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**Final Technical Report:  
Neighborhoods, Recidivism, and Employment Among Returning Prisoners**

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## ABSTRACT

The rising number of individuals being released from prison has prompted renewed interest among researchers, policy makers, and practitioners in reintegrating former prisoners. Yet relatively little is known about the communities into which former prisoners return and how they affect the likelihood that former prisoners will secure stable employment or return to prison. This research fills an important gap in the literature on prisoner reentry by focusing on the role that community context plays in the labor market outcomes and recidivism of former prisoners. A rich set of longitudinal administrative records were assembled on individuals paroled in Michigan during 2003, including records from corrections, police, and unemployment insurance databases. This report describes the data collected and presents results indicating that neighborhood context predicted both the recidivism and labor market outcomes of former prisoners. The analysis considered the association between baseline neighborhood characteristics (first post-prison neighborhood) and cumulative exposure to neighborhood conditions during one's time on parole. The analysis of baseline neighborhood characteristics was based on the full population of 11,064 people released on parole in Michigan in 2003, whereas the analysis of time-varying neighborhood characteristics was based on a 1/6 sample ( $n=1,848$ ). Returning to a more disadvantaged baseline neighborhood was associated with higher risks of absconding and returning to prison for a technical violation, a lower risk of being arrested, and more adverse labor market outcomes, including less employment and lower wages. Cumulative exposure to disadvantaged neighborhoods was associated with lower employment and wages but not related to recidivism. Returning to a more affluent baseline neighborhood was associated with a lower risk of being arrested, absconding, and returning to prison on a technical violation, and more positive labor market outcomes, including greater employment and wages. However, cumulative

exposure to affluent neighborhoods was not significantly related to any of the recidivism or labor market outcomes when the full set of controls were added to models. Returning to a more residentially stable baseline neighborhood was associated with a lower risk of absconding and returning to prison for a new conviction, but not with any labor market outcomes; nor was cumulative exposure to residentially stable neighborhoods associated with any recidivism or labor market outcomes. Returning to a baseline neighborhood with a younger age structure was negatively related to the odds of returning to prison on a technical violation, but when measured as cumulative exposure it was associated with an increased risk of being arrested, absconding, and being returned to prison for either a new commitment or technical violation. Being employed substantially reduced the risk of all recidivism outcomes, but there was no evidence that employment mediated the association between neighborhoods and recidivism. Together, these results suggest that the neighborhoods parolees experience during parole were strong predictors of recidivism and labor market outcomes, but there is not a simple answer to the question of what neighborhood characteristics constitute “risky” environments for parolees. Neighborhood socioeconomic composition was a strong predictor of labor market outcomes, as parolees residing in disadvantaged neighborhoods had difficulty securing employment and escaping poverty. For recidivism, the protective effect of living in a residentially stable neighborhood and the risks posed by spending more time in neighborhoods with higher densities of young people were the most robust predictors. From a policy perspective, these findings suggest that parole outcomes might be improved through more careful evaluation of a parolee’s neighborhood context when approving new residences, placement of institutional housing for former prisoners in more advantaged neighborhoods, inclusion of neighborhood context in risk assessments to

better target services to former prisoners in high risk neighborhoods, and place-based parole strategies involving geographically based agent caseloads.

## Table of Contents

ABSTRACT.....	1
EXECUTIVE SUMMARY .....	6
Background and Motivation .....	6
Data Collection .....	7
Results.....	8
Implications for Policy and Practice .....	13
1. INTRODUCTION.....	18
A. Prisoner Reentry Research .....	19
B. Conceptual Framework: Neighborhood Effects and Desistance.....	22
C. Background on Parole in Michigan.....	25
D. Structure of Report .....	26
2. RESEARCH DESIGN AND DATA COLLECTION.....	27
A. Data Sources.....	28
B. Measures.....	31
i. Residential Histories and Neighborhood Context Measures .....	32
ii. Recidivism .....	36
iii. Employment.....	38
C. Descriptive Statistics on Covariates .....	39

D.	Missing Data .....	40
E.	Methods .....	41
3.	RESULTS .....	44
A.	Frequency and Timing of Recidivism.....	44
B.	Neighborhoods and Recidivism .....	46
i.	Analysis with Baseline Neighborhoods .....	46
ii.	Analysis with Time-Varying Neighborhood Characteristics and Employment.....	49
C.	Neighborhoods and Employment.....	52
i.	Trends in Employment and Wages .....	52
ii.	Analysis with Baseline Neighborhoods .....	55
iii.	Analysis with Time-Varying Neighborhoods .....	60
4.	CONCLUSION .....	63
A.	Summary of Results .....	63
B.	Implications for Criminal Justice Policy and Practice .....	70
C.	Limitations and Implications for Future Research.....	73
	REFERENCES .....	78
	APPENDIX – SAMPLING METHODS .....	87
	FIGURES.....	90
	TABLES.....	96

## EXECUTIVE SUMMARY

### Background and Motivation

As a consequence of the dramatic rise in incarceration in the United States during the last 30 years, many communities are now grappling with the problem of reintegrating former prisoners. Over 600,000 people are released each year from state and federal prisons in the U.S., and about 80 percent of them are released on parole (e.g., National Research Council 2007). The large number of individuals exiting prison every year and evidence of incarceration's effects (e.g., Holzer, Offner, & Sorensen 2005; Manza & Uggen 2006; Pager 2003; Western 2006) have prompted renewed interest among academics and policy makers in prisoner reentry, integrating former prisoners back into society (Visher & Travis 2003).

Successful reentry is challenged by barriers facing former prisoners in housing, employment, and access to services and by former prisoners' disadvantaged positions with regard to education, work experience, social capital, and mental and physical health (Visher & Travis 2003). Indeed, the prospects for successful reentry are often dim, as the chances of returning to prison within three years range from 50 to 75 percent or greater (Langhan & Levin 2002). Recent research emphasizes the role of social contexts such as marriage and employment in desistance (Laub & Sampson 2001), but very little is known about how neighborhood context structures recidivism or desistance (National Research Council 2007). Perhaps the primary reason for the lack of research on the neighborhood context of former prisoners is the difficulty of obtaining appropriate data. This project involved collecting such data through a unique arrangement with the Michigan Department of Corrections (MDOC) and prospectively analyzing the role of neighborhood context in structuring the recidivism and labor market outcomes of returning parolees.



This study examined the association between neighborhood context and outcomes related to employment and recidivism among the cohort of former prisoners released on parole from Michigan state prisons in one calendar year (2003), controlling for pre-incarceration neighborhood context, local labor market conditions, and a large set of individual characteristics. The primary goals of this study were to answer the following two questions: (1) “Are ex-offenders who are released to more disadvantaged neighborhoods (those with greater poverty, unemployment, residential turnover, etc.) more likely to recidivate?” (2) “Are ex-offenders who are released to more disadvantaged neighborhoods less likely to gain stable employment?” This research fills an important gap in the literatures on prisoner reentry and criminal desistance, which have largely ignored the role that neighborhoods play in shaping the recidivism and employment of returning prisoners (but see also Kubrin and Stewart 2006, Mears et al. 2008, Hipp, Petersilia, and Turner 2010, Wang, Mears, and Bails 2010).

### Data Collection

This study included the population of parolees released from Michigan prisons in 2003 and paroled to Michigan communities (N = 11,064). Some of the results described in this report were based on data from the entire population of those paroled in 2003. Other analyses were based on a random 1/6 sample from this population (n = 1,848) for which detailed residential information was collected. Data came from four sources: MDOC administrative databases that provide criminal history and demographic data as well as recidivism outcomes; narrative electronic case notes and paper files written by MDOC parole and probation agents and coded by the research team; arrests reported to the Michigan State Police; and unemployment insurance records provided by the Michigan Unemployment Insurance Agency.

Post-release residential histories were assembled from the case notes that include move dates, residence types, and addresses, which were then geocoded and linked to census tracts and their characteristics from the 2000 Census. Data were also collected on the pre-prison addresses of the 1/6 sample from hard copies of pre-sentence investigation reports, in which addresses are usually verified by the MDOC agent preparing the report, as well as from parole violation reports and parole agent case notes (for those who were on parole prior to their sampled prison term).

This study included five measures of recidivism for each parolee: (1) arrests for a new offense (as recorded in case notes by parole agents and as recorded by the Michigan State Police), (2) recommitment to prison due to parole violation, (3) recommitment to prison for a new conviction, (4) absconding, and (5) new felony convictions, whether or not they result in return to prison.

Through a data sharing agreement between MDOC and the Michigan Unemployment Insurance Agency, this study also obtained unemployment insurance earnings records for the entire population, both during the post-incarceration period and prior to incarceration. UI records are based on employer reports, include employer information, and provided pre-incarceration data, but they are reported in three-month increments, exclude temporary or “under the table” employment, and required matching by social security number.

### Results

The main results from the study were (a) the high prevalence among returning prisoners of recidivism, unemployment, and low-wage jobs among employees who are working, and (b) the evidence of a strong but complicated relationship between features of the neighborhoods where parolees live and their risk of both recidivism and labor market instability. First, the

“failure” rates were high across different measures of recidivism, with 70 percent of the population being arrested at least once by the end of 2009, 44 percent having at least one felony conviction, 49 percent returning to prison, and 40 percent absconding at least once. Estimates of the failure rate rose even higher after adjusting for censoring, to approximately 77 percent for being arrested within 6 years of release on parole in 2003, 50 percent for a felony conviction or return to prison, and 57 percent for absconding.

Relatively few returning parolees managed to secure stable employment over the follow-up period. Only 22 percent of parolees were employed in the formal labor market at any point during the first calendar quarter after their release in 2003. The rate of employment (among parolees who were in the community), initially increased over time, reaching a peak level of 36 percent in the fourth quarter after the release date in 2003, but it dropped gradually over subsequent time points, reaching 32 percent by the 12th quarter after release. Among returning prisoners who remained in the community and were employed in the formal labor market, reported wages were very low. In the initial quarter after release, 92.5 percent of employed former prisoners were earning incomes below the poverty line, and although this rate declined slightly during the first six quarters after release, it remained relatively flat for the remainder of the observation period and never dropped below 80 percent. Moreover, wage inequality among returning prisoners grew over time, as those who were able to secure the highest wages immediately upon reentry experienced greater growth in wages over subsequent quarters than those who initially entered into lower-wage jobs.

The results from the analysis of neighborhood effects on recidivism and employment showed that post-prison neighborhood context significantly predicts both recidivism and labor market outcomes, but the constellation of factors that produce “risky” or “protective”

neighborhoods differ depending on (a) whether the focus was on recidivism or employment, (b) whether neighborhood context was measured only at baseline (first post-prison neighborhood) or as cumulative exposure to neighborhoods throughout the parole period, and (c) how recidivism was measured. All analyses of baseline neighborhood characteristics were based on the full population of 11,064 people released on parole in Michigan in 2003, whereas the analysis of time-varying neighborhood characteristics was based on a 1/6 sample ( $n=1,848$ ) of this population. The results of the neighborhood effect analysis can be summarized as follows:

- Returning to a more affluent baseline neighborhood was associated with a lower risk of being arrested, absconding, and returning to prison on a technical violation; and a higher likelihood of being employed and earning higher wages. However, cumulative exposure to affluent neighborhoods was not significantly related to any of the recidivism or labor market outcomes after controlling for the full set of individual- and neighborhood-level predictors.
- Returning to a more disadvantaged baseline neighborhood was associated with a higher risk of absconding and returning to prison for a technical violation, but, paradoxically, it was associated with a lower risk of being arrested. Moreover, cumulative exposure to disadvantaged neighborhoods was not significantly related to any recidivism outcomes (although it was significantly related to a lower risk of arrest in some models).

Neighborhood disadvantage was a stronger predictor of labor market outcomes, as it was associated with lower odds of employment and lower wages, whether measured as the level of disadvantage in one's baseline neighborhood or the cumulative exposure to disadvantaged neighborhoods during one's time on parole.

- Returning to a more residentially stable baseline neighborhood was associated with a lower risk of recidivism across all outcomes, but the association was only significant in the case of absconding and returning to prison for a new conviction. Cumulative exposure to residentially stable neighborhoods was not significantly associated with recidivism, although the exposure to stable neighborhoods had a marginally significant association with the risk of absconding. Neighborhood residential stability was not significantly related to any labor market outcomes.
- Cumulative exposure to neighborhoods where youth (i.e., people under age 18) constituted a greater share of the population was associated with an increased risk of arrest, absconding, and returning to prison for either a new conviction or a technical violation. However, none of these relationships emerged when analyzing the relationship between the age structure of the baseline neighborhood and subsequent recidivism, and returning to a baseline neighborhood with a younger age structure was associated with a lower risk of returning to prison for a technical violation. Neighborhood age structure was not significantly related to any labor market outcomes.
- Being employed for longer periods of time substantially reduced the risk of all recidivism outcomes in all models, but employment status did not mediate any of the neighborhood effects on recidivism.
- All significant relationships reported above for measures of cumulative exposure to neighborhood conditions were estimated net of a large set of controls including characteristics of the neighborhood where the offender lived before going to prison (for the sentence that culminated in a release onto parole in 2003) and measures of pre-prison employment and earnings.

Together, these results suggest that the neighborhoods parolees experience upon their return and throughout their time on parole are strong predictors of recidivism and labor market outcomes, but there is not a simple answer to the question of what neighborhood characteristics constitute “risky” environments for parolees. Neighborhood socioeconomic composition was a strong predictor of labor market outcomes, as parolees residing in disadvantaged neighborhoods appear to face major obstacles in securing employment and escaping poverty. Socioeconomic conditions, especially concentrated disadvantage, were less consistently and robustly predictive of recidivism outcomes. Although returning to disadvantaged neighborhoods increased the risk of absconding and returning to prison for a technical violation, the risk of arrest was actually lower in disadvantaged neighborhoods, whether measured at baseline or as cumulative exposure (although the latter effect became non-significant after controlling for pre-prison neighborhood characteristics), suggesting that perhaps police behavior is itself shaped by neighborhood context. Moreover, the lower risk of arrest in disadvantaged neighborhoods could in part explain why there were no significant relationships between neighborhood disadvantage and felony convictions or returns to prison. Returning to a more affluent neighborhood was associated with a diminished risk of recidivism on three of the five outcomes, which suggests that future work on desistance from crime should broaden its consideration of neighborhood socioeconomic factors and not be so rooted in a “poverty paradigm.” Moreover, a neighborhood’s degree of residential stability and the youthfulness of its age structure were key determinants of recidivism but not labor market outcomes, suggesting that more important neighborhood influences on desistance could be more related to the social organization of the community and the opportunity for greater interaction with youth of peak crime ages.

### Implications for Policy and Practice

Although this project is not an evaluation of a particular policy or program, the results suggest some implications for criminal justice policy and practice. To the degree that neighborhood context affects reentry outcomes, policies that encourage parolees to locate in more advantaged neighborhood contexts have potential to improve employment prospects and reduce the likelihood of reoffending. Given that parolees are highly concentrated in the most disadvantaged neighborhoods, efforts to disperse former prisoners over a wider geographic area may have some benefits. One policy lever that could be used to achieve this would be to require parole agents to evaluate the neighborhood context surrounding a residence before approving a parolee's request to move there, particularly upon release from prison. Doing so would require parole agencies to improve the way they collect information on neighborhood context (in Michigan and many other states, parolee addresses are often not entered into administrative databases) and perhaps monitor the concentration of parolees in certain neighborhoods. Another way to diminish the residential segregation of parolees would be to locate more housing assistance programs or otherwise create more housing opportunities for returning prisoners in neighborhoods that provide the strongest chances of successful social and economic reintegration.

Another set of policy issues raised by this study concern the way that parole supervision responds to the challenges of reentry into certain neighborhood contexts. For example, most (if not all) risk assessment tools that are widely used to determine level of community supervision and eligibility for services are based exclusively on individual-level attributes and ignore aspects of neighborhoods that returning prisoners encounter during their re-integration process. Incorporating such contextual measures could increase the predictive validity of such risk

assessment tools and foster a more place-based understanding of “criminogenic needs,” along with more place-based treatment programs to target such needs. Such “place-based” thinking can also be applied to the organization of community supervision, by assigning geographically-specific caseloads to parole and probation officers and encouraging agents to familiarize themselves with local resources and threats through greater interaction with local law enforcement, community residents, and service providers in neighborhoods where their caseloads are concentrated.

### Limitations and Implications for Future Research

This research was based on data collected in one state on a particular cohort of parolees. Although Michigan’s rates of incarceration were close to the national average during this time period, the experiences of Michigan parolees may have differed from those in other states due to variation in economic conditions, the administration of community corrections, and other factors. Future research should examine neighborhood effects in other states with different policy regimes.

More generally, the evidence amassed in this project that neighborhood context is associated with post-release recidivism and employment, net of the demographic, human capital, and criminal justice characteristics of parolees, establishes the importance of learning more about how and why neighborhoods might matter for returning prisoners, but it also raises many questions for future research:

- Understanding neighborhood processes: This study focused entirely on census-based measures of neighborhood composition, which shed little light on the underlying processes that may generate neighborhood effects. Given how little research there is on



large populations of returning prisoners, it was important to document and assess how such structural neighborhood characteristics were related to recidivism and labor market outcomes for returning prisoners, but future research should bring more theoretically-motivated measures of neighborhood context into the analysis of recidivism and the economic well-being of returning prisoners.

- Disentangling effects of concentrated disadvantage and affluence: A related challenge for future research is to learn more about how and why measures of neighborhood disadvantage (a scale constructed from measures of poverty, unemployment, public assistance, female-headed families, and racial composition) and affluence (a scale constructed from measures of educational, occupational, and high income composition) differentially predict measures of recidivism and economic well-being in this population. Disentangling the effects of neighborhood affluence and disadvantage is not easy, but there is emerging evidence in the neighborhood effects literature, especially from studies of neighborhoods and health (e.g., Morenoff et al. 2007, 2008; King et al. forthcoming), that just as different measures of socioeconomic status (e.g., education and income) are differentially related to health at the individual level, the same may be true at the neighborhood level.
- Examining heterogeneity of neighborhood effects: Another refinement to this analysis would be to probe more deeply into whether certain types of parolees are more susceptible to the influences of neighborhood context than others, although such research should be motivated by solid theoretical arguments that have also yet to appear.
- Understanding differences across recidivism measures: It is intriguing that neighborhood characteristics were more robustly associated with (a) arrest, returning to prison for a

technical violation, and absconding, than (b) having a felony conviction and returning to prison for a new crime. Although there are many factors that differentiate these two sets of recidivism outcomes, one that deserves further consideration is that the former are influenced by a set of actors (police and parole agents) that are closer to the “street” and thus potentially more influenced themselves by neighborhood factors than the key actors involved in the second set of outcomes (e.g., judges and prosecutors). More generally, future research on neighborhoods and recidivism should probe more deeply into how the decision-making patterns of agents of the criminal justice system may vary across different types of neighborhoods or counties.

- Understanding recidivism as a larger process: Ultimately, it is not satisfactory to analyze each recidivism outcome separately, because they are interdependent parts of a larger process. Criminologists have made a similar point about desistance, describing it as a dynamic, multilayered process that unfolds over time rather than a fixed set of outcomes (Laub and Sampson 2001, 2003). In contrast, research on recidivism remains rooted in a paradigm of fixed indicators of “failure” and “success” measured over relatively small windows of time. Taking a more process-oriented view of recidivism could lead to new theoretical and substantive insights, as discussed in the conclusion to this report (pp. 75-76).
- The link between employment and recidivism: Although neighborhood characteristics predicted both employment and recidivism, and being employed was a strong predictor of all recidivism outcomes, the models of recidivism did not show any evidence that employment mediated the effects of neighborhood characteristics on recidivism.

Different explanations for this apparent paradox are presented in the conclusion (pp. 76-77).

- Causal inference: Finally, there are many threats to causal inference that could not be addressed by this study design, and future research should look for opportunities to harness exogenous sources of variation in neighborhood context (through either randomized experiments or natural experiments) that would strengthen causal inferences about neighborhoods. Moreover, the mobility patterns that potentially generate selection bias in observational studies of neighborhood effects should be analyzed as outcomes unto themselves in studies of returning prisoners to learn more about the processes through they are sorted into different types of neighborhoods.

## **Final Technical Report:**

### **Neighborhoods, Recidivism, and Employment Among Returning Prisoners**

#### **1. INTRODUCTION**

As a consequence of the dramatic rise in incarceration in the United States during the last 30 years, many communities are now grappling with the problem of reintegrating former prisoners. Over 600,000 people are released each year from state and federal prisons in the U.S., and about 80 percent of them are released on parole (e.g., National Research Council 2007). The large number of individuals exiting prison every year and evidence of incarceration's effects (e.g., Holzer, Offner, & Sorensen 2005; Manza & Uggen 2006; Pager 2003; Western 2006) have prompted renewed interest among academics and policy makers in prisoner reentry, integrating former prisoners back into society (Visher & Travis 2003).

Successful reentry is challenged by barriers facing former prisoners in housing, employment, and access to services and by former prisoners' disadvantaged positions with regard to education, work experience, social capital, and mental and physical health (Visher & Travis 2003). Indeed, the prospects for successful reentry are often dim, as the chances of returning to prison within three years range from 50 to 75 percent or greater (Langhan & Levin 2002). Recent research emphasizes the role of social contexts such as marriage and employment in desistance (Laub & Sampson 2001), but very little is known about how neighborhood context structures recidivism or desistance (National Research Council 2007). Perhaps the primary reason for the lack of research on the neighborhood context of former prisoners is the difficulty of obtaining appropriate data. This project involved collecting such data through a unique arrangement with the Michigan Department of Corrections (MDOC) and prospectively analyzing

the role of neighborhood context (net of pre-incarceration neighborhood context and a large set of individual characteristics) in structuring the recidivism and labor market outcomes among a cohort of returning parolees released from Michigan state prisons in one calendar year (2003).

The primary goals of this study were to answer the following questions: (1) “Are ex-offenders who are released to more disadvantaged neighborhoods (those with greater poverty, unemployment, residential turnover, etc.) more likely to recidivate?” (2) “Are ex-offenders who are released to more disadvantaged neighborhoods less likely to gain stable employment?” This research fills an important gap in the literatures on prisoner reentry and criminal desistance, which have largely ignored the role that neighborhoods play in shaping the recidivism of returning prisoners (but see also Kubrin and Stewart 2006, Mears et al. 2008, Hipp, Petersilia, and Turner 2010, Wang, Mears, and Bails 2010).

