.

Although Davies (2003) indicates that the lack of informal social control can have an influence on the crime rates in public housing, it remains unclear as to whether the lack of informal social control is caused exclusively by neighborhood disadvantage conditions or if the physical characteristics of the projects also play a role in reducing social control. Peterson et al. (2000) address this issue by analyzing the impact of local

institutions on crime. The results of this study indicate that the presence of public housing does not have a significant independent effect on rape, robbery, or aggravated assault (Peterson et al., 2000). They did discover a significant relationship between public housing and homicide, but they explained this relationship as a consequence of the strong association between public housing and economic disadvantage (Peterson et al., 2000). These results suggest that the relationship between public housing and crime may be based on levels of disadvantage rather than the physical characteristics of the projects.

Public Housing and Homicide

The existing research on homicide attempts to explain why homicides occur at certain locations, during specific times of days, and involve certain individuals. Furthermore, homicide research has attempted to explain lethal violence by disaggregating homicides by subtypes and victim offender relationships (Cao, Hou, Huang, 2008; Decker, 1993; Kubrin, 2003; Messner & Tardiff, 1985; Pizarro, 2005, 2008). Homicides are not homogenous and the covariates for homicide do vary based on homicide subtype and victim offender relationships. For example, Kubrin (2003) found that differing neighborhood conditions are associated with specific motivations (subtypes) for homicide, which suggests that the characteristics of neighborhoods may have an influence on the nature of homicides that occur. Although homicide research is abundant, there have been only a few studies pertaining to homicides occurring in public housing.

Two studies have examined whether certain motivations for homicide occur with a greater frequency in public housing projects. Pizarro (2008), in her analysis of disaggregated homicides occurring in Newark, New Jersey, found that drug involved

homicides are twice as likely to occur in public housing in comparison to non-drug involved homicides. By contrast, Griffiths and Tita (2009) analyzed homicides involving residents of five large public housing developments in Los Angeles. They found that the frequencies of gang, drug, familial, argument, felony, and "other" motivations for homicide vary between public housing and non-public housing areas, but that these homicides occur relatively proportionately across public housing and non-public housing areas.

In addition, Griffiths and Tita (2009) studied the spatial typology of homicides occurring in public housing. The spatial typology of homicide refers to the location of the incident and the residences of both the offender and the victim (Griffiths & Tita, 2009). These authors found that public housing and non-public housing areas differ for the spatial typology of homicide. The results of this spatial analysis indicate that homicides occurring in public housing areas are more likely to be internal homicides, with the offenses occurring within the public housing development and involving project residents as both the offender and the victim. Griffiths and Tita (2009) found that less than one quarter of all public housing homicide offenders committed murder outside of their home complexes and that public housing is not a generator of violence outside of the projects. Thus, homicide in public housing tends to be a relatively "local" phenomenon (Griffiths & Tita, 2009).

Conclusion

The public housing-crime literature has produced some inconsistent results; yet for the most part, recent studies appear to indicate at least a weak to moderate relationship. These studies generally show that public housing neighborhoods experience

more crime and violence in comparison to non-public housing neighborhoods (Davies, 2003, 2006; Dunworth & Saiger, 1993; Fagan & Davies, 2000). Some of this literature found that large high-rise projects experience more crime and violence than smaller projects of other architectural designs (Newman, 1971; Newman & Franck, 1980). Nevertheless, there are public housing-crime studies that found contradictory results to the aforementioned research. These studies found that neighborhoods containing public housing are not anymore crime prone than non-public housing neighborhoods, once neighborhood disadvantage characteristics are taken into account (Farley, 1982; Roncek et al., 1981; Peterson et al., 2000). Further, Holzman et al. (1996) found that high-rise public housing residents experienced a lower fear of crime than residents living in other architectural designs of public housing. These conflicting results can in part be attributed to the unsystematic and sporadic measures of crime and violence occurring in public housing projects (Holzman & Piper, 1998). Therefore, it is important to disentangle whether public housing has an independent effect on homicide, after controlling for neighborhood disadvantage and social isolation.

Apart from the research determining the influence of public housing on crime, there have only been a few studies that specifically analyzed homicides occurring in public housing projects. This research suggests that drug motivated homicides are more likely to occur in Newark's public housing than other motivations for homicide (Pizarro, 2008), disaggregated homicide motivations occur relatively proportionately across southeast L.A.'s public housing and non-public housing areas (Griffiths & Tita, 2009), and homicides occurring in southeast L.A.'s public housing developments tend to be a relatively "local" phenomenon (Griffiths & Tita, 2009). However, it is still uncertain if

Chicago's public housing areas could be described as micro-places that influence the occurrence of different motivations for homicide, when controlling for neighborhood disadvantage and social isolation.

Previous research also indicates that not all public housing projects are the same. Housing projects can differ in their conditions of neighborhood disadvantage, social isolation, physical environment, and residential composition (Bickford & Massey, 1991; Fagan et al., 1996; Holzman et al., 1996; Massey & Kanaiaupuni,, 1993; Newman, 1972; Newman & Franck, 1980; Thompson & Saegert, 1998). We know that variation exists between public housing projects; however, what needs further study is what specifically sets certain public housing areas apart from other public housing areas and how these differences can influence homicide rates. From reviewing the public housing-crime literature, there is a need for further research. This need for further research will guide the research strategy used for this dissertation.

CHAPTER 4

RESEARCH STRATEGY

This dissertation examines the relationship between the presence of public housing in neighborhoods and homicide rates. In doing so, some of the limitations of previous studies will be addressed. First, existing research exploring the influence of public housing on homicide rates has produced some inconsistent results (see Peterson et al., 2000). Therefore, this study will disentangle the independent effect of the presence of public housing on tract homicide rates, while controlling for conditions of neighborhood disadvantage, social isolation, and residential composition, precisely because public housing is often associated with these conditions. In this dissertation, structural conditions are conceptualized as neighborhood disadvantage and both racial and class isolation are conceptualized as social isolation. Residential composition is conceptualized as the compositional makeup of the tract population, such as educational attainment and enrollment, gender distribution, and vehicle access.

Additionally, public housing developments experience unique physical and social environments. The unique physical environment of public housing areas may have an influence on the rates of crime and violence occurring in these areas (Jeffery, 1971; Newman, 1972; Newman & Franck, 1980). The physical environment varies across tracts containing public housing; as a result, differences in the physical environment are predicted to influence the rates of lethal violence. The outlier tracts with public housing are predicted to be predominately large high-rise family developments. Including and excluding these outlier tracts with public housing from the analyses will, in part, indirectly determine whether the physical environment of large high-rise family based

developments has an effect on the rates of lethal violence, when neighborhood conditions are controlled. Additionally, management problems and organizational issues have been shown to influence the social environment of public housing areas (see Bryne et al., 2003; Fagan et al., 1998; Popkin et al., 2000; Schill, 1993; Venkatesh, 2000). Research has indicated that eviction policies, poor management, delays in leasing apartments, inadequate transportation, few nearby recreational facilities, and insufficient building security can contribute to social problems, which can make public housing areas socially distinctive from neighborhoods without public housing (see Bryne et al., 2003; Popkin et al., 2000; Popkin et al., 2003; Schill, 1993; Venkatesh, 2000). Thereby, when neighborhood conditions are controlled across tracts, the characteristics associated with public housing areas will be the main theoretical difference that exists. Thus, the presence of public housing in a tract will be utilized as a proxy measure for public housing characteristics and will indirectly determine the influence that the physical and social environment of public housing areas have on homicide rates.

Most research has analyzed aggregated homicides occurring in public housing areas, which prohibits in-depth analysis of the specific motivations for homicides that occur with greater frequency in tracts with public housing. This dissertation will examine the nature of lethal violence occurring in Chicago's tracts with and without public housing by analyzing homicides disaggregated by motive. Specifically, it will be determined whether certain types of homicide occur at greater rates and disproportionately in tracts with public housing compared to tracts without public housing, while controlling for neighborhood disadvantage, social isolation, and residential composition. At a broader level, the purpose of this analysis is to explore

whether tracts with public housing can be thought of as micro-places which influence the nature of crime in the area. Homicides will be disaggregated into five distinct motivations: gang, drug, robbery, domestic, and "other." "Other" motivated homicides will include burglary and sex motivations, as well as any other remaining homicide not fitting the gang, drug, robbery, or domestic homicide definition. Homicides are disaggregated into these five distinct motivations based on the known characteristics of homicides in Chicago, as well as previous research analyzing disaggregated homicides (Block & Block, 1993; Block & Martin, 1997; Popkin et al., 2000; Pizarro, 2008; Venkatesh, 2000, 2008).

To address the above mentioned areas of study, negative binominal regression analyses will be conducted. These analyses will determine whether the presence of public housing influences tract level homicide rates over and above of other tract characteristics. However, to provide a more complete understanding of the nature of lethal violence, it is also important to examine the proportionate differences between tracts with and without public housing for type specific homicides. Therefore, in addition to the negative binominal regression, bivariate analyses will be conducted to determine whether certain motivations for homicide occur disproportionately in tracts with public housing than in tracts without public housing. The units of analysis for all methodological approaches and research questions are census tracts.

Regression analysis may overestimate the strength of the true relationship between the independent and the dependent variables due to the presence of outliers in the models. I am predicting that large high-rise projects located among a host of other projects in extremely disadvantaged, isolated, and residentially distinct areas will have an

influence on the rates of lethal violence. Previous research has shown a strong relationship between adverse neighborhood conditions and lethal violence (Lee, 2000; Morenoff et al., 2001; Peterson & Krivo, 1993; Peterson et al., 2000; Sampson et al., 1997; Sampson, 1987; Shihadeh & Flynn, 1996; Shihadeh, 2009). Additionally, projects which are of the large high-rise design are believed to be more crime prone than projects of smaller size and different design (see Jefferies, 1971; Newman, 1972; Newman & Franck, 1980). Therefore, these outlier tracts may have an influence on the rates of homicide. To explore this possibility, principal component analysis was used to create a factor score of neighborhood disadvantage, social isolation, and residential composition and tracts were ranked based on this factor score[1].

The top 5% and 10% of the tracts with the highest factor score of neighborhood disadvantage, social isolation, and residential composition with and without public housing in Chicago will be identified and trimmed from the analyses after the initial estimation of the regression models with the full sample of tracts. Excluding these outlier tracts from the analyses are predicted to influence the results. I am predicting that these outlier tracts experience unique conditions and characteristics, which increases the crime rate for these areas. Therefore, in contrast to the full sample analysis, the presence of public housing will not be a significant predictor of the rates of lethal violence when the outlier tracts are trimmed from the analysis. I predict that conducting the analysis without the subset of outlier tracts comprised mostly of large high-rise projects located among a host of other projects in disadvantaged, isolated, and residentially distinct areas

[1] The factor scores ranged from -6.66 to 3.77, with the scores of the top 5% of the most extremely disadvantaged and isolated tracts ranging from -6.66 to -3.64 and the scores of the top 10% of tracts ranging from -6.66 to -2.81. See Appendix B.

will show a non-significant effect of the physical and social environment on homicide rates. Thus, indicating that this effect is solely found amongst the outlier tracts and the effect of public housing is mostly driven by neighborhood conditions.

Both tracts with and without public housing will be trimmed from the analysis. The trimming the top 5% and 10% of tracts, regardless of the presence of public housing, will enable a clearer estimation of the influence that the presence of public housing (i.e. the physical and social environment) has on the rates of homicide, because all outlier tracts with and without public housing will be removed. There will be different samples utilized: the full sample of tracts with and without public housing (n=800) and the samples excluding the top 5% (n=760) and top 10% (n=720) of outlier tracts. Excluding the top 5% of disadvantaged, isolated, and residentially distinct tracts will remove a total of 40 tracts with 34 of the tracts containing public housing and removing the top 10% will reduce the sample by 80 tracts with 37 of these tracts containing public housing. Because of these different samples, there will be multiple negative binominal regression models estimated in this dissertation. Negative binominal regression will first be estimated with the full sample of tracts with and without public housing and then the regression models will be re-estimated excluding the different subsets of outlier tracts from the models.

In the models with the full sample of tracts, I hypothesize *that the presence of public housing will be a significant predictor for the total homicide rate and for the rates of gang and drug motivated homicides, when controlling for neighborhood disadvantage, social isolation, and residential composition*. The reason for this predicted hypothesis and direction is due to the inclusion of a subset of outlier tracts, which will have an

influence on the total, gang, and drug motivated homicide rates. I predict that the outlier tracts with public housing will be predominantly comprised of family based projects that are large high-rise developments located adjacent to other public housing in disadvantaged, isolated, and residentially distinct areas. Including these tracts in the models will establish that there is a significant relationship between the presence of public housing and lethal violence, when controlling for neighborhood disadvantage, social isolation, and residential composition. This significant effect is predicted to be due to the unique physical and social environment of the outlier tracts. Results consistent with this hypothesis would suggest that the presence of public housing (i.e. the physical and social environment) has an independent effect on tract level homicide rates. With the full sample of tracts, I believe that the physical and social environment, along with neighborhood conditions, can explain violence occurring in public housing areas.

In the models that exclude the outlier tracts, I hypothesize *that the presence of public housing will not be a significant predictor for the rates of total, gang, drug, robbery, domestic, and other motivated homicide, when controlling for neighborhood disadvantage, social isolation, and residential composition*. I am making this prediction based on previous research which suggests that there is variation that exists across neighborhoods with and without public housing and this variation can have an influence on violence (Bickford & Massey, 1991; Fagan et al., 1998; Jeffery, 1971; Lee, 2000; Massey & Kanaiaupuni, 1993; Morenoff et al., 2001; Newman, 1972; Newman & Franck, 1980; Peterson & Krivo, 1993; Shihadeh & Flynn, 1996; Shihadeh, 2009; Thompson & Saegert, 1998). Therefore, removing the subset of outlier tracts from the analysis will establish that the presence of public housing is not always a significant

predictor of lethal violence. The reason for these varied hypotheses between the full and trimmed sample of tracts is that, due to the physical and social environment of the outlier tracts with public housing, *including* these outlier tracts will produce a significant effect of the physical and social environment and *excluding* these outlier tracts will produce a non-significant effect of the physical and social environment on homicide rates.

Along with the prediction that the physical and social environment will show an effect on the rates of homicides with the full sample of tracts, I also believe that neighborhood conditions will influence rates of lethal violence occurring in public housing areas as well. Further, when the outlier tracts are removed from the full sample, I am predicting that lethal violence occurring in public housing areas will be solely influenced by neighborhood conditions and the physical and social environment will not be a significant predictor of lethal violence. Therefore, with the trimmed sample, the presence of public housing (i.e. physical and social environment) will not be significantly influencing lethal violence, but the conditions of neighborhood disadvantage, social isolation, and residential composition will be significantly influencing of the rates of lethal violence.

If the predicted contradictory results are found between the negative binominal regression analyses with different samples, there is the possibility that the conditions and characteristics associated with a subset of outlier tracts maybe influencing the homicide rates. Disentangling the relationship between the presence of public housing and homicide is the main purpose of this dissertation, therefore, bivariate analyses will be conducted to determine how the subset of outlier tracts with public housing differ from the non-outlier tracts with public housing.

Research Questions and Hypotheses

Based on previous research and theory, the following questions are explored in this dissertation.

Research Question 1: Does the presence of public housing in tracts affect homicide rates?

Strategy A: Negative binominal regression with full sample of tracts

Hypothesis 1: The presence of public housing will have a significant positive independent effect on the total homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition.

Negative binominal regression will be used to estimate the effect of public housing on the homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. Public housing areas have been shown to experience greater rates of crime and violence in comparison to non-public housing areas (Davies, 2003, 2006; Dunworth & Saiger, 1993; Fagan & Davies, 2000; McNulty & Holloway, 2000). However, Peterson et al. (2000) found that when controlling for poverty and disorganization, public housing in Columbus, Ohio is not a significant predictor of homicide. Nevertheless, public housing in Chicago was vastly different from public housing in Columbus and previous ethnographic and qualitative research conducted in Chicago indicates that violence was a major issue facing public housing residents (Popkin et al., 2000; Venkatesh, 2000).

I hypothesize that the presence of public housing in census tracts will have a significant positive independent effect on the total homicide rate, even when controlling for neighborhood disadvantage, social isolation, and residential composition.

Consequently, because the presence of public housing is used as a proxy for physical and social public housing characteristics, I am predicting that the physical and social environment of public housing areas will have an independent influence the total homicide rate. Additionally, I believe that not only will the physical and social environment influence homicide rates in public housing areas, but adverse neighborhood conditions will have an influence as well. This prediction is due to the inclusion of tracts that encompass large high-rise projects located adjacent to other projects in disadvantaged, isolated, and residentially distinct areas. In this regression analysis the entire 800 tracts regardless of their conditions of neighborhood disadvantage, social isolation, and residential composition are included in the models.

Some of the most notorious projects such as Robert Taylor Homes and Cabrini-Green are located in tracts included in these regression models. Specifically, the large high-rise projects located in groupings of other projects will have an influence on the homicide rate. Determining that the presence of public housing has an independent effect on the homicide rate will suggest that the physical and social environment of public housing is influencing the relationship with violence. However, if the presence of public housing is not a significant predictor of homicide, then we can determine that the physical and social environment of public housing does not have an independent effect on the homicide rate. High rates in these areas are likely due, then, to mostly neighborhood conditions such as disadvantage, isolation, and residential composition of public housing properties.

Strategy B: Negative binominal regression excluding outlier tracts.

Hypothesis 2: The presence of public housing will not have a significant positive independent effect on the total homicide rate, because the exclusion of a subset of outlier tracts from the analysis will establish a non-significant relationship between the presence of public housing and the total homicide rate.

Negative binominal regression will be conducted to determine whether the presence of public housing has an independent effect on the total homicide rate, when outlier tracts are excluded from the models. Principal component analysis was used to create a factor score that combines neighborhood disadvantage, social isolation, and residential composition[2]. Tracts were ranked based on this factor score and the top 5% and 10% of tracts will be trimmed from the analysis. There are a total of 40 and 80 tracts experiencing extreme levels of disadvantage, isolation, and residential composition that will be excluded from the sample used in this particular analysis. Trimming these outlier tracts from the analysis will enable me to determine whether the unique conditions and characteristics associated with these tracts are having an influence on lethal violence. In this second regression analysis, I hypothesize that the exclusion of these outlier tracts will establish that the presence of public housing is not a significant predictor of the total homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. I am predicting that these adverse neighborhood conditions will explain the high rates of homicides occurring in this sample of tracts.

If this regression analysis finds that the presence of public housing is not a significant predictor of the total homicide rate, then we can conclude that the presence of public housing (i.e. physical and social environment) in most tracts does not have a significant

[2] See Appendix B.

independent effect on the homicide rate. This would suggest that the high-rates of homicides occurring in public housing areas can be mainly attributed to the area's conditions of disadvantage, isolation, and residential composition. Additionally, this finding would indicate that the subset of outlier tracts is influencing the predicted results of the regression analysis. I am predicting that the outlier tracts containing public housing will be uniquely conditioned and excluding these tracts will establish that the presence of public housing is a non-significant predictor of homicides.

However, if the presence of public housing is a significant predictor of the total homicide rate for the models with the trimmed samples, then this would indicate that the physical and social environment of the projects have a significant effect on total homicide rate, net of neighborhood conditions. If this takes place, then the effect of the physical and social environment is occurring outside of the influence of the outlier tracts with public housing that were excluded from the analysis. This analysis may also help to explain the inconsistent findings of past research.

Research Question 2: Are motivations for homicides that occur in tracts with public housing different from motivations for homicides that occur in tracts without public housing?

Q2A: Strategy A-Negative binominal regression with full sample of tracts.

Hypothesis 3: The presence of public housing will have a significant influence on the rates of gang and drug motivated homicides, but the presence of public housing will not have a significant influence on the rates of robbery, domestic, and "other" motivated homicides, when controlling for neighborhood disadvantage, social isolation, and residential composition.

Q2b: Strategy C- Bivariate analyses with full sample of tracts

Hypothesis 4-Gang and drug motivated homicides will comprise a greater proportion of all homicides in tracts containing public housing than in tracts without public housing, however; robbery, domestic, and "other" motivated homicides will comprise a greater proportion of all homicides in tracts without public housing than in tracts with public housing.

To determine the nature of lethal violence in tracts with public housing and without, both negative binominal regression and bivariate analyses will be conducted. Specifically, these analyses will determine whether certain motivations for homicide occur at a higher rate and disproportionately in tracts containing public housing compared to tracts devoid of public housing, when controlling for neighborhood disadvantage, social isolation, and residential composition. For both the negative binominal regression and bivariate analyses, the full sample of tracts with and without public housing is included in the analyses.

Based on previous studies (Popkin et al., 2000; Venkatesh, 2000, 2008), I am predicting that the negative binominal regression analyses will indicate that the presence of public housing is a significant predictor of gang and drug motivated homicides. However, I am predicting that the presence of public housing will not be a significant predictor for robbery, domestic, and "other" motivated homicides. The justification for this prediction is because the physical and social environments of public housing areas are more conducive to instrumental gang and drug related violence. Because public housing areas in Chicago were known as gang "set" spaces and there was a strong drug presence, I am predicting that there will be higher rates of gang and drug motivated

homicides in public housing areas than in areas without public housing. With gangs controlling the drug markets in many of Chicago's projects, the social control exercised by the gangs could have provided fewer opportunities for violence to erupt between individuals not associated with the gang and not involved with drug sales. If the gangs allowed excessive non-instrumental violence between gang and non-gang members to occur in their drug markets, this would provide undue attention and possibly shut down their profitable business. Therefore, because the physical and social environments of Chicago's public housing areas allowed gangs to manipulate the area and residents; I am predicting that the presence of public housing will not be a significant predictor of robbery, domestic, and "other" motivated homicides. I predict that the physical and social environment of public housing will have an effect just on the rates of gang and drug motivated homicides, but I believe that neighborhood conditions will also have an effect on all types of lethal violence occurring in public housing areas in this full sample of tracts.

Bivariate analyses will be conducted to determine whether certain motivations for homicide occur disproportionately in tracts with public housing than in tracts without public housing. I predict that gang and drug motivated homicides will constitute a larger proportion of all homicides occurring in tracts containing public housing than in tracts not containing public housing. Whereas, robbery, domestic, and "other" motivated homicides will comprise a greater proportion of all homicides in tracts without public housing than in tracts containing public housing.

Specifically, I hypothesize that the rates of gang motivated homicides in tracts containing public housing will be significantly higher than the rates of gang motivated

homicides in tracts devoid of public housing. Past research has shown that gang "set" spaces experience a higher rate of crime and violence than areas for which gangs do not congregate (Tita & Ridgeway, 2007; Taniguchi, Ratcliffe, & Taylor, 2011) and public housing in Chicago has been shown to be hotspots for gang activity (Hagedorn, 2005, 2008; Popkin et al., 2000; Venkatesh, 2000, 2008). Therefore, the presence of public housing will be a significant predictor of gang motivated homicide rate. Although, there are non-public housing areas in Chicago that are also gang set spaces, I predict that the physical and social environments of public housing areas are more conducive to gang violence.

However, if the results of this analysis turn out not to be consistent with this primary theoretical hypothesis and the presence of public housing is not a significant predictor of gang motivated homicides, then the explanation for the alternative hypothesis is that gangs located in some of Chicago's public housing areas could have exercised social control to reduce excessive non-instrumental violence from occurring on project grounds, in order, to minimize negative attention and maximize drug profits (see Hagedorn, 2005; Venkatesh, 2000). Therefore, gang presence may affect rates of lethal violence differently in public housing areas than in areas without public housing.

One would expect that if gangs exercise social control in public housing areas then there would be a suppressive effect with gang motivated homicides occurring at a significantly lower rate in public housing areas. However, this interaction might actually produce a non-significant effect rather than a suppressive effect. For instance, there may have been a stronger gang presence in public housing areas than in areas without public housing, but the physical environment of some of Chicago's public housing areas may

have allowed gangs to control their drug markets with less excessive violence than in areas devoid of public housing. With this strong gang presence in Chicago's public housing areas, crime and violence will still occur, however the rates of excessive acts of violence may not be as high as expected due to the protection and social control offered by the physical environment.

Meanwhile, gang presence outside of public housing areas might not be as strong as within public housing areas, but the gangs conducting drug sales on the street may have to engage in more excessive violence to maintain their drug turfs than their public housing counterparts. When conducting the regression analyses, any significant differences might be negated because of the stronger gang presence with less excessive violence in public housing areas and the weaker gang presence with more excessive violence in areas without public housing. Thus, gang presence interacting with the physical environment in public housing areas and the more unstable nature of gang and drug activity outside of the projects may have a self-cancelling effect on the gang motivated homicide rate, which could produce a non-significant relationship between the presence of public housing and the gang motivated homicide rate.

Since some of the projects contain known drug markets, I hypothesize that the rates of drug motivated homicides in tracts containing public housing will be significantly higher than the rates of drug motivated homicides in tracts not containing public housing. It is important to note that even if the gangs controlled the drug markets, the motivating factor for drug motivated homicides will be caused by issues strictly surrounding drugs.

Though, if this significant relationship does not exist, then the explanation for the alternative hypothesis is that the social control exercised by the drug selling gangs in

public housing areas combined with the protection from the physical environment may have reduced the amount of excessive non-instrumental type violence from occurring in project areas. However, as Hagedorn (2005) indicates, drug sales on the street were often more volatile than drug sales in the projects. Thus, drug selling gangs may have been more prevalent in the projects, but the gangs on the street may have engaged in more violent behavior to control drug markets. This interaction could produce a self-cancelling effect on the drug motivated homicide rate and a non-significant relationship. Gang presence may, then, affect drug motivated homicide rates differently in areas with public housing than in areas without public housing.

