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Missing Pieces: How Neighborhood Health Context Influences Jail Reentry

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MISSING PIECES: HOW NEIGHBORHOOD HEALTH CONTEXT
INFLUENCES JAIL REENTRY

by

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This study explores how neighborhood context influences the odds of reoffending by those released from incarceration at a local jail facility. Using data from four sources, I seek to contribute to the understanding of reentry by including two factors missing from current theoretical and empirical work on inmate recidivism. First, using a social disorganization perspective, I include measures of neighborhood health to gain an understanding of how increased substance abuse, mental health, and physical health issues among neighborhood residents impede the development of social capital and informal control that are crucial to the reduction of recidivism. Additionally, I examine jail reentry instead of prison reentry, as the reentry literature has either ignored jail reentry entirely, or has used samples that combine individuals released from prisons and jails. Jails constitute a very different incarcerative experience that may enhance problems with successful reentry differently than for prisons.

I used logistic regression to analyze data on 6,102 men and women released from the Kent County Correctional Facility (KCCF) between 2010 and 2011. Network180 and the Michigan Department of Community Health provided neighborhood health data. Other neighborhood context data came from the U.S. Census. Recidivism was measured in two different ways—rebooking in, and reincarceration in, the KCCF within two years

of the original release date. Additionally, separate logistic regression models were estimated for African Americans and those of other races to determine how race interacts with neighborhood context to influence the odds of recidivism.

Results show that, as hypothesized, neighborhood levels of health issues significantly increase the odds of recidivism for those released from incarceration. Furthermore, neighborhood levels of health issues significantly increase the odds of rebooking and reincarceration among African Americans, but not for those of other races. The results of this study support the notion that neighborhood context, particularly the health of community residents, and race matter when it comes to successful jail reentry outcomes, and thus warrant inclusion in the reentry theoretical and empirical literature. Additionally, results of this study illustrate the importance of recognizing jails as a viable and important research site in the study of reentry.

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Andrew Gregg Verheek

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CHAPTER 1

INTRODUCTION

Introduction

Rising populations of people behind bars in the United States have presented

policy makers and academics with an intriguing problem—how to reduce the odds that

those released from prison or jail will not return to a life of crime. Petersilia (2003) and

Travis (2005), among others, have argued that a significant majority of prison inmates

will be released at some point in the future. Since the late 1990s, a primary policy

initiative engaged in by every level of government in the United States to assist this

growing population of released prisoners and jail inmates has been to focus on a range of

programs and services collectively known as "reentry." In short, the main focus of

reentry services and programming is to keep people released from incarceration from

engaging in criminal behavior that may result in a future prison or jail sentence.

Past research conducted on reentry has focused on the individual-level influences

on successful and unsuccessful reentry. Missing in this body of research is the inclusion

of neighborhood context and its influence on reentry outcomes. This dissertation seeks to

fill the gap in knowledge of reentry by contributing to the scant existing research

literature that has examined the effects of neighborhood context upon reentry outcomes.

More specifically, I hypothesize that neighborhood context, as measured by

neighborhood structural characteristics like concentrated disadvantage (Sampson,

Morenoff, and Gannon-Rowley 2002), will influence whether or not former jail inmates

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reenter their neighborhoods and communities successfully or unsuccessfully. In addition to these neighborhood contextual factors, I hypothesize that health-related issues impact the reentry outcomes of former jail inmates. As noted, the reentry of people after spending time in *jail* will be the focus of this study. Focusing on inmate reentry from jail facilities provides a new pathway to understanding the reentry process given that prior reentry research has emphasized reentry from prison facilities to the neglect of jail facilities.

Background of the Problem

The United States has experienced a sustained period of mass incarceration resulting in the number of people behind bars being pushed to unprecedented levels. Guerino, Harrison, and Sabol (2011) reported 1,612,395 individuals incarcerated in state and federal prison facilities during 2010 with Minton (2013) noting that an additional 744,524 individuals were incarcerated in jail facilities at the midyear point in 2012. Most of these people, as noted by Travis (2005), will eventually return to their communities as approximately 95% will return home after release from incarceration. In terms of hard numbers, Carson and Sabol (2012) reported that approximately 688,000 prisoners were released from incarceration in state and federal prison facilities during 2011. The number of released individuals from jails is significantly higher given that jail facilities across the United States experienced 11.6 million individuals admitted between the months of July 2011 and June 2012 (Minton 2013). Turnover rates ranging from 130.6% for small jail facilities (49 or fewer inmates) to 49.6% for large jail facilities (1,000 or more inmates) also contribute to the significant number of individuals released from jails back into their respective communities each year (Minton 2013).

As the incarcerated population in the United States continued to increase, research began to uncover that mass incarceration was not only expensive, but was also not achieving its stated goal of reducing crime in the United States. Tonry (1999) argued that crime rates were already falling when incarceration as the favored form of punishment began to increase in the United States. Crime rates had already peaked, fallen, rose slightly, and then fell again by time three-strikes and truth-in-sentencing policies began to fuel the prison population explosion in the early to mid-1990s (Tonry 1999). Zimring, Hawkins, and Kamin (2001) also note that crime rates in California were declining well ahead of the implementation of that state's three-strikes legislation in the 1990s. Incarceration costs jumped an estimated 601% through the 1980s and 1990s (Wilhelm and Turner 2002) with diminishing returns in terms of reduced levels of crime. Not only were high incarceration rates failing to produce a significant reduction in crime rates in the United States (Bales and Dees 1992; Zimring et al. 2001), but those released from incarceration continued to recidivate at high rates. Bales and Dees (1992), citing research conducted by Loftin and McDowall in 1984, found that mandatory minimum sentencing in Florida did not have a measurable effect on deterring violent crimes such as robbery and different types of assaults. Within their sample of California cities, Zimring et al. (2001) projected that if the three-strikes legislation had worked perfectly in terms of its proposed deterrent effect, it would have produced a slight 4.3% decrease in crime and not the 17% to 40% decrease advocated by proponents of the legislation. In terms of recidivism, Langan and Levin (2002) found that 67.5% of those released from prison in 1994 were rearrested within three years of their release, with 51.8% of those released returned to prison.

Reentry was one of the primary policy initiatives adopted by various levels of government to reduce incarceration rates and their associated financial costs. While no universal definition of reentry exits in the literature (Petersilia 2003; Pinard 2007; Seiter and Kadela 2003; Travis 2005), an eclectic variety of services and programming aimed at reducing recidivism was initiated to stem the costs of incarceration. These reentry programs and services have focused on assisting those returning to their communities to successfully make the transition back to their neighborhoods by improving their chances to obtain and retain employment (Holzer, Raphael, and Stoll 2004), finish or increase their levels of education (Thompson 2008), and mend frayed family ties and relationships (Travis, Cincotta-McBride, and Solomon 2005). In addition to these areas, health-related concerns have also been identified as impacting the likelihood of successful reentry (Farmer 2002; Hammett, Roberts, and Kennedy 2001; Mallik-Kane and Visher 2008). These health-related factors include physical and mental health along with substance abuse.

Although reentry research has primarily focused upon individual-level services and programming, neighborhood and community characteristics have recently been included in academic reentry research. Clear (2007), La Vigne and Thomson (2003), and Wright et al. (2012) have argued for the inclusion of neighborhood context in reentry research to gain a more holistic understanding of the reentry process. The importance of neighborhood context is demonstrated by previous research that has found that those released from incarceration are more likely to return to a specific number of neighborhoods and communities characterized as economically disadvantaged (Rose and Clear 2002). In turn, research conducted by Hipp, Petersilia, and Turner (2010), Kubrin

and Stewart (2006), and Tillyer and Vose (2011) has shown that when neighborhood-level contextual variables that emphasize poverty and other economic conditions are taken into consideration, the ability of those released from incarceration to successfully remain in their communities and neighborhoods is compromised.

Statement of the Problem

Although there is an extensive array of individual- and neighborhood-level reentry research, a number of gaps in the knowledge of reentry remain. This dissertation seeks to address three of these gaps in the existing reentry research literature.

First, the literature fails fully to assess the role that health-related factors play in reentry. Although individual health-related measures are often included in reentry research, neighborhood-level health-related issues are not addressed. For example, although mental health issues have been shown to have a significant influence on criminal behavior, mental health levels in communities and neighborhoods have not been included in previous reentry research that focuses on neighborhood and community context. With regards to lead levels, previous research has established a relationship between unsafe levels of lead and criminal behavior on both individual (Denno 1990; Pihl and Ervin 1990) and neighborhood levels (Mielke and Zahran 2012; Stretesky and Lynch 2001). Reentry research, however, has not addressed the potential influence of community lead levels on recidivism. Individual health-related measures have been shown to be important predictors of successful reentry, but researchers have not taken the next step to see if neighborhood-level health measures have independent effects on reentry outcomes.

Second, the literature that includes community context fails to assess how communities and neighborhoods impact reentry apart from their ability to provide individual-level programming and services. Travis (2005) discusses the importance of communities and neighborhoods to the successful reentry of individuals released from incarceration; however, his ideas regarding the reinvestment of justice funds into these communities and neighborhoods rests on the provision of individual-level services such as half-way houses, electronic monitoring, and additional treatment programs. Solutions to neighborhood and communities issues like poverty and economic deprivation that influence reentry efforts are not addressed within Travis's (2005) work. Petersilia (2003) falls into the same position as Travis as her suggestions for reentry courts and expanded community partnerships are geared towards individual-level problems rather than looking to improving the poverty-stricken neighborhoods and communities themselves.

Finally, a majority of past and current reentry research focuses on reentry from prison facilities, and fails to address reentry from jail facilities. This emphasis on prison reentry assumes the reentry process is the same for both groups of incarcerated offenders. Moreover, it ignores the uniqueness of jails as institutions of incarceration (Irwin 1985; Wacquant 2010). As noted by Irwin (1985), jails are often more punitive than prison per day of incarceration. Irwin bases this assertion upon personal interviews with individuals who have experienced incarceration in both prisons and jails. He also states that structural characteristics of jails, such as extensive surveillance and stricter policies to enforce conformity, create an incarcerative environment that "has less space and fewer physical resources and material amenities than other 'total institutions,' such as prisons" (Irwin 1985:44). In addition, Solomon et al. (2008) show that jails provide fewer

services and programming options for successful reentry. Additionally, Solomon et al. (2008) found that shorter lengths of stay in jail often make it difficult to provide reentry services for inmates in these facilities. Even with this literature indicating the unique nature of incarceration in jails as opposed to prisons, research focusing on reentry from jail facilities is scarce. Rarer yet are studies that examine the relationship between neighborhood context and jail reentry outcomes.

Theoretical Framework

Both individual- and neighborhood-level theoretical frameworks are employed in this dissertation to gain a more holistic understanding of reentry. While there may be concerns of integrating these different levels in the same research project, support for integrating micro- and macro-level theoretical frameworks can be found in the writings of Barak (1998), Kubrin and Weitzer (2003), and Muftic (2009). Speaking to the integration of criminological theories at different levels of analysis, Barak (1998) wrote that the use of an integrated criminological framework "is capable not only of addressing the fragmentation in criminology, but also of reestablishing and transforming the current state of criminological affairs" (p. 15). More specifically, Agnew (1999), Muftic (2009), and Sampson and Laub (1993) have illustrated how micro- and macro-level theoretical frameworks have been integrated to better understand their various research questions. For example, Muftic (2009) wrote that social disorganization theory may have benefited from researchers working to integrate individual-level theories with this macro-level theoretical tradition.

A variety of micro-level theoretical frameworks are used in this dissertation to help model how individual-level factors influence the reentry of those released from

incarceration. Using a number of different individual theories flows from an understanding that no single theoretical framework has been identified as the sole explanation of the successful reentry process. The lack of a unified individual-level theoretical framework may be due to reentry research being known for its atheoretical nature and program evaluation orientation (Hallett 2012) where any theoretical framework is used as long as it can provide a research-supported policy recommendation that can increase the chances of successful reentry. This dissertation utilizes the strain, life-course, general theory of crime, and social bond theoretical frameworks to help guide the selection of individual-level variables to be included in multilevel models.

One criticism that has been leveled against previous reentry research is that these studies have often omitted macro-level theoretical considerations (Hallett 2012; Martin 2013; Wacquant 2010). Hallett (2012) wrote that prior reentry research is "theoretically shallow" and needs to "move beyond applied research to additionally focus upon issues of macro sociological change impacting the experience of former prisoners" (p. 216). This dissertation seeks to advance the theoretical understanding of reentry through the inclusion of social disorganization theory as a means to better understand and model how neighborhood-level context influences reentry outcomes.

Following decades of criticism (Pratt and Cullen 2005), authors like Bursik and Grasmick (1993) and Sampson, Raudenbush, and Earls (1997) worked to expanded social disorganization theory in ways that have reinvigorated this theoretical tradition. Consistent with recent research, this study will use measures of neighborhood structural characteristics—concentrated disadvantage, residential stability, racial heterogeneity, and ethnic heterogeneity—that are known to impact neighborhood collective efficacy, which

has been defined as the "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson et al. 1997:918) . In turn, these neighborhood structural characteristics are expected to impact reentry outcomes.

Primary Research Questions and Associated Hypotheses

This study seeks to answer three primary research questions. First, do neighborhood-level variables impact the reentry outcomes of those released from jail in the same manner that they impact reentry outcomes of people released from prison. More specifically, do neighborhood structural characteristics such as concentrated disadvantage impact the odds that those released from jail will successfully remain in their communities or neighborhoods? If previous findings regarding neighborhood context and reentry from prison hold true, the same factors should influence jail reentry outcomes.

Second, what impact does high levels of mental health issues in neighborhoods and communities have on jail reentry outcomes? Much in the same way that concentrated disadvantage impacts the ability of communities and neighborhoods to exert informal social control to curtail criminal activity, it is theorized that high mental health issue levels in communities and neighborhoods will act in a similar manner.

Third, what type of relationship exists between the levels of lead in communities and neighborhoods and the odds of individuals staying home after their release from jail. Since jail inmates are likely to return to the communities and neighborhoods where they resided prior to incarceration, the levels of lead in these locations may act as an indicator of the likelihood these individuals will engage in further criminal activity.

I sought to answer these research questions by testing the following hypotheses, while controlling for individual-level variables.

H1: Recidivism will be higher among those returning from jail to neighborhoods and communities with high levels of concentrated disadvantage. Recidivism will be lower in neighborhoods and communities with low levels of concentrated disadvantage.

H2: Recidivism will be higher among those returning from jail to neighborhoods with high levels of substance abuse and mental health issues than among those who return from jail to neighborhoods and communities with low levels of mental health issues.

H3: Recidivism will be higher among those returning from jail to neighborhoods and communities with unsafe levels of lead than among those who return to neighborhoods with safe levels of lead.

Research Design

Quantitative methods are employed in this dissertation to test the hypotheses outlined above in order to better understand how neighborhood-level context impacts jail reentry outcomes. The research subjects in this study are individuals sentenced for felony offenses who have been released from jail after completing their terms of incarceration in Kent County, Michigan. Data were collected from approximately five different data sources, including the Kent County Correctional Facility, Network180, Michigan Department of Community Health, and the U.S. Census Bureau.

Zip codes in Kent County, Michigan are utilized as the geographic unit of analysis for this project. Justification for the use of zip codes in multilevel models can be found in

previous social disorganization and reentry literature (Kirk 2009; Sampson et al. 2002).

Zip codes, according to Kowaleski-Jones (2000), provide a small enough geographic area

where analyzed data can provide an examination of systematic variation among different

zip codes. This geographic unit can also be used to approximate community distinctions

(Kowaleski-Jones 2000). In terms of whether zip codes are better than census tracts as a

level of measurement in neighborhood-level research, Hipp (2007) argues that "there is

no single 'appropriate' level of aggregation" (p. 674). Supporting Hipp's (2007)

assertion, Sampson (2013) wrote that "The phenomenon of crime does not privilege any

one type of place or ecological unit" (p. 7) with crime occurring at all different types of

geographical units. Additionally, Geronimus and Bound (1998) note that the "use of

census tract level data does not greatly improve estimation over using zip code level data

appears to be due to the fact that socioeconomic variation within census tracts is almost

as great as that within zip code areas" (p. 483). Zip codes are also used given that health-

related data from Network180 and the Michigan Department of Community Health was

only available for this geographic unit.

Significance of the Study

This study augments the existing reentry literature by including jail reentry. This

study also broadens the understanding of how neighborhood context influences jail

reentry outcomes. Increasing understanding of how neighborhood context influences jail

reentry may encourage policy analysts and legislators to consider new ways to assist

people in their reentry efforts that focus on addressing structural inequalities such as

poverty and unemployment, as well as programming and services to strengthen

neighborhood and community cohesion.

This study also includes neighborhood-level mental health, substance abuse, and lead levels as variables in the logistic regression models. While health has played an important role in the reentry debate, health considerations have not been fully addressed in research focused on reentry. Mental health and substance abuse have played roles in previous criminological research; however, they been absent from research focusing on prison and jail reentry. Including neighborhood mental health and substance abuse in this study fills this gap in the reentry literature. The same goes for the inclusion of lead levels in this study. Previous research has demonstrated a link between lead levels and criminal behavior, but up to this point there has been no consideration of how unsafe lead levels may impact jail reentry outcomes. This dissertation fills this additional gap in the literature.

Overview of the Dissertation

Chapter 2 of this dissertation provides a review and critique of the literature relevant to jail reentry. This review includes an overview of how a get-tough stance towards criminal behavior created increasingly larger prison and jail populations throughout the country. The chapter also includes a historical summary of how reentry gained a place of prominence in the criminal justice system, a review of the literature focusing on the numerous individual-level barriers to successful reentry, and a delineation of individual characteristics that influence reentry outcomes. More importantly, Chapter 2 provides a review of previous research that has examined the effects of neighborhood context on reentry outcomes. Finally, this chapter also covers the literature pertaining to the link between lead levels and criminal behavior, as well as the role played by jail facilities in reentry research.

Chapter 3 covers the theoretical frameworks guiding this dissertation. Individual-level theories that have influenced reentry research are discussed along with the specific macro-level theoretical framework utilized to inform the discussion of neighborhood-level influences on reentry outcomes, social disorganization theory. Also presented in this chapter is information that supports the use of jails as a unique site from which to expand the theorizing of reentry. Flowing from this theoretical discussion, the research questions and related hypotheses are also developed in this chapter.

Chapter 4 presents the methods utilized to address the research questions and test the hypotheses found in the previous chapter. This chapter includes a delineation of the main sources of data for this project as well as a description of each of the variables used in the analyses. The analytic procedures for the dissertation are also covered in this chapter including regression diagnostics and steps taken to address any potential missing data.

Chapter 5 provides the results of the statistical analyses related to the research questions and hypotheses developed in Chapter 3. This chapter details the results of the logistic regression models utilized to test the hypotheses noted in Chapter 4. These results helped determine support for the hypotheses regarding the influence of neighborhood-level context on reentry outcomes.

A further discussion of the results from the statistical analyses discussed in Chapter 5 is presented in Chapter 6. This discussion includes the presentation of pertinent conclusions that can be drawn from the results of the statistical analyses. Chapter 6 also delineates the limitations of this study. The chapter concludes with a

discussion of how the findings of this study can inform future policy aimed at reducing

recidivism by those returning from incarceration.

CHAPTER 2

EMPIRICAL LITERATURE REVIEW

Introduction

Past reentry research has focused on individual-level determinants of recidivism.

However, there is a growing body of research that examines the effect of neighborhood-

level context on reentry. Social disorganization theory and its more recent extensions

(Bursik and Grasmik 1993; Sampson et al. 1997) have contributed to a better

understanding of how neighborhood-level contextual considerations impact criminal

behavior and recidivism. Recent studies, by authors such as Kubrin and Stewart (2006)

and Tillyer and Vose (2011), have used social disorganization theory in their research to

develop a more holistic understanding of reentry.

In this chapter, I begin with a review and critique of the reentry literature. Based

on this review and critique, I then identify two gaps in this body of literature—a dearth of

studies on jail as opposed to prison reentry and failure to assess the impact of health

levels and risk within neighborhoods on reentry outcomes, particularly the historical and

current levels of lead in the environment.

Review of Reentry Literature

In recent years, state and federal levels of government have focused their

attentions on reentry as a policy initiative to curtail increasing levels of incarceration.

Approximately 95% of those incarcerated in jails prisons will eventually return to their

communities and neighborhoods after they have served their periods of incarceration

(Travis 2005). This number is even higher for those incarcerated within jails. Minton (2013) reported that 11.6 million persons were admitted to jail facilities in the United States between July 2011 and June 2012 with turnover rates ranging from 130.6% for small jail facilities to 49.6% for large jail facilities. In 2011, the Bureau of Justice Statistics reported that 688,384 offenders were released from prison (Carson and Sabol 2012). Many of those released are returned to incarceration due to technical violations or committing additional crimes (Austin 2001; Carson and Sabol 2012; Langan and Levin 2002). As a result, policy makers examined how high levels of incarceration could be reduced by focusing on ensuring helping those released from jail or prison successfully reenter and reintegrate into their communities and neighborhoods. While supervised release has been a component of many former offenders' experiences, beginning in the late 1990s the high cost of incarceration drew attention to reentry programs as a means to reduce recidivism and rising incarceration rates.

Historical Development of Reentry

Prior to and into the 1970s, post-incarceration supervision focused on a medical model of rehabilitation to increase the odds that offenders reintegrated successfully into their former neighborhoods and communities (Petersilia 2003; Phelps 2011; Seiter and Kadela 2003; Simon 1993). More specifically, Phelps (2011) notes the medical model "was referred to as the 'rehabilitative ideal,' a correctional philosophy deeply rooted in the idea that prison inmates could be reformed and returned to the free world as law-abiding citizens" (p. 36) and took root in probation and parole offices throughout the United States. Seiter and Kadela (2003) wrote that a focus on rehabilitation emphasized the utilization and support, both politically and financially, of rehabilitation-focused

programming and services, along with an investment in parole as a means to assist

formerly incarcerated persons success in reintegrating into their communities. In addition

to this emphasis on rehabilitation, intermediate sentencing structures that relied on the

discretion of judges, parole officers, and other court professionals were thought to be the

best possible approach through which to assist formerly incarcerated offenders reenter

society successfully (Petersilia 2003; Travis 2005).

The 1970s and 1980s were when the rehabilitative ideal was jettisoned and

punitive changes to the post-release supervision of formerly incarcerated offenders

happened in the community. Martinson's (1974) classic evaluation of existing

rehabilitation programming and his findings that were infamously twisted into the

"nothing works" mantra by other academics, legislators, and policy makers was one of

the first and most well-known shots taken at the rehabilitation philosophy underpinning

post-release supervision. Once other research supporting Martinson's findings was

published, most notably the work of the National Research Council in the late 1970s

(Sechrest, White, and Brown 1979), the philosophical support for rehabilitation further

deteriorated. Coupled with the continued assault on intermediate sentencing and

discretion (Garland 2001; Petersilia 2003; Phelps 2011; Simon 1993), as well as similar

proposals to drastically reform parole by Wilson and von Hirsch in the late 1970s and

early 1980s (Petersilia 1999), a significant number of state corrections departments

moved away from discretionary parole to a more punitive form of post-release

supervision.

Moving into the 1990s, the dismantling of parole moved forward with a continued

attack against discretion. Petersilia (1999) reported that upon taking office in 1994, one

of the first acts by Governor Allen of Virginia eliminated that state's discretionary parole

system for violent offenders. Governor Allen's actions to drastically remake parole

release in Virginia resulted in the rate of parole release dropping to 6% from the 40% rate

in the previous administration of Governor Wilder in a single year's time (Greene 2002).

By the end of 2002, Petersilia (2003) reports that just sixteen out of fifty states still

provided their parole boards the ability to release offenders on parole supervision through

discretion, with sixteen other states abolishing discretionary parole release for nearly all

criminal offenses. Continued removal of discretionary parole in 1985 through 2001

resulted in the number of mandatory releases from prison due to the serving of the

maximum number of ordered years increasing three times higher than discretionary

parole (Blumstein and Beck 2005). Those incarcerated in prison also experienced

serving longer periods of their sentences prior to being released from incarceration

(Petersilia 2003). Policy makers and legislators throughout state governments also failed

to pay attention to research that pointed to better outcomes in terms of reduced recidivism

for those offenders released under discretionary parole systems versus mandatory parole

systems (Petersilia 2003).

Reentry took on new life in policy and legislative circles in the late 1990s and

early 2000s. Travis (2005) traces this renewed interest in reentry to Attorney General

Janet Reno's 1998 call for proposals to increase the successful reentry of formerly

incarcerated individuals into their respective communities and neighborhoods. Travis

and Visher (2005b) also point to President Bush's push for investment in reentry

programming to the tune of $300 million dollars at the federal level within his 2004 State

of the Union Address. Reentry also drew more attention based on the growth in research

devoted to the topic at the beginning of the 2000s. For example, the journal *Crime and Delinquency* devoted an entire issue to reentry topics in August 2001, and a number of foundations and policy research organizations took up reentry as a topic of interest (Travis and Visher 2005a). Examples of this research include the Urban Institute in Washington, D.C. developing different research projects focused on reentry including the Reentry Roundtable which examined a number of intersections between reentry and other areas such as health care, employment, and housing issues (Travis and Visher 2005a).

Defining Reentry

Reentry is defined in a myriad of ways. Petersilia (2003), Pinard (2007), and Travis (2005) have all contributed to definitions of reentry programming and policies. Definitions of reentry programming have not only changed over the years, but each individual state tends to define reentry in light of the needs of its own specific incarcerated populations (Seiter and Kadela, 2003). Petersilia (2003) offered a broad definition of reentry by noting these initiatives "include all activities and programming conducted to prepare ex-convicts to return safely to the community and to live as law-abiding citizens" (p. 3). Travis (2005) contributed that "Reentry is not a form of supervision, like parole. Reentry is not a goal, like rehabilitation or reintegration. Reentry is not an option. Reentry reflects the iron law of imprisonment: they all come back" (p. xxi). With a small percentage of individuals housed for life within prison facilities, and all individuals sentenced to jail terms returning home after their sentences have been served, Travis's (2005) contribution provides one of the strongest statements regarding reentry.

Implementing Reentry

A variety of opinions exist on how reentry programming should be accomplished. Petersilia (1999) advocated for the strengthening and expanding of post-release supervision services for formerly incarcerated individuals. Horn (1999) offers a different option by arguing for a "personal responsibility" reentry model where formerly incarcerated individuals are held personally responsible for reentry services rather than parole or probation staff. Austin (2001) argued for concentrating on services and programming for formerly incarcerated individuals who are assessed and classified as being at higher risk for future criminal activity and potential failure while on supervised release. On another level, Pinard (2007) envisioned reentry work occurring from start to finish of an individual's journey through the various steps in the criminal justice system. Travis (2005) sums up Pinard's vision of reentry by noting that at the time that an individual's guilt is established by the courts "the law must envision a pathway to the reintegration of that individual. Accordingly, all aspects of the justice system must be aligned to meet this goal" (p. 8).

More specific frameworks for programming have been advocated by Petersilia (2003) and Travis (2005). Petersilia (2003) concentrated on four major categories that should be reformed in order for reentry practices to be successful including, for example, the initiation of reentry programming while individuals are still incarcerated that involves participation of community stakeholders such as family members, parole staff, and treatment providers. Travis (2005) argues for a "reentry framework" that centers on five different principles of effective reentry practice. Starting with initiating programming within prison facilities, Travis (2005) promotes reentry programming that continues after

release and incorporates stakeholder participation and programming within the areas of employment, physical and mental health, and housing within the communities and neighborhoods that formerly incarcerated individuals return to after release.

Barriers to Successful Reentry

Research by Petersilia (2003), Re-Entry Policy Council (2005), Solomon et al. (2008), Thompson (2008), and Travis (2005) has suggested that individuals face a significant number of issues when they attempt to reenter their communities and neighborhoods. These issues often interact with one another to present multiple barriers to successful reentry. Mallik-Kane and Visher (2008) illustrate this dynamic by focusing on health-related issues interact with housing and employment concerns to create multi-faceted reentry barriers. Broadly speaking, the main barriers to successful reentry identified by researchers include housing, education, families and children, employment, and civic involvement (Petersilia 2003; Thompson 2008; Travis 2005).

Housing

For individuals returning from incarceration, finding safe and affordable housing is a major concern. Travis (2005) observes that in terms of the barriers to successful reentry "none is as immediate as the challenge of finding shelter" (p. 219). Obtaining employment, signing up for drug or mental health treatment, and reconnecting with loved ones can wait; finding a safe place to sleep and live after release starts the very minute an individual leaves the prison or jail facility (Travis 2005). Individuals often face a number of additional hurdles related to housing as they must contend with the criminalization of homelessness, denial of public housing to individuals sentenced for specific offenses, and NIMBY-like (Not In My Back Yard) attitudes of potential neighbors and neighborhoods

(Metraux and Culhane 2004; Roman and Travis 2004). Illustrating how homelessness impacts reentry, Metraux and Culhane (2004) found that shelter use, as a measure of homelessness, not only increased the risk of incarceration by 23%, but also increased the risk of reincarceration by approximately 17% after the individuals were released.

Education

A lack of education places another barrier in the pathway to successful reentry. Karpowitz and Kenner (1995) show that 19% of those behind bars were illiterate with up to 60% of this population considered functionally illiterate. This compared to national rates of 4% and 23% respectfully (Karpowitz and Kenner 1995). A significant percentage have not obtained a minimum level of education with 41% of those incarcerated within state prisons and 26% incarcerated within federal facilities did not have a high school diploma or GED (General Equivalency Diploma). Uggen, Wakefield, and Western (2005) found that approximately 33% of male state prison inmates aged 25 to 34 had a high school degree compared to 90% of the males of the same age within the general population. Petersilia (2003) found that as education level rise recidivism rates decline, and Aos, Miller, and Drake (2006) reported more specifically that basic education programs initiated in prison reduced recidivism by 5.1%, findings such as these raise the question of why some believe education programming in prison is expendable. Laham (2009) and Petersilia (2003) both discussed the rolling back of educational opportunities for incarcerated individuals in the 1990s with Petersilia (2003) observing that there were 350 higher education programs available to incarcerated individuals throughout the United States prior to 1997, with this number declining to just eight programs in 1997.

Employment

Those returning from incarceration also face challenges related to obtaining and retaining employment. Holzer et al. (2004), Thompson (2008), and Travis (2005) acknowledge the importance of employment to successful reentry. Thompson (2008) argues that those released from prison "belong to one of the groups most discriminated against in hiring practices" (p. 108) within the United States. Individuals released from incarceration face a number of employment-related issues, such as the elimination of employment and vocation training programs, restrictions on specific occupations and occupational licenses that can be earned by those with a felony conviction, coupled with the disappearance of unskilled employment opportunities due to deindustrialization and outsourcing (Thompson 2008; Travis 2005). Additionally, those returning from incarceration often face the prospect of reduced income resulting from under-employment or nonexistent employment opportunities (Thompson 2008). Pettit and Lyons (2009) and Western (2002) found that the earnings and earning potential of individuals who did find employment were significantly impacted by having been incarcerated. Pettit and Lyons (2009) found that "incarceration appears to have important consequences for employment and wage outcomes regardless of when individuals were admitted to prison" (p. 725), which suggests that incarceration impacts employment prospects, regardless of the age of the individual.

Family Issues

Research conducted by Petersilia (2003), Thompson (2008), and Travis and Waul (2003) shows that those reentering the community must also confront and manage a host of family issues that may have arisen during their period of incarceration. Travis,

Cincotta-McBride, and Solomon (2005) have argued that family ties are very important to successful reentry but are difficult to maintain given the distance that families must travel to visit with incarcerated family members, as well as the cost of using the telephone within the incarceration facility. Eddy and Reid (2003), along with Parke and Clarke-Stewart (2003), have reported on the negative effects of having an incarcerated parent on the development of children and adolescents. Those returning after incarceration also face hurdles supporting their families upon release given different housing, employment, and public aid restrictions (Travis 2005). Travis and Waul (2003) sum up the issues faced by individuals returning from incarceration and their families by writing that the "sometimes-abrupt return of that parent to free society, may have deep and unexamined consequences for all involved" (p. 2).

Civic Engagement

Prohibitions against engagement in civic activities create additional roadblocks that formerly incarcerated people face when trying to successfully reenter society (Alexander 2010; Mauer 2002; Re-Entry Policy Council 2005; Thompson 2008; Travis 2005). Uggen and Manza (2004) report that while only two states, Maine and Vermont, do not place any restrictions on former felony offenders from voting, fourteen states bar some or all of those convicted of a felony offense from voting. Uggen, Shannon, and Manza (2012) show how the population of disenfranchised current and former prisoners has grown by approximately 353% from 1.17 million to 5.85 million between 1976 and 2000. This dramatic increase in the disenfranchised population most likely impacted the 2000 presidential election, as the more than 600,000 disenfranchised former prisoners prevented from voting in Florida most likely would have tipped the election in Al Gore's

favor (Thompson 2008). Miller and Spillane (2012) argued that, while the ability to vote may not have been a central concern among their sample population of 54 formerly incarcerated individuals, there likely was an indirect impact on their odds of successful reentry as these individuals still noted that not being able to vote was "limiting, psychologically harmful, and stigmatizing" (p. 423).

Health-Related Issues

Health-related issues (physical, mental, and substance abuse) have also gained traction as important barriers to the successful reentry of formerly incarcerated individuals. Petersilia (2003) and Travis (2005), in addition to research conducted by Davis et al. (2011), Hammett, Roberts, and Kennedy (2001), Mallik-Kane and Visher (2008), and Solomon et al. (2008) have addressed the importance of health-related matters to reentry. As noted by Hammett et al. (2001), jail and prison inmates constitute a population that is heavily burdened by health-related issues. Once released back to their communities and neighborhoods, members of this population often find themselves returning "to incarceration because they feel that they can obtain better care in a correctional facility than in the community" (Hammett et al. 2001:392). Health-related issues, in addition to housing considerations, are often the day-to-day realities and roadblocks facing individuals as they try to successfully reenter society after incarceration (Solomon et al. 2008).

People incarcerated within prisons and jails have higher levels of infectious diseases and other physical health concerns than the general population. In turn, these physical health issues have an impact on reentry experiences. Findings from the report to Congress by the National Commission for Correctional Health Care (2002) show that

incarcerated individuals had a prevalence of AIDS that was five times higher than the general population. Reporting on a new form of tuberculosis (MDRTB or Multidrug-resistant Tuberculosis), Farmer (2002) found that 80% of all index cases of MDRTB in a large outbreak within New York City during 1989 could be traced back to jails and prisons. Farmer also found that the jail facility on Rikers Island had a tuberculosis rate of between 400 to 500 cases per 100,000 people. Fifty percent of males and two-thirds of females in Mallik-Kane and Visher's (2008) report on individuals returning from prison in Ohio and Texas reported having chronic physical health conditions that required long-term health care management. Binswanger et al. (2007) found that the mortality rate of the 30,237 individuals released from incarceration in the state of Washington between July 1, 1999 and December 31, 2003 was 3.5 times higher than similar non-incarcerated residents during the same time period.

While a majority of individuals surveyed in Mallik-Kane and Visher's (2008) research reported excellent to good health while incarcerated, their reported health status declined within the first post-release year. This deterioration in physical health after release often combined with other issues to make successful reentry difficult. Not only were those formerly incarcerated with physical health concerns less likely to have obtained gainful employment, they were more likely to have trouble keeping stable housing when compared to other returning reentrants without physical health issues (Mallik-Kane and Visher 2008). Physical health also appears to interact with the criminal involvement of individuals returning from incarceration. Women with physical health concerns had a recidivism rate of 53% compared to a recidivism rate of 38% for women with no physical health concerns (Mallik-Kane and Visher 2008). Among men with

physical health issues, 20% returned to prison versus 15% of men without any physical health issues (Mallik-Kane and Visher 2008).

Substance abuse is another issue that impacts prison and jail incarceration rates and reentry. Austin and Irwin (2001), Mauer (2006), Thompson (2008), and Western (2006) have argued that the dramatic increase in prison and jail incarceration rates since the 1970s can be attributed to the continued War on Drugs within the United States. Mauer (2006) noted that new sentences to prison increased 101% from 1985 to 2000, with drug offenses accounting for 52% of this increase. More specifically, new sentences to prison increased even more dramatically, rising 402% during this same time period. In terms of prison inmates, individuals incarcerated for drug offenses increased from 38,900 in 1985 to 237,000 by December 31, 2010, an approximate increase of 509% (Carson and Sabol 2012; Mauer 2006). As reported by the Justice Policy Institute (2008), the United States incarcerates more drug offenders than any other nation in the world.

People returning from prison and jail with substance abuse issues face a number of hurdles when returning to their communities and neighborhoods. Even as previous research has shown substance abuse treatment services as being effective at reducing recidivism (Justice Policy Institute 2008; Thompson 2008), there is a distinct lack of available resources to match the high levels of need and demand for substance abuse treatment (Thompson 2008). Reporting on reentry and substance abuse issues, Thompson (2008) found that 31% of those incarcerated at the federal level and 74% to 85% of those incarcerated at the state level are in need of some form of substance abuse treatment services. Mallik-Kane and Visher (2008) reported similar findings, with 8 out of 10 of those returning home from incarceration reporting using drugs or getting drunk

within 6 months of release from incarceration, with approximately 75% of men and 83% of women reporting illegal drug use. However, only 25% of the men and 14% of the women in Mallik-Kane and Visher's (2008) study reported participating in a formal drug or alcohol treatment program while in prison. One of the main contributing factors to this low rate of participation within substance abuse treatment services while incarcerated can be linked to a reduction in the availability of such services (Petersilia 2003; Rubinstein and Mukamal 2002).

Sentenced drug offenders also face collateral consequences (Mauer and Chesney-Lind 2002) that affect their reentry process. These collateral consequences often involve the denial of housing and other social welfare benefits. Drawing attention to the seismic changes within the American welfare system experienced during President Clinton's first term, Rubenstein and Mukamal (2002) note that individuals who incur drug-related felony convictions face a lifetime ban on their eligibility for TANF (Temporary Assistance to Needy Families) and food stamps. Changes to federal laws as far back as 1988 have made obtaining and retaining stable housing for individuals convicted of drug felony offences more difficult, as HUD and other agencies were able to legally discriminate against individuals originally incarcerated on felony drug offenses by barring their living in certain housing and residential areas (Rubenstein and Mukamal 2002). Barring formerly incarcerated individuals from housing is not unique to public housing. Travis (2005) reported that, due to a high level of drug-related crimes, Lancaster, California worked to cordon off a twenty-block neighborhood north of their downtown area to keep parolees and probationers from returning to and living in the area. These restrictions on welfare benefits and housing availability, in the words of

Rubenstein and Mukamal (2002), have created an environment where it has become "more difficult for low-income individuals to afford treatment, obtain food and employment, and find safe and sober housing as they transition back into the community" (p. 49).

Mallik-Kane and Visher (2008), citing data gathered from interviews conducted with male and female individuals returning home from prison in Ohio and Texas for the *Returning Home* project through the Urban Institute, found that those returning home often have significant levels of mental health concerns. Based on self-reports as well as the results of screening tools, Mallik-Kane and Visher (2008) estimated that approximately 41% of men and 71% of women returning from prison in Ohio and Texas had a mental illness. Reporting on the mental health problems of jail and prison inmates, James and Glaze (2006) reported that 56% of state prisoners and 45% of federal prisoners reported experiencing recent treatment for mental health issues or had experienced recent symptoms of a mental health disorder within a 12-month period prior to the interviews. In the interviews, James and Glaze (2006) also found that there were significant differences between male and female state prisoners as well as white and minority state prison offenders. In terms of gender, 55.0% of males and 73.1% of females and ethnicity in state prisons reported mental health issues (James and Glaze 2006). With respect to race, the authors found that 62.2% of white state prisoners, 54.7% of black state prisoners, and 46.3% of Hispanics in state prisons reported mental health issues (James and Glaze 2006).

Local jail facilities, when compared to state and federal prison facilities, have a higher percentage of those housed in local jail facilities have dealt with mental health

issues than those incarcerated in state and federal prisons. Overall, 64.2% of jail inmates reported experiencing a mental health issue (James and Glaze 2006). In the same report, 62.8% of male and 75.4% percent of female jail inmates reported experiencing a mental health issue. Differences also existed between different ethnic categories with 71.2% of white, 63.4% of black, and 50.7% of Hispanic jail inmates reporting the experience of mental health issues (James and Glaze 2006). Due to the many changes to the ways that mental health issues are addressed in the community (Lurigio 2001), Osher, Steadman, and Barr (2003) reported that these jail facilities "have, in many parts of the country, become psychiatric crisis centers of last resort" (p. 80).

Lurigio (2001) and Osher et al. (2003) cite different factors contributing to the criminalization of mentally ill offenders and increased levels of incarceration within jails and prisons throughout the United States. Lurigio (2001) groups these differences into four categories. First, Lurigio argues that deinstitutionalization and the release of thousands of individuals with serious mental health issues into communities without supervision or assistance has had a negative impact on the criminal justice system. Citing a Center for Mental Health Services report from 1994, there were 559,000 individuals institutionalized in mental health facilities in 1955, this number decreased to 72,000 in 1994, which shows the precipitous rise in deinstitutionalization (Lurigio 2001). Second, a number of significant changes within the laws addressing mental health modified the criteria regarding who could and could not be committed to a mental health facility. Most importantly, these changes dramatically altered the way individuals can be involuntarily institutionalized (Lurigio 2001).

Third, many of the mental health and substance abuse treatment services across

the United States became compartmentalized (Lurigio 2001). Admissions criteria for

many service providers became narrowly defined so that individuals with co-occurring

mental health and substance abuse issues were not admitted to substance abuse treatment

programs as those providers were not equipped or willing to work with those who also

have mental health issues. Lurigio (2001) writes that individuals with co-occurring

disorders "who constitute large percentages of PSMIs (persons with serious mental

illness) in the criminal justice system, might be deprived entirely of services because they

fail to meet stringent admission criteria" (p. 448). Because of these tight admission

standards, individuals with co-occurring disorders are more likely to end up incarcerated

as arresting officers may have no other options. Fourth, and closely tied to the third

factor, the War on Drugs and resulting increase in prison commitments for drug offenders

has also increased the criminalization of mental illness. Many drug offenders also have

mental health issues, hence, as more drug offenders were sentenced to prison, the number

of prisoners with mental health issues increased (Lurigio 2001).

Offenders with mental health issues are often dealing with a number of other

issues related to reentry including homelessness, employment problems, co-occurring

mental health and substance abuse disorders, and needing access to medications after

incarceration (Deason et al. 2011; James and Glaze 2006; Mallik-Kane and Visher 2008).

Approximately 13.2% of state prisoners and 17.2% of individuals within jails with mental

health issues reported homelessness within the past year compared to 6.3% of state

prisoners and 8.8% of jail inmates without mental health issues (James and Glaze 2006).

Those with reported mental health issues released from prison in Ohio and Texas faced

employment issues related to finding, obtaining, and retaining employment (Mallik-Kane

and Visher 2008). In terms of gaining legal employment, 28% of men and 18% of

women with mental health issues were able to secure legal employment. This compares

with 53% of men and 35% of women without mental health issues (Mallik-Kane and

Visher 2008). Deason et al. (2011) reported that when mentally-ill offenders are released

in Missouri, they leave with a 30-day supply of medication. Due to the length of time it takes

to secure an appointment with a psychiatrist and obtain a prescription re-fill, those released

from incarceration often face a difficult time consistently taking their medications. The

authors also report that it is common for mentally ill offenders to not receive necessary

medical services after release due to employment barriers, lack of insurance, and inability to

pay for treatment (Deason et al. 2011).

Additional Barriers to Reentry

Housing, employment, health-related matters, and other considerations present

significant obstacles to successful reentry. There are additional individual-level

considerations that have been shown to impact reentry. Age, race, gender, and prior

criminal records influence their chances that those released will commit further criminal

activity. These individual-level factors, when taken into consideration with the other

reentry barriers discussed above, often create additional roadblocks to successful reentry.

Age and the cessation of involvement in criminal activity has been a central topic

in discussions involving recidivism, dating back to the Gluecks' study in the late 1930s

and early 1940s up to the publication of Laub and Sampson's (2003) additional analysis

of the Glueck data collected by the Gluecks (Laub and Sampson 2003; Nagin and Land

1993; Sampson and Laub 1993). The criminal career debate centers on two primary

ideas. First, the earlier individuals initiate their criminal careers, the more likely they are

to recidivate as they grow older (Gendreau, Little, and Goggin 1996; Harris and Rice

2007). Second, as individuals grow older they will "age" out of their criminal careers

(Hanson 2002; Laub and Sampson 2003). This criminal career debate plays an

important, although often overlooked role, in the reentry success of those released from

incarceration given that a 69.7% of individuals incarcerated within prison at the end of

2011 were 30 years or older (Carson and Sabol 2012). Although a significant proportion

of these individuals may be aging out of criminal careers once released from

incarceration, the various employment, housing, and education barriers may impede this

aging out process.

Race/ethnicity also play a major role when discussing individual-level factors

related to recidivism (Gendreau et al. 1996; Mauer 2006; Thompson 2008). Research

conducted by Kruttschnitt, Uggen, and Shelton (2000), Spohn and Holleran (2002), and

Steen and Opsal (2007) shows that the race/ethnicity of individuals often impacts their

chances of recidivating after release. Thompson (2008) notes that the discussions

involving reentry have often "taken place in a race-neutral context, thereby ignoring the

elephant in the room—the fact that we are talking about a problem that predominantly

affects only certain populations in this country" (p. 2). Petersilia (2003) emphasizes the

importance of race/ethnicity to reentry debates by stating race "affects every aspect of

reentry, including communities, labor markets, family welfare, government entitlements,

and program innovations" (p. 30). This importance is seen in the incarceration rates of

minorities within the United States (Austin and Irwin 2001; Bales and Piquero 2012;

Mauer 2006; Pew Center on the States 2008), as well as in reentry research presented by

Petersilia (2003), Thompson (2008), and Travis (2005). More specifically, race/ethnicity has played an important role in issues related to reentry including communities (Clear 2007; Clear, Rose, and Ryder 2001; Sampson and Laub 1993), health-related issues (Mallik-Kane and Visher 2008), and employment (Western, Pettit, and Geutzkow 2002).

Gender, along with race/ethnicity and age, is a primary individual factor impacting recidivism (Collins 2010; Gendreau et al. 1996; Huebner and Berg 2011; Reisig, Holtfreter, and Morash 2006; Spohn and Holleran 2002; Stuart and Brice-Baker 2004). With an increased number of women incarcerated within jails and prisons (Kruttschnitt and Gartner 2003; Richie 2001), attention paid to this reentry population increased over time (Chesney-Lind 2002; Richie 2001; Thompson 2008; Travis 2005). Not only has gender influenced how reentry is experienced (Mallik-Kane and Visher 2008; Petersilia 2003; Travis and Waul 2003; Thompson 2008), successful reentry also is influenced by the unique circumstances faced by women reentering the community from prison (Chesney-Lind 2002; Reisig et al. 2006; Richie 2001). Cobbina (2010) writes that reentry "is a gendered phenomenon, as women's exposure and response to life-circumstances postrelease are distinct from men's" (p. 211). Reisig et al. (2006) and Richie (2001) both argue that a significant proportion of formerly incarcerated women face a variety of traumas from previous physical and sexual abuse that may influence how they experience reentry services. Chesney-Lind (2002) indicates that prior trauma may not necessarily end at the time of incarceration for women offenders, as they may encounter the same abusive partners when returning home from prison or jail, thus impacting their ability to successfully make the transition back to their communities and neighborhoods.

An individual's prior criminal record has also been found to be a strong predictor of future criminal recidivism (Gendreau et al. 1996). Nagin and Farrington (1992) support Gendreau et al.'s (1996) finding by noting that "among the best documented empirical regularities in criminology is the positive association between past and future criminal behavior" (p. 235). This positive association can be found in research conducted by Gottfredson and Hirschi (1990), Gray, Fields, and Maxwell (2001), Hanson and Bussiere (1998), Kassebaum et al. (1999), and Morgan (1994). The association between prior record and reentry issues can be found in the prohibitions those with felony convictions face in regards to housing (Metraux and Culhane 2004; Travis 2005) and employment (Holzer et al. 2004; Thompson 2008) which may result in future crime by those individuals.

In addition to race, gender, prior record, and age factors contributing to recidivism, there are additional individual-level factors impact reentry and recidivism. Family considerations, including marriage and children, along with employment and education levels, not only impact the odds of successful reentry but also impact recidivism (Eddy and Reid 2003; Holzer et al. 2004; Petersilia 2003; Travis 2005; Travis and Waul 2003). Research conducted by Aos et al. (2006), Gainey, Payne, and O'Toole (2000), Kassebaum et al. (1999), Kruttschnitt et al. (2000), Laub and Sampson (2003), and Western, Kling, and Weiman (2001) has found that formally imprisoned individuals who have found employment, are married, and have higher levels of education are less likely to recidivate once they have returned to their communities and neighborhoods. Employment, marriage, and education often interact with other individual-level factors

such as age, gender, and race to create situations where the experiences of reentry and odds of recidivism are contextual in nature.

Programming Addressing the Barriers to Successful Reentry

Although Goldsmith and Eimicke (2008) caution that there is no set of specific "silver bullets" that guarantee a reduction in recidivism or increased amount of time between release and reoffense, there are initiatives and programs that have been shown to decrease further crime and thus increase the likelihood of successful reentry. Andrews and Bonta (2006), Gendreau et al. (1996), Goldsmith and Eimicke (2008), Re-Entry Policy Council (2005), and Seiter and Kadela (2003) indicate that cognitive-based programs, employment services, vocational education, drug rehabilitation, and health-related programs have been successful in reducing recidivism. However, a vast majority of these programs are targeted towards addressing various individual-level concerns. Missing from this discussion is the role played by neighborhood-level factors in successful.

Neighborhoods and Reentry

A growing body of research has noted the need to include neighborhood and community level factors within the reentry debate. Clear (2007), Lynch and Sabol (2004), Petersilia (2003), Pratt and Cullen (2005), Thompson (2008), Travis (2005), and Wright et al. (2012) all have incorporated neighborhood-level factors in their studies of reentry. Clear (2007) strongly argues that omitting community-level contextual issues fails to place the reentry debate in a more holistic framework. Speaking to the impact of community and neighborhood-level factors on reentry, Wright et al. (2012) argue that focusing exclusively on individual-level considerations "fails to recognize the importance

of certain ecological factors that have been shown to be significant predictors of recidivism" (p. 776). If research into successful reentry is to continue moving forward, neighborhood and community-level variables need to be included in reentry models. Reisig et al. (2007) stated in the context of their research findings that "the ability of released prisoners to desist from crime is affected not simply by their own attributes but by the characteristics of the broader social context they reenter" (p. 427).

When individuals are released from incarceration, many tend to return to the neighborhood where they lived prior to incarceration (Clear 2002; Clear et al. 2001; La Vigne and Thomson 2003; Travis 2005). Travis notes that concentrated incarceration morphs into concentrated reentry as tax payers pay significant sums of money to incarcerate individuals, which in turn translates into less tax funds to invest in improving disadvantaged communities. Clear (2007) and Rose and Clear (1998) suggest that continually removing and returning individuals to incarceration creates a coercive mobility that further destabilizes neighborhoods and communities through the deterioration of social networks important to informal social control mechanisms. Building upon research by Morenoff, Sampson, and Raudenbush (2001), Sampson and Wilson (1995), and Wilson (1987), individuals often return from incarceration to neighborhoods with high levels of concentrated disadvantage where higher levels of poverty and unemployment exist. Hipp and Yates (2009), in addition to Rosenfeld, Wallman, and Fornango (2005), both found that individuals who returned from incarceration contribute to higher levels of criminal activity in their respective communities and neighborhoods. On the other hand, Hipp and Yates (2009) also found

that higher levels of social capital in neighborhoods reduced the criminal activity of individuals on parole.