#### *A. Prisoner Reentry Research*

Research to date on prisoner reentry has focused on four goals: (1) identifying individual-level predictors of recidivism, such as housing instability, substance abuse and other mental health problems, lack of employment, and low education (National Research Council 2007; Petersilia 2003; Visher & Travis 2003); (2) evaluating the effects of intervention programs on desistance from crime (Cullen 2002); (3) documenting the effect of incarceration on employment and family structure (National Research Council 2007; Patillo, Weiman, & Western 2004; Raphael Forthcoming; Western 2006); and (4) demonstrating the contribution of incarceration to rising inequality in the United States (Patillo, Weiman, & Western 2004; Western 2006).

Identifying which characteristics of former prisoners predict recidivism is only the first step toward understanding the mechanisms by which such characteristics are connected to the

social and economic outcomes of former prisoners, such as recidivism or employment. It is known that former prisoners are stigmatized in the labor market (Pager 2003) and that incarceration often disrupts ties to family members, romantic partners, and children (Braman 2004). Yet much remains to be learned about prisoner reentry. In particular, little attention has been paid to the impact of social contexts such as neighborhoods on the employment and recidivism outcomes of released prisoners.

A recent report from the National Research Council (2007) assessing research on factors that promote desistance from crime and community integration among returning parolees concluded that two of the most important outstanding questions are how communities affect the outcomes of former prisoners (the focus of this project) and how parolees in turn affect the communities they reenter. Although very few studies have examined this issue, the few that have found that exposure to disadvantaged neighborhoods was associated with recidivism. Kubrin and Stewart (2006) found that tract-level concentrated disadvantage predicted recidivism in one Oregon county; while Mears and colleagues (2008) analyzed administrative data for the entire state of Florida and found that a county-level measure of resource deprivation was associated with return to prison for a violent or drug-related offense (see also Wang et al. 2010). Hipp, Petersilia, and Turner (2010) found that neighborhood disadvantage, social disorder, and access to social services predicted recidivism among parolees in California.

This investigation into the contextual determinants of recidivism also built on other areas of neighborhood research. For example, prior research has revealed significant and sizable neighborhood effects on crime and intermediary outcomes that might affect recidivism, such as employment, education, and fertility and family formation (Gephart 1997; Harding 2003; Sampson, Morenoff, & Gannon-Rowley 2002; Sampson, Morenoff, & Raudenbush 2005).

Moreover, neighborhoods with high unemployment, poverty and crime rates have been shown to have fewer resources to support the transition from prison to work, exert lower levels of social control over former prisoners, and present former prisoners with greater opportunities to return to crime (Morenoff, Sampson, & Raudenbush 2001). Some research has also documented that former prisoners return disproportionately to disadvantaged neighborhoods and communities where resources and services are already stretched thin and where law enforcement supervision is high (Cadora, Swartz, & Gordon 2003; Fagan, West, & Holland 2003; Lynch & Sabol 2004).

Securing stable employment is a key challenge for former prisoners and a strong predictor of desistance from crime (National Research Council 2007). Previous research on the employment prospects of returning prisoners has focused mainly on the effects of having felony convictions or serving prison terms on finding employment (Pager 2003; Western 2006), and the subsequent effects of employment status on desistance from crime/recidivism. There is fairly strong evidence that criminal behavior is responsive to changes in employment status (Hagan 1993; Sampson & Laub 1993; Tanner, Davies, & O'Grady 1999; Thornberry & Christenson 1984; Uggen 2000) and that incarceration or other contact with the criminal justice system reduces subsequent employment and wages (Freeman 1992; Raphael 2006; Western 2006). It is far less clear, however, that social policies aimed either at improving job opportunities or providing job training for returning prisoners are effective at improving job prospects, leading some scholars to speculate that the effectiveness of such job-related programs may depend on the community context in which individuals are embedded (Bushway & Reuter 2002). Some studies have linked neighborhood conditions to employment outcomes (Mouw 2000; Wilson 1996), although the evidence for such claims remains controversial. Although there is some evidence

that local labor market conditions affect the employment prospects of former prisoners (Sabol 2007), we are aware of no prior studies that have considered the role of neighborhood factors.

Perhaps the primary reason for the lack of research on prisoner reentry is the difficulty in obtaining appropriate data. Prior research on released prisoners has been limited by available data, often relying on data on participants in the demonstration projects of the 1970s and 1980s such as the Texas and Georgia Transitional Aid Research Project (Berk, Lenihan, & Rossi 1980; Needels 1996), data from evaluations of particular programs (e.g., Benda & Toombs 2002), or data from narrow subgroups of former prisoners, such as Texas property offenders (Joo, Ekland-Olson, & Kelley 1995; Kelley & Ekland-Olson 1991). On the one hand, large scale social surveys often exclude the “institutionalized population” or contain few measures of involvement with the criminal justice system. On the other hand, criminal justice data rarely include information on social factors such as employment and neighborhoods. This project involved a major data collection effort to collect, clean and code data on a cohort of parolees released from Michigan prisons in 2003 and followed prospectively over time, with data on neighborhood context, employment, and recidivism.

### *B. Conceptual Framework: Neighborhood Effects and Desistance*

There are strong theoretical reasons to suspect that where returning prisoners live will influence their success in desisting from crime. The life-course perspective on desistance emphasizes the importance of social contexts in structuring social bonds and informal social control. Laub and Sampson (2001) argue that three critical social institutions – marriage (King, Massoglia, & MacMillan 2007; Sampson, Laub, & Wimer 2006), employment (Rossman & Roman 2003; Sampson & Laub 1993; Uggen 2000), and the military (Laub & Sampson 2003) –



create social contexts conducive to desistance. These contexts provide structured daily activities that impose informal social control, encourage investments in conventional institutions and social bonds to non-criminals, transform personal identities, and separate individuals from criminally-involved peers (Giordano, Cernkovich, & Rudolph 2002; Laub & Sampson 2003; Maruna 2001; Osgood & Lee 1993; Warr 1998). Nonetheless, neighborhood contextual factors have rarely entered into studies of desistance, despite their prominent role in many life-course theories.

Based on prior research on neighborhoods and crime in general, and its application to prisoner reintegration specifically, there are six major arguments for why “successful” reentry (e.g., securing and maintaining employment, complying with parole requirements, and staying away from involvement in crime) may be especially difficult in disadvantaged neighborhoods.

(1) *Informal Social Control*: Neighborhoods with many disadvantage residents, fewer affluent residents, greater residential instability, and many young people tend to exert lower levels of social control over their residents and have higher rates of crime and disorder (Sampson, Morenoff, & Earls 1999; Sampson, Raudenbush, & Earls 1997). Former prisoners who return to neighborhoods with lower informal social control will face fewer barriers to returning to crime and therefore may also see employment as less appealing.

(2) *Local Labor Market Conditions*: To the extent that disadvantaged neighborhoods are located in local labor markets with higher unemployment rates, returning to such neighborhoods will reduce unemployment and potentially increase recidivism. County unemployment rates have been found to influence the employment prospects and recidivism of former prisoners (Raphael & Weiman 2007; Sabol 2007).

- (3) *Social Isolation*: Residents of disadvantaged neighborhoods, particularly African Americans, are isolated from social networks that might provide information about employment and other forms of support (Smith 2007; Wilson 1987; Young 2004). Parolees returning to such neighborhoods therefore cannot rely on neighbors to help them find a job or secure other resources such as job training or temporary financial assistance.
- (4) *Spatial Mismatch*: Disadvantaged neighborhoods, particularly central city neighborhoods, tend to be located far from available jobs (Mouw 2000; Wilson 1987), making employment more difficult. Though social service providers tend to be concentrated in and around disadvantaged neighborhoods, residents of such neighborhoods also have greater need for these services, making it more difficult for former prisoners returning to such neighborhoods to secure services that would help them find employment or to abstain from drug and alcohol abuse.
- (5) *Differential Criminal Opportunity*: Disadvantaged neighborhoods and neighborhoods with many young people may provide former prisoners with more opportunities to engage in crime and substance abuse (Cloward & Ohlin 1960), both of which may lower prospects for employment. Disadvantaged neighborhoods also tend to have a higher concentration of former prisoners and of people with alcohol and substance use addictions (Freisthler et al. 2005; Hill & Angel 2005).
- (6) *Formal Social Control*: The level and type of formal social control – from police, parole officers, and other law enforcement agents – may vary systematically across neighborhoods. On average, poor and non-white jurisdictions have less police protection per crime than wealthier ones (Thacher Forthcoming). Those on parole may be especially targeted by law enforcement for surveillance and arrest. To the degree that more affluent

or less disadvantaged neighborhoods have greater law enforcement presence, neighborhood context may affect arrests, parole violations, and returns to prison.

Drawing on these theories and related empirical work on neighborhoods and crime, this study focused on measures of four commonly assessed dimensions of neighborhood social and demographic composition: concentrated disadvantage, concentrated affluence, residential stability, and young age composition. To account for wider regional influences, measures of county unemployment rates and urbanicity were also included as controls.

### *C. Background on Parole in Michigan*

All of the individuals in the data were on parole, so it is important to understand the nature and purpose of parole supervision and how it works in Michigan. Parole supervision is largely geared toward preventing recidivism (National Research Council 2007). Parolees are subject to many conditions of supervision, typically including weekly or monthly visits to their parole officer, regular drug and alcohol tests, informing one's parole agent of changes in address, working or actively looking for work, attending drug or alcohol treatment programs, curfews, limits on contact with other ex-offenders, and not owning or possessing a weapon. Certain classes of parolees have additional conditions, such as restrictions on residential location or contact with children for sex offenders, prohibitions on owning a cell phone for former drug dealers, or prohibitions on driving for those convicted of drunken driving. Some parolees are also subject to "electronic monitoring," in which they wear an ankle bracelet that measures either blood alcohol content or whether they are at home during certain hours and transmits this data back to the parole officer through a phone modem.

In Michigan, as in other states, parolees' living arrangements are closely monitored by parole agents, who must approve any new residence. The address where a prisoner plans to live after release is visited by a parole officer for evaluation and approval (for the typical parolee, concerns are firearms in the home, evidence of drug use in the home, other convicted felons residing at the address, and whether the address is a real address). No parolee is released without a planned place to live, so living on the streets immediately following release is extremely rare but may be more common later during the parole period. Few parolees have the financial resources to live alone, and few are married (12 percent of those paroled in 2003 in Michigan, according to these data), so most parolees must either live with parents, other family members, or romantic partners. When living with friends or family is not an option, parolees may be paroled to homeless shelters or residential drug or alcohol treatment centers, which in Michigan may also be required by the parole board for prisoners with a history of drug or alcohol abuse. Parolees are forbidden from moving out of state unless they initiate a lengthy bureaucratic procedure and pay a fee. Moving between counties is allowed but requires prior permission; as such a move would require changing parole offices. Also, convicted felons are prohibited from living in public housing. Financial and institutional barriers to securing housing may restrict parolees' residential options to the least desirable, most disadvantaged neighborhoods. In Michigan there is no requirement that the offender must return to the same city or county where she or he was arrested or sentenced.

#### *D. Structure of Report*

The remainder of the report describes the analysis conducted to address the following research aims, as stated in the original application that resulted in an NIJ Crime and Justice Research Award for this project:

1. To collect, clean, geocode, and merge data on a one-third sample of parolees ( $n=3,689$ ) released from Michigan prisons in 2003 from prospective, spatially-referenced MDOC administrative records.
2. To investigate whether exposure to disadvantaged neighborhood contexts after release from prison is associated with recidivism.
3. To investigate whether exposure to disadvantaged neighborhood contexts after release from prison is associated with employment.
4. To investigate whether employment is a mechanism through which disadvantaged neighborhood environments are related to recidivism.

The sections below describe the nature of the data collected, the measures and methods used to analyze the data, and the results of the analysis. They also discuss the importance of the main findings and conclusions from the analyses and the implications of the findings for policy and practice and for future research.

## **2. RESEARCH DESIGN AND DATA COLLECTION**

The data for this study are the population of individuals paroled from Michigan prisons to Michigan communities in 2003 ( $N = 11,064$ ), although some analyses are based on a one-sixth sample ( $n = 1,848$ ) of this population. To ensure adequate variation in both the geographic locations and the characteristics of neighborhoods represented in the sample, a two-stage clustered sampling design (in which parolees are clustered within census tracts) with

probabilities proportionate to size (PPS) was employed, a sampling scheme for selecting individuals with equal probability when clusters are of unequal sizes (Groves et al. 2004). In the first stage, census tracts were sampled with probability proportionate to their size (i.e., the number of parolees who returned to each tract). In the second stage, individuals within each selected tract were sampled with probability inversely proportionate to the tract selection rate. When the first- and second-stage selection rates are multiplied together, the sampling probability is equal for every individual (Groves et al. 2004). This approach also ensures that the final sample size of parolees remains the same no matter which tracts were sampled in the first stage. The individual-level sampling probability was set to 1/3, resulting in an initial sample size of 3,689. More details on the methods used to draw the sample are provided in “Appendix – Sampling Methods” below.

#### *A. Data Sources*

The most novel aspect of the data collection for this project is the use of parole agent narrative case notes to collect data on the residences of parolees. Because coding case notes is very time-consuming, the research team was not able to finish coding case note data for the entire 1/3 sample with available resources. Instead, this report draws on case note data from a randomly selected 1/6 sample of the population (half of the 1/3 sample).<sup>1</sup> The research team developed essential expertise in reading and coding case notes (which include many abbreviations and terminology particular to MDOC) in the process of collecting data on each

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<sup>1</sup> To ensure that a random sample would be available even if the research team were unable to code the case notes for the entire 1/3 sample, the sample was divided into eight randomly selected subsamples, or “replicates,” before coding began. The case note data analyzed below are limited to the first four replicates (n = 1,848), which constitute half the sample and one-sixth of the population.

parolee's first residential address after prison for sampling purposes. A coding system was designed and tested using multiple coders and multiple iterations to ensure adequate inter- and intra-coder reliability. Customized data-entry screens were designed (using Microsoft Access) to minimize data-entry error, resulting in dynamically linked databases that track every mention in the case notes of a change in the parolee's (a) residence, (b) employment or income (e.g., a new job, retirement, or receiving SSI), or (c) arrest. In addition, the address where each sample member lived immediately prior to the prison term that led to their parole in 2003 was obtained from hard copies of pre-sentence investigation reports, in which addresses are usually verified by the MDOC agent preparing the report, as well as from parole violation reports and parole agent case notes (for those who were on parole prior to their sampled prison term). Although most case note records were collected only the 1/6 sample of cases, the project team coded the first post-prison residential address for all 11,064 parolees in the population so that "baseline" neighborhoods could be identified and used in the two-stage cluster sampling procedure.

It is important to note some of the limitations of the case note data. Although all parole agents are required to report information on changes of address/living arrangements, employment status, arrest (which must be verified by cross-checking with police records), and parole violations, in practice there may be variability across agents in how completely this information is recorded. Some of the variation across agents could be due to county-specific norms of what parole agents are required to record, and this could result in more missing data for some counties than others. Fixed effects for counties were included in the models to control for any variation in data completeness.

The project team also collected a wide range of data on all 11,064 parolees in the cohort from administrative databases and documents. Through a collaboration with MDOC, the project

was able to extract records from the Corrections Management Information Systems (CMIS) and Offender Management Network Information (OMNI) databases, which cover all time periods during which a person in the cohort was under MDOC supervision, either in a custodial facility or on parole or probation in the community. The CMIS database contains records dating back to 1980, including data on prior criminal history, demographics, marital status, number of minor children, education, services received in prison, recommitments, behavior violations in prison, and MDOC assessments of health, substances use, security level, recidivism risk, and mental health. The OMNI database is used by parole and probation officers to track and record information on individuals under supervision. It includes longitudinal data (updated weekly or monthly throughout the parole period) on residential addresses, employment, drug and alcohol tests, arrests, parole violations and revocations, the issuance of absconding warrants, changes in the conditions of supervision (either in custodial facilities or on parole/probation, including electronic monitoring), and “transit” movements in and out of MDOC facilities. MDOC also provided data from the “basic information report” (BIR), a section of the pre-sentence investigation report written by MDOC agents each time someone is convicted of a felony in Michigan courts. The BIR includes the multiple dates associated with each case as it moves through the court system (e.g., the date of the offense, arrest, bond, conviction, and sentencing), as well as information about the sentence and background characteristics of the offender.

The Michigan State Police (MSP) also agreed to link all offenders in the population with records of every arrest they had as an adult in Michigan (through January, 2011). Arrests are reported regularly by all police departments and other law enforcement agencies to the MSP. The records included dates of the incident, arrest, charging of the offense, and judicial action, as well as details about the charged offenses, their dispositions, and the resulting sentences. MSP



matched their records with the study population using social security numbers, names, date of birth, MSP identification numbers and MDOC identification numbers (which are permanently assigned to each person and thus do not vary over time).

Linked data from unemployment insurance records for the entire population were obtained from a data sharing agreement between MDOC and the Michigan Unemployment Insurance Agency (MUIA). These records track employment status and gross wages of cohort members over every calendar quarter since the release from prison that coincided with their 2003 parole (some people were released to residential centers before being paroled in 2003) and for the calendar quarter before they went to prison (for the prison spell that ended in their 2003 parole). The UI records are based on employer reports of the gross wages they paid during a calendar quarter. These records also contain information on each employer who paid the individual wages, including their North American Industry Classification System (NAICS) code and a multiunit code for distinguishing multiple establishments (if applicable). The MUI data exclude temporary or “under the table” employment. The MUIA matched their records to the study population using social security numbers, names, and where possible, employer names.

Administrative records from all sources were cleaned to check for duplicated records and logical inconsistencies both within and across data sets. When necessary, parole agent case notes were consulted to resolve discrepancies and other errors detected.

## *B. Measures*

This section provides details on how the data sources described above were used to construct measures of (i) residential histories and neighborhood characteristics, (ii) recidivism, and (iii) employment and earnings.

i. Residential Histories and Neighborhood Context Measures

As the role of neighborhood context in prisoner reentry is the overriding theme of the project, a concerted effort was made to collect post-prison residential histories of sampled parolees from parole agent case notes. All parolees are required to report changes of address to their parole officers, who in turn are supposed to verify this address and record it in the OMNI database. It is a technical parole violation to fail to keep one's parole agent informed of one's address, and parole agents are required to verify residence information provided by parolees, so parolees have a strong incentive to provide address information. Parolees also provide an address to MDOC before their release, and these residences are visited by parole agents for approval prior to the parolee's release and recorded in CMIS.

Residential histories, including move dates, residence types, and addresses, were assembled from the case notes, beginning on the day of parole from prison in 2003 (or earlier for those who were released to correctional centers before they were paroled) and ending on or before August 17, 2009, the date on which parole agent case notes were downloaded (only 3.6 percent of sample members were still on parole on this date). About 15 percent of sample members were released from prison before their parole date because they were moved to a correctional center where they had community exposure or placed on electronic monitoring (although technically not yet considered to be on parole).<sup>2</sup> Residential histories were censored when the parolee discharged from parole and was therefore no longer observed (49 percent of the

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<sup>2</sup> This policy, in place in 2003, was stopped soon after with the passage of truth in sentencing legislation in Michigan, which required that the entire minimum sentence be served in prison.

sample members discharged).<sup>3</sup> For the analysis in this report, residential histories were also censored when a sample member returned to prison (for either a new conviction or parole violation), which occurred in 45 percent of the cases. However, residential histories were not censored in this analysis when a parolee was temporarily sent to jail or was temporarily held in custody as the result of an intermediate sanction that did not lead to a movement to prison. Periods of absconding were also not censored in the residential history data used in this report unless they immediately preceded a return to prison or the sample member was absconding when the observation period ended. About two percent ( $n = 38$ ) of sample subjects died during the observation period before their discharge from parole or a return to prison. The median number of residence records was 5 and the mean was 7.6, but there was considerable variation. For example, 15.7 percent of subjects resided in the same residence for the entire observation period, and 25 percent had ten or more residence records, indicating at least 9 moves during the observation period. The mean length of a sample member's observation period was 700 days, with a median of 731 days and a standard deviation of 494 days.

Determining exact move-in and move-out dates for residences was particularly challenging. Approximately one quarter of move-in and move-out dates were estimated based on inexact information in the case notes. When there was insufficient information in the case notes to identify an address in a given period – including periods when the parolee was absconding, the time period was coded as one with an unknown address.<sup>4</sup> One-third of the sample had at least

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<sup>3</sup> When a person was discharged from parole but subsequently imprisoned for a new crime and placed back on parole, the research team did resume collecting residence data, but such parole spells are not included in this analysis.

<sup>4</sup> Parole agents are careful to document all absconding periods, as the issuance of an absconding warrants signals that the parolee is no longer being supervised by the agent and so the agent cannot be held responsible for the parolee's behavior.

one unknown residence, and about nine percent of the average parolee's time was spent in unknown residences.

For sampling purposes (to implement the two-stage cluster sampling design), it was necessary to code the first post-prison address for all 11,064 parolees in the population. Thus, the entire population is used in analyses of the effect of first post-prison neighborhood characteristics on subsequent outcomes. The first post-prison neighborhood was defined as the first place where an individual stayed for at least one night and had some "community exposure," meaning that he or she had unsupervised access to people and places outside of the residence.<sup>5</sup> Those who were paroled to institutions offering no exposure to the community, such as hospitals, in-patient treatment centers, or county jails, were assigned the first subsequent non-institutional address. Homeless individuals were assigned the census tract of the shelter or mission where they were staying (no parolees were living on the streets immediately after their release, as a prisoner must have a place to live before being paroled).<sup>6</sup>

Pre-prison addresses were collected for the 1/3 sample from hard copies of pre-sentence investigation reports, in which addresses are usually verified by the MDOC agent preparing the

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<sup>5</sup> Less than one percent of the parolees in the study cohort stayed in their first address for only one night.