I hypothesize that the presence of public housing will not be a significant predictor of the rates of robbery motivated homicides. In essence, the rates of robbery motivated homicides in tracts containing public housing should be similar to the rates of robbery motivated homicides in tracts devoid of public housing, because gangs, exerting their social control, will prohibit excessive non-gang and drug related violence from occurring in their set spaces. This exercising of social control could reduce the opportunities for robbery motivated homicides to occur in public housing areas compared to areas without public housing. However, I predict that there may not be a suppressive effect for the areas with public housing due to the circumstances often surrounding the nature of robbery incidents. Robbery often occurs with the perpetrator having an instrumental motive that arises out of an urgent need for money (Jacobs & Wright, 1999). The personal and pressing nature of this type of criminal behavior might be difficult for the gangs to control in public housing areas. Thus, gang presence in public housing areas interacting with the unique physical environment and the circumstances surrounding

robbery may have a self-cancelling effect on the robbery motivated homicide rate, which could produce a non-significant relationship.

Women living in public housing areas are more likely to be the victims of domestic or non-stranger violence than stranger violence (see DeKeseredy, Alvi, Schwartz, & Perry, 1999; Holzman, Hyatt, & Dempster, 2001; Menard, 2001; Renzetti, 2001; Raphael, 2001); however, I am predicting that the rates of domestic motivated homicides in tracts containing public housing will be similar to the rates of domestic motivated homicide in tracts without public housing. I hypothesize that the presence of public housing will not be a significant predictor of domestic motivated homicide. This crime is more expressive in nature and is not related to gangs and drugs, thus I predict that tracts containing public housing will be no more likely than tracts devoid of public housing to experience high rates of domestic motivated homicides.

I hypothesize that the presence of public housing will not be a significant predictor of the rate of "other" motivated homicides. The rates of "other" motivated homicides in tracts containing public housing will be similar to the rates of "other" motivated homicides in tracts devoid of public housing. Again, the reason for this prediction is the social control exercised by gangs in public housing areas, which may prohibit excessive amounts of non-gang and non-drug related crimes and non-instrumental violence from occurring. However, I am predicting that there will not be a suppressive effect on the rates of "other" motivated homicides due to the circumstances surrounding the nature of these acts. "Other" motivated homicides include sex, burglary, and any other homicide not fitting the gang, drug, robbery, or domestic motivation. Given the vast characteristics associated with these homicides, such as the pressing need

for money and sexual gratification, I am predicting that gangs controlling some of Chicago's projects may have difficulty influencing these acts of violence. Thus, gang presence in public housing areas interacting with the unique physical environment and the circumstances surrounding these types of offenses may have a self-cancelling effect on the "other" motivated homicide rate, which could produce a non-significant relationship.

For the bivariate analyses, I am predicting that gang and drug motivated homicides will constitute a larger proportion of all homicides occurring in tracts containing public housing than in tracts without public housing. Whereas, robbery, domestic, and "other" motivated homicides will comprise a larger proportion of all homicides occurring in tracts without public housing than in tracts with public housing. These predictions are based on the same rationale as for the negative binomial regression hypotheses.

The hypotheses between the negative binominal regression analyses and the bivariate analyses may seem contradictory for robbery, domestic, and "other" motivated homicides. However, these seemly contradictory results are a product of the use of proportions. In order to determine whether gang and drug motivated homicides represent a greater proportion of all homicides in tracts with public housing compared to tracts without public housing, then percentages of homicides must be compared. For example, of the 100% of all homicides that take place in tracts with public housing, if 30% are gang motivated and 30% are drug motivated, then the remaining 40% of all homicides are spread among the remaining homicide types. Further, of the 100% of all homicides that take place in tracts without public housing, if only 10% are gang motivated and 10%

are drug motivated, then the remaining 80% are spread among the remaining homicide types. Thus, given this hypothetical distribution, robbery, domestic, and "other" motivated homicides will comprise a greater proportion of all homicides in tracts without public housing compared to tracts with public housing, because they constitute a larger proportion of the total number of homicides.

Finding that gang and drug motivated homicides occur at a significantly higher rate and disproportionately in tracts containing public housing will indicate that these areas are micro-places that are distinctive from the surrounding areas. If these hypotheses do not hold true, then this will indicate that tracts with public housing are not specific micro-places that have a significant influence on the nature of lethal violence. Additionally, if public housing is found to be a significant predictor of robbery, domestic, and/or "other" motivated homicides, then this will provide more detail into the nature of lethal violence occurring in public housing areas and help to determine the factors that set public housing areas apart from areas without public housing.

Q2a: Strategy B: Negative binominal regression excluding outlier tracts.

Hypothesis 5-The presence of public housing will not be a significant predictor of the gang, drug, robbery, domestic, and "other" motivated homicide rates, because the exclusion of a subset of outlier tracts from the analysis will establish that there is a non-significant relationship between the presence of public housing and type specific homicide rates in the trimmed sample of tracts.

Q2b: Strategy D- Bivariate analyses excluding outlier tracts.

Hypothesis 6- Gang, drug, robbery, domestic, and "other" motivated homicides will occur proportionately in a sample of tracts with and without public housing, because the exclusion of a subset of outlier tracts from the analysis will show that all motivations for homicides occur proportionately in tracts with public housing and without.

Negative binominal regression will be conducted to determine whether the presence of public housing has an influence on type specific homicides, when outlier tracts are excluded from the models. Given the exclusion of the outlier tracts, I predict that the presence of public housing will not have a significant and independent influence on type specific homicide rates, when controlling for neighborhood disadvantage, social isolation, and residential composition. Additionally, bivariate analyses will determine that the five motivations for homicide occur proportionally in the sample of tracts excluding the outlier tracts. I predict that the outlier tracts, which encompass many large high-rise projects located among a host of other projects, are distinctive from the other tracts and excluding them from the analysis will establish that the presence of public housing is not a significant predictor of the gang, drug, robbery, domestic, and "other" motivated homicide rate. With the trimmed sample of tracts without outliers, the physical and social environment of public housing areas will not significantly influence type specific homicide rates independent of neighborhood disadvantage, social isolation, and residential composition. Therefore, with these models, I am predicting that the homicide rates occurring in the trimmed sample of tracts can be explained mainly by neighborhood conditions rather than the physical and social environments of the projects.

If this hypothesis holds true, we can conclude that most public housing areas are not places that are specifically prone to a certain type of violence. Instead, a small number of outlier tracts are driving the predicted results of the regression analyses within the full sample of tracts and the physical and social environment of these outlier tracts are having an influence on the nature of lethal violence. Additionally, this will indicate that homicides occurring in the non-outlier tracts can be explained predominately by conditions of neighborhood disadvantage, social isolation, and residential composition. However, if there are significant relationships between the presence of public housing (i.e. physical and social environment) and type specific homicide rates in the models with the trimmed sample of tracts, then this will help to determine that most tracts containing public housing are distinctive micro-places that are generators of a certain type of lethal violence. This unexpected finding will indicate that it is not just neighborhood disadvantage, social isolation, and residential composition that are influencing type specific homicide rates, but that the physical and social environment of these tracts have an influence on homicides as well.

Research Question 3: Do differences across tracts with public housing influence the amount and nature of homicide?

Q3: Strategy E- Bivariate analyses with tracts containing public housing.

Hypothesis 7: *Neighborhood disadvantage, social isolation, residential composition, and the physical environment will differ between the subset of outlier trimmed tracts with public housing and the non-trimmed tracts with public housing, which will account for the predicted differences in the results between the negative binominal regression analyses.*

To test hypothesis 7, bivariate analyses will be used to determine the specific differences between the trimmed outlier tracts with public housing and non-trimmed tracts with public housing, which could help to explain any observed differences in the findings between the two regression analyses. I am predicting that the trimmed outlier tracts with public housing will primarily be comprised of large high-rise family public housing developments. These trimmed outlier tracts containing public housing are expected to have high rates of homicide because of their conditions of neighborhood disadvantage, social isolation, residential composition, and the physical and social environment, and the known presence of gangs and drugs (Fagan et al., 1998; Massey & Kanaiaupuni,, 1993; Newman, 1972; Newman & Franck, 1980; Popkin et al., 2000; Roncek et al., 1981; Venkatesh, 2000). Obviously, the subset of trimmed outlier tracts differ from the non-trimmed tracts for neighborhood conditions, but it will be determined whether there are any specific differences in these conditions and if there are differences in the physical environment between two samples of tracts with public housing. Thus, this dissertation will address the specific differences in neighborhood disadvantage, social isolation, residential composition, and the physical environment between the subset of trimmed outlier tracts and the non-trimmed tracts with public housing.

The findings of these bivariate analyses will uncover what is specifically causing any observed contradictory results between the two regression analyses. However, if there are no differences found between the samples of tracts with public housing, then something other than the control variables used in this study is causing the subset of trimmed tracts with public housing to influence local homicide rates.

Data Structuring

Homicide Data

The data for this analysis are taken from the publicly available Chicago Homicide Data set from the time period 1985 to 1995 (Block & Block, 2005). This data set includes detailed information on all homicides that occurred in the city of Chicago. During this time frame there were 8,640 homicides, of which 3,506 took place in tracts containing public housing.

The Chicago Homicide Data set codes homicides based on the Murder Analysis Report (MAR). The MAR includes the narrative and demographic characteristics of the victim and the offender. Homicides can be caused by numerous causal factors such as a fight over children, drugs, and/or retaliation for a previous incident. This data set codes homicides based on the most relevant causal or motivating factor that is provided in the narrative. If there are two motivations for the homicide, then the subsequent causal factor is coded as a secondary motive. Only the primary motivation will be analyzed in this study.

For this dissertation, there are five motivations for homicide that will be distinguished in the analysis: gang, drug, robbery, domestic, and "other" motivated homicides. The Chicago Homicide Data set measures gang motivated homicides based on the causal factor being a gang altercation. This data set utilizes the more conservative definition of a gang homicide—gang motivated. The "Chicago" definition prevents overestimation by using the "gang" label only when a homicide arose due to some street gang function, such as disputes over turf and retaliation for acts committed by a rival gang (Block & Block, 1993; Howell, 1999; Mares, 2010). To be coded as a drug

motivated homicide, there must be positive evidence that a drug related dispute was the cause of the homicide. Drug motivated homicides are classified in this data set as incidents that occurred because of sales or distribution of illegal drugs, including altercations over cost, possession, quality, and markets. For a homicide to be coded as robbery motivated, there must be a clear indication of strong arm robbery or armed robbery. Homicides that involve the victim being a robber will also be coded as robbery motivated. Robbery motivated homicides refer to deaths that result from one participant attempting to take material goods from the other. Domestic motivated homicides include incidents of child abuse, abuse and disputes between intimates, disputes between individuals who live in the same location, love triangles, sexual rivalry and jealousy, altercation over desertion/termination of relationship, and disputes between family members over domestic matters. "Other" motivations for homicide include burglary, sex, retaliation, and any other motivation for homicide not fitting the gang, drug, robbery, or domestic definitions.

Neighborhood Disadvantage and Social Isolation (see Appendix C)

In addition to the homicide data, census data from 1990 will also be used to create indices of neighborhood disadvantage and social isolation for the tracts with and without public housing in Chicago. To construct reliable homicide rates, census tracts with a population less than 500 are removed from the analysis (see Mares, 2010; Peterson et al., 2000), leaving 188 tracts with public housing and 612 tracts without public housing. To be coded as a tract with public housing, the census tract must contain family housing, elderly housing, and/or CHA property. Elderly public housing projects are often non-violent; however non-leaseholders or squatters can reside in the projects "off-the-lease"

(Venkatesh, 2002). Although not typical, some elderly projects may have crime problems as a consequence of the individuals who are residing "off-the-lease" in the project.

Often the neighborhoods for which the projects are located are plagued by neighborhood disadvantage and social isolation (Bickford & Massey, 1991; Holloway et al., 1998; Massey & Kanaiaupuni, 1993). For this dissertation, the structural conditions of a census tract are conceptualized as neighborhood disadvantage and both racial and class isolation are conceptualized as social isolation. Past research indicates that neighborhood disadvantage variables can be highly correlated, thus, an index including poverty, ethnic heterogeneity, and residential instability will be created using principal component analysis (see Morenoff et al., 2001).

Social isolation is captured by both racial and class isolation. Class isolation will be measured by creating an index of concentration at the extremes ("ICE") (Massey, 2001; Morenoff et al., 2001).]"ICE" is operationalized by subtracting the number of poor families from the number of affluent families in a census tract and then dividing by the total number of families in the census tract. According to Morenoff et al. (2001), affluent families have incomes above $50,000 and poor families' incomes must be below the poverty line. The "ICE" index can range from a value of -1 to a +1 value. A census tract that has a score of -1 indicates that the tract experiences extreme poverty and all families are poor in the tract. A census tract that has a score of +1 indicates that the tract experiences extreme affluence and all of the families are affluent in the tract. If there is a score of 0, then there are equal percentages of poor and affluent families in the census tract (Morenoff et al., 2001). A similar strategy will be used to determine racial isolation

in Chicago. An "ICE" measure will be created based on the number of black families subtracted from the number of white families, divided by the total number of families in the census tract. For this dissertation, "ICE" indices will only measure the racial isolation of blacks from whites and not other ethnic/racial groups. Chicago's public housing projects during the time period of this study were extremely segregated and previous research indicates that black and white segregation is conducive to crime and violence (Massey & Denton, 1993; Peterson & Krivo, 1993, 2010; Shihadeh & Flynn, 1996).

Residential Composition (see Appendix C)

Public housing research has shown that residents of public housing are not homogenous (Fagan et al., 1998; Thompson & Saegert, 1998). Most public housing residents are poor; however, some residents have attended college, are employed, are integrated with mainstream society, and are active in their community (Fagan et al., 1998; Thompson & Saegert, 1998). The residential composition variables used in this analysis are taken from the 1990 census and these variables are designed to represent some of the variability that exists across public housing developments that is indicated by previous research (see Fagan et al., 1998; Thompson & Saegert, 1998). Specifically, the percentage of male residents, the percentage of persons 25 years and older who have completed high school, percentage enrolled in school, and the percentage of persons who have access to a vehicle will be used as controls for this dissertation. Access to a vehicle is included because it can be used to determine information pertaining to the mobility of residents. Those residents that have access to a vehicle will be more mobile, thus increasing opportunities for employment and access to social resources. Other census variables such as percentage of individuals under 18 years of age, percentage of female

single headed households, and unemployment can be considered residential composition variables, but for this analysis these variables will be captured with the neighborhood disadvantage variables.

I predict that residential composition interacts with the physical and social environments, which presents opportunities for public housing residents to commit crime. Research has shown that males offend at a higher rate than females, that there is an association between education and crime, and that isolation can be correlated with crime and violence (Fagan & Pabon, 1990; Fagan et al., 1986; Peterson & Krivo, 1993; Shihadeh, 2009; Steffensmeier & Allen, 1996; Sweeten et al., 2009). Not all tracts have large percentages of residents who are male, high-school dropouts, not enrolled in school, and socially isolated, however based on previous research, tracts that do will likely experience a greater rate of crime than tracts that have smaller percentages.

Physical Environment (see Appendix C)

The physical environment characteristics are coded based on research conducted by Hunt (2009) and project location data provided by Dr. Susan Popkin, who is a Senior Fellow at the Urban Institute. From these sources, the size, architectural design, and externality will be coded for each of Chicago's family public housing projects. Size and architectural design are likely to be highly correlated, however, for this dissertation these two variables will be measured separately to determine the specific differences across tracts containing public housing. The physical environment coding scheme will then be applied to the project's respective census tract. Public housing projects have a unique physical environment that can influence the opportunities for and probability of violence in and around Chicago's public housing developments. Much of the initial theoretical

framework for understanding crime occurring in public housing is based on the physical design of the projects that can provide opportunities to commit crime (Newman, 1972). Physical environment characteristics include the size of the project (number of units), style (high-rise/low-rise), and externality. These characteristics can reduce defensible space, reduce social control, and increase the opportunities for crime to occur in public housing.

Size of Project

The size of Chicago's family public housing varied tremendously, with projects ranging in size from 120 housing units to 4,349 units. Previous research has shown that large housing projects exhibit higher rates of crime than smaller sized projects (Holzman et al., 1996; Roncek et al., 1981). Thus, as the size of the project increases, it is predicted that the rate of crime will also increase.

Architectural Design

The architectural design of public housing is thought to influence rates of crime for the area (Newman, 1972; Newman & Franck, 1980). Chicago's public housing was primarily composed of high-rise and low-rise family developments. The high-rise project residents may be unable to establish defensible space, which reduces social control and increases the homicide rate for the project. By analyzing pictures of various high-rise and low-rise projects, it is evident that structural characteristics differ for each design of public housing. Generally, high-rise projects are 10 or more floors high, have only a few ways of egress out of the building, and have courtyards that are characterized by large barren spaces primarily composed of concrete with few grassy areas. On the other hand, low-rise projects are made up of structures that are less than 4 floors high. Often the

surrounding areas and courtyards for the low-rise complexes have more grassy areas and there are more opportunities for residents to establish territory and defensible space.

Externality

In Chicago, parts of the city were comprised of large concentrations of public housing projects, often with over a 1,000 public housing units per census tract. While, in other areas of the city, there were only one or two small projects that encompass less than a 150 units per census tract. Thus, the externality of public housing could influence the rate of homicide for the given area. Upon visual inspection of a map of public housing projects, it is clear that some projects were spatially removed from other projects, thus these projects will likely have a lower homicide rate than those that are grouped in vast tracts of housing developments. The projects that were spatially removed from other public housing projects would likely experience less physical and social isolation because residents are not grouped in areas that are predominately characterized by public housing.

Analytical Methods

Strategy A: Negative binominal regression with the full sample of tracts (see Appendices E & F): Questions 1 and 2a

To address questions 1 and 2a, negative binominal regression will be used to determine the influence of public housing on tract homicide rates and the nature of lethal violence occurring in Chicago's tracts with and without public housing. In these regression models, the full sample of tracts with and without public housing will be included (n=800). There will be a total of six negative binominal regression analyses conducted to address these questions.

Previous research has shown the benefits of using negative binominal regression, which is a Poisson based regression technique, when there is a non-normal distribution (see Appendix D for histograms) (Osgood, 2000). For this dissertation, negative binominal regression is preferable to Ordinary Least Squares (OLS) regression because homicide is a relatively rare event and homicide rates are often non-normal in their distribution (Kubrin & Weitzer, 2003).

With negative binominal regression analyses, the dependent variables must be counts of homicides. However, when a population control measure is included in the models, the results can be interpreted as rates of homicides per capita rather than counts of homicides (Osgood, 2000). The population control measure for this dissertation is established by performing the natural log transformation of the total population. Performing this function normalizes the distribution and enables the results of the analysis to be interpreted as rates rather than counts (Osgood, 2000).

The regression coefficients are exponentiated to standardized form to facilitate interpretation. For instance, if the regression coefficient for variable X is .457. This coefficient (.457) will be exponentiated to standardized form ($e^{.457}$=1.579), which is 1.579. The interpretation would be: every unit increase in X is associated with a 57.9% (1.579-1) increase in the crime rate (see Osgood, 2000). Following Osgood's (2000) example, unit increases in neighborhood disadvantage, social isolation, and residential composition variables will be by 10%. Therefore, the coefficients will be multiplied by 10% prior to being exponentiated ($e^{.457}$*.10=1.047). As an example, a 10% increase in residential mobility is associated with a 4.7% (1-1.047) increase in the homicide rate. However, since public housing is a dichotomous variable, the coefficients will be

multiplied by 1 prior to being exponentiated. Hypothetically, if public housing is a significant predictor and the coefficient is .818 and the exponentiated coefficient is 2.26, the interpretation would be: the total homicide rate for tracts with public housing is 1.26 times higher than the total homicide rate for tracts without public housing.

Dependent Variable (s):

Dependent variable for question 1: Total homicide count per census tract from 1985 through 1995.

To address question 1, the dependent variable for this negative binominal regression model will be the total number of homicides for census tracts in Chicago from 1985 through 1995. Using ten years of homicide data will reduce the impact of annual fluctuations and there will be a sufficient quantity of homicides to produce reliable estimates for census tracts with low absolute numbers of homicide (see Peterson et al., 2000).

Dependent Variables for question 2a:

Model 1: Count of gang motivated homicides per census tract from 1985-1995

Model 2: Count of drug motivated homicides per census tract from 1985-1995

Model 3: Count of robbery motivated homicides per census tract from 1985-1995

Model 4: Count of domestic motivated homicides per census tract from 1985-1995

Model 5: Count of "other" motivated homicides per census tract from 1985-1995

In addressing question 2a, five negative binominal regression models will be estimated to reveal the nature of lethal violence both in and outside of tracts containing public housing. The total number of gang, drug, robbery, domestic, and "other"

homicides from 1985 through 1995 will serve as the dependent variables for the five models.

Independent Variables:

Predictor Variable:

The presence of public housing will serve as the predictor variable for all six of these negative binominal regression models. Public housing projects are not situated perfectly in only one census tract. Thus, some projects might only have one building in a census tract while other developments can span numerous tracts. Prior research has used census tracts that include and are adjacent to public housing (Peterson et al., 2000; Roncek et al., 1981). Based on this previous research, this dissertation will use census tracts that include family public housing, elderly housing, and/or CHA property regardless of the total area the project encompasses within the tract. Tracts with public housing will be coded as 1 and tracts without will be coded as 0. In these regression analyses, the entire samples of tracts containing public housing (n=188) and tracts without public housing (n=612) will be included in the models. The presence of public housing will be used as a proxy for the physical and social environment of public housing areas.

Controls (see Appendix C):

The control variables for these negative binominal regression models will consist of the population control (population ln), neighborhood disadvantage, social isolation, and residential composition variables.

Strategy B: Negative binominal regression excluding outlier tracts (see Appendices G & H): Questions 1 and 2a

In addressing questions 1 and 2B, negative binominal regression will also be used to determine the effect of public housing on the total homicide rate and also the nature of lethal violence occurring in Chicago's tracts with and without public housing. The same variables and methods will be used as is used in Strategy A: however, the top 5% and 10% of tracts that are extremely disadvantaged, isolated, and experience distinctive characteristics of residential composition will be removed from these analyses. There will be a total of six negative binominal regression analyses conducted to address these questions.

Dependent Variable (s):

Dependent variable for question 1: Total homicide count per census tract from 1985 through 1995.

To address question 1, the dependent variable for this negative binominal regression model will be the total number of homicides for the bottom 90% and 95% of census tracts on neighborhood disadvantage, social isolation, and residential composition in Chicago from 1985 through 1995.

Dependent Variables for question 2a:

Model 1: Count of gang motivated homicides per census tract from 1985-1995

Model 2: Count of drug motivated homicides per census tract from 1985-1995

Model 3: Count of robbery motivated homicides per census tract from 1985-1995

Model 4: Count of domestic motivated homicides per census tract from 1985-1995

Model 5: Count of "other" motivated homicides per census tract from 1985-1995

In addressing question 2a, five negative binominal regression models will be estimated to reveal the nature of lethal violence both in and outside of tracts containing public housing. The total number of gang, drug, robbery, domestic, and "other" homicides from 1985 through 1995 will serve as the dependent variables for the five models.

Independent Variables:

Predictor Variable:

The presence of public housing will serve as the predictor variable for all six of these negative binominal regression models. This variable will be used as a proxy for the physical and social environment of public housing areas. Tracts with public housing will be coded as 1 and tracts without will be coded as 0. In these regression analyses, the top 5% and 10% of tracts with extreme conditions of neighborhood disadvantage, social isolation, and residential composition will be excluded from the analyses.

Controls (see Appendix C):

The control variables for these negative binominal regression models will consist of the population control (population ln), neighborhood disadvantage, social isolation, and residential composition variables.

Strategies C & D: Bivariate Analyses: Questions 2b

In addressing question 2b, two samples of tracts with and without public housing will be used, the full sample and the sample tracts excluding the outlier tracts. First, with strategy C, bivariate analyses will be conducted to determine the proportionate differences between the full sample of tracts with and without public housing for the percentages of gang, drug, robbery, domestic, and "other" homicide motivations. Similar

bivariate analyses will be conducted with strategy D, but the only difference will be the exclusion of the outlier tracts from the analysis. These analyses will specifically determine whether any of the aforementioned homicide motivations occur disproportionately in tracts with public housing than in tracts without public housing.

Strategies E: Bivariate Analyses: Question 3 (see Appendix I):

With strategy E, bivariate analyses will be conducted to determine the specific differences between the subset of trimmed outlier tracts with public housing and the non-trimmed tracts with public housing. It is predicted that the subset of trimmed outlier tracts containing public housing exhibit certain criminogenic characteristics, such as the large high-rise architectural design, that can influence the rates of homicide and also produce discrepancies in the results of the regression analyses. Comparisons will be made to determine what specifically sets the subset of trimmed outlier tracts with public housing apart from the non-trimmed tracts with public housing. Thus, a comparison of specific neighborhood disadvantage and social isolation variables, residential composition variables, and physical environment variables will be conducted between the two samples of tracts with public housing to determine if these differences account for the predicted contradictory results found between the two regression analyses.

Neighborhood Disadvantage (1990 census):

Percent below the poverty line

Percent receiving public assistance

Percentage of people who moved into their home in the past 5 years

Percentage of renters

Percentage of foreign born residents

Percentage of Hispanic residents

Percentage of tract population that speaks or uses a language other than English

Percentage of individuals under 18

Percentage of female headed households

Percentage of unemployed

Social Isolation (1990 census):

"ICE" index of class isolation

"ICE" index of racial isolation

Residential Composition (1990 census):

Percentage of male residents in a tract

Percentage of tract that completed high school

Percentage of tract enrolled in school

Percentage of tract population that has access to a vehicle

Physical Environment (only tracts with public housing):

Size of Project- Each project tract will be matched with their respective number of units.