Research on Reentry and Neighborhoods

Studies by Gottfredson and Taylor published in 1986 and 1988 serve as a starting point in examining the interaction effects between individual-level and neighborhood-level factors, or socio-environmental characteristics, as they relate to reentry and recidivism. These neighborhood-level variables included local social ties, attachment to locale, and the "extent, location, and distribution of local services" (Gottfredson and Taylor 1986:137). Utilizing OLS regression techniques within their 1986 study, neighborhood-related variables did not produce statistically significant results within Gottfredson and Taylor's models when entered as main effects. The authors found that the inclusion of interaction terms for neighborhood-related variables and individual-level variables modestly increased the predictive ability of their regression equations, increasing explained variance by 1% to 13% in reentry outcomes (Gottfredson and Taylor 1986).

Gottfredson and Taylor sought to address several of the limitations within their 1986 study with an additional examination of their dataset in their 1988 research. These limitations included not being able to sufficiently assess the effect of neighborhood-level and individual-level variables, as well as only employing simplified measures of the neighborhood-level variables (Gottfredson and Taylor 1988). Within the 1988 study, the authors surveyed a sample of neighborhood residents regarding a number of different items, including "local social dynamics, aspects of residents' attachment to the locale, place dependence, territorial attitudes, comparisons of neighborhood vis-à-vis others"

(Gottfredson and Taylor 1988:68) as a means to improve upon limitations in their earlier study. Focusing specifically on neighborhood-level outcomes, Gottfredson and Taylor (1988) found that "between half and one-third of the variation in offender recidivism rates may be explained...by offender and environment characteristics" (p. 78). In short, both of Gottfredson and Taylor's (1986, 1988) studies suggest that neighborhood context influences recidivism.

More recent research examining the interaction between individual-level variables and neighborhood context finds researchers utilizing advanced analytical techniques, like multi-level modeling (Raudenbush and Bryk 2002; Singer and Willet 2003), as well as a better means to measure neighborhood context, such as concentrated disadvantage (Morenoff et al. 2001; Sampson and Wilson 1995; Wilson 1987), collective efficacy, residential stability, and immigrant concentration (Kubrin and Weitzer 2003; Sampson et al. 1997). Wright et al. (2012) classify these more recent studies into two different groups. First, research conducted by Clear et al. (2001), Clear (2007), and Rose and Clear (1998) examine the effects that individuals returning from incarceration have on the neighborhoods and communities to which they return (Wright et al. 2012). Second, and more important to the present study, Wright et al. (2012) note that research has been conducted that examines the ways in which neighborhood contextual factors impact reentry outcomes, such as recidivism. It is this second group of studies that assists in providing support for the present study.

Kubrin and Stewart (2006) addressed the question of whether neighborhood socioeconomic status accounts for variation in the reoffending behavior of 4,630 individuals released from incarceration across 156 census tracts within Multnomah,

Oregon while controlling for their individual-level characteristics. Using multi-level modeling and two neighborhood-level predictors of recidivism, concentrated disadvantage and Massey's (2001) Index of Concentration at the Extremes (ICE) to account for concentrations of poverty and affluence, the authors found support for their neighborhood context models. Examining concentrated disadvantage, Kubrin and Stewart (2006) found that for a one unit increase in their disadvantage index produced a 12% increase in the odds of recidivism. Turning to the authors' ICE model, a one unit increase in the ICE index resulted in a 62% decrease in the odds of recidivism (Kubrin and Stewart 2006). In short, neighborhoods with a greater concentration of affluent families "serve a critical protective function in reducing recidivism" for individuals returning home from incarceration (Kubrin and Stewart 2006:184).

Using a larger population of individuals returning from incarceration and looking at counties rather than census tracts, Reisig et al. (2007) explored the influence that communities with high levels of racial inequality may have on successful reentry outcomes. Reisig et al. (2007) used a sample of 21,484 blacks and 13,384 whites who were released from prison to 62 counties within Florida as well as employed hierarchical modeling techniques to estimate their models. The authors employed a number of constructed neighborhood-level predictor variables including racial inequality, economic deprivation, black deprivation, white deprivation, ethnic heterogeneity, urbanism, violent crime rate, and police presence (Reisig et al. 2007). The authors found that "racial inequality significantly influences reconviction likelihood for Black male ex-inmates independent of the person-level attributes and other county contextual factors" with

recidivism being 10% higher for every one standard deviation increase in the racial inequality index (Reisig et al. 2007:422).

Mears et al. (2008) also examined the influence of neighborhood context on the successful reentry of 49,420 males returning from incarceration to one of Florida's 67 counties. Using a hierarchical generalized linear model (HGLM) with resource deprivation and racial segregation as their two main neighborhood-level predictor variables, the authors found mixed support for their three hypotheses that focused on drug, property, and violent crime recidivism (Mears et al. 2008). Focusing on the two hypotheses that incorporated neighborhood-level measures, Mears et al. found that increased levels of resource deprivation increased the risk for violent recidivism, while an increased level of resource deprivation showed a negative association with drug recidivism. There were no statistically significant findings for an increased level of resource deprivation and property crime recidivism, as well as no statistically significant findings for any of the three types of recidivism and the level of racial segregation in the county (Mears et al. 2008). In regard to their second hypothesis that examined age-race interactions with racial segregation and resource deprivation, the authors concluded that "the moderating influence of ecology varies depending on the type of offense" (Mears et al. 2008:323). While resource deprivation did not moderate the effect of the race and age interaction, racial segregation worked to moderate the age and race interaction for property and drug-related offenses. More specifically, increased levels of racial segregation increased the risk of property recidivism for young non-whites and older whites while the same increased level of racial segregation decreased the risk of property recidivism for young whites and older non-whites (Mears et al. 2008).

Taking a different path, Kirk (2009) examined the impact of Hurricane Katrina on the reentry of individuals released from Louisiana prisons. Using three different cohorts of 4,639 released individuals who were originally sentenced to prison from five of the parishes most impacted by Katrina, two cohorts released prior to Katrina, and one cohort released after Katrina, Kirk (2009) found that approximately two-thirds of those released pre-Katrina returned to the same parish where they were originally sentenced. Post-Katrina, only 49.9% of those released returned to their original parish with the other 50.1% of those released being released to different parishes (Kirk 2009). After establishing that a majority of individuals were released to different parishes post-Katrina, Kirk was able to show that individuals released to different parishes had statistically significant reduced levels of reincarceration compared to those individuals released to the same parishes that they resided in prior to being imprisoned. The predicted probability of reincarceration for those males released to their original parish was .265, while the predicted probability of reincarceration for those individuals released to different parishes was .110. Kirk's (2009) results support community context influence of reentry outcomes.

Hipp, Petersilia, and Turner (2010) looked at context and reentry within a given census tract, as well as how the neighborhood context of nearby census tracts and the location plus availability of social service providers reduce the risk of recidivism after release from incarceration in California. Looking at 280,121 parole spells, a total of 6,015 social service providers, and using a Cox proportional hazards model, the authors created spatial location variables for nearby census tracts and location of service providers within two miles of each parolee in their study, as well as utilizing three main

neighborhood-level predictor variables concentrated disadvantage, residential stability, and racial/ethnic heterogeneity (Hipp et al. 2010). Within each individual's own census tract, a one standard deviation increase in the level of concentrated disadvantage led to an increase in the hazard ratio of recidivating by 10% (Hipp et al. 2010). Incorporating neighboring census tracts, Hipp et al. found that "parolees returning to neighborhoods embedded in larger disadvantaged areas are particularly at risk of recidivating" (p. 965). The chances of recidivating were increased by 12.7% for those individuals returning from prison to a census tract that was classified as being one standard deviation above the mean for levels of concentrated disadvantage and were surrounded by census tracts that were also one standard deviation above the mean in levels of concentrated disadvantage (Hipp et al. 2010). Presence of social service providers also had a significant impact on recidivism as Hipp et al. (2010) found that a one standard deviation increase in the number of social services nearby an individual parolee's census tract reduced the hazard ratio of recidivating by 26.8%.

Contrary to other studies, concentrated disadvantage and immigrant concentration were not found to have a statistically significant impact on recidivism within Tillyer and Vose's (2011) examination of 5,027 individuals who returned from incarceration to 80 different counties in Iowa. The only neighborhood-level variable within their hierarchical logistic regression models that was statistically associated with recidivism was residential stability (Tillyer and Vose 2011). They found that across the 80 counties in their study, residential stability was negatively associated with recidivism. The authors also examined what influence the Level of Service Inventory-Revised (LSI-R) risk/needs assessment score had on recidivism within the context of neighborhood-level

considerations. Tillyer and Vose (2011) found that the slope of the LSI-R variable did not have a statistically significant effect on variation in recidivism across counties in Iowa. In the end, Tillyer and Vose (2011) concluded that individual-level variables are best suited as predictors of recidivism and should be emphasized over neighborhood context variables in reentry research.

Mears, Wang, and Bales (2012) focus primarily on the relationship between employment and recidivism in their 2012 study involving 13,272 black and 8,648 white males released from prison to 67 counties in Florida. The authors used a hierarchical generalized linear model to determine if these individuals have higher rates of recidivism when returning to counties with higher levels of unemployment. Using neighborhood-level variables that included resource deprivation, change in unemployment rates for White and Black individuals between 1990 and 2000, the Index of Dissimilarity, urbanism, and criminal justice system resources, Mears et al. (2012) were able to find support to their hypotheses that unemployment and race interact to impact recidivism. Pertinent findings include that for every percentage point increase in the black unemployment rate there was a 5% increase in recidivism among blacks returned from incarceration (Mears et al. 2012). For whites, there was a rise in the chances of property recidivism with an increase in the white unemployment rate. Mears and the other authors also noted that there was a statistically significant relationship between unemployment and property recidivism for whites with a higher prior criminal record (Mears et al. 2012). For blacks, this interaction between prior criminal history and unemployment produced statistically significant results when examining property and drug recidivism, however, these were trivial effects (Mears et al. 2012). The mixed results from this study

appear to provide partial support to the idea that unemployment impacts the potential for successful reentry from prison.

Limitations of Current Neighborhood-level Reentry Research

Each of the neighborhood-level studies reviewed has limitations and concerns. First, Hipp et al.'s (2010) measure of recidivism only includes returns to prison. Measuring recidivism in this manner excludes reincarceration in jail facilities, which may result in underestimating how much recidivism actually occurs. Another limitation within Hipp et al.'s (2010) work is their examination of proximity of services without taking into account whether those in their study required these services. Mears et al. (2012), Mears et al. (2008), and Reisig et al. (2007) excluded females from their study and failed to include males identified as Hispanic. Tillyer and Vose (2011) included the total LSI-R score within their study without breaking out how each component of this risk/need assessment may play a part in mediating or aggravating the chances for successful reentry. What is left unknown is whether past violent history, low levels of education, or limited cognitive thinking (as examples) play important or not so important roles in reentry outcomes. While Kirk (2009) takes an interesting path in his study by examining reentry in terms of where individuals were able to go after incarceration due to Hurricane Katrina, using a natural disaster which prevented many individuals from returning home side-steps the more likely reality that individuals will most likely return to the same neighborhoods and communities, plus will not be able to move out of state after being released due to post-incarceration supervision requirements.

Two additional considerations important to a broader, more holistic understanding of neighborhoods and reentry outcomes are not addressed in these previous studies. First,

these studies fail to consider the role played by neighborhood-level measures of public

health, mental health, and substance abuse in the successful reentry of individuals

returning from incarceration. Research conducted by Deason et al. (2011), Lurigio

(2001), Mallik-Kane and Visher (2008), and Thompson (2008) has noted the importance

of health-related issues on how individuals experience reentry to their neighborhoods

after incarceration. Even with the recognized importance of individual-level health-

related issues on reentry, there is a dearth of research that explores health-related issues

and reentry at the neighborhood level. For example, while Hipp et al.'s (2010) research

found a statistically significant reduction in recidivism when examining the proximity of

social services to parolees' census tracts, this study did not identify which specific social

services may have worked to reduce recidivism, nor does the study examine how

neighborhood-levels of health-related issues may impact utilization or types of provided

social services.

Lead and Criminal Behavior

This is not to say that research that examines neighborhoods, health-related

factors, and criminal behavior has not been conducted and published within previous

years. Arguing that the decrease in crime experienced across the United States may not

be explained in detail by employing a single theoretical stance, Drum (2013) advocates

for the consideration of one particular health-related factor, the presence of lead. He

states that with crime decreasing across the United States "all at once—as both the rise of

crime in the '60s and '70s and the fall of crime in the '90s seemed to be—the cause is a

molecule" (Drum 2013:2). The molecule in question, according to Drum (2013), is lead.

Given its prevalence throughout the United States in products such as paint and gasoline

(Reyes 2007) over a significant number of decades during the 20th century, Drum (2013) suggests that its possible influence on the rise and fall of criminal behavior should not be ignored. Reyes (2007) argues this same point by showing how removing lead-based additives to gasoline through the Clean Air Act in the 1970s can be shown to be responsible for a 56% decrease in the violent crime experienced during the 1990s.

Research demonstrates that a variety of physical, behavioral, and psychological-related harms occur when human beings are exposed to higher levels of lead in the environment. Nevin's (2000) findings showed how exposure to higher lead levels resulted in lower measurable IQ levels. Contact with higher levels of lead may also result in "aggressive behavior, impulsivity, hyperactivity, attention impairment, 'minimal brain damage,' and attention deficit hyperactivity disorder" in addition to further neurological impacts and psychological harm that may persist in individuals as they age (Reyes 2007:5). Pihl and Ervin (1990) document how increased levels of lead found in human beings have resulted in higher levels of mental retardation, learning problems, and diminished intelligence. In addition to these harms, higher levels of lead have been linked to increased levels of criminal behavior on both individual and neighborhood levels of measurement.

Denno (1990), Needleman et al. (1996), and Pihl and Ervin (1990) have shown how lead levels can impact criminal behavior at the individual level. In her longitudinal study of black males, Denno (1990) found lead poisoning experienced by children within the study was one of the strongest predictors of criminal and delinquent behaviors across three different age groups. Also in 1990, Pihl and Ervin published research which showed support for the argument that lead levels differentially impact property and

violent crime rates. They found that higher levels of lead were found in the hair samples of individuals convicted of violent offenses, whereas lower levels of lead were found in the hair samples of individuals convicted of property offenses. Taking more of a developmental course, Needleman et al. (1996) established the impact of increased lead levels on criminal behavior in individuals follow a developmental course. Increased exposure to lead resulted in reports of higher levels of negative behaviors and higher levels of self-reported criminal behavior in the sample of boys in the study (Needleman et al. 1996).

More importantly, previously published research has supported the argument that neighborhood-level factors interact with lead levels within communities to produce potentially higher rates of criminal behavior (Mielke and Zahran 2012; Stretesky and Lynch 2001; Stretesky and Lynch 2004). Stretesky and Lynch (2001) examined the relationship between the estimated concentration of lead in the air in the 3,111 contiguous counties found in the lower 48 states and homicide rates. After controlling for nine additional air pollutants and six additional sociological variables, Stretesky and Lynch found that there was a statistically significant relationship between air lead levels and homicides at the county level. That is, the evidence showed that rates of homicide in the counties included in the study were approximately four times higher when a county registered an estimated air lead level equal to 0.17 $\mu g/m^3$ compared to counties that registered estimated air lead levels of 0.00 $\mu g/m^3$. Controlling for the nine additional air pollutants was important in this study, as it allowed the researchers to show that the potential relationship between estimated air lead levels and homicide were due to lead in

the air rather than other chemicals the contribute to air pollution (Stretesky and Lynch 2001).

Stretesky and Lynch (2004) not only focused on air-lead levels in their 2004 study, they also included a measure of resource deprivation. Adding a measure of resource deprivation allowed the authors to gain a better understanding of whether the effects of air-lead pollution on the criminal behavior of individuals as measured by property or violent crime rates were aggravated or mediated by higher or lower levels of resource deprivation (Stretesky and Lynch 2004). Using UCR crime data from the years 1994 through 1996 for 2,772 counties within the lower 48 states and estimated air-lead levels from the Cumulative Exposure Report from 1990, Stretesky and Lynch (2004) found support that county-level resource deprivation impacts rates of property and violent crime. They found a statistically significant relationship between air-lead levels and rates of property and violent crime to be higher in counties with increased levels of resource deprivation and weaker in counties where levels of resource deprivation were lower (Stretesky and Lynch 2004).

Moving to the city level, Mielke and Zahran (2012) examined lead and latent aggravated assault rates in six different urban areas across the United States. The authors utilized a least squares dummy variable regression model that examined the relationship between UCR aggravated assault rates for the years 1972 through 2007 and estimates of lead in the air in metric tons from automobile traffic for the years 1950 through 1985. Noting that a "relationship between air Pb and aggravated assault is not a statistical aberration, nor can it be explained away by other common factors such as changing age structure" (Mielke and Zahran 2012:52), the authors found that with all other factors held

equal their model showed how a 1% increase in the metric tonnage of air lead released 22

years earlier was related to a 0.46% rise in the aggravated assault rate within the six

cities. Their full model explains 90% of the variation in the aggravated assault rate

across the six cities included within their study (Mielke and Zahran 2012). The authors

also examined New Orleans, due to previous research that found children in this city are

exposed to lead at higher rates than other cities. Mielke and Zahran (2012) found that

85% of the variation in the aggravated assault rate within New Orleans was linked to the

amount of lead released into the air 22 years earlier, in addition to a latent increase of

1.59 aggravated assaults per 100,000 residents per metric ton of released lead into the air.

    With respect to reentry, many individuals returning from incarceration are from a

younger cohort and may not have been exposed to the same levels of lead as previous

generations. As noted by Nevin (2000), the use of lead as an additive to paint was

curtailed and banned by the time this current generation was born. This may lead to lead

being dismissed as a cause for concern with regards to influencing criminal behavior on

an individual level. However, with a majority of individuals returning from incarceration

to neighborhoods and communities not only characterized by high levels of concentrated

disadvantage but higher levels of lead as well, these individuals may very well encounter

the various health-related issues associated with high levels of lead. This research

provides the empirical warrant for further examination of how health-related matters on

the neighborhood and community levels impact reentry outcomes. A theoretical

justification for including health-related factors in reentry outcome models will be

detailed in Chapter 3.

Jails and Reentry

Second, reentry research in general and these studies specifically, do not examine jail reentry outcomes. Even though Petersilia (2003) and Travis (2005) write about reentry in general terms, including individuals returning from prisons or jails, their discussions are most often directed towards individuals returning home from prison. When Hipp et al. (2010), Kubrin and Stewart (2006), Mears et al. (2012), and Tillyer and Vose (2011) discuss neighborhood-level concerns and reentry, they focus on those released from prison facilities within their respective states. Miller and Miller (2010) explained that jail reentry may not be emphasized within published literature, given that those incarcerated within jail facilities are incarcerated for vastly shorter lengths of time than those housed in prisons. In turn, the shorter periods of jail incarceration does not provide agencies and treatment personnel the required time to provide services geared towards successful reentry. Additionally, Miller and Miller (2010) note that the perception of policy makers and academic researchers may be that individuals returning from jail may not experience dramatic cuts in family ties that are important to successful reentry. However, what Miller and Miller (2010) and other researchers fail to consider is that those incarcerated in jail facilities will return home to the same neglected and blighted neighborhoods and communities that those released from prison return to after their release from incarceration.

Although researchers associated with the Urban Institute have recently taken more of an interest in the various issues facing jail reentry (Solomon et al. 2008), previously published research on individuals returning home from jail facilities is scarce. Osher et al. (2003) and Osher and Steadman (2007) argue for the use of the APIC (Assess, Plan,

Identify, and Coordinate) model in developing a reentry plan for those leaving jail and note how this particular type of reentry planning can help ensure successful reentry and avoidance of future criminal behavior. Solomon et al. (2008) present a broad systems-based report on the ways in which jail reentry programs can be initiated and improved. Suggestions found within the report include involvement of each individual community stakeholder, the need for services to be provided in jail facilities prior to the release of individuals back into the community, and presenting information on how jail reentry programs have fared in variety of locations across the United States (Solomon et al. 2008).

Hoff et al. (1999) and Ventura et al. (1998) examined how case management and diversion programs provided to jail inmates with mental health issues may work to improve the chances of successful reentry outcomes. Hoff et al. (1999) compared 314 seriously mentally ill individuals who participated in a jail diversion program to 124 similar individuals who were eligible for the program but did not participate. The authors found that the jail diversion program significantly reduced incarceration time over the following year, with participants in the diversion program housed for an average of 40.5 days versus 172.8 days for those individuals who did not participate in the program. Ventura et al. (1998) studied a population of 261 mentally ill individuals released from jail and found those individuals who participated within community services after their release from incarceration were arrested less than those individuals who had not participated in any community case management services. While individuals who participated in some case management services witnessed a 45% decrease in the probability of rearrest over the three-year period after release from jail, the authors found

that the intensity of services, in terms of hours engaged in programming, did not appear to significantly reduce the probability of recidivism in this population (Ventura et al. 1998).

Piehl, LoBuglio, and Freeman (2003) provide one of the few evaluations of a jail reentry program implemented within the Suffolk County House of Corrections in Boston, Massachusetts. The authors note that preliminary results showed significant reductions in recidivism among those who participated and completed the Offender Reentry Program's (ORP) coursework of education, job assistance, case management, and mentoring support. Piehl et al. (2003) found that while 40% of the individuals in the comparison group were rearraigned within the eight-month time frame of the study, 26% of ORP participants who failed to graduate and 13% of ORP graduates were rearraigned within the eight-month time frame. However, because of a number of different issues experienced by the facility, a significant and persistent lower than anticipated enrollment was experienced within ORP. Not only did classification and eligibility requirements prohibit individuals from participating in the program, but inefficiencies within the Suffolk County House of Corrections created a number of barriers to placing eligible individuals into the ORP (Piehl et al. 2003). The authors note that this second finding illustrates that jails often have "real constraints on their internal capacity as determined by the quality of their staff, the sophistication of information technology, financial resources, and the organizational priorities set by managers and political leaders" (Piehl et al. 2003:14).

This previous research on jail reentry projects presents a number of missed opportunities. The works by Osher et al. (2003) and Osher and Steadman (2007) present

a model of reentry planning and coordination. While health-related issues are mentioned, these articles do not empirically examine how well this model does in terms of assisting the reentry efforts of those returning from jails. Additionally, this branch of jail research does not pay attention to how neighborhood-level variables and concerns may impact the full implementation of this model. Solomon et al. (2008) address individual-level and health-related concerns associated with jails and reentry, but do not discuss how the very neighborhoods to which individuals return may impact their odds of avoiding further criminal behavior. Additionally, the various jail programs and initiatives geared towards reentry detailed by Solomon et al. (2008) may or may not provide outcome data. When results are presented within the document, key pieces of information are often missing. This often includes missing definitions of recidivism as well as eligibility criteria.

Conclusion

Reentry became one of the primary policy choices employed by politicians and policy makers to deal with the growing number of individuals returning home after incarceration. Additionally, research has been reviewed to show how both individual and neighborhood-level factors influence reentry. Also covered in this chapter is literature that provides the empirical warrant for inclusion of health-related issues and jails within reentry research. Chapter 3 builds on the literature reviewed above by providing the theoretical justification for examination of neighborhood-level context, health considerations, and jail reentry.

CHAPTER 3

THEORIZING NEIGHBORHOODS, CONCENTRATED HEALTH ISSUES, AND JAIL REENTRY

Introduction

      This chapter constructs a theoretical argument for how neighborhood-level context and concentrated health issues influence reentry outcomes for those returning home after incarceration in jail. Although traditional individual-level criminological theories will be identified as pertinent to an understanding of reentry, the case will be made that a theoretical model that includes the role of neighborhood and community-level context, especially neighborhood-level concentrated health issues, is as important for a more comprehensive understanding of reentry. Not only will a theoretical argument be made that increased levels of concentrated health issues found in neighborhoods impact recidivism rates in a similar manner to traditional neighborhood structural characteristics such as high rates of concentrated disadvantage, residential mobility, and ethnic/racial heterogeneity, neighborhood context, including concentrated health issues, is theorized to impact recidivism through their influence on the factors individual-level theories posit to affect reentry outcomes. For example, increased levels of concentrated health issues at the neighborhood level are theorized to negatively impact the formation of social ties that are important to the generation and continuation of informal social control and social capital central to the reduction of criminal activity in these neighborhoods. Finally, this chapter concludes with the development and presentation of hypotheses derived from the theoretical perspectives reviewed in this chapter.

Neighborhood-level Theory

Social Disorganization

Sampson (2012) traces the theoretical development of social disorganization back to 1833 with the publication of Andre-Michel Guerry's text which described how a cartographic method could be employed to present the statistical distribution of crime over a set of geographical units. Guerry's findings showed that crimes were committed disproportionately in certain geographical units and at certain times of the day. Additional researchers in the nineteenth century, including Quetelet in France and Rawson, Mayhew, and Booth in the United Kingdom, added to the advancement of social ecology as an important theoretical orientation in understanding crime (Sampson 2012). In particular, Mayhew's 1861 research in London serves as a precursor to Shaw and McKay's (1942) work on social disorganization as Mayhew spoke to crime being a learned activity with criminal knowledge passed on from individual to individual within neighborhoods identified as having higher levels of poverty, housing issues, and insecurities related to the economy (Sampson 2012).

In addition to the theoretical influence of Thomas and Znaniecki's study *The Polish Peasant in Europe and America* published in five volumes between 1918 and 1920, Park and Burgess's (1925) research in Chicago stands out as one of the major theoretical contributions to the development of social disorganization theory. Borrowing from theoretical concepts found in the field of plant ecology, Park and Burgess's major theoretical contribution to the growth and development of social disorganization theory illustrated how five concentric zones of development within urban areas help theorize spatial patterns of criminal and deviant behavior. Park and Burgess (1925), using

ecological imagery of invasion, conflict, and eventual assimilation, argued that

individuals living in the second (transition zone) zone closest to the first zone (central

business district) were at the highest risk of being exposed to ecological factors believed

to influence criminal behavior. Factors within this transition zone, which are similar to

the ones first theorized in Mayhew's 1861 writings (Sampson 2012), include slum-like

conditions such as subpar housing, higher rates of poverty, and increased levels of

economic insecurities. As the economic situation of individuals and families improved,

they were able to move farther away from this zone in transition into one of the

remaining three zones where housing and economic prospects improved and levels of

criminal and deviant behavior were lower (Sampson 2012).

Shaw and McKay's (1942) *Juvenile Delinquency and Urban Areas* brought social

disorganization and social ecology research to the theoretical forefront of criminology.

Relying on Park and Burgess's concentric zone theory, Shaw and McKay examined

official juvenile delinquency data from three different time periods between 1900 and

1933 to uncover how delinquent activity was distributed throughout the concentric zones

found in Chicago. Shaw and McKay examined this time frame due to the level of

immigration and migration occurring in Chicago. The intention of the research was to

determine whether or not officially recorded delinquency was explained by the actions of

individuals within the immigrant groups themselves, or whether these delinquency rates

could be explained by the various social environments immigrant groups were entering

once they migrated to Chicago (Shaw and McKay 1942).

What Shaw and McKay (1942) found in the course of their research was that, on a

broad level, social structural issues related to the economic status of community

inhabitants, the mobility of individuals in and out of a given community, and the ethnic

heterogeneity of a community impact its social organization, and in turn levels of

delinquency (Sampson and Groves 1989). The findings from Shaw and McKay's (1942)

study supported their hypothesis that structural characteristics of communities influence

levels of delinquency. More importantly, it was the structural characteristics of the

neighborhoods influencing the level of delinquency rather than the particular residents

living in these neighborhoods. These patterns of high delinquency rates existed in each

of their three time periods regardless of the immigrant groups that lived in these

communities (Shaw and McKay 1942). Their results also indicated that the rates of

delinquency were highest in the transition zones nearest to the central business district

with rates of delinquency declining the farther away the area was from the central

business and transition zones (Shaw and McKay 1942).

Criticisms of Social Disorganization Theory

Social disorganization theory encountered a number of criticisms that led to its

falling out of favor as a theoretical model in the 1970s (Pratt and Cullen 2005).

Criticisms levied against social disorganization theory by the likes of Arnold and

Brungardt (1983) and Davidson (1981) sought to dismiss this theoretical orientation as

unable to provide a theoretically sound explanation for patterns of criminal behavior.

Bursik (1988) summarized five main criticisms researchers and academics have leveled

against social disorganization theory. These include issues related to the normative

assumptions made by social disorganization theory research, a shift in theoretical focus to

more individual-level causes of criminal and delinquency behaviors, and an assumption

of stable ecological factors over an extended time period. Additional criticisms noted by

Bursik (1988) are methodological in nature and include how crime and delinquency are measured using official data, as well as additional issues related to operationalization of social disorganization.

Expansion of Social Disorganization Theory

Social disorganization theory has evolved over the years to answer the criticisms summarized by Bursik (1988) with writings by Kornhauser (1978) and Sampson and Groves (1989) enabling social disorganization theory to answer and overcome past criticisms. More recently, writings by Bursik (1988), Bursik and Grasmick (1993), Sampson, Morenoff, and Earls (1999), and Sampson, Raudenbush, and Earls (1997) have helped social disorganization theory return to favor by theorists and researchers. More specifically, writings by Bursik and Grasmick (1993) and Sampson et al. (1997) have been particularly influential in reshaping theoretical discussions regarding social disorganization into the ability and willingness of community residents to exercise informal social control in their neighborhoods (Triplett, Sun, and Gainey 2005).

Labeled as a systemic model of social disorganization (Kubrin and Weitzer 2003; Pratt and Cullen 2005), Bursik (1988) and Bursik and Grasmick's (1993) extension of social disorganization theory builds a case for the inclusion of social ties in this theoretical model. Social ties are important "for they are the mechanism through which individuals in a neighborhood come to know each other, establish common values, and carry out informal social control" (Triplett et al. 2005:89). These social ties manifest themselves through a variety of personal, parochial, and public networks which play important roles in a broader understanding of social control and crime within communities (Bursik and Grasmick 1993). Additionally, these social ties have been

recognized as playing an important role in the concept of social capital. It is the

transmission of intangible resources such as information, trust, and neighborhood norms

between neighbors through social ties that constitute social capital. In turn, social capital

plays an important role in the moderation of criminal behavior in neighborhoods (Kubrin

and Weitzer 2003).

Whereas Bursik and Grasmick's (1993) view of neighborhood organization is the

ability of individuals living in a community to exert the social control necessary to

confront and prevent crime, Sampson et al.'s (1997) conceptualization of collective

efficacy can be seen as the willingness of individuals to exert informal social control

mechanisms important to regulating criminal behavior in their community (Kubrin and

Weitzer 2003; Triplett et al. 2005). Defined by Sampson et al. (1997) as the "social

cohesion among neighbors combined with their willingness to intervene on behalf of the

common good" (p. 918), collective efficacy not only stresses the importance of informal

social control, but also acknowledges that collective efficacy does not exist within a

vacuum devoid of structural, political, and economic influences. Not only does the

mobility of residents in and out of neighborhoods and ethnic heterogeneity influence

levels of collective efficacy, the varying levels of concentrated disadvantage also

influence the levels of collective efficacy in neighborhoods, and thus the ability of

residents to regulate criminal behavior (Sampson et al. 1997). Although Pratt and Cullen

(2005) discuss how collective efficacy can be interpreted as a concept opposite of social

disorganization, given that the conceptualization of collective efficacy includes the

presence of trust among neighbors in a community, and thus social ties, this presence of

trust between neighbors helps the neighborhood as a whole confront criminal behavior and reduce criminal activity in the community (Pratt and Cullen 2005).

Interactions between residents in their neighborhoods do not occur in a singular direction. Not only do neighborhoods exert a number of different effects upon individuals residing there, these residents bring to bear a number of effects on their neighborhoods. In terms of individual-community effects, Clear et al. (2001), Clear (2007), and Rose and Clear (1998) have written how the process of removing significant numbers of community residents through mass incarceration has weakened the ability of communities and individuals to develop and maintain informal social control mechanisms, and hence to curb criminal activity. The constant removal from and return to communities of residents from prison works to weaken areas cited as being important to the development and continuation of informal social controls. These areas include family ties, employment and economic opportunities, and other structures within the community (Clear 2007; Clear and Rose 1998). In short, relying heavily on formal social control mechanisms, such as incarceration, may produce increased crime due to a reduction in informal social control mechanisms (Clear 2007; Clear and Rose 1998).

Research conducted by Reisig, Holtfreter, and Morash (2002) and Richie (2001) helps illustrate how neighborhood-level contexts impact people who return from incarceration. Reisig et al. (2002) show how education, poverty levels, and age of female residents with a felony record impact their abilities to access the various social networks that can assist in their reentry efforts. Females with lower levels of education, an income below $8,000 per year, and who were older had narrow social networks and thus were unable to access many of the social benefits that would have assisted in a successful

reentry effort (Reisig et al. 2002). Additionally, neighborhood poverty, the racial

composition of the neighborhood, and the residential stability of residents have been

utilized in studies to examine how neighborhood-level context can impact individual-

level outcomes like recidivism. Pratt and Cullen (2005) identified these as among the

strongest and most reliable predictors of patterns of criminal behavior. Previous research

conducted by Kubrin and Stewart (2006), Reising et al. (2007), Mears et al. (2008), Hipp

et al. (2010), and Tillyer and Vose (2011) has shown how the structural and ecological

context of neighborhoods can impact the citizens that live within these communities.

Integrating Criminologies

Discussing the integration of different criminological theories takes on

importance as theorizing reentry has often been done only on the individual level (Hallett

2012). While not necessarily a new argument, adding neighborhood context to the

discussion is a relatively recent development in the theoretical literature on reentry. As

such, discussing the integration of neighborhood-level context and individual theories

provides an opportunity to expand the theoretical understanding of reentry. There have

been arguments regarding the integration of different criminological theories that have

carried on for decades. On one side, theorists have stood fast against any theoretical

integration given the numerous barriers to combining different theories. This is not the

standard position taken with regards to integrating criminological theories. Integrating

various criminological theories has a long history (Barak 1998; Kubrin and Weitzer 2003;

Muftic 2009) with Barak (1998) writing that integrating different theoretical traditions

can be productive and lead to research that is richer and more explanatory than relying on

a single theoretical orientation. He wrote that an integrated criminological framework "is

capable not only of addressing the fragmentation in criminology, but also of reestablishing and transforming the current state of criminological affairs" (Barak 1998:15).

Integrating micro- and macro-level criminological theories has been accomplished in a number of different theoretical traditions. Agnew (1999) proposed an integrative theory through his examination of how strain interacts with community context to explain differing crime rates across communities. Rountree, Land, and Miethe (1994) found support for the integration of micro and macro-level theories by integrating social disorganization and routine activity theories in an examination of victimization rates in Seattle. Sampson and Laub's (1993) development of their age-graded social control theory benefited from incorporating concepts from social disorganization, labeling and subculture, and social control theories (Muftic 2009). As Muftic (2009) notes, social disorganization theory may have benefited from researchers working to integrate social disorganization and individual-level theories. While not done with respect to reentry, there is support for the integration of macro or neighborhood-level and micro or individual-level criminological theories to further develop our understanding of reentry.

Individual-Level Theories

Although the primary argument of this dissertation calls for the inclusion of neighborhood-level context in theoretical discussions regarding reentry, this addition of neighborhood-level context should not come at the expense of omitting individual-level explanations for successful reentry. Excluding individual-level factors that have been associated with recidivism and successful reentry would create a theoretical gap and a missed opportunity to advance a more holistic understanding of reentry. Additionally,

measures of neighborhood-level context work in many instances to increase levels of strain, decrease the quality of social bonds, and erect barriers to the various turning points in the lives of individuals that have been identified as important to the process of desistence from criminal activity. That is, neighborhood context not only acts on the macro-level to influence patterns of criminal behavior, neighborhood level context influences individual-level considerations on the micro-level as well. In this light, individual-level criminological theories pertinent to the study of reentry are discussed in the following paragraphs.

Strain Theory

The starting point for strain theory is often tied to Durkheim's (1893) original conceptualization of anomie, which was defined as the breakdown of existing social norms in a society due to rapid social change. This breakdown in social norms often results in diminished levels of social regulation which may in turn result in increased levels of anomie and social ills (Durkheim 1893). Even though Durkheim's (1893) work specifically identifies suicide as the deviant behavior in question, crime and other related activities could be substituted as the dependent variables in his theory. Over 35 years later, Merton (1938) employed Durkheim's conceptualization of anomie in addressing the shortcomings of the various biological explanations of crime and criminal activity popular at the time by suggesting social factors contributed to the criminal behavior of individuals. Merton (1938) argued that the emphasis placed on monetary gain within the United States, coupled with the lessening of social controls tied to legitimate means for attaining these monetary gains, creates an environment where economic success is pursued by any means necessary, up to and including criminal behavior. The concept of

strain is introduced when Merton (1938) examines how lower class individuals

experience a strain toward anomie when trying to obtain society's defined level of

economic success.

Agnew's (1992, 2001) general strain theory, or GST, serves as a more micro,

social-psychological explanation of individual-level criminal behavior, and in turn makes

this branch of strain theory pertinent to reentry. According to Agnew (1992), strain

theory examines the negative relationships that individuals have with other individuals by

focusing on the negative affective states of anger and other related emotions. Leaning on

the importance of negative relationships, Agnew (1992) argued that strain manifests itself

in three broad ways: prevention of individuals achieving positively-valued goals, the

threat to remove positively-valued stimuli, and the presentation or threatening to present

individuals with negatively-valued stimuli. Anger becomes the primary emotional

response to these broadly defined concepts of strain noted in GST (Agnew 1992).

Agnew writes that anger "is distinct from many of the other types of negative affect in

this respect, and this is the reason that anger occupies a special place in the general strain

theory" (Agnew 1992:60).

Agnew (2001) refined his original 1992 conceptualization of GST by examining

and specifying the different types of strain most likely to lead to delinquency and

criminal behaviors at the individual level. Agnew (2001) lists four characteristics of

strain that influence criminal behavior: seeing the strain as unjust; the strain experienced

by individuals is high in magnitude; strain is associated with a lack of social control; and

the strain creates a level of pressure or some incentives for criminal coping. With these

characteristics in mind, Agnew (2001) listed the broadly defined strains as most strongly

related to criminal behavior in individuals. These strains include, for example, parental

rejection, erratic and excessive discipline, childhood neglect and/or abuse, work in a

secondary labor market, and homelessness. These various strains may in turn lead to an

increased likelihood that individuals will engage in criminal behavior and activities for

different reasons. Agnew (2006) lists these reasons when he emphasizes strains can lead

to negative emotion, may assist in the development of the specific personality traits of

negative emotionality and low constraint, may diminish the levels of self-control

individuals, and may incubate the social learning of criminal behavior. He further

explains that individuals who lack the ability to handle strains through legal channels are

more disposed to criminal behavior than others, and those whose costs for coping with

strains through criminal behavior are low are the ones most likely to engage in criminal

behavior as a means to manage the various strains faced in life (Agnew 2006).

Moving from the individual level to neighborhoods, Agnew (1999) stated that

disadvantaged neighborhoods have the potential to generate strain, and in turn create an

environment where individuals are more likely to respond to this strain with criminal

behaviors. Although Kornhauser (1978) and other authors worked to remove the

considerations of strain theory found in Shaw and McKay's (1942) original

conceptualization of social disorganization, Agnew (1999) argues that strain and social

disorganization theories are theoretically compatible and can be integrated with one

another to better understand criminal behavior. Agnew (1999) states that highly

disorganized communities, characterized as having higher levels of economic deprivation

or levels of residential mobility, help produce strain by increasing the possibility of

failure to achieve positively-valued goals, having higher levels of relative deprivation felt

by individuals, and increasing the potential that there will be higher losses of positive

stimuli as well as greater opportunities for the presentation of negative stimuli.

Additionally, individuals living in highly disorganized communities may run the risk of

increased contacts with angry or frustrated people which can also increase strain (Agnew

1999). In short, disorganized communities act to produce the same types of criminogenic

strain that Agnew originally theorized in his 1992 writings.

Many of the structural characteristics of socially disorganized neighborhoods –

high rates of concentrated disadvantage, residential mobility, and racial/ethnic

heterogeneity—have been associated with generating strain in these neighborhoods.

Agnew (1999) builds the argument that economically depressed communities and

neighborhoods produce higher levels of strain in the individuals residing in these areas as

they are not able to achieve the positively-valued goals of earning a satisfactory income

and obtaining quality employment. Neighborhoods with higher levels of concentrated

disadvantage have been described as having higher levels of poverty and fewer economic

opportunities (Sampson et al. 1997; Wilson 1987, 1996). These economically depressed

areas work to prevent individuals from reaching those positively-valued goals of higher

incomes and quality employment opportunities (Agnew 1999). Strain increases in these

socially disorganized neighborhoods as greater emphasis is placed on obtaining money

with fewer opportunities for obtaining more money through traditional employment

channels. Traditional employment channels are also hard to come by in socially

disorganized neighborhoods given there are fewer quality employment opportunities in

these areas in addition to a decreased number of contacts with neighbors and others in the

neighborhood or community who can connect individuals to quality employment

opportunities (Agnew 1999). With blocked economic opportunity due to high levels of concentrated disadvantage in the neighborhood, individuals in these areas face increased chances for turning to criminal behaviors to deal with these higher levels of strain and to reach positively-valued goals.

High levels of residential mobility and ethnic/racial heterogeneity also work to produce greater levels of strain within neighborhoods. Not all individuals are able to improve their residential situations by moving from poor neighborhoods to communities with better economic climates. In many situations, individuals who do relocate move from one socially disorganized neighborhood or community to another equally disorganized neighborhood or community. In these situations, individuals increase the likelihood that they will continue to encounter a greater number of frustrated and angry individuals. Agnew (1999) notes that socially disorganized neighborhoods are more likely to have a higher percentage of residents who are angry and frustrated. Interactions within and between these populations can create higher levels of strain which may lead to higher levels of criminal behavior. Increased levels of ethnic/racial heterogeneity within socially disorganized neighborhoods may also lead to increased levels of strain. As noted by Agnew (1999), high levels of social cleavages, of which ethnic/racial heterogeneity can be considered a measure, produce strain in neighborhoods through increased levels of exposure to adverse stimuli. This type of strain could conceivably be produced through the decreased communication and increased cultural barriers found in neighborhoods characterized as having higher levels of ethnic/racial heterogeneity.

Wodahl's (2006) research provides an example of how community context can increase levels of strain that in turn impact those living in these areas. What sets

Wodahl's (2006) study apart from previous work that examined neighborhood context and strain is that Wodahl shows how conditions in rural communities can produce strain and erect barriers to reentry from incarceration. Wodahl (2006) writes that many of the strains that are found in urban localities, such as homelessness, employment problems, and reduced access to substance abuse and mental health treatment, are not only found in rural communities, but also may be found at higher levels. Following Agnew (1999), reduced quality employment opportunities in rural areas may lead to higher levels of strain being experienced by individuals living in these communities. Lower quality employment opportunities are linked by Wodahl (2006) to lower wage levels in rural communities, tight-knit firms that are less likely to hire those with criminal records, and higher numbers of residents with lower job qualifications and education levels. Fewer quality job opportunities, coupled with lower rates of pay, have been linked to increased chances that individuals will turn to criminal activities or other opportunities that bring in illegal income (Travis, Solomon, and Waul 2001). In short, reduced economic opportunities in rural locations can lead to increased strain and greater odds of criminal coping strategies.

Previous research has shown that increased levels of specific strains are more likely to lead to criminal behavior. Agnew (2001) theorized that strains related to working in the secondary labor market as well as homelessness were examples of strain that were most likely to lead to a criminal activity. Given that neighborhoods characterized as having high levels of concentrated disadvantage may be at a greater risk to having a greater proportion of residents working in these secondary labor markets, levels of strain as well as criminal behavior have been found to be higher in these

neighborhoods. Secondary labor markets are often characterized by underemployment, lower wages for those who do obtain employment, and fewer benefits associated with these jobs that together work to prevent residents from achieving positively-valued goals (Agnew 1992; Colvin 2000). Higher levels of unemployment, as well as lengthy periods of unemployment, have also been identified as a strain related to higher levels of criminal behavior (Baron 2004; Baron and Hartnagel 1997; Baron and Hartnagel 2002). Homelessness, which can be viewed as an indicator of a high level of residential instability, has also been identified as a contributing factor in increased levels of criminal behavior (Agnew 2001; Baron 2004). Additionally, homelessness contributes to a variety of other strains that may contribute to higher levels of criminal behavior. These additional strains include decreased employment opportunities, increased health concerns, and increased victimization (Agnew 2001). Increased levels of social disorganization in neighborhoods may operate as a contributing factor to increasing the types and intensities of strains in these areas, and thus impacting neighborhood levels of recidivism.

Social Bond Theory

Prior to the advent of social bond theory, previous criminological theories like strain theory, sought to explain why individuals engaged in criminal behavior as opposed to being law-abiding (Hirschi 1969). Rather than trying to explain why individuals engage in criminal activities, Hirschi (1969) sought to answer the opposite question of why individuals do *not* engage in criminal activity. Hirschi (1969) posed this question when he wrote that criminal behavior "is taken for granted; conformity must be explained" (p. 10). For Hirschi (1969), it was assumed that individuals would engage in

criminal behavior simply because humans seek gratification and criminal behavior provides an avenue through which this gratification can be achieved. When explaining criminal behavior, he wrote that "delinquent acts result when an individual's bond to society is weak or broken" (Hirschi 1969:16). It is this bond to society that is central to Hirschi's explanation of conformity and nonconformity.

Four specific elements—attachment, commitment, involvement, and belief—constitute the bond to society that is central to Hirschi's (1969) theory. By focusing on these four elements, Hirschi "explicitly rejected the emphasis placed … on inner containment and personal control" as explanations for criminal behavior and embraced a sociological rather than psychological approach to criminology (Taylor 2001:377). Attachment refers to the extent to which individuals are attached to other individuals in society (Hirschi 1969). This attachment to others is important as it allows individuals to internalize the norms of society. Failure to internalize these norms can lead individuals to feeling they have a greater level of freedom to deviate and engage in criminal behaviors. Commitment is seen as a cost/benefit calculation by individuals on whether or not to engage in criminal behavior (Hirschi 1969). When making this calculation, Hirschi (1969) suggests that individuals must consider the risks of "losing the investment … made in conventional behavior" (p. 20). These potentially lost investments include high levels of education, a virtuous reputation, or a solidly performing business (Hirschi 1969). The assumption here is that individuals will act in a rational manner and are aware of the choices they are making, and how those choices may impact them and other individuals.

Hirschi (1969) argued that individuals involved with non-criminal activities would be too busy to engage in criminal behavior. This involvement component, according to Hirschi (1969), situates individuals as unable to "think about deviant acts, let alone act out [their] inclinations" (p. 22). Strength of the belief in the common value system that exists in a given society works to create a stronger bond to that society, and thus less engagement in criminal behaviors (Hirschi 1969). This does not preclude the idea that variation in the level or strength of the belief in the value systems of societies. Hirschi (1969) places emphasis on the role that variation plays within this belief element by writing that the adherence to a specific level of belief to the common value system is "contingent upon other beliefs and, indeed, on the strength of other ties to the conventional order" (p. 26). That is, if an individual has strong attachments to other individuals, family members, or organizations like churches or schools, the less likely that individual is going to be able to rationalize participating in criminal activity.

Hirschi's (1969) conceptualization of social bonds has played a major role in theorizing the impact of neighborhood-level measures of context on rates of criminal behavior in neighborhoods. Theorists (Bursik 1988; Bursik and Grasmick 1993; Kornhauser 1978; Sampson and Groves 1989; Sampson et al. 1997; Stark 1987) have utilized social bond theory to support their development of the systemic model of social disorganization (Kubrin and Weitzer 2003; Pratt and Cullen 2005). Stark (1987) theorized that social bonds are weakened in densely populated, poverty-ridden neighborhoods. A number of his propositions speak directly to how weak social bonds in these areas contribute to increased crime rates. Examples include Stark's proposition 6 which noted that reduced levels of child supervision may result in poor school

achievement that in turn results in reduced stakes in conformity and increased levels of

deviant behavior as well as proposition 7 where higher levels of conflict result from

overcrowded places of residence which leads to weakened attachments to family (Stark

1987). Bursik (1988) wrote that the quality of local networks and their associated social

bonds in neighborhoods impact the effectiveness of the social control found within

neighborhoods. Weak social networks often erode the social control functions of

neighborhoods and lead to eventual increases in levels of criminal behavior. Kubrin and

Weitzer (2003) wrote of the importance of social bonds to social disorganization when

they stated that among the many mechanisms important to reducing criminal behavior

and disorder "are the residents' social ties and the degree to which people exercise social

control in their neighborhoods" (p. 375).

Increased levels of concentrated disadvantage and residential mobility can

negatively impact the quality of social bonds in neighborhoods. High levels of

concentrated disadvantage often translate into residents of these areas having to focus on

different priorities other than the development and maintenance of quality social bonds.

For example, Wilson (1996) discussed how neighborhoods characterized as being high-

poverty areas may not have the necessary social institutions or belief systems necessary

for nurturing quality social bonds. Concentrated areas of poverty have reduced services,

including educational and employment opportunities, which may be out of reach both

physically and socially to the residents that live in these disadvantaged areas (Wilson

1996). In turn, the stunted social bonds resulting from these sets of circumstances may

lead to increased levels of criminal activities. Areas with higher levels of concentrated

disadvantage and fewer quality social bonds may have difficulties with the necessary

social ties and informal social controls necessary to curb increased levels of criminal behavior.

Quality social bonds are also difficult to develop and maintain in neighborhoods characterized as having higher rates of residential mobility. Rose and Clear's (1998) original conceptualization of coercive mobility, in addition to further theoretical and empirical elaboration of this concept by Clear (2007) and Clear et al. (2003), illustrates how the constant mobility of individuals in and out of neighborhoods can undermine the social bonds important to curtailing criminal activities in these locations. Coercive mobility, according to Clear (2007) plus Rose and Clear (1998), can be defined simply as the constant removal and subsequent return of both men and women through the process of incarceration. Clear (2007) notes that this constant turnover of men and women in poverty-stricken neighborhoods creates barriers to the formation of quality attachments and commitments and in turn translates into these locations having a reduced capacity to provide the informal social control necessary to reducing criminal activities. Quality attachments and commitments to neighborhoods are difficult to form and maintain as this constant sense of mobility creates a situation where frequently incarcerated and released men and women may isolate themselves from others, as well as reducing the commitment these individuals have to these areas which may result in a reduced willingness to engage in collective action with neighbors and other family members to curtail criminal behaviors and recidivism (Clear 2007).

Not only does the constant process of residents being incarcerated, released, and reincarcerated foster an environment conducive to greater criminal activity, coercive mobility also increases the mobility of the families of the men and women caught up in

this constant process of incarceration and release (Clear 2007). Family members may move due to financial hardships experienced when loved ones are incarcerated, or they may move as a strategy to help loved ones returning from incarceration stay out of trouble (Clear 2007). Whether for positive reasons or to avoid formerly incarcerated loved ones, the residential instability of family members creates another situation where neighborhoods are subjected to higher rates of social disorganization and additional reductions in quality social bonds. Family members who have moved away with or without their released kin are unable to provide quality attachments or develop and nurture mainstream beliefs for those who have returned from incarceration. In turn, criminal behavior is theorized to increase in these environments.