<sup>6</sup> Although all parole agents are required to report information on changes of address or living arrangements, employment status, arrest (which must be verified by cross-checking with police records), and parole violations, in practice there may be variability across agents in how completely this information is recorded. Preliminary research suggests, however, that the addresses in the case notes are surprisingly accurate. The research team has also conducted a longitudinal qualitative study of 22 former prisoners who were interviewed once in prison prior to release and at regular intervals for the two years following their release from prison in late 2007 and early 2008. For 18 of the interview subjects, it was possible to compare self-reported residential histories from researcher interviews for the first few months after release with those recorded in MDOC administrative data. Fourteen (78 percent) of these residential histories matched exactly, and the remaining four had one missing address each. Overall, 33 of 37 addresses were correctly recorded by MDOC parole agents. Missing addresses were either brief stays or short periods of living on the streets, and those with missing addresses tended to be more residentially mobile, suggesting that the administrative data will understate mobility slightly for some parolees. While two of the subjects experienced periods in which they were moving quickly between multiple addresses (staying with multiple friends or family members to avoid living on the streets or in a shelter), these periods were very short (only a few weeks).

report, as well as parole violation reports and parole agent case notes (for those who were on parole prior to their sampled prison term). Pre-prison addresses were successfully identified and geocoded for approximately 99 percent of the sample. Forty-nine of the identified addresses, or 1.5 percent, were outside of Michigan. Pre-prison addresses were linked to census tract characteristics for the year in which the individual entered prison.<sup>7</sup>

All pre- and post-prison residential addresses were geocoded (i.e. assigned latitude and longitude) using ArcGIS software and the StreetMap database and matched to census tracts. Post-release neighborhoods were linked to tract- and county-level data from the 2000 Census.<sup>8</sup> Tract-level data from the 1980, 1990, and 2000 censuses were assembled for all Michigan tracts. To assess the dimensionality of tract-level data on socioeconomic and demographic composition, a factor analysis involving 17 census variables was conducted separately on data from each census year. The rotated factor loadings and eigenvalues from the factor analysis of the 2000 census data are reported in Table 1. Five factors were retained from the analysis, four of which had eigenvalues over 10. A fifth factor was retained because it had a relatively high eigenvalue (.81) and represented a conceptually important dimension of neighborhood demographic composition (the concentration of Latinos and immigrants), but it was not used in the analysis reported below. The five factors that emerged from this analysis, which are comparable to those found in similar neighborhood research (Morenoff, Sampson, and Raudenbush 2001; Morenoff et al. 2007), were defined as follows: (1) “concentrated disadvantage,” with high loadings on black, poverty, single parent, unemployment, and welfare receipt, (2) “concentrated affluence,” with high loadings on high education, high income, and professional/managerial occupation, (3)

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<sup>7</sup> Tract characteristics for years between censuses were assigned values created by linear interpolation.

<sup>8</sup> The census bureau only recently released tract-level data from the 2005-2009 American Community Surveys. The research team is currently in the process of assembling data for Michigan tracts.

“residential stability,” with high loadings on percent living in same household 5 years ago and home ownership, (4) “young age structure” with high loadings on percent youth, and (5) “Latino-Foreign Born,” with high loadings on foreign born and Latino.<sup>9</sup> These neighborhood characteristics are also consistent with the theoretical perspectives on neighborhood effects on recidivism and employment presented above.

ii. Recidivism

The term “recidivism” is used in this report to describe violations (of criminal law or parole guidelines) that result in (1) arrest, (2) felony conviction, (3) recommitment to prison for a new crime, (4) recommitment for a technical parole violation, or (5) issuance of an absconding warrant. This study analyzed the occurrence and timing of the first recidivism event of each type that occurs following a person’s parole in 2003. In the analysis of arrests (from MSP data) and felony convictions (from the BIR data), the outcome was the date of the offense that led to the arrest or felony conviction. In the analysis of returns to prison – for a new crime or technical parole violation – the outcome was the date that the person moved to prison, and for absconding the outcome was the date that the parole officer issued an absconding warrant. Dates of recommitments to prison and absconding were obtained from the MDOC records.

In the survival models reported below, all outcomes were measured as the first date on which the recidivism event in question occurred; subsequent incidents of recidivism (after the first event) were not analyzed. Also, each outcome was analyzed independently, so the occurrence of one event (e.g., first arrest) did not remove someone from the risk set of having

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<sup>9</sup> Because there are relatively few foreign born residents of Michigan, there is relatively little variance in the fifth factor. Moreover, in preliminary analyses this factor did not prove to be correlated with recidivism or employment, so it is not included in the final analyses.

another event (e.g., return to prison for a new crime). An important exception to this rule occurred when someone was returned to prison for either a new crime or a parole violation. Once a person returned to prison (for either a new crime or technical parole violation) he/she was removed from the risk set of all other recidivism outcomes. For example, a person who was paroled in May, 2003 but sent back to prison on a technical violation in May, 2004 would be censored from the analysis of all other recidivism outcomes as of May, 2004, even if none of the other events (arrest, felony conviction, return to prison for a new crime, or absconding) occurred during the year that the person was on parole in the community.

There were three additional reasons that someone could exit the analytic sample (i.e., be censored) without recidivating: (a) dying while on parole, (b) being discharged from parole before recidivating, or (c) being in the community at the end of the observation period without the recidivism event in question occurring (and without any other form of censoring). Deaths were only recorded in MDOC databases when a person died while under MDOC custody or supervision, and 308 people (2.8 percent of the population) died while under MDOC custody or supervision during the observation period. Being discharged from parole without recidivating removed someone from the risk set for being returned to prison on a parole violation and absconding because these two outcomes can only occur when a person is under parole supervision. People who did not recidivate and were not censored (due to discharge, return to prison, or death) by the end of the observation period, were assigned a last record date based on the date that the data for the outcome in question were downloaded (i.e., the last date on which events were recorded), which was January 4, 2011 for the MSP records (use to analyze arrests), December 31, 2009 for the BIR records (used to analyze felony convictions), and February 12, 2010 for the MDOC records used to analyze returns to prison and absconding.

### iii. Employment

Employment data were collected from two sources: the parole agent case notes and Michigan Unemployment Insurance records. Parole agents are required to keep track of parolees' employment status and record whether they are working as well as employment start and stop dates. Though employment in the case notes is to some degree based on parolee self-reports, parole agents are required to verify employment by examining pay stubs or contacting employers.

The UI records for the population and the case-note data on employment for the sample complement one another. The advantage of the UI records is that they cover the entire population, provide complete coverage of the post-prison period, even when a person has been discharged from parole, and they contain pre-incarceration data on employment and wages. They also provide information on employers. Some important limitations of the UI data are that they exclude "under the table" employment, they are aggregated into three-month increments (they do not have precise dates of employment), they are based on employer reports, and they require matching by social security number and name, which may not be accurate in MDOC records for all of the population.<sup>10</sup> The case notes provide more frequent (weekly or monthly) reports,

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<sup>10</sup> Records for the study population were matched with UI records using the following procedures. First, all social security numbers available in MDOC databases for the population were sent to the Michigan Unemployment Insurance Agency and Workforce Development Agency for matching. In some cases, more than one social security number was available for each subject. For 32 individuals, MDOC had no social security number, so these individuals have no UI data. Returned UI records were matched with names from MDOC databases, including aliases, to eliminate incorrect social security numbers. Sixteen percent of the population, or 1,758 individuals had no UI data match their social security number, indicating they never had any formal employment in Michigan between 1997 and 2010. If more than one social security number that MDOC had recorded for the same person matched records in the UI data, project staff selected the best match by comparing employer names listed in the UI records with those listed in the MDOC records (from parole agent reports). This procedure resulted in one-to-one matches of individual records between MDOC and UI records for all but 199 parolees (2 percent of the population), for whom a



indicate whether the parole agent verified employment (via pay stub), and include all types of employment, but they are based on agent reports, do not provide reliable information on employers, and only cover the period of time that a person is under MDOC custody.

The analysis of labor market outcomes in this report was based only on the UI data and thus only covers employment in the formal labor market, meaning legal employment that was reported to the state government's unemployment insurance system by the employer, whether paid by cash or check. In addition to capturing employment status and wages in the period after one's 2003 parole (or earlier release from prison) in 2003, the matched UI records also provided employment status and wages immediately prior to the prison spell that ended in 2003 (UI records were examined for both the calendar quarter preceding that incarceration spell and the quarter that the incarceration spell began). A dummy variable was constructed to measure whether a person was employed immediately before going to prison (in either the quarter when incarceration began or the preceding quarter), and a pre-prison wages variable was also constructed as a person's gross wages in either the quarter when incarceration began or the preceding quarter, whichever was larger. All wage data were adjusted to 2010 dollars using the Consumer Price Index (CPI-U-X1).

### *C. Descriptive Statistics on Covariates*

Descriptive statistics on all of the covariates used in the analyses of recidivism and employment are listed in Table 2. One purpose of Table 2 is to compare the 1/6 sample to the

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single social security number could not be selected after matching on the parolee's name and the name(s) of that person's employer(s). In such cases, UI data were retained for all social security numbers listed in the MDOC records for a given individual, under the assumption that such people worked under multiple social security numbers.

population on measures that were collected for the entire population. The sample means and relative frequencies of such variables are very close to their corresponding population parameters. The table also reveals several important features of the population of parolees. Demographically, the population was 8 percent female, 54 percent black, 45 percent white, and 1 percent other (almost entirely Mexican-American). A little more than a third of the population was between ages 18 and 30 in 2003, another third was between ages 31 and 40, and slightly less than a third was over age 40. The neighborhood scales presented in Table 2 were constructed from the factor analysis shown in Table 1. These scales were standardized to have a mean of 0 and standard deviation of 1 across all tracts in the State. However, the means and standard deviations for the neighborhood scales reported in Table 2 do not match the statewide averages, implying that the distribution of neighborhood characteristics in this population of parolees than was not representative of tracts across the entire State.<sup>11</sup> For example, the mean for the disadvantage scale in the population of parolees was .83 of a standard deviation higher than the State-wide average, and there was considerably more variability on neighborhood disadvantage in this population compared to the statewide distribution of tracts, as reflected by the standard deviation of 1.28. Levels of neighborhood affluence and residential stability were low in the population compared to the average Michigan census tract, but the average neighborhood for a parolee in the population had a younger age composition than the average Michigan census tract.

#### *D. Missing Data*

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<sup>11</sup> It is also important to keep in mind that the neighborhood scales were standardized to the tract-level distribution (including all tracts in the State), whereas the means and standard deviations in Table 1 are from individual-level data on parolees in the population, which means that tracts with higher concentrations of parolees are more heavily weighted.

Table 2 also reports the amount of missing data in the administrative records), which fortunately was very low (between 0-1 percent) on most variables.<sup>12</sup> The only exceptions were pre-prison measures of employment status and wages drawn from UI records, where 13.5 percent of the cases had missing data because these individuals entered prison in a period before UI records were entered into MUIA databases. All variables with missing data were multiply imputed (using Stata v12), and five multiply imputed data sets were created. All variables used in the recidivism and labor market outcome analysis were also used as covariates in the imputation models. All statistical models were estimated simultaneously on the five imputed data sets, and the results were combined into a single set of results.<sup>13</sup>

#### *E. Methods*

The statistical models used in this analysis include (a) Cox proportional hazards models to model the time between parole in 2003 and the first recidivism event and (b) multilevel growth-curve models to model longitudinal trajectories in employment and earnings (see the employment results section below for a discussion of the growth curve models). Time-to-event models, of which Cox proportional hazards models are one type, are appropriate for analyzing outcomes that are the time to the occurrence of a particular event.<sup>14</sup>

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<sup>12</sup> This does not mean that there is complete and accurate information about all of the outcome variables. Rather, it means that the administrative records used to measure the outcomes do not have any missing values.

<sup>13</sup> Both Stata and HLM have procedures for integrating results from multiply imputed data sets into a single set of coefficients and standard errors.

<sup>14</sup> An advantage of time-to-event models (also called survival models, failure time models, hazard models, or event history models) over models for binary outcomes is that variation in the time to an event is modeled, rather than just whether the event occurred. An advantage of time-to-event models over modeling time as a continuous outcome using OLS regression is that cases that never have an event during the observation period can be included in the analysis (such cases are referred to as “right censored”).

In the Cox model, the hazard of an event at time  $t$  is modeled as follows:  $h(t) = h_0(t) \exp(\beta_1 x_1 + \dots + \beta_k x_k)$ , where  $h_0(t)$ , the baseline hazard function, is non-parametric and not directly estimated. The baseline hazard function is assumed to be the same for all groups defined by the covariates (the proportional hazards assumption), but this proportionality assumption can be relaxed by stratifying the baseline hazard function by group or by adding interactions between any of the covariates and time. Robust standard errors are reported to correct for lack of independence among people who moved into the same census tract upon their release from prison. Parametric alternatives to the Cox model were also run, including parametric proportional hazards models (e.g., Weibull, Gompertz, and exponential) and accelerated failure time models (e.g., lognormal, loglogistic, and generalized gamma), and the results presented in this report were found to be robust across models.

The covariates in survival models can include both time-invariant and time-varying measures. In some analyses neighborhoods characteristics were treated as time-invariant, using data collected for the entire population ( $n = 11,064$ ) on the first post-prison neighborhood. In other analyses, neighborhood characteristics were treated as time-varying, using data from the 1/6 sample ( $n = 1,848$ ) for whom case notes were coded. Allowing neighborhood characteristics to vary with time also opens a range of options for modeling the temporal nature of the association between neighborhood environments and employment. One possibility is that neighborhood predictors could be measured at the same time as the hazard of recidivism. Another possibility is that cumulative exposure to neighborhood conditions matters more than the contemporaneous characteristics of the neighborhood environment, and this can be measured as the average exposure to a given neighborhood characteristic over the period beginning with release from prison and ending at the time of the event or censoring. Both types

(contemporaneous and cumulative) of time-varying neighborhood measures were constructed, but in the interest of parsimony, only the results involving the cumulative measures are presented in this report.

One important assumption of all survival models is that censoring of cases is “non-informative,” conditional on all predictors in a model (Singer & Willett 2003). In other words, the censoring mechanism must be independent of the risk of event occurrence net of all the predictors in the model. Although the non-informative censoring assumption probably is tenable when a subject is removed from the risk set because the observation period for a given data set ends, other events that remove subjects from the risk set for a given recidivism outcome (e.g., death, discharge from parole, and return to prison) have etiologies that are likely not independent of the outcome of interest. One way to address such dependent sources of censoring is by conditioning on covariates that predict both the outcome of interest and the censoring events.<sup>15</sup> Thus, controls were included for (a) legal factors (e.g., type of offense, offense history, risk assessment) that judges and parole boards consider in determining the length of a prison sentence or parole sentence, (b) demographic and socioeconomic factors that may predict both recidivism and some forms of censoring, and (c) identifiers of the county where the offense was committed, to capture any residual variation across different parts of the State in the probability of censoring

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<sup>15</sup> Future research will explore other methods for addressing the threat of bias due to the occurrence of competing events that remove subjects from the risk set. It is important to note that most such events are more accurately conceptualized as competing failure events than censoring events. Whereas censoring events only prevent observation of the outcome of interest, competing failure events actually prevent the outcome of interest from occurring. Future analyses will explore alternative approaches to modeling such competing failure events, including competing risk regression models and multistate hazard models. This line of analysis also promises to yield important substantive insights because it will involve modeling the complex institutional pathways that underlie the recidivism process, beginning with the actions of police and parole agents (arrest, charging of a parole violation, or issuing an absconding warrant) and continuing through the stages of disposition and sanctioning.

and recidivism that may stem from local norms that influence the actions of police, parole agents, and judges.

### **3. RESULTS**

#### *A. Frequency and Timing of Recidivism*

Summary statistics on the frequency and timing of recidivism events are presented Table 3. The first column shows the proportion of people in the population who experienced each type of event at least once between their parole date in 2003 and the end of 2009 (all of the administrative data sets used to construct recidivism outcomes extended at least this far in time). Arrest was by far the most common event, with 70 percent of the population being arrested at least once in the 6+ years following their 2003 parole. Nearly half (49 percent) of the parolees in the population were returned to prison, 44 percent were convicted of at least one felony, and 40 percent absconded at least once while on parole. Thus, rates of recidivism were very high regardless of which indicators were used.

The other columns in Table 3 present conditional probabilities that show how common it was for someone who experienced one type of recidivism event to also experience another. Individuals who experienced one type of recidivism event were also more likely to experience other types. For example, among parolees who were arrested at least once, 61 percent were also convicted of at least one felony, 47 percent absconded at least once, and 61 percent were returned to prison. The results also demonstrate that even though these recidivism measures were constructed from three separate administrative databases, there are very few cases with logically inconsistent data. For example, it is very difficult (although not impossible) to be convicted of a felony without being arrested, and 97 percent of parolees with a felony conviction recorded in

the BIR data also had an arrest in the MSP data.<sup>16</sup> Likewise, 98 percent of parolees who were returned to prison for a new crime according to MDOC data were also arrested in the MSP data and 96% were convicted of a felony in the BIR data. The likely explanations for why these numbers are not closer to 100 percent are that (a) in some rare instances it is possible to have one event without the other, (b) sometimes there is a lag between when an event occurs and when it shows up in the appropriate administrative database (and closer inspection of the discrepant cases in the comparisons above revealed that most of them occurred close to the end of the observation period, where such a lag could explain the absence of a record), and (c) administrative errors can result in records not getting entered (although inspection of the case notes for these discrepant cases showed that there were no cases in which the parole agent reported an event that did not get reported in the appropriate administrative database).

To describe the timing of recidivism events in the population, the hazard and failure functions for each event are presented in Figures 1 and 2, respectively. The smooth hazard functions in Figure 1, which plot the instantaneous probability of recidivating at each time point (using Kaplan-Meier estimates and a kernel smoothing function) show that the hazard rates for most outcomes increased steeply throughout the first year but then peaked and began a steady decline, although both the level and shape of the curves differ across outcomes. The hazard function for being returned for a technical violation followed a slightly different pattern, peaking once at about one year after parole and again at a higher level at about 2.5 years.

The failure curves displayed in Figure 2 show the cumulative probability (using Kaplan-Meier estimates) of experiencing the outcome of interest (i.e., “failing”) at a given time. It is

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<sup>16</sup> Individual offenses have not been linked across the MSP and BIR data. This would be very difficult to do for the full population because often the dates of a given offense do not match exactly across the two different administrative databases.

noteworthy that the failure curves for all of the recidivism events continued to rise, in some cases substantially, three or more years after one's release on parole. Such late acts of recidivism would not be detected by most recidivism studies, which typically track recidivism for only 2-3 years. The Kaplan Meier estimates of failure in Figure 2 also exceeded the recidivism rates shown in Table 3. For example, in Figure 2 the failure rate for arrest peaked at .77 and the failure curve for felony conviction peaked at .50, but the marginal probabilities for these two outcomes in Table 3 were .70 and .44, respectively. The reason that the Kaplan-Meier estimates presented in Figure 2 are higher is that they take into account the effect of censoring on both the numerator and denominator in calculating the probability of recidivism. To understand how this works, imagine a hypothetical population of 10 parolees, 5 of whom were arrested during the observation period, yielding a marginal probability of .50. Suppose that one of the five parolees who were not arrested died and two more were returned to prison on technical violations. Under the Kaplan-Meier method, the three parolees who were censored (by dying or being returned to prison) get dropped from the risk set, so by the end of the risk period the estimated failure rate would be 5/7 or .71. The Cox proportional hazard models presented below handle censoring in a similar way. Thus, the "raw" probabilities of recidivism presented in Table 3 underestimate the risk of recidivating because they do not take censoring into account.

## *B. Neighborhoods and Recidivism*

### *i. Analysis with Baseline Neighborhoods*

Results from the analysis of the association between characteristics of the first post-prison neighborhood and the hazard rate of each recidivism outcome are presented in Tables 4-8. The Cox proportional hazard models reported in these tables were run on the entire population of



individuals paroled in 2003. The regression coefficients presented in these tables can be interpreted as hazard rate ratios when they are exponentiated.

The same progression of models is presented for each recidivism outcome in Tables 4-8. The first model in each table estimates unadjusted associations between characteristics of the first post-prison neighborhood and the recidivism hazard rate. Individual-level controls for demographic characteristics (age, sex, race, marital status, number of dependents) and socioeconomic status (education and pre-prison measures of employment status and earnings) were added in the second model, and in the third model controls were added for criminal history (number of prior prison spells, indicators of the type of offense for which the offender was sentenced to prison, and the number of years that prison sentence lasted), whether the offender had a known mental illness while in prison, assessments of substance abuse history made while the offender was in prison, and indicators of whether the offender was released before they were paroled in 2003.<sup>17</sup> The fourth model adds controls for whether the first post-prison address is located in a central city or rural area (compared to suburban areas, or places that are within an MSA but not a central city) to account for the possibility that associations between neighborhood characteristics and recidivism could capture larger spatial differences between urban, suburban, and rural areas. Finally, county “fixed effects” (i.e., dummy variables for 82 of Michigan’s 83

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<sup>17</sup> Some offenders were released to residential centers so they could find work before they were officially paroled, although MDOC has since discontinued this practice. Since each offender had to “survive” until their 2003 parole to be part of the sampling frame, the 2003 parole date was used to define the start of the risk period rather than the date a person was first released to the community.

counties) were added in the fifth model to account for unobserved heterogeneity at the county level in the way offenses and violations are detected and punished.<sup>18</sup>

The models of time to the first arrest appear in Table 4. In Model 1, both neighborhood affluence and residential stability were significantly associated with a lower hazard of arrest, but the residential stability effect was reduced to non-significance when individual-level controls were introduced in Models 2 and 3. Neighborhood disadvantage became significantly associated with a lower hazard of arrest in Model 2, a finding that runs counter to theoretical prediction, and which is discussed below. The effects of neighborhood affluence and disadvantage remained statistically significant after controlling for urbanicity in Model 4 but became non-significant after adding county fixed effects in Model 5, implying that these effects are partially attributable to county-level differences.

The results for models predicting felony conviction appear in Table 5. Although disadvantage, residential stability, and age composition were significantly associated with the hazard of felony conviction in Model 1, none of these associations remained significant after controls were introduced for individual-level characteristics in Models 2 and 3.

Neighborhood characteristics were more strongly associated with the hazard of being returned to prison, either for a new crime (Table 6) or technical violation (Table 7), and absconding (Table 8). Neighborhood affluence and residential stability were associated with a lower hazard of all three outcomes, but the association between affluence and being returned for a new offense (Table 6) was not robust to all controls, nor was the association between residential stability and being returned for a technical violation (Table 7). Neighborhood

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<sup>18</sup> Another way of accounting for county-level heterogeneity is to stratify the baseline hazard function in the Cox model by county rather than adding county-specific dummy variables. Such stratified models yielded almost identical results on all recidivism outcomes.

disadvantage was positively associated with being returned (either for a new offense or technical violation) and absconding, but the effect was only robust to controls in the case of absconding.