Architectural Design- Each public housing project tract will be coded based on their architectural design. Low-rise project tracts will be coded as "0" and high-rise project tracts will be coded as "1". Tracts that contain a combination of high-rise and low-rise projects will be coded as "2".

Externality- Project tracts that are in close proximity to other project tracts and have at least one project tract adjacent to them will be coded as "1" and project tracts that are not in close proximity to other project tracts and do not have any project tracts adjacent to them will be coded as "0".

CHAPTER 5

RESULTS: DOES THE PRESENCE OF PUBLIC HOUSING IN TRACTS AFFECT HOMICIDE RATES?

This chapter presents the results of the negative binominal regression analyses determining if the presence of public housing in a tract has an independent effect on the total homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition[3]. There are two main negative binominal regression analyses estimated in this chapter. The first analysis includes the full sample of 800 tracts and the second analysis excludes the outlier tracts with and without public housing. The use of different samples helps to determine whether the presence of public housing, in its entirety per se, influences lethal violence or if only certain unique tracts have an influence on the rates of homicide. The presence of public housing is used as a proxy for public housing characteristics and indirectly determines whether the physical and social environment of public housing areas have an influence the total homicide rate.

Descriptive Statistics

Tracts containing public housing vary in their characteristics and conditions compared to tracts without public housing. Table 5.1 presents the descriptive statistics for the full sample of tracts with and without public housing in Chicago. Both groups of tracts have similar sized populations, however, tracts containing public housing experience significantly higher average levels of poverty and social isolation than tracts devoid of public housing. Compared to tracts without public housing, tracts with public housing tend to be more poverty stricken with significantly larger percentages of

[3] Model stability is discussed in Appendix L.

residents living below the poverty line, under the age of 18, receiving public assistance, living in female headed households, and who are unemployed. Tracts containing public housing also tend to be more socially isolated than tracts devoid of public housing, with significantly greater conditions of racial and class isolation. Additionally, tracts containing public housing have a significantly larger percentage of renters than the tracts without public housing; however, both sets of tracts have similar percentages of residents who moved in the past five years. Tracts not containing public housing tend to be more diverse, with a significantly larger percentage of residents speaking another language, being foreign born, and of Hispanic descent. These tracts also have significantly larger percentages of residents who have completed high school, are male,[4] and have access to a vehicle than the tracts with public housing. Tracts containing public housing have a significantly larger percentage of residents who are enrolled in school compared to tracts without public housing, which can be attributed to the tracts with public housing having a significantly larger percentage of residents under the age of 18.

[4] It should be noted that although public housing areas may experience a significantly lower percentage of male residents than areas without public housing, however, there may be more male residents residing in public housing areas than what is officially reported by census data (see Chapter 7 for discussion).

Table 5.1: Descriptive Statistics for Census Tracts with and without Public Housing in Chicago, 1985-1995.

	Average per census tract with public housing	Significant Differences	Average per census tract without public housing
Number of tracts	188		612
Population	3,360		3,498
	(2,396)		(2,328)
% Living in poverty	40.57	**	19.42
	(22.30)		(14.61)
% Under 18 years of age	30.76	**	25.16
	(12.86)		(9.23)
% Receiving public assistance	32.18	**	14.44
	(20.15)		(13.50)
% Female headed	21.99	**	10.76
	(17.53)		(9.46)
% Unemployed	10.79	**	7.19
	(5.26)		(4.42)
% Speaking another language	17.23	**	30.50
	(24.23)		(25.56)
% Hispanic	12.42	**	21.72
	(23.58)		(26.42)
% Foreign born	8.96	**	16.89
	(14.55)		(14.74)
% Renters	75.81	**	54.91
	(20.10)		(23.46)
% Who moved in past five years	44.30		44.63
	(13.23)		(14.56)
Average racial isolation score	.4999	**	-.1568
	(.6829)		(.7635)
Average class isolation score	-.3501	**	-.0483
	(.3121)		(.2377)
% Enrolled in school	31.15	**	27.82
	(.0920)		(.0788)
% Completed high school	54.54	**	63.93
	(.0117)		(.0069)
% Male	46.27	**	48.42
	(.0461)		(.0426)
% With access to a vehicle	46.61	**	68.84
	(.0151)		(.0059)
Total number of homicides	3,506		5,134
Average homicide rate per 1,000 residents	6.55	**	2.94
	(4.54)		(3.36)
Average number of homicides	18.65	**	8.39
	(15.74)		(9.93)

Notes: Standard deviations in parentheses. **indicates significantly larger differences in average at .01 significance level, two-tailed test.

The two groups of tracts also significantly differ for the average number of homicides and the average rate of homicide. The total number of homicides occurring in Chicago from 1985 to 1995 was 8,640, with 3,506 of the homicides taking place in tracts that include public housing projects. On average, these tracts are significantly more violent than tracts devoid of public housing, with a rate of 6.55 homicides per 1,000 residents compared to the rate of 2.94 homicides per 1,000 residents for the tracts without public housing. The descriptive statistics shown in Table 5.1 indicate that neighborhoods with public housing are more poverty stricken, isolated, and violent than neighborhoods without public housing.

Strategy A: Negative binominal regression with full sample of tracts.

Hypothesis 1: The presence of public housing will have a significant positive independent effect on the total homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition.

Negative binominal regression is used to determine if there is a significant relationship between the presence of public housing and the total homicide rate. With this analysis, the entire 188 tracts with public housing and 612 tracts without public housing are included in the models. Prior to conducting this analysis, I predicted that the presence of public housing would have a significant independent effect on the total rate of homicide, when controlling for neighborhood disadvantage, social isolation, and residential composition.

Table 5.2 presents the results of the negative binominal regression analysis. Two separate models were estimated; the first model is estimated with only population (ln) as a control and the second is estimated with population (ln), neighborhood disadvantage,

social isolation, and residential composition variables included in the model[5]. Population (ln) is the natural log transformation of the total population of a tract. By controlling for population (ln), the findings of this analysis can be interpreted as rates. When no control variables are included, other than the population control, the presence of public housing has a significant influence on the total homicide rate. Specifically, the total homicide rate for tracts with public housing is 1.26 times higher than the total homicide rate for tracts without public housing[6]. However, when the control variables are included, there is not a significant relationship between the presence of public housing and the total homicide rate. Consequently, the presence of public housing does not have a significant independent effect on the total homicide rate, when taking the neighborhood disadvantage, social isolation, and residential composition variables into account.

[5] Population (ln) is included in all models, but will be only referred to in the interpretation of this model.
[6] Unstandardized regression coefficients are reported in the model columns in the tables. However, to interpret the results as rates, the coefficients must be exponentiated. The interpretations are of the exponentiated coefficients (see Osgood, 2000).

Table 5.2: Negative Binominal Regression Predicting the Influence of Public Housing on the Total Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Full Sample.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.818 (.080)**	2.26	.053 (.044)	-----
Population (ln)	.570 (.049)**	------	.813 (.029)**	-----
Poverty	--------	------	1.53 (.444)**	1.17
Ethnic Heterogeneity	--------	------	1.15 (.206)**	1.12
Residential Mobility	--------	------	.594 (.215)**	1.06
Class Isolation	--------	------	.289 (.199)	-----
Racial Isolation	--------	------	1.12 (.048)**	1.12
School Enroll.	-------	------	-.748 (.379)*	.93
H.S. Completion	-------	------	-.470 (.268)	-----
Percent Male	-------	------	2.23 (.521)**	1.25
Vehicle Access	-------	------	-1.00 (.263)**	.90
Log Likelihood	-2629.0627		-2113.3199	
LR Test	215.64**		1247.12**	
Pseudo R2	.04		.23	
Constant	-2.48 (.392)**		-5.31 (.421)**	
N	800		800	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Model 2 explains 23% of the variance of the dependent variable. In this model, the neighborhood disadvantage variables that are significant predictors of homicide include poverty, ethnic heterogeneity, and residential mobility. Specifically, a 10% increase in poverty, ethnic heterogeneity, and residential mobility is associated with a 17%, 12%, and 6% increase in the total homicide rate, respectively. Racial isolation is also a significant predictor of lethal violence and a 10% increase in racial isolation is associated with a 12% increase in the total homicide rate. In addition, school enrollment, percentage of male residents, and vehicle access are also significant predictors of the total homicide rate. A 10% increase in the percentage of male residents is associated with a

25% increase in the total homicide rate. Finally, a 10% increase in school enrollment and vehicle access is associated with a 7% and a 10% decrease in the total homicide rate, respectively.

The results of this regression analysis are not consistent with my theoretical hypothesis; therefore, the presence of public housing is not a significant predictor of the total homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. The physical and social environment of public housing does not appear to have a significant independent effect on the total homicide rate. Neighborhood disadvantage, social isolation, and residential conditions seem to be driving the effect of public housing on lethal violence occurring in Chicago's public housing, rather than the physical and social environment of the projects.

Strategy B: Negative binominal regression excluding outlier tracts.

Hypothesis 2: The presence of public housing will not have a significant positive independent effect on the total homicide rate, because the exclusion of a subset of outlier tracts from the analysis will establish a non-significant relationship between the presence of public housing and the total homicide rate.

The results of the regression analyses with the full sample of tracts indicates that the physical and social environment of the outlier tracts are not having an influence on the rates of lethal violence in public housing areas and the effect of public housing seems to be influenced by adverse neighborhood conditions. However, the question that remains is whether the effect of these neighborhood conditions is located mainly amongst the outlier tracts or whether neighborhood conditions are influencing homicides across all types of tracts with public housing. Therefore, the negative binominal regression

analyses with the trimmed sample of tracts were still estimated to determine the impact of neighborhood conditions on homicide rates occurring in the sample of tracts with public housing.

A factor score of neighborhood disadvantage, social isolation, and residential composition was created using principal component analysis. Subsequently, the tracts were indentified and ranked based on their factor score. To determine if a subset of outlier tracts have an influence on the total homicide rate, the top 5% and 10% of tracts were trimmed from the analysis based on this factor score of neighborhood disadvantage, social isolation, and residential composition. The trimming of the top 5% of tracts reduced the sample by 40 tracts with 34 of these tracts containing public housing and the trimming of the top 10% of tracts removed 80 tracts from the sample of 800 and 37 of these tracts contain public housing (see Table 5.3)[7]. Similar results were produced in each of the regression models with different trimmed samples, therefore for the sake of parsimony only the models that exclude the top 5% of outlier tracts are reported in this chapter[8].

Table 5.3: Number of Tracts Removed from Full Sample Based on a Factor Score of Neighborhood Disadvantage, Social Isolation, and Residential Composition, Chicago, 1985-1995.

	Tracts with PH	Tracts without PH	Total Tracts
5%	34	6	40
10%	37	43	80

The results of the negative binominal regression model excluding the top 5% of outlier tracts are presented in Table 5.4. Without any control variables included in the

[7] See Appendix C
[8] See Appendix J for the negative binominal regression analyses excluding the top 10% of outlier tracts.

model, the presence of public housing is a significant predictor of the total homicide rate. Specifically, the total homicide rate for the sample of tracts with public housing is 1.00 times higher than the total homicide rate for the sample of tracts without public housing.

However, in the model including all of the control variables, the presence of public housing is not a significant predictor of the total homicide rate. This second model explains 23% of the variance of the dependent variable and poverty, ethnic heterogeneity, residential mobility, racial isolation, percentage of male residents, and vehicle access are all significant predictors of the total homicide rate. Specifically, a 10% increase in poverty, ethnic heterogeneity, and residential mobility is associated with a 31%, 12%, and 5% increase in the total homicide rate, respectively. Additionally, a 10% increase in racial isolation is associated with an 11% increase in the total homicide rate. Finally, a 10% increase in the percentage of male residents is associated with a 17% increase in the total homicide rate and a 10% increase in vehicle access is associated with a 12% decrease in the total homicide rate.

The results of this regression analysis are consistent with my theoretical hypothesis; the presence of public housing is not a significant predictor of the total homicide rate in the trimmed sample, when controlling for neighborhood conditions. This prediction was based on the notion that the characteristics of a group of outlier tracts are driving the findings of the analyses with the full sample and the effect of the physical and social environment was predicted to be found amongst these tracts. Neighborhood conditions were predicted to have an influence on homicides occurring in all types of tracts with public housing, however, the effect of physical and social environment was predicted to be found just with the outlier tracts present in the models with the full

sample. But, as indicated in the previous section, the effect of the physical and social environment did not occur.

Based on this regression analysis, the physical and social environment of this sample of Chicago's public housing areas do not have a significant independent effect on the total homicide rate. Since the results of both analyses with different samples are similar, the physical and social environment of the subset of outlier tracts has no significant effect on the overall comparisons of homicide rates between tracts with and without public housing. Therefore, it appears that the conditions and characteristics associated with the trimmed outlier tracts are not having an influence on the comparative rates of homicide and lethal violence occurring in public housing areas can be explained due to adverse neighborhood conditions.

Table 5.4: Negative Binominal Regression Predicting the Influence of Public Housing on the Total Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding Top 5% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.693 (.088)**	2.00	.068 (.043)	-------
Population (ln)	.583 (.051)**	------	.818 (.029)**	-------
Poverty	--------	-------	2.69 (.511)**	1.31
Ethnic Heterogeneity	--------	-------	1.10 (.208)**	1.12
Residential Mobility	--------	-------	.486 (.219)*	1.05
Class Isolation	--------	-------	.415 (.201)	-------
Racial Isolation	--------	-------	1.00 (.051)**	1.11
School Enroll.	-------	-------	-.482 (.388)	-------
H.S. Completion	-------	-------	-.332 (.279)	-------
Percent Male	-------	-------	1.58 (.538)**	1.17
Vehicle Access	-------	-------	-1.23 (.271)**	.88
Log Likelihood	-2455.8897		-1958.7611	
LR Test	175.37**		1169.62**	
Pseudo R2	.03		.23	
Constant	-2.60 (.409)**		-5.17 (.430)**	
N	760		760	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Discussion and Summary

I originally predicted that there would be contradictory results found between the two main negative binominal regression analyses, because a subset of outlier tracts would influence the total homicide rate. In order to determine if the presence of public housing has a significant independent effect on the total homicide rate and if this effect is partitioned in certain tracts, different samples were used for each analysis. Initially, I predicted that the negative binominal regression analysis with the full sample of tracts would show a significant relationship between the presence of public housing and the total homicide rate. This significant relationship was believed to be caused by the

presence of outliers included in the regression models. These uniquely conditioned outlier tracts were predicted to have an influence on the total homicide rate. However, the results of the negative binominal regression analysis failed to show a significant relationship. Thus, in the full model, neighborhood conditions can explain the effect of public housing on homicide rates.

The results of second main negative binominal regression analysis, with the outlier tracts excluded from the model, turned out as predicted. In these models, the presence of public housing is not a significant predictor of the total homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. Therefore, the physical and social environment of this sample of tracts does not have a significant independent effect on the total homicide rate and homicides occurring in these areas can also be explained by the adverse neighborhood conditions of these tracts. Because the results of the two analyses with different samples are similar; we can determine that certain uniquely conditioned outlier tracts are not influencing comparative homicide rates.

For the most part, it appears that the effect of neighborhood conditions on homicides is relatively stable across models with different samples. This indicates that the conditions of neighborhood disadvantage, social isolation, and residential composition of the outlier tracts are not overly influencing the rate of homicide occurring in public housing areas (see Appendix L). Interestingly, in both analyses with different samples, poverty is a significant predictor of lethal violence; however, the size of the coefficient is substantially different between the samples. The exponentiated coefficient size for the analyses with the trimmed sample of tracts (31% increase) is larger than the

exponentiated coefficient size for the analyses with the full sample of tracts (17% increase). It seems that poverty is a more robust predictor of lethal violence in the trimmed sample of tracts compared to the full.

The results found in the chapter are consistent with previous research, which suggests that the neighborhood conditions have an influence on homicides and this effect appears to also be occurring in Chicago's public housing areas (Land et al, 1990; Lee, 2000; Morenoff et al., 2001; Peterson & Krivo, 1993; Peterson et al., 2000; Sampson, 1987; Shihadeh & Flynn, 1996; Shihadeh, 2009). Finding that the presence of public is not a significant predictor of the total homicide rate, when controlling for neighborhood conditions, was surprising given the documented research conducted in many of Chicago's projects (see Popkin et al., 2000; Venkatesh, 2000, 2008). These projects were beset with a host of problems including gangs, drugs, limited building security, decaying structures, and management issues (see Bryne et al., 2003; Fagan et al., 1998; Hunt, 2009; Popkin et al., 2000; Schill, 1993; Venkatesh, 2000). Additionally, many of these projects were large high-rise projects located adjacent to other projects, which theoretically may have an impact on violence rates (see Jefferies, 1971; Newman, 1972; Newman & Franck, 1980). However, physical and social environments are not having a significant influence on the rate of lethal violence. The results of these analyses support the conclusion that high rates of lethal violence occurring in public housing areas can be understood through social structural characteristics rather than situational characteristics.

This non-significant effect of the physical and social environment of public housing found in this chapter may be explained by the social control exercised by the gangs located in many of Chicago's projects (see Hagedorn, 2005, 2008; Popkin et al.,

2000; Venkatesh, 2000, 2008). Since the gangs of Chicago during the late 1980s and early 1990s were involved in the drug trade (Venkatesh, 2000, 2008), it is possible that the gangs, operating in the projects, exercised social control over residents and outsiders to reduce excessive acts of violence occurring in their drug markets. The underlying goal of suppressing excessive violence in the drug markets was to limit negative attention and ultimately increase the profits from the sale of drugs (Venkatesh, 2000).

The physical environment of the projects could have facilitated the social control by providing opportunities for the gang to regulate the entry and exit of the buildings and also to conduct surveillance of the courtyards and lobbies. In addition, the physical environment of the projects could have also protected gang members from law enforcement and rival gangs by providing places to hide and escape (Hagedorn, 2005). Therefore, gang presence may affect rates of lethal violence differently in public housing areas than in areas without public housing. In public housing areas, there may be a stronger gang presence than in areas without public housing, but the physical environment of the projects may have allowed for the gangs to control criminal behavior. While, on the street, the gang presence might be weaker compared to the projects, but the volatile nature of drug sales and lack of defensible space in these areas may produce elevated rates of lethal violence. Consequently, when conducting the regression analyses, the significant differences may have a cancelling effect, because of the stronger gang presence with less excessive violence in public housing areas and weaker gang presence with more excessive violence in areas without public housing. Initially, because of the strong gang presence in project areas, I predicted that the presence of public housing and

the physical and social environment would have a significant positive influence the total homicide rate; however, it appears the opposite might have been occurring.

CHAPTER 6

RESULTS: ARE MOTIVATIONS FOR HOMICIDES THAT OCCUR IN TRACTS WITH PUBLIC HOUSING DIFFERENT FROM MOTIVATIONS FOR HOMICIDES THAT OCCUR IN TRACTS WITHOUT PUBLIC HOUSING?

This chapter presents the results of the negative binominal regression analyses determining whether certain motivations for homicide occur at different rates and disproportionately in tracts containing public housing compared to those without. Similar to chapter 5 of this dissertation, different samples are used in these analyses: the full sample and the sample of tracts excluding the outliers[9]. The results of these analyses will determine whether the presence of public housing has an independent influence on type specific homicide rates. The presence of public housing is used as a proxy for social and physical public housing characteristics; it indirectly determines whether the physical and social characteristics of public housing areas have an influence on type specific homicide rates.

Descriptive Statistics

Tracts with public housing (n=188) experience significantly greater average rates of gang, drug, robbery, domestic, and "other" motivated homicides compared to the tracts without public housing (n=612) in Chicago (see Table 6.1). Although tracts containing public housing on average experience greater homicide rates for all five different homicide types, there is variation that exists within both groups of tracts. The descriptive statistics indicate that some census tracts, both with and without public housing, experience higher rates of homicide compared to other tracts in their respective groups.

[9] Model stability is discussed in Appendix L.

These statistics are in accordance with previous research examining homicides in Chicago, which indicates that a small number of neighborhoods experience disproportionately higher rates of lethal violence than the majority of other neighborhoods (Griffiths & Chavez, 2004; Rosenfeld, 2000)[10]. For instance, among tracts containing public housing, the highest gang motivated homicide rate was 8.93 gang homicides per 1,000 residents and the lowest rate was 0 gang homicides per 1,000 residents. The same finding holds true for the tracts devoid of public housing, with the highest rate being 5.92 gang homicides per 1,000 residents and the lowest being 0 gang homicides per 1,000 residents. Thus, there is variation within both groups of tracts for the rates of type specific homicides.

Table 6.1: Mean Homicide Rates per 1,000 Residents for Gang, Drug, Robbery, Domestic, and "Other" Motivated Homicides in Chicago's Tracts with and without Public Housing, 1985-1995.

	With Public Housing (n=188)			**Without Public Housing (n=612)**	
	Homicide Rate	**Standard Deviation**	**Significant Difference**	**Homicide Rate**	**Standard Deviation**
Gang	.7917 (0-8.93)	1.100	**	.4504 (0-5.92)	.7401
Drug	.7059 (0-3.80)	.8178	**	.3531 (0-5.04)	.7003
Robbery	.6549 (0-3.64)	.6760	**	.3377 (0-5.04)	.5550
Domestic	1.152 (0-6.08)	1.142	**	.4010 (0-3.75)	.6101
"Other"	3.711 (0-14.07)	2.766	**	1.653 (0-15.63)	2.181

p<.01=**, two tailed tests.

Note: homicide rates for both tracts with and without public housing range from rates of zero for all motivations to the maximum rates reported in the parentheses.

[10] Tracts with public housing comprise 58% of the top 10% of tracts in terms of homicide rates.

Q2A: Strategy A-Negative binominal regression with full sample of tracts.

Hypothesis 3: The presence of public housing will have a significant influence on the rates of gang and drug motivated homicides, but the presence of public housing will not have a significant influence on the rates of robbery, domestic, and "other" motivated homicides, when controlling for neighborhood disadvantage, social isolation, and residential composition.

Negative binominal regression models were estimated to determine the nature of lethal violence occurring in tracts containing public housing, with each homicide rate by type serving as the dependent variable for one of the models and the presence of public housing serving as the main predictor variable in all of the models. The presence of public housing is used as a proxy for public housing characteristics and indirectly determines whether the physical and social environment of public housing areas have an influence on type specific homicide rates. The controls for all of these negative binominal regression models include neighborhood disadvantage, social isolation, and residential composition variables. For each disaggregated homicide type, there were two models estimated. First, the presence of public housing was entered into the model as an independent variable without any control variables included[11]. The second model (full model) includes the presence of public housing as the main predictor variable with neighborhood disadvantage, social isolation, and residential composition variables included as controls. The full sample of tracts (n=800) are included in these regression models.

[11] The natural log transformation of population is included in all models.

Gang Motivated Homicides

Chicago's public housing developments were rich with gang activity (see Popkin et al., 2000; Venkatesh, 2000, 2008); therefore, my initial hypothesis was that the presence of public housing would be a significant predictor of the gang motivated homicide rate. When control variables are excluded from the models, the presence of public housing is a significant predictor of the gang motivated homicide rate (see Table 6.2). Specifically, the gang motivated homicide rate for tracts with public housing is 0.76 times higher than the gang motivated homicide rate for tracts without public housing[12]. Yet, when the control variables are included, the results indicate there is not a significant relationship between the presence of public housing in a tract and the gang motivated homicide rate.

Model 2 explains 19% of the variance of the dependent variable and includes neighborhood disadvantage, social isolation, and residential composition variables. Similar to previous research analyzing gang motivated homicides in Chicago (Mares, 2010); poverty and ethnic heterogeneity are significant predictors of the gang motivated homicide rate. A 10% increase in poverty and ethnic heterogeneity is associated with a 26% and a 31% increase in the gang motivated homicide rate, respectively. Additionally, racial isolation is a significant predictor of the gang motivated homicide rate in Chicago. Specifically, a 10% increase in racial isolation is associated with an 11% increase in the gang motivated homicide rate. The results of this regression analysis indicate that gang motivated homicides occur at a higher rate in neighborhoods that experience poverty, ethnic heterogeneity, and are more racially isolated than neighborhoods not experiencing

[13] Unstandardized regression coefficients are reported in the model columns in the tables. However, to interpret the results as rates, the coefficients must be exponentiated. The interpretations are of the exponentiated coefficients (see Osgood, 2000).

such severe conditions. When the full sample of 800 tracts is included in the model, it appears that the physical and social characteristics of Chicago's public housing do not have a significant independent effect on the gang motivated homicide rate. Poverty, ethnic heterogeneity, and racial isolation seem to be influencing the gang motivated homicide rate occurring in public housing areas rather than the unique physical and social characteristics associated of public housing projects.

The results of this analysis are not consistent with my theoretical hypothesis; they show that the presence of public housing is not a significant predictor of the gang motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. These results are surprising, given the nature of gang activity in Chicago's public housing developments (Popkin et al., 2000; Venkatesh, 2000, 2008). A possible explanation for this finding is that the gangs located in some of Chicago's public housing areas could have exercised social control to reduce excessive non-instrumental violence from occurring on project grounds, in order to minimize negative attention and maximize drug profits (see Hagedorn, 2005; Venkatesh, 2000). Therefore, gang presence might affect rates of lethal violence differently in public housing areas than in areas without public housing. The findings from this negative binominal regression model indicate that there is not a significant suppression effect occurring in public housing areas. It appears, though, that gang presence interacting with the physical environment in public housing areas and the more unstable nature of gang and drug activity outside of the projects may have a self-cancelling effect on the gang motivated homicide rate.