Social bonds that are of sufficient quality and strength have been shown to influence reductions in recidivism and are thus an important contribution to theorizing reentry. On a general level, Rocque et al. (2013) found that a change in social relationships, such as marriage, during their subjects' imprisonment was a predictor of recidivism. As the quality of the attachment decreased, the chances of recidivism increased. The authors were also able to establish a statistically significant relationship between the levels of pro-social beliefs held by their population at their times of release from prison and the occurrences of recidivism. Again, as the levels of pro-social beliefs increased, levels of recidivism decreased (Rocque et al. 2013). Cobbina, Huebner, and Berg (2012) found that both men and women who had reported quality marriages to their partners and relationships with other family members had lower recidivism rates. King, Massoglia, and MacMillan (2007), along with Sampson, Laub, and Wimer (2006), also found that marital ties were important to the reduction of recidivism. Social bonds

developed through education and employment (Aos et al. 2006; Gainey, Payne, and

O'Toole 2000; Kassebaum et al. 1999; Kruttschnitt et al. 2000; Western, Kling, and

Weiman 2001) have also been shown to influence recidivism rates with higher levels of

education and quality employment both lowering the chances of recidivism.

Life-Course Theory

Life-course, or age-graded criminological theories, offer a different perspective of

criminal behavior than other theories. Strain, social bond, and most other criminological

theories take a static view of individuals and criminal behavior. Additionally, many of

these earlier criminological theories seek to explain criminal behavior from a continuity

perspective, such as Gottfredson and Hirschi's (1990) general theory of crime, where

behavior is seen as being on a stable path throughout the life-course. By acknowledging

the role that continuity plays in criminal behavior as individuals grow older, life-course

theories examine the dynamic nature of change in criminal activity over the life-course.

In short, individuals are not slated to act in a given way throughout their entire lives as

both persistence and desistance of criminal behavior are possible (Laub and Sampson

2003).

Sampson and Laub (1993) and Laub and Sampson (2003) expand upon the

dynamic nature of the life-course theoretical tradition. Whereas other life-course

theorists, such as Moffitt (1993), place individuals within a continuity or change criminal

trajectory, Sampson and Laub's (1993) age-graded theory of informal social control

looked at criminal behavior through a continuity and change lens. The authors not only

sought to explain how individuals may persist within a given criminal pathway, but also

how various turning points can assist individuals with desisting from criminal behavior

(Sampson and Laub 1993). Turning points noted by Sampson and Laub (1993) include

military service, marriage, and employment opportunities. In turn, these turning points

provide opportunities to increase the quality and quantity of social capital individuals

possess through an increase in social bonds (Sampson and Laub 1993). By doing so, the

probability of desisting from criminal behavior increases.

Laub and Sampson (2003) expanded on their 1993 writings by doing additional

research on the 500 men in the original 1950 study conducted by Glueck and Glueck.

This involved following the men until they reached 70 years of age and conducting in-

depth interviews with 52 of the men. By extending their study past the ages where other

researchers conclude their research, Laub and Sampson (2003) were able to determine

that a vast majority of the participants in the study eventually desisted from criminal

behavior. While continuing to focus on the turning points identified in their 1993 study,

namely marriage, military service, and education, Laub and Sampson (2003) expanded

their theory in several important ways. One contribution was the assertion that desisting

from criminal behavior was not necessarily a conscious decision on the part of the

individual (Laub and Sampson 2003). A second extension to their theory was the role

they assigned to human agency. Individual choice as expressed through human agency,

when tied to structures found within a given community, has the potential to significantly

impact the life-course of individuals and their desistance or persistence within criminal

pathways (Laub and Sampson 2003).

Another important way in which Laub and Sampson (2003) expanded their theory

was to include a more in-depth explanation of how turning points help individuals turn

away from continued participation in criminal behaviors. Not only are individuals able to

shed their criminal pasts by cutting off the past from present and future behavior, involving themselves within the various turning points allows for increased attachments and supervision where missteps and additional bad behavior may be addressed and informally punished (Laub and Sampson 2003). Marriage, a new job, or participation in educational opportunities operate as means to purge negative influences from the lives of individuals. Finally, Laub and Sampson (2003) assert that those who have taken on new relationships or involved themselves in new activities may be heavily vested in conformity as they do not want to risk losing these new relationships through further participation in criminal behaviors. In short, those who are working to desist from criminal pathways have experienced an increase in the strength and quality of the social bonds first noted by Hirschi (1969) and addressed by Sampson and Laub (1993) in their earlier writings.

The context of neighborhoods also impacts the quality of and opportunities to gain from the participation in the turning points suggested by Laub and Sampson (2003). Returning to neighborhoods that are characterized by higher rates of social disorganization can result in a more difficult time forming and maintaining the turning points noted by Sampson and Laub (1993). For example, quality marriage and employment prospects that were reduced prior to incarceration through high rates of social disorganization may continue to be difficult to obtain and maintain after release from incarceration given continued high rates of neighborhood poverty and residential mobility. In turn, this hinders the "knifing off" process as there are fewer opportunities to create distance from previous negative lifestyles given the disadvantaged composition of the neighborhood or community (Laub and Sampson 2003). As residents reach the

latter stages of adulthood, the constitution of neighborhoods become an important influence in the desistance from crime as this neighborhood context influences the ability to form and maintain social bonds found to influence informal social control (Laub and Sampson 2003).

Neighborhoods that have high rates of concentrated disadvantage often experience decreased opportunities for quality relationships, participation in employment and educational opportunities, and joining the military. Wilson (1996) shows how high poverty neighborhoods influence marriage and employment opportunities for the individuals that reside in these areas. For the black population that tends to make up the majority population in these disadvantaged neighborhoods in the United States, the choice to marry is often tied to the level of education with lower educated blacks, who tend to make up a large portion of the population in poverty-stricken neighborhoods, choosing not to marry (Wilson 1996). This choice to avoid marriage in these socially disorganized areas is often a function of the employment and economic environment with men reporting that they wish to avoid marriage due to a lack of employment and other economic means to support their families (Wilson 1996). And with high rates of incarceration often associated with neighborhoods that also have high rates of concentrated disadvantage, there may be fewer quality marriage partners from whom to choose. Braman (2002) found that Washington, D.C. neighborhoods with high rates of incarceration there were only 62 men for every 100 women in the neighborhoods versus 94 men for every 100 women in neighborhoods with lower incarceration rates. Fewer men in a given neighborhood, according to Braman (2002), altered the stability of families with men feeling the encouragement to be in relationships with a variety of

different women as well as women feeling encouraged to be in relationships with men who may already be in established partnerships with other women. In this sense, coercive mobility (Clear 2007; Rose and Clear 1998), as an example of high rates of residential mobility, also impacts the ability to access an important turning point as men and women who face a repetitive process of incarceration and release may not be able to find and maintain positive marital ties in these areas.

Obtaining and maintaining quality employment is also a difficult endeavor in socially disorganized neighborhoods. Wilson (1996) equates joblessness with concentrated poverty by stating that where there is one, the other can generally be found in the same location. Not only do increased levels of concentrated disadvantage impact the ability of residents to find and maintain quality employment, residential mobility also plays a role in the availability of employment opportunities. Bursik (1988) has noted that residential mobility in and out of neighborhoods negatively impacts participation in social networks, interpersonal relationships between neighbors and other community members, and additional voluntary associations such as civic clubs. This impacts employment opportunities as this constant mobility hampers development of relationships with individuals and other important social networks in neighborhoods that may be able to connect returning individuals to quality employment opportunities (Braman 2002; Petersilia 2003).

Previous research has found that marriage and attachment to families, participation in and the retention of employment, as well as military service, assist in the reduction of criminal behavior in individuals. Sampson et al. (2006) found that for their sample of men in their study, marriage was associated with an average reduction of 35%

in the odds that this population would participate in further criminal behavior. Maruna (2001) also has suggested that strong family ties, which can include a robust marriage, operate to reduce recidivism as well as moderate additional negative experiences that may influence criminal behavior. For a sample of parolees in Ohio, Visher and Courtney (2006) found that these individuals spoke of familial support as being the most important factor in preventing their backsliding into recidivistic criminal behavior. Quality employment opportunities have also been found to reduce recidivism. Being employed may help reduce the monetary incentive that some may feel to participate in economic-based crimes (Petersilia and Rosenfeld 2008). Additionally, Uggen's (1999) analysis of data from the National Supported Works Demonstration Project established that quality employment worked to reduce recidivistic behavior in those released from incarceration. With higher rates of social disadvantage in neighborhoods, these positive findings related to turning points may actually decrease.

In short, individual-level theoretical considerations should not be seen as operating separately from the influences of neighborhood context. All three theoretical traditions discussed in this section—strain, social bonds, and life-course—are influenced by neighborhood-level structural characteristics. High levels of concentrated disadvantage, residential mobility, and ethnic/racial heterogeneity influence higher levels of strain, hinder and reduce quality social bonds, and prevent individuals from engaging in turning point activities. These are important considerations given that reducing strain, strengthening social bonds, and accessing turning points such as marriage and employment can reduce recidivism and improve reentry opportunities. From a theoretical

standpoint, it becomes important to consider both individual- and neighborhood-level considerations given their mutual influence on one another.

Missing Theoretical Considerations Within Reentry Research

A number of criticisms have been leveled against reentry research for either being atheoretical or for focusing exclusively on individual-level theories and ignoring macro-level contextual factors that influence reentry (Hallett 2012; Lyles-Chockley 2009; Martin 2013; Nixon et al. 2008; Olusanya and Cancino 2012; Wacquant 2010). Hallett (2012), in his critique of prior reentry research, wrote that this work "has been heavily focused upon experimental design and program evaluation rather than broader shifts in race and class relations or underlying economic change" (p. 213) which has left reentry research "theoretically shallow" with scholars needing to "move beyond applied research to additionally focus upon issues of macro sociological change impacting the experience of former prisoners" (p. 216). The entire December 2010 edition of *Dialectical Anthropology* was dedicated to critiquing reentry as currently practiced and experienced by individuals returning from incarceration. Many of these criticisms focused on macro-level concerns including international perspectives (Bornstein 2010; Halsey 2010), the development and growth of the prisoner reentry industry (Ducksworth 2010; Thompkins 2010), and the communities that individuals return to after serving a period of incarceration (Pryor 2010).

Hallett (2012), Lyles-Chockley (2009), Nixon et al. (2008), and Olusanya and Cancino (2012) have argued that theorizing reentry is incomplete without the consideration of race in a macro-level framework. Olusanya and Cancino (2012) argue that previous reentry work has painted reentry issues in race-neutral terms. However,

both Lyles-Chockley (2009) and Olusanya and Cancino (2012) note that minorities

returning from incarceration not only face the same numerous barriers and various

collateral consequences resulting from incarceration, they also face the various stigmas

and stereotypes associated with being members of a minority group. This leads Nixon et

al. (2008) to label minorities as "prisoners-in-reentry" (p. 26). Racial/ethnic

discrimination thus adds to the already difficult task of successfully reentering society

after incarceration. Olusanya and Cancino (2012) theorize that "the effect of racial

stratification is so powerful that for the majority of White ex-offenders the large social

capital at their disposal might buffer them from the collateral consequences of a criminal

conviction" (p. 346) and that structural-level characteristics offer a better set of

explanatory factors than individual-level factors in describing how minorities experience

their return from incarceration.

　　　These critiques, however, often do not take into consideration the wide breadth of

reentry research. For example, race has not been omitted entirely from theoretical

discussions involving reentry. Previous research has included race within the theoretical

framework of neighborhood and community context. Wacquant (2001) details the

various ways in which a "carceral mesh" (p. 95) creates a situation where minority

ghettos become more like prisons, and prisons become more like ghettos. This blurring

of ghetto and prison lines entrenches younger minorities in a vicious cycle of

confinement and economic poverty, thus impacting their ability to successfully reenter

their neighborhoods after incarceration. Research conducted by Hipp et al. (2010),

Kubrin and Stewart (2006), Mears et al. (2008), Reising et al. (2007), and Tillyer and

Vose (2011) have included neighborhood-level measures of race within their multi-level

reentry studies. These efforts to include and confront race on a more macro level within the theoretical framework of reentry can produce a number of benefits and opportunities including the possibility of reentry programming working to "overcome racism by creating opportunities for social and economic parity for ex-offenders" (Lyles-Chockley 2009:284).

Additionally, even though reentry work has been criticized for omitting macro-level considerations such as neighborhood context, theorists (Petersilia 2003; Travis 2005; Visher 2007) have argued that community and neighborhood-level concerns are important to a broader understanding of the process and barriers facing individuals after incarceration. Authors such as Kubrin and Stewart (2006), Reising et al. (2007), and Tillyer and Vose (2011) have addressed how neighborhood context impacts reentry. Still, many of the discussions geared towards the inclusion of neighborhoods within reentry conversations are grounded within individual-level concerns. For example, Visher (2007) argues that work on reentry tends to focus on individual-level concerns without taking the social context where an individual lives into consideration. Although she argues for the inclusion of community-level context within reentry research given the poor and disadvantaged neighborhoods minorities return to after incarceration, most of her suggestions are geared towards addressing the very individual-level concerns identified in her article (Visher 2007). She writes that the role communities play in reentry include "building community capacity for providing services and enlisting community resources to assist in reintegration, such as involving churches in providing mentors to newly released ex-prisoners" (Visher 2007:98) as well as working to link those community service providers to individuals prior to their release in addition to

better coordination of community service providers and supervision officers within the community (Visher 2007). She fails to offer suggestions on how community and neighborhood-level concerns, such as poverty, can be confronted in terms of helping individuals successfully reenter society after release from incarceration.

Travis (2005) goes further in his discussion of how communities and neighborhoods play roles in reentry by incorporating information related to concentrated disadvantage, economic viability, and weakened social controls. These topics, on a surface level, begin to broaden the theoretical discussion of how communities and neighborhoods may impact reentry. However, Travis's (2005) suggested ways of alleviating these issues that focus on services and means to deal with individual-level problems rather than improving the communities themselves. Travis's (2005) concept of "justice reinvestment" (pp. 300-301) appears promising until he advocates for these funds to be allocated to treatment programs, electronic-monitoring systems, or creating a number of halfway centers. None of the justice reinvestment funds are slated for poverty-reduction or economic development programs within disadvantaged neighborhoods. Petersilia's (2003) suggested changes to improve reentry are similar to those of Travis in that her recommendation to establish and test reentry courts and expand upon community partnerships are geared towards addressing identified individual-level reentry issues. Additionally, Petersilia (2003) by-passes any discussion of how poverty and a lack of economic development within neighborhoods create additional reentry barriers for individuals returning from incarceration.

The end result is that these discussions link neighborhood issues back to individual-level concerns. These suggestions are more closely aligned with coordination

of services and treatment providers than discussing the very constitution of neighborhoods to which individuals return. Minimal attention is given to ways to alleviate poverty and economic decline of neighborhoods in order to increase the odds of successful reentry for individuals from incarceration. Focusing solely on communities in terms of the services and treatment provided or potentially provided, while bypassing discussions related to how the very nature of the communities themselves impact the reentry process, creates a shortcoming in the theoretical understanding of how the context of neighborhoods plays important roles in reentry.

While research by Clear (2007), Pratt and Cullen (2005), and Sampson et al. (1997) include neighborhood structural characteristics underlying social disorganization in communities, these studies and other published research are missing a key factor that may influence neighborhood context, namely neighborhood levels of concentrated health issues. These issues include physical health, mental health, and the abuse of drugs and alcohol. Although a sizeable research literature indicates the importance of physical and mental health concerns to the successful reentry of individuals who have been released from incarceration (Davis et al. 2011; Hammett et al. 2001; Mallik-Kane and Visher 2008; Solomon et al. 2008), there is a dearth of published research that examines how concentration of these health issues at the neighborhood-level impact the differences in criminal activity between communities as well as reentry outcomes. And in turn, there has been a distinct lack of theorizing of how concentrated health issues impact the reentry process outside of simply stating that individual health issues are another concern in the litany of reentry barriers.

On the neighborhood level, higher levels of concentrated health issues are theorized to negatively impact the reentry process in a manner similar to how higher levels of concentrated disadvantage, residential mobility, and ethnic/racial heterogeneity have impacted recidivism and criminal activity in previous research on neighborhood context effects. As noted by Kornhauser (1978) and other researchers, three structural characteristics explain variation in crime rates between neighborhoods. Higher levels of concentrated disadvantage, according to Kubrin and Weitzer (2003), Sampson et al. (1997), Sampson and Wilson (1995), Shaw and McKay (1942), and Wilson (1987, 1996), has been to found to negatively influence criminal behavior in neighborhoods. The poverty and reduced economic opportunities inherent in these neighborhoods combine to create situations where it is difficult to collectively produce higher levels of informal social control and social capital necessary in reducing criminal activity. Sampson et al. (1997) note that while neighborhoods characterized as having high levels of concentrated disadvantage may see "personal ties [that] are strong in areas of concentrated disadvantage, they may be weakly tethered to collective actions" (p. 919). That is, the effects of poverty, reduced economic opportunities, and family disruption may create situations where people are withdrawn to a greater extent and are unable, due to a lack of time or are unwilling due to a lack of trust and ability to act collectively with their neighbors, to create an environment that reduces criminal behavior and recidivism.

Greater levels of residential mobility and racial/ethnic heterogeneity also provide insight into how increased levels of concentrated health concerns in neighborhoods may work to increase levels of criminal behavior in these areas. Bursik (1988), Bursik and Grasmick (1993), Clear (2007), Kornhauser (1978), Sampson and Groves (1989), and

Sampson et al. (1997) have theorized that high levels of residential mobility decrease social ties to a wide range of neighbors and community organizations important to the formation and continuation of social ties. Bursik (1988) noted that residential instability provides fewer opportunities to produce social ties necessary for the reduction of criminal behavior. Reducing the number and strength of social ties in these areas works to lower informal social control and access to social capital that has been established as being paramount to reductions of criminal behavior in these areas.

Likewise, high rates of ethnic/racial heterogeneity also impede the development of social ties. As rates of ethnic heterogeneity increase in neighborhoods the "social order of the slum becomes segmented, provincial, and personalistic" (Sampson and Groves 1989:781) with neighbors harboring a greater level of distrust amongst each other as well as becoming less willing to communicate and work collaboratively on solving neighborhood and community problems. In turn, the quality and quantity of social ties are reduced which may lead to an increased level of criminal behaviors in these neighborhoods. Additionally, Sampson and Wilson (1995) extended the theoretical discussion on how levels of ethnic/racial heterogeneity impact neighborhood levels of crime by theorizing the impact of racial heterogeneity when considered separately from ethnic heterogeneity. They asserted that neighborhoods with higher levels of racial heterogeneity would work to lower crime rates resulting from greater levels of contact between different racial groups and a lower level of social isolation often found in neighborhoods associated with increased levels of ethnic heterogeneity (Sampson and Wilson 1995). This greater level of interaction between neighbors allows for more opportunities to come into contact with positive social networks and role models. In

doing so, the number and quality of social ties are increased which results in lower crime rates.

Much like the unwillingness or inability of residents in neighborhoods with high levels of concentrated disadvantage to exercise informal social control or create the necessary social capital to decrease criminal behavior, neighborhoods with high levels of concentrated health issues may also experience an environment where residents are unwilling or unable to come together to produce higher levels of informal social control that reduce criminal activities in these communities. These areas may witness a greater proportion of residents that are too withdrawn given that they are dealing with their own health issues to act in a collaborative manner with their neighbors and other community members. Examples of withdrawing from a community to deal with individual health problems include those who suffer from persistent mental illness and are continuously in crisis, as well as those that suffer from a substance use disorder and are unable to think or act past their next hit. In a similar sense, higher rates of residential mobility, either through populations moving in and out of neighborhoods or through the process of coercive mobility (Clear 2007; Rose and Clear 1998), may work in a comparable manner as high levels of concentrated health issues in the same neighborhoods work to create an environment that is conducive to criminal behavior. Neighborhoods with high levels of concentrated health issues may witness a greater level of residential mobility through the high rate of mental illness associated with homelessness or those sick with other physical ailments moving to be closer to treatment opportunities or family support systems. This adds to a reduction of creating and maintaining quality social ties. Additionally, just as higher levels of ethnic/racial heterogeneity in neighborhoods create difficulties in the

establishment and maintenance of social ties due to a lack of communication and other cultural barriers, those areas with increased concentrated health issues are likely to experience high rates of criminal activity and recidivism due to larger proportions of neighborhood populations focused on their own behaviors and safety, rather than the behaviors and safety of.

Individual-level theoretical considerations also provide insight into how higher levels of concentrated health issues may increase the possibility of recidivistic behavior in those returning from incarceration. High levels of concentrated health concerns could be seen as a source of additional strain (Agnew 1992) that leads to criminal behavior as a coping mechanism. These concentrated health concerns may contribute to the failure of men and women to achieve positively-valued goals via a greater share of time spent in the neighborhood addressing these health concerns, as well as assisting in the loss or removal of positively-valued stimuli through the loss of jobs and quality familial relationships (Agnew 1992). In terms of social bonds (Hirschi 1969), having higher levels of concentrated health issues in the neighborhood can impact the development and sustaining of quality social bonds by reducing attachment and commitment opportunities. Neighborhoods with high concentrations of people who suffer from untreated mental illnesses or are engaged in illegal substance use may not be able to provide quality attachments to families or community organizations that could assist in the reduction of criminal behaviors. Lastly, neighborhoods with higher levels of concentrated health issues may have more difficulty providing various turning points (Laub and Sampson 2003) that life-course theory has noted as important to the desistance of criminal offending. High concentrations of those with substance use disorders or persistent mental

health issues may hinder important familial relationships, including marriages, as well as retaining quality employment opportunities and thus increasing the likelihood of recidivistic activities.

Supporting the inclusion of concentrated health issues in neighborhood context research as a separate consideration apart from concentrated disadvantage and other neighborhood-level factors comes from a variety of sources. Kubrin and Weitzer (2003) wrote that the current practice of creating index variables to measure neighborhood-level context "confounds attempts at untangling each characteristic's distinct influence on crime" (p. 392). Rhineberger-Dunn and Carlson (2009, 2011) have also advocated for the separation of collective efficacy and police satisfaction into separate variables into component or singular variables in order to assess their individual impacts on neighborhood crime rates. Arguing that consideration of social cohesion, informal social control, police-citizen relations, and formal control mediate the influence of neighborhood context on crime, and thus impact crime rates in different ways within neighborhoods, Rhineberger-Dunn and Carlson (2009) found support for the consideration of each of these four concepts separately from the composite concepts of collective efficacy and police satisfaction. Additionally, Rhineberger-Dunn and Carlson's (2009) analysis provided a better model fit utilizing these four separate variables rather than the unidimensional concepts of collective efficacy and police satisfaction, neighborhood-specific levels of concentrated disadvantage and other context measures have differential impacts on social cohesion, informal social control, police-citizen relations, and formal control. Likewise, Rhineberger-Dunn and Carlson (2011) established that informal social control, social cohesion, police-citizen relations, and

formal social control differentially mediated the effects of neighborhood-level measures of social disorganization on property and violent crime victimization rates. This, in turn, leads to different policy implications for each type of crime rather than simplified, one-size fits all policy initiatives to combat and curtail criminal activities in neighborhoods.

Rhineberger-Dunn and Carlson's (2009, 2011) research also supports the separation of ethnicity and race when discussing the impacts of ethnic/racial heterogeneity on neighborhood crime rates and recidivism. Their analysis found that, whereas racial heterogeneity was found to be significant and positive only in the final formal control model, ethnic heterogeneity was found to be negatively and significantly related to each of the social cohesion, informal control, police-citizen relations, and formal control dependent variables, but not in all of the various models associated with these variables (Rhineberger-Dunn and Carlson 2009). Similar results were found in Rhineberger-Dunn and Carlson's 2011 study. Ethnic heterogeneity was found to have a statistically significant, direct, and positive impact on each of the victimization variables included in the study save for the burglary variable, whereas racial heterogeneity was found to have a statistically significant, direct, and negative impact only on the violent crime and burglary victimization. The findings from the 2009 and 2011 Rhineberger-Dunn and Carlson studies help support the argument that measures of concentrated health should be separated from other neighborhood context measures and considered on their own as a means to a better understanding of the impact of neighborhood levels of health on recidivism and criminal behavior.

A similar argument is made here in regards to the consideration of concentrated health measures as separate from established neighborhood context variables of

concentrated disadvantage, residential mobility, and ethnic/racial heterogeneity. Combining neighborhood levels of concentrated health issues into the index variables that have traditionally been used in neighborhood context research may reduce the understanding of the reentry process as a whole and hamper the implementation of specific policy initiatives. Having a broader understanding of how concentrated health issues impact recidivism can lead to more holistic theoretical understanding of reentry as a whole and policy initiatives that address improvement of physical and mental health within neighborhoods.

Theoretical Contributions of the Dissertation

Based on the theoretical discussion provided in this chapter and review of the existing literature in Chapter 2, this dissertation seeks to expand the theoretical understanding of reentry by examining how the addition of concentrated health issues at the neighborhood level, as well as traditional neighborhood-level contextual factors, impact reentry. Previous literature identifies neighborhood-level context as an important determinant of the reentry efforts of those released from incarceration as well as being important to a more holistic understanding of reentry. More specifically, the following hypotheses will be tested in order to expand the theoretical understanding of reentry:

A. Neighborhoods with higher rates of concentrated disadvantage will have higher recidivism rates than neighborhoods with lower rates of concentrated disadvantage.

B. Neighborhoods with higher rates of residential mobility will have higher recidivism rates than neighborhoods with lower rates of residential mobility.

C. Neighborhoods with higher rates of ethnic heterogeneity will have higher recidivism rates than neighborhoods with lower rates of ethnic heterogeneity.

D. Neighborhoods with higher rates of racial heterogeneity will have lower rates of recidivism than neighborhoods with lower rates of racial heterogeneity.

E. Neighborhoods with higher rates of concentrated health issues will have higher recidivism rates than neighborhoods with lower rates of concentrated health issues.

In addition to testing these hypotheses, the inclusion of individual-level control variables in this multilevel model provides an opportunity to test for cross-level interactions between individual- and neighborhood-level variables. Singer and Willet (2003) define cross-level interactions as "when the effects of one predictor differ by the levels of another predictor, we say that the two predictors *interact*" (p. 83). Previous multilevel studies exploring neighborhood context and reentry have employed cross-level interaction variables in their models. Although they do not specify which cross-level interactions they explored in their study, Kubrin and Stewart (2006) noted that they included cross-level interactions in their models but found that none were statistically significant. Mears et al. (2008) also explored the use of cross-level interactions in their research examining the reentry of those released from prison in Florida. They found mixed results with the cross-level interaction variables improving the fit for drug reconviction, but not for violence or property reconviction in the resource deprivation model, while cross-level interaction variables improved the fit of the racial segregation model for drug and property reconviction, but not for violent reconviction (Mears et al. 2008). Finally, Tillyer and Vose (2011) included cross-level interaction variables in their

models with these variables producing non-significant results. These findings, however, do not preclude the authors from suggesting that future research include cross-level interaction variables as a means to ascertain the moderating effects of neighborhood-level context on individual-level factors (Tillyer and Vose 2011).

Based on this recommendation, the present study will test cross-level interaction hypotheses between individual- and neighborhood-level measures of health issues on recidivism. In general, I expect the effect of individual-level physical health, mental health, and substance abuse to increase the likelihood of recidivism more in neighborhoods characterized by higher levels of concentrated health issues. Specifically,

F.   The effect of individual physical health issues is expected to increase the likelihood of recidivism most in neighborhoods characterized by high concentrations of health issues.

G. The effect of individual mental health issues is expected to increase the likelihood of recidivism most in neighborhoods characterized by high concentrations of health issues.

H. The effect of individual substance abuse issues is expected to increase the likelihood of recidivism most in neighborhoods characterized by high concentrations of health issues.

Conclusion

Theorizing about reentry has largely neglected to consider neighborhood-level factors and how these contextual effects work to influence the chances of successful reentry for those returning from incarceration. Even when community and neighborhood issues have been included within the reentry debate, these considerations are often linked

to solutions and policy recommendations that are geared towards improving service delivery and assisting treatment and social service agencies in providing reentry services to individuals. That is, there are no recommendations regarding the improvement of the neighborhoods themselves. This chapter makes a theoretical argument that neighborhood context is important in expanding the understanding of reentry and to explaining differences in recidivism rates across neighborhoods. Additionally, neighborhood context can be linked to individual-level influences on recidivism and criminal behavior. This includes how neighborhood context can work to increase strain, reduce quality social bond opportunities, and hinder participation in the turning points associated with lowering levels of criminal behavior. More importantly, I argue that neighborhood-level measures of concentrated health issues may impact recidivism and criminal behavior in neighborhoods. Higher levels of concentrated health issues in the neighborhood are theorized to increase recidivism and criminal behavior in neighborhoods much in the same way that high levels of concentrated disadvantage, residential mobility, and ethnic/racial heterogeneity do, namely by preventing the formation of quality social ties and reducing the levels of social capital and informal social control. The next chapter discusses the data and methods employed in this study to test the hypotheses formulated in this chapter.

CHAPTER 4

METHODS

Introduction

This chapter details the methods used in this study. After an overview of the research setting, I discuss individual and contextual level data sources, along with variables included in the study. I also provide information on the reasons why I used single-level logistic regression in the data analysis instead of multilevel modeling. This chapter also provides information on the regression diagnostics performed to ensure that model assumptions were met.

Research Setting

Two primary research settings were employed in this study. Both individual-level and neighborhood-level data were obtained from Kent County, Michigan. With a 2012 estimated population of 614,462 (U.S. Census Bureau 2013), Kent County is one of the top five most populated counties in Michigan. The population in the county is 49.1% male and 50.9% female with the three main racial and ethnic categories being 75.5% white, 10.3% black, and 9.9% Hispanic. In terms of education, 88.6% of residents have a high school degree or higher level of education. Unemployment stands at 5.6% as of April 2013 (U.S. Bureau of Labor Statistics 2013). The largest city in Kent County, Grand Rapids, has an estimated 2012 population of 190,411 with 48.7% men and 51.3% women (U.S. Census Bureau 2013). Ethnically and racially, Grand Rapids has a population composition that is 50.9% white, 20.9% black, and 15.6% Hispanic.

Approximately 82.7% of the population in the city have a high school degree or higher in

terms of education. The unemployment was 7.9% as of April 2013 (U.S. Bureau of

Labor Statistics 2013).

The Kent County Correctional Facility (KCCF) was also employed as a primary

research setting. KCCF is a 1,471 bed jail operating as a centralized incarceration facility

for the entire Kent County area ("Measuring What Matters" 2013). During 2012, there

were a total of 26,211 bookings into KCCF, with 59% of those being incarcerated for two

or fewer days. The population booked into KCCF during 2012 was 76.7% male and

23.3% female with the ethnic and racial composition being 46.2% white, 42.7% black,

and 10.2% Hispanic ("Measuring What Matters" 2013). Individuals booked into KCCF

are admitted with a variety of health, education, and employment issues. These issues are

identified at the time of booking as well as at the time that classification occurs. Booked

individuals, whether sentenced or on pretrial status, are not given a classification

interview for housing purposes until they have been incarcerated in KCCF for three or

more days. Classification for housing purposes takes a number of issues into

consideration including past violence, type of offense, and behavior while incarcerated.

There are three main classification categories—minimum, medium, and maximum—that

are further divided into nine different sub-classification levels ranging on a continuum

from very low to high that help with housing and programming decisions ("Measuring

What Matters" 2013). Among these issues, 32.9% of classified inmates report having

less than a high school education while 15.5% of the classified population report mental

health problems. Additionally, 19.5% of the classified population report having an

alcohol abuse issue, 20.7% report having a drug abuse issue, and 21.9% report having a

health condition ("Measuring What Matters" 2013).

Need for Jails as a Research Setting

Jail facilities play a central role in criminal justice systems across the United

States and are important to the expansion of theoretical discussions examining the reentry

of those released from incarceration. One of the reasons jails play an important role is

due to the sheer number of inmates cycling through these institutions in a given year.

Minton (2012) reported that approximately 11.6 million people cycled through jail

facilities between July 2011 and June 2012. While prison populations were increasing by

an average of 1.2% between the years 2000 and 2011, jail populations were increasing by

an average of 1.5% over this same time period (Glaze and Herberman 2013). For the

years 2011 and 2012, overall jail populations increased 1.2% while overall prison

populations decreased by 1.4% (Glaze and Herberman 2013). Furthermore, jails

experienced a greater level of growth in terms of the total number of individuals

incarcerated from 2000 through 2012. The total number incarcerated in jail facilities

across the United States jumped by 19.9% from 2000 through 2012, while the total

number incarcerated in prison facilities increased by 12.6% (Glaze and Herberman 2013).

This increase in jail populations places additional financial burdens on the city and

county levels of government that are responsible for the funding and administration of

these facilities. Unlike prisons that are administered by state and federal governments,

city and county governments were hit harder in the most recent economic downturn and

have fewer financial resources to house and support these increased populations.

Homeless individuals are often overrepresented in jail populations across the United

States (Fitzpatrick and Myrstol 2011), as well as individuals experiencing a variety of family disruptions due to their incarceration (Carmichael 2005). Wacquant (2010) also notes that individuals warehoused in jails are often from the urban working class, experience low employment and higher rates of poverty, and reside in deprived and stigmatized neighborhoods.

Another reason that jails are important to a broader theoretical understanding of reentry is that the populations in jail facilities encounter high levels of issues that may impact successful reentry. These hurdles to successful reentry include health-related issues (James and Glaze 2006; Mallik-Kane and Visher 2008) prior to and during their periods of incarceration. James and Glaze (2006) found that "jail inmates had the highest rate of symptoms of a mental health disorder" (p. 3) followed by state and federal prisoners. For jail inmates, this rate was a reported 60.5% versus 49.2% for state prison inmates and 39.8% for federal prison inmates (James and Glaze 2006). Jail populations have higher rates of co-occurring substance abuse and mental health issues than prison populations. The rate of co-occurring disorders in jail populations was 48.7% compared to 41.7% for prison populations (James and Glaze 2006). Additionally, the rate of jail inmates reporting any treatment for mental health issues was lower than the rate reported by prison inmates, 42.7% to 49.3% (James and Glaze 2006). Jail inmates, when compared to prison inmates, were also more likely to have been homeless prior to incarceration, 8.8% to 6.3% (James and Glaze 2006). A significant proportion of jail inmates also suffer from physical health issues. According to Maruschak (2006), 36.9% of jail inmates reported suffering from a current medical problem.

These health-related issues impact various populations within jail facilities differently, which in turn differentially impacts the reentry experience of those released from jails. A higher percentage of females, compared to males, incarcerated in jail facilities were reported to have substance abuse issues, 52% versus 44% (Karberg and James 2005). This difference between males and females incarcerated in jails also manifests itself when examining other health-related issues. Female jail inmates had a higher rate of mental health problems when compared to male jail inmates, 75.4% to 62.8%. These higher rates also exist when comparing female and male jail inmates to female and male state prison inmates. The rate of mental health issues in the male jail population was a reported 62.8% compared to a rate of 55.0% for the male prison population, while the rate for the female jail population was 75.4% compared to 73.1% for the female prison population (James and Glaze 2006). Maruschak (2006) reported that while 35% of males incarcerated in jail facilities reported a current medical condition, 53% of females incarcerated in jail facilities reported current medical conditions that required treatment. This difference in rates also occurs in the homeless population housed in jail facilities. In terms of having a current health condition, 49% of homeless individuals compared with 35% of non-homeless individuals reported having a current medical condition (Maruschak 2006). This difference between homeless and non-homeless individuals also manifests itself when examining substance abuse issues, with homeless individuals reporting substance abuse issues at higher rates when compared to non-homeless individuals (Karberg and James 2005).

The information found in the previous paragraphs helps support the argument that jails and the populations incarcerated in these facilities are not only different from prison

populations, but also that jail populations have a high level of issues that may impact

their reentry when released from incarceration. However, when writing about reentry,

scholars and policy makers have often failed to distinguish between these two

incarcerative settings. In doing so, researchers fail to acknowledge the uniqueness of

jails as an incarcerative setting in the criminal justice system, and to recognize the

different set of barriers and circumstances faced by individuals returning to their

neighborhoods from jail as opposed to prison. In addition to the data that illustrates the

differences between jails and prisons, McConnville (1995) argues for the importance of

jails by writing that "for one generation after another, the overcrowding, underfunding,

and brutality of the jails have been an inescapable part of the American experience"

(p. 322). Irwin (1985) adds to the importance of examining jails by arguing that a

majority of important decisions made about the future freedoms of individuals are

rendered while they are incarcerated in jail facilities.

Even though jail facilities play a unique role in criminal justice systems across the

United States, inclusion of jails in theoretical discussions of reentry have been few.

Goldfarb (1975:1) wrote that jails are "wildly misunderstood" with Klofas (1990a) noting

that the use of theory to examine the role of jails in criminal justice has been sparse.

Klofas (1990a) acknowledges that theory has guided jail research; however, these

theoretical orientations are often lifted from other disciplines, and thus leave a void in a

more holistic understanding of jails. A noted difficulty with this situation "is not a lack

of theory but that a variety of theories has not led to the development of a general model

or models in which to study jail issues" (Klofas 1990a:72). In addition to the lack of a

unique theoretical orientation to guide research regarding reentry and jails, various

methodological issues facing jail research are tied to the dynamic and complex nature of jail populations (Klofas 1990a). Due to the opinions held by some researchers that jails are "idiosyncratic" (Klofas 1990a:70), and therefore not amenable to a research agenda that generalizes findings to all individuals entering and leaving jail facilities, reentry research has infrequently focused on jails and the individuals who are released from them.

In addition to the high level of needs and issues facing jail populations, Goldfarb (1975), Irwin (1985), Mattick and Aikman (1969), and Wacquant (2010) argue that jails serve as a means to control specific populations—the poor, lower class, and minorities. Branded as "cloacal regions," Mattick and Aikman (1969) equated jails and their many shortcomings to facilities in which socially undesirable populations are housed. Goldfarb (1975) saw jails serving the function of modern day poorhouses, whereas Irwin (1985) classified jails as facilities where the "rabble class" is dumped for their offensiveness rather than for the seriousness of the offenses they were alleged to have committed. Fitzpatrick and Myrstol (2011) support Irwin's (1985) rabble hypothesis by noting that the homeless in their study were jailed more often for their offensiveness rather than the seriousness or dangerousness of their actions. Jail facilities also serve as a "gateway into America's carceral archipelago" (Wacquant 2010:79) and have helped expand the hyper-incarceration of lower class black men who are trapped in the crumbling ghettos of large cities across the United States.

Although prisons and jails share some commonalities as incarcerative institutions (Solomon et al. 2008), jails differ from prisons in important ways in addition to the previously noted health-related issues. Understanding these differences is important for

understanding the need for a broader theoretical knowledge of reentry that is not only

inclusive of, but also specific to, jail facilities. Garofalo and Clark (1985), Irwin (1985),

Solomon et al. (2008), and Wacquant (2010) have all written on the numerous differences

between jails and prisons. Irwin (1985) conducted interviews with individuals who had

experienced incarceration in both prisons and jails. Based on these interviews, he argued

that the structure and operation of jails cause individuals to experience a greater level of

punishment per day of incarceration than if they had been incarcerated in prison.

Structural characteristics of jails, such as extensive surveillance and stricter policies to

enforce conformity, create an incarcerative environment that "has less space and fewer

physical resources and material amenities than other 'total institutions,' such as prisons"

(Irwin 1985:44) which in turn helps create an environment in jails where incarceration is

more punitive than prisons. Garofalo and Clark (1985) argued that individuals housed in

jail facilities often do not subscribe to the same type of subcultural values found in

prisons, nor are jails identified as a location where these subcultural values are learned by

newly incarcerated individuals. Further contrasting the differences between jails and

prison, Wacquant (2010) contended that jail facilities "create more social disruption and

family turmoil at the bottom of the urban order than do prisons" (p. 75).

     Solomon et al. (2008) provide a summarization of the differences between jails

and prisons as incarcerative settings. The authors argue that the challenges facing

individuals in jail facilities are high, including high levels of substance abuse plus low

levels of education and employment, while a low service capacity exists in these facilities

to assist individuals in overcoming these challenges (Solomon et al. 2008). Added to the

challenge of a reduced number of services are shorter lengths of stay making the

provision of treatment services difficult, and in particular, quality substance abuse treatment, education, vocational programming, and other services geared to ensuring the successful reentry of those released from jails (Solomon et al. 2008). Moreover, short lengths of stay in jail facilities can result in a number of severe consequences including a loss of property and housing, victimization while incarcerated, and a loss of employment (Weisheit and Klofas 1989).

Draine and Solomon (1994), Klofas (1990b), and Solomon et al. (2008) also comment on how the more community-focused nature of jails impact the incarcerative and reentry experiences of those housed in these facilities. Draine and Solomon (1994) observed that, due to the permeable nature of jails, these facilities often interact more frequently with the communities in which they operate. That is, different community organizations and service providers, coupled with community politics, are more likely to impact the way in which jails are administered and the programming that is provided in these facilities. Similar to Draine and Solomon (1994), Klofas (1990b) wrote that due to the different sizes of jails throughout the United States, these facilities provide a wide-range of different services in these communities as well as serve a variety of different functions. Smaller jails in more rural locations are not able to provide the same quality or types of services that larger urban jails may be able to provide. In turn, the lack of quality services may impact the potential successful reentry of those released from jail. Solomon et al. (2008) pointed out that there are 3,365 independently operated jail facilities, compared to 50 state-run and 1 federally-administered prison systems, with rated design capacities ranging from a low of 50 individuals to a high over 2,000 individuals scattered across the United States. Having thousands of locally-operated jails

creates an environment where the social control function of these facilities expresses itself differently across jurisdictions along with the availability of services and programming within these facilities (Klofas 1990b). Jails that are of similar size and located in comparable communities often perform different functions and provide different levels of services. Solomon et al. (2008) note that "county-level operation creates diverse policies and procedures surrounding inmate supervision, management, and treatment" (p. 21) for these comparable jails and communities. In turn, this diverse set of policies, procedures, and programming opportunities impact the availability and provision of reentry services.

Jails are an important, although neglected, aspect in reentry research. Not only do jail populations have higher rates of mental health and co-occurring substance abuse and mental health issues (James and Glaze 2006), jail populations also have high levels of physical health needs, substance abuse levels, homelessness, and lower levels of education (Karberg and James 2005; Maruschak 2006; Solomon et al. 2008). Many times, however, jails are not equipped to adequately address these issues due to the shorter lengths of stay experienced by jail inmates as well as the reduced availability and quality of substance abuse and mental health treatment programs as well as educational services (Solomon et al. 2008). And even though authors such as Garofalo and Clark (1985), Irwin (1985), and Wacquant (2010) have written on the uniqueness of jails as an incarcerative experience separate from prison, authors that have focused on reentry, including Petersilia (2003) and Travis (2005), have either ignored jails or have lumped jails and prisons into a singular incarcerative experience. By focusing on a local jail facility in Kent County, this research presents an opportunity to broaden the

understanding of reentry to be more inclusive of jail reentry experiences separately from prison reentry experiences.

Data Sources

Level-One Data Sources

Individual-level data were obtained from two separate sources. The Kent County Sheriff's Department's jail management system, JailView, was utilized to collect data on individuals who have been sentenced for felony or misdemeanor offenses and served jail time prior to being released back into the community. JailView has been utilized by the Kent County Sheriff's Department since midyear 2004 and serves as the primary information management system for the sheriff's department ("Measuring What Matters" 2013). Information on all individuals incarcerated in KCCF from the time of their booking to their release is stored in this database. This includes, but is not limited to, demographic, charge, classification, and sentencing information.

Whereas prisons have historically incarcerated individuals convicted of felony offenses, jails house a broader offender population that includes, not only felony offenders, but misdemeanants, pretrial status offenders, and individuals awaiting transfer to other incarcerative settings (Solomon et al. 2008). For this purposes of this research, those released after serving a sentence for a misdemeanor or felony offense are included in the research population. When studying reentry and how the potential rearrest and reincarceration of those released into the community impacts locally operated jail facilities, any individual reentering a facility impacts the operation of that facility in terms of population and financial cost.

Level-Two Data Sources

Neighborhood-level data were gathered from three different sources. Data from the U.S. Census Bureau were collected to operationalize neighborhood contextual variables of concentrated disadvantage, ethnic/racial heterogeneity, and residential mobility. Network180, which is Kent County's local community mental health coordinating organization, provided data related to substance abuse and mental health conditions aggregated to the neighborhood level. Finally, the Michigan Department of Community Health provided data on lead levels for neighborhoods in Kent County.

Defining the geographic boundaries in research that takes neighborhood context into consideration is an important and controversial issue. Over the years, neighborhood-level data have been collected and analyzed using different geographic boundaries (Sampson 2013; Sampson et al. 2002) with Sampson et al. (2002) providing an overview of neighborhood-level studies where zip codes, community clusters, neighborhood tracts, and block groups to illustrate the wide-range of geographic areas utilized in multilevel research. In light of these various geographic units, Hipp (2007) notes that researchers must be prepared to utilize a geographic unit that is appropriate to the research questions being examined. Hipp (2007) also suggests that "there is no single 'appropriate' level of aggregation" (p. 674). Supporting Hipp's (2007) assertion, Sampson (2013) wrote that "The phenomenon of crime does not privilege any one type of place or ecological unit" (p. 7) with crime occurring in all different types of geographical units. For the purposes of this study, neighborhood-level data were aggregated to the zip code geographic level.

Utilizing zip codes in multilevel models has been supported by Geronimus and Bound (1998) as well as Kowaleski-Jones (2000). Geronimus and Bound (1998) found

that using census tract over zip code aggregated data did not appreciatively improve the

statistical accuracy of their models. The authors noted that their finding that "use of

census tract level data does not greatly improve estimation over using zip code level data

appears to be due to the fact that socioeconomic variation in census tracts is almost as

great as that in zip code areas" (Geronimus and Bound 1998:483). Zip codes are

appropriate geographic units in neighborhood-level research for two reasons according to

Kowaleski-Jones (2000). First, zip codes provide a small enough geographic area where

analyzed data provides systematic variation among different zip codes. Second, this

geographic unit can approximate community distinctions in a similar manner to other

geographic units of measurement (Kowaleski-Jones 2000).

Additionally, collecting data at the zip code level helps alleviate confidentiality

concerns expressed by Network180 and Michigan Department of Community Health

staffs. One of the main concerns voiced by each agency was in regards to the

confidentiality of the data they provided. Staff from MDCH noted during an initial

conversation regarding access to their lead level data for Kent County that their

confidentiality rules meet and in some ways exceed what is included in currently existing

HIPPA legislation. Aggregating the data by zip code provides an additional level of

anonymity while still being in a geographic unit that can extend the meaningful

theoretical understanding of neighborhood context and reentry.

Measures

Dependent Variable

The outcome variable in this project is recidivism. Maltz (1984) wrote that

recidivism "is the outcome measure used most frequently in evaluating correctional

programs" (p. 18). A generally accepted single definition of recidivism does not exist, which has provided room for debate in past research. Illustrating this point, Maltz (1984) classified recidivism into nine different categories that ranged from rearrest, reconviction, reincarceration, violating post-release supervision whether on probation or parole, and absconding from post-release supervision. Often times, researchers employ multiple definitions and specifications of recidivism to answer their research inquiries. For example, Mears et al. (2008) utilized reconviction as their definition of recidivism, but then looked at reconviction for three different categories of offenses: property, drug, and violent offenses.

Given that both rearrest and reconviction have been cited as being the most representative of recidivism measures, recidivism in this study is defined in two ways. First, recidivism is defined as rearrest for a new felony or misdemeanor offense. Rearrest has been identified as a conservative measure of recidivism in that potentially underrepresenting the criminal activity of released individuals (Kubrin and Stewart 2006; Ulmer 2001). However, rearrest is one of the primary definitions of recidivism utilized by researchers and evaluators (Maltz 1984). Addressing the concern of underreporting criminal activity, Ulmer (2001) noted that "conservative data is better than fictional data" (p. 172). Kubrin and Stewart (2006) also argue that the use of rearrest as a measure of recidivism "bypasses problems associated with prosecutorial, court and correctional data, which are not as complete or reliable as law enforcement arrest data" (p. 175). For the purposes of this study, rearrest is defined as a binary outcome variable coded as 0 for no rearrest for a new felony or misdemeanor offense and 1 for rearrest for a new felony or misdemeanor offense.

Citing research by Villettaz, Killias, and Zoder (2006), Wang, Mears, and Bales (2010) argue that reconviction, in addition to rearrest, is a frequently used measure of recidivism. Wehrman (2010) notes that the benefit to using reconviction as a measure of recidivism "is theoretical: reincarceration can overestimate recidivist criminal behavior via the inclusion of technical violations, and rearrest is measured at a stage too early to be ensured of recidivist behavior" (p. 541). This project moves beyond reconviction by taking an additional step by combining reconviction with reincarceration in jail or prison for a new felony or misdemeanor offense. Because reincarceration for a new felony or misdemeanor offense involves reconviction, this measure may also be seen as a conservative measure of criminal activity (Tillyer and Vose 2011). As noted by Ulmer (2001), however, it is better to underestimate rather than overestimate recidivism. Wehrman (2010) also cautions against using reincarceration as a measure of recidivism as the inclusion of probation violations may cause reincarceration to overestimate the rate of recidivism. This issue is controlled for in this study by excluding probation violations from consideration as recidivistic events. Reincarceration is also coded as a binary outcome variable with 0 for no reincarceration for a new felony or misdemeanor conviction and 1 for reincarceration for a new felony or misdemeanor conviction.

The follow-up period for measuring recidivism is defined as two years from the date of an individual's release from incarceration. Part of the difficulty of measuring recidivism comes in the context of defining the time frame to use, whether after individuals have completed court-ordered programming, supervision, or have been released from incarceration. Generally, the time period in the past has ranged from one to three years. Kubrin and Stewart (2006) used a twelve-month period of time whereas

research by Langan and Levin (2002) and Tillyer and Vose (2011) utilized three year

measurement periods. A majority of studies (e.g., Hipp et al. 2010; Mears et al. 2008;

Reising et al. 2007) have used a two-year follow-up period for their recidivism measures.

As noted by Mears et al. (2012), citing research by Kurlychek, Brame, and Bushway

(2006), a majority of recidivistic behavior is committed in the first two years of release

from incarceration. Given this finding, two-year follow up periods are often set as the

time frame in which recidivism is measured, and this precedent is followed in the present

study.

Neighborhood Contextual Independent Variables

     Researchers have employed a number of neighborhood-level variables to better

understand how neighborhood context impacts the recidivistic behavior of those returning

from incarceration (Kubrin and Weitzer 2003; Morenoff et al. 2001; Pratt and Cullen

2005; Sampson et al. 1997; Sampson et al. 2002). Examples of neighborhood contextual

variables used in previous research have included collective efficacy, concentrated

disadvantage, and residential mobility. Other variables that help fine-tune our

understanding of how neighborhood context impacts recidivistic behavior have included

measures examining how levels of affluence moderate criminal behavior as well as

variables measuring ethnic/racial heterogeneity levels in neighborhoods. For the

purposes of this study, concentrated disadvantage, residential stability, index of

concentration at the extremes (ICE), and indexes of racial and ethnic heterogeneity are

included as neighborhood contextual independent variables.