Many of the individual-level covariates were robust predictors of recidivism, including young age, being male, black, divorced or widowed, having a known mental illness, being sentenced for a non-assaultive crime (for the most recent prison spell), having committed a sexual offense, having more prior prison spells, and being assessed as having substance abuse issues. It is also notable that the individual-level education was only significantly associated with two of the five recidivism outcomes: returning to prison for a technical violation (Table 7) and absconding (Table 8).

ii. Analysis with Time-Varying Neighborhood Characteristics and Employment

The models reported above considered only the first neighborhood where each parolee lived upon his or her release from prison. Residential mobility is quite high in this population, as reported elsewhere (Harding, Morenoff and Herbert 2011), with the average parolee making 2.67 moves per year, although most of these moves do not result in much change in neighborhood characteristics. Nonetheless, to understand how neighborhood context affects the likelihood of recidivism over a 6 year observation period, it is important to consider trajectories of neighborhood change and cumulative exposure to different types of neighborhood conditions.

The results for the models with time-varying neighborhood measures for each recidivism outcome, estimated on the 1/6 sample, are presented in Tables 9-13.<sup>19</sup> To facilitate comparisons between time invariant and time-varying neighborhood effects, the first model in each table

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<sup>19</sup> Because of the smaller sample size in this analysis, p-values are reported in these tables rather than asterisks to make clear the exact significance level of each coefficient.

estimated associations between characteristics of the first post-prison neighborhood and each recidivism outcome after adjusting for all individual- and county-level covariates (i.e., those included in Model 4 in Tables 4-8). The second model substituted time-varying measures of each neighborhood characteristic. These variables change (potentially) every time a subject moves or the observation period ends (with a recidivism event or censoring), and they capture an individual's cumulative exposure to a given neighborhood condition.<sup>20</sup> Each time-varying neighborhood variable was calculated as a weighted average of values at every residence where the subject lived from baseline (the 2003 parole date) up to a given time point, weighted by the number of days spent at each residence.<sup>21</sup> The third model added a time-varying measure of post-prison employment status that was constructed as the average employment status at every calendar quarter from baseline up to a given time point.<sup>22</sup> The final model added controls for characteristics of the neighborhoods where subjects lived immediately prior to their prison sentence (that ended in their 2003 parole), to isolate the contribution of post-prison neighborhood context to recidivism.<sup>23</sup>

Cumulative exposure to neighborhood disadvantage, affluence and residential stability were not associated with any of the recidivism outcomes (in Tables 9-13) once all individual characteristics and pre-prison neighborhood characteristics were controlled. Although these results seem to contradict those from the baseline neighborhoods analysis (from Tables 4-8), the

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<sup>20</sup> Since the most recent data on neighborhood conditions are currently the 2000 Census, changes in tract characteristics themselves are not incorporated into this analysis. The only changes producing variability over time come from residential mobility.

<sup>21</sup> Periods of unknown residence or periods in residences with no community exposure (jails and detention centers) are not included in calculating these averages.

<sup>22</sup> Specifically, this variable was constructed as a weighted average where each calendar quarter had a weight equal to "1" except for the calendar quarter that overlapped with the person's parole in 2003, which was weighted according to the proportion of days during the quarter that the person was on parole.

<sup>23</sup> Data on pre-prison residences were only collected for the 1/6 sample, so it was not possible to control for these measures in the prior analysis.

confidence intervals actually overlap across the two analyses, indicating that these differences may not actually reflect substantive differences in the effects of first post-prison neighborhoods compared to cumulative exposure to neighborhood conditions but rather sampling error. The only robust neighborhood predictor of recidivism in this analysis was age composition: longer cumulative exposure to neighborhoods where more young people live was significantly associated with an increased risk of absconding and returning to prison on a technical violation, and after controlling for pre-prison neighborhood characteristics in Model 4 it was also significantly associated with an increased hazard of returning to prison for a new crime and committing an offense that leads to a felony conviction. The positive association between younger neighborhood age composition and recidivism appears to be driven by two factors: (a) the use of time-varying neighborhood characteristics and (b) controlling for pre-prison neighborhood characteristics (in Model 4). Controlling for pre-prison neighborhood age composition enhanced the positive effects of post-prison neighborhood age composition because the former is negatively associated with recidivism.

Another notable finding from Tables 8-13 is that being employed strongly reduced the risk of every recidivism outcome (in Models 3 and 4). However, controlling for employment status did not substantially alter the estimated effects of neighborhood conditions, so there was little evidence for the hypothesis that neighborhood effects are mediated by individual labor market outcomes. The negative effect of being employed was strongest on the risk of being sent back to prison, either for a new crime (Table 11) or a parole violation (Table 12). The employment coefficients from these models suggest that offenders who were employed at all calendar quarters since being released on parole (and were thus coded as “1” on the employment variable) were about 60 percent less likely to be returned to prison compared to offenders who

were unemployed in all calendar quarters between their parole and the end of their observation period.

In sum, the two most robust findings from the analysis of time-varying covariates on recidivism were that (a) greater cumulative exposure to neighborhoods with younger age compositions was associated with an increased hazard of being returned to prison and absconding, and (b) the risk of recidivism was greatly reduced the longer one was employed after being released from prison. However, caution is urged in drawing strong conclusions from these results due to the relatively small sample size in the 1/6 sample. Finally, while the results presented here suggest that neighborhoods are important for recidivism, it is important to note that the magnitude of the neighborhood effects was generally smaller than that of the individual level predictors of recidivism, particularly variables measuring prior criminal history, substance use, employment, age, and other demographic characteristics.

### *C. Neighborhoods and Employment*

#### *i. Trends in Employment and Wages*

The primary hypotheses motivating this analysis is that former prisoners who were released to neighborhoods with higher rates of poverty, joblessness, and other forms of disadvantage would be less likely to secure employment, net of individual characteristics, while former prisoners released to more affluent neighborhoods with higher levels of income and education and more professional workers would be more likely to secure employment. The analysis focused on the first 12 full calendar quarters following the quarter of release from

prison.<sup>24</sup> Individuals were censored from the analysis once they returned to prison for the first time or died during the first three years.

Figure 3 describes censoring over time for the population with a “stacked area” graph of change over time in the relative share of parolees who were (1) returned to prison, (2) deceased, (3) in the community but unemployed, and (4) in the community and employed.<sup>25</sup> The proportion of individuals who returned to prison increased steadily over the first three years following release. By the 12<sup>th</sup> quarter, 40 percent of the population had been returned to prison and two percent had died. The proportion of individuals who were employed and in the community increased from about 21 percent in the first quarter to about 30 percent in the third quarter, but fell to 19 percent in the 12<sup>th</sup> quarter, while the proportion unemployed and in the community fell from 75 percent to 40 percent. The remainder of the employment analysis included only the time periods in which the individual was still in the community, so it is important to keep in mind the censoring described in Figure 3.

Three measures of employment from the unemployment insurance (UI) records were used in this analysis. The first was whether a parolee is employed in the formal labor market at any point during a calendar quarter. Figure 4 shows this trend, with individuals who died or were returned to prison removed from the denominator. During the first quarter, about 22 percent of parolees in the community were employed. This percentage increased over the next three quarters, peaking at 36 percent in quarter 4, and then dropped gradually over time to 32 percent

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<sup>24</sup> Recall that UI records are reported on a quarterly basis, meaning calendar quarter is the most specific unit of time available.

<sup>25</sup> Quarter 1 in this graph represents the first full quarter following release. Individuals who returned to prison or died during the quarter of release (i.e. before the first full quarter) were excluded from the analysis below but are included in this figure so that the degree of censoring is clear to the reader. One half of one percent of the population, or 55 individuals, returned to prison before they reached the beginning of their first calendar quarter. Another one tenth of one percent of the population, or 15 individuals, died during their release quarter.

in the 12th quarter. These low rates of formal employment, even for those who did not return to prison, are striking. Given that the censoring process (largely returns to prison) likely removed mainly individuals who would have been unlikely to find and maintain employment had they remained in the community, the downward trend is somewhat surprising. However, a similar downward trend has been observed in other data on former prisoners (Pettit and Lyons 2007, Tyler and Kling 2007, Sabol 2007), and some scholars have attributed it to the effects of prisoner release programs offered immediately after release or to more intensive parole supervision immediately after release, both of which may improve employment outcomes in the immediate post-release period but then fade over time. However, the explanation that this trend resulted from the fading away of prisoner release programs or intensive parole supervision is ultimately unconvincing because (a) the pace of decline in employment was gradual and fairly uniform, which would be hard to reconcile with any explanation that expects a sharp drop in employment after the cessation of services or supervision, and (b) in the multivariate models discussed below, the negative trend over time in employment persisted even after controlling for measures of whether a parolee had more intensive supervision at the time of their release (in the form of a corrections center or electronic monitoring). A second possible alternative explanation is that the economy declined over time in Michigan during the period of this study. However, given that a similar decline was evident in other states and in other time periods with low unemployment rates, and that the trend persisted even after controlling for county unemployment rates, this is not a particularly convincing explanation either. Another possible alternative explanation is that former prisoners become discouraged with low-wage work and gravitate to the informal labor market or back to criminal activity. Future research is required to understand the causes and significance of the rise and fall of employment among former prisoners.



The second measure was the total dollar value of wages earned in the formal labor market in a calendar quarter. Figure 5 shows wages over time at the first quartile, median, and third quartile of the wage distribution among those in the community and employed. Inequality among parolees clearly increased over time following release.

The third measure, displayed in Figure 6, was whether an individual's quarterly wages from the formal labor market were insufficient to lift him or her above the poverty line for a single person. Those who had no employment were coded as below the poverty line. Except for a slight drop over the first six quarters, the trend was largely flat, although there was a slightly quadratic relationship between time and formal income below the poverty line. It was also significant that at no point in time did this measure drop below 80 percent, revealing the extreme material disadvantage of even those former prisoners who are not returned to prison. At most 20 percent of them earned sufficient income in the formal labor market to meet the basic material needs of a single person. This finding also highlights the challenges of integrating former prisoners into the formal economy.

ii. Analysis with Baseline Neighborhoods

The next set of tables present results from multilevel growth curve models (Singer and Willet 2003) assessing the association between neighborhood context and labor market outcomes net of individual-level characteristics.<sup>26</sup> For the first part of this analysis, which uses characteristics of baseline neighborhoods as predictors of labor market outcomes, the data were arrayed hierarchically, with time points nested within parolees, and parolees nested within baseline neighborhoods. The growth curve in these models was specified using an intercept, a

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<sup>26</sup> The three labor market outcomes analyzed in this section – employment status, wages, and having an income below the poverty line – are not independent of one another but rather are different ways of shedding light on the same process.

linear term for time (calendar quarter since release), and a quadratic term for time. The coefficient on the intercept corresponds to the mean value of the outcome for a person in the first full quarter following release. The coefficients on the linear and quadratic terms indicate the mean time trend over subsequent quarters. Random effects were included at the individual and neighborhood level on both the intercept and time trend.<sup>27</sup> Following a multilevel modeling approach, the growth curve models treat the intercept and linear time slope as outcomes that were modeled as functions of time-invariant person- and neighborhood-level characteristics. Alternatively, one can think of the growth curve model as a standard regression model that introduces interaction terms between time and both person- and neighborhood-level covariates (both time-invariant and time-varying) and also adds random effects for people and neighborhoods (on both the intercept and the linear time slope).

The model-building strategy for the labor market outcomes analysis was to begin with a model that contained neighborhood characteristics, the growth curve, and controls related to time and supervision status upon release, and then to gradually introduce other sets of controls in subsequent models. The controls in Model 1 included measures of the number of days one spent in the community before the start of the first full calendar quarter, the year of one's release (since some prisoners were released prior to their official parole in 2003), whether upon release the parolee was placed in a correctional center or on electronic monitoring, and dummies for specific calendar quarters corresponding to each observation (to control for seasonality in employment). Subsequent models introduced additional individual and contextual controls. Specifically, Model 2 controlled for demographic characteristics, Model 3 added criminal justice characteristics, and

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<sup>27</sup> Models do not include random effects for the quadratic time trend terms since there is little residual variation in these coefficients.

Model 4 added human capital characteristics, and Model 5 added controls for urbanicity and the county unemployment rate.

Quarterly employment was modeled using multilevel logit models, and the results are presented in Table 14. Each model is displayed in two columns: the first contains the coefficients and standard errors for the “intercept model” (i.e., the predictors of employment status in the first quarter), and the second contains results for the linear time trend model (i.e., interactions between covariates and time). In Model 1, neighborhood disadvantage and affluence factors were strongly associated with initial employment but not with the temporal trend. As more controls were added in subsequent models, the associations between tract disadvantage and affluence and employment attenuated but remained statistically significant, even after controlling for urbanicity and the county unemployment rate (in Model 5), suggesting that these associations were not simply due to the local labor market in which the neighborhood was located, even though living in a central city or a county with a higher unemployment rate significantly reduced the odds of being employed.<sup>28</sup> Exponentiation of the logit coefficients from Model 5 indicates that a one-standard deviation increase in the neighborhood disadvantage factor multiplies the odds of any employment in the first quarter following release by 0.94, while a one standard deviation increase in the tract affluence factor multiplies the odds of employment by 1.08. Net of other neighborhood characteristics, returning to a central city neighborhood multiplies the odds of employment by 0.88. Although many of the individual covariates were more strongly associated with employment than contextual characteristics, the magnitude of the coefficients on the contextual characteristics were still large enough to be substantively significant.

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<sup>28</sup> An additional model (not shown) confirmed these results by including county fixed effects (a set of dummies for each county in Michigan). These fixed effects removed all cross-county variation in parolee employment from the model, and the associations between neighborhood disadvantage, affluence and employment persisted.

In general, there were not as many significant predictors of the linear time trend in employment as there were of baseline employment. Some of the individual-level characteristics associated with greater odds of baseline employment (from Model 5) included having more education, being employed before prison, earning higher pre-prison wages, and, counter intuitively, serving more time in prison for the sentence that ended in 2003.<sup>29</sup> Those with high school degrees and those with greater pre-prison wages also had more positive employment trajectories over time. Being older, being black, having a known mental illness, and having more prior prison sentences were all associated with lower odds of baseline employment.

Table 15 presents the results from parallel models of the natural log of quarterly wages.<sup>30</sup> Model 1 shows that neighborhood disadvantage was negatively associated with wages in the first quarter (the intercept) but positively associated with the time trend in wages, which means that parolees who returned to more disadvantaged neighborhoods started out with significantly lower wages in the initial quarter but made up some of that deficit over time. The intercept coefficient on affluence was also significant, although the time trend was not. As more controls were added to the model, these associations became attenuated but remained statistically significant with one exception: the association between neighborhood disadvantage and the linear time trend employment became non-significant after criminal justice and human capital characteristics were added in Models 3 and 4. As was the case with employment, the associations between neighborhood disadvantage and wages persisted even after controls for urbanicity and county

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<sup>29</sup> It is important to recall that the association between length of prison sentence and employment was estimated net of a large set of covariates. Since this particular association was not a central focus of this project, alternative model specifications that could shed greater light on how/why this association came about have not yet been fully explored.

<sup>30</sup> Individuals with zero wages in a quarter are given \$1 in wages to avoid undefined values.

unemployment were introduced in Model 5.<sup>31</sup> The exponentiated coefficients from Model 5 suggest that a one-standard deviation increase in tract disadvantage reduces wages by about 13 percent while a one standard deviation increase in tract affluence reduces wages by about 17 percent, net of individual characteristics and county unemployment. Returning to a central city neighborhood reduces wages by about 22 percent. Among other results of interest, individual-level predictors of earning lower wages included being older, being black, having a mental illness, having committed a drug or non-assaultive crime (relative to assaultive offenders) or a sex offense, having more prior prison sentences, and having a history of using hard drugs. Similar to the employment analysis, the predictors of higher post-prison wages included having more education, being employed before going to prison, earning higher wages before going to prison, and served more time on the last prison sentence. Another interesting result was that whereas having a high school degree was associated with higher wages immediately upon release and greater wage growth over time, having a GED was associated with higher initial wages (almost as high as those with a high school degree) but not with wage growth.

Table 16 shows parallel results for models of whether income from the formal labor market was below the poverty line for a single person. These results are discussed only briefly because they closely parallel those from the prior two sets of models. Neighborhood disadvantage increased the likelihood that one's income in the first calendar quarter would be below the poverty line, and neighborhood affluence decreased the likelihood of poverty-level wages, even when demographic, criminal justice, human capital and geographic characteristics are added to the model. Central city and county variables were again significant predictors of

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<sup>31</sup> An additional model (not shown) confirmed these results by including county fixed effects (a set of dummies for each county in Michigan). These fixed effects removed all cross-county variation in parolee employment from the model, and the associations between neighborhood disadvantage, affluence and employment persisted.

initial poverty-level wages, and those who returned to central city neighborhoods also had an increasing likelihood of poverty-level wages over time.<sup>32</sup> Exponentiation of the coefficients in Model 5 indicates that a one standard deviation increase in the disadvantage of the first post-prison neighborhood multiplies the odds of income from the formal labor market below the poverty line by 1.08 while affluence multiplies the odds of poverty-level wages by 0.91. These effects are net of individual characteristics, central city residence, and county unemployment. Returning to a central city neighborhood multiplies the odds of poverty-level wages by 1.14.

### iii. Analysis with Time-Varying Neighborhoods

Whereas the above growth-curve models examined only the first post-prison neighborhood, the models presented in this section use the time-varying residential history data collected on the 1/6 sample of returning parolees ( $n = 1,848$ ). After dropping individuals who were censored before their first full post-release quarter or whose records could not be matched to the UI data, the analytic sample size was reduced slightly to 1,759 individuals, representing 13,497 person-quarters. As in the previous analysis, individuals were censored when they returned to prison or died before the end of the 12<sup>th</sup> full quarter, but in this analysis additional censoring came about when individuals discharged from parole before the end of the 12<sup>th</sup> full quarter, because residential addresses came from case notes that were only written about active parolees.

The time-varying measures of the tract disadvantage and affluence factors used in this analysis were constructed as the cumulative means of each measure (over all time periods up to

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<sup>32</sup> An additional model (not shown) confirmed these results by including county fixed effects (a set of dummies for each county in Michigan). These fixed effects removed all cross-county variation in parolee employment from the model, and the associations between neighborhood disadvantage, affluence and employment persisted.

and including a given time point), weighted by number of days exposed to each level, to capture the history of prior exposure to disadvantaged or affluent neighborhood contexts.<sup>33</sup> All models controlled for the difference (in days) between the start of the quarter and the start of the nearest residential spell.<sup>34</sup> Otherwise, these models were constructed identically to those estimated in the prior analysis (of the association between characteristics of the first post-prison neighborhood and labor market outcomes), with two exceptions. First, these models include random effects for individuals, to adjust for the additional clustering of time-period observations within individuals, but not neighborhoods (because unlike the previous analysis, the nesting of people within neighborhoods changes over time). Second, since tract-level factors measuring pre-prison neighborhood characteristics were collected for the entire sample, controls for these measures were included in the final model of each table (along with controls for other contextual characteristics).

Table 17 shows logit models predicting quarterly employment, controlling for the time trend over the first 12 quarters with linear and quadratic terms. Results from Model 1 show that the cumulative means for tract disadvantage and affluence were each predictive of employment, and although these associations were attenuated when individual-level controls were added. In Models 2-4 they remained statistically significant. The positive association between cumulative affluence and employment was reduced to non-significance after controlling for urbanicity and

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<sup>33</sup> Days in which a parolee's residence is unknown or days in which the parolee is housed in an institutional setting with no exposure to the community (technical rule violator center or jail) are not included in the mean. If an individual is at an address with no community exposure at the start of the quarter, the algorithm searches forward in the residential history for the first address with community exposure, as long as he or she moved to that address sometime in the quarter in question. If the individual is at an unknown residence, the algorithm searches backward in time for the most recent known address with community exposure.

<sup>34</sup> Searching forward or backward was necessary in 27 percent of person-quarters. Forward search was required for 12 percent of person quarters and backwards search required in 15 percent of person quarters.

county unemployment, in Model 5, but the negative association between cumulative disadvantage and employment remained significant in all models, even after controlling for pre-prison neighborhood characteristics in Model 6. Exponentiation of the neighborhood disadvantage coefficient in Model 6 indicates that a one standard deviation increase in neighborhood disadvantage was associated with a 16 percent reduction in the odds of employment.<sup>35</sup> Model 6 also shows that residence in a central city neighborhood reduced the odds of employment by about 28 percent.

Table 18 presents the same set of models predicting log wages. Model 1 shows strong associations between wages and both cumulative neighborhood disadvantage and affluence. As in the analysis of employment, the association between cumulative affluence and wages was explained by the introduction of individual controls, but the negative relationship between cumulative disadvantage and wages was significant across all models. Exponentiating the coefficient on cumulative mean tract disadvantage in Model 6 indicates that a one standard deviation increase in neighborhood disadvantage was associated with about 17 percent lower wages.<sup>36</sup> In addition, residing in a central city neighborhood was associated with about 27 percent lower wages.

Finally, Table 19 presents the results from parallel logit models of quarterly income from the formal labor market that is below the poverty line for a single person. In Model 1, which contained no individual controls, poverty-level wages were associated with both cumulative disadvantage and affluence. Although the affluence coefficient became non-significant when individual controls were added in Models 2, 3, and 4, the disadvantage coefficient remained

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<sup>35</sup> An additional model (not shown) added county fixed effects, with little impact on the main coefficients of interest.

<sup>36</sup> An additional model (not shown) added county fixed effects, with little impact on the main coefficients of interest.



statistically significant in all models. Exponentiating the coefficients in Model 6 indicates that a one standard deviation increase in tract disadvantage was associated with a 24 percent increase in the odds of formal income below the poverty line, while living in a central city neighborhood was associated with a 57 percent increase in the odds of formal income below the poverty line, net of individual characteristics.<sup>37</sup>

Together, the models with time-varying neighborhood data showed strong associations between cumulative neighborhood disadvantage, central city residence, and all three employment-related outcomes. They reinforced the results from the models using first post-prison neighborhoods on the larger sample and demonstrated that cumulative exposure to disadvantaged neighborhoods matters for employment in the formal labor market. Moreover, the associations between the cumulative mean of neighborhood disadvantage were larger than estimates from models (not shown) in which point-in-time measures of neighborhood disadvantage were substituted for neighborhood means, suggesting that one's whole neighborhood history after release, rather than just one's current neighborhood, was predictive of employment outcomes and that the challenges of returning from prison to disadvantaged, central city neighborhoods may build on one another over time. Moreover, the robustness of these results to controls for pre-prison neighborhood characteristics suggests that they were not merely the product of selection on unobserved individual characteristics due to omitted variable bias.