Table 6.2: Negative Binominal Regression Predicting the Influence of Public Housing on the Gang Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Full Sample.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.563 (.113)**	1.76	-.033 (.096)	--------
Population (ln)	.699(.076)**	--------	.838(.064)**	--------
Poverty	--------	--------	2.31 (.968)*	1.26
Ethnic Heterogeneity	--------	--------	2.73 (.460)**	1.31
Residential Mobility	--------	--------	-.081 (.503)	--------
Class Isolation	--------	--------	.478 (.470)	--------
Racial Isolation	--------	--------	1.08 (.108)**	1.11
School Enroll.	-------	--------	1.01 (.855)	--------
H.S. Completion	-------	--------	-1.13 (.604)	--------
Percent Male	-------	--------	1.50 (1.14)	--------
Vehicle Access	-------	--------	-.521 (.598)	--------
Log Likelihood	-1317.3921		-1113.3537	
LR Test	105.22**		513.29**	
Pseudo R2	.04		.19	
Constant	-5.34 (.613)**		-7.60 (.898)**	
N	800		800	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Drug Motivated Homicides

Using previous research as a guide (see Popkin et al., 2000; Venkatesh, 2000, 2008), I initially hypothesized that the presence of public housing would be a significant predictor of the drug motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. In the first model (see Table 6.3), the presence of public housing is a significant predictor of the drug motivated homicide rate, when no control variables are included. Specifically, the drug motivated

homicide rate for tracts with public housing is 1.23 times higher than the drug motivated homicide rate for tracts without public housing.

However, with the second model, there is not a significant relationship between the presence of public housing and the drug motivated homicide rate. The results of this analysis are not consistent with my theoretical hypothesis; that is, the presence of public housing is not a significant predictor of the drug motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. About 22% of the variance of the dependent variable is explained in the second model with poverty, racial isolation, and percentage of male residents being significantly related to the drug motivated homicide rate. Therefore, a 10% increase in poverty, racial isolation, and the percentage of male residents is associated with a 25%, 13%, and 40% increase in the drug motivated homicide rate, respectively. All else being equal, the physical and social environment of public housing areas does not have a significant independent effect on the drug motivated homicide rate. Rather, poverty, racial isolation, and percentage of male residents predict the drug motivated homicide rate occurring in public housing areas.

The explanation for this non-significant relationship between the presence of public housing and the drug motivated homicide rate is similar to the explanation used to understand the presence of public housing's non-significant relationship with gang motivated homicides. Gang presence may affect homicide rates differently in areas with public housing compared to areas without public housing. As illustrated by Venkatesh (2000, 2008), gang maintained a stronghold over drug distribution and often policed the area for which they sold drugs. The gangs were able to maintain this stronghold and

exercise social control, in part, due to the physical environment characteristics associated with the projects (see Hagedorn, 2005, 2008). Therefore, the social control exerted by the gangs could have provided fewer opportunities for violence to erupt between individuals not associated with the gang. If the gangs allowed excessive violence to occur in their drug markets, this would provide undue attention and possible shut down their profitable business (see Venkatesh, 2000, 2008). Thus, drug selling gangs may have been more prevalent in the projects, but the gangs on the street may have engaged in more violent behavior to control drug markets, which could produce a self-cancelling effect on the drug motivated homicide rate. This interaction does not totally suppress crime and violence, but it can have an effect to negate any significant relationship.

Table 6.3: Negative Binominal Regression Predicting the Influence of Public Housing on the Drug Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Full Sample.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.803 (.125)**	2.23	-.156 (.104)	--------
Population (ln)	.550 (.083)**	--------	.914 (.071)**	--------
Poverty	--------	--------	2.25 (1.08)*	1.25
Ethnic Heterogeneity	--------	--------	-.209 (.523)	--------
Residential Mobility	--------	--------	.627 (.525)	--------
Class Isolation	--------	--------	-.031 (.503)	--------
Racial Isolation	--------	--------	1.27 (.132)**	1.14
School Enroll.	-------	--------	-.419 (.962)	--------
H.S. Completion	-------	--------	-.873 (.621)	--------
Percent Male	-------	--------	3.33(1.24)**	1.40
Vehicle Access	-------	--------	-.091 (.655)	--------
Log Likelihood	-1164.5951		-938.69903	
LR Test	86.59**		538.38**	
Pseudo R2	.04		.22	
Constant	.353 (.029)**		-9.31 (1.04)**	
N	800		800	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Robbery Motivated Homicides

My initial hypothesis was that the presence of public housing would not be a significant predictor of the robbery motivated homicide rate. As shown in Table 6.4, without any controls included in the model, the presence of public housing is a significant predictor of the robbery motivated homicide rate. The robbery motivated homicide rate for tracts with public housing is 1.03 times higher than the robbery motivated homicide rate for tracts without public housing. However, when neighborhood disadvantage, social isolation, and residential composition are included in the model, there does not appear to

be a significant relationship between the presence of public housing and the robbery motivated homicide rate. The results of this analysis are consistent with my theoretical hypothesis, the presence of public housing is not a significant predictor of the robbery motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition.

Model 2 explains 19% of the variance in the dependent variable and poverty, ethnic heterogeneity, and racial isolation are significantly related to the robbery motivated homicide rate. A 10% increase in poverty, ethnic heterogeneity, and racial isolation is associated with a 22%, 10%, and 12% increase in the robbery motivated homicide rate, respectively. There is not a significant relationship between the presence of public housing in a tract and the robbery motivated homicide rate. Thus, the physical and social environment of public housing areas is not influencing the rate of robbery motivated homicides. Poverty, ethnic heterogeneity, and racial isolation appear to influence the robbery motivated homicide rate occurring in public housing areas.

As mentioned in the discussion of the previous analyses, gang presence may have a different effect on the rates of gang and drug motivated homicides occurring in public housing areas than in areas without public housing (Hagedorn, 2005, 2008; Venkatesh, 2000, 2008). The same effect maybe happening with the rates of robbery motivated homicides as well. The social control exercised by gangs presiding in the unique physical environment of public housing areas could reduce the opportunities for robbery motivated homicides to occur in these areas. But, due to the often personal and pressing nature of robbery, gangs may have difficulty in controlling this type of behavior compared to gang and drug related crimes (see Jacobs & Wright, 1999). Therefore, a

self-cancelling effect maybe occurring with gang presence having some influence, but not enough to suppress the level of incidents due to the circumstances of surrounding robbery.

Table 6.4: Negative Binominal Regression Predicting the Influence of Public Housing on the Robbery Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Full Sample.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.706 (1.02)**	2.03	-.011(.094)	--------
Population (ln)	.614 (.069)**	--------	.838(.063)**	--------
Poverty	--------	--------	2.01(.986)**	1.22
Ethnic Heterogeneity	--------	--------	.930 (.464)**	1.10
Residential Mobility	--------	--------	.852 (.467)	--------
Class Isolation	--------	--------	.386 (.442)	--------
Racial Isolation	--------	--------	1.14 (.109)**	1.12
School Enroll.	-------	--------	-1.59 (.884)	--------
H.S. Completion	-------	--------	.329 (.573)	--------
Percent Male	-------	--------	.846(1.09)	--------
Vehicle Access	-------	--------	-.641 (.577)	--------
Log Likelihood	-1146.6673		-979.46449	
LR Test	118.66**		453.07**	
Pseudo R2	.05		.19	
Constant	-5.00 (.559)**		-7.65 (.262)**	
N	800		800	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Domestic Motivated Homicide

At the start, I hypothesized that public housing would not be a significant predictor of the domestic motivated homicide rate. Without any control variables included in the model, the presence of public housing is a significant predictor of the

domestic motivated homicide rate (see Table 6.5). In this first model, the domestic motivated homicide rate for tracts with public housing is 1.80 times higher than the domestic motivated homicide rate for tracts without public housing. However, the results of the second model, with all of the controls included, indicate that there is not a significant relationship between the presence of public housing and the domestic motivated homicide rate. The results of this analysis are consistent with my theoretical hypothesis such that the presence of public housing is not a significant predictor of the domestic motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition.

The second model explains 23% of the variance in the dependent variable and racial isolation is the only control variable that is a significant predictor of the domestic motivated homicide rate. Specifically, a 10% increase in racial isolation is associated with a 10% increase in the rate of domestic motivated homicide. Neighborhoods with a high-degree of black and white racial segregation experience greater rates of domestic motivated homicide than neighborhoods that are more racially integrated. The findings from this analysis indicate that the physical and social characteristics of public housing areas are not significantly influencing the domestic motivated homicide rate and racial isolation appears to be influencing the domestic motivated homicide rate occurring in public housing areas.

I initially predicted that there would not be a significant relationship between the presence of public housing and the domestic motivated homicide rate. It appears that the domestic motivated homicides occur at similar rates in public housing areas compared to areas without public housing. I predicted that this type of homicide would not be

influenced by the social control exercised by gangs in public housing areas. Domestic motivated homicides occur between individuals who have a relationship and often occur in private spaces rather than public (see Holzman et al., 2001; Raphael, 2001). Because of these offense characteristics, the social control exercised by the gang is not predicted to be influencing this type of homicide.

Table 6.5: Negative Binominal Regression Predicting the Influence of Public Housing on the Domestic Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Full Sample.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	1.03 (.097)**	2.80	.134 (.078)	--------
Population (ln)	.724(.067)**	--------	.984 (.054)**	--------
Poverty Index	--------	--------	.975 (.784)	--------
Ethnic Heterogeneity	--------	--------	.308 (.388)	--------
Residential Mobility	--------	--------	.191 (.398)	--------
Class Isolation	--------	--------	-.164 (.377)	--------
Racial Isolation	--------	--------	.929 (.090)**	1.10
School Enroll.	-------	--------	.026 (.718)	--------
H.S. Completion	-------	--------	-.320 (.474)	--------
Percent Male	-------	--------	.725 (.915)	--------
Vehicle Access	-------	--------	-.940 (.490)	--------
Log likelihood	-1324.8514		-1101.6417	
LR Test	195.91**		642.32**	
Pseudo R2	.07		.23	
Constant	-5.66 (.546)**		-7.77 (.728)**	
N	800		800	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

"Other" Motivated Homicides

I hypothesized that the presence of public housing would not be a significant predictor of the "other" motivated homicide rate. When no control variables are included in the model, the presence of public housing is a significant predictor of the "other" motivated homicide rate (see Table 6.6). The "other" motivated homicide rate for tracts with public housing is 1.32 times higher than the "other" motivated homicide rate for tracts without public housing. However, the results of the second model indicate that there is a non-significant relationship between the presence of public housing and the "other" motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. The results of this analysis are consistent with my theoretical hypothesis that the presence of public housing is not a significant predictor of the "other" motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition.

The second model explains 22% of the variance of the dependent variable and poverty, ethnic heterogeneity, residential mobility, racial isolation, percentage of male residents, and vehicle access are significant predictors of the "other" motivated homicide rate. A 10% increase in poverty, ethnic heterogeneity, residential mobility, racial isolation, and the percentage of male residents is associated with an 11%, 8%, 7%, 12%, and 36% increase in the rate of "other" motivated homicides, respectively. Additionally, a 10% increase in vehicle access is associated with a 12% decrease in the "other" motivated homicide rate. The results of this regression analysis with the full sample of tracts indicate that the physical and social characteristics of public housing areas do not have a significant independent effect on the rate of "other" motivated homicides and

poverty, ethnic heterogeneity, residential mobility, racial isolation, percentage of male residents, and vehicle access can explain the rates of "other" motivated homicides occurring in public housing areas.

As mentioned in the discussion of the previous analyses, gang presence may affect homicide rates differently in public housing areas compared to areas without public housing (Hagedorn, 2005, 2008; Venkatesh, 2000, 2008). It appears that the social control exercised by the gangs in the project areas maybe reducing the opportunities for the commission of "other" motivated homicides in these neighborhoods. However, the results indicate that a suppressive effect is not occurring and a potential reason may be due to the circumstances surrounding the nature of these acts. "Other" motivated homicides include sex, burglary, and any other homicide not fitting the gang, drug, robbery, or domestic motivation. Therefore, given the vast characteristics associated with these homicides, such as the pressing need for money and sexual gratification, the gangs presiding over the projects may have had difficulty controlling these types of crimes. Therefore, a self-cancelling effect maybe occurring with gang presence having some influence, but not enough to suppress the level of incidents due to the circumstances of surrounding these acts of violence.

Table 6.6: Negative Binominal Regression Predicting the Influence of Public Housing on the "Other" Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Full Sample.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.842 (.084)**	2.32	.066 (.051)	--------
Population (ln)	.504 (.052)**	--------	.769 (.034)**	--------
Poverty	--------	--------	1.05 (.517)*	1.11
Ethnic Heterogeneity	--------	--------	.789 (.246)**	1.08
Residential Mobility	--------	--------	.676 (.256)**	1.07
Class Isolation	--------	--------	.270 (.235)	--------
Racial Isolation	--------	--------	1.12 (.060)**	1.12
School Enroll.	-------	--------	-.871 (.447)	--------
H.S. Completion	-------	--------	-.349 (.313)	-------
Percent Male	-------	--------	3.05 (.602)**	1.36
Vehicle Access	-------	--------	-1.26 (.034)**	.88
Log likelihood	-2190.5257		-1770.4946	
LR Test	179.48**		1019.54**	
Pseudo R2	.04		.22	
Constant	-2.56 (.416)**		-5.71 (.492)**	
N	800		800	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Q2b: Strategy C- Bivariate analyses with full sample of tracts

Hypothesis 4-Gang and drug motivated homicides will comprise a greater proportion of all homicides in tracts containing public housing than in tracts without public housing; however, robbery, domestic, and "other" motivated homicides will comprise a greater proportion of all homicides in tracts without public housing than in tracts with public housing.

Table 6.7: Bivariate Analyses of Type Specific Homicides with Full Sample of Tracts with and without Public Housing, Chicago, 1985-1995.

	Gang	Drug	Robbery	Domestic	"Other"	Total
With-PH (n=188)	12%	11%	10%	16%	51%	100%
Without-PH (n=612)	15%	10.5%	10.5%	14%	50%	100%

Two group tests of proportions: no significant differences for any homicide type between tracts with and without public housing.

Bivariate cross-tabulations and two group tests of proportion were conducted to determine whether certain motivations for homicide occur at greater percentages in tracts containing public housing than in tracts devoid of public housing. The full sample of tracts with and without public housing is included in this analysis (see Table 6.7). My initial hypothesis was that gang and drug motivated homicides would comprise significantly greater percentages of all homicides in tracts containing public housing than in tracts not containing public housing. However, the findings from this analysis are not consistent with my theoretical hypothesis; there are not significant differences in the percentages of gang and drug motivated homicides between tracts with and without public housing. I predicted that robbery, domestic, and "other" motivated homicides will comprise greater percentages of all homicides in tracts without public housing than in tracts with public housing. The results are not consistent with my theoretical hypothesis; there are not significant differences in the percentages of robbery, domestic, and "other" motivated homicides between tracts with and without public housing. Therefore, we can determine that gang, drug, robbery, domestic, and "other" motivated homicides constitute similar percentages of all homicides in tracts with and without public housing.

Q2a: Strategy B: Negative binominal regression excluding outlier tracts.

Hypothesis 5-The presence of public housing will not be a significant predictor of the gang, drug, robbery, domestic, and "other" motivated homicide rates, because the exclusion of a subset of outlier tracts from the analysis will establish that there is a non-significant relationship between the presence of public housing and type specific homicide rates in the trimmed sample of tracts.

The results of the regression analyses with the full sample of tracts indicates that the physical and social environment of the outlier tracts are not having an influence on type specific homicide rates and the effect of public housing on these homicide rates appears to be influenced by adverse neighborhood conditions. However, it is unclear as to whether this effect of neighborhood conditions is simply located amongst the outlier tracts or whether neighborhood conditions have an influence on type specific homicides across all types of tracts and differing levels of disadvantage, isolation, and residential composition. Therefore, the negative binominal regression analyses with the trimmed sample of tracts were still estimated to determine the impact of neighborhood conditions on type specific homicide rates occurring in public housing areas.

Five main negative binominal regression models were estimated to determine the nature of lethal violence occurring in a trimmed sample of tracts with each homicide rate by type serving as an outcome measure. The steps used in these negative binominal regression analyses were identical to those used to address research Question 1 (strategy B) in the previous chapter of this dissertation. Tracts are ranked based on a factor score of neighborhood disadvantage, social isolation, and residential composition[13]. The top 5% and 10% of extremely disadvantaged, isolated, and residentially distinct tracts were

[13] See Appendix C for factor scores.

trimmed from the sample. Similar results were produced in the regression models that exclude the top 5% and 10% of outlier tracts, therefore only the models that exclude the top 5% of outlier tracts are reported in this chapter[14].

This trimming of data enables me to determine if the characteristics of these uniquely conditioned tracts are having an influence on type specific homicide rates. The outlier tracts (n=40) experience significantly higher rates of total, gang, drug, robbery, domestic, and "other" motivated homicides than the rest of the sample (n=760) (see Table 6.8). I predicted that excluding these outlier tracts with high rates of violence from the analysis would establish a non-significant relationship between the presence of public housing and the rates of gang, drug, robbery, domestic, and other motivated homicide rates.

Table 6.8: Differences in Homicide Rates per 1,000 Residents between 40 Outlier Tracts and 760 Non-Outlier Isolated Tracts, Chicago, 1985-1995.

	Outlier Tracts (n=40)	Significant Difference	Non-Outlier Tracts (n=760)	t-value (S.E.)
Total	10.64	**	3.43	-12.18 (.141)
Gang	1.39	**	.485	-6.73 (.283)
Drug	1.02	**	.405	-5.18 (.026)
Robbery	1.02	**	.380	-6.71 (.021)
Domestic	1.79	**	.514	-10.08 (.029)
"Other"	6.18	**	1.92	-11.37 (.088)

p<.01=**, two-tailed tests.

[14] See Appendix J for the negative binominal regression analyses excluding the top 10% of outlier tracts.

Gang Motivated Homicides

I originally predicted that there would not be a significant relationship between the presence of public housing and the gang motivated homicide rate. Table 6.9 presents the results of the negative binominal regression analysis determining whether the presence of public housing has a significant independent effect on the gang motivated homicide rate, when excluding 40 outlier tracts. When control variables are not included in the model, the presence of public housing is a significant predictor of the gang motivated homicide rate. Specifically, the gang motivated homicide rate for the sample of tracts with public housing is 0.47 times higher than the gang motivated homicide rate for the sample of tracts without public housing.

Yet, when the control variables are included, the results indicate that there is not a significant relationship between the presence of public housing and the gang motivated homicide rate. The second model, which explains 19% of the variance of the dependent variable, includes neighborhood disadvantage, social isolation, and residential composition variables. Poverty and ethnic heterogeneity are significant predictors of the gang motivated homicide rate. A 10% increase in poverty and ethnic heterogeneity is associated with a 28% and a 31% increase in the gang motivated homicide rate, respectively. Additionally, racial isolation is a significant predictor of the gang motivated homicide rate in Chicago. Specifically, a 10% increase in racial isolation is associated with an 11% increase in the gang motivated homicide rate. The results of this regression analysis indicate that gang motivated homicides occur at a higher rate in neighborhoods that experience poverty, ethnic heterogeneity, and are more racially isolated than neighborhoods not experiencing such severe conditions.

The findings from this analysis are consistent with my theoretical hypothesis; it appears that with this sample of tracts, the physical and social characteristics of public housing areas are not significantly influencing the gang motivated homicide rate. Since the results of both analyses with different samples of tracts are similar, the trimmed subset of outlier tracts have no significant effect on the overall comparisons of gang motivated homicide rates between tracts with and without public housing. Therefore, it appears that the conditions and characteristics associated with the trimmed outlier tracts are not having an influence on the comparative rates of gang motivated homicides and poverty, ethnic heterogeneity, and racial isolation influence the rate of gang motivated homicides occurring in public housing areas.

Table 6.9: Negative Binominal Regression Predicting the Influence of Public Housing on the Gang Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 5% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.385 (.124)**	1.47	-.034 (.097)	--------
Population (ln)	.728 (.080)**	--------	.853 (.066)**	--------
Poverty	--------	--------	2.45 (1.13)*	1.28
Ethnic Heterogeneity	--------	--------	2.67 (.470)**	1.31
Residential Mobility	--------	--------	-.085 (.532)	--------
Class Isolation	--------	--------	.228 (.488)	--------
Racial Isolation	--------	--------	1.03 (.118)**	1.11
School Enroll.	-------	--------	1.36 (.886)	--------
H.S. Completion	-------	--------	-1.07 (.636)	--------
Percent Male	-------	--------	.465 (1.19)	--------
Vehicle Access	-------	--------	-.348 (.628)	--------
Log likelihood	-1223.601		-1028.1929	
LR Test	92.39**		483.21**	
Pseudo R2	.04		.19	
Constant	-5.58 (.643)**		-7.50 (.924)**	
N	760		760	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Drug Motivated Homicides

For this negative binominal regression analysis, I originally predicted that the presence of public housing would not have a significant independent effect on the drug motivated homicide rate, when the outlier tracts are trimmed from the analysis. In the first model (see Table 6.10), the presence of public housing is a significant predictor of the drug motivated homicide rate, when no control variables are included. Specifically, the drug motivated homicide rate for the sample of tracts with public housing is 1.01

times higher than the drug motivated homicide rate for the sample of tracts without public housing.

However, with the second model, there is not a significant relationship between the presence of public housing and the drug motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. About 23% of the variance of the dependent variable is explained in the second model; with poverty, racial isolation, and percentage of male residents being significantly related to the drug motivated homicide rate. Therefore a 10% increase in poverty, racial isolation, and the percentage of male residents is associated with a 65%, 10%, and 30% increase in the drug motivated homicide rate, respectively. All else being equal, the physical and social environment of this sample of tracts with public housing does not have a significant independent effect on the drug motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. Thus, drug motivated homicides occur at a higher rate in neighborhoods that are more poverty stricken, racially isolated, and experience a greater percentage of male residents than neighborhoods that experience less severe conditions.

The results of this analysis are consistent with my theoretical hypothesis; there is not a significant relationship between the presence of public housing and the drug motivated homicide rate. Since the results of both analyses with different samples are similar, the trimmed subset of outlier tracts have no significant effect on the overall comparisons of drug motivated homicide rates between tracts with and without public housing. Therefore, it appears that the conditions and characteristics associated with the outlier tracts are not having an influence on the comparative rates of drug motivated

homicides and poverty, racial isolation, and the percentage of male residents have an influence on the rates of drug motivated homicides occurring in public housing areas.

Table 6.10: Negative Binominal Regression Predicting the Influence of Public Housing on the Drug Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 5% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.699 (.140)**	2.01	-.126 (.101)	--------
Population (ln)	.524(.088)**	--------	.911(.072)**	--------
Poverty	--------	--------	5.03 (1.23)**	1.65
Ethnic Heterogeneity	--------	--------	-.266 (.528)	--------
Residential Mobility	--------	--------	.003 (.542)	--------
Class Isolation	--------	--------	.283 (.507)	--------
Racial Isolation	--------	--------	.973 (.139)**	1.10
School Enroll.	-------	-------	.306 (.982)	-------
H.S. Completion	-------	-------	-.382 (.658)	-------
Percent Male	-------	-------	2.61 (1.28)*	1.30
Vehicle Access	-------	-------	-1.02 (.669)	------
Log likelihood	-1075.3795		-846.87305	
LR Test	62.33**		519.34**	
Pseudo R2	.03		.23	
Constant	-4.27 (.707)**		-8.95 (1.04)**	
N	760		760	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Robbery Motivated Homicides

My initial hypothesis was that the presence of public housing would not be a significant predictor of the robbery motivated homicide rate, when outlier tracts are removed from the analysis. As shown in Table 6.11, without any controls included in the model, the presence of public housing is a significant predictor of the robbery motivated

homicide rate. The robbery motivated homicide rate for the sample of tracts with public housing is 0.87 times higher than the robbery motivated homicide rate for the sample of tracts without public housing. However, when the neighborhood disadvantage, social isolation, and residential composition variables are included in the model, there does not appear to be a significant relationship between the presence of public housing and robbery motivated homicide rate.

The second model explains 19% of the variance in the dependent variable and poverty and racial isolation are significantly related to the rate of robbery motivated homicides. A 10% increase in poverty and racial isolation is associated with a 53% and a 10% increase in the robbery motivated homicide rate, respectively. It appears that the physical and social environment of public housing areas is not having an additive effect on the robbery motivated homicide rate and robbery motivated homicides occur at a higher rate in neighborhoods that are more poverty stricken and racially isolated than neighborhoods that are more affluent and integrated.

The results of this analysis are consistent with my theoretical hypothesis, the presence of public housing is not a significant predictor of the robbery motivated homicide rate, when controlling for neighborhood conditions and excluding the outlier tracts. Since the results of both analyses with different samples of tracts are similar, the trimmed subset of outlier tracts have no effect on the overall comparisons of robbery motivated homicide rates between tracts with and without public housing. Therefore, it appears that the conditions and characteristics associated with the outlier tracts are not having an influence on the comparative rates of robbery motivated homicides and poverty

and racial isolation can explain robbery motivated homicides occurring in public housing areas.