     Concentrated disadvantage stands as one of the "strongest and most stable macro-

level predictors of crime" in research involving neighborhoods (Pratt and Cullen

2005:378). This variable was constructed with available measures from the U.S. Census

Bureau for the zip codes in Kent County. Researchers examining the effects of

neighborhood context on reentry and recidivism have defined concentrated disadvantage

in many ways (Hipp et al. 2010; Kubrin and Stewart 2006; Mears et al. 2008). For the

purposes of this study, this variable is operationalized by summing the z-scores of the

census measures of percentage of individuals receiving public assistance, percentage of

persons living below the poverty level, percentage unemployed, median family income,

and percentage of households headed by a single parent (Kubrin and Stewart 2006; Mears

et al. 2012). Although this index variable has been criticized in the past by researchers

who have noted that combining different measures into a single index variable prevents a

fuller understanding of how each measure contributes to crime, Kubrin and Weitzer

(2003) note that combining these measures into a single variable can be "justified as the

concentrated disadvantage index reflects neighborhood segregation mechanisms that

concentrate the poor, unemployed, and single-parent families with children" (p. 392).

Additionally, this index variable works to counter the multicollinearity issues that are

cited as a problem in past neighborhood-level research (Kubrin and Weitzer 2003).

Residential mobility/stability is another variable important to a more holistic

understanding of how neighborhood context impacts criminal behavior and recidivism

(Hipp et al. 2010; Morenoff et al. 2001). As with concentrated disadvantage, residential

mobility is a variable that has been constructed by researchers in a variety of ways.

Following Sampson et al. (1997), Morenoff et al. (2001) used two census statistics to

calculate an index variable measuring residential stability. These measures included the

percentage of residents who have resided in their residences five years prior to the

decennial census and percentage of homes in a given neighborhood that are owner-occupied. Hipp et al. (2010) added the average length of residence and the percentage of housing units that are currently vacant to their measure of residential mobility. For the purposes of this study, residential stability was measured with a summated z-score using the same census measures as Hipp et al. (2010): percentage of housing units currently vacant (inverse), average length of residence, and percentage of residents who moved into their residences in the past five years.

Massey (1996, 2001), Morenoff et al. (2001), and Sampson et al. (2002) have advocated for the inclusion of neighborhood affluence in neighborhood context research. Morenoff et al. (2001) wrote that affluence needs to be accounted for in neighborhood-level research, as failing to do so may result in researchers missing how affluence provides a protective effect in neighborhoods that have other contextual factors that would otherwise produce high rates of crime. Massey's (2001) index of concentration at the extremes (ICE) was utilized as the measure of neighborhood affluence. According to Massey (2001), ICE is a computed variable using the following formula: [(number of affluent families-number of poor families)/total number of families] with values of this index ranging from +1 to −1. Values closer to +1 indicate higher levels of affluence while values closer to −1 denote higher levels of poverty in neighborhoods.

Ethnic and racial heterogeneity have been shown to play important roles in reentry and neighborhood context research (Kirk 2009; Mears et al. 2012; Rhineberger-Dunn and Carlson 2011; Sampson and Groves 1989). In the present study, I computed indexes of diversity to account for ethnic and racial heterogeneity in the neighborhoods/zip codes in Kent County. Rhineberger-Dunn and Carlson (2009) wrote

that indexes of diversity measure "the chance that two individuals drawn at random from the neighborhood will come from different racial or ethnic groups" (p. 133). Due to the relatively small number of foreign born individuals in Kent County, only two index variables were calculated for this study. One index measures racial heterogeneity by examining the chance that two randomly-selected individuals will be from different race groups, black and non-black. The second index measures ethnic heterogeneity by looking into the chances that two randomly-selected individuals would come from different ethnic groups, Hispanic and non-Hispanic. These indexes of diversity were calculated utilizing the formula $D = 1 - \Sigma p_i^2$ where p_i is the proportion in group i. Values for each index are 0 if all individuals in the zip code are from the same ethnic or racial group and a value of .50 when 50% of individuals fall into each group indicating maximum heterogeneity (Rhineberger-Dunn and Carlson 2009).

Missing from the neighborhood contextual variables used in past studies are variables that measure the levels of health of community residents (i.e., neighborhood levels of health). To account for this omission, three health measures were included in my analysis. Mental health in Kent County zip codes was measured by data obtained from Network180. This continuous variable measures the percentage of individuals in a given zip code that have received mental health services from Network180. Neighborhood levels of substance abuse also were measured with data from Network180. Similar to the mental health data, this is a continuous variable that measures the percentage of residents in a given zip code who received treatment for substance abuse issues via Network180. A neighborhood indicator of physical health was measured via average blood lead levels (micrograms of lead per deciliter of blood) in Kent County zip

codes. Data for lead levels were obtained from the Michigan Department of Community Health in Lansing, Michigan. I conducted a principal components analysis to ascertain whether these three variables could be combined into a summated index variable. The results showed that the three health variables loaded on a single dimension. Thus, I summed the z-scores for the three items into a single combined neighborhood health measure.

Individual-Level Control Variables

Individual-level factors that influence the reentry experiences of those released from incarceration noted in Chapter 2 to influence the reentry experiences of those released from incarceration are were included as control variables in this study. These include: age of individuals at the time of release from jail, length of stay in jail, reported monthly income, level of education, sex, race, employment, physical health, mental health, substance abuse, whether an individual was released after serving time for a felony offense, plus co-occurring mental health and substance abuse issues. Age at the time of release from jail is a continuous variable calculated using the release date and date of birth recorded in JailView at the original date of booking. Level of education for each individual was obtained from booking information available through JailView and measured as a dichotomous variable. JailView records the number of years of education each individual self-reports at the time of initial booking into the facility, which means that the exact education credentials in terms of degrees earned cannot be discerned from the available data. To this end, the education level for each individual was coded 0 for less than 13 years of education and 1 for13 years or greater education. Selecting 13 as the cutoff level ensures that individuals will have, at a minimum, a high school diploma.

Length of stay in jail was calculated as a continuous variable using an individual's booking date and release date information as recorded in JailView. Monthly income is a continuous variable that measures the self-reported monthly income level reported by individuals booked into KCCF.

Sex is a dichotomous variable coded as 0 for male and 1 for female. Sex information on each individual included in the study was obtained from JailView. Race information for each individual included in the study was also be obtained from JailView. Due to the low number of individuals booked into KCCF who identified as Native American, Asian, and other races, these individuals have been excluded from the study. Race and ethnicity were recoded into two binary dummy variables. The two dummy variables were coded 1 for black, 0 for non-black, and 1 for Hispanic, 0 for non-Hispanic.

Due to the manner that employment information is entered into JailView, employment is measured as a dichotomous variable coded as 0 for unemployed and 1 for employed using the available occupation categories found in JailView. Individuals were considered unemployed if their occupation category is unemployed, laid off from employment, disabled, or if the individual stated no occupation at the time of booking into KCCF. Physical health, substance abuse, and mental health were constructed using three dichotomous variables using available physical, substance abuse, and mental health data collected at the original booking event for each individual included in the study. Each of these variables was coded as 0 for no physical, substance abuse, or mental health issue identified at the time of booking, and 1 for a physical, substance abuse, or mental health issue identified at the time of booking. The variable measuring whether or not an individual released from KCCF was released after serving time for a felony offense was

coded as a dichotomous variable with 0 for those individuals released after serving time for a misdemeanor offense and 1 for those individuals released after serving time for a felony offense.

An additional control variable identifies whether an individual released from jail was suffering from a co-occurring substance abuse and mental health issues was included in this study. Both substance abuse and mental health issues have been identified as important considerations in the reentry literature (Mallik-Kane and Visher 2008; Solomon et al. 2008; Travis 2005), and, when those returning from incarceration suffer from both issues simultaneously, this creates an additional barrier to reentry. Deason et al. (2011) reported that approximately 75% of individuals incarcerated in prison with a serious mental health issue also suffer from a substance abuse issue. Messina et al. (2004) found that individuals with co-occurring substance abuse and mental health issues experienced a 113% increase in the odds of reincarceration in prison within one year of release when compared to those individuals dealing with only a substance abuse issue. Those released from jails with co-occurring disorders present unique challenges to reentry in terms of treatment planning that can impact their potential for success in the community (Chandler et al. 2004; Osher et al. 2003). Individuals with co-occurring issues are identified by a dichotomous variable coded as 0 for no co-occurring issue and 1 for co-occurring mental health and substance abuse issues. This variable was calculated using information from JailView.

Based on the literature reviewed in Chapter 2, I expected that younger, male, unemployed, and individuals who have been identified as belonging to a minority population will see an increase in their log odds for engaging in recidivistic behavior.

Those individuals with less education, those incarcerated for longer periods of time, as well as individuals with identified physical health, substance abuse, mental health, or co-occurring substance abuse and mental health issues were also anticipated to experience increases in their log odds of engaging in recidivistic behavior. Formally, these expectations are expressed in the following hypotheses:

    A. As the age of individuals increase, the odds of recidivism will decrease.

    B. Those individuals with a high school diploma as a minimum level of education will see their odds of recidivism decrease.

    C. Individuals who have served longer periods of time incarcerated will see their odds of recidivism increase.

    D. Individuals with higher levels of monthly income will see their odds of recidivism decrease.

    E. Females released from incarceration will have lower odds of recidivism when compared to males released from incarceration.

    F. Racial and ethnic minorities will have higher odds of recidivism once released from incarceration.

    G. Individuals who were employed at the time of booking will have lower odds of recidivism when compared to individuals who were not employed.

    H. Individuals with identified physical health issues will have higher odds of recidivism when compared to those individuals without physical health issues.

    I. Individuals with substance abuse issues will have higher odds of recidivism compared to those individuals without substance abuse issues.

J. Individuals with identified mental health issues will have higher odds of recidivism when compared to those individuals without mental health issues.

K. Individuals with co-occurring mental health and substance abuse issues will have greater odds of recidivism when compared to those individuals without co-occurring mental health and substance abuse issues.

Hypothesized Models

Multilevel modeling was originally proposed to test the hypotheses developed in Chapter 3, with level-1 models examining the influence of individual-level variables upon the dependent recidivism variables, and level-2 models the influence of neighborhood-level variables in explaining differences in recidivism rates across zip codes controlling for level-1 compositional effects. Citing work by Raudenbush and Bryk (2002), Kubrin and Stewart (2006) note that multilevel modeling became the standard method by which researchers examine the effects of neighborhood-level contextual variables on individuals living in defined geographic units. More specifically, Guo and Zhao (2000) argued that multilevel modeling helps correct for any potential biases in the parameter estimates of the model, as well as providing correct standard errors that assist in providing correct confidence intervals and significance tests. Additionally, Kubrin and Stewart (2006) justify their use of multilevel modeling by citing how this statistical modeling method works to "explicitly recognize that individuals in a particular neighborhood may be more similar to one another than to individuals in another neighborhood" (p. 178) in addition to accounting for the amount of variance in recidivism across neighborhoods. Providing a simple, yet direct, argument for using multilevel modeling, Luke (2002) writes "because so much of what we study is

multilevel in nature, we should use theories and analytic techniques that are also

multilevel" (p. 4).

In a preliminary set of analyses, Bernoulli unconditional models (i.e., models

including only the random intercept) were conducted on both dependent variables,

rebooking and reincarceration. The variance component for the random slope was

statistically significant, indicating there was sufficient variation in recidivism across zip

codes to warrant using a multilevel model. However, when level-1 variables were added

to the models, the variance component for the random intercept was no longer

statistically significant, indicating that there was no significant variation in recidivism

rates to be explained between zip codes in Kent County. Census tract data was

subsequently collected to ascertain whether there was a statistically significant amount of

variation in recidivism rates across these smaller geographic units. Once again, results

from the Bernoulli unconditional models indicated that using a multilevel model for each

of the dependent variables was appropriate. However, once level-1 individual variables

were added, the variation in recidivism rates across census tracts disappeared, thus

rendering use of multilevel modeling inappropriate, making single-level logistic

regression analysis the appropriate method to use to analyze these data.

Just because there was insufficient variation in the rates of recidivism across both

zip codes and census tracts in Kent County does not mean that contextual effects

consistent with the original hypotheses might exist. Thus, the influence of neighborhood

context on the odds that those released from jail will recidivate in the future can still be

assessed by using logistic regression analysis. Logistic regression methods allow for the

measurement of how dichotomous and continuous independent variables influence a

dichotomous dependent variable. Menard (2002) wrote that logistic regression models help researchers "reconceptualize the problem as an attempt to predict the probability of being classified into one as opposed to the other of the two categories of the dependent variable" rather than "trying to predict the arbitrary value associated with a category" (p. 12). Second, in a logistic regression model the log odds of the event (here, recidivism) are regressed on the independent variables (Menard 2002). The logit coefficient estimates, b's, "can be interpreted as the change in the dependent variable, logit(Y), associated with a one-unit change in the independent variable" (Menard 2002:50). Third, the odds ratio, Exp(B), shows how many times the odds of recidivism are multiplied for each one-unit increase in the predictor variables included in the model (Menard 2002). Odds ratios greater than 1 indicate an increase in the odds of recidivism, while odds ratios less than 1 will indicate a decrease in the likelihood of t recidivism (Menard 2002).

Statistical Methods

Missing Data

Based on the researcher's previous experience, missing data are expected in the individual-level data gathered from the Kent County Sheriff's Jailview system. The primary reason for missing data in this particular dataset is that data for each individual booked into KCCF is collected through personal interviews at the time of booking which is then keyed in by hand by Kent County Sheriff's Department staff. Given the significant number of bookings in KCCF, there is a significant chance that data will be missed when they are entered into Jailview.

Multiple imputation is the method employed in this research to handle missing data. Allison (2002) argues that the more common methods for handling missing data, such as listwise or pairwise deletion, can "typically make things worse" (p. 12) when estimating a statistical model. Some of the problems that researchers may encounter when using listwise or pairwise deletion include the introduction of substantial levels of bias in the model, creation of a situation where the model and subsequent analysis are at a greater level of sensitivity to deviations from data missing completely at random assumptions, or estimation of standard errors may be incorrect (Allison 2002). On the other hand, Allison (2002) wrote that multiple imputation "when used correctly, produces estimates that are consistent, asymptotically efficient, and asymptotically normal when the data are MAR" (p. 27). Given the way the individual-level data for this project are gathered and entered into Jailview, any missing data have a greater chance of being missing at random. Multiple imputation also has the added benefit of being a flexible method that can be utilized "with virtually any kind of data and any kind of model, and the analysis can be done with unmodified, conventional software" (Allison 2002:27).

I used SPSS to estimate five imputed data sets for use in the analysis. Multiply imputed data sets are required for two primary reasons. First, using multiple imputed data sets produces the necessary estimates of the standard errors that will more accurately mirror the unknown aspects of the missing values in the dataset (Allison 2002). Noting that there are a variety of ways to estimate the number of imputations that are required to obtain good confidence intervals, p-values, and standard error estimates, Allison (2002) moved away from earlier suggestions that the number of required imputations focus on efficiency, which were often limited to 10 or fewer imputations, to writing that more

recent recommendations suggest the number of imputations be based upon the percentage of missing data in the dataset. Given the amount of missing data in my study, five imputations appeared to be sufficient.

Regression Diagnostics

Regression diagnostics were conducted to determine if the models met all statistical assumptions (Agresti and Finlay 2009). Regression diagnostics, as noted by Agresti and Finlay (2009), can help identify "(1) when model assumptions are grossly violated and (2) when certain observations are highly influential in affecting the model fit or inference about model parameters" (p. 448). Additionally, there is a need "to perform at least a limited set of diagnostics on any model as a precaution against miscoded data and a guide to weakness in our conceptual models" (Menard 2002:90). As the dependent variables in this project are dichotomous, violating the assumptions of a logistic regression model may produce some undesirable effects. These include "biased coefficients, inefficient estimates, or invalid statistical inferences" (Menard 2002:67). Thus there is a need to employ a set of regression diagnostics.

Due to the binary nature of the dependent variable, Menard (2002) suggests checking for nonlinearity and multicollinearity. Nonlinearity was assessed using the Box-Tidwell transformation in the IBM SPSS Statistics 21 software package. Agresti and Finlay (2009) and Menard (2002) write that multicollinearity can be assessed for by using the tolerance and variance inflation factor statistics produced in SPSS. Square roots of the VIF statistics show how many times greater the standard error of the slope coefficient for a particular variables is than would be the case if no multicollinearity were present, and hence the degree to which hypothesis tests may be compromised.

Additionally, any potential instability issues with multicollinearity can be assessed with condition index statistics that are also calculated in SPSS.

Results from the tests for nonlinearity using the Box-Tidwell transformation for the three continuous independent variables—length of stay, age at booking, and reported monthly income—indicated that there were no issues with nonlinearity. Tests for multicollinearity indicated that there were collinearity issues to be addressed with the neighborhood contextual variables. Table 4.1 indicates a high level of collinearity based on the tolerance and square root of VIF scores.

Table 4.1. Multicollinearity Tests – Contextual Variables

	Tolerance	Square Root of VIF
Concentrated Disadvantage	0.024	6.423
ICE	0.051	4.428
Black Heterogeneity	0.182	2.345
Hispanic Diversity	0.095	3.251
Residential Stability	0.188	2.309
Substance Abuse	0.027	6.046
Mental Health	0.026	6.261
Lead Blood Levels	0.137	2.703

Tolerance levels that are less than or equal to .40, as well as square root of the VIF scores of 1.58 or higher, are considered problematic as they indicate how many times the standard errors are inflated due to multicollinearity. With each of the

contextual variables showing tolerance scores well below the .40 thresholds, as well as square roots of the VIF scores well above 1.58, additional multicollinearity tests were conducted for models using different combinations of the neighborhood contextual variables.

Tables 4.2 and 4.3 detail the results of the multicollinearity tests when the concentrated disadvantage and ICE variables were entered separately from one another into the models. Concentrated disadvantage and ICE had problematic tolerances, .024 and .051, and square roots of the VIFs of 6.423 and 4.428. Although both variables measure economic disadvantage in different ways, they are similar enough to cause multicollinearity concerns to surface in each of the models when added to the model together. Each of these variables was then entered separately to gauge any additional multicollinearity issues.

Table 4.2. Multicollinearity Tests – Concentrated Disadvantage

	Tolerance	Square Root of VIF
Concentrated Disadvantage	0.040	4.981
Black Heterogeneity	0.202	2.226
Hispanic Diversity	0.096	3.233
Residential Stability	0.188	2.309
Substance Abuse	0.027	6.044
Mental Health	0.027	6.045
Lead Blood Levels	0.230	2.087

Table 4.3. Multicollinearity Tests – ICE

	Tolerance	Square Root of VIF
ICE	0.085	3.434
Black Heterogeneity	0.361	1.664
Hispanic Diversity	0.136	2.715
Residential Stability	0.230	2.086
Substance Abuse	0.028	6.019
Mental Health	0.026	6.148
Lead Blood Levels	0.166	2.455

Even when concentrated disadvantage and ICE entered the models separately, multicollinearity remained problematic. In Table 4.2, concentrated disadvantage had a tolerance value of .040 and the square root of the VIF was 4.981. Tolerance and square roots of VIF values for the ICE variable in Table 4.3 were .085 and 3.434, respectively.

One of the primary contributors to the multicollinearity concerns found in Tables 4.1, 4.2, and 4.3 may be the health-related context variables. In all three tables, the tolerance and square root of VIF values for the substance abuse and mental health variables are among the highest for all seven contextual variables. Tolerance values for the two variables remain at approximately .027 while the square roots of VIF values remain above 6.0. In turn, this impacts the multicollinearity being experienced by the concentrated disadvantage and ICE variables. This may be attributable to the data used to measure the substance abuse and mental health variables. These data measure the

percentage of zip code residents who received substance abuse and mental health

treatment services through Network180. These services are provided to individuals who

may not have insurance or other coverage to pay for these treatment services. As such,

the substance abuse and mental health variables may be measuring the same underlying

construct.

I conducted a principal components analysis to see if the health-related variables

could be collapsed into a single variable that measures the overall health level of

residents in a given zip code. Results from the analysis indicated all three variables could

be combined into a single variable that provides a score measuring the level of overall

health of residents in a given zip code. Z-scores for each health-related measure—

substance abuse, mental health, and blood lead values—were summed to create the

combined health composite variable. Multicollinearity tests were conducted by including

all context variables minus concentrated disadvantage and ICE, and then adding in

concentrated disadvantage and ICE separately into the models. Table 4.4 shows that

multicollinearity is still an issue as the tolerance and square roots of VIF values have

been, respectively, increased and lowered when concentrated disadvantage and ICE are

absent from the models.

Table 4.4. Multicollinearity Tests – Composite Health

	Tolerance	Square Root of VIF
Black Heterogeneity	0.468	1.462
Hispanic Diversity	0.362	1.661
Residential Stability	0.402	1.578
Combined Health	0.228	2.092

Black heterogeneity, Hispanic heterogeneity, and residential stability all show improvements in multicollinearity when combined health is used in place of the three health-related variables found in Tables 4.1, 4.2, and 4.3.

Multicollinearity still appears as a concern when concentrated disadvantage and ICE are entered into the models independently of each other. Table 4.5 shows that concentrated disadvantage has a tolerance value of .056 and a square root of the VIF value of 4.230. These are marginally better than the values found in Table 4.2, and significantly better than the results found in Tables 4.1 and 4.3.

Table 4.6 shows similar results when ICE is entered independently of concentrated disadvantage. ICE has a tolerance value of .197 and a square root of the VIF value of 2.255, and similar to the results found in Table 4.5 for concentrated disadvantage, however, these values are markedly better than the values for ICE in Tables 4.1 and 4.3.

Table 4.5. Multicollinearity Tests – Concentrated Disadvantage and Composite Health

	Tolerance	Square Root of VIF
Concentrated Disadvantage	0.056	4.230
Black Heterogeneity	0.299	1.830
Hispanic Diversity	0.120	2.881
Residential Stability	0.371	1.642
Combined Health	0.158	2.516

Table 4.6. Multicollinearity Tests – ICE and Composite Health

	Tolerance	Square Root of VIF
ICE	0.197	2.255
Black Heterogeneity	0.464	1.468
Hispanic Diversity	0.182	2.347
Residential Stability	0.385	1.612
Combined Health	0.224	2.114

Given that the concentrated disadvantage, ICE, substance abuse, and mental health variables either measure or are influenced by the level of economic disadvantage in a given zip code, any variables that include these measures may exhibit multicollinearity issues. Additional multicollinearity tests were run with models that included only the concentrated disadvantage, ICE, and lead variables. Table 4.7 indicates that the multicollinearity issues found in the previous tables in this section have been

abated. Tolerance and square roots of the VIF levels for all four context variables in

Table 4.7 are within acceptable levels, indicating that multicollinearity is no longer an

issue.

Table 4.7. Multicollinearity Tests – Lead

	Tolerance	Square Root of VIF
Black Heterogeneity	0.418	1.547
Hispanic Diversity	0.460	1.474
Residential Stability	0.613	1.277
Lead Blood Levels	0.462	1.471

Although the tolerance and square root of the VIF values improved, the

multicollinearity tests with concentrated disadvantage and ICE added in separately with

the lead variable still show multicollinearity concerns. Even though the values are above

acceptable levels, Table 4.8 shows improved tolerance and square roots of VIF values,

.075 and 3.662, for concentrated disadvantage when compared to previous results.

Similar results can be found in Table 4.9 when ICE is entered into the model

along with the lead variable. ICE shows a tolerance value of .188 and a square root of the

VIF value of 2.307. When compared to the tolerance and square roots of the VIF values

found in Tables 4.1 and 4.3, the results in Table 4.9, while still showing multicollinearity

issues, are an improvement.

Table 4.8. Multicollinearity Tests – Concentrated Disadvantage and Lead

	Tolerance	Square Root of VIF
Concentrated Disadvantage	0.075	3.662
Black Heterogeneity	0.300	1.826
Hispanic Diversity	0.124	2.838
Residential Stability	0.611	1.280
Lead Blood Levels	0.427	1.531

Table 4.9. Multicollinearity Tests – ICE and Lead

	Tolerance	Square Root of VIF
ICE	0.188	2.307
Black Heterogeneity	0.417	1.549
Hispanic Diversity	0.173	2.404
Residential Stability	0.511	1.399
Lead Blood Levels	0.433	1.520

As a means to address the identified multicollinearity issues, different models were specified for each dependent variable. Each dependent variable was regressed on the seven contextual variables independently of each other. Models were also estimated for the rebooking and reincarceration dependent variables where the combined health variable was used in place of the substance abuse, mental health, and lead variables.

Finally, models were developed with the lead variable substituted for the combined health variable. The results of these models are reported in Chapter 5.

Conclusion

This chapter provides information on the methods employed in this study to test the research hypotheses. More specifically, logistic regression models were utilized to ascertain the relationship between neighborhood context and the two recidivism outcome measures, controlling for individual-level factors related to reentry. Logistic regression models were employed after initial modeling using multilevel models determined that the introduction of individual-level variables explained away all variance in recidivism rates across zip codes. Concentrated health issue variables were included with the other neighborhood contextual measures to expand the understanding of how neighborhood context impacts the odds of recidivism after release from jail. Additionally, individual-level variables were included in the models as control variables. In Chapter 5, results of the analyses are presented. Limitations of this study are also addressed in the final chapter. Chapter 6 interprets and discusses the significant findings of this study. The findings in Chapter 5 are also be used to develop policy recommendations in Chapter 6.

CHAPTER 5

RESULTS

Introduction

This chapter presents the results of the quantitative analyses performed to test the hypotheses detailed in Chapter 4. First, the results of the bivariate correlations and estimated logistic regression models that examine the influence of individual-level factors on the dependent variables are presented. Second, maps are presented to provide the reader with a visualization of the spatial distribution of each neighborhood contextual variable included in this study as well as which zip codes receive the largest volume of those released from the Kent County Correctional Facility (hereafter KCCF). The maps also provide the reader an opportunity to see where higher and lower levels of the neighborhood contextual variables are spatially located relative to one another. Third, results of the estimated logistic regression models that include both individual-level and neighborhood contextual variables are presented. These results will cover the logistic regression models where each neighborhood contextual variable has been entered individually, as well as separately estimated models that examine the influence of the neighborhood contextual variables on the log odds of rebooking and reincarceration when entered in combination with one another. Lastly, results of the logistic regression models estimated for black and non-black individuals are detailed in the final part of this chapter. Discussion of the findings from the analyses presented in this chapter will be elaborated in Chapter 6.

Bivariate Correlation Results

Table 5.1 presents the bivariate correlation matrix, means, and standard deviations for the neighborhood contextual variables. These results show that there are statistically significant correlations (p=.000) between each of the eight neighborhood contextual variables. Furthermore, none of the correlations are below .500 with 11 of the 28 correlations exceeding .80, indicating that the relationships between the neighborhood variables are very strong. High correlations between the concentrated disadvantage and ICE variables (r=-.913, p=.000) plus the substance abuse and mental health variables (r=.970, p=.000) contribute to the high multicollinearity findings identified in Chapter 4 for these two pairs of variables. These findings support the use of logistic regression models that enter the concentrated disadvantage and ICE variables separately from one another, as well as estimating models separately using combined health and lead variables.

Individual-Level Models

Results of the logistic regression models that estimated the influence of individual-level variables on the rebooking and reincarceration dependent variables are presented in Tables 5.2 and 5.3. Table 5.2 details the results of how individual-level variables influence the log odds of rebooking individuals within two years of their release from KCCF. Probation and parole violations were excluded from the rearrest information given the difficulty in determining whether the violations were for technical violations or new offenses.

Table 5.1. Pearson Product Moment Correlation Matrix of Contextual Variables

	Concentrated Disadvantage	ICE Index	Black Heterogeneity	Hispanic Heterogeneity	Residential Stability	Neighborhood Substance Abuse	Neighborhood Mental Health	Neighborhood Lead
Concentrated Disadvantage	1	-.913**	.810**	.928**	-.587**	.855**	.824**	.718**
ICE Index	-.913**	1	-.617**	-.878**	.620**	-.826**	-.840**	-.504**
Black Heterogeneity	.810**	-.617**	1	.688**	-.529**	.636**	.608**	.678**
Hispanic Heterogeneity	.928**	-.878**	.688**	1	-.545**	.793**	.740**	.619**
Residential Stability	-.587**	.620**	-.529**	-.545**	1	-.778**	-.839**	-.561**
Neighborhood Substance Abuse	.855**	-.826**	.636**	.793**	-.778**	1	.970**	.804**
Neighborhood Mental Health	.824**	-.840**	.608**	.740**	-.839**	.970**	1	.724**
Neighborhood Lead	.718**	-.504**	.678**	.619**	-.561**	.804**	.724**	1
Mean	4.763	-.048	.234	.242	-1.438	2.631	6.348	3.835
s.d.	5.478	.180	.155	.132	1.717	1.465	3.051	1.137

N=6,102

**Correlation is significant at the .000 level (1-tailed).

Table 5.2. Logistic Regression Results – Rebooking with No Probation Violations and Individual-Level Variables

	Rebooking
Black	.763 (.058) 2.144***
Hispanic	.158 (.096) 1.171**
GED/High School Diploma or More	-.234 (.058) .791***
Female	-.369 (.065) .691***
Medical Issue	-.065 (.060) .937
Substance Abuse	.189 (.062) 1.208***
Mental Health	.026 (.107) 1.026
Substance Abuse and Mental Health Issue	.367 (.089) 1.443***
Occupation	-.084 (.063) .919*
Felony Disposition	-.393 (.070) .675***
Length of Stay - Days	.001 (.000) 1.001
Income Level - Month	.000 (.000) 1.000***
Age at Booking	-.023 (.003) .977***
Constant	.848 (.108) 2.336***
McFadden's R^2	0.057
N=6,102	

*p<.10, **p<.05, ***p<.01; one-tailed tests

Table 5.3. Logistic Regression Results – Reincarceration with No Probation Violations and Individual-Level Variables

	Reincarceration
Black	.585 (.061) 1.796***
Hispanic	-.022 (.104) .979
GED/High School Diploma or More	-.268 (.059) .765***
Female	-.526 (.070) .591***
Medical Issue	-.098 (.062) .906*
Substance Abuse	.086 (.064) 1.090*
Mental Health	.037 (.114) 1.037
Substance Abuse and /Mental Health Issue	.432 (.092) 1.540***
Occupation	-.080 (.064) .923
Felony Disposition	-.481 (.075) .618***
Length of Stay - Days	.001 (.001) 1.001***
Income Level - Month	.000 (.000) 1.000***
Age at Booking	-.016 (.003) .984***
Constant	.022 (.110) 1.022
McFadden's R^2	0.044
N=6,102	

*p<.10, **p<.05, ***p<.01; one-tailed tests

Several measures show the model detailed in Table 5.2 fits the data well. The model chi-square value of 483.093 (p<.000) indicates that including the individual-level variables significantly improves correct prediction of rebooking into the KCCF, increasing the correct classification of cases by 9.7% over the baseline intercept-only model (from 51.7% to 61.4% correct). The Hosmer-Lemeshow test shows that the null hypothesis of a good fit of the model to the data cannot be rejected (p=.292). Finally, McFadden's pseudo R^2 shows the proportional reduction in the absolute value of the log-likelihood (-2LL), which is the value minimized by the logistic regression algorithm. As such, it can be viewed as the approximate proportion of the variation explained by the model (Menard 2002:21-23). For the model in Table 5.2, McFadden's R^2 is .057, indicating that the individual-level variables account for 5.7% of the variation in the log odds of being rebooked into KFCC.

Turning to the effects of the individual variables, contrary to my hypotheses, three effects failed to be statistically significant—having a physical health issue, having a mental health issue, and the length of stay in jail. However, nine of the remaining ten variables are statistically significant in the hypothesized direction. Blacks were over two times more likely to be rebooked than those who were of other races (Exp(B)=2.144, p=.000), while Hispanics were 17.1% more likely to be rebooked than non-Hispanics (Exp(B)=1.171, p=.05). Those with a substance abuse issue were 20.9% more likely to be rebooked for an additional offense than those with no mental health or substance abuse issues (Exp(B)=1.208, p=.001), while those with co-occurring substance abuse and mental health issues were 44.3% more likely to be rebooked for repeat offenses (Exp(B)=1.443, p=.000). Having an identifiable occupation also helped reduce the odds

of rebooking by 8.1% (Exp(B)=.919, p<.10). As expected, having at least a GED or high

school diploma and being female both reduced the odds of being rebooked into jail by

20.9% and 30.9%, respectively (Exp(B)=.791, p=.000; Exp(B)=.691, p=.000). Age also

decreased the odds of being rebooked by 2.3% per year (Exp(B)=.977, p=.000). Finally,

contrary to my hypothesis, being sentenced for a felony rather than a misdemeanor

significantly decreased the odds of rebooking by 32.5% (Exp(B)=.675, p=.000). I will

return to these findings in the concluding chapter.

Similar to the information presented in Table 5.2, the model in Table 5.3 also fits

the data well. While the model chi-square value of 343.753 (p<.000) indicates that the

inclusion of the individual-level variables improves the prediction of reincarceration after

being released from KCCF at a prior point in time, the increase in prediction is not as

strong as was found in the rebooking model. Whereas the addition of the individual-level

variables into the rebooking model increased the correct classification of cases by 9.7%,

the addition of the individual-level variables into the reincarceration model increased the

correct classification of cases from 65.3% to 67.0%, or an increase of 1.7%.

Additionally, the McFadden's R^2 value of .044 indicates that this model explains 4.4% of

the variation in the log odds of being reincarcerated after an initial release from KCCF.

This is 1.3% less than the 5.7% variation explained found in the rebooking model.

Similar to the rebooking model, the Hosmer-Lemeshow test results for the reincarceration

model in Table 5.3 indicate that the model is a good fit (p=.331).

Results from Table 5.3 show that six of the individual-level variables have a

significant impact on the log odds of reincarceration in the hypothesized direction.

Blacks were 79.6% more likely to be reincarcerated after release (Exp(B)=1.796,

p<.000), while those with combined substance abuse and mental health issues were 54.0% more likely to be reincarcerated (Exp(B)=1.540, p<.000). Those with an identified substance abuse problem saw their odds of reincarceration increase by 9% (Exp(B)=1.090, p<.089). Decreasing the odds of reincarceration by 23.5% and 40.9% were, respectively, having a minimum level of education of a GED/high school diploma (Exp(B)=.765, p<.000) and being female (Exp(B)=.591, p<.000). Booking age also decreased the odds of reincarceration by 1.6% per year (Exp(B)=.984, p<.000). Two differences from the rebooking model were that being Hispanic as well as having an identified occupation did not reduce the odds of reincarceration. Having a medical issue, the length of stay in jail, and the reported level of income per month were also not statistically significant. Similar to the results in Table 5.2, being sentenced for a felony offense decreased the odds of reincarceration by 38.2% (Exp(B)=.618, p<.000).

Maps

The maps provided in this section complement the dissertation in three ways. First, the maps detail the layout of the zip codes utilized in this study. Second, the maps provide a visual representation of the neighborhood contextual variables and their distribution across zip codes. Finally, the maps show where the highest percentage of those released from KCCF returned in Kent County. Providing the percentage of those released from KCCF that returned to each zip code, coupled with the neighborhood contextual values for the zip codes, allows readers to visualize how the neighborhood contexts individuals returned to tended to be more disadvantaged, had high levels of substance abuse or mental health issues, etc.

Figure 5.1 illustrates the levels of concentrated disadvantage for each zip code including the levels of concentrated disadvantage for the zip codes that received the greatest percentage of those released from KCCF. A closer examination of Figure 5.1 reveals that the highest percentage of those released from incarceration, 74.5%, returned to eight zip codes – 49503, 49504, 49505, 49506, 49507, 49508, 49509, and 49548 – and these same zip codes are characterized as having higher levels of concentrated disadvantage. Five of the eight zip codes, 49503 through 49507, constitute a significant proportion of the city of Grand Rapids while the zip codes 49508, 49509, and 49548 constitute large swaths of Grand Rapids' two largest suburbs, Kentwood and Wyoming. Each of these zip codes are not only heavily populated when compared to the other 20 zip codes in Kent County, they also contain a significant number of commercial and industrial areas as well. For example, zip code 49503 encompasses the downtown area for Grand Rapids which not only contains the Van Andel Arena, DeVos Convention Center, and governmental offices, but also contains many of the homeless shelters and missions within blocks of the offices for major banks and other business ventures. Zip code 49508 is home to the busiest commercial district in Kent County that includes two major shopping centers as well as being home to a higher number of apartment complexes and other rental properties.
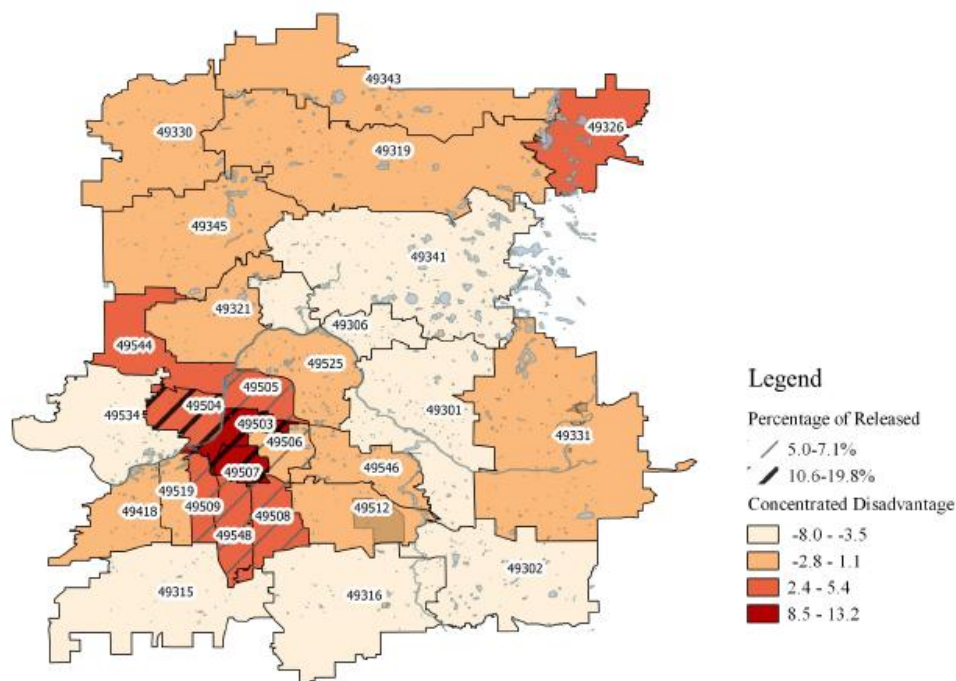
Figure 5.1.   Concentrated Disadvantage and Percentage of Those Released from Jail in Kent County Zip Codes

Conversely, Figure 5.2 illustrates that a significant number of those returning home after release from incarceration returned to zip codes with the lowest ICE values. Seven of the eight zip codes with the highest levels of concentrated disadvantage, which also received 68.6% of all those released from incarceration, also have the lowest ICE values. This finding provides an indication that those released from incarceration are returning to neighborhoods with lower levels of affluence, which in turn can create additional barriers to successful reentry.
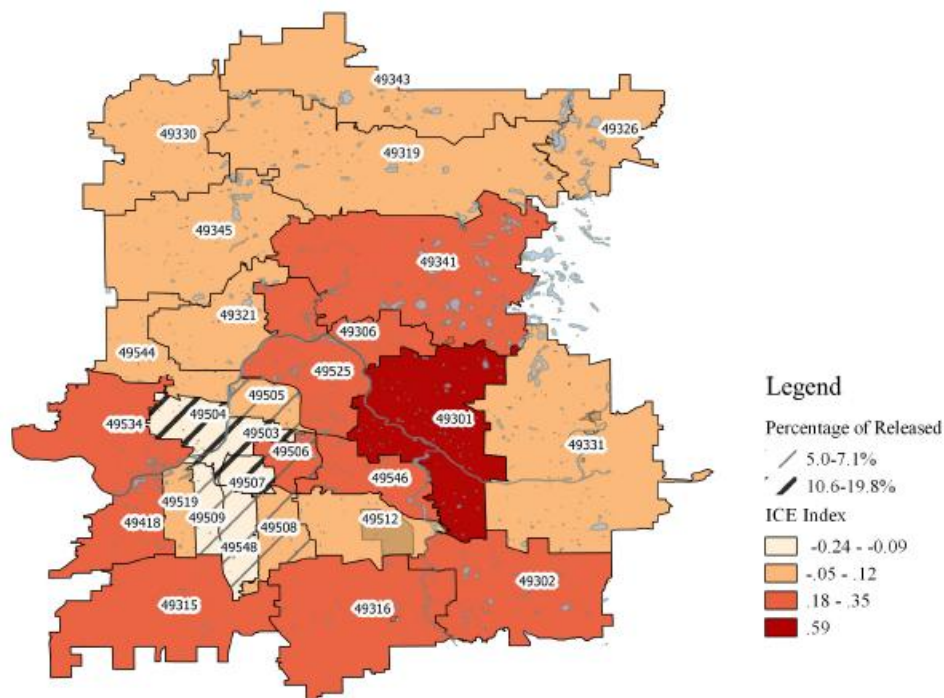
Figure 5.2. ICE Index and Percentage of Those Released from jail in Kent County Zip Codes

Figure 5.3 indicates that 52.3% of those released from incarceration return to five zip codes that are not only characterized by high levels of concentrated disadvantage and low levels of affluence, they are also characterized as having greater levels of black heterogeneity. Likewise, a significant percentage of those returning from incarceration, 54.6%, are also returning to five zip codes with higher levels of Hispanic heterogeneity based on the information provided in Figure 5.4. Higher levels of black heterogeneity and Hispanic heterogeneity in Kent County are grouped closely together in the zip codes that encompass more urban areas. These urban areas include three of the largest cities in Kent County: Grand Rapids, Kentwood, and Wyoming.
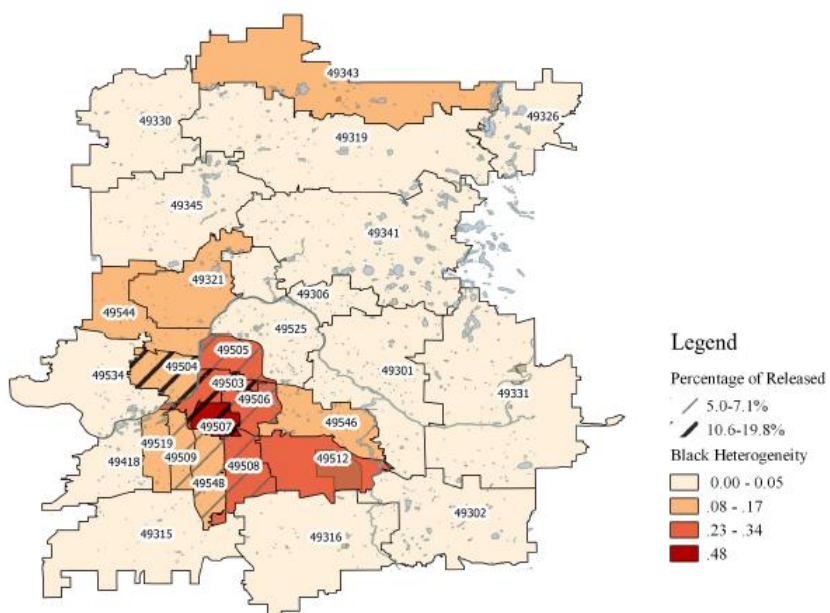
Figure 5.3. **Black Heterogeneity and Percentage of those Released from Jail in Kent County Zip Codes**
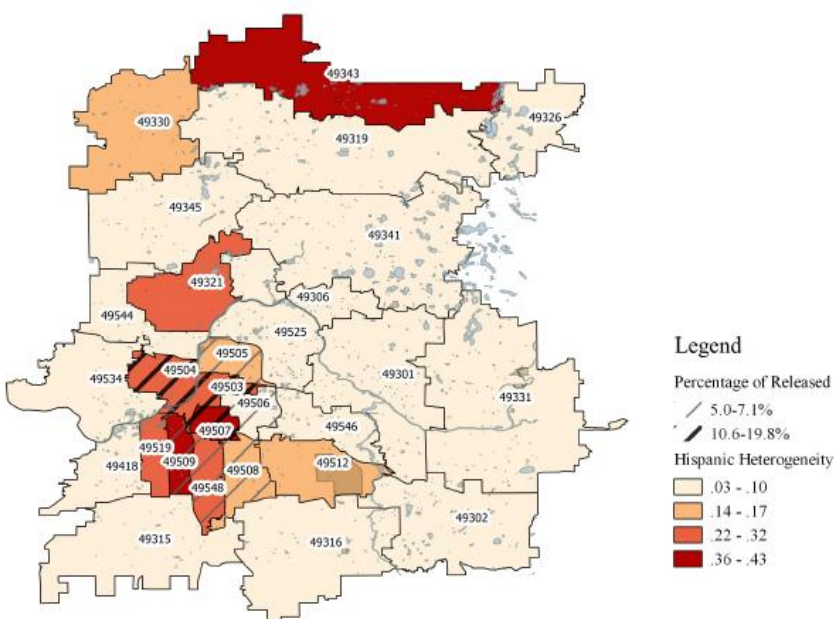
Figure 5.4. **Hispanic Heterogeneity and Percentage of Those Released from Jail in Kent County Zip Codes**

Similar to the prior maps, Figure 5.5 shows that lower levels of residential stability appear in the same eight zip codes that exhibited higher levels of concentrated disadvantage and lower ICE values. That is, 74.5% of those released from KCCF return to zip codes with the lowest levels of residential stability in Kent County. One of these eight zip codes, 49503, exhibits one of the lowest levels of residential stability in Kent County. This was expected given that zip code 49503 is where a majority of the homeless reside in Kent County's largest city, Grand Rapids.
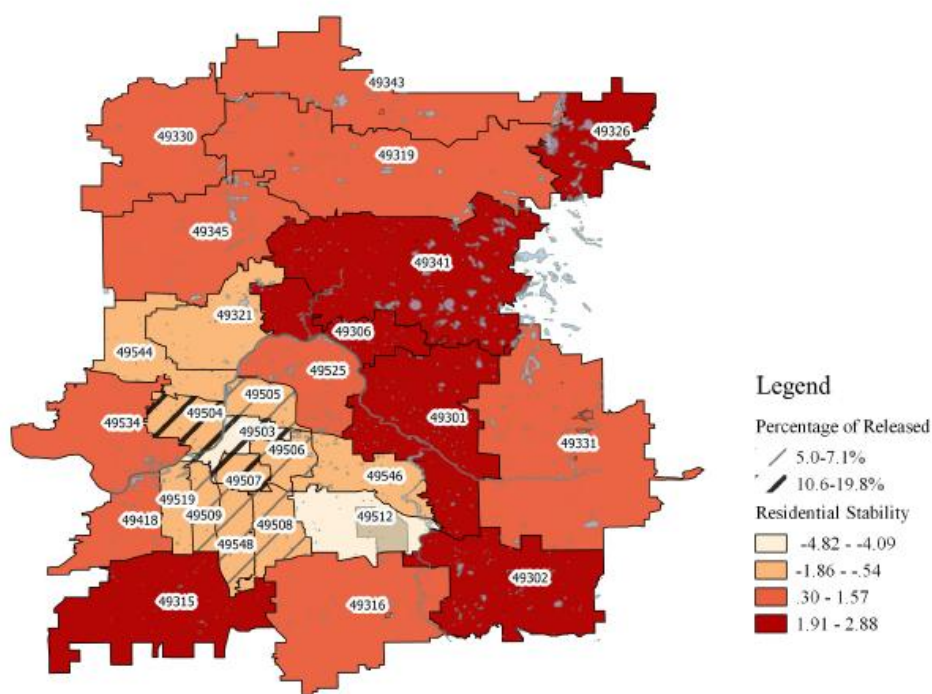
Figure 5.5. Residential Stability and Percentage of Those Released from Jail in Kent County Zip Codes

Given how the data for substance abuse and mental health treatment in each zip code were collected and calculated, the maps in Figures 5.6 and 5.7 illustrate how these levels mirror the information found in the maps detailing concentrated disadvantage levels and ICE values. Higher levels of mental health and substance abuse treatment are

found in the same eight zip codes that are characterized by higher levels of concentrated

disadvantage and lower ICE values.
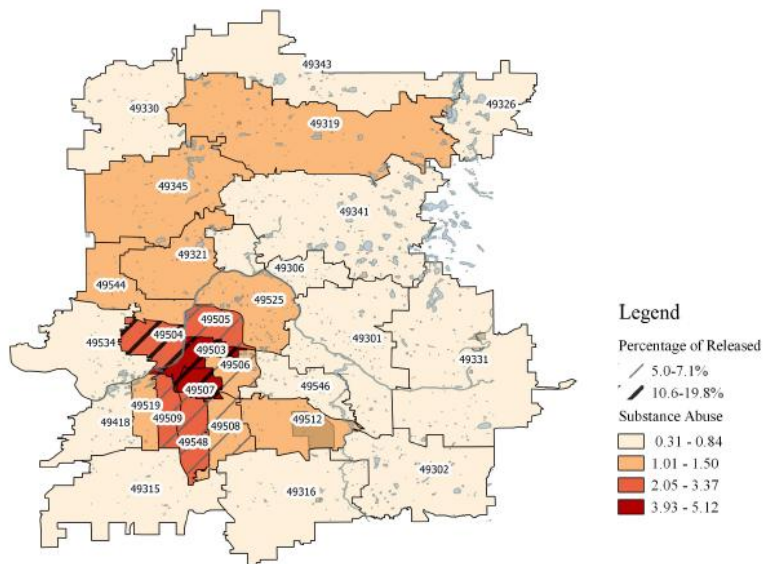
Figure 5.6. **Substance Abuse and Percentage of Those Released from Jail in Kent County Zip Codes**
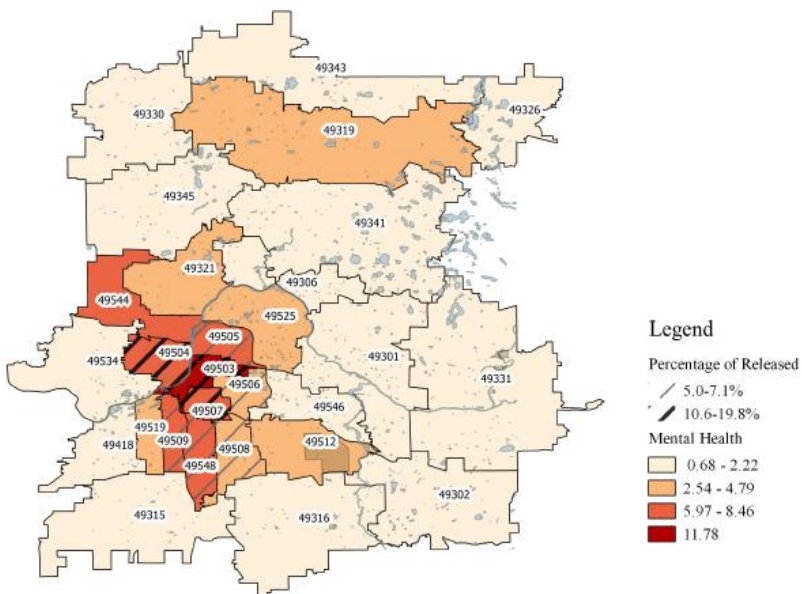
Figure 5.7. **Mental Health and Percentage of Those Released from Jail in Kent County Zip Codes**

Figures 5.6 and 5.7 indicate that a majority of those released from incarceration are returning home to zip codes characterized as having greater proportions of their populations receiving substance abuse and mental health services through Network180. Given that Network180 tends to provide services to those who have fewer financial resources to purchase or pursue these services on their own, it is intuitive that higher levels of substance abuse and mental health treatment are found in areas that are more disadvantaged and have less affluence. Figure 5.6 shows that 61.5% of those released from KCCF return to six zip codes that have substance abuse treatment levels ranging from 2.05 to 5.12% of Network180 clients. In a similar manner, Figure 5.7 shows that the same six zip codes with higher levels of substance abuse treatment are also characterized with higher levels of mental health treatment than range from 5.97 to 11.78% of Network180 clients.