## **4. CONCLUSION**

### *A. Summary of Results*

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<sup>37</sup> An additional model (not shown) added county fixed effects, with little impact on the main coefficients of interest.

To summarize the results from this project, the original research aims are restated and main findings and accomplishments related to each are reviewed. To help integrate the results from the many statistical models presented above, Table 20 summarizes the statistically significant associations between neighborhood characteristics and all of the outcomes examined in the report.

- 1. To collect, clean, geocode, and merge data on a one-third sample of parolees (n=3,689) released from Michigan prisons in 2003 from prospective, spatially-referenced MDOC administrative records.*

One of the main accomplishments of this project was assembling and archiving a rich set of administrative records and data hand-coded from case notes on a large number of parolees. Many variables (including arrests, felony convictions, employment histories, and background characteristics) were collected for the entire population ( $n=11,064$ ) of prisoners released on parole in Michigan in 2003. Due to the complexity of collecting data from the case notes, data that were hand-coded from these notes, including residential histories, were only completed for half of the original sample (1/6 of the population). Case note data continue to be collected for the remainder of the 1/3 sample but will not be complete until after the end of the project.

- 2. To investigate whether exposure to disadvantaged neighborhood contexts after release from prison is associated with recidivism.*

**and**

- 4. To investigate whether employment is a mechanism through which disadvantaged neighborhood environments are related to recidivism.*

Although the focus of this project was on neighborhood effects, one of the more important findings pertains to the frequency and timing of different types of recidivism. Rates of recidivism were extremely high, especially after accounting for censoring due to death, returns to prison (for analyzing arrest, felony convictions, and absconding), and being discharged from parole (for analyzing technical violations and absconding). By the end of the six-year observation period, the recidivism rate reached 77 percent for being arrested, 57 percent for absconding, and 50 percent for having a felony conviction or being returned for prison.

The analysis of neighborhoods and recidivism provided strong evidence that post-prison neighborhood context was associated with some forms of recidivism, but the nature of this relationship depended on how recidivism was measured and whether neighborhood characteristics were measured statically or dynamically. The results, summarized in Table 20, can be summarized as follows:

- Returning to a more affluent baseline neighborhood was associated with a lower risk of recidivism on three out of the five outcomes measures: being arrested, absconding, and returning to prison on a technical violation. It was not associated with the risk of having a felony conviction or returning to prison for a new crime (two outcomes that often occur together). However, cumulative exposure to affluent neighborhoods was not significantly related to any of the recidivism outcomes.
- Returning to a more disadvantaged baseline neighborhood was associated with a higher risk of absconding and returning to prison for a technical violation, but, paradoxically, it was associated with a lower risk of being arrested. Cumulative exposure to disadvantaged neighborhoods was not significantly related to any recidivism outcomes (although it was significantly related to a lower risk of arrest in some models). One explanation for the

positive association between neighborhood disadvantage and the risk of arrest could be that offenses are less likely to be detected by the police and/or processed as arrests in disadvantaged neighborhoods. In turn, the lower risk of arrest in disadvantaged neighborhoods could explain why there were no significant relationships between neighborhood disadvantage and felony convictions or returns to prison. This study was not designed to investigate the extent to which neighborhood context influences police behavior, but other research has suggested that poor and minority jurisdictions across the United States employ fewer police officers per crime than do wealthier and white jurisdictions (Thacher forthcoming).

- Returning to a more residentially stable baseline neighborhood was associated with a lower risk of recidivism across all outcomes, but the association was only significant in the case of absconding and returning to prison for a new conviction. Cumulative exposure to residentially stable neighborhoods was not significantly associated with recidivism, although its association with the risk of absconding was marginally significant.
- Cumulative exposure to neighborhoods where youth (i.e., people under age 18) constitute a greater share of the population was associated with an increased risk of arrest, absconding, and returning to prison for either a new conviction or a technical violation. However, none of these relationships emerged when analyzing the relationship between the age structure of the baseline neighborhood and subsequent recidivism, and returning to a baseline neighborhood with a younger age structure was actually associated with a lower risk of returning to prison for a technical violation.

- Being employed for longer periods of time substantially reduced the risk of all recidivism outcomes in all models, but employment status did not mediate any of the neighborhood effects on recidivism. One possible explanation for this combination of results is that while neighborhood disadvantage lowers employment and wages, it also reduces the risk of some forms of recidivism and is uncorrelated with most others. More generally, results from the analysis of recidivism and labor market outcomes (summarized below) suggest that the neighborhood processes most influential for recidivism/desistance do not overlap completely with those that create obstacles and opportunities for securing gainful employment.
- The relative absence of strong associations between cumulative exposure to most neighborhood characteristics (with the exception of young age composition) and recidivism outcomes could be in part a reflection of the large reduction in sample size from the analysis of baseline neighborhoods to time-varying neighborhood conditions. Fortunately, future analysis using these data to assess the association between time-varying neighborhood and recidivism will draw on a 1/3 sample of the population of returning parolees rather than the 1/6 sample used in this report.

The findings summarized above recidivism challenge part of the conventional wisdom on how and why neighborhoods matter for recidivism because the story is not only, or even primarily, one about the most disadvantaged neighborhoods being risky environments. Although criminologists have long recognized the importance of residential stability and, to a lesser extent, age composition in predicting crime in general, this may be the first study to show that these factors represent important environmental exposures for those returning from prison. There is also evidence of a protective effect of neighborhood affluence above and beyond neighborhood

disadvantage. Perhaps the most counterintuitive finding is that higher levels of neighborhood disadvantage were associated with lower hazard rates of arrest. Although sampling variability may account for some, if not all, of this association, it dovetails in interesting ways with a new study showing that poor and minority jurisdictions across the United States employ fewer police officers per crime than do wealthier and white jurisdictions (Thacher forthcoming). More generally, the variation in neighborhood effects across different measures of recidivism suggests that future research needs to explore whether and how decision-making by agents of the criminal justice system (e.g., police, judges, prosecutors, and parole agents) varies across different types of neighborhoods or wider geographic areas (e.g., counties).

***3. To investigate whether exposure to disadvantaged neighborhood contexts after release from prison is associated with employment.***

Another primary hypothesis was that former prisoners who were released to neighborhoods with higher rates of poverty, joblessness, and other forms of disadvantage would be less likely to secure stable employment, net of individual characteristics. The analysis focused on the first 12 full calendar quarters following release from prison (the first three years) using three outcomes drawn from the unemployment insurance records that, while not independent of one another, provide different ways of shedding light on the same process. The first outcome was whether a parolee was employed in the formal labor market at any point during a calendar quarter. Only 22 percent of parolees were employed in the formal labor market at any point during the first calendar quarter after their release in 2003. The rate of employment among parolees who were in the community initially increased over time, reaching a peak level of 36 percent in the fourth quarter after the release date in 2003, but it dropped gradually over

subsequent time points, reaching 32 percent by the 12th quarter after release. The second measure was the total dollar value of wages earned in the formal labor market in a calendar quarter. Wage inequality among parolees clearly increased over time after release. The third measure was whether an individual's quarterly wages from the formal labor market were insufficient to lift him or her above the poverty line for a single person. This trend was largely flat, and at no point in time did the measure drop below 80 percent, demonstrating the extreme material disadvantage of returning prisoners, even when selecting out those who returned to prison. At most, 20 percent of prisoners in the community during a given quarter earned sufficient income in the formal labor market to meet the basic material needs of a single person. This finding highlights the challenges in integrating former prisoners into the formal economy.

The results from the multilevel growth curve models, summarized in Table 19, can be summarized as follows:

- The socioeconomic composition of one's baseline neighborhood – including its level of disadvantage and affluence – was strongly associated with quarterly employment, wages, and having an income below the poverty line, net of controls for not only individual demographic, criminal justice, and human capital characteristics, but also the county unemployment rate and urbanicity. Thus, the associations between neighborhood socioeconomic composition and employment outcomes was not simply a story about residents of central cities or counties with higher unemployment rates being located in labor markets with fewer employment opportunities.
- The analysis of time-varying neighborhood exposures revealed a strong association between cumulative exposure to neighborhood disadvantage and all three labor market outcomes (employment, wages, and having an income below the poverty line). These

results were robust not only to the full set of individual and contextual controls mentioned in the previous point, but also to controls for pre-prison neighborhood characteristics. These findings suggest that the relationships between living in a disadvantaged neighborhood after prison and labor market outcomes were somewhat separable from the longer-term effects associated with neighborhood conditions that one experienced prior to prison, with the important qualification that the controls for pre-prison neighborhoods used in this analysis measured only the conditions of the neighborhood where a person lived immediately before going to prison, not a longer history of neighborhood exposures prior to prison.

- All associations documented between strong neighborhood socioeconomic composition and labor market outcomes pertained to the static component of the growth curve model (the intercept), which captures between-person differences in employment status, wages, and having an income below the poverty line. There were no significant associations between neighborhood characteristics and within-person change over time (the linear time slope) in labor market outcomes, nor were there many individual-level predictors of such change over time.

### *B. Implications for Criminal Justice Policy and Practice*

Although this project is not an evaluation of a particular policy or program, the results suggest some implications for criminal justice policy and practice. To the degree that neighborhood context, particularly the first neighborhood where parolees return after release, affects employment and recidivism, policies that encourage parolees to locate in more advantaged neighborhood contexts have potential to improve employment prospects and reduce



the likelihood of reoffending. Given that parolees are highly concentrated in the most disadvantaged neighborhoods, efforts to disperse former prisoners over a wider geographic area may have some benefits.

One possible policy intervention would be to require parole agents to evaluate the neighborhood context surrounding a residence before approving a parolee's request to move to a new residence, particularly the first post-prison residence. Currently parole agents in most jurisdictions visit homes to inspect for signs of drug or alcohol use or the presence of firearms and to verify that no other felons live there, but this is not fully equivalent to taking neighborhood context into account. For some types of offenders, such as sex offenders, other requirements are also imposed. Given that the state already exercises some degree of control over where parolees live, taking into account neighborhood characteristics such as employment, criminal peers, and criminal opportunities is a possibility. For this to be successful, however, more knowledge is needed on which specific neighborhood characteristics are most risky for which specific ex-offenders. One practical complication of such a policy is the lack of housing options for former prisoners, who are typically reliant on family and friends for housing, particularly immediately after release. In short, few parolees may have the opportunity to move to pro-social neighborhood environments. Such a policy would also require parole agencies to more systematically collect information on neighborhood characteristics and the geographic concentration of parolees.

A second policy implication is that more institutional housing options, including housing designed explicitly for former prisoners and housing for broader populations that include many former prisoners, should be located in neighborhoods that provide the strongest chances for successful social and economic reintegration. Such institutional housing includes residential

correctional centers, substance abuse treatment programs, commercial placements, and transitional housing. Individuals on parole supervision spend considerable time living in such settings, both immediately after release and throughout their time on parole in the community (see Harding, Morenoff, and Herbert 2011). Given that state and federal funds often support these institutions, some leverage might be available to direct resources to such institutions located in more pro-social neighborhood contexts, although there would be numerous obstacles to implementing such policy, including opposition from residents of more advantaged areas and higher rents in these places that could prevent such programs from locating there.

A third possible policy implication is that risk assessments could be improved by taking into account information on neighborhood context. Individuals returning to certain types of neighborhoods may be at greater risk of parole failure and in greater need of services to find and maintain employment. Systematically building neighborhood-based elements of risk into regular assessments would facilitate the efficient targeting of services and supervision resources.

Finally, the role of neighborhoods in reentry outcomes suggests that place-based parole strategies be given serious consideration. Like community policing strategies, place-based parole (also known as community-based parole) takes agents out of their offices and into the neighborhoods where parolees live and work. Place-based supervision also means that agent caseloads would cover a more restricted geographic area, and that satellite offices may be set up in communities with high concentrations of offenders. By supervising offenders where they live, fostering relationships with community residents, and becoming familiar with local resources and high-risk areas, community-based field agents have the potential to play a substantial role in making communities safer while improving outcomes for ex-offenders (Petersilia 1998, 2002, 2003, Reentry Policy Council 2005, Solomon 2006, Taxman 2006). For example, Maryland's

Proactive Community Supervision (PCS) model employs place-based supervision in four areas of the state, and an evaluation found that arrests were reduced by 22 percent and parole violations by 31 percent for parolees under PCS supervision compared to those under traditional supervision (Taxman 2007).

### *C. Limitations and Implications for Future Research*

This research was based on data collected in one state on a particular cohort of parolees. Although Michigan's rates of incarceration were close to the national average during this time period, the experiences of Michigan parolees may have differed from those in other states for a number of reasons. One is that Michigan experienced higher unemployment rates, less immigration, and greater racial and economic segregation during this time period than many other states. Many policies governing the prison release, parole supervision, and the treatment of those with a felony record also vary from state to state. For example, Michigan has longer time to parole than other similar states but imposes fewer restrictions than most states on access to public benefits by those with a felony record. Future research should examine neighborhood effects in other states with different policy regimes. Indeed, since the 2003 cohort of parolees was released, Michigan implemented the Michigan Prisoner Reentry Initiative, which greatly expanded the services and resources offered to individuals being released on parole.

More generally, the evidence amassed in this project that neighborhood context is associated with post-release recidivism and employment, net of the demographic, human capital, and criminal justice characteristics of parolees, establishes the importance of learning more about how and why neighborhoods might matter for returning prisoners, but it also raises many questions for future research:

- Understanding neighborhood processes: This study focused entirely on census-based measures of neighborhood composition, which shed little light on the underlying processes that may generate neighborhood effects. Given how little research there is on large populations of returning prisoners, it was important to document and assess how such structural neighborhood characteristics were related to recidivism and labor market outcomes for returning prisoners, but future research should bring more theoretically-motivated measures of neighborhood context into the analysis of recidivism and the economic well-being of returning prisoners.
- Disentangling effects of concentrated disadvantage and affluence: A related challenge for future research is to learn more about how and why measures of neighborhood disadvantage (measured by a factor with high loadings on measures of poverty, unemployment, public assistance, female-headed families, and racial composition) and affluence (measured by a factor with high loadings in the factor analysis on measures of educational, occupational, and high income composition) differentially predict measures of recidivism and economic well-being in this population. Disentangling the effects of neighborhood affluence and disadvantage is not easy, but there is emerging evidence in the neighborhood effects literature, especially from studies of neighborhoods and health (e.g., Morenoff et al. 2007, 2008; King et al. forthcoming), that just as different measures of socioeconomic status (e.g., education and income) are differentially related to health at the individual level, the same may be true at the neighborhood level.
- Examining heterogeneity of neighborhood effects: Another refinement to this analysis would be to probe more deeply into whether certain types of parolees are more

susceptible to the influences of neighborhood context than others, although such research should be motivated by solid theoretical arguments that have also yet to appear.

- Understanding differences across recidivism measures: It is intriguing that neighborhood characteristics were more robustly associated with (a) arrest, returning to prison for a technical violation, and absconding, than (b) having a felony conviction and returning to prison for a new crime. Although there are many factors that differentiate these two sets of recidivism outcomes, one that deserves further consideration is that the former are influenced by a set of actors (police and parole agents) that are closer to the “street” and thus potentially more influenced themselves by neighborhood factors than the key actors involved in the second set of outcomes (e.g., judges and prosecutors). More generally, future research on neighborhoods and recidivism should probe more deeply into how the decision-making patterns of agents of the criminal justice system may vary across different types of neighborhoods or counties.
- Understanding recidivism as a larger process: Ultimately, it is not satisfactory to analyze each recidivism outcome separately, because they are interdependent parts of a larger process. Criminologists have made a similar point about desistance, describing it as a dynamic, multilayered process that unfolds over time rather than a fixed set of outcomes (Laub and Sampson 2001, 2003). In contrast, research on recidivism remains rooted in a paradigm of fixed indicators of “failure” and “success” measured over relatively small windows of time. Taking a more process-oriented view of recidivism could lead to new theoretical and substantive insights. One example is that there has been relatively little prior research on the connection between absconding and other acts of recidivism. Not only was absconding relatively common in the population of Michigan parolees (see

Table 3), but it was also strongly related to characteristics of the baseline neighborhood (Table 8) and exposure to subsequent neighborhoods (Table 13). It is likely that absconding exposes individuals to a higher risk of other forms of recidivism (because usually absconders avoid contact with their parole agents to avoid detection of a violation), but it also takes them out of the “risk set” for recidivism for substantial periods of time, raising a thorny set of substantive and methodological issues that have been ignored by extant research on recidivism. To complicate matters even further, the supervision status of a parolee is part of a feedback loop that is seldom accounted for in recidivism studies between the behavior of parolees (or other populations of ex-offenders) and changes in their level of supervision in the community, which in turn can affect their risk of violating parole, absconding from parole, or committing a new crime.

- The link between employment and recidivism: Although neighborhood characteristics predicted both employment and recidivism, and being employed was a strong predictor of all recidivism outcomes, the models of recidivism did not show any evidence that employment mediated the effects of neighborhood characteristics on recidivism. One possible way to reconcile these findings is that the same neighborhood characteristic may have opposite effects on employment and recidivism. This might explain why employment did not mediate the association between neighborhood disadvantage and arrest, even though living in a disadvantaged neighborhood was associated with lower odds of employment, and employment in turn was associated with a higher risk of arrest. This indirect pathway leading from neighborhood disadvantage to unemployment to a higher risk of arrest was offset by another pathway leading from disadvantaged neighborhoods to a lower risk of arrest. Another explanation is that employment status

and neighborhood characteristics may have interactive effects on recidivism, such that the protective effect of being employed on the subsequent likelihood of recidivism may vary systematically with features of the neighborhood. Future work should consider interactions of this kind and assess whether employment operates more as a moderator than mediator of neighborhood effects on recidivism.

- Causal inference: Finally, there are many threats to causal inference that could not be addressed by this study design, and future research should look for opportunities to harness exogenous sources of variation in neighborhood context (through either randomized experiments or natural experiments) that would strengthen causal inferences about neighborhoods. Moreover, the mobility patterns that potentially generate selection bias in observational studies of neighborhood effects should be analyzed as outcomes unto themselves in studies of returning prisoners to learn more about the processes through they are sorted into different types of neighborhoods.

## REFERENCES

- Benda, Brent B. and Nancy J. Toombs. 2002. "Two preeminent theoretical models: A proportional hazard rate analysis of recidivism." *Journal of Criminal Justice* 30 217-228.
- Berk, Richard A., Kenneth J. Lenihan, and Peter H. Rossi. 1980. "Crime and Poverty: Some Experimental Evidence From Ex-Offenders." *American Sociological Review* 45:766-786.
- Braman, Donald. 2004. *Doing Time on the Outside: Incarceration and Family Life in Urban America*. Ann Arbor, MI: University of Michigan Press.
- Bushway, Shawn and Peter Reuter. 2002. "Labor Markets and Crime." Pp. 191-224 in *Crime: Public Policies for Crime Control*, edited by J. Q. Wilson and J. Petersilia. Oakland, CA: ICS Press.
- Cadora, Eric, Charles Swartz, and Mannix Gordon. 2003. "Criminal Justice and Health and Human Services: An Exploration of Overlapping Needs, Resources, and Interests in Brooklyn Neighborhoods." 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.
- Cleves, Mario A., William W. Gould, and Roberto G. Gutierrez. 2004. *An Introduction to Survival Analysis Using Stata, Revised Edition*. College Station, Texas: Stata Press.
- Cloward, Richard A. and Lloyd E. Ohlin. 1960. *Delinquency and Opportunity: A Theory of Delinquent Gangs*. New York: Free Press.
- Cullen, Francis T. 2002. "Rehabilitation and Treatment Programs." Pp. 253-290 in *Crime: Public Policies for Crime Control*, edited by J. Q. W. a. J. Petersilia. Oakland, CA: ICS Press.



- Fagan, Jeffrey, Valerie West, and Jan Holland. 2003. "Reciprocal Effects of Crime and Incarceration in New York Neighborhoods." *Fordham Urban Law Journal* 30:1551-1602.
- Freeman, Richard B. 1992. "Crime and the Employment of Disadvantaged Youths." in *Urban Labor Markets and Job Opportunity*, edited by G. Peterson and W. Vroman. Washington, D.C.: The Urban Institute Press.
- Freisthler, Bridget, Elizabeth A. Lascaia, Paul J. Gruenewald, and Andrew J. Treno. 2005. "An Examination of Drug Activity: Effects of Neighborhood Social Organization on the Development of Drug Distribution Systems." *Substance Use & Misuse* 40:671-686.
- Gephart, Martha A. 1997. "Neighborhoods and Communities as Contexts for Development." Pp. 1-43 in *Neighborhood Poverty Volume 1: Context and Consequences for Children*, edited by J. Brooks-Gunn, G. J. Duncan, and J. L. Aber. New York, NY: Russell Sage Foundation.
- Giordano, Peggy C., Stephen A. Cernkovich, and Jennifer L. Rudolph. 2002. "Gender, crime, and desistance: Toward a theory of cognitive transformation." *American Journal of Sociology* 107:990-1064.
- Groves, Robert M., Jr. Floyd J. Fowler, Mick P. Couper, James M. Lepkowski, Eleanor Singer, and Roger Tourangeau. 2004. *Survey Methodology*. Hoboken, New Jersey: Wiley.
- Hagan, John. 1993. "The Social Embeddedness of Crime and Unemployment." *Criminology* 31 4:465-492.
- Harding, David J. 2003. "Counterfactual Models of Neighborhood Effects: The Effect of Neighborhood Poverty on Dropping Out and Teenage Pregnancy." *American Journal of Sociology* 109 3:676 (44 pages).