Table 6.11: Negative Binominal Regression Predicting the Influence of Public Housing on the Robbery Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 5% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.627 (.113)**	1.87	.004 (.093)	--------
Population (ln)	.633 (.073)**	--------	.864 (.065)**	--------
Poverty	--------	--------	4.25 (1.17)**	1.53
Ethnic Heterogeneity	--------	--------	.937 (.479)	--------
Residential Mobility	--------	--------	.603 (.487)	--------
Class Isolation	--------	--------	-.639 (.452)	--------
Racial Isolation	--------	--------	.964 (.118)**	1.10
School Enrollment	-------	-------	-1.52 (.929)	-------
H.S. Completion	-------	-------	.662 (.617)	-------
Percent Male	-------	-------	.064 (1.15)	-------
Vehicle Access	-------	-------	-1.04 (.600)	-------
Log likelihood	-1066.5859		-901.01765	
LR Test	100.45**		431.58**	
Pseudo R2	.05		.19	
Constant	-5.16 (.594)**		-7.67 (.904)**	
N	760		760	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Domestic Motivated Homicides

My original hypothesis was that the presence of public housing would not have a significant independent effect on the domestic motivated homicide rate, when outlier tracts are trimmed from the analysis. Without any control variables included in the model, the presence of public housing is a significant predictor of the domestic motivated homicide rate (see Table 6.12). In this model, the domestic motivated homicide rate for

the sample of tracts with public housing is 1.36 times higher than the domestic motivated homicide rate for the sample of tracts without public housing. However, the results of the second model indicate that there is not a significant relationship between the presence of public housing and the domestic motivated homicide rate.

The second model explains 23% of the variance in the dependent variable and poverty, racial isolation, and vehicle access are the control variables that are significant predictors of the domestic motivated homicide rate. Specifically, a 10% increase in poverty and racial isolation is associated with a 33% and an 8% increase in the rate of domestic motivated homicide, respectively. Additionally, a 10% increase in vehicle access is associated with an 11% decrease in the domestic motivated homicide rate. Neighborhoods that are poverty stricken, with high-degree of black and white racial segregation, and limited vehicle access experience greater rates of domestic motivated homicide than more affluent areas with less severe conditions.

The results of this analysis are consistent with my theoretical hypothesis; the presence of public housing is not a significant predictor of the domestic motivated homicide rate, when neighborhood conditions are controlled and the outlier tracts are removed from the analysis. Since the results of both analyses with different samples are similar, the trimmed subset of outlier tracts have no effect on overall comparisons of domestic motivated homicide rates between tracts with and without public housing. Therefore, it appears that the conditions and characteristics associated with the outlier tracts are not having an influence on the comparative rates of domestic motivated homicides and poverty, racial isolation, and vehicle access can explain the rates of domestic motivated homicides occurring in public housing areas.

Table 6.12: Negative Binominal Regression Predicting the Influence of Public Housing on the Domestic Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding Top 5% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.859 (.107)**	2.36	.134 (.076)	--------
Population (ln)	.712 (.069)**	-------	.980 (.056)**	--------
Poverty	--------	-------	2.85 (.945)**	1.33
Ethnic Heterogeneity	--------	-------	.368 (.396)	--------
Residential Mobility	--------	-------	-.059 (.415)	--------
Class Isolation	--------	-------	-.091 (.387)	--------
Racial Isolation	--------	-------	.773 (.099)**	1.08
School Enrollment	-------	-------	.271 (.749)	-------
H.S. Completion	-------	-------	.125 (.506)	-------
Percent Male	-------	-------	-.198 (.979)	-------
Vehicle Access	-------	-------	-1.20 (.511)*	.89
Log likelihood	-1218.2995		-1003.6915	
LR Test	148.08**		577.25**	
Pseudo R2	.06		.23	
Constant	-5.57 (.567)**		-7.67 (.760)**	
N	760		760	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Other Motivated Homicides

When excluding the outlier tracts from the regression analysis, I hypothesized that the results would indicate that there is not a significant relationship between the presence of public housing and the "other" motivated homicide rate, when controlling for neighborhood disadvantage, social isolation, and residential composition. As seen in Table 6.13, the presence of public housing is a significant predictor of the "other" motivated homicide rate, when no control variables are included in the models. The "other" motivated homicide rate for the sample of tracts with public housing is 1.07 times higher than the "other" motivated homicide rate for the sample of tracts without public

housing. However, the results of the second model indicate that there is not a significant relationship between the presence of public housing and the "other" motivated homicide rate, when controlling neighborhood conditions.

The second model explains 22% of the variance of the dependent variable and poverty, ethnic heterogeneity, residential mobility, racial isolation, percentage of male residents, and vehicle access are significant predictors of the "other" motivated homicide rate. A 10% increase in poverty, ethnic heterogeneity, residential mobility, racial isolation, and percentage of male residents is associated with a 23%, 7%, 6%, 11%, and 29% increase in the rate of "other" motivated homicides, respectively. Additionally, a 10% increase in vehicle access is associated with a 14% decrease in the "other" motivated homicide rate. Therefore, "other" motivated homicides occur at a higher rate in neighborhoods that are more disadvantaged, racially isolated, have greater percentages of male residents and less vehicle access than neighborhood not experiencing such extreme conditions.

The results of this analysis are consistent with my theoretical hypothesis, the presence of public housing is not a significant predictor of the "other" motivated homicide rate, when controlling for neighborhood conditions and excluding the outlier tracts. Since the results of both analyses with different samples are similar, the trimmed subset of outlier tracts has no effect on overall comparisons of "other" motivated homicide rates between tracts with and without public housing. Therefore, it appears that the conditions and characteristics associated with the outlier tracts are not having an influence on the comparative rates of "other" motivated homicides and neighborhood disadvantage, racial

isolation, the male population, and vehicle access can explain the rates of "other" motivated homicides occurring in public housing areas.

Table 6.13: Negative Binominal Regression Predicting the Influence of Public Housing on the "Other" Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 5% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.728 (.092)**	2.07	.087 (.052)	--------
Population (ln)	.521 (.054)**	--------	.774 (.035)**	--------
Poverty	--------	--------	2.10 (.607)**	1.23
Ethnic Heterogeneity	--------	--------	.721 (.250)**	1.07
Residential Mobility	--------	--------	.585 (.263)*	1.06
Class Isolation	--------	--------	.451 (.239)	--------
Racial Isolation	--------	--------	1.02 (.063)**	1.11
School Enroll.	-------	--------	-.566 (.462)	--------
H.S. Completion	-------	--------	-.266 (.332)	--------
Percent Male	-------	--------	2.58 (.627)**	1.29
Vehicle Access	-------	--------	-1.51(.325)**	.86
Log likelihood	-2036.6139		-1638.1239	
LR Test	143.96**		940.94**	
Pseudo R2	.07		.22	
Constant	-2.71 (.436)**		-5.60 (.507)**	
N	760		760	

Notes: data in model columns represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*

Q2b: Strategy D- Bivariate analyses excluding outlier tracts.

H6- Gang, drug, robbery, domestic, and "other" motivated homicides will occur proportionately in tracts with and without public housing, because the exclusion of a subset of outlier tracts from the analysis will show that all motivations for homicides occur proportionately in tracts with public housing and without.

Bivariate cross-tabulations and two group tests of proportion were conducted to determine whether certain motivations for homicides occur disproportionately in tracts with public housing and without. There are 154 tracts with public housing and 606 tracts without included in the analysis[15] (see Table 6.14). My initial hypothesis was that proportions of gang, drug, robbery, domestic, and "other" motivated homicides would not differ across tracts with and without public housing in the sample excluding the outlier tracts. The results of this analysis are consistent with my theoretical hypothesis, there are not significant differences for the percentages of gang, drug, robbery, domestic, and "other" homicides between the trimmed sample of tracts with and without public housing. It appears that each type of homicide comprises similar percentages of all homicides in tracts with and without public housing. The percentages of type specific homicides in this sample of tracts with public housing were very similar to the percentages of type specific homicides in the full sample of tracts with public housing.

Table 6.14: Bivariate Analyses of Type Specific Homicides in Tracts with and without Public Housing, Excluding 40 Outlier Tracts, Chicago, 1985-1995.

	Gang	**Drug**	**Robbery**	**Domestic**	**"Other"**	**Total**
With-PH (n=154)	12%	11%	10%	15%	52%	100%
Without-PH (n=606)	15%	10.5%	10.5%	14%	50%	100%

Two group tests of proportion: no significant differences for any homicide type between tracts with and without public housing.

[15] See Appendix J for bivariate analyses with the top 10% of tracts excluded from the sample.

Discussion

Previous research has established that areas for which gangs congregate and conduct drug sales have high rates of gang and drug related crimes (Tita & Ridgeway, 2007; Taniguchi et al., 2011). Research conducted in some of Chicago's public housing projects indicates that there was a strong gang and drug presence during the late 1980s and early 1990s (Popkin et al., 2000; Venkatesh, 2000, 2008). In this dissertation, I based my hypotheses on this past research and in most cases the findings were not consistent with my original hypotheses. As it turns out, the presence of public housing does not have a significant independent effect on the total, gang, drug, robbery, domestic, and "other" motivated homicide rates, when controlling for neighborhood disadvantage, social isolation, and residential composition. From previous research and the findings from this dissertation, it appears that there might be some phenomenon occurring in these areas which can help to explain this non-significant relationship between the presence of public housing and lethal violence.

A potential explanation for this non-significant relationship is based on the *defended neighborhood* thesis. Suttles (1972) coined this term in his study of neighborhoods in Chicago. *Defended neighborhoods* are often disorganized, but experience relatively low crime rates due to local youth gangs and adult criminal organizations. According to Suttles (1972), in *defended neighborhoods*, crimes such as burglary and robbery were almost non-existent. The reason for this was the social control that the local gangs and criminal groups exercised over the neighborhood. Although street gangs engaged in criminal and violent acts against rival gang members, the neighborhood was generally safe for residents of the community (Suttles, 1972).

The structure, organization, and activities of gangs have evolved from Suttles (1972) analysis, but, parallels can still be drawn to understand the findings of this dissertation. The gangs that controlled many of Chicago's public housing areas were generally viewed negatively by the residents and members of the broader community. However, it does appear that gangs were able to exercise social control over the project grounds. Venkatesh (2000) indicates that the gangs (or at least the gang leaders) in the Robert Taylor Homes wanted to be viewed as a part of the community. Part of this community involvement included hosting basketball tournaments, barbecues, and escorting residents across project grounds (Venkatesh, 2000, 2008). In addition, occasionally the gangs funneled small amounts of money back to the community residents by purchasing food and clothing for the residents who were without these necessities (Venkatesh, 2000, 2008). These actions were not altogether altruistic; it seems that the major reason for community involvement was to reduce the tension between gang members and residents, which would ultimately make it easier to maintain the drug markets on project' grounds (Venkatesh, 2000, 2008).

According to Venkatesh (2000), some gang leaders attempted to reduce the negative attention brought upon the gang by sanctioning gang members who engaged in too much violence in project areas. Venkatesh (2000) provides an account of a how a mid-level gang leader was removed from his position for engaging in too much violence and attracting too much negative attention to the gang (2000, page 196). The gang leaders believed that unnecessary violence brings too much negative attention to the gang and the community. Therefore, in some instances, gangs are able to show restraint and exercise social control over their neighborhood to maximize their drug profits.

Additionally, only a small part of the gang's activity was extremely violent behavior (Venkatesh, 2000). There were short periods of intense violence between rival gangs, but these outbursts were generally directed towards rival gang members (Venkatesh, 2000). Therefore, it appears that much of the violence occurring in the public housing areas was sporadic and was generally targeted towards rivals. This does not downplay the significance that the exposure to this violence has on the residents; however, it does help to understand the findings found in this dissertation.

Gangs have an underlying motive to keep the rate of crime and violence relatively low in the areas for which they conduct drug sales. This motive is to maximize profits and profit cannot be maximized if there is constant opposition and attention from the community and law enforcement. Therefore, social control is exercised and wanton acts of violence are regulated by the gang. There are drug markets that were controlled by gangs in non-public housing areas of Chicago as well, but the physical environment of Chicago's public housing may have made it easier to exercise social control. Hagedorn (2005, 2008) addresses this issue and suggests that gangs in some of Chicago's most notorious projects became institutionalized, in part, due to the physical environment of the projects. The physical environment of these areas allowed the gangs to control the comings and goings of residents and outsiders, and to regulate the behaviors of residents as well as low-level gang members (Hagedorn, 2005, 2008; Venkatesh, 2000, 2008).

Another important aspect of the physical environment was that it offered protection from the violence associated with drug sales. Hagedorn (2005) interviewed gang members who lived in Chicago's Robert Taylor Homes and were displaced due the demolition of the project. According to these gang members, it seems that drug sales in

the projects were safer and easier than conducting drug sales on the streets. On the street, arrests were more frequent and violence increased because displaced gangs came into conflict over the newly established drug turfs (Hagedorn, 2005). Similarly, Taniguchi et al. (2011) found that street corners where gangs sold drugs experienced higher rates of crime and violence compared to street corners that were not associated with gangs and drugs. In the projects, as opposed to the street, gang members were able to hide from law enforcement and rival gang members due to the unique physical environment conditions (see Hagedorn, 2005).

If, in fact, gang presence in public housing areas has a suppressive effect on lethal violence, then the results of these analyses should indicate that there is a significantly lower homicide rate in tracts with public housing than in tracts without. However, the results of these regression analyses do not indicate that this type of relationship is occurring. This does not mean that gang presence in a neighborhood does not have an effect on homicide rates, but that gangs may affect homicide rates differently in public housing areas compared to non-public housing areas. For instance, there may have been a stronger gang presence in public housing areas than in areas without public housing, but the physical environment of some of Chicago's public housing areas may have allowed gangs to control their drug markets with less excessive violence than in non-public housing areas. With this strong gang presence in Chicago's public housing areas, crime and violence will still occur, however the rates of excessive acts of violence will not be as high due to the protection and social control offered by the physical environment. Meanwhile, gang presence outside of public housing areas might not be as strong as within public housing areas, but the gangs conducting drug sales on the street may have

to engage in more excessive violence to maintain their drug turfs than their public housing counterparts. Thus, when conducting the regression analyses, the significant differences might be negated because of the stronger gang presence with less excessive violence in public housing areas and smaller gang presence with more excessive violence in areas without public housing.

It has not been firmly established whether the presence of gangs affect homicide rates differently in areas with public housing compared to areas without public housing and the results of this dissertation do not specifically determine whether the social control exerted by the gangs are having a suppression effect on the rates of lethal violence occurring in public housing areas. However, based on the results found in this dissertation and previous research (Hagedorn, 2005, 2008; Suttles, 1972; Venkatesh, 2000, 2008), it is reasonable to consider that the social control exercised by gangs in public housing areas have some effect on the homicide rates occurring in public housing areas. In public housing areas, the physical environment of Chicago's public housing projects may have made it easier for gangs to exercise social control because they were able to use the physical environment to conduct surveillance over their drug markets with protection from rival gangs and law enforcement. The social control exercised by the gangs allowed them to regulate behaviors and activities occurring in the projects (Hagedorn, 2005, 2008; Suttles, 1972; Venkatesh, 2000, 2008). This regulation of behaviors and activities could have influenced and limited the amount of excessive crime and violence occurring in these areas. The social control exercised by gangs in public housing areas can, in part, help to understand the unexpected findings from this dissertation.

Summary

The results of this chapter indicate that Chicago's public housing areas do not experience significantly different rates of gang, drug, robbery, domestic, and "other" motivated homicides than areas without public housing, when controlling for neighborhood disadvantage, social isolation, and residential composition. Therefore, the physical and social environment of public housing areas in Chicago does not influence a specific type of violence. In most cases, neighborhood conditions seem to explain the rates of type specific homicides occurring in public housing areas.

The presence of public housing was not a significant predictor of the rates of gang, drug, robbery, domestic, and "other" motivated homicides, when the full sample of tracts were included in the regression models. Similarly, the results of the second negative binominal regression analyses without the 40 outlier tracts indicates that the presence of public housing does not have a significant independent effect on the rates of type specific homicides, when controlling neighborhood conditions. With all else being equal, it appears the physical and social environment does not have a significant positive independent effect on type specific homicide rates. However, as discussed, the physical environment of public housing areas might have facilitated the social control exercised by the gangs located in project areas (Hagedorn, 2005, 2008). This gang presence interacting with the physical environment may contribute to the non-significant relationship between the presence of public housing and the rates of lethal violence occurring in public housing areas.

Since the results of both analyses with different samples are similar, the trimmed subset of outlier tracts do not change the substantive conclusion that elevated violence in

tracts with public housing is driven by social structural characteristics rather than situational or physical features associated with public housing properties. Therefore, it appears that the conditions and characteristics associated with the outlier tracts are not having an influence on the comparative rates of type specific homicides. Similar to the results of the previous chapter, it seems the only thing that separated the outlier tracts with public housing apart from the non-outlier tracts with public housing was their levels of disadvantage, isolation, and residential composition. Therefore, a subset of outlier tracts is not influencing the results of the analyses and the conditions and characteristics associated with these tracts are not having an independent influence on the comparative rates of type specific homicides.

CHAPTER 7

RESULTS: DO DIFFERENCES ACROSS TRACTS WITH PUBLIC HOUSING INFLUENCE THE AMOUNT AND NATURE OF HOMICIDE?

Q3: Strategy E- Bivariate analyses with tracts containing public housing.

Hypothesis 7: *Neighborhood disadvantage, social isolation, residential composition, and the physical environment will differ between the subset of trimmed outlier tracts with public housing and the non-trimmed tracts with public housing, which will account for the predicted differences in the results between the two negative binominal regression analyses.*

I initially predicted that there would be differences in the results between the negative binominal regression analyses with different samples and the contradictory findings would be attributed to the differences in the neighborhood, residential, and the physical environment characteristics between the trimmed outlier tracts and the non-trimmed tracts. The predicted contradictory results never occurred, thus, the findings are not consistent with my theoretical hypotheses. Since the results of both analyses with different samples of tracts are similar, the trimmed subset of outlier tracts has no significant independent effect on the overall comparisons of homicide rates between tracts with and without public housing. The trimmed outlier tracts obviously differ from the non-trimmed tracts for the conditions and characteristics of neighborhood disadvantage, social isolation, and residential composition[16]. However, it is uncertain as to whether the trimmed outlier tracts with public housing exhibit different physical environment characteristics than the non-trimmed tracts with public housing. Therefore,

[16] See Appendix K for specific differences in neighborhood disadvantage, social isolation, and residential composition and homicide rates between the trimmed tracts and the non-trimmed tracts.

bivariate analyses will be conducted to determine if there are significant differences in the physical environment between the two samples of tracts with public housing.

Within the top 5% of outlier tracts, there are 34 tracts containing public housing that were trimmed from the analyses. These trimmed outlier tracts with public housing encompass 29 tracts that contain family developments and 5 tract containing only scattered site projects (see Table 7.1). However, for brevity, I will only compare the differences between the trimmed outlier tracts and the non-trimmed tracts containing family developments. There are 16 other tracts with family public housing developments that are not located in extremely disadvantaged and isolated tracts and not trimmed from the analyses (see Table 7.2). The 29 trimmed outlier tracts with family public housing developments experience significantly greater rates of total, gang, drug, and "other" motivated homicides than the 16 non-trimmed tracts with family public housing developments (see Table 7.3).

Neighborhood Disadvantage, Social Isolation, and Residential Composition Differences

The trimmed outlier tracts with family public housing experience significantly greater levels of poverty, residential mobility, racial and class isolation, and school enrollment than the non-trimmed tracts with family public housing (see Table 7.4). Whereas, the non-trimmed tracts with family public housing experience significantly greater levels of ethnic heterogeneity, high-school graduates, percentage of male residents, and vehicle access than the trimmed outlier tracts with family public housing (see Table 7.4). Additionally, the trimmed outlier tracts with public housing experience significantly greater rates of homicides than the non-trimmed tracts with public housing.

Therefore, it seems that the trimmed outlier tracts with family public housing experience significantly greater rates of homicide, in part, due to differences in neighborhood disadvantage, social isolation, and residential composition variables (see Tables 5.2 & 5.4; Tables 6.2-6.6 & 6.9-6.14).

However, the connection is not as clear with the relationship between the percentage of male residents and homicide rates. The trimmed outlier tracts with family public housing have a significantly smaller percentage of male residents than the non-trimmed tracts with family public housing; yet, the results of regression analyses show that as the percentage of the male population increases, the rates of total, drug, and "other" motivated homicide rates will increase as well. A potential explanation for these findings is that there are actually more males residing in public housing areas than what is officially reported (Holzman & Piper, 1998).

It has been documented that the United States census has traditionally undercounted certain demographic groups, such as males and minorities (Nguyen, 1996; Sullivan, 1990; West & Fein, 1990). With the 1990 census, 5.7% of the total black population was undercounted compared to the undercount of the total non-black population, which was 1.3% (Nguyen, 1996). Particularly germane to this study was that black males were disproportionately undercounted compared to black females and other demographic groups in the 1990 census (Nguyen, 1996). Around 8.5% of the total black male population in the United States was undercounted in the 1990 census (Nguyen, 1996). It is evident that black males are undercounted by official measures; therefore, a greater number of males could be illegally residing in public housing areas than what is indicated by the census and other measures.

The undercount of males in public housing areas can be understood by examining some of the issues surrounding welfare and public housing policies. First, welfare dependency has often been blamed for reduction in marriage rates among the lower class (see Edin, 2000). In the 1980s and 1990s, it was often believed that if a low-income mother was to marry, then the benefits coming from welfare and public assistance would be reduced (see Edin, 2000; Nguyen, 1996; Sullivan 1990; West & Fein, 1990). Frequently, the rules and regulations regarding welfare benefits and marriage were complex and difficult to understand, which helped to perpetuate the belief that marriage would result in a reduction or loss of benefits (Edin & Lein, 1997; Nguyen, 1996; Sullivan, 1990; West & Fein, 1990). It appears from the descriptive statistics found in this dissertation that tracts containing public housing experience significantly greater percentages of female headed households than tracts without public housing (see Table 5.1 on page 73). Due to this greater percentage of un-wed mothers in public housing areas compared to non-public housing areas, it is apparent that there would be significantly lower percentages of reported male residents in these areas. Moreover, after males have reached the age of eighteen, their residence in the household can reduce the amount of welfare benefits for which the family is permitted (Sullivan, 1990). This does not mean that males are not residing in public housing areas, but that males could be living "off-the-lease" or "living with" significant others or relatives in public housing areas. Therefore, these males will be undocumented in official measures due to fear of reduction in welfare benefits (see Sullivan, 1990). Since these "off-the-lease" residents are not captured in census and public housing data, there could be significantly more

male residents in public housing areas than what is officially reported (see Fagan et al., 1998; Holzman & Piper, 1998; Sullivan, 1990; Venkatesh, 2002).

"One-strike" policies can also explain the undercount of males in public housing areas. Originally enacted with the Anti-Drug Abuse Act of 1988, "one-strike" policies allow housing authorities to evict and terminate the lease of the household, if a household member engages in illegal drug use or criminal activity (Popkin et al., 2000; Popkin et al., 2003; Ready et al., 1998; Roman & Travis, 2004). This policy covers any member of the leaseholder's household who engages in illegal activities (Roman & Travis, 2004). Additionally, housing authorities have the power to reject the housing applications of potential residents with a criminal record or a history of drug or alcohol abuse (Popkin et al., 2000; Popkin et al., 2003; Roman & Travis, 2004). According to Roman and Travis (2004), a large number of public housing residents have relatives or significant others with criminal histories. Therefore, often, the lease holder is forced to make a decision on whether to allow the relative or significant other with a criminal record to live with them illegally or to turn their back on them (Roman & Travis, 2004). Venkatesh (2002) indicates that almost half of the households surveyed in the Robert Taylor Homes expected a family member to be released from prison within nine months and the returning offenders only option might be to reside in public housing developments with their family (Popkin et al., 2003; Venkatesh, 2002). With this in mind, census data can drastically under report the number of males living in Chicago's public housing projects. Thus, it appears that there are more males than what is officially reported in these areas and the undocumented males may have an effect on the rates of lethal violence occurring in public housing areas.

The stringent welfare and public housing policies, in part, contribute to significantly less males officially residing in public housing areas compared to non-public housing areas. It appears that a proportion of the undocumented male population may likely have a history of criminal behavior or drug abuse, but it is uncertain as to the size of this proportion (see Popkin et al., 2003; Roman & Travis, 2004; Sullivan, 1990; Venkatesh, 2002). Interestingly, the results of three out of six regression models conducted in this dissertation indicate that the as the male population of a neighborhood increases, so too does the total, robbery, and "other" motivated homicide rate. Since, there are more male residents than what is officially reported in public housing areas, it is plausible that many of the murders occurring in public housing areas could be committed by males who are "living-off-lease" or "living with" residents in the developments.

Based on all of the results found in this dissertation, it appears that certain neighborhood disadvantage, social isolation, and residential compositional variables can explain of homicides occurring in public housing areas rather than the unique physical and social environment. Yet, since the results of the negative binominal regression analyses with two different samples are similar, the conditions and characteristics associated with the trimmed outlier tracts are not having an independent effect on overall comparisons of homicide rates between tracts with and without public housing.

Physical Environment

In terms of the architectural design, the 29 trimmed outlier tracts with family public housing comprise a significantly larger percentage of all high-rise projects (80%) than the non-trimmed tracts with family public housing (20%) (see Table 7.5). The trimmed outlier tracts that contain high-rise family public housing developments include

projects such as Robert Taylor Homes, Cabrini Homes, and Stateway Gardens (see Table 7.1). In regards to low-rise projects, the non-trimmed tracts with family public housing (64%) comprise a greater percentage of all low-rise projects than the trimmed outlier tracts with family public housing (36%); however, this difference is non-significant. Finally, the trimmed outlier tract with family public housing comprise a greater percentage of all developments that are a mixture of high-rise and low-rise project buildings (71%) than the non-trimmed tracts with family public housing (29%), but again this difference is non-significant.