Figure 5.8 shows that a significant percentage, 62.4%, of those released from KCCF return to six zip codes characterized by higher blood lead levels of 2.83 to 5.20 micrograms of lead per deciliter of blood. Higher blood lead levels are found in many of the zip codes that also have higher levels of concentrated disadvantage, substance abuse and mental health treatment, and lower ICE values. Zip codes 49503, 49504, and 49506 are where many of the oldest houses in Kent County are located, as well as many of the oldest industrial and commercial. These zip codes, in addition to the zip codes 49505, 49507, and 49509, also have Kent County's major freeways and main roads running through their borders. Hence, these zip codes have the highest lead levels in the county.
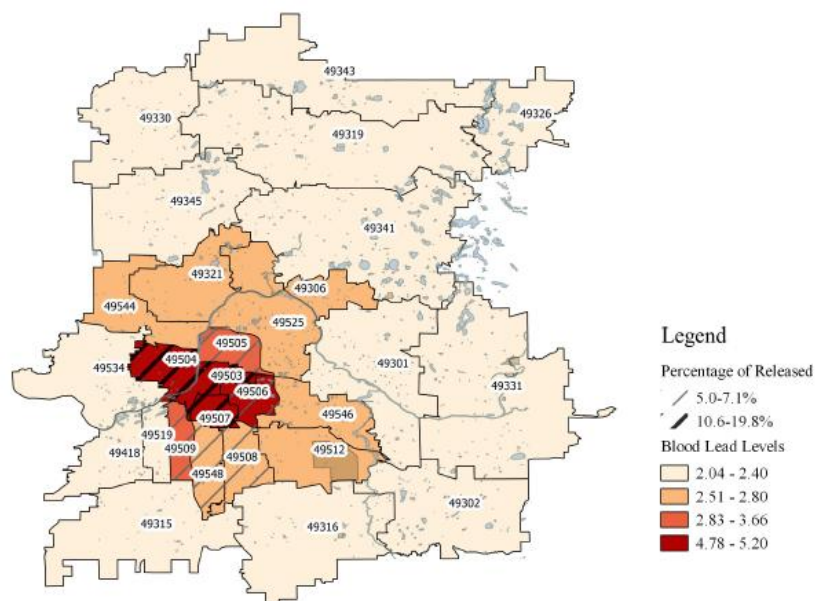
Figure 5.8. Blood Lead Levels and Percentage of Those Released from Jail in Kent County Zip Codes

Due to the composite health index being comprised of the substance abuse and mental health treatment levels plus blood lead level data, the scores for each zip code align themselves to the patterns seen in Figures 5.6, 5.7, and 5.8 for these three variables (see Figure 5.9). A significant percentage, 62.4%, return to those six zip codes that have higher composite health index values. This indicates that those released from incarceration at KCCF are returning to zip codes that have higher levels of health-related issues that could theoretically impact the odds of rebooking and reincarceration for those released from incarceration for the reasons detailed in Chapter 3.
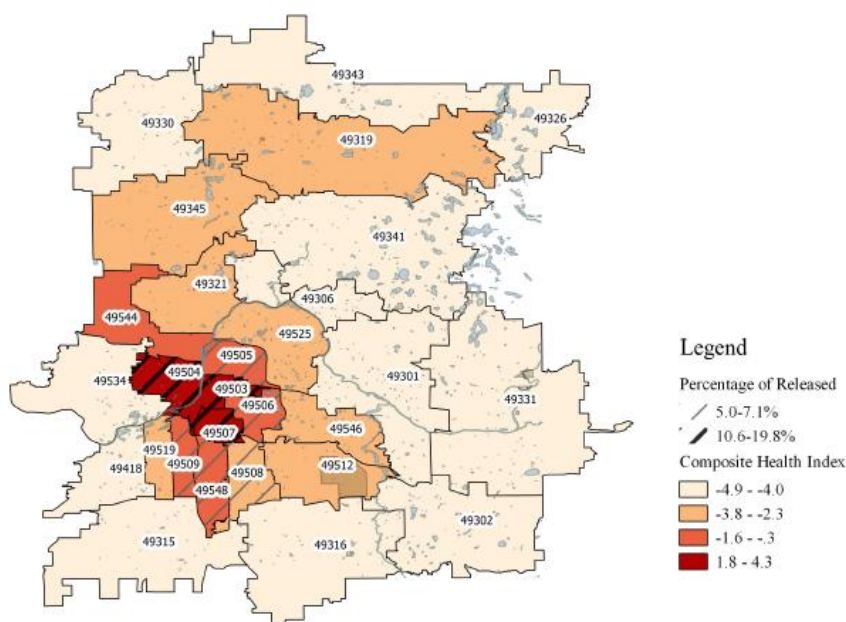
Figure 5.9. Composite Health Index and Percentage of Those Released from Jail in Kent County Zip Codes

Contextual plus Individual-Level Variables Models

Results of the multicollinearity tests in Chapter 4 revealed extraordinarily high levels of collinearity when all neighborhood contextual variables were entered into the logistic regression models at the same time. Therefore, separate models were estimated with each neighborhood contextual variable entered one at a time into the models for the rebooking and reincarceration dependent variables. First, baseline models were estimated with each neighborhood contextual variable entered into the model by itself. Second, models were estimated where each of the neighborhood contextual variables was entered along with the individual-level variables. The models were estimated in this fashion to determine if the addition of individual-level variables makes the contextual variable of interest nonsignificant.

Rebooking-No Probation Violators Dependent Variable

Table 5.4 details the results of the models that examine the influence of the

neighborhood contextual variables on the log odds of rebooking. Each neighborhood

contextual variable was entered separately in the first set of models, as these variables

had statistically significant impacts on rebooking if they were entered separately rather

than together with the other contextual variables. These models explained small amounts

of variation in the various models. McFadden's R^2 values for these models ranged from

.004 to .009, indicating the baseline models accounted for 0.4% to 0.9% of the variation

in the log odds of being rebooked into KCCF. Hosmer-Lemeshow test results indicated

that using only the neighborhood contextual variables was problematic in terms of a good

fit of the model to the data as the null hypothesis of a good fit could be rejected ($p<.05$)

for all nine models. This indicated a need for additional variables to be added in order to

gain better fitting models.

Eight of the nine neighborhood contextual variables significantly influenced the

log odds of being rebooked into KCCF in the expected direction. As anticipated, higher

levels of concentrated disadvantage ($b=.034$, $p<.01$) and Hispanic heterogeneity

($b=1.211$, $p<.01$) significantly increased the log odds of being rebooked. Also as

hypothesized, higher levels of residential stability and concentrated affluence (ICE)

significantly decreased the log odds of being rebooked into KCCF ($b=-.09$, $p<.01$ and $b=-$

.768, $p<.01$, respectively). Most importantly, all three health-related neighborhood

contextual variables significantly increased the odds of being rebooked, with a one

percent increase in Network180 substance abuse and mental health clients increasing the

odds of rebooking by 12.4% and 5.6% respectively ($Exp(B)=1.124$, $p<.01$;

Exp(B)=1.056, p<.01), and a microgram increase per deciliter in blood lead levels

increasing the odds of being rebooked by 19.8% (Exp(B)=1.198, p<.01). Higher values

on the combined health variable also significantly increased the log odds of being

rebooked into KCCF (b=.068, p<.01). Higher levels of black heterogeneity were

expected to decrease the odds of being rebooked into KCCF, however the model for

black heterogeneity indicates that the opposite was the case, with higher levels of black

heterogeneity significantly increasing the log odds of being rebooked into KCCF

(b=1.446, p<.01).

When individual-level variables were added to each of the baseline models, the

predictive power of the models increased. McFadden's R^2 values increased to values

ranging from 0.057 to 0.058 for all nine baseline models, thus increasing from 0.4% to

0.9% in the baseline models to values ranging from 5.7% to 5.8% in the full models.

Including individual-level variables also increased the percent correctly classified in each

of the models as each of the model chi-square values for the full models was statistically

significant (p<.000). Increases in the percent correctly classified for each neighborhood

contextual variable ranged from 6.1% to 9.6% when comparing the baseline model to the

full model containing both neighborhood context and individual-level variables.

Additionally, Hosmer-Lemeshow test results indicate that the null hypothesis of good

model fit cannot be rejected for each of the nine neighborhood contextual variable

models: concentrated disadvantage (p=.180), ICE (p=.404), black heterogeneity

(p=.243), Hispanic heterogeneity (p=.169), residential stability (p=.239), substance abuse

(p=.403), mental health (p=.103), lead (p=.412), and combined health (p=.248).

Table 5.4. Logistic Regression Results for Each Contextual Variable – Rebooking with No Probation Violations

Contextual Variables	Concentrated Disadvantage		ICE Index		Black Heterogeneity		Hispanic Heterogeneity		Residential Stability	
Individual-level Variables	.034 (.005) 1.035***	.011 (.005) 1.011**	-.768 (.143) .464***	-.233 (.156) .792*	1.446 (.168) 4.246***	.351 (.198) 1.421**	1.211 (.195) 3.358***	.346 (.216) 1.413**	-.090 (.015) .914***	-.033 (.016) .968**
Black		.720 (.062) 2.054***		.742 (.060) 2.101***		.708 (.066) 2.030***		.734 (.061) 2.083***		.729 (.061) 2.073***
Hispanic		.114 (.098) 1.121		.131 (.098) 1.139*		.121 (.098) 1.129		.123 (.098) 1.131		.122 (.098) 1.129
GED/High School Diploma or More		-.226 (.058) .797***		-.228 (.058) .796***		-.231 (.058) .794***		-.228 (.058) .796***		-.232 (.058) .793***
Female		-.372 (.065) .690***		-.371 (.065) .690***		-.370 (.065) .691***		-.371 (.065) .690***		-.372 (.065) .689***
Medical Issue		-.066 (.060) .936		-.066 (.060) .936		-.064 (.060) .938		-.065 (.060) .937		-.068 (.060) .934
Substance Abuse		.189 (.062) 1.208***		.189 (.062) 1.208***		.189 (.062) 1.208***		.189 (.062) 1.208***		.188 (.062) 1.207***
Mental Health		.024 (.107) 1.024		.022 (.107) 1.023		.024 (.107) 1.025		.025 (.107) 1.025		.018 (.107) 1.019
Substance Abuse and Mental Health Issue		.366 (.089) 1.442***		.365 (.089) 1.441***		.368 (.089) 1.444***		.366 (.089) 1.441***		.365 (.089) 1.441***
Occupation		-.085 (.063) .919*		-.083 (.063) .920*		-.087 (.063) .917*		-.084 (.063) .920*		-.085 (.063) .918*
Felony Disposition		-.392 (.070) .676***		-.392 (.070) .676***		-.394 (.070) .675***		-.391 (.070) .676***		-.391 (.070) .676***
Length of Stay - Days		.001 (.000) 1.001		.001 (.000) 1.001		.001 (.000) 1.001		.001 (.000) 1.001		.001 (.000) 1.001
Income Level - Month		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Age at Booking		-.024 (.003) .976***		-.024 (.003) .977***		-.024 (.003) .977***		-.024 (.003) .977***		-.024 (.003) .977***
Constant	-.094 (.034) .910***	.827 (.108) 2.286***	.032 (.027) 1.033***	.850 (.108) 2.341***	-.269 (.047) .764***	.801 (.111) 2.227***	-.224 (.054) .799***	.784 (.115) 2.190***	-.059 (.034) .942**	.827 (.108) 2.286***
McFadden's R^2	0.006	0.058	0.003	0.057	0.009	0.058	0.005	0.057	0.004	0.058

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=6,102

While the inclusion of individual variables increased the amount of variation explained in each of the nine models in Table 5.4, it also caused the magnitude of the logit coefficients to drop substantially, yet all remained statistically significant and in the same direction as in the baseline models. The logit coefficient for concentrated disadvantage dropped from .034 to .011, Hispanic heterogeneity from 1.211 to .346, ICE from -.768 to -.233, residential stability from -.090 to -.033, substance abuse from .117 to .050, mental health from .055 to .024, lead from .180 to .069, combined health from .068 to .029, and black heterogeneity from 1.446 to .351. Overall, the largest declines were for the black and Hispanic heterogeneity measures.

Reincarceration–No Probation Violators Dependent Variable

The results for the logistic regression models that examine the influence of neighborhood contextual variables on the reincarceration dependent variable are found in Table 5.5. These results are similar to those in Table 5.4. That is, the explanatory power of the models increased when individual-level variables were added to the models.

The baseline models in Table 5.5 explain little of the variation in the log odds of being reincarcerated after being released from KCCF. All nine baseline models have McFadden R^2 values ranging from .003 to .007 indicating that only 0.3% to 0.7% of the variation in the log odds of reincarceration is explained by each model. Additionally, Hosmer-Lemeshow tests for the baseline models indicate that the null hypothesis of a good fitting model for each of the nine neighborhood contextual variables could be rejected (p<.05). Coupled with the low McFadden's R^2 values, both sets of measures indicate that the models could be improved by the additional variables.

Table 5.5. Logistic Regression Results for Each Contextual Variable – Reincarceration with No Probation Violations

Contextual Variables	Concentrated Disadvantage		ICE Index		Black Heterogeneity		Hispanic Heterogeneity		Residential Stability	
Individual-level Variables	.032 (.005) 1.032***	.014 (.005) 1.015***	-.773 (.154) .462***	-.378 (.164) .686***	1.255 (.174) 3.508***	.464 (.204) 1.591***	1.112 (.204) 3.040***	.473 (.223) 1.604***	-.073 (.016) .930***	-.033 (.017) .968**
Black		.527 (.065) 1.694***		.552 (.062) 1.737***		.513 (.069) 1.670***		.546 (.063) 1.726		.552 (.063) 1.736
Hispanic		-.081 (.106) .922		-.067 (.106) .936		-.072 (.106) .931		-.070 (.106) .933		-.058 (.106) .944
GED/High School Diploma or More		-.258 (.059) .773***		-.258 (.059) .773***		-.264 (.059) .768***		-.260 (.059) .771***		-.266 (.059) .766***
Female		-.529 (.070) .589***		-.528 (.070) .590***		-.527 (.070) .590***		-.528 (.070) .590***		-.528 (.070) .590***
Medical Issue		-.099 (.062) .905*		-.099 (.062) .906*		-.097 (.062) .907*		-.098 (.062) .907*		-.101 (.062) .904**
Substance Abuse		.085 (.064) 1.089*		.085 (.064) 1.089*		.086 (.064) 1.090*		.086 (.064) 1.090*		.085 (.064) 1.089*
Mental Health		.034 (.114) 1.034		.031 (.114) 1.031		.035 (.114) 1.036		.035 (.114) 1.036		.029 (.114) 1.030
Substance Abuse and Mental Health Issue		.431 (.092) 1.539***		.429 (.092) 1.536***		.434 (.092) 1.543***		.430 (.092) 1.538***		.430 (.092) 1.537***
Occupation		-.081 (.064) .923		-.078 (.064) .925		-.083 (.064) .920*		-.079 (.064) .924		-.081 (.064) .922
Felony Disposition		-.479 (.075) .619***		-.480 (.075) .619***		-.482 (.075) .618***		-.479 (.075) .620***		-.479 (.075) .619***
Length of Stay - Days		.001 (.001) 1.001***		.001 (.001) 1.001***		.001 (.001) 1.001***		.001 (.001) 1.001***		.001 (.001) 1.001***
Income Level - Month		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Age at Booking		-.017 (.003) .984***		-.016 (.003) .984***		-.016 (.003) .984***		-.016 (.003) .984***		-.016 (.003) .984***
Constant	-.789 (.037) .454***	-.007 (.111) .993	-.674 (.028) .510***	.025 (.111) 1.026	-.934 (.050) .393***	-.042 (.114) .959	-.906 (.057) .404***	-.066 (.118) .936	-.741 (.036) .477***	.001 (.111) 1.001
McFadden's R^2	0.005	0.045	0.003	0.044	0.007	0.044	0.004	0.044	0.003	0.044

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=6,102

Eight of the nine neighborhood contextual variables were statistically significant and influenced the log odds of being reincarcerated in the expected direction in the baseline models. Higher levels of concentrated disadvantage significantly increased the log odds of reincarceration (b=.032, p<.01), higher levels of affluence experienced a decrease in the log odds of incarceration (b=-.773, p<.01), higher levels of Hispanic heterogeneity also increased the log odds of reincarceration (b=1.112, p<.01). Higher levels of residential stability also decreased the log odds of reincarceration (b=-.073, p<.01). Most importantly, increased levels of the three health-related variables significantly increased the odds of reincarceration, with a one percent increase in the Network180 substance abuse caseload increasing the odds of reincarceration by 11.3% (Exp(B)=1.113, p<.01), a one percent increase in Network180 mental health cases increasing the odds by 5.9% (Exp(B)=1.059, p<.01), and a one microgram increase in lead per deciliter of blood increasing the odds by17.4% (Exp(B)=1.174. The combined health measure also significantly increased the log odds of being reincarcerated (b=.061, p<.01). Black heterogeneity was the only variable that did not influence reincarceration in the expected way. Rather than reducing the odds of reincarceration, higher levels of black heterogeneity in the neighborhood increased the log odds of reincarceration (b=1.255, p<.01).

As was the case in Table 5.4, the predictive ability of the models in Table 5.5 improved with the addition of individual-level variables. McFadden's R^2 values improved across all models, with the values increasing from the baseline amounts of .003 to .007 to values of either .044 or .045. This translates into the full models accounting for between 4.4% and 4.5% of the variation in the log odds of reincarceration. Hosmer-

Lemeshow test results also improved such that the null hypothesis of a good fitting model

could no longer be rejected: concentrated disadvantage (p=.344), ICE (p=.129), black

heterogeneity (p=.089), Hispanic heterogeneity (p=.386), residential stability (p=.590),

substance abuse (p=.221), mental health (p=.348), lead (p=.303), and combined health

(p=.529). The final indication of improvement in the models with the addition of

individual-level variables in Table 5.5 is that the model chi-square values were all

statistically significant (p<.000), with the percent correctly classified increasing by 1.6 to

1.9% in the full models over the baseline models.

All nine neighborhood contextual variables remained statistically significant in

the full models, and impacted the log odds of reincarceration in the same direction as they

did in the baseline models. However, the magnitude of the contextual effects decreased

substantially when the individual-level variables were added to the models. The logit

coefficient for concentrated disadvantage decreased from .032 to .014, the ICE index

from -.773 to -.378, Hispanic heterogeneity from 1.112 to .473, black heterogeneity from

1.255 to .464, and residential stability from -.073 to -.033. As was the case for

rebooking, the two heterogeneity measures experienced the largest declines once the

individual-level variables were added to the models. Likewise, all health-related

variables remained statistically significant, but their effects were reduced once the

individual variables were included in the reincarceration models. A one percent increase

in Network180 substance abuse cases increased the odds of reincarceration by 5.9%

(Exp(B)=1.059, p<.01), a one percent increase in the Network180 mental health caseload

increased the odds of reincarceration by 2.6% (Exp(B)=1.026, p<.01), and a one

microgram increase in lead per deciliter of blood increased the odds of reincarceration by

7.8% (Exp(B)=1.078, p<.01). Finally, the combined health measure logit effect fell by

about half, from .061 to .031, yet remained statistically significant (p<.05).

Rebooking with No Probation Violations – Composite Health Variable

Due to the multicollinearity issues involving neighborhood contextual variables

identified in Chapter 4, additional logistic regression models were estimated to ascertain

the influence of combinations of neighborhood contextual variables on the two dependent

variables. Table 5.6 focuses on the combined health measure and contains three sets of

equations for the rebooking dependent variable. In Table 5.6 and subsequent tables, the

first two equations use concentrated disadvantage as the measure of economic distress,

the third and fourth equations use the ICE index as the economic measure, while the fifth

and sixth equations drop the economic measure. In each set of equations, the first

equation includes the neighborhood contextual measures alone, while the second adds the

individual predictors.

Each of the baseline models in Table 5.6 does not explain much in the way of

variation in the log odds of rebooking, with each model explaining only .010, or 1%, of

the variation in the log odds of being rebooked into KCCF based on the McFadden's R^2

values. Hosmer-Lemeshow test results for all three baseline models in Table 5.6 found

that the null hypothesis of a good fit could be rejected (p<.05), indicating once again

additional variables may be able to provide a better fitting model.

Table 5.6. Logistic Regression Results – Rebooking with No Probation Violations and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Concentrated Disadvantage	-.020 (.020) .980	-.005 (.021) .995				
ICE Index			.436 (.323) 1.546*	.198 (.339) 1.219		
Black Heterogeneity	1.374 (.305) 3.951***	.121 (.337) 1.129	1.160 (.244) 3.190***	.064 (.271) 1.066	1.188 (.243) 3.282***	.070 (.271) 1.073
Hispanic Heterogeneity	.170 (.560) 1.185	-.118 (.582) .888	.140 (.456) 1.150	-.044 (.474) .957	-.294 (.322) .745	-.239 (.337) .787
Residential Stability	.004 (.025) 1.004	.007 (.026) 1.007	-.010 (.024) .990	.002 (.025) 1.002	-.003 (.024) .997	.005 (.025) 1.005
Combined Health	.046 (.023) 1.047**	.040 (.024) 1.041**	.037 (.019) 1.037**	.039 (.020) 1.039**	.033 (.019) 1.034**	.037 (.020) 1.038**
Individual-level Variables						
Black		.705 (.066) 2.024***		.702 (.066) 2.018***		.706 (.066) 2.026***
Hispanic		.106 (.099) 1.112		.105 (.099) 1.110		.107 (.099) 1.113
GED/High School Diploma or More		-.227 (.058) .797***		-.228 (.058) .796***		-.227 (.058) .797***
Female		-.374 (.065) .688***		-.374 (.065) .688***		-.374 (.065) .688***
Medical Issue		-.070 (.060) .932		-.070 (.060) .932		-.070 (.060) .932
Substance Abuse		.187 (.062) 1.206***		.187 (.062) 1.206***		.187 (.062) 1.206***
Mental Health		.017 (.107) 1.017		.018 (.107) 1.018		.017 (.107) 1.017

Table 5.6—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Substance Abuse and Mental Health Issue		.363 (.089)		.364 (.089)		.363 (.089)
		1.438***		1.439***		1.438***
Occupation		-.087 (.063)		-.087 (.063)		-.087 (.063)
		.917*		.916*		.917*
Felony Disposition		-.386 (.070)		-.385 (.070)		-.386 (.070)
		.680***		.680***		.680***
Length of Stay – Days		.000 (.000)		.000 (.000)		.000 (.000)
		1.000		1.000		1.000
Income Level - Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.024 (.003)		-.024 (.003)		-.024 (.003)
		.976***		.976***		.976***
Constant	-.192 (.104)	.932 (.149)	-.229 (.112)	.908 (.154)	-.142 (.091)	.945 (.141)
	.825**	2.541***	.795**	2.480***	.868*	2.572***
McFadden's R^2	0.010	0.058	0.010	0.058	0.010	0.058

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=6102

Two of the five neighborhood contextual variables in the concentrated disadvantage baseline model were statistically significant, with only one of the variables impacting the log odds of rebooking in the expected direction. The combined health measure significantly increased the log odds of being rebooked into KCCF (b=.046, p<.05). Working in the opposite direction than was expected, black heterogeneity significantly increased the log odds of rebooking (b=1.374, p<.01). The ICE baseline model had three statistically significant neighborhood contextual variables, with two out of the three variables, black heterogeneity and combined health, influencing rebooking in the same manner as in the concentrated disadvantage baseline model. Increased black heterogeneity and combined health significantly raised the log odds of rebooking (b=1.160, p<.01 and b=.037, p<.05, respectively), whereas higher levels of affluence increased the log odds of rebooking (b=.436, p<.10), which is in the opposite direction of what was expected. In the third baseline model without an economic measure, the results again indicate that higher levels of black heterogeneity and combined health increase the log odds of rebooking (b=1.188, p<.01 and b=.033, p<.05, respectively).

Adding individual-level variables to the baseline models in Table 5.6 improves the McFadden R^2 values, which in turn means that the models are able to account for a greater level of variability in the log odds of being rebooked into KCCF. All baseline models had McFadden's R^2 values of .010 while the full models in Table 5.6 have McFadden's R^2 values of .058, indicating that the models with both individual-level and neighborhood contextual variables explain 5.8% of the variation in the log odds of being rebooked into KCCF. The full models are better fitting models as well given that their Hosmer-Lemeshow test values all show that the null hypothesis of a good fit cannot be

rejected: concentrated disadvantage (p=.111), ICE (p=.252), and combined health (p=.218). Additionally, model chi-square values for the three models were all statistically significant (p<.000) with the percentage correctly classified increasing by 5.8% over the baseline model.

With the addition of the individual-level variables, black heterogeneity is no longer statistically significant across all three models in Table 5.6. Combined health was the only neighborhood contextual variable that significantly influenced the log odds of rebooking in each model, with higher levels of combined health issues significantly increasing the log odds of rebooking (b=.040, p<.01, b=.039, p<.01; and b=.037, p<.01, respectively, in equations 2, 4, and 6).

Rebooking with No Probation Violations – Lead Variable

Table 5.7 presents the results of the logistic regression models the neighborhood health variable is the blood lead level. Similar to the findings presented in Table 5.6, each of the baseline models in Table 5.7 explain the same amount of variation in the log odds of being rebooked into KCCF after release. McFadden's R^2 values for all three baseline models are 0.010, that is, 1% of the variation in the odds of being rebooked into KCCF is explained by each of the baseline models. Hosmer-Lemeshow values also indicate that the null hypothesis of a good fitting model can be rejected (p<.05), indicating a need for additional variables to be included to obtain better fitting models.

Table 5.7. Logistic Regression Results – Rebooking with No Probation Violations and Lead

Contextual Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Concentrated Disadvantage	-.011 (.017) .990	.006 (.018) 1.006				
ICE Index			.151 (.330) 1.163	-.040 (.347) .961		
Black Heterogeneity	1.127 (.304) 3.087***	-.049 (.334) .952	1.034 (.258) 2.813***	.012 (.283) 1.013	1.028 (.257) 2.796***	.015 (.282) 1.015
Hispanic Heterogeneity	.118 (.552) 1.125	-.215 (.573) .807	-.002 (.467) .998	-.083 (.486) .920	-.171 (.286) .843	-.040 (.300) .961
Residential Stability	-.017 (.019) .983	-.014 (.020) .986	-.020 (.021) .896	-.014 (.022) .986	-.016 (.019) .984	-.015 (.020) .985
Lead in Neighborhood	.091 (.035) 1.095***	.055 (.036) 1.057*	.081 (.330) 1.084***	.060 (.036) 1.062**	.085 (.033) 1.089***	.059 (.035) 1.061**
Individual-level Variables						
Black		.699 (.067) 2.011***		.697 (.066) 2.008***		.696 (.066) 2.007***
Hispanic		.103 (.099) 1.109		.103 (.099) 1.108		.102 (.099) 1.108
GED/High School Diploma or More		-.227 (.058) .797***		-.228 (.058) .796***		-.228 (.058) .796***
Female		-.374 (.065) .688***		-.374 (.065) .688***		-.374 (.065) .688***
Medical Issue		-.070 (.060) .932		-.070 (.060) .933		-.070 (.060) .933
Substance Abuse		.188 (.062) 1.207***		.188 (.062) 1.207***		188 (.062) 1.207***
Mental Health		.019 (.107) 1.019		.019 (.107) 1.019		.019 (.107) 1.019

Table 5.7—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Substance Abuse and Mental Health Issue		.364 (.089) 1.439***		.364 (.089) 1.439***		.364 (.089) 1.439***
Occupation		-.088 (.063) .916*		-.088 (.063) .916*		-.088 (.063) .916*
Felony Disposition		-.386 (.070) .579***		-.386 (.070) .680***		-.386 (.070) .680***
Length of Stay – Days		.000 (.000) 1.000		.000 (.000) 1.000		.000 (.000) 1.000
Income Level – Month		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Age at Booking		-.024 (.003) .976***		-.024 (.003) .976***		-.024 (.003) .976***
Constant	-.546 (.147) .579***	.699 (.180) 2.012***	-.504 (.113) .604***	.865 (.151) 1.944***	-.479 (.099) .619***	.659 (.141) 1.932***
McFadden's R^2	0.010	0.058	0.010	0.058	0.010	0.058

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=6102

Two of the neighborhood contextual variables are statistically significant in all three models in Table 5.7. Higher levels of black heterogeneity influenced rebooking in the opposite direction of that expected in all three models. This variable increased the log odds of being rebooked in the baseline concentrated disadvantage model (b=1.127, p<.01), in the baseline ICE model (b=1.034, p<.01), and in the lead model (b=1.028, p<.01). The lead variable influenced rebooking in the expected direction, with higher measured blood lead levels increasing the odds of rebooking by 9.5% per microgram increase in lead per deciliter of blood in the concentrated disadvantage model (Exp(B)=1.095, p<.01), in the ICE model by 8.4% (Exp(B)=1.084, p<.01), and in the lead model by 8.9% (Exp(B)=1.089, p<.01).

Adding individual-level variables to the three models in Table 5.7 improved both the McFadden's R^2 values and Hosmer-Lemeshow test results. McFadden's R^2 values increased to 0.058 for all three of the full models in Table 5.7, indicating that the addition of individual-level variables increased the models' ability to explain the variation in the log odds of being rebooked in KCCF to 5.8%. Hosmer-Lemeshow test results for the concentrated disadvantage model (p=.641), ICE model (p=.602), and lead model (p=.535) indicated that the null hypothesis of a good fit could not be rejected. Model chi-square values were statistically significant for all three models (p<.000) with the percent correctly classified increasing by 6.5% over the baseline model with the introduction of the individual-level variables.

Only one of the neighborhood contextual variables retained its statistical significance after the addition of the individual-level variables. Black heterogeneity's was no longer statistically significant after individual-level variables were added to the

model. However, the lead variable remained statistically significance across all three models even with the inclusion of individual-level variables. Higher levels of lead increased the odds of rebooking in the concentrated disadvantage model by 5.7% per microgram increase in lead per deciliter of blood (Exp(B)=1.057, p<.10); increased the odds of rebooking in the ICE model by 6.2% (Exp(B)=1.062, p<.05), and increased the odds of rebooking in the lead model by 6.1% (Exp(B)=1.061, p<.05).

Reincarceration with No Probation Violations – Combined Health

The logistic regression models found in Tables 5.6 and 5.7 were reestimated for the reincarceration dependent variable. These results are detailed in Tables 5.8 and 5.9. Table 5.8 presents the findings from the logistic regression models that examine the combination of neighborhood contextual variables and their influence on the log odds of being reincarcerated after release from KCCF. Concentrated disadvantage and ICE were added to the models that also contain the black and Hispanic heterogeneity, residential mobility, and combined health variables. A third model containing just the combined health, black and Hispanic heterogeneity, and residential mobility variables is also included in Table 5.8. The same three models are estimated in Table 5.9 with the combined health variable replaced by the lead variable.

Table 5.8 presents the findings from the logistic regression models that examine the combination of neighborhood contextual variables and their influence on the log odds of being reincarcerated after release from KCCF. The baseline models, which include the neighborhood contextual variables, account for little in the way of variation in the log odds of being reincarcerated. All three baseline models explain 0.7% of the variation in the log odds of being reincarcerated based on McFadden's R^2 values of .007. Additional

variables can be added to the models to improve model fit as the Hosmer-Lemeshow test results indicate that the null hypothesis for good model fit is rejected (p<.05).

The three baseline models in Table 5.8 show that two of the neighborhood contextual variables are statistically significant. Black heterogeneity influences the reincarceration of those released from KCCF, increasing the log odds of reincarceration in the concentrated disadvantage model (b=1.075, p<.01); increasing the log odds of reincarceration in the ICE model (b=.988, p<.01); and increasing the log odds of reincarceration in the combined health model (b=.992, p<.01). This influence is in the opposite direction of that expected. Higher levels of the combined health variable impacted the log odds of reincarceration in the expected direction by increasing the log odds of reincarceration in the three baseline models. Log odds of reincarceration increased in the concentrated health model (b=.042, p<.05), ICE model (b=.037, p<.05), and combined health model (b=.036, p<.05).

Having individual-level variables added to the three baseline models in Table 5.8 increases the predictive ability of the models. Once the individual-level variables were added, the McFadden's R^2 values increased to .045 for each of the three models. This indicates that the models now account for 4.5% of the variation in the log odds of being reincarcerated after release from KCCF. The Hosmer-Lemeshow test results also indicate that the null hypothesis of a good fit cannot be rejected for the concentrated disadvantage (p=.641), ICE (p=.602), and combined health (p=.535) models. Model chi-square values were also statistically significant (p<.000), with the inclusion of individual-level variables improving the percent correctly classified by 1.7% for all three of the models detailed in Table 5.8.

Table 5.8. Logistic Regression Results – Reincarceration with No Probation Violations and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Concentrated Disadvantage	-.009 (.022) .991	007 (.022) 1.007				
ICE Index			.064 (.345) 1.067	-.152 (.357) .859		
Black Heterogeneity	1.075 (.323) 2.929***	.105 (.353) 1.110	.988 (.256) 2.686***	.177 (.280) 1.193	.992 (.255) 2.698***	.171 (.280) 1.187
Hispanic Heterogeneity	-.001 (.608) .999	-.270 (.626) .763	-.144 (.488) .866	-.261 (.502) .770	-.209 (.343) .811	-.109 (.351) .897
Residential Stability	.013 (.026) 1.013	.009 (.027) 1.009	.009 (.026) 1.009	.014 (.027) 1.014	.010 (.025) 1.010	.012 (.026) 1.012
Combined Health	.042 (.024) 1.043**	.031 (.025) 1.031	.037 (.020) 1.037**	034 (.021) 1.035**	.036 (.020) 1.037**	.035 (.021) 1.036**
Individual-level Variables						
Black		.514 (.069) 1.672***		.516 (.069) 1.674***		.512 (.069) 1.669***
Hispanic		-.086 (.107) .918		-.085 (.107) .919		-.087 (.107) .917
GED/High School Diploma or More		-.259 (.059) .772***		-.258 (.060) .773***		-.259 (.059) .772***
Female		-.530 (.070) .588***		-.530 (.070) .588***		-.530 (.070) .588***
Medical Issue		-.102 (.063) .903**		-.102 (.063) .903**		-.102 (.063) .903**
Substance Abuse		.084 (.064) 1.088*		.084 (.064) 1.088*		.084 (.064) 1.088*
Mental Health		029 (.114) 1.029		028 (.115) 1.028		.029 (.114) 1.030

Table 5.8—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Substance Abuse and Mental Health Issue		.430 (.092)		.429 (.092)		.430 (.092)
		1.537***		1.536***		1.537***
Occupation		-.082 (.064)		-.081 (.064)		-.082 (.064)
		.921*		.922*		.921*
Felony Disposition		-.475 (.075)		-.475 (.075)		-.475 (.075)
		.622***		.622***		.622***
Length of Stay – Days		.001 (.001)		.001 (.001)		.001 (.001)
		1.001***		1.001***		1.001***
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.017 (.003)		-.017 (.003)		-.017 (.003)
		.983***		.983***		.983***
Constant	-.830 (.112)	.098 (.155)	-.821 (.120)	.110 (.160)	-.807 (.097)	.081 (.145)
	.436***	1.103	.440***	1.116	.446***	1.084
McFadden's R^2	0.007	0.045	0.007	0.045	0.007	0.045

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=6102

The statistically significant influence that higher levels of black heterogeneity has on the odds of reincarceration disappear once individual-level variables are introduced to the three models in Table 5.8. Only combined health retains statistically significant in terms of influencing the log odds of reincarceration. Increased levels of combined health issues in zip codes increased the log odds of reincarceration in the ICE model (b=.034, p<.05) and in the combined health model (b=.035, p<.05). No other neighborhood contextual variables were statistically significant.

Reincarceration with No Probation Violators – Lead

Table 5.9 details the logistic regression models where the neighborhood contextual variable lead substitutes for the combined health measure. The black and Hispanic heterogeneity plus residential stability variables are included in these models as does concentrated disadvantage and ICE entered one at a time.

As seen in Tables 5.6, 5.7, and 5.8, the baseline model results in Table 5.9 explain very little in terms of the variation in the log odds of reincarceration. Two of the three baseline models, concentrated disadvantage and lead in neighborhood, yield McFadden's R^2 values of .007, while the ICE baseline model has a McFadden's R^2 value of .008. All three baseline models explain 0.7% and 0.8% of the variation in the log odds of being reincarcerated after release from KCCF. The Hosmer-Lemeshow tests indicate that the null hypothesis of a good fit can be rejected (p<.05), thus there is support for adding in the individual-level variables to gain a better fitting model.

Table 5.9. Logistic Regression Results – Reincarceration with No Probation Violations and Lead

Contextual Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Concentrated Disadvantage	.001 (.019) 1.001	.016 (.019) 1.016				
ICE Index			-.245 (.356) .783	-.398 (.369) .671		
Black Heterogeneity	.849 (.321) 2.337***	-.034 (.348) .967	.846 (.269) 2.330***	.097 (.292) 1.102	.854 (.269) 2.349***	.123 (.291) 1.131
Hispanic Heterogeneity	-.060 (.589) .941	-.344 (.615) .709	-.321 (.502) .725	-.353 (.516) .702	-.045 (.301) .956	.091 (.310) 1.095
Residential Stability	-.006 (.020) .994	-.007 (.021) .993	.000 (.022) 1.000	.002 (.023) 1.002	-.006 (.020) .994	-.008 (.021) .992
Lead in Neighborhood	.079 (.036) 1.083**	.045 (.037) 1.046	-.245 (.356) .783	.064 (.038) 1.067**	.080 (.035) 1.083***	.053 (.036) 1.055*
Individual-level Variables						
Black		.509 (.069) 1.664***		.510 (.069) 1.666***		.503 (.069) 1.654***
Hispanic		-.089 (.107) .915		-.088 (.107) .916		-.092 (.107) .913
GED/High School Diploma or More		-.259 (.059) .772***		-.257 (.060) .774***		-.260 (.059) .771***
Female		-.531 (.070) .588***		-.531 (.070) .588***		-.530 (.070) .589***
Medical Issue		-.102 (.063) .903**		-.102 (.063) .903**		-.101 (.063) .904**
Substance Abuse		.085 (.064) 1.089*		.085 (.064) 1.089*		.085 (.064) 1.089*
Mental Health		.031 (.114) 1.031		.029 (.114) 1.029		.032 (.114) 1.032

Table 5.9—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Substance Abuse and Mental Health Issue		.430 (.092) 1.538***		.429 (.092) 1.536***		.430 (.092) 1.538***
Occupation		-.083 (.064) .920*		-.082 (.064) .921		-.083 (.064) .920*
Felony Disposition		-.476 (.075) .621***		-.475 (.075) .622***		-.475 (.075) .622***
Length of Stay – Days		.001 (.001) 1.001***		.001 (.001) 1.001***		.001 (.001) 1.001***
Income Level – Month		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Age at Booking		-.017 (.003) .983***		-.017 (.003) .983***		-.017 (.003) .983***
Constant	1.141 (.157) .320***	-.087 (.188) .917	-1.104 (.120) .331***	-.123 (.156) .884	-1.145 (.105) .318***	-.185 (.145) .831*
McFadden's R^2	0.007	0.045	0.008	0.045	0.007	0.045

*$p<.10$, **$p<.05$, ***$p<.01$; one-tailed tests; N=6102

Results of the baseline logistic regression models show that two of the

neighborhood contextual variables influence the log odds of reincarceration.

Concentrated disadvantage significantly increased the log odds of reincarceration

(b=.849, p<.01), ICE (b=.846, p<.01), and lead in neighborhood (b=.854, p<.01) baseline

models. The direction of influence for the black heterogeneity variable was not in the

expected direction (b=.849, p<.01). Increasing lead levels increased the odds of

reincarceration in two of the three baseline models. A one microgram increase in lead

per deciliter of blood in the concentrated disadvantage model increased the odds of

reincarceration by 8.3% (Exp(B)=1.083, p<.05).

With the addition of individual-level variables to the baseline models in Table 5.9,

the values for McFadden's R^2 increased to .045, indicating that adding individual-level

variables to the baseline models helps account for 4.5% of the variation in the log odds of

reincarceration. Furthermore, the Hosmer-Lemeshow test for the concentrated

disadvantage model (p=.242), ICE model (p=.105), and lead model (p=.452) indicate that

the null hypothesis of a good fit can no longer be rejected, indicating that all three models

have improved their fit over the baseline models. Adding individual-level variables to

the baseline models produced statistically significant model chi-square tests (p<.000), as

well as increased the percentage correctly classified by 1.7% across all three models in

Table 5.9.

Black heterogeneity's influence on the log odds of reincarceration disappears

once individual-level variables are introduced to the three models in Table 5.9. The

influence of lead levels is still statistically significant in two of the three models. One

microgram increase in lead per deciliter of blood in the ICE model increased the odds of

reincarceration by 6.7% (Exp(B)=1.067, p<.05), while it increased the odds of

reincarceration by 5.5% (Exp(B)=1.055, p<.10) in the lead model.

Interaction Models

Interaction effects for the black and Hispanic dummy variables were included in the

logistic regression models because one of the hypotheses in this study indicates that

blacks and Hispanics will experience greater log odds of being rebooked or

reincarcerated if they are in neighborhoods characterized by higher levels of concentrated

disadvantage, residential instability, and health issues. In order to test whether separate

logistic regression models for different race and ethnic groups should be estimated,

interaction terms multiplying the black and Hispanic dummy variables by each of the

neighborhood contextual variables were included in the logistic regression models for

each of the rebooking and reincarceration dependent variables.

The models for blacks and the rebooking dependent variable indicated that

separate models based on race would be appropriate. For both the Concentrated

Disadvantage and ICE models, the Step/Block significance levels were below .05

(p<.000) which indicates that separate models based on race are appropriate. For the

reincarceration dependent variable, the same results were obtained with significance

levels below .05 (p<.000). However, interaction effects for the Hispanic dummy variable

failed to be statistically significant in the concentrated disadvantage model (p=.604) and

ICE model (p=.810). Based on these results, separate models for those classified as black

and those from other races were estimated with the results of these models presented

below.

Rebooking with No Probation Violations – Non-Black

Table 5.10 presents the results of the models that estimated the influence of each neighborhood contextual variable on the log odds of being rebooked into KCCF for non-blacks. As was the case for the models detailed in Tables 5.3 and 5.4, each of the neighborhood contextual variables was entered one at a time due to the collinearity issues that present themselves when all neighborhood contextual variables are enter into the models simultaneously.

Baseline models in Table 5.10 for each of the neighborhood contextual variables account for small levels of variation in the log odds of being rebooked into KCCF for non-blacks. McFadden's R^2 values of .001 or .002 reported for each of the neighborhood contextual variables indicate that only 0.1% to 0.2% of the variation in the log odds of being rearrested is explained by each of the baseline models. Even though the baseline models in Table 5.10 account for low amounts of variation in the log odds of being rebooked into KCCF, Hosmer-Lemeshow test results indicate that eight of the nine baseline models are good fitting models as the null hypothesis of a good fit cannot be rejected. The eight baseline models that are good fitting models include concentrated disadvantage (p=.257), ICE (p=.636), black heterogeneity (p=.384), Hispanic heterogeneity (p=.167), residential stability (p=.185), mental health (p=.397), lead (p=.136), and combined health (p=.118). The only baseline model where the Hosmer-Lemeshow test indicates that the null hypothesis of a good fit could be rejected was for substance abuse (p=.032). Taken together with the McFadden's R^2 values, the addition of individual-level variables is still warranted to ascertain if a better fitting model can be obtained.

Table 5.10. Logistic Regression Results – Rebooking with No Probation Violations – Non-Black

Contextual Variables	Concentrated Disadvantage		ICE Index		Black Heterogeneity		Hispanic Heterogeneity	
Individual-level Variables	.020 (.007) 1.020***	.010 (.008) 1.010*	-.562 (.203). .570***	-.264 (.218) .768	.696 (.258) 2.006***	.462 (.276) 1.587**	.746 (.284) 2.108***	.326 (.308) 1.385
Hispanic		.174 (.102) 1.191**		.185 (.100) 1.203**		.166 (.101) 1.181**		.183 (.102) 1.201**
GED/High School Diploma or More		-.189 (.079) .828***		-.188 (.079) .829***		-.195 (.079) .823***		-.191 (.079) .826***
Female		-.187 (.088) .830**		-.185 (.088) .831**		-.186 (.088) .830**		-.185 (.088) .831**
Medical Issue		.017 (.081) 1.017		.016 (.081) 1.016		.021 (.081) 1.021		.017 (.081) 1.017
Substance Abuse		.290 (.085) 1.336***		.291 (.085) 1.337***		.288 (.085) 1.334***		.290 (.085) 1.336***
Mental Health		.054 (.135) 1.056		.054 (.135) 1.055		.050 (.135) 1.051		.055 (.135) 1.057
Substance Abuse and Mental Health Issue		.400 (.111) 1.492***		.401 (.111) 1.493***		.397 (.111) 1.488***		.401 (.111) 1.493***
Occupation		-.180 (.088) .835**		-.179 (.088) .836**		-.182 (.088) .834**		-.180 (.088) .836**
Felony Disposition		-.472 (.094) .624***		-.473 (.094) .623***		-.475 (.094) .622***		-.472 (.094) .624***
Length of Stay – Days		.001 (.001) 1.001*		.001 (.001) 1.001*		.001 (.001) 1.001*		.001 (.001) 1.001*
Income Level – Month		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Age at Booking		-.018 (.003) .982***		-.018 (.003) .982***		-.018 (.003) .982***		-.018 (.003) .982***
Constant	-.344 (.042) .709***	.530 (.145) 1.698***	-.288 (.035) .749***	.552 (.144) 1.736***	-.399 (.057) .671***	.488 (.149) 1.630***	-.437 (.070) .646***	.489 (.156) 1.631***
McFadden's R^2	0.002	0.028	0.002	0.028	0.002	0.029	0.002	0.028

Table 5.10—Continued

Contextual Variables	Residential Stability		Substance Abuse in Neighborhood		Mental Health in Neighborhood		Lead in Neighborhood		Combined Health	
Individual-level Variables	-.047 (.019) .954***	-.034 (.020) .967**	.066 (.024) 1.068***	.040 (.026) 1.040*	.031 (.011) 1.031***	.020 (.012) 1.020**	.072 (.032) 1.075***	.045 (.034) 1.046*	.033 (.012) 1.033***	.021 (.013) 1.021**
Hispanic		.178 (.099) 1.195**		.176 (.100) 1.192**		.175 (.100) 1.191**		.183 (.100) 1.200**		.174 (.100) 1.190**
GED/High School Diploma or More		-.195 (.079) .823***		-.190 (.079) .827***		-.190 (.079) .827***		-.194 (.079) .824***		.190 (.079) .827***
Female		-.189 (.088) .828**		-.190 (.088) .827**		-.190 (.088) .827**		-.188 (.088) .829**		-.190 (.088) .827**
Medical Issue		.011 (.081) 1.011		.012 (.081) 1.012		.011 (.081) 1.012		.014 (.081) 1.014		.012 (.081) 1.012
Substance Abuse		.287 (.085) 1.333***		.288 (.085) 1.334***		.288 (.085) 1.334***		.289 (.085) 1.336***		.289 (.085) 1.334***
Mental Health		.048 (.135) 1.049		.051 (.135) 1.052		.050 (.135) 1.052		.049 (.135) 1.051		.050 (.135) 1.051
Substance Abuse and Mental Health Issue		.400 (.111) 1.492***		.400 (.111) 1.491***		.401 (.111) 1.493***		.398 (.111) 1.489***		.399 (.111) 1.491***
Occupation		-.181 (.088) .834**		-.181 (.088) .834**		-.181 (.088) .835**		.183 (.088) .833**		.182 (.088) .834**
Felony Disposition		-.473 (.094) .623***		-.470 (.094) .625***		-.470 (.094) .625***		-.470 (.094) .625***		-.470 (.094) .625***
Length of Stay – Days		.001 (.001) 1.001*		.001 (.001) 1.001*		.001 (.001) 1.001*		.001 (.001) 1.001*		.001 (.001) 1.001*
Income Level – Month		.000 (.000) 1.000***		.000 (.000) 1.000***		000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Age at Booking		-.018 (.003) .982***		-.018 (.003) .982***		-.018 (.003) .982***		-.018 (.003) .982***		-.018 (.003) .982***
Constant	-.330 (.040) .719***	.532 (.144) 1.703***	-.432 (.066) .649***	.477 (.152) 1.610***		.456 (.155) 1.578***	-.530 (.116) .589***	.413 (.179) 1.511***		.585 (.145) 1.796***
McFadden's R^2	0.001	0.029	0.002	0.029	0.002	0.029	0.001	0.028		0.028

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=3303

Eight of the nine neighborhood contextual variables influenced the log odds of being rebooked into KCCF for non-blacks in the hypothesized directions. Concentrated disadvantage increased the log odds of rebooking (b=.020, p<.01), while higher ICE values decreased the log odds of rebooking (b=-.562, p<.01). Hispanic heterogeneity increased the log odds of rebooking (b=.746, p<.01), whereas increased levels of residential stability decreased the log odds of rebooking (b=-.047, p<.01). All four baseline models involving health-related variables showed that higher values of these contextual variables increased the log odds of being rebooked into KCCF for non-blacks – higher substance abuse in the neighborhood (b=.066, p<.01), higher mental health issues in neighborhood (b=.031, p<.01), increased lead levels in the neighborhood (b=.072, p<.01), and combined health issues (b=.033, p<.01). The only neighborhood contextual variable that did not impact rebooking in the expected direction was black heterogeneity. Higher levels of black heterogeneity in the neighborhood, rather than decreasing the log odds of recidivism, significantly increased the log odds of rebooking (b=.696, p<.01).

Including individual-level variables in each of the nine models in Table 5.10 increased the amount of variation explained in the log odds of being rebooked into KCCF for non-blacks. McFadden's R^2 values increased from the .001 and .002 levels found in the baseline models to .028 and .029 in the full models, indicating that models containing both neighborhood contextual and individual-level variables increased the amount of explained variation in the log odds of being rebooked by 2.8% to 2.9%. Each of the nine full models in Table 5.10 indicate a good fit with Hosmer-Lemeshow tests indicating that the null hypothesis of a good fit cannot be rejected: concentrated disadvantage (p=.575),

ICE (p=.594), black heterogeneity (p=.045), Hispanic heterogeneity (p=.607), residential stability (p=.425), substance abuse in neighborhood (p=.533), mental health in neighborhood (p=.390), lead in neighborhood (p=.091), and combined health (p=.609). Additionally, statistically significant model chi-square values (p<.000) and an increase in the percent correctly classified of between 1.6% and 2.2% for the nine models indicate these are better fitting models.

Seven of the nine neighborhood contextual variables retained statistical significance once individual-level variables were added to the models. Six of these seven variables continued to influence the log odds of rebooking into KCCF for non-blacks in the hypothesized directions, although the magnitude of this influence declined from the baseline models. The logit coefficients decreased for the concentrated disadvantage (.020 to .010), black heterogeneity (.696 to .462), residential stability (-.047 to -.034), substance abuse in neighborhood (.066 to .040), mental health in neighborhood (.031 to .020), lead in neighborhood (.072 to .045), and combined health (.033 to .021) models. Two variables that had statistically significant effects on the log odds of rebooking in the baseline models, ICE and Hispanic heterogeneity, did not retain their statistical significance once the individual-level variables were added to the baseline models.