- Harding, David J., Jeffrey D. Morenoff, and Claire Herbert. 2011. "Returning Home After Prison? Residential Mobility, Intermediate Sanctions, and Neighborhood Context among Parolees." Paper prepared for the conference on *Rethinking Urban Poverty for the 21st Century City: Institutional and Organizational Perspectives*, March 10-11, 2011 at the University of Chicago
- Hill, Terrence D. and Ronald J. Angel. 2005. "Neighborhood disorder, psychological distress, and heavy drinking." *Social Science & Medicine* 61 5:965-975.
- 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.
- Holzer, Harry J., Paul Offner, and Elaine Sorensen. 2005. "What Explains the Continuing Decline in Labor Force Activity Among Young Black Men?" *Labor History* 46:37-55.
- Joo, Hee-Jong, Sheldon Ekland-Olson, and William R. Kelley. 1995. "Recidivism Among paroled Property Offenders Released During a Period of Prison Reform." *Criminology* 33:389-410.
- Kelley, William R. and Sheldon Ekland-Olson. 1991. "The Response of the Criminal Justice System to Prison Overcrowding: Recidivism Patterns among Four Successive Parolee Cohorts." *Law & Society Review* 25 601-620.
- King, Katherine E., Jeffrey D. Morenoff, and James S. House. "Cumulative Biological Risk Factors: Neighborhood Socioeconomic Characteristics and Race/Ethnic Disparities." Forthcoming in *Psychosomatic Medicine: Journal of Biobehavioral Medicine*.

- 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* 45:33-64.
- 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.
- Langhan, Patrick A. and David J. Levin. 2002. "Recidivism of Prisoners Released in 1994." Bureau of Justice Statistics, Washington, DC.
- Laub, John H. and Robert J. Sampson. 2001. "Understanding desistance from crime." Pp. 1-69 in *Crime and Justice: A Review of Research*, vol. 28, edited by M. Tonry. Chicago: University of Chicago Press.
- . 2003. *Shared Beginnings, Divergent Lives: Delinquent Boys to Age 70*. Cambridge, MA: Harvard University Press.
- Lynch, James P. and William J. Sabol. 2004. "Effects of Incarceration on Informal Social Control." in *Imprisoning America: The Social Effects of Mass Incarceration*, edited by M. Patillo, D. Weiman, and B. Western. New York: Russell Sage Foundation.
- Manza, Jeff and Christopher Uggen. 2006. *Locked Out: Felon Disenfranchisement and American Democracy*. New York: Oxford University Press.
- Maruna, Shadd. 2001. *Making Good: How Ex-Offenders Reform and Reclaim Their Lives*. Washington, D.C.: American Psychological Association Books.
- 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.

- Morenoff, Jeffrey D., Robert J. Sampson, and Stephen W. Raudenbush. 2001. "Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence." *Criminology* 39 3:517-59.
- Morenoff, Jeffrey D., Ana Diez Roux, Theresa Osypuk, and Ben Hansen. 2008 "Residential Environments and Obesity: What Can We Learn About Policy Interventions from Observational Studies?" Pp. 309-343 in Robert F. Schoeni, James S. House, George A. Kaplan, and Harold Pollock (eds.), *Making Americans Healthier: Social and Economic Policy as Health Policy*. New York: Russell Sage Foundation.
- Morenoff, Jeffrey D., James S., Ben B. Hansen, David R. Williams, George Kaplan, and Haslyn Hunte. 2007. "Understanding Social Disparities in Hypertension Prevalence, Awareness, Treatment, and Control: The Role of Neighborhood Context." *Social Science & Medicine* 65:1853-1866.
- Mouw, Ted. 2000. "Job relocation and the racial gap in unemployment in Detroit and Chicago, 1980 to 1990." *American Sociological Review* 65 5:730-753.
- National Research Council. 2007. "Parole, Desistance from Crime, and Community Integration." Washington, D.C.: The National Academies Press.
- Needels, Karen E. 1996. "Go Directly to Jail and Do Not Collect? A Long-term Study of Recidivism, Employment, and Earnings Patterns among Prison Releasees." *Journal of Research in Crime and Delinquency* 33 47:1-496.
- Osgood, D. Wayne and Hyunkee Lee. 1993. "Leisure activities, age, and adult roles across the lifespan." *Society and Leisure* 16:181-208.

- Pager, Devah. 2003. "The Mark of a Criminal Record." *American Journal of Sociology* 108 5:937-975.
- Patillo, Mary, David Weiman, and Bruce Western. 2004. "Imprisoning America: The Social Effects of Mass Incarceration." New York: Russell Sage Foundation.
- Petersilia, Joan. 1998. "A Decade of Experimenting with Intermediate Sanctions: What Have We Learned?" *Federal Probation* 62 2:3-9.
- Petersilia, Joan. 2002. *Reforming Probation and Parole*. Lanham, MD: American Correctional Association.
- Petersilia, Joan. 2003. *When Prisoners Come Home: Parole and Prisoner Reentry*. New York: Oxford University Press.
- Pettit, Becky and Christopher J. Lyons. 2007. "Status and Stigma of Incarceration: The Labor-Market Effects of Incarceration, by Race, Class, and Criminal Involvement." in *Barriers to Reentry?: The Labor Market for Released Prisoners in Post-Industrial America*, edited by S. Bushway, M. A. Stoll, and D. F. Weiman.
- Raphael, Stephen and David F. Weiman. 2007. "The Impact of Local Labor Market Conditions on the Likelihood that Parolees are Returned to Custody." Pp. 304-3332 in *Barriers to Reentry? The Labor Market for Released Prisoners in Post-Industrial America*, edited by S. Bushway, M. S. Stoll, and D. F. Weiman. New York: Russell Sage.
- Raphael, Steven. 2006. "Early Incarceration Spells and the Transition to Adulthood."
- . Forthcoming. "The Socioeconomic Status of Black Males: The Increasing Importance of Incarceration." in *Poverty, the Distribution of Income, and Public Policy*, edited by A. Auerbach, D. Card, and J. Quigley. New York: Russell Sage Foundation.

- Reentry Policy Council. 2005. "Report of the Re-Entry Policy Council: Charting the Safe and Successful Return of Prisoners to the Community." Council of State Governments, New York.
- Rossman, Selli B. and Caterina G. Roman. 2003. "Case managed reentry and employment: Lessons from the Opportunity to Succeed Program." *Justice Research and Policy* 5 2:75-100.
- Sabol, William J. 2007. "Local Labor Market Conditions and Post-Prison Employment Experiences of Offenders Released from Ohio State Prisons." Pp. 257-303 in *Barriers to Reentry? The Labor Market for Released Prisoners in Post-Industrial America*, edited by S. Bushway, M. S. Stoll, and D. F. Weiman. New York: Russell Sage.
- Sampson, R. J., J. D. Morenoff, and F. Earls. 1999. "Beyond social capital: Spatial dynamics of collective efficacy for children." *American Sociological Review* 64 5:633-660.
- Sampson, Robert J. and John H. Laub. 1993. *Crime in the Making: Pathways and Turning Points Through Life*. Cambridge, Mass.: 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* 44:465-508.
- 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* 28:443-78.
- Sampson, Robert J., Jeffrey D. Morenoff, and Stephen W. Raudenbush. 2005. "Social Anatomy of Racial and Ethnic Disparities in Violence." *American Journal of Public Health* 95:224-232.

- Sampson, Robert J., Stephen W. Raudenbush, and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277 5328:918-924.
- Singer, Judith D. and John B. Willett. 2003. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. New York: Oxford University Press.
- Smith, Sandra S. 2007. *Lone Pursuit: Distrust and Defensive Individualism among the Black Poor*. New York: Russell Sage.
- Solomon, Amy L. 2006. "Does Parole Supervision Work? Research Findings and Policy Opportunities." *American Probation and Parole Association Perspectives* 30 2:26-37.
- Tanner, Julian, Scott Davies, and Bill O'Grady. 1999. "Whatever Happened to Yesterday's Rebels? Longitudinal Effects of Youth Delinquency on Education and Employment." *Social Problems* 46 2:250-274.
- Taxman, Fay S. 2006. "What Should We Expect from Parole (and Probation) Under a Behavioral Management Approach?" *Perspectives* 30 2:38-45.
- Taxman, Fay S. 2007. "Reentry and Supervision: One is Impossible Without the Other." *Corrections Today*, April.
- Thacher, David. Forthcoming. "The Distribution of Police Protection," *Journal of Quantitative Criminology*
- Thornberry, Terence P. and R.L. Christenson. 1984. "Unemployment and Criminal Involvement: An Investigation of Reciprocal Causal Structures." *American Sociological Review* 49:398-411.
- Tyler, John H and Jeffrey R Kling. 2007. "Prison-Based Education and Reentry into the Mainstream Labor Market." in *Barriers to Reentry?: The Labor Market for Released*

- Prisoners in Post-Industrial America*, edited by S. Bushway, M. A. Stoll, and D. F. Weiman.
- Uggen, Christopher. 2000. "Work as a Turning Point in the Life Course of Criminals: A Duration Model of Age, Employment, and Recidivism." *American Sociological Review* 67:529-546.
- Visher, Christy A. and Jeremy Travis. 2003. "Transitions from Prison to Community: Understanding Individual Pathways." *Annual Review of Sociology* 29:89-113.
- Wang, Xia, Daniel P. Mears, and William D. Bales. 2010. "Race-Specific Employment Contexts and Recidivism." *Criminology* 48:1171-1211.
- Warr, Mark. 1998. "Life-course transitions and desistance from crime." *Criminology* 36:183-216.
- Western, Bruce. 2006. *Punishment and Inequality in America*. New York: Russell Sage.
- Wilson, William Julius. 1987. *The Truly Disadvantaged : The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.
- . 1996. *When Work Disappears: The World of the New Urban Poor*. New York: Knopf.
- Young, Alford. 2004. *The Minds of Marginalized Black Men: Making Sense of Mobility, Opportunity, and Future Life Chances*. Princeton, NJ: Princeton University Press.



## **APPENDIX – SAMPLING METHODS**

Data were collected from parole agent case notes on the first post-prison residential address data of all 11,064 parolees in the population. First addresses are those where an individual stayed for at least one night and had some “community exposure,” meaning that he or she had unsupervised access to people and places outside of the residence, treatment facility, or residential center. The number of parolees who stayed at their first address for only one night is less than 1 percent, so the “one-night rule” is reasonable for purposes of determining census tract for sampling. About 15 percent of parolees stayed in a residential center or treatment center immediately following their release. Homeless individuals were assigned the census tract of the shelter or mission where they were staying (no parolees were living on the streets immediately after their release, as a prisoner must have a place to live before being paroled). Those living in institutions where they had no exposure to the community such as hospitals, in-patient treatment centers, or county jails during their initial period of parole were assigned the first subsequent non-institutional address. Addresses were then geocoded to determine the census tract of first residence and matched the census tract data and factor scores to these records. The research team successfully identified and geocoded the first addresses of all but 25 of the 11,064 parolees (0.2 percent).

In the first stage, census tracts were systematically sampled with probability proportionate to their size (i.e., the number of parolees who returned to each tract). Because census tract identification numbers tend to be ordered geographically, the list of Michigan census tracts was sorted by their identification numbers as an assurance that the systematic sample would be geographically diverse. Some tracts had fewer than the desired within-tract sample size of returning parolees. In such cases, geographically proximate tracts that were in the same county

and had similar socioeconomic characteristics were combined until the number of parolees in the combined units equaled or exceeded the expected within-tract sample size (eight). Other tracts had a very large number of parolees, and their first stage probability of being selected exceeded 1.0. Following the method suggested by Groves et al. (2004: 124), all such large tracts were included in the sample, but they were removed from the list from which the stage one sample was drawn. Parolees were directly selected from these large tracts at random at the overall sample rate (1/3). The 25 parolees whose addresses were missing or could not be geocoded were sampled separately, at the same overall rate (1/3).

Figure A-1 shows the first residential addresses of parolees released from Michigan Prisons in 2003. This map shows that most of the parolees returned to neighborhoods in Michigan's major metropolitan areas, but it also reveals significant geographic variation in the reentry communities of Michigan parolees. Thirty-five percent of parolees returned to Wayne County (Detroit and its western suburbs), and 75 percent of parolees returned to just 9 of Michigan's 84 counties. Many parolees returned to a small set of tracts: two percent of tracts received 25 percent of parolees, 12 percent of tracts receive 50 percent of parolees, and 33 percent of tracts received 75 percent of the parolees. The number of parolees per tract ranges from 1 to 509, with a mean of 5.2 and a SD of 16.4. Of Michigan's 2,707 census tracts, 78 percent received at least one parolee in 2003. Not surprisingly, parolees returned disproportionately to disadvantaged tracts. Almost 55 percent returned to tracts in the highest quintile of the disadvantage factor. However, there was considerable variation in the tracts to which parolees return. Over 9 percent returned to tracts in the most advantaged quintile and another 10 percent returned to tracts in the second most advantaged quintile.

**Figure A-1. First Residential Addresses of Parolees Released from Michigan Prisons in 2003**

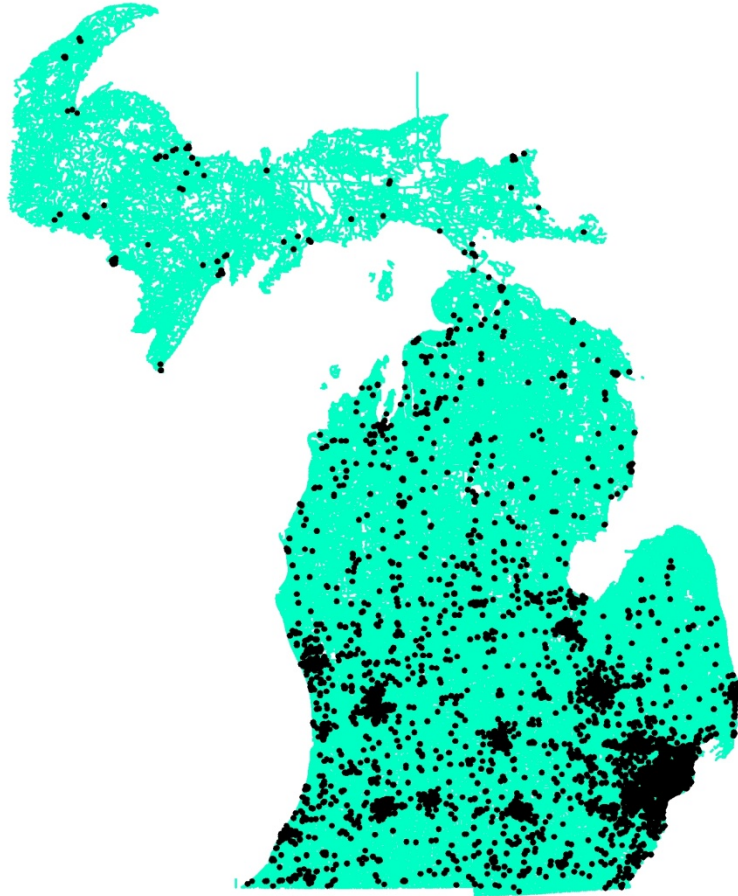


Figure 1. Smoothed Hazard Functions For Recidivism Outcomes  
(Time to 1st event)

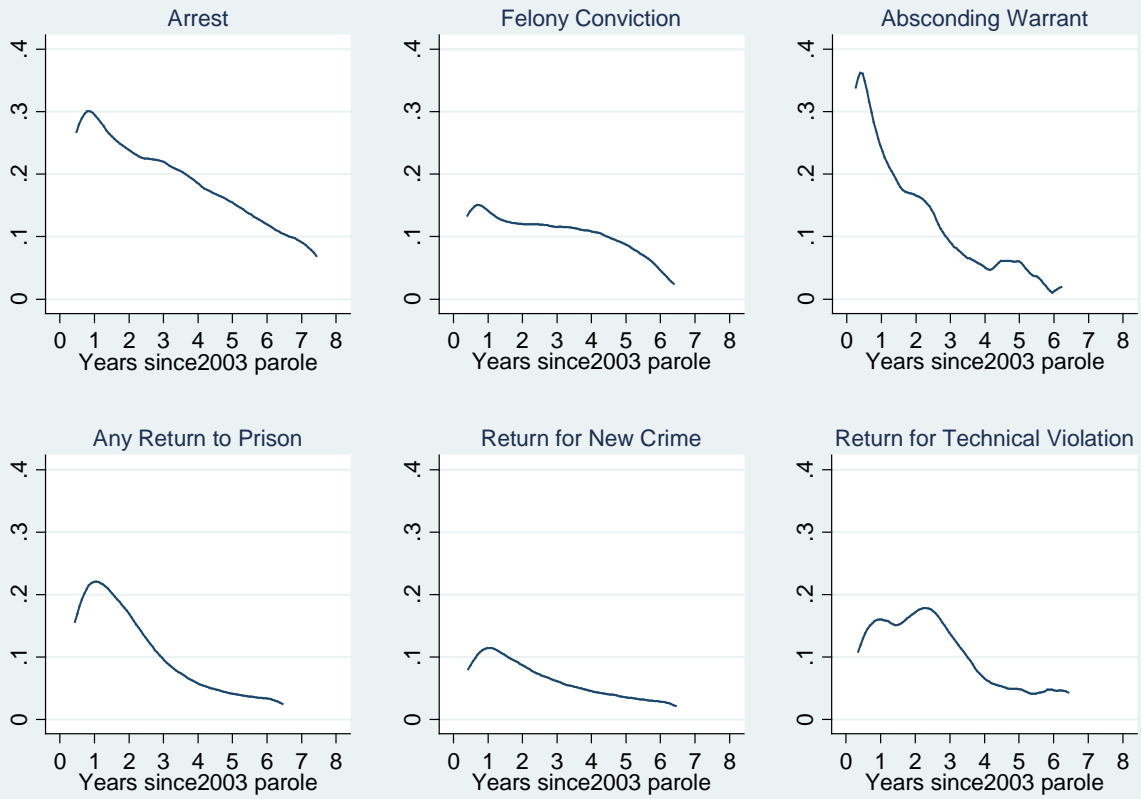
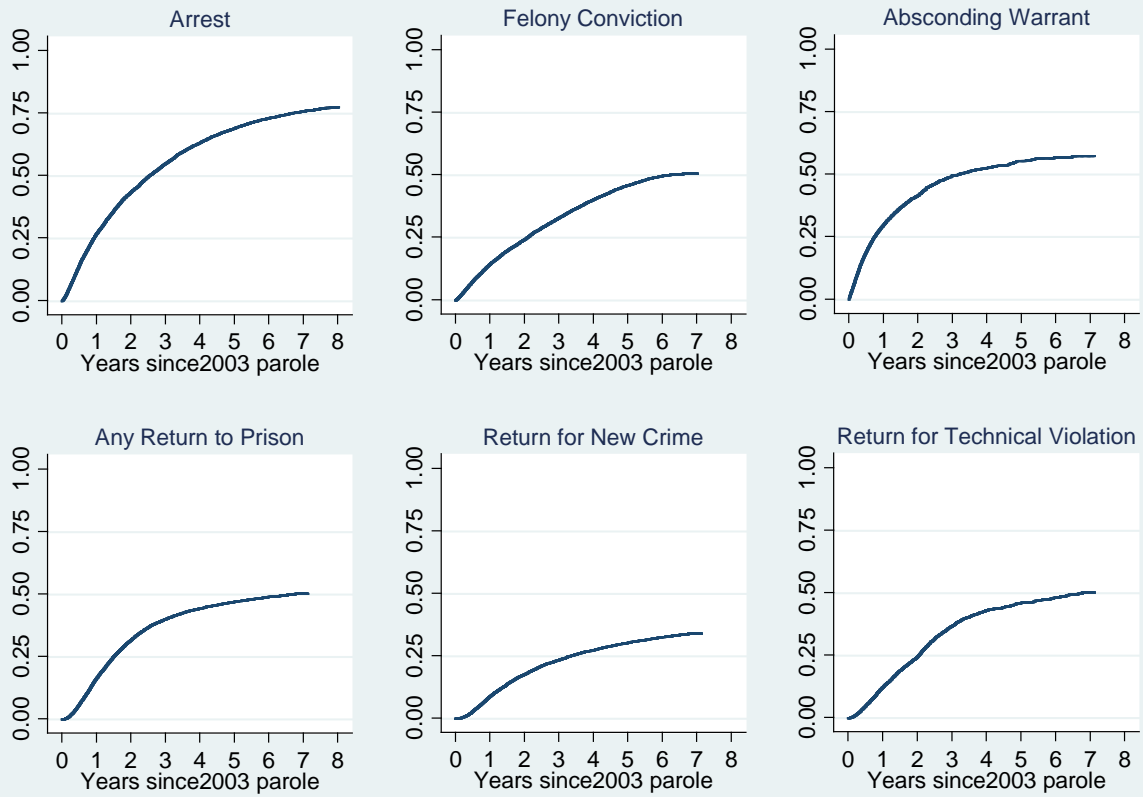
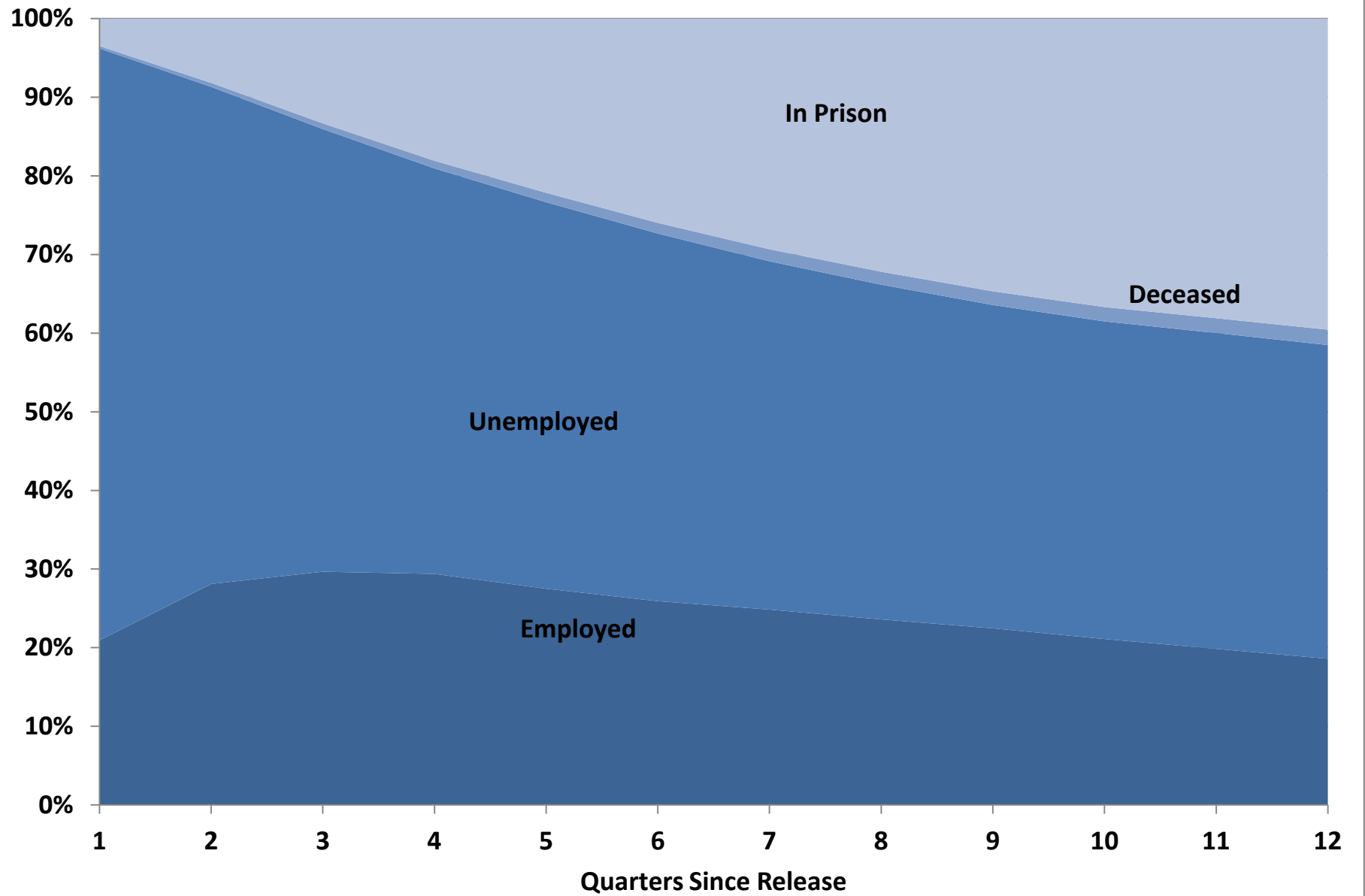