The trimmed outlier tracts with family public housing contain significantly more housing units than the non-trimmed tracts with family public housing. The average number of housing units for the 29 trimmed outlier tracts with family public housing is 938.97 units and the average number of housing units for the non-trimmed tracts with family public housing is 359.10 units (see Table 7.6). Finally, the 29 trimmed outlier tracts with family public housing (90%) are mostly adjacent to another project tract, while a greater percentage of non-trimmed tracts with family public housing (57%) are removed from other tracts containing public housing (see Table 7.7). Specifically, a significantly greater percentage of the 29 trimmed outlier tracts containing family public housing are located adjacent to other public housing areas than the non-trimmed tracts containing family public housing. From these comparisons, the trimmed outlier tracts with family public housing are more likely to be of the high-rise design, larger, and adjacent to other tracts with public housing than the non-trimmed tracts with family public housing.

Discussion and Summary

The presence of public housing does not have a significant independent effect on lethal violence, when neighborhood conditions are controlled. Generally, the results found in this dissertation indicate that neighborhood disadvantage, social isolation, and residential composition variables are significant predictors of lethal violence and the physical and social features characteristic of public housing properties do not have a significant independent effect on lethal violence. The trimmed outlier tracts with public housing that were removed from the regression models are comprised of many large high-rise projects located adjacent to other public housing areas. These trimmed outlier tracts with public housing experience higher rates of lethal violence than the non-trimmed tracts with public housing. However, based on all the results reported in this dissertation, it appears that the effect of public housing on the rates of lethal violence is rooted in neighborhood disadvantage, social isolation, and residential composition and the differences between the trimmed outlier tracts and the non-trimmed tracts do not have an influence the comparative rates of homicides between the analyses with the two different samples.

Table 7.1: Physical Environment Characteristics of the Trimmed Outlier Tracts with Family Developments, Chicago, 1985-1995.

Project	Design	Housing Units	Externality
ABLA	High-rise/low-rise	1,569	Adjacent
Addams/Abbot	High-rise/low-rise	1,636	Adjacent
Altgeld/Murray Homes	Low-rise	2,000	Adjacent
Brooks Extension	High-rise	453	Adjacent
Cabrini Extension	High-rise	960.5	Adjacent
Cabrini Row	Low-rise	586	Adjacent
Dearborn Homes	High-rise	3,504	Removed
Hillard/Ickles Homes	High-rise	1,145	Adjacent
Horner Homes	High-rise	1,658	Adjacent
Horner Homes Annex	High-rise/low-rise	150	Adjacent
Madden Homes	Low-rise	150.6	Adjacent
Maplewood/Rockwell	High-rise	1,265	Adjacent
Ogden Homes	Low-rise	322	Removed
Olander/Lake Michigan	High-rise	909	Adjacent
Robert Taylor Homes	High-rise	869.8	Adjacent
Robert Taylor Homes	High-rise	869.8	Adjacent
Robert Taylor Homes	High-rise	869.8	Adjacent
Robert Taylor Homes	High-rise	869.8	Adjacent
Robert Taylor Homes	High-rise	869.8	Adjacent
Stateway Gardens	High-rise	1,644	Adjacent
Washington Park	High-rise/low-rise	204	Adjacent
Washington Park	High-rise/low-rise	204	Adjacent
Washington Park	High-rise/low-rise	204	Adjacent
Washington Park	High-rise/low-rise	204	Adjacent
Washington Park	High-rise/low-rise	204	Removed
Wells/Darrow/Madden	High-rise/low-rise	1,456.60	Adjacent
Wells/Wells Extension	High-rise/low-rise	1,479	Adjacent
Wentworth Gardens	Low-rise	422	Adjacent
William Green Homes	High-rise	549.5	Adjacent

*There are also 6 outlier tracts with scattered site housing.

Table 7.2: Physical Environment Characteristics of the Non-Trimmed Tracts with Family Developments, Chicago, 1985-1995.

Project	Design	Housing Units	Externality
41st Cottage	High-rise/low-rise	354	Adjacent
Archer Homes	High-rise	148	Adjacent
Bridgeport Homes	Low-rise	141	Removed
Cabrini Extension	High-rise	960.5	Adjacent
Harrison Courts	Low-rise	126	Removed
Lathrop Homes	Low-rise	925	Removed
Lawndale	Low-rise	128	Removed
Le Claire Courts	Low-rise	616	Removed
Lowden Homes	Low-rise	128	Removed
Madden Homes	Low-rise	150.6	Adjacent
Prairie Ave Courts	High-rise/low-rise	529	Removed
Racine Courts	Low-rise	120	Removed
Trumbull Homes	Low-rise	462	Removed
Washington Park	High-rise/low-rise	204	Adjacent
Washington Park	High-rise/low-rise	204	Adjacent
William Green Homes	High-rise	549.5	Adjacent

*There are also 138 non-trimmed tracts with scattered site housing.

Table 7.3: Differences in Homicide Rates per 1,000 Residents between Trimmed Outlier and Non-Trimmed Family Public Housing Developments, Chicago, 1985-1995.

	16 Non-Trimmed Tracts	Significant Difference	29 Trimmed Tracts	t-value (S.E.)
Total	5.85	**	10.8	-3.29 (.802)
Gang	.413	**	1.69	-2.56 (.254)
Drug	.789	**	1.05	-.096 (.128)
Robbery	.700		.916	-.851 (.253)
Domestic	1.33		1.91	-1.39 (.418)
"Other"	3.31	**	6.04	-2.86 (.492)

p<.01=**, two-tailed tests.

Table 7.4: Average Neighborhood Disadvantage, Social Isolation, and Residential Composition Scores, Tracts with Family Public Housing in Chicago, 1985-1995.

	Trimmed outlier tracts with family public housing		Non-trimmed tracts with family public housing
Number of tracts	29		16
Neighborhood Disadvantage			
Poverty index	.515	**	.257
	(.017)		(.021)
Ethnic heterogeneity index	.015	**	.163
	(.004)		(.057)
Residential mobility index	.689	**	.573
	(.010)		(.037)
Social Isolation			
Racial isolation score	.977	**	.523
(-1 to +1)	(.011)		(.157)
Class isolation score	-.778	**	-.303
(-1 to +1)	(.017)		(.067)
Residential Composition			
% Enrolled in school	.424	**	.314
	(.013)		(.013)
% Completed high school	.419	**	.532
	(.016)		(.033)
% Male	.419	**	.465
	(.005)		(.011)
% With access to a vehicle	.166	**	.480
	(.020)		(.047)

Notes: Standard deviations in parentheses.
**indicates significantly larger differences in average at .01 significance level, two-tailed test.

Table 7.5: Architectural Design of Trimmed Outlier and Non-Trimmed Tracts Containing Family Projects, Chicago, 1985-1995.

	High-Rise	Low-Rise	High-Rise/Low-Rise
Non-Trimmed	20% (n=3)	64% (n=9)	29% (n=4)
Trimmed	80% (n=14)*	36% (n=5)	71% (n=10)

p<.05=*, two group tests of proportion, z-value= -2.19, standard error= .286.

Table 7.6: Average Number of Housing Units for Trimmed Outlier and Non-Trimmed Tracts Containing Family Projects, Chicago, 1985-1995.

	Average Number of Housing Units
Non-Trimmed	359.10
Trimmed	938.97*

p<.05=*, two-tailed tests, t-value= -2.99, standard error= 100.84.

Table 7.7: Externality of Trimmed Outlier and Non-Trimmed Tracts Containing Family Projects, Chicago, 1985-1995.

	Adjacent	Removed
Non-Trimmed	43%	57%
Trimmed	90%**	10%

p<.01=**, two-tailed tests, t-value= -3.75, standard error= .122.

CHAPTER 8

SUMMARY AND DISCUSSION

Summary of Findings

This dissertation sought to disentangle the relationship between public housing and homicide. In doing so, the effect of the presence of public housing on homicide rates and the nature of lethal violence occurring in tracts containing public housing were established. In addition, this study determined whether a subset of outlier tracts has an influence on the rates of lethal violence. To address these purposes, negative binominal regression models were estimated with different samples: the full sample and samples excluding the outlier tracts. First, negative binominal regression models were estimated with full sample of tracts with and without public housing included in the analysis (n=800). With the second main analysis, tracts with and without public housing were ranked on a factor score of neighborhood disadvantage, social isolation, and residential composition. The top 5% of tracts (n=40) were removed from the analysis based on their factor scores[17]. Consequently, out of the 40 tracts, there were 34 outlier tracts with public housing that were removed from the sample. After removal, negative binominal regression models were re-estimated without these tracts included in the models. The use of different samples allowed for the determination of whether a subset of outlier tracts are exhibiting certain characteristics and conditions that have an influence on the total homicide rate, as well as type specific homicide rates.

The results of the negative binominal regression analysis, with the full sample of tracts, indicate that there is not a significant relationship between the presence of public

[17] The results of the negative binominal regression analyses excluding the top 10% of extremely disadvantaged and isolated tracts are reported in Appendix J.

housing and the total homicide rate. Therefore, the physical and social environment of public housing does not have a significant independent effect on lethal violence once other neighborhood conditions influencing violence are controlled. There were similar results produced in the second negative binominal regression analysis excluding the outlier tracts. In this model, the presence of public housing is also not a significant predictor of the total homicide rate, when neighborhood disadvantage, social isolation, and residential composition variables are controlled. In both analyses with different samples, neighborhood conditions are driving the effect of public housing on rates of lethal violence. Because the results were similar between the two main analyses, it appears that the conditions and characteristics associated with the trimmed outlier tracts are not having an effect on overall comparisons of homicide rates between tracts with and without public housing.

Another purpose of this dissertation was to determine whether certain motivations for homicide occur at a higher rate and disproportionately in tracts containing public housing compared to tracts without. Again, the different samples of tracts were utilized in the negative binominal regression and bivariate analyses and the results indicate that tracts with public housing are not micro-places that have a significant independent influence on gang, drug, robbery, domestic, and "other" motivated homicides, when controlling for neighborhood conditions that influence violence. Therefore, Chicago's public housing areas do not seem to be significantly more prone to specific types of violence than are other neighborhoods, net of social structural conditions.

The contradictory results that were predicted to arise between the negative binominal regression analyses with different samples never occurred. Due to the similar

results found between the two analyses, it appears that the conditions and characteristics associated with the subset of outlier tracts are not having an influence on the comparative rates of homicide. The outlier tracts with public housing that were excluded from the analyses were primarily large high-rise family developments, however, it appears that the effect of public housing seems to be caused by conditions of neighborhood disadvantage, social isolation, and residential composition rather than the physical and social environment of public housing areas.

Limitations

The results of this dissertation should be taken in light of the following limitations. First, the public housing landscape of today is different from the landscape of public housing in the 1980s and early 1990s. Many of Chicago's housing projects were large high-rise or low-rise projects and many of the most notorious projects have been demolished. These vast high-rise and low-rise projects have given way to mixed-income town-home style housing projects. Consequently, the characteristics and conditions of Chicago's public housing during the time period for this study are limitations that need to be acknowledged. Although, public housing has changed in Chicago, there are still large high-rise and low-rise housing projects being used across the United States. The findings of this study are not applicable to Chicago today, but they are pertinent to other cities that utilize these types of projects.

Secondly, the location for each homicide is aggregated to the census tract level. As a result, just because a homicide occurred in a tract containing public housing, it does not mean that the homicide actually occurred on public housing property. Therefore, the effect of public housing maybe overestimated; however due to the non-significant results

of the physical and social environment in this analysis, the overestimation does not appear to have an effect. The residential composition variables are also aggregated to the tract level and project specific resident information is not available. The aggregated residential characteristics might not be representative of the actual residential population characteristics in public housing developments. Along similar lines, the physical and social environment of public housing areas is indirectly measured in this dissertation. By not directly measuring the physical and social environment specific to public housing developments, it cannot be firmly established whether any of the unique physical and social characteristics are having an influence on lethal violence.

The data used for this study, 1985 to 1995, was from period of increasing crime rates. The emergence of crack cocaine, increased firearms usage, demographic and criminal justice policy changes can be attributed to the skyrocketing crime and violence rates in many cities across the United States (Blumstein & Wallman, 2000). However, homicides often are concentrated in a few neighborhoods of a city and a small proportion of neighborhoods are believed to be responsible for the increase in the homicide rates during the late 1980s and early 1990s (Block & Martin, 1997; Griffiths & Chavez, 2004; Krivo & Peterson, 1996; Rosenfeld, 2000; Sherman, 1997; Wilson, 1987). Therefore, a small number of census tracts experience disproportionately greater rates of homicide than other tracts in Chicago (Griffiths & Chavez, 2004; Rosenfeld, 2000)[18]. These areas maybe experiencing extremely high rates of homicides specifically during this study period and the results should be taken in light of this. Therefore, during this time period, neighborhoods without public housing could have experienced extremely high rates of

[18] Tracts with public housing comprise 58% of the top 10% of tracts in terms of homicide rates.

homicides, which could weaken the effect that the presence of public housing has on the rates of lethal violence.

Theoretical Implications

Crime occurring in public housing areas can be understood through social structural theories, including the social disorganization and social isolation perspectives (Massey & Denton, 1993; Sampson et al., 1998; Shaw & McKay, 1942; Wilson, 1987). Variables measuring concepts from these theories were controlled for in this dissertation. The results of the negative binominal regression analyses indicate that the physical and social environment of public housing is not a significant predictor of the total homicide rate and the rate of type specific homicides, when neighborhood disadvantage, social isolation, and residential composition variables are controlled. Therefore, homicides occurring in Chicago's tracts are significantly influenced by the social structural variables controlled for in this study.

Situational theories have also been used to understand crime occurring in public housing projects (Clarke, 1997; Jeffery, 1971; Newman, 1972). Essentially, the physical environment of public housing areas reduces social control, which contributes to a higher rate of crime for the area (Jeffery, 1971; Newman, 1972). In particular, large family housing developments of the high-rise design are often associated low social control and are believed to be the most criminogenic (Newman, 1972; Newman & Franck, 1980). The physical and social environment of public housing is indirectly measured in this study; however, it does not appear that these characteristics of Chicago's public housing are independently contributing to an increase in lethal violence. In particular, many of the outlier tracts contained large high-rise family developments and the results of the

regression analyses indicate that including or excluding tracts with these characteristics does not have a significant positive independent effect on the comparative rates of lethal violence, when controlling for neighborhood conditions.

Interestingly, there are some examples in previous research to suggest that the physical environment may have helped the gangs conducting drug sales in the projects to exercise social control and ultimately reduce the level of excessive violence (Hagedorn, 2005, 2008; Venkatesh, 2000). To maximize their drug profits, gangs may have tried to limit negative attention from the community and law enforcement by reducing undue violence from occurring in the projects (see Hagedorn, 2005, 2008; see Venkatesh, 2000). Due to the limited ways of egress, dark hallways and stairwells, and often broken elevators, the gangs had the ability to establish territory and conduct surveillance over the lobbies, stairwells, hallways, and court-yards of the projects. Therefore, the physical environment of the projects may have assisted in creating social control by providing opportunities for the gangs to regulate behavior of residents and outsiders. Additionally, Hagedorn (2005) indicates that drug sales on the street, as opposed to in the projects, have the potential to be more violent and there are also more opportunities to be arrested. Therefore, it appears that the unique physical environment of public housing areas may have an effect on lethal violence, but this effect maybe actually reducing excessive violence rather than increasing it. These examples help to understand the findings from this dissertation; however, this violence reduction effect of the physical environment remains speculative.

Policy Implications

Poverty is a major problem facing many Americans and concentrated poverty has been shown to isolate residents from resources and social networks (Wilson, 1987, 1996). Poverty can be concentrated in both the public and private housing markets. However, this discussion will focus on how the changes occurring to public housing areas across the United States can influence concentrated poverty and ultimately affect crime and violence rates. In recent years, housing authorities across the United States have been demolishing large scale public housing projects in favor of the mixed-income town-home style of public housing. The underlying purpose of these new mixed-income residences is to reduce the concentrated poverty, disadvantage, and isolation associated with public housing by bringing together families from differing social classes. With these changes occurring to the landscape of public housing across the United States, more scientific research is emerging to determine if these changes influence the social and living conditions of public housing. This dissertation does not seek to determine the impact that the changes to public housing have on the homicide rates; however, the findings reported here do, in part, support the changes occurring to public housing.

The results of this study suggest that homicides occurring in public housing areas are associated with neighborhood disadvantage, social isolation, and residential composition. Furthermore, it appears that the physical and social characteristics of public housing areas are not having an independent effect on homicide rates, net of the neighborhood conditions. With this in mind, efforts should be geared at reducing concentrated poverty, disadvantage, and isolation associated with public housing areas. The results of this dissertation support the changes occurring across the United States that

are designed to reduce adverse neighborhood conditions, these changes include the creation of mixed-income housing and the use of housing choice vouchers in less disadvantaged and isolated neighborhoods. The use of housing choice vouchers could reduce concentrated poverty, disadvantage, and isolation by allowing public housing residents to choose housing in more affluent and integrated neighborhoods. Concentrated disadvantage and social isolation are significant predictors of lethal violence and addressing these issues through mixed-income residences and/or housing choice vouchers may reduce neighborhood crime rates. However, the existing research analyzing transformation and voucher holder relocations has produced mixed results in terms of crime reduction with some studies even showing a increase in crime for the destination neighborhoods (see Ellen, Lens, & O'Regan, 2012; Popkin, Levy, & Buron, 2009; Popkin et al., 2012; Suresh & Vito, 2007, 2009).

Future Research

Future research should continue to explore the relationship between public housing and crime. Chicago's public housing landscape was unique and future research should seek to determine the impact that public housing has on crime and violence in other cities. Furthermore, it has not yet been determined if the newer mixed-income town-home style of projects have an influence on lethal violence. This dissertation has not substantively shown that this style of public housing has an influence on crime and future research should uncover if the mixed-income town-home projects have a significant independent effect on lethal violence.

Holzman and Piper (1996) suggest that the research examining the relationship between public housing and crime has produced inconsistent results because of

unsystematic and sporadic measures of crime occurring in public housing. Future research should be conducted with measures of crime occurring specifically in and directly surrounding public housing buildings and if possible the measures should be compared to crime occurring in and around other similar styled and conditioned non-public housing buildings. By doing so, this will provide a comparison between essentially identical buildings with the only difference being one is managed by a housing authority. Analyzing a smaller unit of analysis, rather than aggregating to the tract level, will provide a better understanding of the relationship between public housing and crime.

Additionally, to further extend our understanding of the relationship between public housing and homicide, there needs to be more research focusing on the dynamics that lead to lethal violence in public housing areas. In particular, more ethnographic research is needed to examine the culture in public housing areas and the role that culture plays in the crime commission process in these areas (see Kirk & Papachristos, 2011). This type of research will enable further understanding of the mechanisms which connect public housing and homicide.

Finally, future research should uncover if the physical and social environment has a direct influence on the rates of crime. Generally, previous research has not determined whether the physical and social environment is a significant predictor of crime and violence. Without physical and social environment variables being included in the models, it is uncertain if these variables are predictors of crime and violence. Therefore, future researchers should seek to include physical and social environment variables in

their analyses to provide a more complete understanding of crime and violence occurring in public housing developments.

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APPENDIX A

Chicago Housing Authority Projects, 1985-1995 (Hunt, 2009).

Name, Number of Housing Units, Architectural Design, Year of Creation, and Full/Partial Demolitions of Chicago Housing Authority Projects				
Public Housing	**Number of Units**	**Architectural Design**	**Date Built**	**Full/Partial Demolitions, 1995-2011**
Robert Taylor Homes	4,349	High-Rise	1962	Yes
Cabrini-Green	3,606	High/Low-Rise	1942/1958/1960	Yes
Wells Homes	2,308	High/Low-Rise	1941/1955	Yes
Horner Homes	1,808	High-Rise	1957/1961/1970	Yes
Washington Park Homes	1,789	High-Rise/Scattered Site	1962	Yes
Stateway Gardens	1,644	High-Rise	1958	Yes
Scattered Site	1,600	Scattered Site	1966	Yes (select sites)
Altgeld Gardens	1,500	Low-Rise	1945	No
Brooks Homes	1,287	Low-Rise	1943/1961	Yes
Abbott Homes	1,218	High/Low-Rise	1955	Yes
Rockwell Gardens	1,133	High-Rise	1961	Yes
Addams Houses	1,027	Low-Rise	1938	Yes
Lathrop Homes	925	Low-Rise	1938	No
Ickes Homes	803	High-Rise	1955	Yes
Dearborn Homes	800	High-Rise	1950	No
Le Claire Courts	616	Low-Rise	1950/1954	No
Prairie Avenue Courts	529	High/Low-Rise	1952/1958	Yes
Murray Homes	500	Low-Rise	1954	No
Darrow Homes	479	High-Rise	1961	Yes
Trumbull Park Homes	462	Low-Rise	1938	No
Lake Michigan Homes	459	High-Rise	1963	Yes
Madden Park Homes	452	Low-Rise	1970	Yes
Wentworth Gardens	422	Low-Rise	1947	Yes
Hilliard Homes	342	High-Rise	1966	No
Ogden Courts	322	Low-Rise	1952/1970	Yes
Olander Homes	300	Low-Rise	1950/1953	No
West Chesterfield Homes	250	Low-Rise	1945	No
41st –Cottage Grove	150	Low-Rise	1970	No
Archer Courts	148	High-Rise	1952	No

Bridgeport Homes	141	Low-Rise	1943	Yes
Maplewood Courts	132	High-Rise	1950	Yes
Lowden Homes	128	Low-Rise	1954	No
Lawndale Gardens	128	Low-Rise/Scattered Site	1943	Yes
Loomis Courts	126	High-Rise	1953	No
Harrison Courts	125	Low-Rise	1950	No
Racine Courts	120	Low-Rise	1950	No

APPENDIX B

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9
Poverty	-0.4576	0.0071	-0.1296	0.0406	0.0980	-0.2639	0.6930	0.3936	0.2403
Ethnic Heterogeneity	0.1135	0.6468	-0.1825	-0.1046	-0.3453	0.3505	-0.0667	0.2158	0.4810
Residential Mobility	-0.2146	0.3089	0.7134	0.1738	-0.1831	0.2982	0.2936	-0.1200	-0.3105
ICE Class	0.4524	-0.1048	-0.0295	0.2247	-0.0212	0.1779	0.0704	0.7357	-0.3933
ICE Racial	-0.3739	-0.3016	-0.1147	0.1234	0.3613	0.7566	-0.1186	0.0595	0.1422
School Enrollment	-0.2892	0.1115	-0.3379	0.7818	-0.2970	-0.1340	-0.2085	-0.0914	-0.1434
HS Completion	0.3062	-0.3681	0.4136	0.4164	-0.1122	-0.0625	0.0295	-0.0004	0.6395
Male	0.1719	0.4857	0.0909	0.2948	0.7783	-0.1510	-0.0736	-0.0186	0.0717
Vehicle Access	0.4245	-0.0183	-0.3653	0.1417	0.0097	0.2644	0.6003	-0.4802	0.0703

Tracts Ranked on Factor Scores of Neighborhood Disadvantage, Social Isolation, and Residential Composition, Chicago, 1985-1995, top 5% and 10%.