Rebooking with No Probation Violations – Black

Logistic regression models similar to those found in Table 5.10 are detailed in Table 5.11. These tables estimate the influence of neighborhood contextual and individual-level variables on the log odds of being rebooked for blacks released from KCCF.

Table 5.11. Logistic Regression Results – Rebooking with No Probation Violations – Black

Contextual Variables	Concentrated Disadvantage		ICE Index		Black Heterogeneity		Hispanic Heterogeneity	
Individual-level Variables	.008 (.007) 1.008	.011 (.007) 1.011*	-.138 (.219) .871	-.218 (.227) .804	.127 (.277) 1.136	.195 (.287) 1.216	.261 (.294) 1.298	.368 (.305) 1.444
Hispanic		-.276 (.087) .759***		-.277 (.087) .758***		-.278 (.087) .758***		-.276 (.087) .759***
GED/High School Diploma or More		.588 (.096) .556***		-.588 (.096) .555***		-.588 (.096) .556***		-.588 (.096) .556***
Female		-.154 (.089) .857**		-.153 (.089) .858**		-.154 (.089) .858**		-.153 (.089) .858**
Medical Issue		.095 (.092) 1.100		.095 (.092) 1.099		.097 (.092) 1.101		.096 (.092) 1.100
Substance Abuse		-.048 (.175) .953		-.050 (.175) .951		-.042 (.175) .959		-.047 (.175) .955
Mental Health		.322 (.149) 1.380**		.320 (.149) 1.377**		.327 (.149) 1.387***		.320 (.149) 1.377**
Substance Abuse and Mental Health Issue		.035 (.091) 1.035		.037 (.091) 1.038		.034 (.091) 1.034		.036 (.091) 1.036
Occupation		-.332 (.106) .718***		-.331 (.106) .718***		-.332 (.106) .718***		-.331 (.106) .718***
Felony Disposition		.000 (.001) 1.000		.000 (.001) 1.000		.000 (.001) 1.000		.000 (.001) 1.000
Length of Stay – Days		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Income Level – Month		-.029 (.004) .971***		-.029 (.004) .971***		-.029 (.004) .971***		-.029 (.004) .971***
Age at Booking	.008 (.007) 1.008	.011 (.007) 1.011*	-.138 (.219) .871	-.218 (.227) .804	.127 (.277) 1.136	.195 (.287) 1.216	.261 (.294) 1.298	.368 (.305) 1.444
Constant	.433 (.061) 1.542***	1.858 (.155) 6.412***	.475 (.043) 1.609***	1.906 (.151) 6.728***	.448 (.094) 1.565***	1.864 (.171) 6.452***	.415 (.091) 1.514***	1.825 (.169) 6.203***
McFadden's R^2	0.000	0.048	0.000	0.047	0.000	0.047	0.000	0.047

Table 5.11—Continued

Contextual Variables	Residential Stability		Substance Abuse in Neighborhood		Mental Health in Neighborhood		Lead in Neighborhood		Combined Health	
Individual-level Variables	-.014 (.029) .986	-.021 (.030) .979	.048 (.028) 1.049**	.058 (.029) 1.059**	.023 (.014) 1.023**	.028 (.015) 1.029**	.079 (.038) 1.083**	.092 (.040) 1.097***	.031 (.016) 1.031**	.037 (.016) 1.038***
Hispanic		-.280 (.086) .756***		-.275 (.087) .759***		-.276 (.087) .759***		-.273 (.087) .761***		-.274 (.087) .760***
GED/High School Diploma or More		-.587 (.096) .556***		-.585 (.096) .557***		-.586 (.096) .557***		-.586 (.096) .557***		-.585 (.096) .557***
Female		-.152 (.089) .859**		-.153 (.089) .858**		-.154 (.089) .857**		-.155 (.089) .856**		-.154 (.089) .857**
Medical Issue		.096 (.092) 1.101		.094 (.092) 1.099		.094 (.092) 1.098		.096 (.092) 1.101		.094 (.092) 1.099
Substance Abuse		-.048 (.175) .953		-.056 (.175) .946		-.058 (.175) .944		-.037 (.175) .964		-.053 (.175) .949
Mental Health		.320 (.149) 1.378**		.314 (.149) 1.369**		.314 (.149) 1.369**		.322 (.149) 1.380**		.315 (.149) 1.370**
Substance Abuse and Mental Health Issue		.036 (.091) 1.036		.036 (.091) 1.037		.037 (.091) 1.038		.030 (.091) 1.030		.034 (.091) 1.035
Occupation		-.330 (.106) .719***		-.327 (.106) .721***		-.328 (.106) .721***		-.322 (.106) .725***		-.324 (.106) .723***
Felony Disposition		.000 (.001) 1.000		.000 (.001) 1.000		.000 (.001) 1.000		.000 (.001) 1.000		.000 (.001) 1.000
Length of Stay – Days		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Income Level – Month		-.029 (.004) .971***		-.029 (.004) .971***		-.029 (.004) .971***		-.029 (.004) .971***		-.030 (.004) .971***
Age at Booking	-.014 (.029) .986	-.021 (.030) .979	.048 (.028) 1.049**	.058 (.029) 1.059**	.023 (.014) 1.023**	.028 (.015) 1.029**	.079 (.038) 1.083**	.092 (.040) 1.097***	.031 (.016) 1.031**	.037 (.016) 1.038***
Constant	.461 (.067) 1.585***	1.883 (.158) 6.576***	.344 (.093) 1.410***	1.763 (.169) 5.828***	.323 (.108) 1.381***	1.735 (.178) 5.666***	.149 (.166) 1.161	1.552 (.217) 4.721	.460 (.041) 1.584***	1.910 (.150) 6.751***
McFadden's R^2	0.000	0.047	0.000	0.048	0.000	0.048	0.001	0.048	0.001	0.048

*$p<.10$, **$p<.05$, ***$p<.01$; one-tailed tests; N=2799

Baseline models in Table 5.11 explain small amounts of the variation in the log odds of being rebooked into KCCF for blacks. McFadden's R^2 values range from .000 to .001, indicating that less than .1% to .1% of the variation was explained for in the log odds of rebooking for blacks in the baseline models. All nine baseline models – concentrated disadvantage (p=.578), ICE (p=.355), black heterogeneity (p=.148), Hispanic heterogeneity (p=.126), residential stability (p=.057), substance abuse in neighborhood (p=.324), mental health in neighborhood (p=.045), lead (p=.132), and combined health (p=.362) – have Hosmer-Lemeshow tests that indicate that the null hypothesis of a good fit cannot be rejected. Although there is little variation explained in the log odds of rebooking for blacks, the baseline models appear to fit well.

Contrary to the findings in Table 5.10, only the health-related neighborhood contextual variables had a statistically significant influence on the log odds of rebooking for blacks in the baseline models. All four health-related variables influenced the odds of rebooking in the expected directions. Higher levels of substance abuse, mental health issues, and combined health issues increased the log odds of rebooking for blacks (b=.048, p<.05; b=.023, p<.05; and b=.031, p<.05 respectively). A one microgram increase in lead per deciliter of blood also increased the odds of rebooking for blacks by 8.3% (Exp(B)=1.083, p<.05).

McFadden's R^2 values improved with the addition of individual-level variables to the baseline models. Results in Table 5.11 indicate that the McFadden's R^2 values increased to between .047 and .048 in each of the nine models, indicating that the full models account for increased levels of variation in the log odds of rebooking for blacks by between 4.7% and 4.8%. Hosmer-Lemeshow test results for all nine models –

concentrated disadvantage (p=.414), ICE (p=.549), black heterogeneity (p=.389),

Hispanic heterogeneity (p=.405), residential stability (p=.516), substance abuse in

neighborhood (.803), mental health in neighborhood (p=.550), lead in neighborhood

(.519), and combined health (p=.818) – also show that the introduction of individual-level

variables continued to indicate that the null hypothesis of a good fit could not be rejected.

Inclusion of individual-level variables in all nine models detailed in Table 5.11 resulted

in statistically significant model chi-square values (p<.000) and assisted with an increase

in the percent correctly classified by 1.8% to 2.2% for each model.

One additional neighborhood contextual variable reached statistical significance

with the introduction of individual-level variables into the baseline models. Higher levels

of concentrated disadvantage increased the log odds of rebooking for blacks (b=.011,

p<.10). This influence was in the expected direction. All four health-related

neighborhood contextual variables retained their statistically significant influence on the

log odds of being rebooked for blacks with the influence occurring in the expected

direction. Contrary to previous models, the addition of individual-level variables to the

baseline models increased the magnitude of the logit coefficient values in all four health-

related variables. The logit coefficient values increased in the substance abuse in

neighborhood (.048 to .058), mental health issues in neighborhood (.023 to .028), lead in

neighborhood (.079 to .092), and combined health issues in the neighborhood (.031 to

.037).

Reincarceration with No Probation Violations – Non-Black

Table 5.12 details the estimated logistic regression models that examine the influence of neighborhood contextual and individual-level variables on the log odds of being reincarcerated in KCCF for non-blacks.

McFadden's R^2 values that range between .001 and .002 for each of the nine baseline models in Table 5.12 indicate that 0.1% to 0.2% of the variation in the log odds of reincarceration for non-blacks is explained by the inclusion of neighborhood contextual variables in the baseline models. As in Tables 5.10 and 5.11, Hosmer-Lemeshow tests indicate that all nine baseline models – concentrated disadvantage (p=.896), ICE (p=.884), black heterogeneity (p=.259), Hispanic heterogeneity (p=.553), residential stability (p=.539), substance abuse in neighborhood (p=.446), mental health in neighborhood (p=.870), lead in neighborhood (p=.558), and combined health (p=.838) – provide a good fit as the null hypothesis of a good fit cannot be rejected.

Results of the baseline models indicate that eight of the nine neighborhood contextual variables influence the log odds of reincarceration for non-blacks in the expected directions. Higher ICE values reduced the log odds of reincarceration (b=-.568, p<.01), while higher values of residential stability decreased the log odds of reincarceration (b=-.042, p<.05). Increased levels of concentrated disadvantage increased the log odds of reincarceration (b=.017, p<.01) with high levels of Hispanic heterogeneity increasing the log odds of reincarceration of non-blacks (b=.537, p<.05). Higher levels of the health-related variables also produced a significant increase in the log odds of reincarceration for substance abuse (b=.064, p<.01), mental health (b=.027, p<.01), and combined health (b=.031, p<.02). One microgram of lead increase per deciliter of blood

increased the odds of reincarceration for non-blacks by 7.3% (Exp(B)=1.073, p<.01).

Black heterogeneity increased the log odds of reincarceration for non-blacks (b=.427,

p<.01), which was in the opposite direction than expected.

Adding individual-level variables to the baseline models worked to increase each

full model's ability to account for increased levels of variation in the log odds of

reincarceration for non-blacks. Table 5.12 indicates the McFadden's R^2 values for all

nine models stand at .022, or 2.2% of the expected variation in the log odds of

reincarceration is explained by each model. Likewise, the addition of individual-level

variables helps all nine models retain their good fit. Hosmer-Lemeshow test results for

all nine full models – concentrated disadvantage (p=.431), ICE (p=.716), black

heterogeneity (p=.913), Hispanic heterogeneity (p=.957), residential stability (p=.909),

substance abuse in neighborhood (p=.829), mental health in neighborhood (p=.305), lead

in neighborhood(p=.956), and combined health (p=.874) – show that the addition of

individual-level variables did not change test results as well as not changing the findings

that the null hypothesis of a good fit cannot be rejected. Although the model chi-square

values for the nine models were statistically significant (p<.000), the addition of

individual-level variables to the baseline models did not improve the percent correctly

classified.

Table 5.12. Logistic Regression Results – Reincarceration with No Probation Violations – Non-Black

Contextual Variables	Concentrated Disadvantage		ICE Index		Black Heterogeneity		Hispanic Heterogeneity	
Individual-level Variables	.017 (.008) 1.017***	.013 (.008) 1.013*	-.568 (.226) .567***	-.433 (.241) .649**	.427 (.282) 1.532*	.349 (.300) 1.418	.537 (.312) 1.712**	.333 (.337) 1.395
Hispanic		-.002 (.111) .998		.001 (.109) 1.001		.013 (.110) 1.013		.018 (.110) 1.018
GED/High School Diploma or More		-.129 (.086) .879*		-.124 (.086) .884*		-.139 (.086) .870**		-.134 (.086) .875*
Female		-.320 (.098) .726***		-.319 (.098) .727***		-.317 (.098) .729***		-.316 (.098) .729***
Medical Issue		-.032 (.089) .968		-.033 (.089) .967		-.029 (.089) .972		-.031 (.089) .969
Substance Abuse		.100 (.093) 1.105		.101 (.093) 1.107		.099 (.093) 1.104		.101 (.093) 1.106
Mental Health		.008 (.151) 1.008		.007 (.151) 1.007		.005 (.151) 1.005		.009 (.151) 1.009
Substance Abuse and Mental Health Issue		.468 (.119) 1.597***		.469 (.119) 1.599***		.467 (.119) 1.594***		.469 (.119) 1.598***
Occupation		-.189 (.094) .828**		-.187 (.094) .830**		-.190 (.094) .827**		-.188 (.094) .828**
Felony Disposition		-.538 (.107) .584***		-.538 (.107) .584***		-.542 (.107) .582***		-.539 (.107) .583***
Length of Stay – Days		.002 (.001) 1.002**		.002 (.001) 1.002**		.002 (.001) 1.002**		.002 (.001) 1.002**
Income Level – Month		.000 (.000) 1.000**		.000 (.000) 1.000**		.000 (.000) 1.000**		.000 (.000) 1.000**
Age at Booking		-.013 (.004) .987***		-.013 (.004) .987***		-.012 (.004) .988***		-.012 (.004) .988***
Constant	-.988 (.047) .372***	-.232 (.157) .793*	-.943 (.039) .390***	-.025 (.155) .815*	-1.005 (.062) .366***	-.252 (.161) .777*	-1.046 (.077) .351***	-.268 (.169) .765*
McFadden's R^2	0.001	0.022	0.002	0.022	0.001	0.022	0.001	0.022

Table 5.12—Continued

Contextual Variables	Residential Stability		Substance Abuse in Neighborhood		Mental Health in Neighborhood		Lead in Neighborhood		Combined Health	
Individual-level Variables	-.042 (.020) .959**	-.040 (.021) .961**	.064 (.026) 1.066***	.056 (.028) 1.058**	.027 (.012) 1.028***	.024 (.013) 1.024**	.070 (.035) 1.073**	.062 (.037) 1.064**	.031 (.013) 1.032***	.028 (.014) 1.028**
Hispanic		.007 (.108) 1.007		-.006 (.109) .994		.001 (.109) 1.001		.006 (.109) 1.006		-.004 (.109) .996
GED/High School Diploma or More		-.137 (.086) .872*		-.129 (.086) .879*		-.131 (.086) .877*		-.135 (.086) .874*		-.131 (.086) .877*
Female		-.322 (.098) .725***		-.325 (.098) .723***		-.324 (.098) .723***		-.322 (.098) .725***		-.325 (.098) .723***
Medical Issue		-.039 (.089) .962		-.038 (.089) .962		-.039 (.089) .962		-.037 (.089) .964		-.039 (.089) .962
Substance Abuse		.097 (.093) 1.102		.098 (.093) 1.103		.098 (.093) 1.103		.099 (.093) 1.104		.098 (.093) 1.103
Mental Health		.001 (.151) 1.001		.003 (.151) 1.003		.003 (.151) 1.003		.001 (.151) 1.001		.002 (.151) 1.002
Substance Abuse and Mental Health Issue		.469 (.119) 1.599***		.468 (.119) 1.597***		.470 (.119) 1.599***		.466 (.119) 1.594***		.468 (.119) 1.596***
Occupation		-.190 (.094) .827**		-.190 (.094) .827**		-.189 (.094) .827**		-.192 (.094) .825**		-.191 (.094) .827**
Felony Disposition		-.540 (.107) .583***		-.535 (.108) .586***		-.536 (.107) .585***		-.536 (.108) .585***		-.535 (.108) .586***
Length of Stay – Days		.002 (.001) 1.002**		.002 (.001) 1.002**		.002 (.001) 1.002**		.002 (.001) 1.002**		.002 (.001) 1.002**
Income Level – Month		.000 (.000) 1.000**		.000 (.000) 1.000**		.000 (.000) 1.000**		.000 (.000) 1.000**		.000 (.000) 1.000**
Age at Booking		-.012 (.004) .988***		-.013 (.004) .987***		-.013 (.004) .987***		-.013 (.004) .987***		-.013 (.004) .987***
Constant	-.977 (.045) .376***	-.228 (.156) .796*	-1.082 (.073) .339***	-.311 (.165) .733**	-1.089 (.081) .336***	-.322 (.168) .725**	-1.177 (.128) .308***	-.386 (.193) .673**	-.910 (.040) .402***	-.159 (.157) .853
McFadden's R^2	0.001	0.022	0.002	0.022	0.001	0.022	0.001	0.022	0.001	0.022

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=3303

Seven of the nine neighborhood contextual variables retained their statistical significance after individual-level variables were added to the baseline models in Table 5.12. All seven of these variables influenced the log odds of reincarceration of non-blacks in the expected directions. The magnitude of the logit coefficient values decreased for concentrated disadvantage (.017 to .013), ICE (-.568 to -.433), residential stability (-.042 to -.040), substance abuse (.064 to .056), mental health (.027 to .024), lead (.070 to .062), and combined health (.031 to .028). Black and Hispanic heterogeneity variables failed to retain their statistically significant influence on the log odds of reincarceration for non-blacks after the addition of the individual-level variables to the baseline models.

Reincarceration with No Probation Violations – Black

Table 5.13 presents the results of the logistic regression models that sought to determine the influence of neighborhood contextual and individual-level variables on the reincarceration in KCCF of blacks.

Results in Table 5.13 indicate that small percentages of the variation in the log odds of being reincarcerated in KCCF for blacks are explained by the neighborhood contextual variables in each of the nine baseline models. The explained variation, as evidenced by McFadden's R^2 values ranging from .000 to .001, equates to or is lower than 0.1%. Even with low McFadden's R^2 values, Hosmer-Lemeshow test results indicate that the baseline models fit well. Test results for the concentrated disadvantage (p=.771), ICE (p=.728), black heterogeneity (p=.408), Hispanic heterogeneity (p=.191), residential stability (p=.061), substance abuse in neighborhood (p=.213), mental health in neighborhood (p=.202), lead in neighborhood (p=.208), and combined health (p=.318) models indicate that the null hypothesis of a good fit cannot be rejected. As was done

with the baseline models in Tables 5.10, 5.11, and 5.12, individual-level variables were added to ascertain whether or not each of the baseline models could be improved.

Eight of the nine neighborhood contextual variables entered in the baseline models had a statistically significant impact on the log odds of reincarceration for blacks. Out of these eight neighborhood contextual variables, seven variables influenced the log odds of reincarceration in the predicted directions. Higher ICE values witnessed a reduction in the log odds of reincarceration (b=-.316, p<.05). As concentrated disadvantage and Hispanic heterogeneity values increased, the log odds of reincarceration increased (b=.017, p<.05; b=.537, p<.05).. Higher values of health-related neighborhood contextual variables increased the log odds of reincarceration for blacks in the baseline models examining neighborhood levels of substance abuse (b=.055, p<.05), mental health (b=.025, p<.05), and for combined health (b=.033=1.034, p<.05). An increase of one microgram of lead per deciliter of blood in neighborhoods increased the odds of reincarceration of blacks by 8.6% (Exp(B)=1.086, p<.05). The black heterogeneity variable did not impact the odds of incarceration for blacks in the expected direction, as increased levels of this variable worked to increase the log odds of incarceration of blacks (b=.489, p<.05).

Table 5.13. Logistic Regression Results – Reincarceration with No Probation Violations – Black

Contextual Variables	Concentrated Disadvantage		ICE Index		Black Heterogeneity		Hispanic Heterogeneity	
Individual-level Variables	.014 (.007) 1.014**	.015 (.007) 1.015**	-.316 (.218) .729*	-.345 (.224) .708*	.489 (.273) 1.631**	.527 (.282) 1.693**	.549 (.290) 1.731**	.588 (.299) 1.800**
Hispanic		-.379 (.083) .684***		-.381 (.083) .683***		-.381 (.083) .683***		-.380 (.083) .684***
GED/High School Diploma or More		-.738 (.101) .478***		-.739 (.101) .478***		-.737 (.101) .478***		-.738 (.101) .478***
Female		-.163 (.089) .850**		-.162 (.088) .851**		-.163 (.088) .850**		-.161 (.088) .851**
Medical Issue		.083 (.089) 1.087		.082 (.089) 1.085		.086 (.089) 1.090		.084 (.089) 1.087
Substance Abuse		.037 (.178) 1.038		.033 (.178) 1.034		.046 (.178) 1.047		.039 (.178) 1.040
Mental Health		.350 (.147) 1.420***		.345 (.147) 1.412***		.362 (.147) 1.436***		.346 (.147) 1.414***
Substance Abuse and Mental Health Issue		.021 (.088) 1.021		.024 (.088) 1.024		.017 (.088) 1.017		.022 (.088) 1.022
Occupation		-.440 (.107) .644***		-.439 (.107) .645***		-.441 (.107) .643***		-.439 (.107) .645***
Felony Disposition		.001 (.001) 1.001**		.001 (.001) 1.001**		.001 (.001) 1.001**		.001 (.001) 1.001**
Length of Stay – Days		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Income Level – Month		-.020 (.004) .981***		-.020 (.004) .981***		-.019 (.004) .981***		-.019 (.004) .981***
Age at Booking	.014 (.007) 1.014**	.015 (.007) 1.015**	-.316 (.218) .729*	-.345 (.224) .708*	.489 (.273) 1.631**	.527 (.282) 1.693**	.549 (.290) 1.731**	.588 (.299) 1.800**
Constant	-.408 (.061) .665***	.708 (.148) 2.030***	-.341 (.043) .711***	.774 (.143) 2.168***	-.465 (.093) .628***	.645 (.164) 1.906***	-.467 (.090) .627***	.642 (.162) 1.901***
McFadden's R^2	0.001	0.042	0.001	0.041	0.001	0.041	0.000	0.042

Table 5.13—Continued

Contextual Variables	Residential Stability		Substance Abuse in Neighborhood		Mental Health in Neighborhood		Lead in Neighborhood		Combined Health	
Individual-level Variables	-.012 (.028) .988	-.014 (.029) .986	.055 (.028) 1.056**	.054 (.029) 1.056**	.025 (.014) 1.025**	.025 (.014) 1.025**	.083 (.038) 1.086***	.081 (.039) 1.085**	.033 (.015) 1.034**	.033 (.016) 1.034**
Hispanic		-.385 (.083) .680***		-.381 (.083) .683***		-.381 (.083) .683***		-.379 (.083) .684***		-.379 (.083) .684***
GED/High School Diploma or More		-.738 (.101) .478***		.736 (.101) .479***		-.736 (.101) .479***		-.737 (.101) .479***		-.736 (.101) .479***
Female		-.161 (.088) .851**		-.161 (.088) .851**		-.162 (.088) .851**		-.163 (.088) .850**		-.162 (.089) .851**
Medical Issue		.084 (.089) 1.087		.083 (.089) 1.086		.082 (.089) 1.086		.085 (.089) 1.088		.083 (.089) 1.087
Substance Abuse		.040 (.178) 1.041		.031 (.178) 1.031		.030 (.178) 1.030		.049 (.178) 1.050		.034 (.178) 1.034
Mental Health		.348 (.147) 1.417***		.343 (.147) 1.409***		.343 (.147) 1.409***		.352 (.147) 1.421***		.344 (.147) 1.411***
Substance Abuse and Mental Health Issue		.022 (.088) 1.022		.022 (.088) 1.022		.023 (.088) 1.023		.017 (.088) 1.017		.021 (.088) 1.021
Occupation		-.437 (.107) .646***		-.434 (.107) .648***		-.435 (.107) .647***		-.430 (.107) .651***		-.432 (.107) .649***
Felony Disposition		.001 (.001) 1.001**		.001 (.001) 1.001**		.001 (.001) 1.001**		.001 (.001) 1.001**		.001 (.001) 1.001**
Length of Stay – Days		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***		.000 (.000) 1.000***
Income Level – Month		-.019 (.004) .981***		-.020 (.004) .981***		-.019 (.004) .981***		-.020 (.004) .981***		-.020 (.004) .981***
Age at Booking	-.012 (.028) .988	-.014 (.029) .986	.055 (.028) 1.056**	.054 (.029) 1.056**	.025 (.014) 1.025**	.025 (.014) 1.025**	.083 (.038) 1.086***	.081 (.039) 1.085**	.033 (.015) 1.034**	.033 (.016) 1.034**
Constant	-.336 (.066) .714***	.774 (.150) 2.168***	-.479 (.093) .619***	.647 (.163) 1.909***	-.491 (.107) .612***	.632 (.172) 1.882***	-.666 (.166) .514***	.470 (.213) 1.599***	-.344 (.041) .709***	.784 (.142) 2.191***
McFadden's R^2	0.000	0.041	0.001	0.041	0.000	0.041	0.001	0.042	0.001	0.042

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=2799

Adding individual-level variables to the models reported in Table 5.13 did not change the findings that these models can be described fitting well. Hosmer-Lemeshow tests for the concentrated disadvantage (p=.461), ICE (p=.761), black heterogeneity (p=.313), Hispanic heterogeneity (p=.456), residential stability (p=.696), substance abuse in neighborhood (p=.753), mental health in neighborhood (p=.965), lead in neighborhood (p=.926), and combined health (p=.961) models indicate that the null hypothesis of a good fit cannot be rejected. Individual-level variables also improved the amount of variation explained in the log odds of reincarceration for blacks. McFadden's R^2 values increased to between .041 and .042 meaning that the amount of variation in the log odds of reincarceration accounted for by the full models increased to between 4.1% and 4.2%. Inclusion of individual-level variables to the baseline models produced statistically significant model chi-square values (p<.000) as well as increased the percent correctly classified by 3.5% to 4.4% for all nine models.

Mirroring the results of the baseline models in Table 5.13, the addition of individual-level variables did not change which neighborhood contextual variables significantly influenced the log odds of reincarceration for blacks, nor did the introduction of individual-level variables change the direction of these influences. The introduction of individual-level variables to four of the baseline models increased the magnitude of the logit coefficient values in these models. Logit coefficient values increased in the concentrated disadvantage (.014 to .015), ICE (-.316 to -.345), black heterogeneity (.489 to .527), and Hispanic heterogeneity (.549 to .588) models. Adding individual-level variables to the health-related variable models impacted the log odds of reincarceration of blacks in different ways than the four previous models. The magnitude

of the logit coefficient values decreased in the substance abuse in neighborhood (.055 to .054) and lead in neighborhood (.083 to .081) models, whereas the logit coefficient values remained static in the mental health in neighborhood (.025) and combined health (.033) baseline and full models.

Rebooking with No Probation Violations – Combined Health and Non-Black

Tables 5.14 through 5.21 present the findings for the separate logistic regression models for blacks and non-blacks plus the combined health and lead variables with concentrated disadvantage and ICE added into the models separately to account for the collinearity issues identified in Chapter 4. Table 5.14 examines the results of the models that estimated the influence of neighborhood contextual variables on the rebooking of non-blacks.

Results for the baseline models indicate that small amounts of variation in the log odds of rebooking for non-blacks are explained by the neighborhood contextual variables in the baseline models. The concentrated disadvantage, ICE, and combined health baseline models account for 0.2% of the variation in the log odds of rebooking for non-blacks based on the McFadden's R^2 scores of .002. The Hosmer-Lemeshow tests for the concentrated disadvantage (p=.260), ICE (p=.326), and combined health (p=.174) show that the null hypothesis of a good fit cannot be rejected.

Concentrated disadvantage and ICE neighborhood contextual variables were entered into separate baseline models along with black heterogeneity, Hispanic heterogeneity, residential stability, and combined health neighborhood contextual variables. The black and Hispanic heterogeneity, residential stability, and combined health neighborhood contextual variables were estimated in a separate model that did not

include either of the concentrated disadvantage or ICE neighborhood contextual variables. None of the baseline models produced statistically significant effects of the neighborhood contextual variables on the log odds of rebooking for non-black.

While the McFadden's R^2 values improved with the addition of individual-level variables to the baseline models, there were no changes in terms of the Hosmer-Lemeshow test results. Values for the McFadden's R^2 increased to .028 for all three models in Table 5.14 which indicates that the combination of neighborhood and individual-level variables explained 2.8% of the variation in the log odds of being rebooked for non-blacks. Hosmer-Lemeshow tests – concentrated disadvantage (p=.326), ice (p=.181), and combined health (p=.181) – showed that the null hypothesis of a good fit cannot be rejected. Model chi-square values were statistically significant (p<.000) for all three models with the percentage correctly classified increasing by 2.2% for the three full models detailed in Table 5.14.

Adding individual-level variables to the baseline models did not improve the impact of the neighborhood contextual variables on the log odds of rebooking for non-blacks. None of the neighborhood contextual variables in the three models in Table 5.14 had a statistically significant effect on the log odds of rebooking among non-blacks.

Table 5.14. Logistic Regression Results – Rebooking with No Probation Violations – Non-Black and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Concentrated Disadvantage	.004 (.024)	-.008 (.024)				
	1.004	.993				
ICE			-.246 (.427)	.002 (.439)		
			.782	1.002		
Black Heterogeneity	.282 (.436)	.365 (.449)	.323 (.382)	.298 (.393)	.321 (.382)	.298 (.393)
	1.326	1.441	1.381	1.347	1.379	1.347
Hispanic Heterogeneity	.189 (.641)	-.034 (.657)	.069 (.572)	-.176 (.589)	.275 (.447)	-.177 (.464)
	1.208	.967	1.072	.839	1.316	.838
Residential Stability	-.013 (.034)	-.019 (.035)	-.009 (.033)	-.021 (.034)	-.012 (.033)	-.021 (.034)
	.987	.981	.991	.979	.727	.979
Combined Health	.004 (.030)	.011 (.031)	.004 (.026)	.005 (.027)	.007 (.025)	.005 (.026)
	1.004	1.011	1.004	1.005	1.007	1.005
Individual-level Variables						
Hispanic		.168 (.103)		.167 (.103)		.167 (.103)
		1.182**		1.182**		1.182**
GED/High School Diploma or More		-.197 (.080)		-.196 (.080)		-.196 (.079)
		.821***		.822***		.822***
Female		-.189 (.088)		-.189 (.088)		-.189 (.088)
		.827**		.827**		.827**
Medical Issue		.015 (.081)		.015 (.081)		.015 (.081)
		1.015		1.015		1.015
Substance Abuse		.286 (.085)		.287 (.085)		.287 (.085)
		1.332***		1.332***		1.332***
Mental Health		.045 (.135)		.046 (.135)		.046 (.135)
		1.046		1.047		1.047
Substance Abuse and Mental Health Issue		398 (.111)		.398 (.111)		.398 (.111)
		1.488***		1.489***		1.489***

Table 5.14—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Occupation		-.183 (.088)		-.183 (.088)		-.183 (.088)
		.833**		.833**		.833**
Felony Disposition		-.474 (.095)		-.474 (.095)		-.474 (.095)
		.623***		.622***		.622***
Length of Stay – Days		.001 (.001)		.001 (.001)		.001 (.001)
		1.001*		1.001*		1.001*
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.018 (.003)		-.018 (.003)		-.018 (.003)
		.982***		.982***		.982***
Constant	-.392 (.125)	.531 (.192)	-.360 (.138)	.541 (.199)	-.399 (.120)	.541 (.190)
	.675***	1.701***	.698***	1.718***	.671***	1.718***
McFadden's R^2	0.002	0.029	0.002	0.029	0.002	0.029

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=3303

Rebooking with No Probation Violations – Combined Health and Black

Table 5.15 presents the same models as were found in Table 5.14 for blacks

released from KCCF. These results include the addition of the concentrated disadvantage

and ICE neighborhood variables into separate models, as well as a separate model that

includes only the black and Hispanic heterogeneity, residential stability, and combined

health variables.

The logistic regression results reported in Table 5.15 indicate that the baseline

models do not account for a large portion of the variation in the log odds of blacks being

rebooked into KCCF. All three baseline models have McFadden's R^2 values of .002

which indicates 0.2% of the variation in the log odds of being rebooked is explained by

the inclusion of neighborhood contextual variables in each baseline model. Hosmer-

Lemeshow tests for the concentrated disadvantage (p=.409), ICE (p=.290), and combined

health (p=.234) baseline models indicate that the null hypothesis of a good fit cannot be

rejected.

Two neighborhood contextual variables in the three models had statistically

significant effects on the log odds of rebooking for blacks. Higher values of the

combined health neighborhood contextual variable increased the log odds of being

rebooked for blacks in the concentrated disadvantage model (b=.067, p<.05) as well as

increased the log odds of being rebooked in the ICE and combined health models

(b=.073, p<.01). This influence was in the predicted direction in all three models.

Higher rates of residential stability increased the log odds of rebooking for blacks in the

combined health model (b=.053, p=.10).

Table 5.15. Logistic Regression Results – Rebooking with No Probation Violations – Black and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Concentrated Disadvantage	.013 (.044) 1.013	.025 (.046) 1.026				
ICE			.250 (.544) 1.284	.222 (.562) 1.248		
Black Heterogeneity	-.376 (.574) .687	-.503 (.594) .605	-.269 (.381) .764	-.272 (.395) .762	-.253 (.379) .777	-.257 (.393) .774
Hispanic Heterogeneity	-.748 (1.286) .473	-1.020 (1.334) .361	-.113 (.812) .893	-.076 (.842) .927	-.406 (.497) .665	. -.339 (.513) .713
Residential Stability	.049 (.041) 1.051	.043 (.042) 1.044	.047 (.041) 1.048	.045 (.043) 1.046	.053 (.039) 1.054*	.050 (.040) 1.051
Combined Health	.067 (.037) 1.070**	.064 (.038) 1.066**	.073 (.030) 1.076***	.076 (.031) 1.079***	.073 (.030) 1.076***	.076 (.031) 1.079***
Individual-level Variables						
GED/High School Diploma or More		-.272 (.087) .762***		. -.272 (.087) .762***		0.271 (.087) .762***
Female		-.587 (.096) .556***		-.585 (.096) .557***		-.586 (.096) .557***
Medical Issue		-.158 (.089) .853**		-.156 (.089) .856**		-.156 (.089) .855**
Substance Abuse		.089 (.092) 1.093)		.092 (.092) 1.096		.091 (.092) 1.095
Mental Health		-.054 (.176 .948		-.046 (.176) .955		-.049 (.176) .952
Substance Abuse and Mental Health Issue		.314 (.150) 1.369**		.313 (.150) 1.368**		.313 (.150) 1.367**
Occupation		.038 (.091) 1.039		-.036 (.091) 1.037		.037 (.091) 1.038

Table 5.15—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Felony Disposition		-.320 (.106)		-.317(.106)		-.317 (.106)
		.726***		.729***		.728***
Length of Stay – Days		.000 (.001)		.000 (.001)		.000 (.001)
		1.000		1.000		1.000
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.030 (.004)		-.030 (.004)		-.030 (.004)
		.970***		.970***		.970***
Constant	.763 (.232)	2.240 (.281)	.648 (.218)	2.086 (.267)	.715 (.162)	2.145 (.222)
	2.145***	9.396***	1.913***	8.050***	2.045***	8.540***
McFadden's R^2	0.002	0.049	0.002	0.049	0.002	0.049

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=2799

McFadden's R^2 values increased to .049 with the addition of individual-level variables to the baseline models. The full models presented in Table 5.15 now account for 4.9% of the variation in the log odds of being rebooked for blacks. Hosmer-Lemeshow tests for concentrated health (p=.271), ICE (p=.613), and combined health (p=.465) indicated that the null hypothesis of a good fit could not be rejected. The combination of neighborhood contextual and individual-level variables in the models produced statistically significant test results (p<.000) for all three models, and increased the percentage correctly classified by 2.2% to 2.4% for each model in Table 5.15.

Adding individual-level variables to the baseline models in Table 5.15 produced results where higher levels of combined health had a statistically significant influence on the log odds of rebooking for blacks in the expected direction. The log odds of rebooking for blacks increased in the concentrated health (b=.064, p<.05) and in the ICE and combined health (b=.076, p<.01) models when individual-level variables were added to the baseline models. No other neighborhood context variable significantly influenced the log odds of rebooking of blacks in Table 5.15.

Rebooking with No Probation Violations – Lead and Non-Black

Table 5.16 takes the models found in Tables 5.14 and 5.15 and substitutes the lead variable for the combined health neighborhood contextual variable. Concentrated disadvantage and ICE continue to be entered apart from each other in separate models in addition to a separate model including only the black and ethnic heterogeneity, residential stability, and lead variables.

Table 5.16. Logistic Regression Results – Rebooking with No Probation Violations – Black and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Concentrated Disadvantage	-.004 (.021) .996	-.013 (.021) .967				
ICE			.015 (.410) 1.015	.250 (.421) 1.284		
Black Heterogeneity	.353 (.432) 1.423	.442 (.444) 1.556	.318 (.390) 1.374	.336 (.400) 1.399	.317 (.389) 1.372	.319 (.399) 1.375
Hispanic Heterogeneity	.408 (.628) 1.503	.310 (.643) 1.364	.330 (.573) 1.391	.245 (.589) 1.278	.316 (.417) 1.372	.008 (.433) 1.008
Residential Stability	-.032 (.028) .969	-.038 (.029) .963*	-.031 (.030) .969	-.042 (.030) .959*	-.031 (.028) .969	-.036 (.028) .965*
Lead in Neighborhood	-.027 (.051) .974	-.011 (.052) .989	-.030 (.048) .970	-.025 (.049) .975	-.030 (.048) .970	-.023 (.049) .977
Individual-level Variables						
Hispanic		.050 (.102) 1.051		.047 (.102) 1.048		.049 (.102) 1.050
GED/High School Diploma or More		-.141 (.079) .869**		-.141 (.079) .868**		-.137 (.079) .872**
Female		-.210 (.087) .811***		-.210 (.087) .810***		-.210 (.087) .810***
Medical Issue		.020 (.080) 1.020		.020 (.080) 1.020		.020 (.080) 1.020
Substance Abuse		.304 (.084) 1.356***		.304 (.084) 1.355***		.305 (.084) 1.357***
Mental Health		.061 (.133) 1.063		.063 (.133) 1.065		.063 (.133) 1.065
Substance Abuse and Mental Health Issue		.405 (.110) 1.500***		.406 (.110) 1.500***		.406 (.110) 1.501***

Table 5.16—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Occupation		-.190 (.087)		-.191 (.087)		-.190 (.087)
		.827**		.826**		.827**
Felony Disposition		-.302 (.092)		-.302 (.092)		-.302 (.092)
		.739***		.739***		.739***
Length of Stay – Days		.002 (.001)		.002 (.001)		.002 (.001)
		1.002***		1.002***		1.002***
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.020 (.003)		-.021 (.003)		-.021 (.003)
		.980***		.980***		.980***
Constant	-.124 (.190)	.689 (.233)	-.101 (.158)	.728 (.207)	-.098 (.137)	.772 (.193)
	.883	1.002***	.904	2.070***	.906	2.163***
McFadden's R^2	0.002	0.025	0.002	0.025	0.002	0.025

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=3303

Similar to the results found in Tables 5.14 and 5.15, the results in Table 5.16 indicate that little variation in the log odds of rebooking for non-blacks is explained by the inclusion neighborhood contextual variables into the baseline models. McFadden's R^2 values of .002 for all three models indicate that 0.2% of the variation in the log odds of being rebooked for non-blacks is explained when neighborhood contextual variables are included in the baseline models. The concentrated disadvantage (p=.284), ICE (p=.253), and lead in neighborhood (p=.123) models all have Hosmer-Lemeshow tests that indicate that the null hypothesis of a good fit cannot be rejected.

Concentrated disadvantage and ICE neighborhood contextual variables were entered into each of the baseline models along with black heterogeneity, Hispanic heterogeneity, residential stability, and in this instance, lead neighborhood contextual variables. The heterogeneity, residential stability, and lead neighborhood contextual variables were estimated in a separate model that did not include either of the concentrated disadvantage or ICE neighborhood contextual variables. None of the neighborhood contextual variables had a statistically significant effect on the log odds of rebooking of non-blacks.

Adding individual-level variables to the baseline models increased the McFadden's R^2 values to .025 in the concentrated disadvantage, ICE, and lead models. The full models now account for 2.5% of the variation in the log odds of booking for non-blacks when individual-level variables are added to the baseline models. Results of the Hosmer-Lemeshow tests for concentrated disadvantage (p=.296), ICE (p=.186), and lead in neighborhood (p=.260) indicate that the null hypothesis of a good fit still cannot be rejected. Inclusion of individual-level variables in each of the baseline models

resulted in statistically significant model chi-square values (p<.000), and increased the percent correctly estimated by between 6.1% and 6.2%.

Residential stability is the single neighborhood contextual variable that attains statistical significance after the addition of individual-level variables to the baseline models. The influence of higher levels of residential stability was in the expected direction with the variable decreasing the log odds of rebooking for non-blacks in the concentrated disadvantage model (b=-.038, p<.10), in the ICE model (b=-.042, p<.01), and in the lead in neighborhood model (b=-.036=.965, p<.10).

Rebooking with No Probation Violations – Lead and Black

Table 5.17 contains the results of the logistic regression models for blacks with lead substituting for the combined health measure

The baseline models detailed in Table 5.17 show similar results in terms of the McFadden's R^2 values and Hosmer-Lemeshow test results found in Tables 5.14, 5.15, and 5.16. McFadden's R^2 values of .001 are the same for the concentrated disadvantage, ICE, and lead in neighborhood models that indicates the neighborhood contextual variables included in the baseline models account for 0.1% of the variation in the log odds of rebooking for blacks. Likewise, Hosmer-Lemeshow test results for the concentrated disadvantage (p=.319), ICE (p=.277), and lead (p=.446) models show that the null hypothesis of a good fit cannot be rejected.

Table 5.17. Logistic Regression Results – Rebooking with No Probation Violations – Black and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Concentrated Disadvantage	.032 (.038) 1.032	039 (.039) 1.040				
ICE			-.342 (.622) .710	-.431 (.645) .650		
Black Heterogeneity	-.785 (.556) .456*	-.887 (.574) .412*	-.487 (.406) .615	-.520 (.420) .594	-.468 (.405) .626	-.498 (.419) .608
Hispanic Heterogeneity	-.836 (1.242) .434	-.988 (1.284) .372	-.284 (.876) .752	-.317 (.909) .728	.138 (.421) 1.148	.216 (.435) 1.242.
Residential Stability	.006 (.031) 1.006	.004 (.033) 1.004	.013 (.036) 1.013	.012 (.037) 1.012	.003 (.031) 1.003	.000 (.032) 1.000
Lead in Neighborhood	.077 (.050) 1.081*	.087 (.052) 1.091**	.102 (.055) 1.107**	.117 (.057) 1.124**	.087 (.049) 1.091**	.099 (.051) 1.104**
Individual-level Variables						
GED/High School Diploma or More		-.277 (.088) .758***		-.276 (.088) .759***		-.277 (.088) .758***
Female		-.616 (.097) .540***		-.615 (.097) .541***		-.614 (.097) .541***
Medical Issue		.153 (.091) .858**		-.150 (.090) .861		-.149 (.090) .862**
Substance Abuse		.065 (.093) 1.067		.066 (.093) 1.068		.068 (.093) 1.071
Mental Health		.026 (.178) 1.026		.030 (.178) 1.030		.034 (.178) 1.035
Substance Abuse and Mental Health Issue		.342 (.152) 1.408***		.340 (.152) 1.404***		.341 (.152) 1.406***

Table 5.17—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Occupation		-.013 (.092)		-.013 (.092)		-.015 (.092)
		.987		.987		.985
Felony Disposition		-.185 (.108)		-.182 (.108)		-.183 (.108)
		.831**		.833**		.833**
Length of Stay – Days		.000 (.001)		.000 (.001)		.000 (.001)
		1.000		1.000		1.000
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.032 (.004)		-.032 (.004)		-.032 (.004)
		.969***		.969***		.969***
Constant	.541 (.302)	2.040 (.342)	.385 (.193)	1.847 (.242)	.333 (.169)	1.782 (.221)
	1.718	7.693***	1.469**	6.342***	1.395**	5.940***
McFadden's R^2	0.001	0.049	0.001	0.049	0.001	0.049

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=2799

The baseline model results in Table 5.17 indicate that the lead neighborhood contextual variable has a statistically significant effect on the odds of rebooking for blacks in the expected direction. The odds of rebooking for blacks increase by 8.1% per one microgram increase in lead per deciliter of blood in the concentrated disadvantage model (Exp(B)=1.081, p<.10), 10.7% in the ICE model (Exp(B)=1.107, p<.05), and 9.1% in the lead model (Exp(B)=1.091, p<.05). One additional neighborhood contextual variable influenced the log odds of rebooking for blacks in the concentrated disadvantage model. Higher levels of black heterogeneity influenced the log odds of booking for blacks in the expected direction, with these increased levels reducing the log odds of reincarceration (b=-.785, p<.10).

McFadden's R^2 values improved with the addition of individual-level variables to the baseline models detailed in Table 5.17. All three models had McFadden's R^2 values of .049, indicating that the combination of neighborhood contextual and individual-level variables now accounts for 4.9% of the variation in the log odds of rebooking for blacks. All three models – concentrated disadvantage (p=.235), ICE (p=.575), and lead in neighborhood (p=.455) – have Hosmer-Lemeshow tests that indicate that the null hypothesis of a good fit cannot be rejected. Additionally, the inclusion of individual-level and neighborhood contextual variables in the same model produced statistically significant model chi-square tests (p<.000), as well as increased the percent correctly estimated by 1.5% to 1.8% for the three models in Table 5.17.

The lead neighborhood contextual variable included in each of the models in Table 5.17 retained its statistically significant impact on the rebooking of blacks after the introduction of individual-level variables to the baseline models. Higher micrograms of

lead per deciliter of blood continued to influence the odds of rebooking in the expected direction with the odds of rebooking for blacks increasing by 9.1% per microgram increase in lead per deciliter of blood in the concentrated disadvantage model (Exp(B)=1.091, p<.05), by 12.4% in the ICE model (Exp(B)=1.124, p<.05), and by 10.4% in the lead in neighborhood model (Exp(B)=1.104, p<.05). Higher values of black heterogeneity in zip codes also continued to influence the log odds of rebooking for blacks in the expected direction in the concentrated disadvantage model where there was a decrease in the log odds of rebooking for blacks with higher levels of black heterogeneity (b=-.887, p<.10).

Reincarceration with No Probation Violations – Combined Health and Non-Black

Tables 5.18 through 5.21 present the results of the logistic regression models that include the reincarceration dependent variable with separate models estimated for blacks and non-blacks. Each of the estimated models contain the black and ethnic heterogeneity measures plus residential stability neighborhood contextual variables with the concentrated disadvantage and ICE neighborhood contextual variables entered separately in their own models. Combined health and lead neighborhood contextual variables are also entered in separate models. Table 5.18 contains the results logistic regression models that estimated the log odds of incarceration for non-blacks and includes the combined health, black and Hispanic heterogeneity, and residential stability neighborhood contextual variables the concentrated disadvantage and ICE neighborhood variables entered separately.

Table 5.18. Logistic Regression Results – Reincarceration with No Probation Violations – Non-Black and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Concentrated Disadvantage	.021 (.026) 1.021	.014 (.027) 1.014				
ICE Index			-.716 (.480) .489*	-.522 (.490) .593		
Black Heterogeneity	-.271 (.481) .763	-.175 (.492) .840	-.081 (.419) .922	-.055 (.429) .946	-.082 (.419) .921	-.52 (.429) .949
Hispanic Heterogeneity	-.399 (.709) .671	-.555 (.722) .574	-.586 (.633) .557	-.722 (.648) .486	.008 (.493) 1.008	-.296 (.509) .744
Residential Stability	-.017 (.037) .983	-.025 (.038) .975	-.003 (.037) .997	-.015 (.038) .985	-.011 (.036) .989	-.021 (.037) .979
Combined Health	.012 (.034) 1.013	.017 (.034) 1.017	.017 (.029) 1.017	.019 (.029) 1.020	.028 (.028) 1.028	.027 (.028) 1.027
Individual-level Variables						
Hispanic		.008 (.112) 1.008		.013 (.112) 1.013		.008 (.112) 1.008
GED/High School Diploma or More		-.134 (.086) .875*		-.129 (.087) .879*		-.137 (.086) .872*
Female		-.326 (.098) .722***		-.324 (.098) .723***		-.325 (.098) .722***
Medical Issue		-.043 (.089) .958		-.042 (.089) .959		-.043 (.089) .958
Substance Abuse		.097 (.093) 1.102		.099 (.093) 1.104		.097 (.093) 1.102
Mental Health		.000 (.151) 1.000		-.001 (.151) .999		-.002 (.151) .998
Substance Abuse and Mental Health Issue		.469 (.119) 1.598***		.469 (.119) 1.599***		.468 (.119) 1.597***

Table 5.18—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Occupation		-.192 (.094) .826**		-.190 (.094) .827**		-.192 (.094) .825**
Felony Disposition		-.537 (.108) .584***		-.538 (.108) .584***		-.537 (.108) .585***
Length of Stay – Days		.002 (.001) 1.002**		.002 (.001) 1.002**		.002 (.001) 1.002**
Income Level – Month		.000 (.000) 1.000**		.000 (.000) 1.000**		.000 (.000) 1.000**
Age at Booking		-.013 (.004) .987***		-.013 (.004) .987***		-.013 (.004) .987***
Constant	-.879 (.138) .415***	-.090 (.209) .914	-.798 (.152) .450***	-.036 (.217) .965	-.912 (.131) .402***	-.109 (.205) .897
McFadden's R²	0.001	0.023	0.002	0.023	0.001	0.023

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=3303

McFadden's R^2 values of .001 and .002 indicate that small amounts of variation, 0.1% to 0.2%, can be attributed to the neighborhood contextual variables influence on the log odds of reincarceration of non-blacks. Hosmer-Lemeshow tests – concentrated disadvantage (p=.483), ICE (p=.586), and combined health (p=.382) – indicate that the models are a good fit as the null hypothesis of a good fit model cannot be rejected. None of the neighborhood contextual variables included in the three baseline models detailed in Table 5.18 exhibited s statistically significant influence on the log odds of reincarceration of non-blacks.

Adding individual-level variables improved the McFadden's R^2 values in each of the three models found in Table 5.18. The McFadden values increased to .023 with the addition of individual-level variables to the baseline models, indicating explained variation in the log odds of reincarceration increased by 2.3%. The models retained their good fit as Hosmer-Lemeshow tests for concentrated health (p=.684), ICE (p=.561), and combined health (p=.853) show that the null hypothesis of a good fit cannot be rejected. Even with statistically significant model chi-square values for all three models (p<.000), adding individual-level variables to the baseline models did not produce increases in the percent correctly classified. Having individual-level variables added to the models also did not increase the influence that neighborhood contextual variables had on the reincarceration of non-black. None of the neighborhood contextual variables had a statistically significant effect on the log odds of reincarceration of non-blacks after the addition of individual-level variables to the baseline models.

Reincarceration with No Probation Violations – Combined Health and Black

Table 5.19 presents the results the logistic regression models that estimated the influence of neighborhood contextual and individual-level variables on the reincarceration of blacks. The variables used in the models are the same as were used to estimate the models found in Table 5.18.