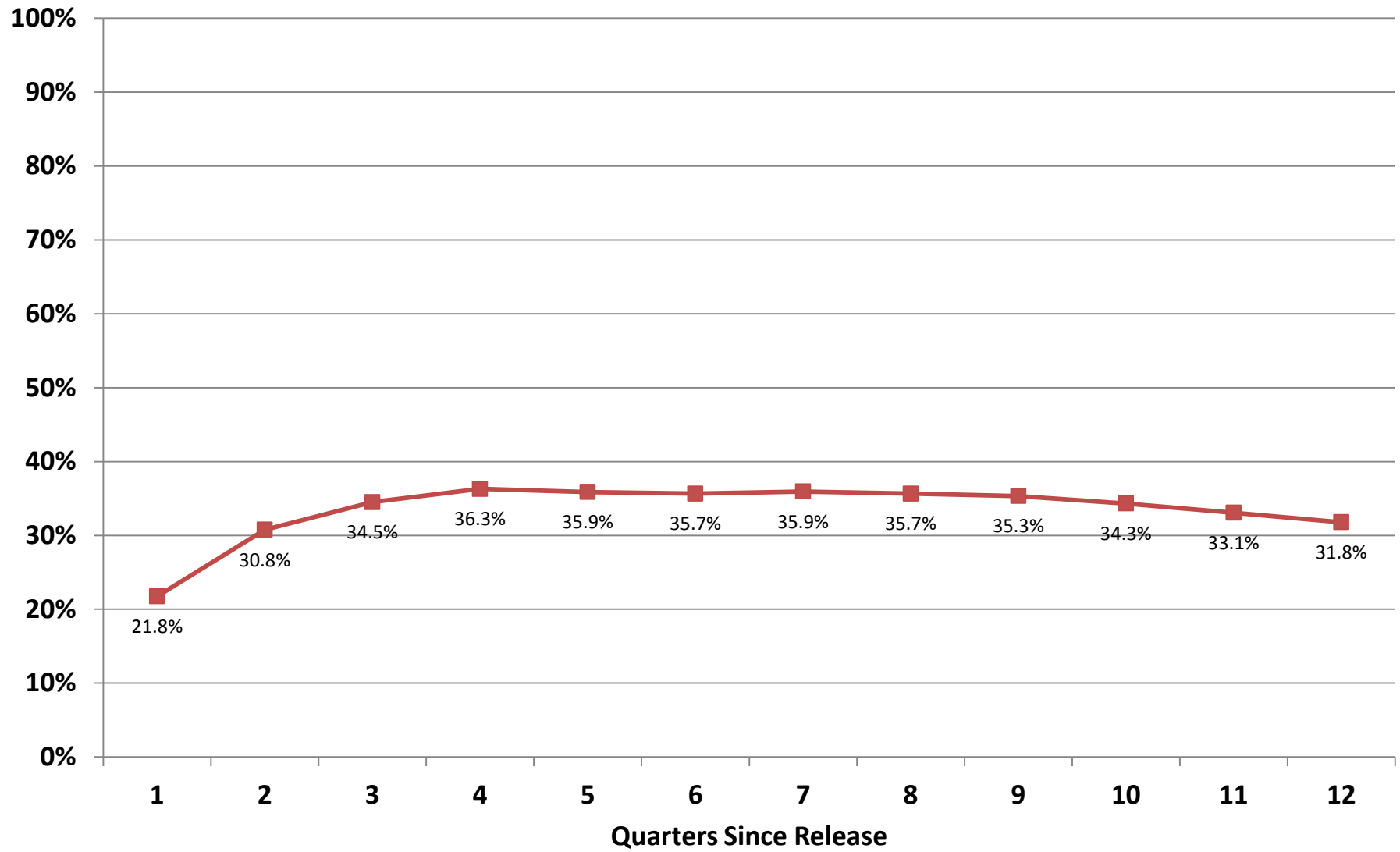
Figure 2. Kaplan-Meier Failure Functions For Recidivism Outcomes  
(Time to 1st event)



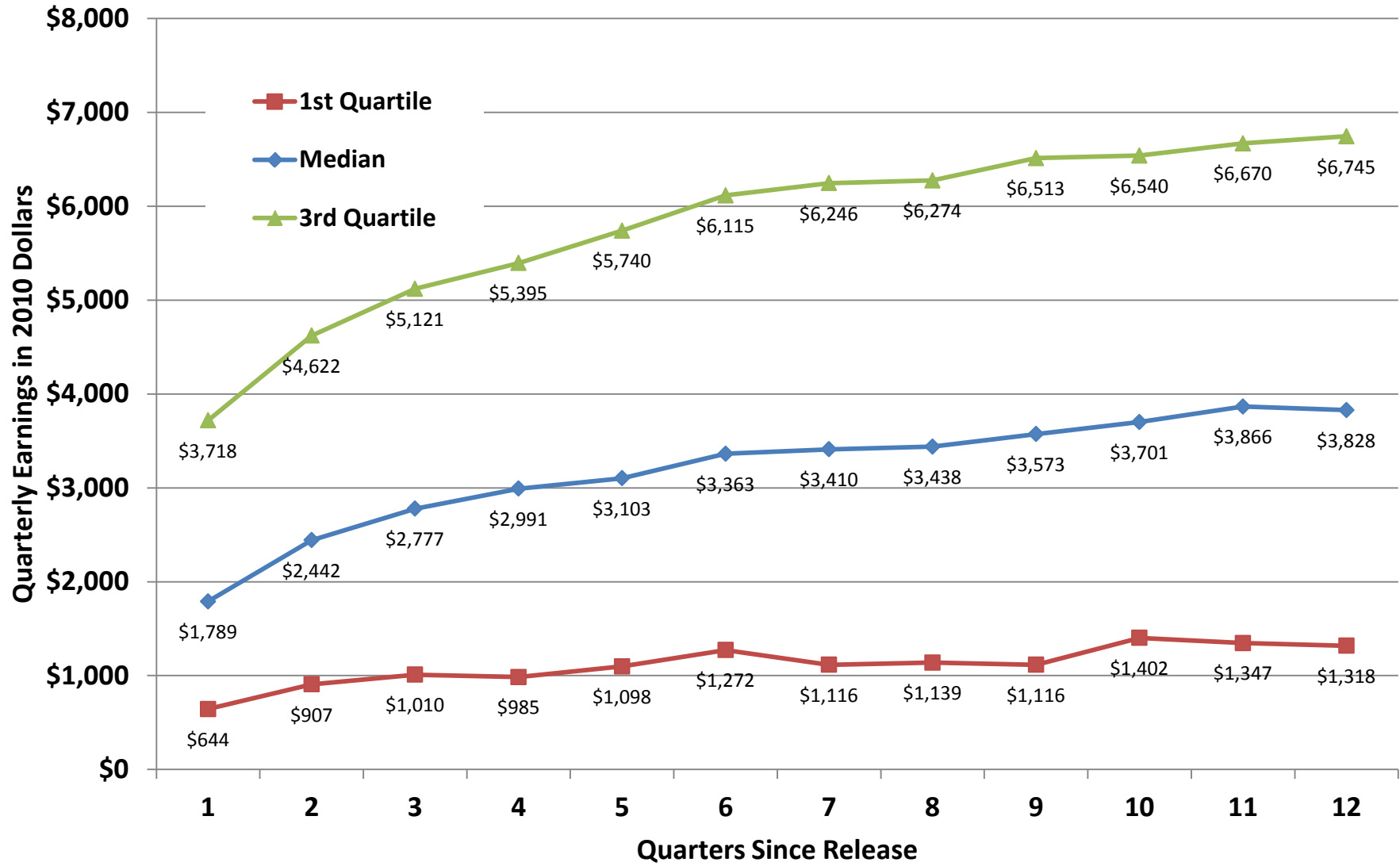
**Figure 3: Formal Employment After Release from Prison**



### Figure 4: Percent of Parolees In Community Who Are Employed in the Formal Labor Market

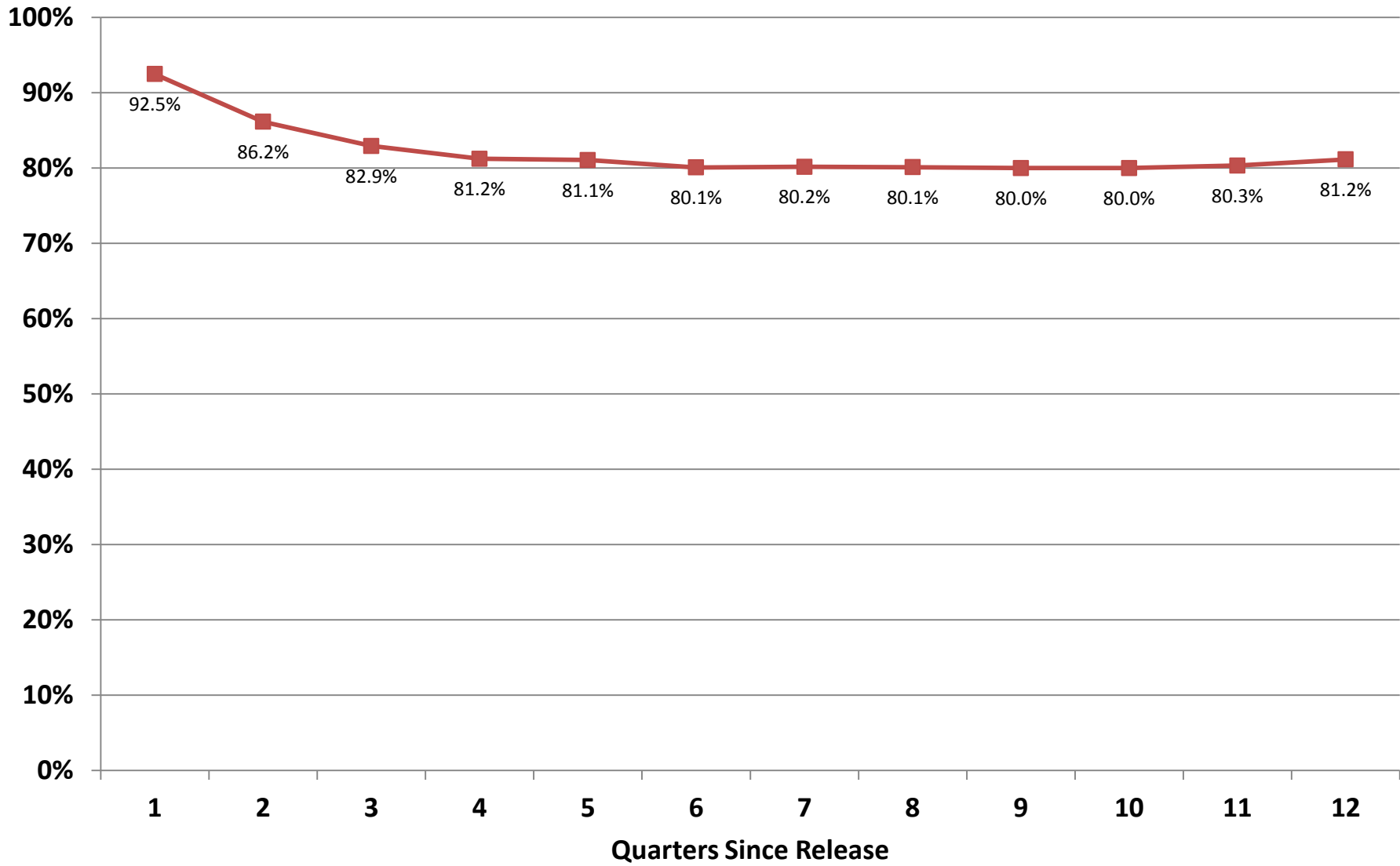


## Figure 5: Quarterly Earnings in Formal Labor Market Among Employed Parolees





**Figure 6: Percent of Parolees In Community with Formal Employment Income Below the Poverty Line**



**Table1. Factor Loadings from Factor Analysis of Michigan Census Tract Characteristics, Varimax Rotation**

Variable	Concentrated Affluence	Concentrated Disadvantage	Residential Stability	Young Age Structure	Hispanic/ Immigrant Concentration
% Managerial/professional occupations	0.93	-0.19	-0.01	-0.14	0.02
% Over 25 with BA degree	0.92	-0.16	-0.20	-0.09	0.03
% Families with income over \$75K	0.87	-0.29	0.20	0.12	0.00
Median family income	0.83	-0.37	0.25	0.09	0.01
% Less than high school educ	-0.65	0.53	0.04	0.04	0.44
% Non-Hispanic Black	-0.10	0.88	-0.01	0.11	-0.09
% Households receiving public assistance	-0.39	0.84	0.00	0.11	0.14
% Female-Headed Families	-0.35	0.84	-0.20	0.04	-0.04
Unemployment rate	-0.36	0.72	-0.12	0.02	0.02
% Poor families	-0.32	0.70	-0.42	0.03	0.12
% Owner occupied homes	0.11	-0.50	0.71	0.14	-0.15
% Age 18-34	-0.09	0.08	-0.91	0.01	0.02
% Same residence as 1995	-0.10	-0.04	0.79	-0.07	-0.12
% Age 75+	-0.05	-0.05	0.27	-0.72	0.02
% Age 17 and under	-0.15	0.28	0.39	0.68	0.11
% Foreign Born	0.29	-0.01	-0.25	-0.02	0.63
% Hispanic	-0.21	0.02	-0.17	0.15	0.58
Eigenvalue	7.06	2.71	1.54	1.08	0.81

Note: Factor Analysis Weighted by Tract Population Size; n = 2,697 tracts

**Table 2. Descriptive Statistics on Covariates Used in Analysis of Recidivism & Employment for Population and S**

Variables	Population ( <i>n</i> =11,064)		1/6 Sample ( <i>n</i> =1,848)		# Imputed Cases	
	% ( <i>mean in italics</i> )	<i>n</i> ( <i>SD in italics</i> )	% ( <i>mean in italics</i> )	<i>n</i> ( <i>SD in italics</i> )	% of pop	<i>n</i>
<u>1st Neighb Characteristics</u>						
Disadvantage factor	0.83	(1.28)	0.83	(1.28)	0.3%	(32)
Affluence factor	-0.37	(0.61)	-0.35	(0.61)	0.3%	(32)
Residential stability factor	-0.32	(1.05)	-0.31	(1.05)	0.3%	(32)
Young age factor	0.20	(1.03)	0.19	(1.03)	0.3%	(32)
<u>County of 1st Neighb</u>						
MSA, central city (urban)	53.1%	(5,878)	53.1%	(982)	0.0%	(0)
MSA, non-central city (suburban)	38.5%	(4,264)	38.1%	(705)	0.0%	(0)
Non-MSA (rural)	8.3%	(922)	8.7%	(161)	0.0%	(0)
<u>Pre-Prison Neighborhood</u>						
Disadvantage factor			0.79	(1.18)	0.2%	(17)
Affluence factor			-0.24	(0.66)	0.2%	(17)
Residential stability factor			-0.13	(1.06)	0.2%	(17)
Young age factor			-1.16	(0.78)	0.2%	(17)
<u>Age in 2003</u>						
18-25	18.7%	(2,073)	18.3%	(339)	0.0%	(0)
26-30	16.7%	(1,847)	16.9%	(313)	0.0%	(0)
31-35	18.3%	(2,022)	16.9%	(313)	0.0%	(0)
36-40	16.1%	(1,778)	17.8%	(329)	0.0%	(0)
41-45	14.2%	(1,568)	12.9%	(238)	0.0%	(0)
46-50	9.7%	(1,070)	10.6%	(195)	0.0%	(0)
51-89	6.4%	(706)	6.5%	(121)	0.0%	(0)
<u>Race</u>						
White	44.7%	(4,948)	45.1%	(834)	0.0%	(0)
Black	53.5%	(5,918)	53.0%	(980)	0.0%	(0)
Other	1.8%	(198)	1.8%	(34)	0.0%	(0)
<u>Female offender</u>	7.8%	(862)	7.7%	(143)	0.0%	(0)
<u>Marital status</u>						
Never married	66.3%	(7,336)	66.3%	(1,225)	0.0%	(0)
Married	12.4%	(1,368)	11.9%	(220)	0.0%	(0)
Divorced or separated	20.2%	(2,235)	20.7%	(382)	0.0%	(0)
Widowed, common law, unknown	1.1%	(125)	1.1%	(21)	0.0%	(0)
Number of dependents	1.24	(1.32)	1.24	(1.32)	0.0%	(0)
<u>Education in 2003</u>						
8 years or less	7.2%	(797)	7.4%	(136)	0.0%	(0)
Some High School	35.4%	(3,920)	34.4%	(636)	0.0%	(0)
GED	31.0%	(3,429)	30.5%	(563)	0.0%	(0)
High School Graduate	20.1%	(2,227)	21.2%	(391)	0.0%	(0)
Some College or More	6.2%	(691)	6.6%	(122)	0.0%	(0)
<u>Employment &amp; Earnings Pre-Prison</u>						
Employed in quarter	6.1%	(679)	557.0%	(103)	13.7%	(1513)
Max wages in quarter	164.50	(1,305.17)	215.10	(2,023.73)	13.7%	(1513)
Sex offender	7.4%	(818)	6.8%	(126)	0.0%	(0)
Known mental illness status	20.6%	(2,279)	20.9%	(386)	0.7%	(76)
<u>#Prior Prison Spells</u>						
0	47.5%	(5,257)	46.6%	(862)	0.0%	(0)
1	26.8%	(2,970)	26.6%	(491)	0.0%	(0)
2 or 3	19.7%	(2,180)	20.1%	(372)	0.0%	(0)
4 or more	5.9%	(657)	6.7%	(123)	0.0%	(0)
Years in Prison, Prior Spell	2.94	(3.12)	2.89	(3.06)	0.1%	(15)

<u>Type of Offense</u>						
Assaultive	28.5%	(3,158)	26.6%	(492)	0.0%	(0)
Drug Offender	25.7%	(2,838)	26.0%	(481)	0.0%	(0)
Non-Assaultive Offender	45.8%	(5,068)	47.3%	(875)	0.0%	(0)
<u>Substance Abuse History (ref=none)</u>						
None	50.9%	(5,634)	51.6%	(954)	0.0%	(0)
Alcohol only	4.2%	(463)	4.4%	(82)	0.0%	(0)
THC only	7.8%	(866)	7.9%	(146)	0.0%	(0)
Hard Drugs only	5.0%	(552)	4.7%	(87)	0.0%	(0)
Alcohol & THC	6.5%	(715)	5.0%	(93)	0.0%	(0)
Hard Drugs & Alcohol/THC	25.6%	(2,834)	26.3%	(486)	0.0%	(0)
<u>Year of release</u>						
2000-2001	1.0%	(110)	1.0%	(19)	0.0%	(0)
2002	5.9%	(658)	5.9%	(109)	0.0%	(0)
2003	93.1%	(10,296)	93.1%	(1,720)	0.0%	(0)
<u>Conditions of Release</u>						
Released to Center	10.1%	(1,122)	10.0%	(185)	0.0%	(0)
Released on Electronic Monitoring	7.7%	(848)	7.2%	(133)	0.0%	(0)

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**Table 3. Frequency and Co-Occurrence of Recidivism Events: 2003-2009**

Recidivism event	Marginal probability (proportion)	Probability of recidivism event conditional on...					
		Arrest	Felony Conviction	Abscond	Return (for any reason)	Return for new crime	Return for tech violation
Arrest	0.70	-	0.97	0.81	0.90	0.98	0.81
Felony Conviction	0.44	0.61	-	0.55	0.71	0.96	0.54
Abscond	0.40	0.47	0.50	-	0.60	0.55	0.68
Return to prison	0.49	0.61	0.78	0.72	-	-	-
Return for new crime	0.27	0.39	0.59	0.37	-	-	0.27
Return for tech violation	0.29	0.33	0.35	0.48	-	0.28	-
<i>n</i>	11,064	7,759	4,886	4,465	5,421	3,035	3,185