Tract Number	Presence of Public Housing	Factor Score
Tract 3817	Yes	-6.66241
Tract 3806	Yes	-6.42418
Tract 3515	Yes	-6.38692
Tract 808	Yes	-6.35408
Tract 4002	Yes	-6.32902
Tract 3603	Yes	-6.32616
Tract 3805	Yes	-6.30862
Tract 2808	Yes	-5.92762
Tract 805	Yes	-5.87934
Tract 819	Yes	-5.86858
Tract 3303	Yes	-5.85863
Tract 3816	Yes	-5.83962
Tract 3504	Yes	-5.80904
Tract 2839	Yes	-5.67944
Tract 3815	Yes	-5.52361
Tract 2805	Yes	-5.37085
Tract 2918	No	-5.17029
Tract 3406	Yes	-5.15988
Tract 3810	Yes	-5.01612
Tract 2905	No	-5.01453
Tract 3302	Yes	-4.92363
Tract 3602	Yes	-4.87352
Tract 2903	No	-4.78619
Tract 2804	Yes	-4.77688
Tract 2838	Yes	-4.69998
Tract 3807	Yes	-4.46454
Tract 2809	No	-4.41836
Tract 2902	Yes	-4.36005
Tract 3604	Yes	-4.27145
Tract 2832	Yes	-4.21791
Tract 2915	Yes	-3.96488
Tract 2913	Yes	-3.94925
Tract 5401	Yes	-3.94006
Tract 3804	Yes	-3.92055
Tract 3511	Yes	-3.89806
Tract 3803	Yes	-3.85924
Tract 2813	Yes	-3.7421
Tract 4008	Yes	-3.64305
Tract 2842	No	-3.64075

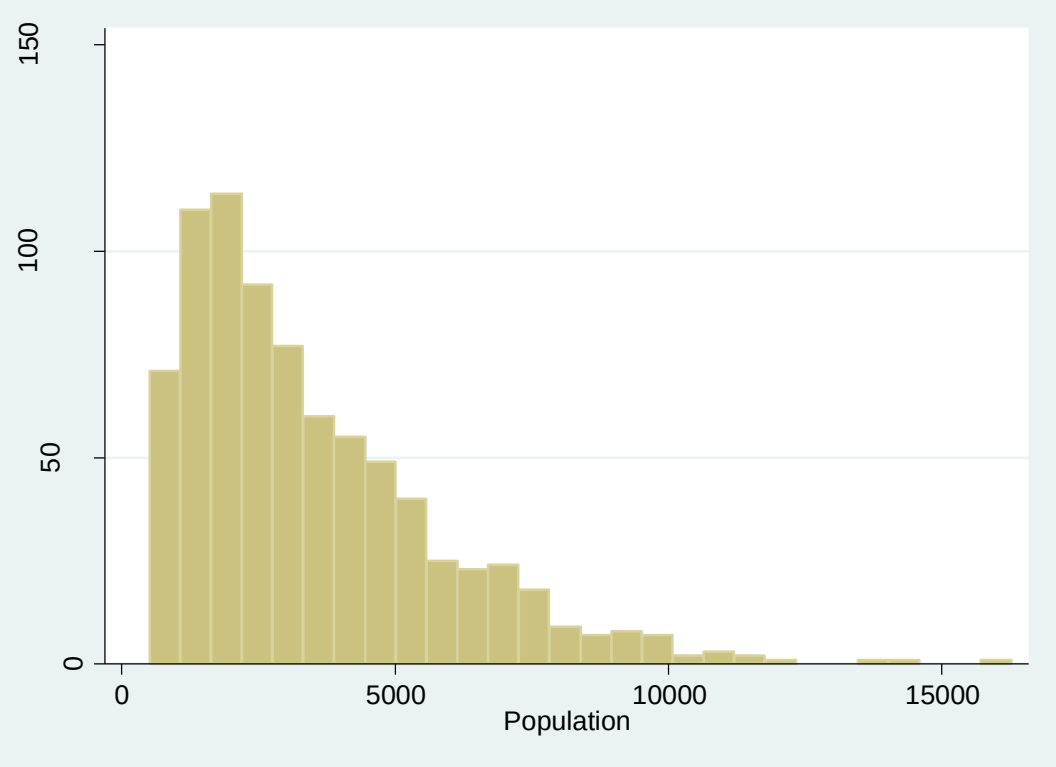
Tract 4004	No	-3.63857
Tract 3903	No	-3.63045
Tract 2707	Yes	-3.60713
Tract 6809	Yes	-3.59623
Tract 2908	No	-3.5526
Tract 2911	Yes	-3.51728
Tract 2705	Yes	-3.50669
Tract 3502	Yes	-3.4535
Tract 3801	Yes	-3.43434
Tract 3601	Yes	-3.34742
Tract 4303	Yes	-3.31333
Tract 4007	No	-3.3052
Tract 2712	No	-3.27183
Tract 3812	No	-3.24558
Tract 4203	Yes	-3.22257
Tract 2906	No	-3.21719
Tract 4210	No	-3.21236
Tract 3605	Yes	-3.21127
Tract 4211	No	-3.2101
Tract 3514	Yes	-3.2056
Tract 2607	Yes	-3.17061
Tract 3808	No	-3.16997
Tract 2914	Yes	-3.08517
Tract 2815	Yes	-3.04841
Tract 6803	Yes	-3.03832
Tract 3901	No	-3.02898
Tract 3701	Yes	-3.02287
Tract 2920	No	-2.95911
Tract 2711	Yes	-2.94682
Tract 2912	Yes	-2.94631
Tract 2602	Yes	-2.93002
Tract 2816	Yes	-2.92683
Tract 6812	Yes	-2.90662
Tract 6808	Yes	-2.88587
Tract 4208	No	-2.88149
Tract 4005	Yes	-2.8735
Tract 312	Yes	-2.87116
Tract 2316	No	-2.86857
Tract 6901	No	-2.82734
Tract 2719	No	-2.82529
Tract 3819	No	-2.80769

APPENDIX C
Neighborhood Disadvantage, Social Isolation, Physical Environment, and Residential Composition Variables.

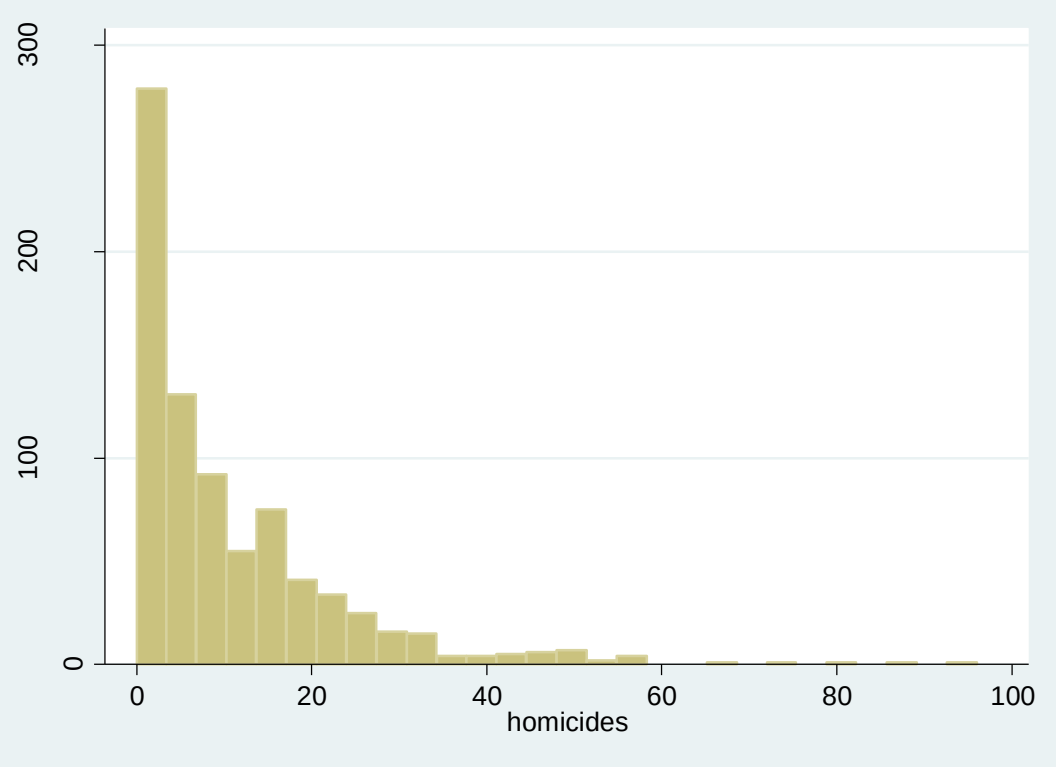
	Variable	**Operationalization**
Population	Population	Total population of tract
Neighborhood Disadvantage	Poverty Index	Percent of families living below the poverty line
		Percent of families receiving public assistance
		Percentage of children under 18 years of age
		Percent of unemployed individuals in the civilian labor force.
		Percent of female headed households with children
	Residential Mobility Index	Percentage of renters
		The percentage of people who moved into their home in the past 5 years
	Ethnic Heterogeneity Index	Percentage of foreign born residents
		Percentage of Latino residents
		The percentage of tract population that speaks or uses a language other than English
Social Isolation	Class Isolation	ICE index of class isolation
	Racial Isolation	ICE index of racial isolation

Physical Environment	Size of Project	Total number of housing units
	Architectural Design	High-rise, low-rise, or high-rise/low-rise
	Externality	Adjacent to public housing tract or isolated from public housing tracts
Residential Composition	Male Residents	Percentage of male residents
	High School Completion	Percentage of tract who have completed high school
	School Enrollment	Percentage of tract who are enrolled in school
	Vehicle Access	Percentage of tract who has access to a vehicle

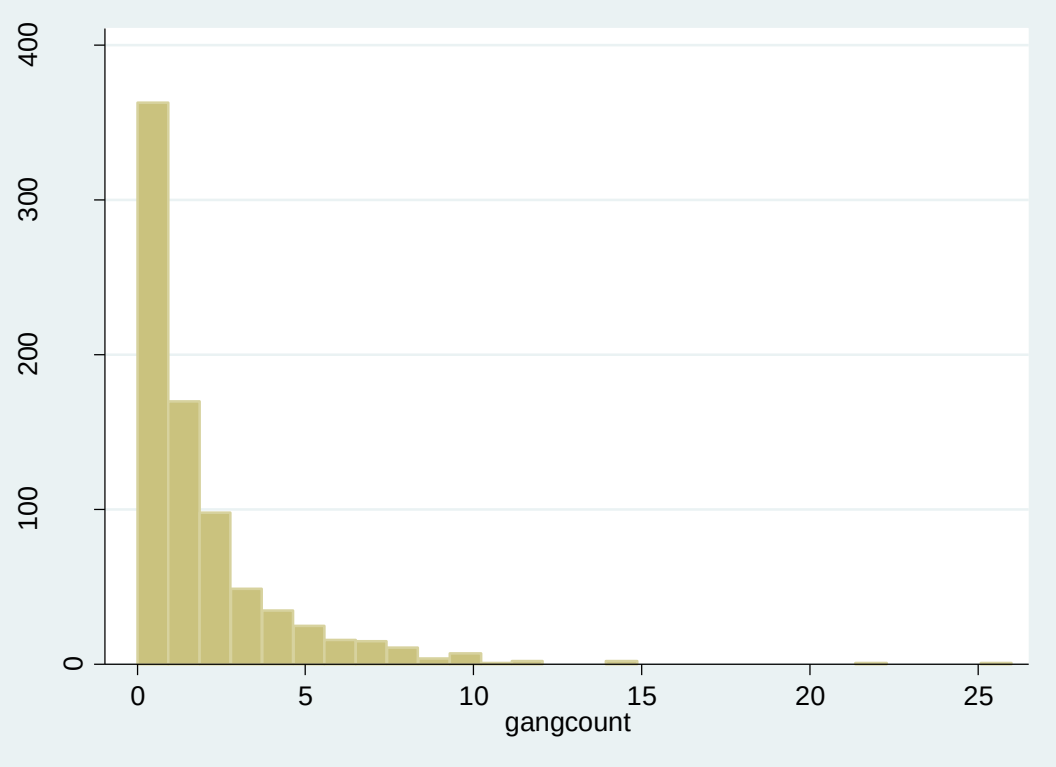
APPENDIX D
Histograms



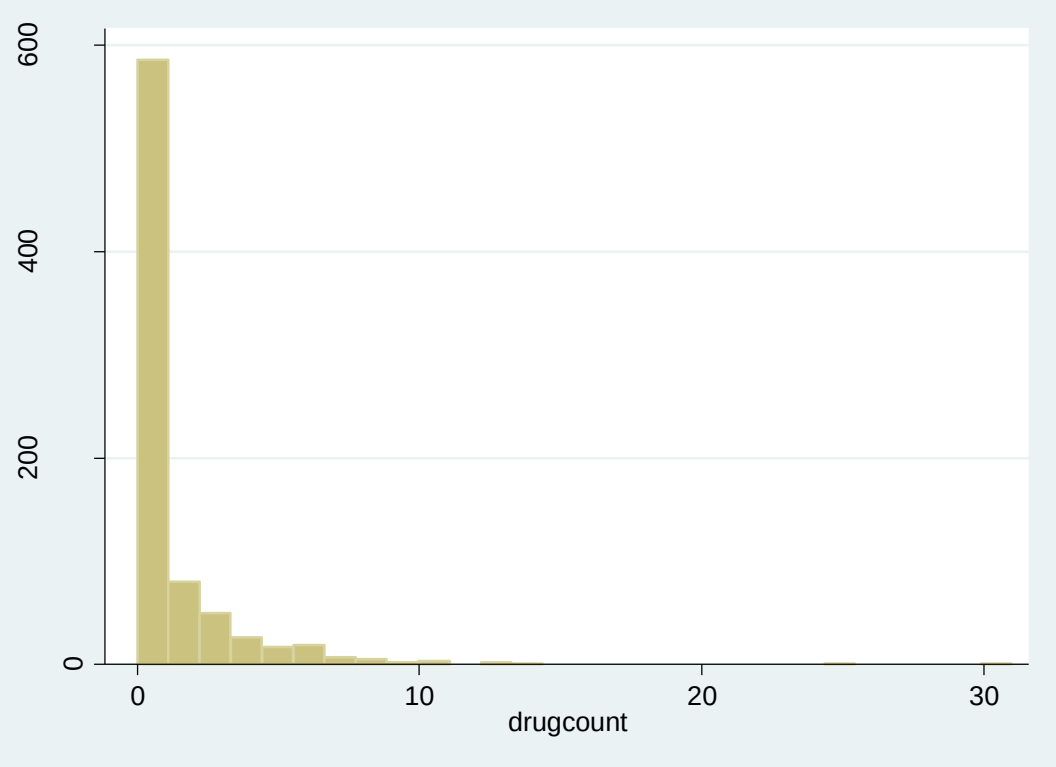
Total Population



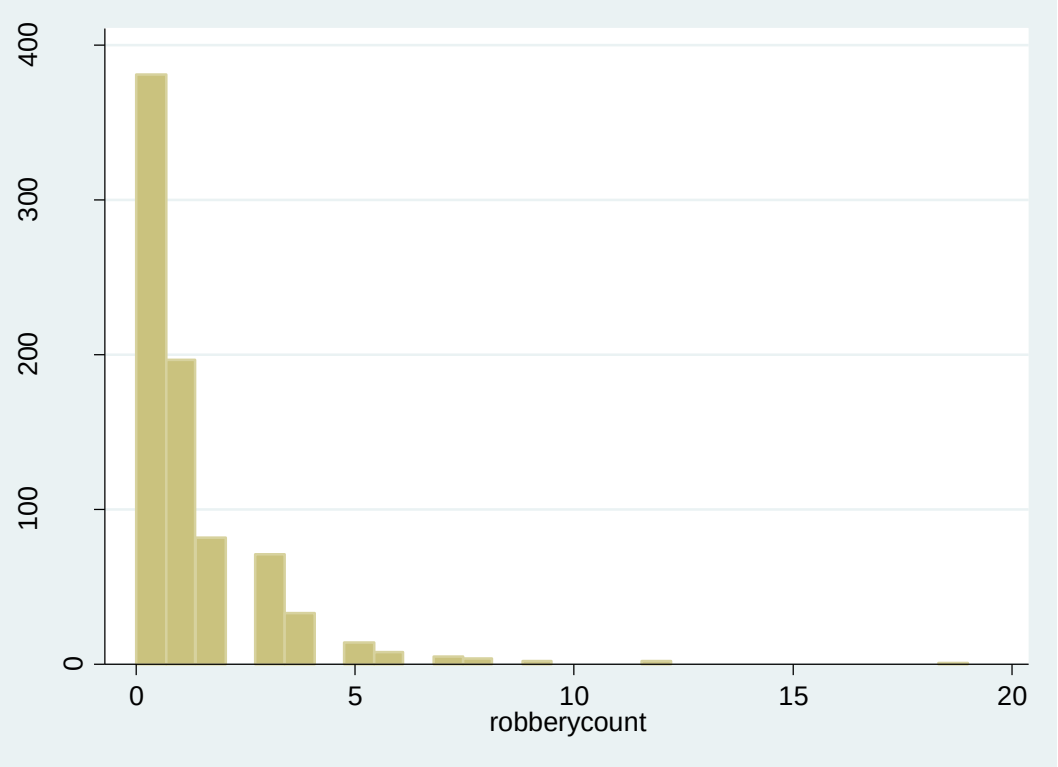
Total Homicide Count



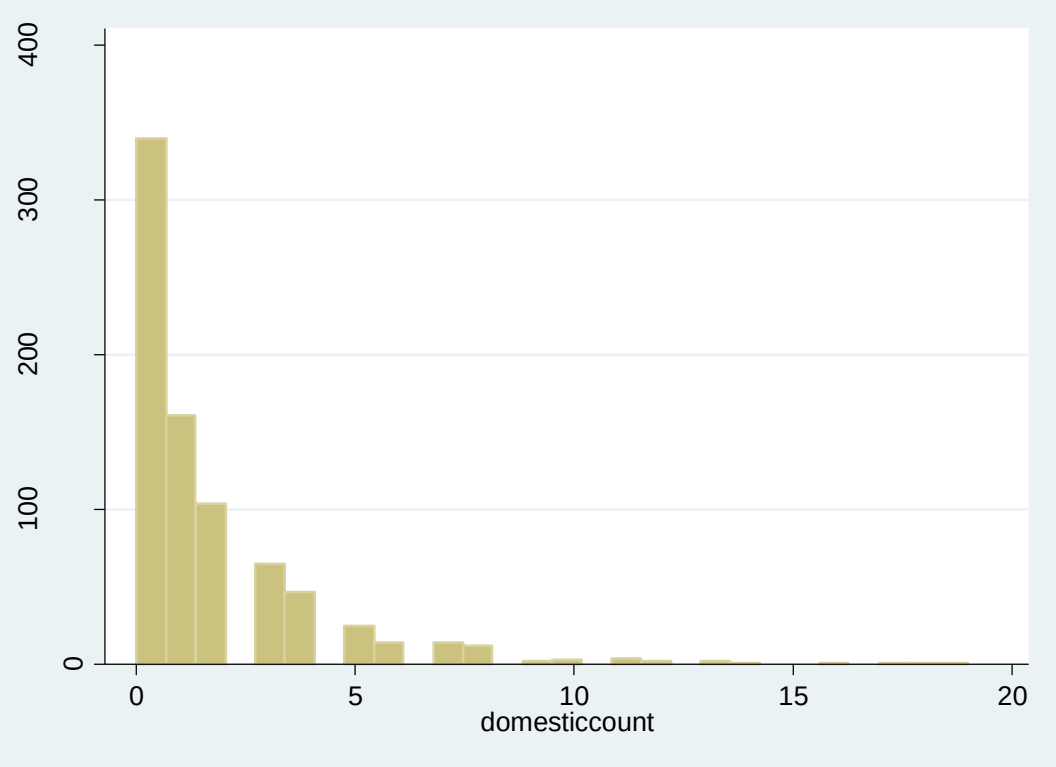
Gang Homicide Count



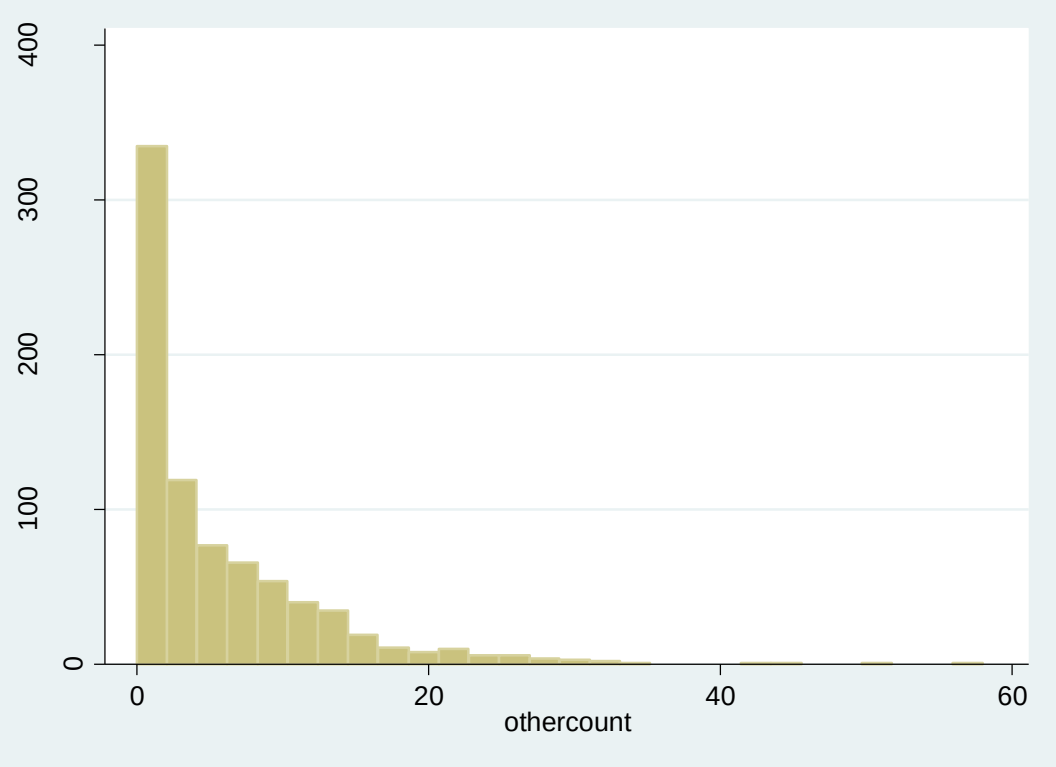
Drug Homicide Count



Robbery Homicide Count



Domestic Homicide Count



“Other” Homicide Count

APPENDIX E

Dependent, Independent, and Control Variables for Strategy A: Negative Binominal Regression, Full Sample of Tracts.

Question 1: Does the presence of public housing in tracts affect homicide rates?		
Dependent Variable	**Value**	**Data Source**
Homicide Counts	Total Count of Homicides	Chicago Homicide Data Set
Independent Variable		
Presence of Public Housing	1=Public Housing 0=Non Public Housing	Chicago Homicide Data Set/ Project Specific Data
Controls		
Population (ln)	Natural log transformation of the total population of tract	1990 Census
Poverty Index	Percent of families living below the poverty line	1990 Census
	Percent of families receiving public assistance	1990 Census
	Percentage of children under 18 years of age	1990 Census
	Percent of unemployed individuals in the civilian labor force.	1990 Census
	Percent of female headed households with children	1990 Census
Residential Mobility Index	Percentage of renters	1990 Census
	The percentage of people who moved into their home in the past 5 years	1990 Census
Ethnic Heterogeneity Index	Percentage of foreign born residents	1990 Census
	Percentage of Latino residents	1990 Census
	The percentage of tract population that speaks or uses a language other than English	1990 Census
Class Isolation	ICE index of class isolation	1990 Census
Racial Isolation	ICE index of racial isolation	1990 Census
Male Residents	Percentage of male residents	1990 Census
High School Completion	Percentage of tract who have completed high school	1990 Census
School Enrollment	Percentage of tract who are enrolled in school	1990 Census
Vehicle Access	Percentage of tract who has access to a vehicle	1990 Census

APPENDIX F
Dependent, Independent, and Control Variables for Strategy A: Negative Binominal Regression, Full Sample of Tracts

Question 2: Are motivations for homicides that occur in tracts with public housing different from motivations for homicides that occur in tracts without public housing?		
Dependent Variables	**Value**	**Data Source**
Gang Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Drug Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Robbery Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Domestic Motivated Homicide Count	Total Count	Chicago Homicide Data Set
"Other" Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Independent Variable		
Presence of Public Housing	1=Public Housing 0=Non Public Housing	Chicago Homicide Data Set/ Project Specific Data
Controls		
Population (ln)	Natural log transformation of total population of tract	1990 Census
Poverty Index	Percent of families living below the poverty line	1990 Census
	Percent of families receiving public assistance	1990 Census
	Percentage of children under 18 years of age	1990 Census
	Percent of unemployed individuals in the civilian labor force.	1990 Census
	Percent of female headed households with children	1990 Census
Residential Mobility Index	Percentage of renters	1990 Census
	The percentage of people who moved into their home in the past 5 years	1990 Census
Ethnic Heterogeneity Index	Percentage of foreign born residents	1990 Census
	Percentage of Latino residents	1990 Census
	The percentage of tract population that speaks or uses a language other than English	1990 Census
Class Isolation	ICE index of class isolation	1990 Census
Racial Isolation	ICE index of racial isolation	1990 Census
Male Residents	Percentage of male residents	1990 Census

High School Completion	Percentage of tract who have completed high school	1990 Census
School Enrollment	Percentage of tract who are enrolled in school	1990 Census
Vehicle Access	Percentage of tract who has access to a vehicle	1990 Census

APPENDIX G

Dependent, Independent, and Control Variables for Strategy A: Negative Binominal Regression, Sample of Tracts, Excluding Outlier Tracts.

Question 1: Does the presence of public housing in tracts affect homicide rates?		
Dependent Variable	**Value**	**Data Source**
Homicide Counts	Total Count of Homicides	Chicago Homicide Data Set
Independent Variable		
Presence of Public Housing	1=Public Housing 0=Non Public Housing	Chicago Homicide Data Set/ Project Specific Data
Controls		
Population (ln)	Natural log transformation of the total population of tract	1990 Census
Poverty Index	Percent of families living below the poverty line	1990 Census
	Percent of families receiving public assistance	1990 Census
	Percentage of children under 18 years of age	1990 Census
	Percent of unemployed individuals in the civilian labor force.	1990 Census
	Percent of female headed households with children	1990 Census
Residential Mobility Index	Percentage of renters	1990 Census
	The percentage of people who moved into their home in the past 5 years	1990 Census
Ethnic Heterogeneity Index	Percentage of foreign born residents	1990 Census
	Percentage of Latino residents	1990 Census
	The percentage of tract population that speaks or uses a language other than English	1990 Census
Class Isolation	ICE index of class isolation	1990 Census
Racial Isolation	ICE index of racial isolation	1990 Census
Male Residents	Percentage of male residents	1990 Census
High School Completion	Percentage of tract who have completed high school	1990 Census
School Enrollment	Percentage of tract who are enrolled in school	1990 Census
Vehicle Access	Percentage of tract who has access to a vehicle	1990 Census

APPENDIX H

Dependent, Independent, and Control Variables for Strategy A: Negative Binominal Regression, Sample of Tracts, Excluding Outlier Tracts.

Question 2: Are motivations for homicides that occur in tracts with public housing different from motivations for homicides that occur in tracts without public housing?		
Dependent Variables	**Value**	**Data Source**
Gang Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Drug Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Robbery Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Domestic Motivated Homicide Count	Total Count	Chicago Homicide Data Set
"Other" Motivated Homicide Count	Total Count	Chicago Homicide Data Set
Independent Variable		
Presence of Public Housing	1=Public Housing 0=Non Public Housing	Chicago Homicide Data Set/ Project Specific Data
Controls		
Population (ln)	Natural log transformation of total population of tract	1990 Census
Poverty Index	Percent of families living below the poverty line	1990 Census
	Percent of families receiving public assistance	1990 Census
	Percentage of children under 18 years of age	1990 Census
	Percent of unemployed individuals in the civilian labor force.	1990 Census
	Percent of female headed households with children	1990 Census
Residential Mobility Index	Percentage of renters	1990 Census
	The percentage of people who moved into their home in the past 5 years	1990 Census
Ethnic Heterogeneity Index	Percentage of foreign born residents	1990 Census
	Percentage of Latino residents	1990 Census
	The percentage of tract population that speaks or uses a language other than English	1990 Census
Class Isolation	ICE index of class isolation	1990 Census
Racial Isolation	ICE index of racial isolation	1990 Census
Male Residents	Percentage of male residents	1990 Census

High School Completion	Percentage of tract who have completed high school	1990 Census
School Enrollment	Percentage of tract who are enrolled in school	1990 Census
Vehicle Access	Percentage of tract who has access to a vehicle	1990 Census

APPENDIX I

Neighborhood Disadvantage, Social Isolation, Residential Composition, and Physical Environment Variables for Strategy E: Bivariate Analyses.