The baseline concentrated disadvantage, ICE, and combined health logistic regression models detailed in Table 5.19, similar to the results in Table 5.18, indicate that small amounts of explained variation in the log odds of reincarceration of blacks can be attributed to the addition of the neighborhood contextual variables. McFadden's R^2 values of .002 indicate that 0.2% of the variation in the log odds of reincarceration of blacks can be attributed to the neighborhood contextual variables. Hosmer-Lemeshow tests for concentrated disadvantage (p=.577), ICE (p=.620), and combined health (p=.753) show that the null hypothesis of a good fit cannot be rejected.

Combined health had a statistically significant influence on the log odds of being reincarcerated for blacks. This influence was in the expected direction. Higher levels of combined health issues in the neighborhood increased the log odds of reincarceration of blacks in the concentrated disadvantage model (b=.062=1.064, p<.05). ICE model (b=.046, p<.10), and combined health (b=.046, p<.10) model. Higher levels of residential stability increased the log odds of reincarceration of blacks in the concentrated disadvantage model (b=.053, p<.10). This influence was in an unexpected direction.

Table 5.19. Logistic Regression Results – Reincarceration with No Probation Violations – Black and Combined Health

Contextual Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Concentrated Disadvantage	-.034 (.044) ..967	-.019 (.046) .981				
ICE Index			.217 (.540) 1.243	.200 (.556) 1.221		
Black Heterogeneity	.472 (.568) 1.603	.372 (.587) 1.451	.130 (.377) 1.138	.173 (.389) 1.189	.146 (.375) 1.157	.187 (.387) 1.206
Hispanic Heterogeneity	.865 (1.292) 2.375	.571 (1.336) 1.769	.210 (.812) 1.234	.291 (.835) 1.338	-.049 (.493) .952	.052 (.507) 1.054
Residential Stability	.053 (.041) 1.054*	.041 (.042) 1.042	.038 (.041) 1.039	.031 (.043) 1.032	.044 (.039) 1.045	.037 (.040) 1.037
Combined Health	062 (.037) 1.064**	.047 (.038) 1.048	.046 (.030) 1.047*	.038 (.031) 1.038	.046 (.030) 1.047*	. .038 (.031) 1.039
Individual-level Variables						
GED/High School Diploma or More		-.375 (.083) .687***		-.376 (.083) .686***		-.376 (.083) .687***
Female		-.736 (.101) .479***		-.736 (.101) .479***		-.737 (.101) .479***
Medical Issue		-.162 (.089) .851**		-.163 (.089) .850**		-.163 (.089) .849**
Substance Abuse		.085 (.089) 1.088		.084 (.089) 1.088		.083 (.089) 1.087
Mental Health		.046 (.179) 1.047		-.045 (.179) 1.046		-.043 (.179) 1.043
Substance Abuse and Mental Health Issue		.352 (.148) 1.422***		.353 (.148) 1.424***		.353 (.1489) 1.423***

Table 5.19—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Combined Health	
Occupation		-.019 (.088)		-.019 (.088)		-.020 (.088)
		1.019		.1.019		1.020
Felony Disposition		-.432 (.107)		-.433 (.107)		-.434 (.107)
		.649***		.648***		.648***
Length of Stay – Days		.001 (.001)		.001 (.001)		.001 (.001)
		1.001**		1.001**		1.001**
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.020 (.004)		-.020 (.004)		-.020 (.004)
		.980***		.980***		.980***
Constant	-.432 (.232)	-.703 (.276)	-.362 (.216)	-.723 (.260)	-.304 (.160)	-.777 (.214)
	.649***	2.021	.696**	2.016	.738**	2.174
McFadden's R^2	0.002	0.042	0.002	0.042	0.002	0.042

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=2799

The addition of individual-level variables to the baseline logistic regression models detailed in Table 5.19 increased the McFadden's R^2 values to .042 for the concentrated disadvantage, ICE, and combined health models. The amount of variation in the log odds of reincarceration of blacks attributed to the inclusion of individual-level variables in the baseline models rose to 4.2%. Results of the Hosmer-Lemeshow test for the concentrated disadvantage (p=.327), ICE (p=.395), and combined health (p=.571) models indicate that the null hypothesis of a good fit cannot be rejected. Adding individual-level variables produced statistically significant model chi-square values (p<.000) and improved the percent correctly classified by 3.6% to 3.7% for the three full models detailed in Table 5.19.

Individual-level variables added into the baseline models did not improve the influence of the neighborhood contextual variables on the log odds of reincarceration of blacks. The statistically significant influence of the combined health neighborhood contextual variable on the log odds of reincarceration of blacks was not present in the full models. The statistically significant influence of residential stability on the log odds of reincarceration of blacks was also no longer present in the concentrated disadvantage model.

Reincarceration with No Probation Violations – Lead and Non-Black

Table 5.20 substitutes the lead measure for the combined health neighborhood contextual variable. The additional neighborhood contextual variables used in the models detailed in Table 5.20 remain the same as in Tables 5.18 and 5.19.

Table 5.20. Logistic Regression Results – Reincarceration with No Probation Violations – Non-Black and Lead

Contextual Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Concentrated Disadvantage	.024 (.023) 1.024	.017 (.024) 1.017				
ICE Index			-.814 (.467) .443**	-.630 (.477) .533*		
Black Heterogeneity	-.307 (.478) .735	-.225 (.489) .799	-.140 (.430) .869	-.112 (.439) .894	-.091 (.429) .913	-.068 (.438) .934
Hispanic Heterogeneity	-.417 (.704) .659	-.578 (.716) .561	-.655 (.644) .519	-.787 (.658) .455	.124 (.462) 1.132	-.194 (.480) .823
Residential Stability	-.023 (.031) .977	-.033 (.031) .968	-.006 (.033) .984	-.020 (.033) .980	-.026 (.031) .974	-.035 (.031) .966
Lead in Neighborhood	.019 (.057) 1.019	.027 (.058) 1.027	.046 (.053) 1.047	.047 (.054) 1.048	.040 (.052) 1.040	.042 (.054) 1.043
Individual-level Variables						
Hispanic		.007 (.112) 1.007		.012 (.112) 1.013		.008 (.112) 1.008
GED/High School Diploma or More		-.134 (.087) .875*		-.129 (.087) .879*		-.138 (.086) .871**
Female		-.325 (.098) .722***		-.325 (.098) .723***		-.324 (.098) .723***
Medical Issue		-.043 (.089) .958		-.043 (.089) .958		-.042 (.089) .959
Substance Abuse		.098 (.093) 1.103		.100 (.093) 1.105		.097 (.093) 1.102
Mental Health		.000 (.151) 1.000		-.002 (.151) .998		-.003 (.151) .997
Substance Abuse and Mental Health Issue		469 (.119) 1.598***		.468 (.119) 1.597***		.468 (.119) 1.596***

Table 5.20—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Occupation		-.192 (.094)		-.190 (.094)		-.192 (.094)
		.825**		.827**		.825**
Felony Disposition		-.538 (.108)		-.538 (.108)		-.538 (.108)
		.584***		.584***		.584***
Length of Stay – Days		.002 (.001)		.002 (.001)		.002 (.001)
		1.002**		1.002**		1.002**
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000**		1.000**		1.000**
Age at Booking		-.013 (.004)		-.013 (.004)		-.013 (.004)
		.987***		.987***		.987***
Constant	-.958 (.211)	-.202 (.257)	-.952 (.176)	-.197 (.227)	-1.109 (.152)	-.308 (.211)
	.384***	.817	.386***	.821	.330***	.735*
McFadden's R^2	0.002	0.023	0.002	0.023	0.001	0.023

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=3303

Little variation in the log odds of reincarceration for non-blacks is explained by the addition of the neighborhood contextual variables in the baseline concentrated disadvantage, ICE, and lead in neighborhood models in Table 5.20. McFadden's R^2 values of .001 and .002 for each of the models indicate that 0.1% and 0.2% of the variation in the log odds of reincarceration for non-blacks can be attributed to the inclusion of neighborhood contextual variables in the baseline models. These models can still be considered good fitting models given the Hosmer-Lemeshow test results for concentrated disadvantage (p=.295), ICE (p=.594), and lead (p=.080) indicate that the null hypothesis of a good fit cannot be rejected.

The neighborhood contextual variables failed to have statistically significant effects on the log odds of reincarceration among non-blacks in the concentrated disadvantage and leadin the neighborhood models. ICE was the only neighborhood contextual variable in the ICE model that significantly influenced the log odds of reincarceration of non-blacks, with higher levels of affluence reducing the log odds of reincarceration for non-blacks (b=-.814, p<.05). This effect was in the expected direction.

Adding individual-level variables to the baseline models increased the amount of explained variation in the log odds of reincarceration of non-blacks to 2.3% for all three models in Table 5.20. This is based on the McFadden's R^2 values of .023 for the concentrated disadvantage, ICE, and lead in neighborhood models. The models also retain their good fit after the inclusion of individual-level variables, as the Hosmer-Lemeshow tests for the concentrated disadvantage (p=.921), ICE (p=.894), and lead in neighborhood (p=.728) models all showing that that the null hypothesis of a good fit

cannot be rejected. Even with statistically significant model chi-square values (p<.000), individual-level variables added to the baseline models did not improve the percent correctly classified.

ICE retained its statistically significant influence on the log odds of reincarceration of non-blacks with the influence in the expected direction. After the inclusion of individual-level variables in the ICE model, higher levels of affluence decreased the log odds of reincarceration of non-blacks (b=-.630, p<.10). This was the only neighborhood contextual variable that significantly influenced the odds of reincarceration of non-blacks in the full models detailed in Table 5.20.

Reincarceration with No Probation Violations – Lead and Black

Table 5.21 includes the results of the logistic regression models for blacks and the lead neighborhood contextual variable. The additional neighborhood contextual variables included in the models remain the same as in Table 5.20.

Results of the baseline models in Table 5.21 indicate that little of the variation in the log odds of reincarceration of blacks in the three baseline models can be attributed to the inclusion of neighborhood contextual variables. McFadden's R^2 values of .001 and .002 show that 0.1% to 0.2% of the variation in the log odds of reincarceration of blacks in concentrated disadvantage, ice, and lead in neighborhood models can be attributed to the neighborhood contextual variables. Although there is little variation to be explained, the Hosmer-Lemeshow test results for the concentrated disadvantage (p=.353), ICE (p=.402), and lead (p=.351) models indicate a good fit as the null hypothesis of a good fit cannot be rejected.

Table 5.21. Logistic Regression Results – Reincarceration with No Probation Violations – Black and Lead

Contextual Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Concentrated Disadvantage	-.002 (.037) .998	.004 (.039) 1.004				
ICE Index			-.105 (.610) .901	-.079 (.631) .924		
Black Heterogeneity	.097 (.538) 1.102	.083 (.558) 1.066	.072 (.395) 1.074	.118 (.408) 1.125	.076 (.394) 1.079	.122 (.407) 1.130
Hispanic Heterogeneity	.355 (1.220) 1.426	.204 (1.265) 1.226	.160 (.861) 1.174	.230 (.896) 1.258	.290 (.408) 1.337	.327 (.420) 1.387
Residential Stability	.012 (.031) 1.102	.011 (.031) 1.011	.015 (.035) 1.015	.013 (.036) 1.013	.012 (.030) 1.012	.011 (.031) 1.011
Lead in Neighborhood	.062 (.049) 1.064*	.052 (.051) 1.054	.066 (.054) 1.068	.057 (.056) 1.058	.062 (.167) 1.063*	.054 (.050) 1.055
Individual-level Variables						
GED/High School Diploma or More		-.377 (.083) .686***		-.377 (.083) .686***		-.377 (.083) .686***
Female		-.737 (.101) .478***		-.738 (.101) .478***		-.737 (.101) .478***
Medical Issue		-.163 (.089) .850**		-.163 (.089) .850**		-.163 (.089) 1.089**
Substance Abuse		.084 (.089) 1.088		.084 (.089) 1.088		.083 (.089) 1.087
Mental Health		.047 (.179) 1.048		-.047 (.179) 1.048		-.048 (.179) 1.049
Substance Abuse and Mental Health Issue		.353 (.148) 1.424***		.353 (.148) 1.423***		.353 (.148) 1.424***

Table 5.21—Continued

Individual-level Variables	Concentrated Disadvantage		ICE Index		Lead in Neighborhood	
Occupation		-.018 (.088)		-.018 (.088)		-.018 (.088)
		1.018		.1.018		1.018
Felony Disposition		-.434 (.107)		-.434 (.107)		-.434 (.107)
		.648***		.648***		.648***
Length of Stay – Days		.001 (.001)		.001 (.001)		.001 (.001)
		1.001**		1.001**		1.001**
Income Level – Month		.000 (.000)		.000 (.000)		.000 (.000)
		1.000***		1.000***		1.000***
Age at Booking		-.020 (.004)		-.020 (.004)		-.020 (.004)
		.980***		.980***		.980***
Constant	-.672 (.295)	-.504 (.331)	-.643 (.190)	-.489 (.233)	-.658 (.167)	-.478 (.213)
	.511***	1.655*	.526***	1.631**	.518***	1.612***
McFadden's R^2	0.002	0.042	0.001	0.042	0.002	0.042

*p<.10, **p<.05, ***p<.01; one-tailed tests; N=2799

Higher levels of lead in the neighborhood have a statistically significant influence on the odds of reincarceration of blacks in the concentrated disadvantage and lead in neighborhood models. A one microgram of lead increase per deciliter of blood increases the odds of reincarceration among blacks by 6.4% in the concentrated disadvantage model (Exp(B)=1.064, p<.10) plus a 6.3% increase in the odds of reincarceration of blacks in the lead in neighborhood model (Exp(B)=1.063, p<.10). This influence was in the expected direction. No other neighborhood variables influenced the odds of reincarceration of blacks in a statistically significant manner.

Inclusion of individual-level variables in the baseline models detailed in Table 5.21 improved the amount of explained variation in the log odds of reincarceration of blacks in the concentrated disadvantage, ICE, and lead in neighborhood models. McFadden's R^2 values increased to .042 in all three models, meaning that the addition of individual-level variables improved the amount of variation explained in the log odds of reincarceration of blacks to 4.2%. Hosmer-Lemeshow test in the concentrated disadvantage (p=.495), ICE (p=.497), and lead (p=.492) models indicate that the null hypothesis of a good fit cannot be rejected. Individual-level variables added to the baseline models produced statistically significant model chi-square tests (p<.000), and also assisted in increasing the percent correctly classified by between 3.4% and 3.5%.

The addition of individual-level variables did not improve the influence of neighborhood contextual variables on the log odds of reincarceration of blacks. The influence of the lead neighborhood contextual variable on the reincarceration of blacks that was present in the baseline models is no longer present in the full concentrated disadvantage and lead in neighborhood models. No other neighborhood contextual

variables had a statistically significant influence on the odds of reincarceration of blacks for the models detailed in Table 5.21.

Conclusion

This chapter detailed the results of the logistic regression models which estimated the influence of individual-level and neighborhood contextual variables on the log odds of being rebooked or reincarcerated for those released from incarceration. These models were estimated for the entire sample population in addition to separate models for blacks and non-blacks. Additionally, nine maps were included in this chapter to provide readers with a visualization of where a majority of those released from KCCF return to after serving their sentences and the levels of the neighborhood contextual variables in these geographic locations. Chapter 6 provides a discussion of the findings presented in this chapter and the policy recommendations for changes in reentry practices that stem from these results. Limitations and the opportunities for future research that develop from these limitations are also discussed in Chapter 6.

CHAPTER 6

DISCUSSION, CONCLUSION, AND POLICY RECOMMENDATIONS

Introduction

Since the late 1990s, state and federal policymakers and academic researchers have identified reentry of those released from incarceration as a primary concern. For the most part, theory and research on reentry has centered on two main issues. First, the vast majority of reentry research and policies have focused on addressing individual-level factors that impede successful reentry, such as low education levels and unemployment. Attention paid to neighborhood context and its impact on reentry is conspicuously lacking. Second, reentry research and theorizing focuses almost exclusively on prison reentry. Jail reentry and the different problems it poses to successful reentry are overlooked in this literature.

This study has addressed these two gaps in the reentry literature. First, this study provides empirical support for the argument that neighborhood contextual factors play important roles in the reentry experiences of those released from incarceration. More specifically, I broadened the conception of neighborhood context to include concentrated health issues of neighborhood residents, specifically substance abuse, mental health problems, and physical health issues, as an important factor likely to influence reentry outcomes. Second, this research focused on jail reentry as opposed to prison reentry. I estimated logistic regression models of the log odds of recidivism (i.e., rebooking and

reincarceration) that included both individual- and neighborhood-level variables for those released from KCCF.

This final chapter provides a summary of the key findings in this study, followed by a discussion of limitations of this research and the opportunities these provide for future research on jail reentry and neighborhood context. I conclude with the implications of the results of this study for jail reentry policies that may increase successful reentry for those released from local and county jails.

Findings

Results of the analyses detailed in Chapter 5 provide mixed support for the individual-level and neighborhood context hypotheses guiding this dissertation. However, the results of the study show the importance of including jail facilities as a research site in order to broaden our understanding of the factors that lead to successful reentry. This section provides a more focused assessment of the important findings from the analyses in Chapter 5 by grouping the discussion into three parts: individual-level models, maps, and neighborhood context models. The neighborhood context subsection also covers the important findings from the interaction models that examined black and non-black populations.

Individual-Level Models

Individual-level variables employed in this study influenced the odds of recidivism, for the most part in the expected directions. As expected, higher levels of education and age at release influenced a reduction in the log odds of recidivism in both the rebooking and reincarceration models. Increased levels of education may increase the likelihood of finding and retaining quality employment that has been found to be

essential to reducing recidivism in past research. Past research also has found that increased age decreases the odds of recidivism. Consistent with this past research, those released from KCCF who were older had reduced odds of recidivism. Additionally, females had reduced odds of recidivism in both the rebooking and reincarceration models, as was expected based on previous research. This finding speaks to the need for additional studies to uncover why being female has this impact and promotes successful reentry (Chesney-Lind 2002; Richie 2001).

Race had a significant influence on successful reentry, with blacks being over two times more likely to be rebooked and almost 80% more likely to be reincarcerated than those of other races, holding constant all other individual factors. This supports previous findings that show that race plays a pivotal role in recidivism and reentry (Austin and Irwin 2001; Mauer 2006; Thompson 2008). This finding is important for at least two reasons. First, it illustrates the racism remains a problem in the criminal justice system. Racial profiling and other law enforcement practices, prosecutorial decision making, and other factors should be investigated as potential contributing factors to this substantial race difference in rebooking and reincarceration. Second, and more specific to reentry, this finding has the potential to impact reentry programming in negative ways. Any benefits gained through the participation in reentry education programming or treatment services could be offset by racism in the criminal justice system that impacts higher rebooking and reincarceration of blacks.

Also as expected, those released from incarceration with a substance abuse problem, or co-occurring substance abuse and mental health issues, witnessed increased odds of recidivism. This has important implications for reentry policy, as it supports the

need for continued funding for substance abuse and mental health treatment services, before and after release. Reducing or eliminating programming and services targeting these concerns would result in a failure to address some of the fundamental issues that contribute to continued criminal behavior among those released from jails (Mallik-Kane and Visher 2008). Additionally, untreated substance abuse and mental health issues negatively impact family ties, employment opportunities, and education attainment that have all been shown to improve the odds of successful reentry.

Mixed results were found for the Hispanic, occupation, and physical health issue variables, as they impacted the recidivism measures in different ways. Being Hispanic had a positive significant effect on rebooking, but failed to have a significant impact on reincarceration. Occupation had a significant negative effect on rebooking, contrary to expectations, but failed to have a significant impact on reincarceration. Finally having a medical issue failed to have a significant impact on rebooking, yet had a significant negative impact on reincarceration, again contrary to the hypothesized effect. These findings suggest that individual-level influences of successful reentry may depend on the type of recidivism being measured. In addition, the effects, and lack thereof, for occupation and medical issue variables may be due to reliability and validity issues in these measures. On closer inspection, for example, many of those reporting an occupation at the time of booking also reported having no income, particularly among blacks—of those reporting an occupation, 52.8% had no income.

Contrary to expectations, neither increased lengths of stay, nor higher reported monthly income levels influenced the odds of recidivism in either model. The finding for monthly income may be due to the fact that 54.7% overall, and 61.8% of blacks reported

having no monthly income at the time of booking. Likewise, for length of stay, this result may be due to the highly skewed and kurtotic distribution of this variable, with nearly 10% serving a day or less, and a median of 9.7 days and a mean of 32.6 days. Perhaps more surprisingly, mental health issues in the absence of a substance abuse problem had no effect on the log odds of recidivism in either model. This is counter to previous literature which has shown that mental health is a driving factor in the recidivistic behavior and activities of those released from incarceration (Davis et al. 2011; Hammett et al. 2001; Mallik-Kane and Visher 2008). However, mental health issues combined with a substance abuse problem did significantly increase the log odds of rebooking and incarceration. One possible reason for this finding is that substance abuse and mental health issues tend to interact with each other. For example, more serious levels of mental illness may cause individuals to self-medicate leading to problems with substance abuse, while in turn, substance abuse issues may cause mental health conditions to worsen to the point that behavior and thinking is compromised resulting in a higher chance of engagement in recidivistic activities.

Also contrary to expectations was that those who served time for a felony offense experienced a decrease in the odds of rebooking and reincarceration. This was unexpected given that those who served time for felony offenses were expected to have longer prior criminal records that speak to a potential for engaging in recidivistic. The difficulty in fully interpreting these results lies in not being able to determine the specific aspects of being released after serving time for a felony offense that leads to a reduction in the odds of recidivism. It may be that this population is older, and based on the influence that age has on the odds of recidivism, may be phasing out of their criminal

careers. It is also entirely possible that probation supervision for a period of time after release may have provided an added incentive to keep recidivistic behaviors in check in order to achieve successful reentry back into society after incarceration.

On a broader level, results from the individual-level models help support the argument for including jail facilities in reentry theory and research. Before this study, there was scant research providing evidence that the individual-level factors found in past research to affect prison reentry impacted the reentry efforts of those released from jail facilities. Findings from the individual-level models in the present study provide solid evidence that those returning home from jail facilities face the same obstacles and benefit the same factors as those released from prison. In short, jails matter and should be a focus of future research on reentry.

Maps

Each of the maps presented in Chapter 5 support conclusions drawn from previous studies examining neighborhood context and reentry. One of these previous findings was that a majority of those released from incarceration return to relatively few residential areas characterized by higher levels of economic disadvantage (La Vigne and Thomson 2003; Rose and Clear 2002). Maps in Chapter 5 show a significant majority of those released from KCCF overwhelmingly return to a select few zip codes in Kent County. Eight of the twenty-eight zip codes, or 28.6%, receive approximately 74% of those returning from KCCF. One of the primary reasons these eight zip codes receive a majority of those released is that the cities of Grand Rapids, Kentwood, and Wyoming are in these geographic boundaries. These three cities account for approximately 52% of the overall population in Kent County, with Grand Rapids ranking as the second largest

city in Michigan and the largest urban area in West Michigan. Wyoming ranks as the 18th largest city in Michigan, and is the largest suburb of Grand Rapids with Kentwood placing as the second largest suburb to Grand Rapids.

The zip codes that receive the majority of those released from incarceration are consistently the same zip codes with the highest levels of disadvantage, lower affluence and residential stability, and increased levels of both black and Hispanic heterogeneity. Two zip code in particular, 49503 and 49507, not only receive a significant number of those released from incarceration, these geographic areas are often identified as having the highest recorded levels of disadvantage, residential instability, racial and ethnic heterogeneity, and lowest levels of affluence. In contrast, zip codes situated farther away from the urban centers of Grand Rapids, Kentwood, and Wyoming show lower levels of disadvantage and heterogeneity plus higher levels of affluence and residential stability. These areas also receive far fewer of those released from incarceration. As such, these outlying areas may be able to generate and nurture higher levels of social capital and informal social control important to recidivism reduction.

Zip codes showing higher levels of traditional social disorganization variables also are characterized by higher levels of concentrated health-related issues. This was expected. Given the manner in which the substance abuse and mental health variables were constructed, many of those receiving substance abuse and mental health treatment services were expected to reside in areas with higher levels of concentrated disadvantage, as well as lower levels of affluence as they are accessing services made available to lower income individuals and families through Network180. This creates a situation where those released to these neighborhoods are returning to zip codes where residents may

have limited financial means to access substance abuse and/or mental health treatment services on their own. It was also not surprising that the 49503 zip code had the highest reported percentage of residents accessing mental health and substance abuse treatment services through Network180 in Kent County. This zip code is home to a significant percentage of the homeless population, as well as many of the homeless shelters in Grand Rapids. Given the prevalence of mental health and substance abuse problems in the homeless population, it would be reasonable to expect that substance abuse and mental health levels in this zip code would be higher than in surrounding zip codes.

These eight zip codes characterized by higher levels of social disorganization also have higher blood lead levels than surrounding zip codes. One of these zip codes, 49507, not only has the highest blood lead level of all zip codes in Kent County, it also has the highest reported level of lead poisoning in Michigan (Harger 2015). There are multiple reasons why these core urban zip codes have higher blood lead levels than outlying zip codes in Kent County. For example, zip codes in Grand Rapids, Wyoming, and Kentwood are governed by building regulations that prevent the use of lead-based paint in the construction of new houses. Given the age of some of the neighborhoods in Grand Rapids, Wyoming, and Kentwood, these areas are more likely to contain higher blood lead levels as housing, industrial, and other small businesses are more apt to have lead-based paints and other lead-based materials used in their construction. In addition, Route 131 and other major roads transect these urban areas, and significant residues of lead from gasoline remain in the soil and atmosphere, and historically affected the populations who have lived and continue to live there. Significant numbers of those released from incarceration are returning to zip codes with higher blood lead levels, thus increasing the

risk they will be exposed to an environment that is conducive to increased levels of physical and developmental health risks that may contribute to increased recidivism levels.

Neighborhood Context Models

The crux of this dissertation was to expand the understanding of neighborhood context and reentry by addressing how increased levels of health-related issues in neighborhoods influence recidivism. Based on the analyses presented in Chapter 5, increased neighborhood levels of health-related issues consistently increased the log odds of being rebooked or reincarcerated in KCCF. In fact, the neighborhood level measures of health—substance abuse, mental health, lead, and a combined health measure— exerted some of the strongest influences on the log odds of recidivism for those released from incarceration. The resiliency of this positive influence is also evident when modeling recidivism odds for blacks and non-blacks returning from incarceration. In short, neighborhood levels of health are an important and worthwhile contribution to the reentry literature.

Due to the multicollinearity issues I found during the regression diagnostics, each of the neighborhood contextual variables was entered separately into the rebooking and reincarceration models to ascertain their influences on recidivism. As expected, a majority of neighborhood contextual variables influenced recidivism in their anticipated ways. For example, higher levels of concentrated disadvantage in a given zip code increased the log odds of recidivism. Higher levels of affluence and residential stability worked in the opposite direction by decreasing the log odds of recidivism. Based on prior reentry research that employed neighborhood context (Kubrin and Stewart 2006;

Mears et al. 2008), these findings were to be expected. In this respect, these findings help confirm that traditional measures of social disorganization used in prison reentry studies are also applicable to jail reentry settings. The same neighborhood obstacles present for prison reentry are also present for jail reentry.

Findings relating to black and Hispanic heterogeneity, plus the health-related neighborhood contextual variables are of particular interest. Higher levels of Hispanic heterogeneity influenced recidivism in the anticipated way by increasing the log odds that those released from KCCF would either be rebooked or reincarcerated after returning to their communities and neighborhoods. Unanticipated was how black heterogeneity influenced the log odds of recidivism. Past neighborhood context research (Rhineberger-Dunn and Carlson 2011; Sampson and Wilson 1995) found that a more racially heterogeneous neighborhood would work to lower levels of crime given the opportunities individuals have to interact with neighbors and be exposed to non-criminal ideas and lifestyles. The results of this dissertation indicate that higher levels of black heterogeneity in zip codes located in Kent County increase the log odds of being rebooked or reincarcerated. Additionally, a majority of the zip codes with the highest levels of black heterogeneity are inclusive of higher levels of social disorganization. As such, race appears to be interacting with other measures of disorganization to create an environment where pro-social messages are not properly conveyed due to an inability of these neighborhoods and communities to build and sustain strong social capital and informal social control.

As anticipated, higher neighborhood levels of substance abuse, mental health, lead, and combined concentrated health issues worked to increase the odds of recidivism

when entered separately in the baseline models. This influence was also present after the introduction of individual-level variables to the baseline models. What these findings suggest is that zip codes with higher concentrated health-related issues present additional barriers to successful reentry over and above traditional measures of social disorganization. In turn, this creates new issues that need to be taken into consideration when developing ways to improve the odds of successful reentry.

Due to the manner in which the mental health and substance abuse variables were measured, these findings also provide new avenues of understanding how concentrated disadvantage and lower levels of affluence impact reentry. The substance abuse and mental health neighborhood contextual variables measure the percentage of zip code residents who assessed and received services through Network180 in Kent County. Network180 provides funding and access to services for those who lack the necessary financial resources to access needed substance abuse and mental health treatment services elsewhere. Given that zip codes show both higher levels of concentrated disadvantage and lower levels of affluence, coupled with higher substance abuse and mental health treatment levels, results from the substance abuse and mental health models may translate into a secondary way of understanding how disadvantage and a lack of affluence impact reentry. In other words, the substance abuse and mental health models explain the impacts of concentrated disadvantage on reentry as opposed to how higher levels of substance abuse and mental health impact recidivism. A second consideration is how higher substance abuse and mental health levels in neighborhoods create environments that impede the ability of those returning from incarceration to access social capital networks that assist in reducing the odds of recidivism.

Much like the interactions between black heterogeneity and concentrated health-related neighborhood contextual variables, higher lead levels in neighborhoods interact with increased levels of neighborhood disorganization to create an environment that is not conducive to the development and continuation of social capital and informal social control necessary for reducing recidivism levels. When entered separately, higher lead values in zip codes significantly increased the log odds of recidivism for both the baseline and full models. Similar to the findings for the other neighborhood health-related contextual variables and black heterogeneity, zip codes characterized by higher blood lead values are also characterized by higher levels of neighborhood social disorganization. Those returning to zip codes with higher social disorganization levels not only face environments which impede successful reentry due to reduced levels of social capital and informal social control, they also return to areas where their very living environment may have led to physical and developmental delays that present additional obstacles to accessing what little social capital may be present. The time to form pro-social contacts with neighbors who could assist with successful reentry activities is limited due to a need to address health-related issues for themselves or family members that have been exposed to high lead levels.

Interaction Models – Race and Health

Some of the most interesting findings from the analyses in Chapter 5 come from the models examining the impact of combined health and lead contextual variables on black and non-black recidivism. By and large, a majority of the traditional social disorganization variables did not influence the log odds of recidivism for blacks or non-blacks when these variables were entered in the same model. Increased levels of black

heterogeneity decreased the odds of rebooking for blacks in the model containing the lead

contextual variable. This is the only instance in all models where increased levels of

black heterogeneity worked to decrease recidivism when it was entered with other

neighborhood-level variables. In the reincarceration model measuring the influence of

combined concentrated health issues on black reincarceration, higher levels of residential

stability significantly increased the odds of reincarceration in the baseline model. This

effect, however, disappeared after the introduction of individual-level variables to the

model.

Of greater significance to this dissertation is the consistency of the statistically

significant effects of the combined concentrated health issue and lead contextual

variables on the odds of recidivism for blacks. In the rebooking models, both health

contextual variables influenced increased odds of recidivism. This influence was still

significant after the introduction of individual-level variables to the baseline models. On

the other side, health contextual variables increased the odds of reincarceration in each of

the baseline models for blacks. However, statistical significance disappeared in each of

the reincarceration models for blacks when individual-level variables were added.

Interestingly, for those of other races, none of the concentrated neighborhood health issue

variables had a statistically significant influence on either the log odds of rebooking or

recidivism.

This suggests two conclusions. First, the workings of different parts of the

criminal justice system may impact blacks and non-blacks differently based on how

recidivism is measured. Each recidivism measure involves different aspects of the

criminal justice and, as such, blacks and non-blacks may be treated and viewed

differently in terms of rebooking and reincarceration practices of the different criminal justice agencies across Kent County. This would follow similar findings by Mears et al. (2008) which suggested that neighborhood context and race impacted the type of reconviction for violent, property, and drug offenses. Second, although the traditional social disorganization variables were not statistically significant, an argument could still be made that higher levels of disadvantage impact recidivism based on the way the health contextual variables were constructed.

Another finding of interest in the black rebooking models is that adding individual-level variables to the baseline models resulted in the logit coefficient values for the combined health and lead variables to increase. Increased logit coefficient values did not occur in the reincarceration models for the health contextual variables. In previous models, logit coefficient values for the neighborhood health variables decreased once individual-level variables were introduced to the baseline models. Again, the reason for this outcome may be grounded in the practices and culture of criminal justice system actors in certain zip codes given the influence that these practices and culture have on how cases are prosecuted. Whereas Reisig et al. (2007) found that higher levels of racial inequality amplified the negative effects of individual-level factors on recidivism for blacks, this finding suggests the opposite. The addition of individual-level variables to the baseline models appears to intensify the negative effects of health contextual variables on the rebooking of blacks.

Figures 6.10 and 6.11 provide a visual representation of how race and health-related variables interact with one another to influence increased odds of recidivism. Figure 6.10 shows that approximately 80% of all blacks released from KCCF return to

the eight zip codes with the highest levels of combined health issues. The map in Figure

6.11 shows how non-Hispanic whites are more likely to return to zip codes that are

suburban in nature and have lower combined health scores. Additionally, this suggests

that, not only do blacks return to specific locations in Kent County, these geographic

areas are highly disorganized and have high levels of neighborhood health-related issues.

In turn, these create environments where it is more difficult to avoid recidivistic activity.
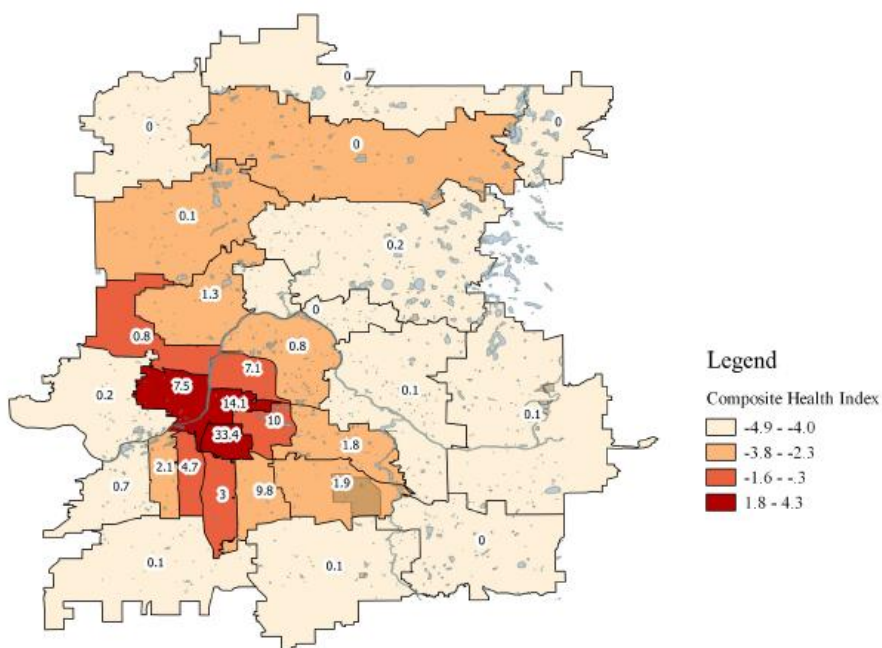

Figure 6.10. Health Composite Index and Percentage of Blacks Released from Jail in Kent County Zip Codes
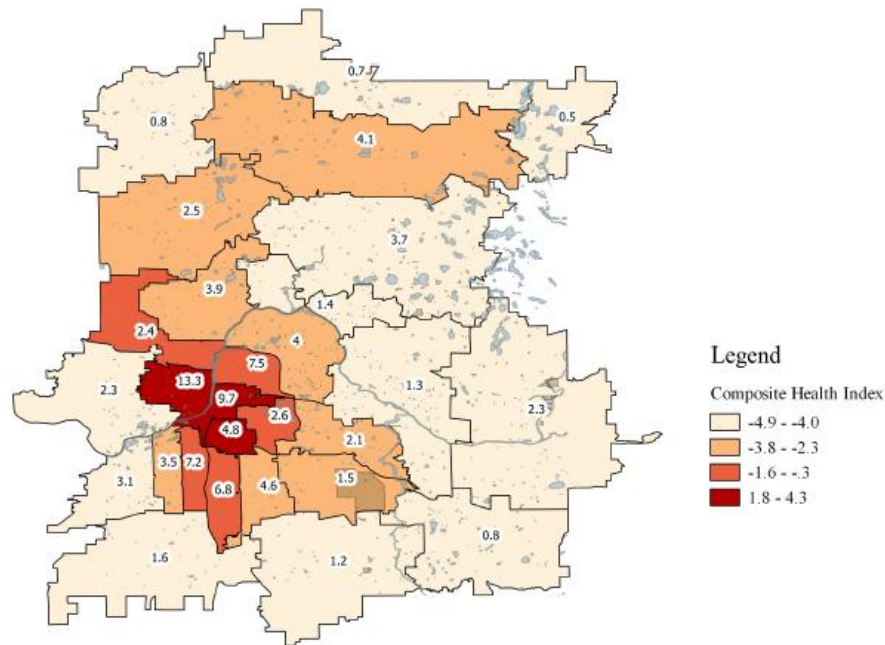
Figure 6.11. Composite Health Index and Percentage of White Non-Hispanics Released from Jail in Kent County Zip Codes

Tables 6.1 and 6.2 further elaborate the finding that neighborhood context, including neighborhood concentrated health-related issues, impact recidivism odds over and above individual-level factors that may be faced by blacks and non-blacks. To construct these tables, the black rebooking and reincarceration equations for the combined neighborhood health measure in Tables 5.15 and 5.19 were used to calculate the predicted probabilities of recidivism of "typical" black male and female releasees based on their respective group means/proportions for dummy variables in the model and medians for the continuous variables, and the mean values for the neighborhood contextual variables. Then the probabilities for "typical" male and female white, non-Hispanic releasees were calculated using the means and medians of the individual-level variables for these groups, in order to show if differences between races in individual

factors alone can explain race differences in recidivism outcomes. If differences in individual characteristics between blacks and white non-Hispanics explain the race difference, probabilities should be much higher for blacks than for white non-Hispanics. On the other hand, if differences in the neighborhood contexts to which the two groups return are responsible, small differences in probabilities should obtain across groups.

Tables 6.1 and 6.2 clearly show the probabilities of being rebooked and reincarcerated for blacks and non-Hispanic whites released from incarceration are very small, indicating that increased log odds of recidivism are not attributable to differences in individual-level characteristics across groups. If individual-level characteristics were the primary drivers of recidivistic activity, percentage values would be higher for blacks than non-Hispanic whites. In fact, the low difference in probability values in both tables indicates that race differences in rebooking and reincarceration are more attributable to differences in the neighborhood contexts within zip codes to which the two race groups disproportionately return. Given that a larger percentage of blacks return to zip codes characterized as having less social capital and lower levels of informal social control due to higher levels of social disorganization, higher odds of recidivism for blacks can be attributed to neighborhood context as opposed to individual-level factors. In short, these findings suggest race and neighborhood context are important determinants of reentry outcomes.

Table 6.1. Probability of Rebooking for Typical Black and White Jail Releasee Characteristics by Sex

Zip Code	Black Male	White Male	Difference	Black Female	White Female	Difference
49504	72.3%	71.5%	0.8%	59.5%	58.9%	0.6%
49503	71.6%	70.8%	0.8%	58.7%	58.0%	0.7%
49507	70.4%	69.6%	0.8%	57.3%	56.6%	0.7%
49505	70.0%	69.1%	0.9%	56.8%	56.1%	0.7%
49506	70.0%	69.1%	0.9%	56.8%	56.1%	0.7%
49306	69.9%	69.0%	0.9%	56.6%	55.9%	0.7%
49319	69.4%	68.5%	0.9%	56.1%	55.4%	0.7%
49341	69.2%	68.3%	0.9%	55.9%	55.2%	0.7%
49544	68.7%	67.9%	0.8%	55.3%	54.7%	0.6%
49301	68.5%	67.6%	0.9%	55.1%	54.4%	0.7%
49331	68.5%	67.6%	0.9%	55.0%	54.3%	0.7%
49525	68.5%	67.6%	0.9%	55.1%	54.4%	0.7%
49302	68.4%	67.5%	0.9%	54.9%	54.2%	0.7%
49326	68.2%	67.3%	0.9%	54.7%	54.0%	0.7%
49509	68.2%	67.3%	0.9%	54.7%	54.0%	0.7%
49345	68.0%	67.1%	0.9%	54.5%	53.8%	0.7%
49548	67.9%	67.0%	0.9%	54.3%	53.6%	0.7%
49315	67.7%	66.8%	0.9%	54.2%	53.5%	0.7%
49316	67.2%	66.2%	1.0%	53.5%	52.8%	0.7%
49330	66.9%	66.0%	0.9%	53.3%	52.6%	0.7%
49534	66.7%	65.8%	0.9%	53.0%	52.3%	0.7%
49418	66.4%	65.5%	0.9%	52.7%	52.0%	0.7%
49321	65.7%	64.8%	0.9%	51.9%	51.2%	0.7%
49508	65.6%	64.7%	0.9%	51.8%	51.1%	0.7%
49546	65.4%	64.5%	0.9%	51.6%	50.9%	0.7%
49343	64.4%	63.5%	0.9%	50.5%	49.8%	0.7%
49519	64.2%	63.2%	1.0%	50.2%	49.5%	0.7%
49512	61.4%	60.4%	1.0%	47.2%	46.5%	0.7%

Note. First three zip codes have the highest combined health issues.

Table 6.2. Probability of Rincarceration for Typical Black and White Jail Releasee Characteristics by Sex

Zip Code	Black Male	White Male	Difference	Black Female	White Female	Difference
49507	49.8%	48.9%	0.9%	32.6%	32.2%	0.4%
49503	47.7%	46.7%	1.0%	30.7%	30.3%	0.4%
49504	47.3%	46.3%	1.0%	30.4%	30.0%	0.4%
49505	46.4%	45.4%	1.0%	29.6%	29.3%	0.3%
49506	46.2%	45.2%	1.0%	29.4%	29.1%	0.3%
49509	45.5%	44.5%	1.0%	28.8%	28.5%	0.3%
49548	45.3%	44.3%	1.0%	28.7%	28.4%	0.3%
49306	45.0%	44.0%	1.0%	28.4%	28.1%	0.3%
49343	44.7%	43.8%	0.9%	28.2%	27.9%	0.3%
49341	44.5%	43.5%	1.0%	28.0%	27.7%	0.3%
49319	44.4%	43.4%	1.0%	28.0%	27.6%	0.4%
49508	44.4%	43.5%	0.9%	28.0%	27.7%	0.3%
49301	44.2%	43.2%	1.0%	27.8%	27.5%	0.3%
49331	44.0%	43.0%	1.0%	27.6%	27.3%	0.3%
49525	44.0%	43.1%	0.9%	27.7%	27.3%	0.4%
49302	43.9%	42.9%	1.0%	27.5%	27.2%	0.3%
49326	43.9%	43.0%	0.9%	27.6%	27.3%	0.3%
49330	43.9%	42.9%	1.0%	27.5%	27.2%	0.3%
49315	43.7%	42.7%	1.0%	27.4%	27.0%	0.4%
49345	43.7%	42.7%	1.0%	27.4%	27.1%	0.3%
49544	43.6%	42.7%	0.9%	27.3%	27.0%	0.3%
49316	43.5%	42.6%	0.9%	27.3%	26.9%	0.4%
49321	43.1%	42.2%	0.9%	26.9%	26.6%	0.3%
49418	42.9%	42.0%	0.9%	26.8%	26.4%	0.4%
49546	42.8%	41.8%	1.0%	26.7%	26.3%	0.4%
49534	42.7%	41.7%	1.0%	26.6%	26.2%	0.4%
49519	42.4%	41.4%	1.0%	26.3%	26.0%	0.3%
49512	40.9%	39.9%	1.0%	25.1%	24.8%	0.3%

Note. First three zip codes have the highest combined health issues

Limitations and Opportunities

Although the limitations discussed in the following paragraphs have presented

barriers to gaining a more holistic understanding of the factors impacting successful

reentry, these limitations also present a number of opportunities to guide future research.

These opportunities for future research are also detailed below.

Limitations

One of the major limitations of this study was the lack of availability of specifics

related to substance abuse and mental health at the individual and neighborhood levels.

In terms of neighborhood context, substance abuse and mental health data provided by

Network180 only measure the percentage of neighborhood residents who received

funding for treatment services through this agency. These data do not provide an

accurate view of substance abuse and mental health levels in Kent County zip codes, as

data that include a measure of such services accessed outside of Network180 was not

available. As such, true levels of substance abuse and mental health issues in the twenty-

eight zip codes may have been underestimated, as those who paid for treatment services

on their own, or whose services were funded by other agencies would not have been

captured in the data provided by Network180. Additionally, data provided by KCCF

only measures whether those released from incarceration have or do not have a substance

abuse or mental health issue. There was no means to measure what type of substance

was being abused, nor was there the means to capture the severity and type of mental

illness. In short, the individual-level variables did not capture important information

related to substance abuse and mental health of those released from incarceration.

A second limitation of the present study concerns generalizability of the findings beyond the research setting. Due to this study being based on those released from one specific county jail to zip codes in a single county, generalizing these findings to other counties in Michigan or in other states may be problematic. First, other counties may not have the same financial resources to provide a similar jail experience as in Kent County. This lack of resources might inhibit their ability to provide reentry services specific to their locations and even in obtaining information relevant to targeting such services to those at highest risk of recidivism. Second, counties that are more rural in nature may not be able to apply the findings of this study given the urbanized nature of many parts of Kent County. Wodahl (2006) wrote on the unique reentry barriers faced by rural counties, and thus limiting generalizabilitiy of findings from this dissertation to rural locations. Applying these findings to larger urban areas may also be problematic given that the contextual nature of their communities and neighborhoods may differ from those in Kent County. Local jail populations also differ from county to county and this would limit applying the findings of this dissertation to other locations.

Focusing on a single county for this study resulted in two methodological issues that also may have limited the generalizability of results of this dissertation. Regression diagnostics found that there were high levels of multicollinearity between several of the neighborhood contextual variables. More specifically, high levels of multicollinearity were detected between the substance abuse and mental health variables, as well as between the concentrated disadvantage and ICE variables when these variables were entered simultaneously into the models. These findings of high multicollinearity can be attributed to the ways in which these two sets of variables were constructed.

Concentrated disadvantage and ICE variables measure levels of poverty and affluence, although in different ways. Kubrin and Stewart (2006) noted that multicollinearity was an issue in their study when concentrated disadvantage and ICE variables were entered together in their models. I employed the same strategy used by Kubrin and Stewart (2006) in addressing the multicollinearity for these two variables by estimating models that added concentrated disadvantage and ICE in separate models.

Network180 provided data for the substance abuse and mental health neighborhood-level variables that measured the percentage of neighborhood residents receiving services through their office. With Network180 only providing funding and services to individuals who have fewer financial resources to access these services through their own means, these variables can be seen as measuring disadvantage or affluence in a different way than the concentrated disadvantage and ICE variables. This helps explain the high levels of multicollinearity when the four variables—concentrated disadvantage, ICE, substance abuse, and mental health—are entered into the logistic regression models simultaneously. Multicollinearity levels were reduced for the neighborhood substance abuse and mental health contextual variables by combing these with the neighborhood lead contextual variable to form the combined health contextual variable. Separate logistic regression models were estimated with the combined health and lead context variables entered separately, but in conjunction with the other social disorganization variables. While this course of action helped address multicollinearity issues, this tactic presents a limitation in the findings as the models were not able to estimate the independent influence of the substance abuse and mental health neighborhood contextual variables on the recidivism measures.

Another limitation encountered in the process of this dissertation was the lack of variation in recidivism rates across zip codes and even census tracts. A lack of variation across zip codes limited the use of multi-level modeling techniques, which in turn limited the overall findings in the dissertation. When multi-level modeling techniques were explored for this study, initial results showed that all of the neighborhood variation in recidivism rates was explained by the introduction of individual-level variables. This lack of variation was surprising given that previous studies conducted by Hipp, Petersilia, and Turner (2010), Kubrin and Stewart (2006), and Mears et al. (2008) did not mention any encounters with a lack of variability between neighborhoods in their research. However, these studies also do not indicate what percentage of those released from incarceration return to each geographic area. In the case of this dissertation, mapped information clearly show that a majority of those released from incarceration return to eight out of the twenty-eight zip codes in Kent County. These zip codes are characterized by the highest levels of each of the neighborhood context variables. This means that the remaining twenty zip codes in Kent County do not attract a significant number of those returning home after incarceration, nor is there a significant level of variability in the level of social disorganization, including health, variables, across these zip codes.

While this lack of variability may signal a limitation in the use of jail facilities as sites for reentry research, caution would suggest otherwise. Kent County may be an outlier in the sense that a majority of those released from incarceration return to the zip codes that contain neighborhoods and communities with higher levels of social disorganization. Previous neighborhood context and recidivism studies utilized larger geographic areas than a single county. For example, Mears et al. (2008) and Reisig et al.

(2007) both used counties in Florida as their geographic units of analysis, whereas Hipp

et al. (2010) collected census tract data on all parolees released in California during a

two-year period. These studies thus would have greater levels of variability across

geographic areas than in a study like this one based on zip codes in a single county.

The measurement of individual-level variables was also problematic in the present

study. Measuring employment in this dissertation was done with a binary variable which

noted whether or not those released from incarceration had an occupation at the time of

their booking. This tells nothing about the quality of the job in terms of wages earned or

how long their employment had lasted prior to incarceration. Family data, such as

marital status or number of children, were not utilized in this dissertation due to the data

not being detailed as to the nature of these relationships. Data pulled from KCCF only

detail whether or not someone was married, single, widowed, and so forth. It does not

include, for example, whether someone identified as single is currently in a relationship

with a significant other, or had recently broken up with a partner. Likewise, while KCCF

data records the number of children those released from incarceration have, the data do

not indicate when they may have last seen their children, or if they have an ongoing

relationship with their children. This information is necessary to establish whether these

relationships likely will provide a positive or negative impact on successful reentry

outcomes.

Information related to any programming and services engaged in by the study

population—while incarcerated, after incarceration, or both—were not available for use

in this project. Participation in programming and services may have worked to mitigate

the negative impacts of socially disorganized neighborhoods or other individual-level

barriers to successful reentry. Programming and services, specifically those that are

considered evidence-based in structure and implementation, have been shown to be

effective in helping reduce recidivistic behavior, and thus improving the odds of

successful reentry (Cullen and Gendreau 2000; Listwan, Cullen, and Latessa 2006;

MacKenzie 2006; Petersilia 2004, Thompson 2008). These data were excluded due to

their limited availability. This information would have only been available for a small

group of those released to probation supervision for a felony offense. Services and

programming data were not available for those who served time for a felony offense and

received no probation supervision, those who had served time for misdemeanor offenses,

and those who may have participated in programming or services that were not reported

to a probation agent or other supervisory agency.

Opportunities

These limitations in the present study provide a number of future research

opportunities. One of the primary influences on successful reentry that was not captured

in this study is the role family members and familial relationships play in the reentry

process. Future research into jail reentry and neighborhood context would benefit from

conducting mixed-method studies that combine qualitative and quantitative data to

provide a greater level of contextualization that more fully explains how family

relationships impact jail reentry. In doing so, researchers would be able to better

understand the types of family ties that best influence the odds of successful reentry.