Question 3: Do differences across tracts influence the amount and nature of homicide?

Variable	Value	Data Source
Poverty Index	Percent of families living below the poverty line	1990 Census
	Percent of families receiving public assistance	1990 Census
	Percentage of children under 18 years of age	1990 Census
	Percent of unemployed individuals in the civilian labor force.	1990 Census
	Percent of female headed households with children	1990 Census
Residential Mobility Index	Percentage of renters	1990 Census
	The percentage of people who moved into their home in the past 5 years	1990 Census
Ethnic Heterogeneity Index	Percentage of foreign born residents	1990 Census
	Percentage of Latino residents	1990 Census
	The percentage of tract population that speaks or uses a language other than English	1990 Census
Class Isolation	ICE index of class isolation	1990 Census
Racial Isolation	ICE index of racial isolation	1990 Census
Physical Environment (just PH tracts)	Size of Project	Hunt (2009)
	Architectural Design	CHA & Hunt (2009)
	Externality	Hunt (2009)
Male Residents	Percentage of male residents	1990 Census
High School Completion	Percentage of tract who have completed high school	1990 Census
High School Completion	Percentage of tract who have completed high school	1990 Census
Vehicle Access	Percentage of tract who has access to a vehicle	1990 Census

APPENDIX J

Differences in Homicide Rates per 1,000 Residents between 80 Outlier Tracts and 720 Non-Outlier Tracts, Chicago, 1985-1995.

	Outlier Tracts (n=80)	Significant Difference	Non-Outlier Tracts (n=720)	t-value (S.E.)
Total	22.15	**	9.54	-9.10 (.436)
Gang	1.07	**	.470	-6.16 (.030)
Drug	1.27	**	.343	-11.4 (.026)
Robbery	1.07	**	.340	-11.0 (.021)
Domestic	1.80	**	.442	-5.92 (.030)
"Other"	5.85	**	1.72	-16.20 (.088)

p<.01=**, two-tailed tests.

Negative Binominal Regression Predicting the Influence of Public Housing on the Total Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 10% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.622 (.095)**	1.86	.069 (.046)	-------
Population (ln)	.650 (.053)**	------	.823 (.030)**	-------
Poverty	--------	------	3.05 (.561)**	1.36
Ethnic Heterogeneity	--------	------	1.07 (.216)**	1.11
Residential Mobility	--------	------	.520 (.228)*	1.05
Class Isolation	--------	------	.433 (.214)*	1.04
Racial Isolation	--------	------	.979 (.052)**	1.10
School Enroll.	-------	------	-.500 (.405)	-------
H.S. Completion	-------	------	-.301 (.301)	-------
Percent Male	-------	------	1.29 (.581)*	1.14
Vehicle Access	-------	------	-1.31 (.287)**	.88
Log Likelihood	-2289.7102		-1822.9944	
LR Test	175.34**		1108.78**	
Pseudo R2	.04		.23	
Constant	-3.18 (.430)**		-5.09 (.450)**	
N	720		720	

Notes: data in table represents regression coefficients; standard errors in parentheses.
p<.01 = **, p<.05=*.

Negative Binominal Regression Predicting the Influence of Public Housing on the Gang Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 10% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.392 (.135)**	1.48	.006 (.101)	------
Population (ln)	.739 (.083)**	-------	.834 (.067)**	------
Poverty	--------	--------	3.34 (1.20)**	1.40
Ethnic Heterogeneity	--------	--------	2.74 (.486)**	1.32
Residential Mobility	--------	--------	-.260 (.228)	------
Class Isolation	--------	--------	.082 (.510)	------
Racial Isolation	--------	--------	.973 (.120)**	1.10
School Enroll.	-------	-------	1.42 (.902)	-------
H.S. Completion	-------	-------	-.617 (.673)	-------
Percent Male	-------	-------	.709 (1.25)	-------
Vehicle Access	-------	-------	-.446 (.658)	-------
Log Likelihood	-1156.7329		-962.5525	
LR Test	87.05**		475.41**	
Pseudo R2	.04		.20	
Constant	-5.68 (.677)**		-7.78 (.961)**	
N	720		720	

Notes: data in table represents regression coefficients; standard errors in parentheses.
p<.01 = **.

Negative Binominal Regression Predicting the Influence of Public Housing on the Drug Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 10% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.720 (.118)**	2.05	-.097 (.110)	--------
Population (ln)	.823 (.076)**	--------	.888 (.076)**	--------
Poverty	--------	--------	6.62 (1.40)**	1.94
Ethnic Heterogeneity	--------	--------	-.020 (.562)	--------
Residential Mobility	--------	--------	.213 (.583)	--------
Class Isolation	--------	--------	.512 (.562)	--------
Racial Isolation	--------	--------	.940 (.144)**	1.10
School Enroll.	-------	-------	.221 (1.06)	-------
H.S. Completion	-------	-------	.110 (.738)	-------
Percent Male	-------	-------	1.17 (1.43)	-------
Vehicle Access	-------	-------	-.862 (.735)	-------
Log Likelihood	-1115.7208		-764.6672	
LR Test	143.24**		478.32**	
Pseudo R2	.06		.24	
Constant	-6.50 (.620)**		-8.88 (1.11)**	
N	720		720	

Notes: data in table represents regression coefficients; standard errors in parentheses.
p<.01 = **.

Negative Binominal Regression Predicting the Influence of Public Housing on the Robbery Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 10% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.557 (.126)**	1.75	.011 (.102)	------
Population (ln)	.709 (.079)**	-------	.867 (.069)**	------
Poverty	--------	--------	5.10 (1.35)**	1.67
Ethnic Heterogeneity	--------	--------	1.13 (.519)*	1.12
Residential Mobility	--------	--------	.790 (.523)	------
Class Isolation	--------	--------	.582 (.498)	------
Racial Isolation	--------	--------	.981 (.124)**	1.10
School Enrollment	-------	-------	-2.58 (1.05)*	.77
H.S. Completion	-------	-------	.789 (.700)	-----
Percent Male	-------	-------	-1.15 (1.31)	-----
Vehicle Access	-------	-------	-.728 (.659)	-----
Log Likelihood	-982.4311		-832.26857	
LR Test	98.97**		399.29**	
Pseudo R2	.05		.20	
Constant	-5.82(.643)**		-7.39 (.988)**	
N	720		720	

Notes: data in table represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*.

Negative Binominal Regression Predicting the Influence of Public Housing on the Domestic Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 10% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.720 (.118)**	2.05	.103 (.083)	------
Population (ln)	.823 (.076)**	------	1.01 (.060)**	------
Poverty	--------	------	3.28 (1.07)**	1.39
Ethnic Heterogeneity	--------	------	.366 (.426)	------
Residential Mobility	--------	------	-.042 (.449)	------
Class Isolation	--------	------	-.163 (.428)	------
Racial Isolation	--------	------	.737 (.103)**	1.08
School Enroll.	-------	------	.271 (.575)	------
H.S. Completion	-------	------	.789 (.700)	------
Percent Male	-------	------	-.670 (1.11)	------
Vehicle Access	-------	------	-1.19 (.566)*	.89
Log Likelihood	-1115.7208		-922.89073	
LR Test	143.24**		528.90**	
Pseudo R2	.07		.22	
Constant	-6.50 (.620)**		-7.91 (.830)**	
N	720		720	

Notes: data in table represents regression coefficients; standard errors in parentheses.
p<.01 = **, p<.05=*.

Negative Binominal Regression Predicting the Influence of Public Housing on the "Other" Motivated Homicide Rate, when Controlling for Neighborhood Disadvantage, Social Isolation, and Residential Composition, Excluding the Top 10% of Outlier Tracts.

	Model 1 (PH Only)	exp(β)	Model 2 (Full Model)	exp(β)
Public Housing	.671 (.100)**	1.96	.090 (.054)	------
Population (ln)	.583 (.057)**	------	.779 (.036)**	------
Poverty	--------	------	2.29 (.665)**	1.26
Ethnic Heterogeneity	--------	------	.618 (.259)*	1.06
Residential Mobility	--------	------	.621 (.273)*	1.06
Class Isolation	--------	------	.481 (.254)	------
Racial Isolation	--------	------	.985 (.064)**	1.10
School Enroll.	-------	------	-.460 (.480)	------
H.S. Completion	-------	------	-.328 (.359)	------
Percent Male	-------	------	2.36 (.670)**	1.27
Vehicle Access	-------	------	-1.67 (.345)**	.85
Log Likelihood	-1893.7192		-1517.3259	
LR Test	141.82**		894.61**	
Pseudo R2	.04		.23	
Constant	-3.25(.459)**		-5.43 (.528)**	
N	720		720	

Notes: data in table represents regression coefficients; standard errors in parentheses. p<.01 = **, p<.05=*.

Bivariate Analyses of Type Specific Homicides in Tracts with and without Public Housing, Excluding 80 Outlier Tracts, Chicago, 1985-1995.

	Gang	Drug	Robbery	Domestic	"Other"	Total
With-PH (n=151)	13%	11%	10%	15%	51%	100%
Without-PH (n=569)	15%	10.5%	10.5%	14%	50%	100%

Two group tests of proportion: no significant differences for any homicide type between tracts with and without public housing.

APPENDIX K

Differences in Homicide Rates per 1,000 Residents between Tracts with Public Housing, Chicago, 1985-1995, 5%.

	154 Non-Trimmed Tracts	Significant Difference	34 Trimmed Tracts	t-value (S.E.)
Total	5.67	**	10.54	-6.21 (.331)
Gang	.630	**	1.52	-4.51 (.080)
Drug	.639	**	1.01	-2.41 (.153)
Robbery	.591	**	.944	-2.81 (.126)
Domestic	.979	**	1.94	-4.67 (.083)
"Other"	3.24	**	5.87	-5.39 (.489)

p<.01=**, two-tailed tests.

Differences in Homicide Rates per 1,000 Residents between Tracts with Public Housing, Chicago, 1985-1995, 10%.

	151 Non-Trimmed Tracts	Significant Difference	37 Trimmed Tracts	t-value (S.E.)
Total	5.60	**	10.41	-6.35 (.331)
Gang	.623	**	1.48	-4.47 (.080)
Drug	.631	**	1.01	-2.57 (.060)
Robbery	.597	**	.892	-2.41 (.049)
Domestic	.951	**	1.97	-5.20 (.083)
"Other"	3.21	**	5.76	-5.40 (.202)

p<.01=**, two-tailed tests.

Differences in Homicide Rates per 1,000 Residents between Tracts without Public Housing, Chicago, 1985-1995, 5%.

	606 Non-Trimmed Tracts	Significant Difference	6 Trimmed Tracts	t-value (S.E.)
Total	2.86	**	11.21	-6.25 (.136)
Gang	.449		.625	-.058 (.030)
Drug	.346	**	1.10	-2.62 (.286)
Robbery	.327	**	1.43	-4.94 (.223)
Domestic	.395	**	.987	-2.37 (.249)
"Other"	1.59	**	7.97	-7.43 (.088)

p<.01=**, two-tailed tests.

Differences in Homicide Rates per 1,000 Residents between Tracts without Public Housing, Chicago, 1985-1995, 10%.

	569 Non-Trimmed Tracts	Significant Difference	43 Trimmed Tracts	t-value (S.E.)
Total	2.45	**	9.39	-15.4 (.136)
Gang	.420	**	.866	-3.86 (.117)
Drug	.269	**	1.47	-12.0 (.028)
Robbery	.284	**	1.05	-9.28 (.022)
Domestic	.331	**	1.32	-11.3 (.025)
"Other"	1.34	**	5.74	-14.8 (.088)

p<.01=**, two-tailed tests.

Average Neighborhood Disadvantage, Social Isolation, and Residential Composition Scores, Tracts with Public Housing in Chicago, 1985-1995, 5%.

	Trimmed tracts with public housing	Significant Difference	Non-trimmed tracts with public housing
Number of tracts	34		154
Neighborhood Disadvantage			
Poverty index	.499	**	.222
	(.017)		(.008)
Ethnic heterogeneity index	.015	**	.154
	(.004)		(.017)
Residential mobility index	.691	**	.580
	(.009)		(.017)
Social Isolation			
Racial isolation score	.976	**	.395
(-1 to +1)	(.010)		(.057)
Class isolation score	-.770	**	-.257
(-1 to +1)	(.017)		(.021)
Residential Composition			
% Enrolled in school	.417	**	.288
	(.006)		(.012)
% Completed high school	.420	**	.573
	(.014)		(.013)
% Male	.417	**	.473
	(.005)		(.003)
% With access to a vehicle	.176	**	.530
	(.019)		(.013)

Notes: Standard deviations in parentheses.
**indicates significantly larger differences in average at .01 significance level, two-tailed test.

Average Neighborhood Disadvantage, Social Isolation, and Residential Composition Scores, Tracts with Public Housing in Chicago, 1985-1995, 10%.

	Trimmed tracts with public housing	Significant Difference	Non-trimmed tracts with public housing
Number of tracts	37		151
Neighborhood Disadvantage			
Poverty index	.489	**	.220
	(.017)		(.008)
Ethnic heterogeneity index	.015	**	.157
	(.003)		(.017)
Residential mobility index	.690	**	.580
	(.009)		(.012)
Social Isolation			
Racial isolation score (-1 to +1)	.978	**	.383
	(.009)		(.058)
Class isolation score (-1 to +1)	-.755	**	-.251
	(.018)		(.021)
Residential Composition			
% Enrolled in school	.412	**	.287
	(.011)		(.006)
% Completed high school	.430	**	.574
	(.015)		(.013)
% Male	.414	**	.475
	(.005)		(.003)
% With access to a vehicle	.192	**	.533
	(.020)		(.013)

Notes: Standard deviations in parentheses.
**indicates significantly larger differences in average at .01 significance level, two-tailed test.

Average Neighborhood Disadvantage, Social Isolation, and Residential Composition Scores, Tracts with Family Public Housing in Chicago, 1985-1995.

	Trimmed tracts with family public housing	Significant Difference	Non-trimmed tracts with family public housing
Number of tracts	29		16
Neighborhood Disadvantage			
Poverty index	.515	**	.257
	(.017)		(.021)
Ethnic heterogeneity index	.015	**	.163
	(.004)		(.057)
Residential mobility index	.689	**	.573
	(.010)		(.037)
Social Isolation			
Racial isolation score (-1 to +1)	.977	**	.523
	(.011)		(.157)
Class isolation score (-1 to +1)	-.778	**	-.303
	(.017)		(.067)
Residential Composition			
% Enrolled in school	.424	**	.314
	(.013)		(.013)
% Completed high school	.419	**	.532
	(.016)		(.033)
% Male	.419	**	.465
	(.005)		(.011)
% With access to a vehicle	.166	**	.480
	(.020)		(.047)

Notes: Standard deviations in parentheses.
**indicates significantly larger differences in average at .01 significance level, two-tailed test.

Average Neighborhood Disadvantage, Social Isolation, and Residential Composition Scores, Tracts without Public Housing in Chicago, 1985-1995, 5%.

	Trimmed tracts without public housing	Significant Difference	Non-trimmed tracts without public housing
Number of tracts	6		606
Neighborhood Disadvantage			
Poverty index	.407	**	.151
	(.030)		(.004)
Ethnic heterogeneity index	.008	**	.233
	(.002)		(.009)
Residential mobility index	.691	**	.496
	(.040)		(.007)
Social Isolation			
Racial isolation score (-1 to +1)	.999	**	-.168
	(.001)		(.031)
Class isolation score (-1 to +1)	-.679	**	-.042
	(.036)		(.010)
Residential Composition			
% Enrolled in school	.397	**	.277
	(.040)		(.003)
% Completed high school	.419	**	.641
	(.035)		(.007)
% Male	.398	**	.485
	(.005)		(.001)
% With access to a vehicle	.264	**	.693
	(.029)		(.006)

Notes: Standard deviations in parentheses.
**indicates significantly larger differences in average at .01 significance level, two-tailed test.

Average Neighborhood Disadvantage, Social Isolation, and Residential Composition Scores, Tracts without Public Housing in Chicago, 1985-1995, 10%.

	Trimmed tracts without public housing	Significant Difference	Non-trimmed tracts without public housing
Number of tracts	43		569
Neighborhood Disadvantage			
Poverty index	.342	**	.140
	(.008)		(.003)
Ethnic heterogeneity index	.025	**	.246
	(.010)		(.009)
Residential mobility index	.610	**	.489
	(.020)		(.007)
Social Isolation			
Racial isolation score (-1 to +1)	.949	**	-.240
	(.023)		(.030)
Class isolation score (-1 to +1)	-.525	**	-.012
	(.018)		(.009)
Residential Composition			
% Enrolled in school	.338	**	.274
	(.011)		(.003)
% Completed high school	.465	**	.652
	(.013)		(.007)
% Male	.450	**	.487
	(.007)		(.002)
% With access to a vehicle	.388	**	.711
	(.016)		(.005)

Notes: Standard deviations in parentheses.
**indicates significantly larger differences in average at .01 significance level, two-tailed test.

APPENDIX L

Comparisons were made between the two samples of tracts for coefficient size and significance level. For many of the models, the trimming of the data by 5% does not influence or change the significance level for most of the predictor variables. Additionally, there is not a substantial difference in the size of the coefficients for most of the predictor variables between the full samples of tracts and trimmed sample of tracts. However, there are a few instances where the significance level does change and there are substantial differences in the size of the coefficients (greater than 1.00 difference for unstandardized coefficients between samples).

In the first model, with the dependent variable being the total homicide rate, school enrollment changes from being significant at the .05 level to a non-significant level, when the outlier tracts are trimmed from the analysis. Additionally, the significance level changes from .01 to .05 for residential mobility. For these models, the coefficient size changes substantially for poverty. With the full sample of tracts, poverty is a significant predictor with the coefficient being 1.53 (17%), but when the outlier tracts are removed from the analysis, the size of the coefficient changes to 2.69 (31%), which is an increase of 1.16 (14%)[19]. This indicates that for every 10% increase in the poverty level, the trimmed sample of tracts experience an increase in the total homicide rate that is 14% higher than the full sample of tracts.

When the dependent variable is the gang motivated homicide rate, the significance levels remain stable for all predictor variables. Percent male is the only variable with a substantial difference in coefficient size between the models with two different samples, but the relationship is non-significant. The size of the coefficient is reduced by 1.035 after trimming the subset of outlier tracts from the models. This indicates that for every 10% increase in the male population, the full sample of tracts experience an increase in the gang motivated homicide that is 12% higher

[19] Unstandardized regression coefficients are discussed and reported in the tables. However, to interpret the results as rates, the coefficients must be exponentiated, which are then interpreted as percents in parentheses and comparisons (see Osgood, 2000).

than the sample with the extremely disadvantaged and isolated tracts removed. But again, this relationship is non-significant.

The results of the models predicting the drug motivated homicide rates do not appear to be as stable compared to the gang motivated models, because poverty and percent male change significance levels between the models. Additionally, there is a difference of 2.78 in the size of the coefficient between the full and the reduced sample models for poverty. This indicates that for every 10% increase in the poverty level, the trimmed sample of tracts experience an increase in the drug motivated homicide rate that is 40% higher than the rate for the full sample of tracts.

In regards to the models predicting the robbery motivated homicide rate, ethnic heterogeneity is unstable in terms of significance levels, but, the differences in the size of the ethnic heterogeneity coefficients is not substantial. There is a 2.24 poverty coefficient size difference between the two samples. This indicates that for every 10% increase in the poverty level, the trimmed sample of tracts experience an increase in the robbery motivated homicide rate that is 31% higher than the rate for the full sample of tracts. Additionally, there is a 1.025 class isolation coefficient size difference between the two samples; however, class isolation is not a significant predictor of the robbery motivated homicide rate. Thus, for every 10% increase in class isolation, the full sample of tracts experience an increase in the robbery motivated homicide rate that is 10% higher than the rate for the trimmed sample of tracts.

For the domestic motivated homicide rate, there are changes in significance level for poverty and vehicle access. For the full sample of tracts poverty is non-significant and with the trimmed reduced sample of tracts, poverty becomes significant. There is also a 1.875 poverty coefficient size difference between both samples of tracts. Specifically, for every 10% increase in the poverty level, the trimmed sample of tracts experience an increase the domestic motivated homicide rate that is 23% higher than the rate for the full sample of tracts. Vehicle access becomes significant when the outlier tracts are removed from the analysis, but the difference in coefficient size is not substantial.

Finally, for the "other" motivated homicide rate, the difference in coefficient size of poverty between the full sample and the trimmed sample is 1.05. Specifically, for every 10% increase in poverty level, the trimmed sample of tracts experience an increase in the "other" motivated homicide rate that is 12% higher than the rate for the full sample of tracts. The significance level of all other independent variables remained stable in these models, except for residential mobility, which changed from .01 to .05.

In most of the models there is stability in the significance level and coefficient size across the samples. However, with the exception of the gang motivated homicide models, there are considerable differences in the size of the poverty coefficients between the full sample of tracts and the trimmed sample of tracts. For all of the models, the coefficient size increases for the trimmed sample of tracts considerably compared to the full sample of tracts. It appears that for every standard unit increase in the poverty level, the homicide rates estimated in models with the trimmed sample of tracts are higher than the homicide rates for the full sample of tracts. Therefore, poverty seems to be a more robust predictor of homicide in the trimmed sample of tracts compared to the full.

Differences in coefficient size between full and trimmed sample of tracts with and without public housing for total, gang, and drug motivated homicide rates.

	Total			Gang			Drug		
	Full	**Trim**	**Diff**	**Full**	**Trim**	**Diff**	**Full**	**Trim**	**Diff**
PH	0.053	0.068	0.015	-0.033	-0.034	0.004	-0.156	-0.126	0.03
Population	0.813**	0.818**	0.005	0.838**	0.853**	0.015	0.914**	0.911**	0.003
Poverty	1.53**	2.69**	1.16	2.31*	2.45*	0.14	2.25*	5.03**	2.78
EH	1.15**	1.1**	0.05	2.73**	2.67**	0.06	-0.209	-0.266	0.057
Residential Mobility	0.594**	0.486*	0.108	-0.081	-0.085	0.004	0.627	0.003	0.624
Class Isolation	0.289	0.415	0.126	0.478	0.228	0.25	-0.031	0.283	0.314
Racial Isolation	1.12**	1**	0.12	1.08**	1.03**	0.05	1.27**	0.973**	0.297
School Enrollment	-0.748*	-0.482	0.266	1.01	1.36	0.35	-0.419	0.306	0.725
H.S Comp.	-0.47	-0.332	0.138	-1.13	-1.07	0.06	-0.873	-0.382	0.491
Percent Male	2.23**	1.58**	0.65	1.5	0.465	1.035	3.33**	2.61*	0.72
Vehicle Access	-1**	-1.23**	0.23	-0.521	-0.348	0.173	-0.091	-1.02	0.929

Notes: data in table represents unstandardized regression coefficients
p<.01 = *, p<.05=**

Differences in coefficient size between full and trimmed sample of tracts with and without public housing for robbery, domestics, and "other" motivated homicide rates.

	Robbery			Domestic			"Other"		
	Full	**Trim**	**Diff**	**Full**	**Trim**	**Diff**	**Full**	**Trim**	**Diff**
PH	-0.011	0.004	0.015	0.134	0.134	0	0.066	0.087	0.021
Population	0.838**	0.864**	0.026	0.984**	0.98**	0.004	0.769**	0.774**	0.005
Poverty	2.01**	4.25**	2.24	0.975	2.85**	1.875	1.05*	2.1**	1.05
EH	0.93**	0.937	0.007	0.308	0.368	0.06	0.789**	0.721**	0.068
Residential Mobility	0.852	0.603	0.249	0.191	-0.059	0.25	0.676**	0.585*	0.091
Class Isolation	0.386	-0.639	1.025	-0.164	-0.091	0.073	0.27	0.451	0.181
Racial Isolation	1.14**	0.964**	0.176	0.929**	0.773**	0.156	1.12*	1.02**	0.1
School Enrollment	-1.59	-1.52	0.07	0.026	0.271	0.245	-0.871	-0.566	0.305
H.S. Comp.	0.329	0.662	0.333	-0.32	0.125	0.445	-0.349	-0.266	0.089
Percent Male	0.846	0.064	0.782	0.725	-0.198	0.923	3.05**	2.58**	0.47
Vehicle Access	-0.641	-1.04	0.399	-0.94	-1.2*	0.26	-1.26**	-1.51**	0.25

Notes: data in table represents unstandardized regression coefficients

p<.01 = *, p<.05=**

Curriculum Vitae

1982	Born in Indiana, Pennsylvania
2001	High School Diploma from Indiana High School, Indiana, PA
2004	Bachelor of Arts in Criminology, Indiana University of Pennsylvania, Indiana, PA
2006	Master of Arts in Criminology, Indiana University of Pennsylvania, Indiana, PA
2007	Master of Arts in Sociology, Indiana University of Pennsylvania, Indiana, PA
2007-2010	Teaching Assistant, Rutgers University, Newark, NJ, School of Criminal Justice
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