Incorporating additional counties in future studies would provide policymakers

with more information to bolster support for research funding and for jail reentry

programs in other locations. Expanding this research to include other counties would

have the benefit of showing how neighborhood context measures, including

neighborhood health-related variables, impact smaller rural counties as well as counties

with urban populations larger than in Kent County. Additional benefits to counties would

be gaining a broader understanding of the populations incarcerated in their local and

county jails. Having knowledge of these populations would allow counties and other

governmental entities to use problem-solving to find additional solutions that address the

numerous issues impacting those released from jail incarceration.

Future research would benefit from the inclusion of programming and services in

two ways. On the individual level, research projects that include variables measuring the

services and programming engaged in by those released from jail would broaden the

understanding of how these programs and services impact jail reentry. Being able to

ascertain whether released individuals obtained an education credential after release,

successfully completed a substance abuse treatment program while incarcerated, or

continued in mental health case management services post release could strengthen future

reentry research and policy. With regards to neighborhood context, mapping the location

of treatment providers, hospitals, and other programming opportunities could, not only

provide support for additional treatment programming and services, but also serve to

further cement the importance of place in the study of reentry. Hipp, Petersilia, and

Turner (2010) found that social service providers located close to where those returned

from incarceration lived significantly reduced the chances of recidivating. Knowing

where local service providers are located in relationship to where individuals return home

after incarceration strengthens the understanding of how neighborhood context impacts

reentry.

The decreased odds of recidivism for females is one of the most consistent findings across all models in this study. Future research should work to unpack the reasons contributing to why females recidivate less than males. Because women come into criminality and experience reentry differently than men, it is difficult to draw any hard and fast conclusions of why the odds of recidivism are reduced for this population without having additional information. Similar to gaining an advanced understanding of how familial relationships impact reentry, a mixed-methods study would provide richer data from which stronger conclusions regarding the female reentry experience could be drawn. This type of study could also answer why being female works to blunt the impact of higher levels of neighborhood social disorganization on reentry.

Policy Recommendations

Results of this dissertation support the argument that, in order to improve the odds of successful reentry, policymakers will need to address disadvantage and other neighborhood barriers facing those returned from incarceration, both from prisons and jails. Byrne and Taxman (2005:5) wrote that reentry strategies that focus on individual-level factors will see small reductions in recidivism levels unless these policies are created "in conjunction with interventions designed to change communities as well." This assertion falls in line with similar arguments made by Clear (2007) that focusing solely on individual-level rehabilitation programming to increase the odds of successful reentry will not provide satisfactory results. Policymakers and legislators seeking to increase the odds of successful reentry would be wise to implement changes that are aimed at reducing the harmful effects of economic disadvantage and family disruption at the neighborhood level (Currie 1998; Pratt 2009; Wilson 1987). Additionally, improving

neighborhoods means policymakers have to do more than just combating poverty and inequality. As noted by Messner and Rosenfeld (2001), improvements to neighborhoods must include work that supports positive changes in the cultural and structural composition of these geographic areas. By doing so, the odds of successful reentry can be strengthened above and beyond what is currently being done for those returning home from incarceration.

With the findings that higher lead values in zip codes in Kent County contribute to increased odds of recidivism, financial support for lead abatement programs should be continued. These programs have proved beneficial to removing lead from homes, and thus reducing the chances of being exposed to dangerously high lead levels that may lead to the development of new or additional physical and developmental health issues. Kent County's Get the Lead Out! program has helped 1,368 homes over the past 10 years with repairs aimed at reducing lead levels in these dwellings. Still, there are approximately 60,000 homes in Kent County that continue to a problem because of high lead levels (Harger 2015). These programs not only face funding shortages, they also face a dearth of contractors and workers who are qualified or want to undertake these types of projects. Continued funding, mixed with community outreach and education, provide the necessary resources to help reduce lead levels in communities and neighborhoods.

Policymakers, governmental representatives, and additional criminal justice stakeholders must also address the fact that improving the odds of successful reentry means facing issues related to race. On a broad level, Spohn and Holleran (2002), Steen and Opsal (2007), and Thompson (2008) have shown how race impacts the odds of successful reentry after prison when focusing on individual-level reentry issues. Moving

up to the community level, Clear (2007) and Sampson and Laub (2003), among others, have shown how race interacts with neighborhood context to negatively influence reentry. More specific to the findings in this dissertation, race was one of the most consistent predictors of increased odds of rebooking or reincarceration for those released from jail incarceration. This occurs on both individual and neighborhood levels. Maps show that blacks returning home after incarceration return to a relatively small geographic area characterized by higher levels of social disorganization and combined health issues in the neighborhood. The negative impacts of these factors in these disorganized zip codes are not experienced in a significant manner by non-blacks to the extent that they are experienced by blacks. These findings support the need for all stakeholders to address race in a meaningful way in terms of how blacks are disportionately impacted by reentry obstacles on the individual and neighborhood levels.

Results of the individual-level models indicated that individual-level factors played important roles in influencing the successful reentry of those released from jail incarceration. In several of the models, the addition of individual-level variables to baseline models nullified the impact that higher levels of neighborhood social disorganization had on recidivism. These findings should encourage policymakers to continue financial support for programs and services that address these barriers. For example, improving education levels has been shown to decrease the odds of recidivism for those who have participated in these programs (Aos, Miller, and Drake 2006; Petersilia 2003). Holzer et al. (2004) and Travis (2005) have both written on equating the importance of gaining and maintaining employment to a reduction in recidivism. Thompson (2008) has shown that successful participation in substance abuse services is

effective in helping improve the odds of reducing recidivism for those released from incarceration.

Policymakers would also be wise to recognize the importance that these individual-level barriers to successful reentry do not exist in a vacuum to each other. A majority of the time, those reentering society do not face educational deficiencies and a lack of employment opportunities separately. More often than not, those returned from incarceration face a lack of quality employment opportunities due to low levels of educational attainment or because of a persistent substance abuse problem. In other words, these issues must be addressed simultaneously and holistically. Policymakers should not be drawn into thinking that a single program or service will work as a cure-all that can address every single one of these individual-level barriers. Policymakers need to acknowledge that a comprehensive array of reentry services that address a variety of reentry obstacles and issues are required in order to promote successful reentry.

Focusing more specifically on substance abuse and mental health, the results of this study show that both individual and neighborhood levels of these variables influence an increase in the odds that those released from jail incarceration will be rebooked or reincarcerated. Jail staffs and other concerned stakeholders should actively pursue policies and procedures to increase the number of those released from incarceration are signed up for medical coverage under the Affordable Care Act (ACA) or their state's affiliated medical insurance program as a means to begin addressing these concerns. ACA literature has noted that the provision of substance abuse and mental health treatment services is one of the core essential health benefits addressed by the implementation of this insurance program. In Kent County, one of the primary

roadblocks to enrolling a greater percentage of those eligible for ACA-covered services prior to release is deciding which personnel or agency bears the responsibilities of the work necessary to enroll those eligible for these benefits, as well as which agency or department is responsible for financially supporting these registration efforts. Results from this study can be used to develop and support local policies that require jail staffs to register those eligible for ACA coverage prior to their release from incarceration. By doing so, needed substance abuse and mental health treatment services demonstrated to reduce recidivism can be initiated closer to the actual release date for those returning home, rather than wasting precious time waiting for an application for coverage to be approved after their release.

Conclusion

Results of this study produced a number of findings that have not been found in earlier reentry research. Even though individual-level health has been discussed as influential in the reentry process, prior studies focusing on prison reentry have failed to include this variable in their models. Findings of this study show that both substance abuse alone and combined with mental health issues significantly increase the odds of rebooking and reincarceration. Moreover, prison reentry studies that include the effect of neighborhood context have not included concentrated health issues in the community as a determinant of reentry outcomes. The finding that neighborhood-level measures of health have a statistically significant impact on recidivism, and that this influence is one of the most consistent findings across all models suggests the need to include community health in future studies of jail and prison reentry. Additionally, the impact of neighborhood-level health was more influential for blacks released from incarceration

than for those of other races which suggests that race and neighborhood context interact in such a way as to influence the reentry of those released from jail. These findings are important as they suggest that neighborhood context, health, and race matter and are important contributors to the expanding field of jail reentry research, and they could also be in the prison reentry process.

Where these findings fall short is providing solid evidence that jail reentry is a unique process that differs from prison reentry. Although this project shows support for the assertions that neighborhood context, race, and health should be included in reentry research, the findings also suggest that jail and prison reentry are influenced by at least some of the same factors. The individual-level variables employed in this research that influenced the successful reentry of those released from jail have also been identified as influencing the successful reentry of those released from prison facilities. These include, for example, higher levels of education, having an occupation, and being female. Likewise, neighborhood factors influencing jail reentry have also been shown to influence prison reentry. Moreover, even though this research shows the significant impact that race has on jail reentry, prior prison studies have also shown that race plays an important role in the reentry process. All of this equates to a situation that begs the question of whether jail reentry can be theorized and studied separately from prison reentry.

As a result, the findings from this dissertation support the need for future research initiatives that delve further into jail reentry. For example, future research projects could more fully explore the influence that length of stay has on the reentry process for those returning from prison or jail facilities. Length of stay has been identified as an important

consideration in previous discussions centered on jail reentry; however, these discussions focused on how length of stay impacted the provision of programming to those in jail, not on the direct impact that length of stay may have on the reentry process. The results of the analyses in this dissertation indicate that length of stay was not a statistically significant predictor of recidivism. In this case, this finding suggests the need for additional research that takes length of stay into consideration. Future research should also attempt to unpack the influence that race, health, and neighborhood context has on jail reentry. Engaging in future research focused on jail reentry can help draw more definitive conclusions with regards to whether this process is indeed a unique and separate process that differs from prison reentry.

REFERENCES

Agnew, Robert. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." *Criminology* 30(1):47-88.

Agnew, Robert. 1999. "A General Strain Theory of Community Differences in Crime Rates." *Journal of Research in Crime and Delinquency* 36(2):123-155.

Agnew, Robert. 2001. "Building on the Foundation of General Strain Theory: Specifying the Types of Strain Most Likely to Lead to Crime and Delinquency." *Journal of Research in Crime and Delinquency* 38(4):319-361.

Agnew, Robert. 2006. *Pressured Into Crime: An Overview of General Strain Theory.* New York: Oxford University Press.

Agresti, Alan and Barbara Finlay. 2009. *Statistical Methods for the Social Sciences.* Upper Saddle River, NJ: Prentice Hall, Inc.

Alexander, Michelle. 2010. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness.* New York: The New Press.

Allison, Paul D. 2002. *Missing Data.* Thousand Oaks, CA: Sage Publications, Inc.

Andrews, D.A. and James Bonta. 2006. *The Psychology of Criminal Conduct, 5th Edition.* Philadelphia: Andrews Publishing.

Aos, Steve, Marna Miller, and Elizabeth Drake. 2006. *Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates.* Olympia, WA: Washington Institute for Public Policy.

Arnold, William R. and Terrance M. Brungardt. 1983. *Juvenile Misconduct and Delinquency.* Boston: Houghton Mifflin Publishing.

Austin, James. 2001. "Prisoner Reentry: Current Trends, Practices, and Issues." *Crime & Delinquency* 47(3):314-334.

Austin, James and John Irwin. 2001. *It's About Time: America's Imprisonment Binge, Third Edition.* Stamford, CT: Wadsworth.

Bales, William D. and Linda G. Dees. 1992. "Mandatory Minimum Sentencing in Florida: Past Trends and Future Implications." *Crime & Delinquency* 38(3):309-329.

Bales, William D. and Alex R. Piquero. 2012. "Racial/Ethnic Differentials in Sentencing to Incarceration." *Justice Quarterly* 29(5):742-773.

Barak, Gregg. 1998. *Integrating Criminologies.* Needham Heights, MA: Allyn & Bacon.

Baron, Stephen W. 2004. "General Strain, Street Youth and Crime: A Test of Agnew's Revised Theory." *Criminology* 42(2):457-484.

Baron, Stephen W. and Timothy F. Hartnagel. 1997. "Attributions, Affect, and Crime: Street Youths' Reactions to Unemployment." *Criminology* 35(3):409-434.

Baron, Stephen W. and Timothy F. Hartnagel. 2002. "Street Youth and Labor Market Strain." *Journal of Criminal Justice* 30(6):519-533.

Binswanger, Ingrid A., Marc F. Stern, Richard A. Deyo, Patrick J. Heagerty, Allen Cheadle, Joann G. Elmore, and Thomas D. Koepsell. 2007. "Release From Prison: A High Risk of Death for Former Inmates." *New England Journal of Medicine* 356(2):157-165.

Blumstein, Alfred and Allen J. Beck. 2005. "Reentry as a Transient State Between Liberty and Recommitment." Pp. 50-79 in *Prisoner Reentry and Crime in America,* edited by J. Travis and C. Visher. New York: Cambridge University Press.

Bornstein, Avram. 2010. "Palestinian Prison Ontologies." *Dialectical Anthropology* 34(4): 459-472.

Braman, Donald. 2002. "Families and Incarceration." Pp. 117-135 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Bursik, Robert J. 1988. "Social Disorganization and Theories of Crime and Delinquency: Problems and Prospects." *Criminology* 26(4):519-552.

Bursik, Robert J. and Harold G. Grasmick. 1993. *Neighborhoods and Crime: The Dimensions of Effective Community Control.* New York: Lexington.

Byrne, James M. and Faye S. Taxman. 2005. "Crime (Control) Is a Choice: Divergent Perspectives on the Role of Treatment in the Adult Corrections System." *Criminology and Public Policy* 4(2):291-310.

Carmichael, Jason T. 2005. "The Determinants of Jail Use Across Large US Cities: An Assessment of Racial, Ethnic, and Economic Threat Explanations." *Social Science Research* 34(2):538-569.

Carson, E. Ann and William J. Sabol. 2012. *Prisoners in 2011.* Washington, D.C.: Bureau of Justice Statistics NCJ 239808.

Chandler, Redonna K., Roger H. Peters, Gary Field, and Denise Juliano-Bult. 2004. "Challenges in Implementing Evidence-Based Treatment Practices for Co-Occurring Disorders in the Criminal Justice System." *Behavioral Sciences and the Law* 22(4):431-448.

Chesney-Lind, Meda. 2002. "Imprisoning Women: The Unintended Victims of Mass Imprisonment." Pp. 79-94 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Clear, Todd R. 2002. "The Problem with 'Addition by Subtraction': The Prison-Crime Relationship in Low-Income Communities." Pp. 181-193 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Clear, Todd R. 2007. *Imprisoning Communities: How Mass Incarceration Makes Disadvantaged Neighborhoods Worse.* New York: Oxford University Press.

Clear, Todd R., Dina R. Rose, and Judith A. Ryder. 2001. "Incarceration and the Community: The Problem of Removing and Returning Offenders." *Crime & Delinquency* 47(3): 331-351.

Cobbina, Jennifer E. 2010. "Reintegration Success and Failure: Factors Impacting Reintegration Among Incarcerated and Formally Incarcerated Women." *Journal of Offender Rehabilitation* 49(3):210-232.

Cobbina, Jennifer E., Beth M. Huebner, and Mark T. Berg. 2012. "Men, Women, and Postrelease Offending: An Examination of the Nature of the Link Between Relational Ties and Recidivism." *Crime and Delinquency* 58(3):331-361.

Collins, Rachael E. 2010. "The Effect of Gender on Violent and Nonviolent Recidivism: A Meta-Analysis." *Journal of Criminal Justice* 38(4):675-684.

Colvin, Mark. 2000. *Crime and Coercion: An Integrated Theory of Chronic Criminality.* New York: St. Martin's Press.

Cullen, Francis T. and Paul E. Gendreau. 2000. "Assessing Correctional Rehabilitation: Policy, Practice, and Prospects." Pp. 109-176 in *Policies, Processes, and Decisions of the Criminal Justice System, Criminal Justice*. Washington, D. C.: U.S. Department of Justice.

Currie, Elliott. 1998. *Crime and Punishment in America*. New York: Henry Holt and Company.

Davidson, R. Norman. 1981. *Crime and Environment.* New York: St. Martin's Press.

Davis, Lois M., Malcolm Williams, Kathryn Derose, Paul Steinberg, Nancy Nicosia, Adrian Overton, Lisa Miyashiro, Susan Turner, Terry Fain, and Eugene Williams. 2011. *What Are the Public Health Implication of Prisoner Reentry in California?* Santa Monica, CA: Rand Corporation RB-9634.

Deason, Chris, Cynthia Hygrade, Madeline Adams, and Karen Jones. 2011. *Offender Reentry and Mental Illness.* St. Louis, MO: St. Louis Alliance for Reentry.

Denno, Deborah W. 1990. *Biology and Violence: From Birth to Adulthood.* New York: Cambridge University Press.

Draine, Jeffrey and Phyllis Solomon. 1994. "Jail Recidivism and the Intensity of Case Management Services Among Homeless Person with Mental Illness Leaving Jail." *The Journal of Psychiatry & Law* 22(2):245-261.

Drum, Kevin. 2013. "America's Real Criminal Element: Lead." *Mother Jones* January/February, pp. 1-2. Retrieved April 10, 2013 (http://www.motherjones.com/environment/2013/01/lead-crime-link-gasoline?page=1).

Ducksworth, John. 2010. "The Prisoner Reentry Industry." *Dialectical Anthropology* 34(4):557-561.

Durkheim, Emile. 1893/1997. *The Division of Labor in Society.* Trans. W. D. Halls, intro. Lewis A. Coser. New York: Free Press.

Eddy, J. Mark and John B. Reid. 2003. "The Adolescent Children of Incarcerated Parents: A Development Perspective." Pp. 233-258 in *Prisoners Once Removed: The Impact of Incarceration and Reentry on Children, Families, and Communities,* edited by J. Travis and M. Waul. Washington, D.C.: The Urban Institute Press.

Farmer, Paul. 2002. "The House of the Dead: Tuberculosis and Incarceration." Pp. 239-257 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Fitzpatrick, Kevin M. and Brad Myrstol. 2011. "The Jailing of American's Homeless: Evaluating the Rabble Management Thesis." *Crime & Delinquency* 57(2):271-297.

Gainey, Randy R., Brian K. Payne, and Mike O'Toole. 2000. "The Relationships Between Time in Jail, Time on Electronic Monitoring, and Recidivism: An Event History Analysis of a Jail-based Program." *Justice Quarterly* 17(4):733-752.

Garland, David. 2001. *The Culture of Control: Crime and Social Order in Contemporary Society.* Chicago: The University of Chicago Press.

Garofalo, James and Richard D. Clark. 1985. "The Inmate Subculture in Jails." *Criminal Justice and Behavior* 12(4):415-434.

Gendreau, Paul, Tracy Little, and Claire Goggin. 1996. "A Meta-Analysis of the Predictors of Adult Offender Recidivism: What Works!" *Criminology* 34(4):575-607.

Geronimus, Arline T. and John Bound. 1998. "Use of Census-based Aggregate Variables to Proxy for Socioeconomic Group: Evidence from National Samples." *American Journal of Epidemiology* 148(5):475-486.

Glaze, Lauren E. and Erinn J. Herberman. 2013. *Correctional Populations in the United States, 2012.* Washington, D.C.: Bureau of Justice Statistics NCJ 243936.

Goldfarb, Ronald L. 1975. *Jails: The Ultimate Ghetto of the Criminal Justice System.* New York: Anchor Press.

Goldsmith, Stephen and William B. Eimicke. 2008. "Moving Men Into the Mainstream: Best Practices in Prisoner Reentry." *Civic Bulletin* 51:1-14.

Gottfredson, Michael R. and Travis Hirschi. 1990. *A General Theory of Crime.* Redwood City, CA: Stanford University Press.

Gottfredson, Stephen D. and Ralph B. Taylor. 1986. "Person-Environment Interactions in the Prediction of Recidivism." Pp 133-155 in *The Social Ecology of Crime*, edited by J. M. Byrne and R. J. Sampson. New York: Springer Verlag.

Gottfredson, Stephen D. and Ralph B. Taylor. 1988. "Community Contexts and Criminal Offenders." Pp. 62-82 in *Communities and Crime Reduction,* edited by T. Hope and M. Shaw. London: Her Majesty's Stationery Office.

Gray, M. Kevin, Monique Fields, and Sheila Royo Maxwell. 2001. "Examining Probation Violations: Who, What, and When." *Crime & Delinquency* 47(4):537-557.

Greene, Judith A. 2002. "Entrepreneurial Corrections: Incarceration as a Business Opportunity." Pp. 95-113 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Guerino, Paul, Paige M. Harrison, and William J. Sabol. 2011. *Prisoners in 2011.* Washington, D.C.: Bureau of Justice Statistics NCJ 236096.

Guo, Guang and Hongxin Zhao. 2000. "Multilevel Modeling for Binary Data." *Annual Review of Sociology* 26:441-462.

Hallett, Michael. 2012. "Reentry To What? Theorizing Prisoner Reentry in the Jobless Future." *Critical Criminology* 20(3):213-228.

Hammett, Theodore M., Cheryl Roberts, and Sofia Kennedy. 2001. "Health-Related Issues in Prisoner Reentry." *Crime & Delinquency* 47(3):390-409.

Hanson, R. Karl. 2002. "Recidivism and Age: Follow-Up Data from 4,673 Sexual Offenders." *Journal of Interpersonal Violence* 17(10):1046-1062.

Hanson, R. Karl and Monique T. Bussiere. 1998. "Predicting Relapse: A Meta-Analysis of Sexual Offender Recidivism Studies." *Journal of Consulting and Clinical Psychology* 66(2):348-362.

Harger, Jim. 2015. "Building boom, economic recovery threaten household lead reduction programs." *Mlive.com*, March 2. Retrieved March 4, 2015 (http://www.mlive.com/business/westmichigan/index.ssf/2015/03/building_boom_economic_recover.html)

Harris, Grant T. and Marnie E. Rice. 2007. "Adjusting Actuarial Violence Risk Assessments Based on Aging or the Passage of Time." *Criminal Justice and Behavior* 34(3):297-313.

Halsey, Mark. 2010. "Imprisonment and Prisoner Re-Entry in Australia." *Dialectical Anthropology* 34(4):545-554.

Hipp, John R. 2007. "Block, Tract, and Levels of Aggregation: Neighborhood Structure and Crime and Disorder as a Case in Point." *American Sociological Review* 72(5):659-680.

Hipp, John R., Joan Petersilia, and Susan Turner. 2010. "Parolee Recidivism in California: The Effect of Neighborhood Context and Social Service Agency Characteristics." *Criminology* 48(4):947-979.

Hipp, John R. and Daniel K. Yates. 2009. "Do Neighborhood Parolees Affect Neighborhood Crime? A Case Study of Sacramento." *Criminology* 47(3):619-656.

Hirschi, Travis. 1969. *Causes of Delinquency.* Los Angeles: University of California Press.

Hoff, Rani A., Madelon V. Baranoski, Josephine Buchanan, Howard Zonana, and Robert A. Rosenchek. 1999. "The Effects of a Jail Diversion Program on Incarceration: A Retrospective Cohort Study." *Journal of the American Academy of Psychiatry and Law* 27(3):377-386.

Holzer, Harry J., Steven Raphael, and Michael A. Stoll. 2004. "Will Employers Hire Former Offenders?: Employer Preferences, Background Checks, and Their Determinants." Pp. 205-246 in *Imprisoning America: The Social Effects of Mass Incarceration*, edited by M. Pattillo, D. Weiman, and B. Western. New York: Russell Page Foundation.

Horn, Martin F. 1999. *Rethinking Sentencing.* Paper prepared for the National Institute of Justice Executive Sessions on Sentencing and Corrections.

Huebner, Beth M. and Mark T. Berg. 2011. "Examining the Sources of Variation in Risk for Recidivism." *Justice Quarterly* 28(1):146-173.

Irwin, John. 1985. *The Jail: Managing the Underclass in American Society.* Los Angeles: University of California Press.

James, Doris J. and Lauren E. Glaze. 2006. *Mental Health Problems of Prison and Jail Inmates.* Washington, D.C.: Bureau of Justice Statistics NCJ 213600.

Justice Policy Institute. 2008. *Substance Abuse Treatment and Public Safety.* Washington, D.C.: Justice Policy Institute.

Karberg, J. and J. James. 2005. *Substance Dependence, Abuse, and Treatment of Jail Inmates, 2002.* Washington, D.C.: Bureau of Justice Statistics NCJ 209588.

Karpowitz, Daniel and Max Kenner. 1995. *Education as Crime Prevention: The Case for Reinstating Pell Grant Eligibility for the Incarcerated.* Annandale-on-Hudson, NY: Bard Prison Initiative.

Kassebaum, Gene, Janet Davidson-Coronado, Mel Silverio, and Nancy Marker. 1999. *Survival on Parole: A Study of Post-Prison Adjustment and the Risk of Returning to Prison in the State of Hawaii.* Honolulu, HI: Attorney General – State of Hawaii.

King, Ryan D., Michael Massoglia, and Ross MacMillan. 2007. "The Context of Marriage and Crime: Gender, The Propensity to Marry, and Offending in Early Adulthood." *Criminology* 45(1):33-65.

Kirk, David S. 2009. "A Natural Experiment on Residential Change and Recidivism: Lessons From Hurricane Katrina." *American Sociological Review* 74(3):484-505.

Klofas, John M. 1990a. "The Jail and the Community." *Justice Quarterly* 7(1):69-102.

Klofas, John M. 1990b. "Measuring Jail Use: A Comparative Analysis of Local Corrections." *Journal of Research in Crime and Delinquency* 27(3):295-317.

Kornhauser, Ruth R. 1978. *Social Sources of Delinquency: An Appraisal of Analytic Models.* Chicago: University of Chicago Press.

Kowaleski-Jones, Lori. 2000. "Staying Out of Trouble: Community Resources and Problem Behavior Among High-Risk Adolescents." *Journal of Marriage and the Family* 62(2): 449-464.

Kruttschnitt, Candace and Rosemary Gartner. 2003. "Women's Imprisonment." *Crime & Justice* 30:1-82.

Kruttschnitt, Candace, Christopher Uggen, and Kelly Shelton. 2000. "Predictors of Desistance Among Sex Offenders: The Interaction of Formal and Informal Social Controls." *Justice Quarterly* 17(1):61-87.

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

Kubrin, Charis E. and Ronald Weitzer. 2003. "New Directions in Social Disorganization Theory." *Journal of Research in Crime and Delinquency* 40(4):374-402.

Kurlychek, Megan C., Robert Brame, and Shawn D. Bushway. 2006. "Scarlet Letters and Recidivism: Does an Old Criminal Record Predict Future Offending?" *Criminology and Public Policy* 5(3):483-504.

La Vigne, Nancy G. and Gillian L. Thomson. 2003. *A Portrait of Prisoner Reentry in Ohio.* Washington, D.C.: Urban Institute Justice Policy Center.

Laham, Karen F. 2009. "Educational Participation and Inmate Misconduct." *Journal of Offender Rehabilitation* 48(1):37-52.

Langan, Patrick A. and David J. Levin. 2002. *Recidivism of Prisoners Released in 1994.* Washington, D.C.: Bureau of Justice Statistics NCJ 193427

Laub, John H. and Robert J. Sampson. 2003. *Shared Beginnings, Divergent Lives: Delinquent Boys to Age 70.* Cambridge, MA: Harvard University Press.

Listwan, Shelley J., Francis T. Cullen, and Edward J. Latessa. 2006. "How to Prevent Prisoner Re-entry Programs From Failing: Insights from Evidence-Based Corrections." *Federal Probation* 70(3):19-25,64.

Luke, Douglas A. 2002. *Multilevel Modeling.* Thousand Oaks, CA: Sage Publications.

Lurigio, Arthur J. 2001. "Effective Services for Parolees with Mental Illness." *Crime & Delinquency* 47(3):446-461.

Lyles-Chockley, Adrienne. 2009. "Transitions to Justice: Prisoner Reentry as an Opportunity to Confront and Counteract Racism." *Hastings Race and Poverty Law Journal* 6(2):259- 303.

Lynch, James P. and William J. Sabol. 2004. "Effects of Incarceration on Informal Social Control in Communities." Pp. 135-164 in *Imprisoning America: The Social Effects of Mass Incarceration*, edited by M. Pattillo, D. Weiman, and B. Western. New York: Russell Page Foundation.

Mackenzie, Doris L. 2006. "Aftercare Following a Correctional Bootcamp May Reduce Recidivism." *Criminology and Public Policy* 5(2):359-362

Mallik-Kane, Kamala and Christy A. Visher. 2008. *Health and Prisoner Reentry: How Physical, Mental, and Substance Abuse Conditions Shape the Process of Reintegration.* Washington, D.C.: Urban Institute Justice Policy Center.

Maltz, Michael D. 1984. *Recidivism.* Orlando, FL: Academic Press, Inc.

Martin, Liam. 2013. "Reentry Within the Carceral: Foucault, Race, and Prisoner Reentry." *Critical Criminology*. doi:10.1007/s10612-013-9196-1

Martinson, Robert. 1974. "What Works? Questions and Answers About Prison Reform." *Public Interest* 35:22-53.

Maruna, Shadd. 2001. *Making Good: How Ex-Convicts Reform and Rebuild Their Lives.* Washington, D.C.: American Psychological Association Books.

Maruschak, Laura M. 2006. *HIV in Prisons, 2004* Washington, D.C.: Bureau of Justice Statistics.

Massey, Douglas S. 1996. "The Age of Extremes: Concentrated Affluence and Poverty in the Twenty-First Century." *Demography* 33(4):395-412.

Massey, Douglas S. 2001. "The Prodigal Paradigm Returns: Ecology Comes Back to Sociology." Pp. 41-48 in *Does it Take a Village? Community Effects on Children,*

Adolescents, and Families, edited by Alan Booth and Ann Crouter. Mahwah, NJ: Lawrence Erlbaum.

Mattick, Hans W. and Alexander B. Aikman. 1969. "The Cloacal Region of American Corrections." *The ANNALS of the American Academy of Political and Social Science* 381(1):109-118.

Mauer, Marc. 2002. "Mass Imprisonment and the Disappearing Voters." Pp. 50-58 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Mauer, Marc. 2006. *Race to Incarcerate.* New York: The New Press.

Mauer, Marc and Meda Chesney-Lind, eds. 2002. *Invisible Punishment: The Collateral Consequences of Mass Imprisonment.* New York: The New Press.

McConnville, Sean. 1995. "Local Justice: The Jail." Pp. 519-552 in *The Oxford History of the Prison: The Practice of Punishment in Western Society*, edited by D. Rothman and N. Morris. New York: Oxford University Press.

Mears, Daniel P., Xia Wang, and William D. Bales. 2012. "Does a Rising Tide Lift All Boats? Labor Market Changes and Their Effects on the Recidivism of Released Prisoners." *Justice Quarterly.* doi.org/10.1080/07418825.2012.677466

Mears, Daniel P., Xia Wang, Carter Hay, and William D. Bales. 2008. "Social Ecology and Recidivism: Implications for Prisoner Reentry." *Criminology* 46(2):301-340.

"Measuring What Matters." 2013. Grand Rapids, MI: Kent County Sheriff's Department.

Menard, Scott. 2002. *Applied Logistic Regression Analysis, 2ⁿᵈ Edition.* Thousand Oaks, CA: Sage Publications, Inc.

Merton, Robert K. 1938. "Social Structure and Anomie." *American Sociological Review* 3:672-682.

Messina, Nena, William Burdon, Garo Hagopian, and Michael Prendergast. 2004. "One Year Return to Custody Rates Among Co-Disordered Offenders." *Behavioral Sciences and the Law* 22(2):503-518.

Messner, Stephen F. and Rosenfeld, Richard. 2001. *Crime and the American Dream* (3rd ed.). Belmont, CA: Wadsworth/Thomson Learning.

Metraux, Stephen and Dennis P. Culhane. 2004. "Homeless Shelter Use and Reincarceration Following Prison Release." *Criminology & Public Policy* 3(2):139-160.

Mielke, Howard W. and Sammy Zahran. 2012. "The Urban Rise and Fall of Air Lead (Pb) and the Latent Surge and Retreat of Societal Violence." *Environment International* 43:48-55.

Miller, Bryan L. and Joseph F. Spillane. 2012. "Civil Death: An Examination of Ex-Felon Disenfranchisement and Reintegration." *Punishment & Society* 14(4):402-428.

Miller, Holly V. and J. Mitchell Miller. 2010. "Community In-Reach Through Jail Reentry: Findings from a Quasi-Experimental Design." *Justice Quarterly* 27(6):893-910.

Minton, Todd D. 2013. *Jail Inmates at Midyear 2012 – Statistical Tables.* Washington, D.C.: Bureau of Justice Statistics NCJ 241264.

Moffitt, Terrie E. 1993. "Adolescence-Limited and Life-Course-Persistent Antisocial Behavior: A Development Taxonomy." *Psychological Review* 100(4):674-701.

Morenoff, Jeffrey D., Robert J. Sampson, and Stephen W. Raudenbush. 2001. "Neighborhood Inequality, Collective Efficacy, and the Spatial Dynamics of Urban Violence." *Criminology* 39(1):517-560.

Morgan, Kathryn D. 1994. "Factors Associated with Probation Outcome." *Journal of Criminal Justice* 22(4):341-353.

Muftic, Lisa R. 2009. "Macro-Micro Theoretical Integration: An Unexplored Theoretical Frontier." *Journal of Theoretical and Philosophical Criminology* 1(2):33-71.

Nagin, Daniel S. and David P. Farrington. 1992. "The Stability of Criminal Potential From Childhood to Adulthood." *Criminology* 30(2):235-260.

Nagin, Daniel S. and Kenneth C. Land. 1993. "Age, Criminal Careers, and Population Heterogeneity: Specification and Estimation of a Nonparametic, Mixed Poisson Model." *Criminology* 31(3):327-362.

National Commission on Correctional Health Care. 2002. *The Health Status of Soon-To-Be-Released Inmates: A Report to Congress Volume 1.* Washington, D.C.: National Commission on Correctional Health Care.

Needleman, Herbert L., Julie A. Riess, Michael J. Tobin, Gretchen Biesecker, and Joesl B. Greenhouse. 1996. "Bone Lead Levels and Delinquent Behavior." *Journal of the American Medical Association* 275(5):363-369.

Nevin, Rick. 2000. "How Lead Exposure Relates to Temporal Changes in IQ, Violent Crime, and Unwed Pregnancy." *Environmental Research* 83(A):1-22.

Nixon, Vivian, Patricia Ticento Clough, David Staples, Yolanda Johnson Peterkin, Patricia Zimmerman, Christina Voight, and Sean Pica. 2008. "Life Capacity Beyond Reentry: A Critical Examination of Racism and Prisoner Reentry Reform in the U.S." *Race/Ethnicity: Multidisciplinary Global Contexts* 2(1):21-43.

Olusanya, Olaoluwa and Jeffrey M. Cancino. 2012. "Cross-Examining the Race-Neutral Frameworks of Prisoner Re-Entry." *Critical Criminology* 20(4):345-358.

Osher, Fred and Henry J. Steadman. 2007. "Adapting Evidence-Based Practices for Persons With Mental Illness Involved with the Criminal Justice System." *Psychiatric Services* 58(11):1472-1478.

Osher, Fred, Henry J. Steadman, and Heather Barr. 2003. "A Best Practice Approach to Community Reentry from Jails for Inmates With Co-Occurring Disorders: The APIC Model." *Crime & Delinquency* 49(1):79-96.

Park, Robert and Ernest Burgess. 1925. *The City.* Chicago: University of Chicago Press.

Parke, Ross D. and K. Alison Clarke-Stewart. 2003. "The Effects of Parental Incarceration on Children: Perspectives, Promises, and Policies." Pp. 189-232 in *Prisoners Once Removed: The Impact of Incarceration and Reentry on Children, Families, and Communities,* edited by J. Travis and M. Waul. Washington, D.C.: The Urban Institute Press.

Petersilia, Joan. 1999. "Parole and Prisoner Reentry in the United States." *Crime and Justice* 26:479-529.

Petersilia, Joan. 2003. *When Prisoners Come Home: Parole and Prisoner Reentry.* New York: Oxford University Press.

Petersilia, Joan. 2004. "What Works in Prisoner Reentry? Reviewing and Questioning the Evidence." *Federal Probation* 68(2):4-10.

Petersilia, Joan and Richard Rosenfeld. 2008. *Parole, Desistence from Crime, and Community Integration.* Washington, D.C.: National Academies Press, National Research Council.

Pettit, Becky and Christopher J. Lyons. 2009. "Incarceration, Employment and Wages Over the Life Course." *Law & Society Review* 43(4):725-756.

Pew Center on the States. 2008. *One in 100: Behind Bars in America 2008.* Washington, D.C.: Pew Center on the States.

Phelps, Michelle S. 2011. "Rehabilitation in the Punitive Era: The Gap Between Rhetoric and Reality in U.S. Prison Programs." *Law & Society Review* 45(1):33-68.

Piehl, Anne M., Stefan F. LoBuglio, and Richard B. Freeman. 2003. *Prospects for Prisoner Reentry.* Washington, D.C.: Economic Policy Institute Working Paper No. 125.

Pihl, R.O. and F. Ervin. 1990. "Lead and Cadmium Levels in Violent Criminals." *Psychological Reports* 66(3):839-844.

Pinard, Michael. 2007. "A Reentry-Centered Vision of Criminal Justice." *Federal Sentencing Reporter* 20(2):103-109.

Pratt, Travis, C. 2009. *Addicted to Incarceration: Corrections Policy and the Politics of Misinformation in the United States.* Thousand Oaks, CA: Sage Publications, Inc.

Pratt, Travis C. and Francis T. Cullen. 2005. "Assessing Macro-Level Predictors and Theories of Crime: A Meta-Analysis." *Crime and Justice* 32:373-450.

Pryor, Marie. 2010. "The Unintended Effects of Prisoner Reentry Policy and the Marginalization of Urban Communities." *Dialectical Anthropology* 34(4):513-517.

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

Re-Entry Policy Council. 2005. *Report of the Re-Entry Policy Council: Charting the Safe and Successful Return of Prisoners to the Community.* New York: Council of State Governments.

Reisig, Michael D., William D. Bales, Carter Hay, and Xia Wang. 2007. "The Effect of Racial Inequality on Black Male Recidivism." *Justice Quarterly* 24(3):408-434.

Reisig, Michael D., Kristy Holtfreter, and Merry Morash. 2002. "Social Capital Among Women Offenders: Examining the Distribution of Social Networks and Resources." *Journal of Contemporary Criminal Justice* 18(2):167-187.

Reisig, Michael D., Kristy Holtfreter, and Merry Morash. 2006. "Assessing Recidivism Risk Across Female Pathways to Crime." *Justice Quarterly* 23(3):384-405.

Reyes, Jessica W. 2007. *Environmental Policy and Social Policy? The Impact of Childhood Lead Exposure on Crime.* Cambridge, MA: National Bureau of Economic Research.

Rhineberger-Dunn, Gayle M. and Susan M. Carlson. 2009. "Confirmatory Factor Analyses of Collective Efficacy and Police Satisfaction." *Journal of Crime & Justice* 32(1):125-154.

Rhineberger-Dunn, Gayle M. and Susan M. Carlson. 2011. "An Analysis of the Mediating Effects of Social Relations and Controls on Neighborhood Crime Victimization." *Western Criminology Review* 12(1):15-34.

Richie, Beth E. 2001. "Challenges Incarcerated Women Face as They Return to Their Communities: Findings from Life History Interviews." *Crime & Delinquency* 47(3): 368-389.

Rocque, Michael, David M. Bierie, Chad Posick, and Doris L. MacKenzie. 2013. "Unraveling Change: Social Bonds and Recidivism Among Released Offenders." *Victims & Offenders* 8(2):209.

Roman, Caterina G. and Jeremy Travis. 2004. *Taking Stock: Housing, Homelessness, and Prisoner Reentry.* Washington, D.C.: Urban Institute Justice Policy Center.

Rose, Dina A. and Todd R. Clear. 1998. "Incarceration, Social Capital, and Crime: Implications for Social Disorganization Theory." *Criminology* 36(3):441-479.

Rose, Dina and Todd Clear. 2002. *Incarceration, Reentry, and Social Capital: Social Networks in the Balance.* Washington, D.C.: Urban Institute.

Rosenfeld, Richard, Joel Wallman, and Robert Fornango. 2005. "The Contribution of Ex-Prisoners to Crime Rates." Pp. 80-104 in *Prisoner Reentry and Crime in America,* edited by J. Travis and C. Visher. New York: Cambridge University Press.

Rountree, Pamela W., Kenneth C. Land, and Terance D. Miethe. 1994. "Macro-Micro Integration in the Study of Victimization: A Hierarchical Logistic Model Analysis Across Seattle Neighborhoods." *Criminology* 32(3):387-414.

Rubinstein, Gwen and Debbie Mukamal. 2002. "Welfare and Housing – Denial of Benefits to Drug Offenders." Pp. 37-49 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Sampson, Robert J. 2012. *Great American City: Chicago and the Enduring Neighborhood Effect.* Chicago: University of Chicago Press.

Sampson, Robert J. 2013. "The Place of Context: A Theory and Strategy for Criminology's Hard Problems." *Criminology* 51(1):1-31.

Sampson, Robert J. and W. Byron Groves. 1989. "Community Structure and Crime: Testing Social-Disorganization Theory." *American Journal of Sociology* 94(4):774-802.

Sampson, Robert J. and John H. Laub. 1993. *Crime in the Making: Pathways and Turning Points Through Life*. Cambridge, MA: Harvard University Press.

Sampson, Robert J., John H. Laub, and Christopher Wimer. 2006. "Does Marriage Reduce Crime? A Counterfactual Approach to Within-Individual Causal Effects." *Criminology* 44(3):465-508.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. "Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review* 64(5):633-660.

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

Sampson, Robert J., Stephen W. Raudenbush, and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277:918-924.

Sampson, Robert J. and William J. Wilson. 1995. "Toward a Theory of Race, Crime, and Urban Inequality." Pp. 37-56 in *Crime and Inequality,* edited by J. Hagen and R. Peterson. Stanford, CA: Stanford University Press.

Sechrest, Lee, Susan O. White, and Elizabeth D. Brown. 1979. *The Rehabilitation of Criminal Offenders: Problems and Prospects.* Washington, D.C.: National Academy Press.

Seiter, Richard P. and Karen R. Kadela. 2003. "Prisoner Reentry: What Works, What Does Not, and What is Promising." *Crime & Delinquency* 49(3):360-388.

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

Simon, Jonathan. 1993. *Poor Discipline: Parole and the Social Control of the Underclass, 1890-1990.* Chicago: University of Chicago Press.

Singer, Judith and John B. Willett. 2003. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence.* New York: Oxford University Press.

Solomon, Amy L., Jenny W.L. Osborne, Stefan F. LoBuglio, Jeff Mellow, and Debbie A. Mukamal. 2008. *Life After Lockup: Improving Reentry From Jail to the Community.* Washington, D.C.: Urban Institute Justice Policy Center.

Spohn, Cassia and David Holleran. 2002. "The Effect of Imprisonment on Recidivism Rates of Felony Offenders: A Focus on Drug Offenders." *Criminology* 40(2):329-358.

Stark, Rodney. 1987. "Deviant Places: A Theory of the Ecology of Crime." *Criminology* 25(4): 893-909.

Steen, Sara and Tara Opsal. 2007. "'Punishment on the Installment Plan': Individual-Level Predictors of Parole Revocation in Four States." *The Prison Journal* 87(3):344-366.

Stretesky, Paul B. and Michael J. Lynch. 2001. "The Relationship Between Lead Exposure and Homicide." *Archives of Pediatric and Adolescent Medicine* 155:579-582.

Stretesky, Paul B. and Michael J. Lynch. 2004. "The Relationship Between Lead and Crime." *Journal of Health and Social Behavior* 45(2):214-229.

Stuart, Bryan and Janet Brice-Baker. 2004. "Correlates of Higher Rates of Recidivism in Female Prisoners: An Exploratory Study." *Journal of Psychiatry & Law* 32:29-70.

Taylor, Claire. 2001. "The Relationship Between Social and Self-Control: Tracing Hirschi's Criminological Career." *Theoretical Criminology* 5(3):369-388.

Thomas, William I. and Florian Znaniecki. 1918-1920. *The Polish Peasant in Europe and America* (5 volumes). Boston: The Gorham Press.

Thompkins, Douglas E. 2010. "The Expanding Prisoner Reentry Industry." *Dialectical Anthropology* 34(4):589-604.

Thompson, Anthony C. 2008. *Releasing Prisoners, Redeeming Communities: Reentry, Race, and Politics.* New York: New York University Press.

Tillyer, Marie S. and Brenda Vose. 2011. "Social Ecology, Individual Risk, and Recidivism: A Multilevel Examination of Main and Moderating Influences." *Journal of Criminal Justice* 39(5):452-459.

Tonry, Michael. 1999. "Why Are U.S. Incarceration Rates So High?" *Crime & Delinquency* 45(4):419-437.

Travis, Jeremy. 2005. *But They All Come Back: Facing the Challenges of Prisoner Reentry.* Washington, D.C.: The Urban Institute Press.

Travis, Jeremy, Elizabeth Cincotta-McBride, and Amy L. Solomon. 2005. *Families Left Behind: The Hidden Costs of Incarceration and Reentry.* Washington, D.C.: Urban Institute Justice Policy Center.

Travis, Jeremy, Amy L. Solomon, and Michelle Waul. 2001. *From Prison to Home: The Dimensions and Consequences of Prisoner Reentry.* Washington, D.C.: Urban Institute Justice Policy Center.

Travis, Jeremy and Christy Visher. 2005a. "Introduction: Viewing Public Safety Through the Reentry Lens." Pp. 1-14 in *Prisoner Reentry and Crime in America,* edited by J. Travis and C. Visher. New York: Cambridge University Press.

Travis, Jeremy and Christy Visher. 2005b. "Considering the Policy Implications." Pp. 244-260 in *Prisoner Reentry and Crime in America,* edited by J. Travis and C. Visher. New York: Cambridge University Press.

Travis, Jeremy and Michelle Waul. 2003. "Prisoners Once Removed: The Children and Families of Prisoners." Pp. 1-29 in *Prisoners Once Removed: The Impact of Incarceration and Reentry on Children, Families, and Communities,* edited by J. Travis and M. Waul. Washington, D. C.: The Urban Institute Press.

Triplett, Ruth, Ivan Sun, and Randy Gainey. 2005. "Social Disorganization and the Ability and Willingness to Enact Control: A Preliminary Test." *Western Criminology Review* 6(1): 89-103.

Uggen, Christopher. 1999. "Ex-Offenders and the Conformist Alternative: A Job Quality Model of Work and Crime." *Social Problems* 46(1):127-151.

Uggen, Christopher and Jeff Manza. 2004. "Lost Voices: The Civic and Political Views of Disenfranchised Felons." Pp. 165-204 in *Imprisoning America: The Social Effects of Mass Incarceration*, edited by M. Pattillo, D. Weiman, and B. Western. New York: Russell Page Foundation.

Uggen, Christopher, Sarah Shannon, and Jeff Manza. 2012. *State-Level Estimates of Felon Disenfranchisement in the United States, 2010.* Washington, D.C.: The Sentencing Project.

Uggen, Christopher, Sara Wakefield, and Bruce Western. 2005. "Work and Family Perspectives on Reentry." Pp. 209-243 in *Prisoner Reentry and Crime in America,* edited by J. Travis and C. Visher. New York: Cambridge University Press.

Ulmer, Jeffery T. 2001. "Intermediate Sanctions: A Comparative Analysis of the Probability and Severity of Recidivism." *Sociological Inquiry* 71(2):164-193.

U.S. Bureau of Labor Statistics. 2013. Retrieved September 20, 2013, from the U.S. Bureau of Labor Statistics website: http://www.bls.gov/home.htm

U.S. Census Bureau. 2013. Retrieved September 20, 2013, from the U.S. Census Bureau's State and County QuickFacts website: http://quickfacts.census.gov/ qfd/index.html

Ventura, Lois A., Charlene A. Cassel, Joseph E. Jacoby, and Bu Huang. 1998. "Case Management and Recidivism of Mentally Ill Persons Released from Jail." *Psychiatric Services* 49(10):1330-1337.

Villettaz, Patrice, Martin Killias, and Isabel Zoder. 2006. *The Effects of Custodial vs. Non- Custodial Sanctions on Re-Offending: A Systematic Review of the State of Knowledge.* Washington, D.C.: Campbell Collaboration Crime & Justice Group.

Visher, Christy A. 2007. "Returning Home: Emerging Findings and Policy Lessons about Prisoner Reentry." *Federal Sentencing Reporter* 20(2):93-102.

Visher, Christy A. and Shannon M.E. Courtney. 2006. *Cleveland Prisoners' Experiences Returning Home.* Washington, D.C.: Urban Institute.

Wacquant, Loic. 2001. "Deadly Symbiosis: When Ghetto and Prison Meet and Mesh." *Punishment and Society* 3(1):95-134.

Wacquant, Loic. 2010. "Prisoner Reentry as Myth and Ceremony." *Dialectical Anthropology* 34(4):605-620.

Wang, XI, Daniel P. Mears, and William D. Bales. "Race-Specific Employment Contexts and Recidivism." *Criminology* 48(4):1171-1211.

Wehrman, Michael M. 2010. "Race, Concentrated Disadvantage, and Recidivism: A Test of Interaction Effects." *Journal of Criminal Justice* 38(2):538-544.

Weisheit, Ralph A. and John M. Klofas. 1989. "The Impact of Jail: Collateral Costs and Affective Response." *Journal of Offender Counseling, Services & Rehabilitation* 14(1):51-66.

Western, Bruce. 2002. "The Impact of Incarceration on Wage Mobility and Inequality." *American Sociological Review* 67:477-498.

Western, Bruce. 2006. *Punishment and Inequality in America.* New York: Russell Sage Foundation.

Western, Bruce, Jeffrey R. Kling, and David F. Weiman. 2001. "The Labor Market Consequences of Incarceration." *Crime & Delinquency* 47(3):410-427.

Western, Bruce, Beck Pettit, and Josh Guetzkow. 2002. "Black Economic Progress in the Era of Mass Imprisonment." Pp. 165-180 in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment,* edited by M. Mauer and M. Chesney-Lind. New York: The New Press.

Wilhelm, Daniel F. and Nicholas R. Turner. 2002. *Is the Budget Crisis Changing the Way We Look at Sentencing and Incarceration?* Washington, D.C.: Vera Institute of Justice.

Wilson, William J. 1987. *The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy.* Chicago: University of Chicago Press.

Wilson, William J. 1996. *When Work Disappears: The World of the New Urban Poor.* New York: Vintage Publishing.

Wodahl, Eric J. 2006. "The Challenges of Prisoner Reentry from a Rural Perspective." *Western Criminology Review* 7(2):32-47.

Wright, Kevin, A., Travis C. Pratt, Christopher T. Lowenkamp, and Edward J. Latessa. 2012. "The Importance of Ecological Context for Correctional Rehabilitation Programs: Understanding the Micro- and Macro-Level Dimensions of Successful Offender Treatment." *Justice Quarter* 29(6):775-798.

Zimring, Franklin, Gordon Hawkins, and Sam Kamin. 2001. *Punishment and Democracy: Three Strikes and You're Out in California.* New York: Oxford University Press.

Appendix A

**Human Subjects Institutional Review Board
Letter of Approval**

WESTERN MICHIGAN UNIVERSITY

Date: May 28, 2014

To: Susan Carlson, Principal Investigator
Andrew Verheek, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 14-05-29

This letter will serve as confirmation that your research project titled "Does Health Matter? A Multilevel Analysis of Individual and Neighborhood-Level Health on Jail Inmate Recidivism" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., *you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study)."* Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: May 27, 2015