**Table 4. Cox Proportional Hazard Models of Time to Offense Resulting in 1st Arrest (n=11,064)**

	(1)		(2)		(3)		(4)		(5) <sup>†</sup>	
	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)
<u>1st Post-Prison Neighborhood</u>										
Disadvantage factor	0.00	(0.01)	-0.03	(0.01)	-0.03	(0.01) **	-0.03	(0.02) *	0.01	(0.01)
Affluence factor	-0.07	(0.02) ***	-0.08	(0.02) ***	-0.06	(0.02) ***	-0.05	(0.02) **	-0.01	(0.02)
Residential stability factor	-0.04	(0.02) **	-0.03	(0.02)	-0.02	(0.02)	-0.02	(0.02)	-0.01	(0.01)
Young age factor	0.04	(0.02) **	0.02	(0.02)	0.02	(0.02)	0.02	(0.02)	0.01	(0.01)
<u>Urbanicity (ref=suburban)</u>										
Rural							0.06	(0.05)		
Central City							0.02	(0.04)		
<u>Age in 2003 (ref=18-25)</u>										
26-30			-0.25	(0.04) ***	-0.24	(0.04) ***	-0.24	(0.04) ***	-0.23	(0.04) ***
31-35			-0.30	(0.04) ***	-0.42	(0.04) ***	-0.42	(0.04) ***	-0.39	(0.04) ***
36-40			-0.25	(0.04) ***	-0.51	(0.04) ***	-0.51	(0.04) ***	-0.48	(0.04) ***
41-45			-0.29	(0.04) ***	-0.60	(0.05) ***	-0.60	(0.05) ***	-0.58	(0.05) ***
46-50			-0.53	(0.05) ***	-0.85	(0.05) ***	-0.84	(0.05) ***	-0.81	(0.05) ***
51-89			-0.94	(0.07) ***	-1.22	(0.07) ***	-1.21	(0.07) ***	-1.19	(0.07) ***
<u>Race (ref=white)</u>										
Black			0.17	(0.03) ***	0.18	(0.03) ***	0.18	(0.03) ***	0.20	(0.04) ***
Other			-0.20	(0.08) **	-0.11	(0.08)	-0.11	(0.08)	-0.11	(0.09)
Female offender			-0.32	(0.05) ***	-0.25	(0.05) ***	-0.25	(0.05) ***	-0.28	(0.05) ***
<u>Marital status</u>										
Married			-0.08	(0.04)	-0.05	(0.04)	-0.05	(0.04)	-0.07	(0.04)
Divorced or separated			0.11	(0.04)	0.09	(0.04) **	0.09	(0.04) **	0.09	(0.04) **
Widowed, common law, unknown			0.42	(0.11)	0.30	(0.10) ***	0.30	(0.10) ***	0.29	(0.10) ***
Number of dependents			0.00	(0.01)	0.00	(0.01)	0.00	(0.01)	-0.01	(0.01)
<u>Education in 2003 (ref=8 years or less)</u>										
Some High School			-0.04	(0.04)	0.00	(0.05)	0.00	(0.05)	-0.02	(0.05)
GED			0.31	(0.05) ***	0.07	(0.05)	0.07	(0.05)	0.05	(0.05)
High School Graduate			-0.12	(0.05) **	-0.04	(0.05)	-0.04	(0.05)	-0.07	(0.05)
Some College or More			-0.03	(0.07)	0.00	(0.07)	0.00	(0.07)	-0.04	(0.07)
<u>Pre-Prison Employment &amp; Earnings</u>										
Employed in quarter			-0.11	(0.07) *	-0.04	(0.06)	-0.04	(0.06)	-0.04	(0.06)
Max wages in quarter (x 10k)			-0.39	(0.17) **	-0.19	(0.15)	-0.19	(0.15)	-0.18	(0.16)
Sex offender					0.10	(0.04) **	0.10	(0.04) **	0.06	(0.04)
Known mental illness status					0.09	(0.03) ***	0.09	(0.03) ***	0.07	(0.03) **
<u>#Prior Prison Spells (ref=0)</u>										
1					0.60	(0.03) ***	0.60	(0.03) ***	0.60	(0.03) ***
2 or 3					0.94	(0.04) ***	0.94	(0.04) ***	0.93	(0.04) ***
4 or more					1.20	(0.06) ***	1.20	(0.06) ***	1.19	(0.06) ***
<u>Type of Offense (ref=Assaultive)</u>										
Drug Offender					-0.13	(0.03) ***	-0.13	(0.03) ***	-0.14	(0.03) ***
Non-Assaultive Offender					0.08	(0.03) ***	0.07	(0.03) ***	0.06	(0.03) **
Years in Prison, Prior Spell					-0.02	(0.00) ***	-0.02	(0.00) ***	-0.02	(0.00) ***
<u>Substance Abuse History (ref=none)</u>										
Alcohol only					0.67	(0.05) ***	0.67	(0.05) ***	0.71	(0.06) ***
THC only					0.59	(0.04) ***	0.59	(0.04) ***	0.63	(0.04) ***
Hard Drugs only					0.87	(0.05) ***	0.87	(0.05) ***	0.92	(0.05) ***
Alcohol & THC					0.70	(0.05) ***	0.70	(0.05) ***	0.73	(0.05) ***
Hard Drugs & Alcohol/THC					0.85	(0.03) ***	0.85	(0.03) ***	0.89	(0.03) ***
<u>Year of release (ref=2003)</u>										
2000-2001	-0.43	(0.19) **	-0.35	(0.18) **	-0.04	(0.17)	-0.03	(0.17)	-0.15	(0.18)
2002	-0.33	(0.07) ***	-0.27	(0.09) ***	-0.14	(0.08) *	-0.14	(0.08) *	-0.24	(0.05) ***

note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

† Model 5 includes county fixed effects.

**Table 5. Cox Proportional Hazard Models of Time to Offense Resulting in 1st Felony Conviction (n=11,064)**

	(1)		(2)		(3)		(4)		(5) <sup>†</sup>	
	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)
<u>1st Post-Prison Neighborhood</u>										
Disadvantage factor	0.04	(0.01) ***	0.01	(0.01)	0.00	(0.01)	0.00	(0.02)	0.02	(0.02)
Affluence factor	-0.03	(0.02)	-0.04	(0.02)	0.01	(0.02)	0.01	(0.02)	0.02	(0.03)
Residential stability factor	-0.04	(0.02) ***	-0.03	(0.02) **	-0.02	(0.01)	-0.02	(0.01)	-0.01	(0.01)
Young age factor	0.04	(0.02) **	0.02	(0.02)	0.02	(0.01)	0.02	(0.01)	0.01	(0.02)
<u>Urbanicity (ref=suburban)</u>										
Rural							0.00	(0.06)		
Central City							-0.01	(0.04)		
<u>Age in 2003 (ref=18-25)</u>										
26-30			-0.29	(0.04) ***	-0.33	(0.05) ***	-0.33	(0.05) ***	-0.32	(0.05) ***
31-35			-0.30	(0.05) ***	-0.57	(0.05) ***	-0.57	(0.05) ***	-0.56	(0.05) ***
36-40			-0.28	(0.05) ***	-0.76	(0.05) ***	-0.76	(0.05) ***	-0.76	(0.06) ***
41-45			-0.40	(0.05) ***	-1.00	(0.05) ***	-1.00	(0.05) ***	-1.00	(0.05) ***
46-50			-0.67	(0.07) ***	-1.22	(0.07) ***	-1.22	(0.07) ***	-1.21	(0.07) ***
51-89			-1.06	(0.09) ***	-1.46	(0.09) ***	-1.46	(0.09) ***	-1.46	(0.09) ***
<u>Race (ref=white)</u>										
Black			0.25	(0.04) ***	0.15	(0.04) ***	0.16	(0.04) ***	0.13	(0.04) ***
Other			-0.08	(0.12)	0.01	(0.11)	0.01	(0.11)	0.01	(0.11)
Female offender			-0.31	(0.06) ***	-0.14	(0.06) **	-0.14	(0.06) **	-0.17	(0.06) ***
<u>Marital status</u>										
Married			-0.10	(0.05) **	-0.10	(0.05) **	-0.10	(0.05) **	-0.12	(0.05) **
Divorced or separated			0.18	(0.04) ***	0.14	(0.04) ***	0.14	(0.04) ***	0.14	(0.04) ***
Widowed, common law, unknown			0.46	(0.14) ***	0.29	(0.14) **	0.29	(0.14) **	0.30	(0.15) **
Number of dependents			-0.02	(0.01)	-0.02	(0.01) *	-0.02	(0.01) *	-0.03	(0.01) **
<u>Education in 2003 (ref=8 years or less)</u>										
Some High School			-0.08	(0.06)	0.00	(0.06)	0.00	(0.06)	-0.01	(0.06)
GED			0.44	(0.06) ***	0.09	(0.06)	0.09	(0.06)	0.09	(0.06)
High School Graduate			-0.10	(0.07)	0.06	(0.07)	0.06	(0.07)	0.05	(0.07)
Some College or More			0.03	(0.08)	0.08	(0.09)	0.08	(0.09)	0.06	(0.09)
<u>Pre-Prison Employment &amp; Earnings</u>										
Employed in quarter			-0.15	(0.08) **	-0.13	(0.08) *	-0.13	(0.08) *	-0.11	(0.08)
Max wages in quarter (x 10k)			-0.28	(0.16) *	0.13	(0.13)	0.13	(0.13)	0.11	(0.14)
Sex offender					0.25	(0.06) ***	0.25	(0.06) ***	0.24	(0.06) ***
Known mental illness status					0.13	(0.04) ***	0.13	(0.04) ***	0.13	(0.04) ***
<u>#Prior Prison Spells (ref=0)</u>										
1					1.05	(0.04) ***	1.05	(0.04) ***	1.05	(0.04) ***
2 or 3					1.46	(0.05) ***	1.46	(0.05) ***	1.46	(0.05) ***
4 or more					1.74	(0.07) ***	1.74	(0.07) ***	1.71	(0.07) ***
<u>Type of Offense (ref=Assaultive)</u>										
Drug Offender					-0.14	(0.04) ***	-0.14	(0.04) ***	-0.14	(0.04) ***
Non-Assaultive Offender					-0.01	(0.03)	-0.01	(0.03)	-0.01	(0.04)
Years in Prison, Prior Spell					0.02	(0.01) ***	0.02	(0.01) ***	0.02	(0.01) ***
<u>Substance Abuse History (ref=none)</u>										
Alcohol only					1.76	(0.08) ***	1.76	(0.08) ***	1.79	(0.08) ***
THC only					1.73	(0.06) ***	1.73	(0.06) ***	1.75	(0.06) ***
Hard Drugs only					2.00	(0.07) ***	2.00	(0.07) ***	2.03	(0.07) ***
Alcohol & THC					1.81	(0.06) ***	1.81	(0.06) ***	1.82	(0.06) ***
Hard Drugs & Alcohol/THC					1.99	(0.05) ***	1.99	(0.05) ***	2.02	(0.05) ***
<u>Year of release (ref=2003)</u>										
2000-2001	-0.80	(0.23)	-0.70	(0.21) ***	-0.01	(0.26)	-0.01	(0.27)	-0.03	(0.27)
2002	-0.34	(0.05)	-0.27	(0.06) ***	0.01	(0.04)	0.01	(0.04)	0.01	(0.05)

note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

† Model 5 includes county fixed effects.

**Table 6. Cox Proportional Hazard Models of Time to 1st Return to Prison for New Offense (n=11,064)**

	(1)		(2)		(3)		(4)		(5) <sup>†</sup>	
	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)
<u>1st Post-Prison Neighborhood</u>										
Disadvantage factor	0.03	(0.02) **	0.01	(0.02)	0.02	(0.02)	0.02	(0.02)	0.05	(0.03) *
Affluence factor	-0.05	(0.03) *	-0.06	(0.03) *	0.00	(0.03)	0.01	(0.04)	0.04	(0.04)
Residential stability factor	-0.07	(0.02) ***	-0.06	(0.02) ***	-0.05	(0.02) **	-0.05	(0.02) **	-0.06	(0.02) ***
Young age factor	0.04	(0.02) *	0.02	(0.02)	0.02	(0.02)	0.02	(0.02)	0.03	(0.02)
<u>Urbanicity (ref=suburban)</u>										
Rural							0.05	(0.07)		
Central City							0.01	(0.05)		
<u>Age in 2003 (ref=18-25)</u>										
26-30			-0.28	(0.06) ***	-0.42	(0.06) ***	-0.42	(0.06) ***	-0.45	(0.06) ***
31-35			-0.22	(0.06) ***	-0.73	(0.06) ***	-0.73	(0.06) ***	-0.75	(0.06) ***
36-40			-0.23	(0.06) ***	-1.06	(0.07) ***	-1.05	(0.07) ***	-1.07	(0.07) ***
41-45			-0.37	(0.07) ***	-1.36	(0.07) ***	-1.36	(0.07) ***	-1.39	(0.07) ***
46-50			-0.72	(0.09) ***	-1.79	(0.09) ***	-1.78	(0.09) ***	-1.79	(0.09) ***
51-89			-1.15	(0.12) ***	-2.15	(0.14) ***	-2.14	(0.14) ***	-2.16	(0.14) ***
<u>Race (ref=white)</u>										
Black			0.22	(0.06) ***	0.12	(0.06) **	0.12	(0.06) **	0.09	(0.06)
Other			-0.04	(0.14)	0.05	(0.13)	0.05	(0.13)	-0.02	(0.14)
Female offender			-0.40	(0.07) ***	-0.22	(0.08) **	-0.22	(0.08) **	-0.24	(0.08) ***
<u>Marital status</u>										
Married			-0.07	(0.06)	-0.10	(0.06) *	-0.10	(0.06) *	-0.09	(0.06)
Divorced or separated			0.22	(0.06) ***	0.16	(0.06) ***	0.16	(0.06) ***	0.16	(0.06) ***
Widowed, common law, unknown			0.66	(0.16) ***	0.39	(0.16) **	0.39	(0.16) **	0.39	(0.17) **
Number of dependents			-0.03	(0.01) *	-0.03	(0.01) **	-0.03	(0.01) **	-0.03	(0.01) **
<u>Education in 2003 (ref=8 years or less)</u>										
Some High School			-0.14	(0.08) *	-0.02	(0.08)	-0.02	(0.08)	-0.04	(0.08)
GED			0.54	(0.07) ***	0.01	(0.08)	0.01	(0.08)	0.01	(0.08)
High School Graduate			-0.16	(0.09) *	0.02	(0.09)	0.02	(0.09)	0.01	(0.09)
Some College or More			-0.01	(0.11)	0.00	(0.11)	0.00	(0.11)	-0.01	(0.11)
<u>Pre-Prison Employment &amp; Earnings</u>										
Employed in quarter			-0.20	(0.10) *	-0.26	(0.09) ***	-0.25	(0.09) ***	-0.25	(0.10) ***
Max wages in quarter (x 10k)			-0.21	(0.22)	0.33	(0.16) **	0.33	(0.16) **	0.34	(0.16) **
Sex offender					0.34	(0.07) ***	0.34	(0.07) ***	0.36	(0.07) ***
Known mental illness status					0.23	(0.04) ***	0.23	(0.04) ***	0.23	(0.04) ***
<u>#Prior Prison Spells (ref=0)</u>										
1					2.19	(0.08) ***	2.19	(0.08) ***	2.20	(0.08) ***
2 or 3					2.82	(0.08) ***	2.82	(0.08) ***	2.84	(0.08) ***
4 or more					3.29	(0.11) ***	3.29	(0.11) ***	3.27	(0.11) ***
<u>Type of Offense (ref=Assaultive)</u>										
Drug Offender					-0.32	(0.06) ***	-0.32	(0.06) ***	-0.32	(0.06) ***
Non-Assaultive Offender					-0.05	(0.05)	-0.05	(0.05)	-0.05	(0.05)
Years in Prison, Prior Spell					0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
<u>Substance Abuse History (ref=none)</u>										
Alcohol only					1.50	(0.09) ***	1.49	(0.09) ***	1.52	(0.09) ***
THC only					1.28	(0.07) ***	1.28	(0.07) ***	1.29	(0.07) ***
Hard Drugs only					1.68	(0.08) ***	1.68	(0.08) ***	1.71	(0.08) ***
Alcohol & THC					1.42	(0.08) ***	1.41	(0.08) ***	1.42	(0.08) ***
Hard Drugs & Alcohol/THC					1.61	(0.06) ***	1.61	(0.06) ***	1.64	(0.06) ***
<u>Year of release (ref=2003)</u>										
2000-2001	-1.06	(0.25) ***	-0.95	(0.23)	-0.12	(0.27)	-0.11	(0.27)	-0.16	(0.26)
2002	-0.47	(0.06) ***	-0.40	(0.09)	-0.08	(0.07)	-0.07	(0.06)	-0.10	(0.05) *

note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

† Model 5 includes county fixed effects.



**Table 7. Cox Proportional Hazard Models of Time to 1st Return to Prison for Technical Parole Violation (n=11,064)**

	(1)		(2)		(3)		(4)		(5) <sup>†</sup>	
	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)
<u>1st Post-Prison Neighborhood</u>										
Disadvantage factor	0.04	(0.02) **	0.03	(0.02)	0.04	(0.02) *	0.05	(0.02) **	0.02	(0.02)
Affluence factor	-0.09	(0.04) ***	-0.09	(0.04) **	-0.08	(0.04) **	-0.11	(0.04) ***	-0.10	(0.04) **
Residential stability factor	-0.05	(0.03) *	-0.04	(0.03)	-0.03	(0.02)	-0.03	(0.02)	-0.03	(0.03)
Young age factor	-0.03	(0.02)	-0.04	(0.02)	-0.03	(0.02)	-0.04	(0.02) **	-0.04	(0.02) *
<u>Urbanicity (ref=suburban)</u>										
Rural							-0.32	(0.08) ***		
Central City							-0.13	(0.06) **		
<u>Age in 2003 (ref=18-25)</u>										
26-30			-0.17	(0.06) ***	-0.18	(0.06) ***	-0.18	(0.06) ***	-0.18	(0.06) ***
31-35			-0.02	(0.06)	-0.09	(0.06)	-0.09	(0.06)	-0.11	(0.06) *
36-40			0.07	(0.06)	-0.07	(0.06)	-0.08	(0.06)	-0.09	(0.06)
41-45			-0.08	(0.06)	-0.25	(0.07) ***	-0.26	(0.07) ***	-0.28	(0.07) ***
46-50			-0.36	(0.07) ***	-0.56	(0.08) ***	-0.57	(0.08) ***	-0.58	(0.08) ***
51-89			-0.47	(0.09) ***	-0.62	(0.10) ***	-0.62	(0.10) ***	-0.63	(0.10) ***
<u>Race (ref=white)</u>										
Black			0.05	(0.05)	0.14	(0.06) **	0.14	(0.05) **	0.13	(0.06) **
Other			-0.10	(0.15)	-0.04	(0.15)	-0.02	(0.15)	-0.01	(0.15)
Female offender			-0.30	(0.07) ***	-0.32	(0.08) ***	-0.32	(0.08) ***	-0.30	(0.08) ***
<u>Marital status</u>										
Married			0.01	(0.06)	0.00	(0.06)	0.00	(0.06)	0.00	(0.06)
Divorced or separated			0.21	(0.05) ***	0.17	(0.05) ***	0.17	(0.05) ***	0.18	(0.05) ***
Widowed, common law, unknown			0.14	(0.17)	0.04	(0.17)	0.04	(0.17)	0.02	(0.17)
Number of dependents			-0.01	(0.01)	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
<u>Education in 2003 (ref=8 years or less)</u>										
Some High School			0.04	(0.07)	0.06	(0.07)	0.06	(0.07)	0.07	(0.07)
GED			0.13	(0.07)	0.02	(0.07)	0.02	(0.07)	0.05	(0.07)
High School Graduate			-0.21	(0.08) ***	-0.19	(0.08) **	-0.19	(0.08) **	-0.19	(0.08) **
Some College or More			-0.09	(0.10)	-0.10	(0.10)	-0.11	(0.10)	-0.09	(0.10)
<u>Pre-Prison Employment &amp; Earnings</u>										
Employed in quarter			0.01	(0.11)	0.03	(0.11)	0.03	(0.11)	0.03	(0.11)
Max wages in quarter (x 10k)			-0.72	(0.27) ***	-0.71	(0.29) **	-0.71	(0.28) **	-0.73	(0.28) **
Sex offender					0.53	(0.07) ***	0.53	(0.07) ***	0.55	(0.07) ***
Known mental illness status					0.26	(0.05) ***	0.27	(0.05) ***	0.28	(0.05) ***
<u>#Prior Prison Spells (ref=0)</u>										
1					0.23	(0.05) ***	0.23	(0.05) ***	0.23	(0.05) ***
2 or 3					0.40	(0.05) ***	0.40	(0.05) ***	0.40	(0.06) ***
4 or more					0.52	(0.09) ***	0.51	(0.09) ***	0.52	(0.09) ***
<u>Type of Offense (ref=Assaultive)</u>										
Drug Offender					-0.22	(0.05) ***	-0.22	(0.05) ***	-0.22	(0.05) ***
Non-Assaultive Offender					0.00	(0.05)	0.01	(0.05)	0.02	(0.05)
Years in Prison, Prior Spell					-0.03	(0.01) ***	-0.03	(0.01) ***	-0.03	(0.01) ***
<u>Substance Abuse History (ref=none)</u>										
Alcohol only					0.17	(0.08) **	0.18	(0.08) **	0.19	(0.09) **
THC only					-0.07	(0.07)	-0.07	(0.07)	-0.07	(0.07)
Hard Drugs only					0.27	(0.08) ***	0.27	(0.08) ***	0.27	(0.08) ***
Alcohol & THC					-0.01	(0.07)	-0.01	(0.08)	0.00	(0.08)
Hard Drugs & Alcohol/THC					0.23	(0.05) ***	0.23	(0.05) ***	0.22	(0.05) ***
<u>Year of release (ref=2003)</u>										
2000-2001	-1.61	(0.30) ***	-1.55	(0.29) ***	-1.41	(0.28) ***	-1.43	(0.28) ***	-1.39	(0.28) ***
2002	-0.70	(0.10) ***	-0.66	(0.09) ***	-0.57	(0.08) ***	-0.57	(0.08) ***	-0.55	(0.08) ***

note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

† Model 5 includes county fixed effects.

**Table 8. Cox Proportional Hazard Models of Time to 1st Abscond (n=11,064)**

	(1)		(2)		(3)		(4)		(5) <sup>†</sup>	
	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)
<u>1st Post-Prison Neighborhood</u>										
Disadvantage factor	0.05	(0.02) **	0.05	(0.03) *	0.05	(0.02) *	0.05	(0.03) *	0.08	(0.03) ***
Affluence factor	-0.10	(0.04) ***	-0.10	(0.04) **	-0.08	(0.04) **	-0.09	(0.04) **	-0.09	(0.05) **
Residential stability factor	-0.19	(0.07) ***	-0.18	(0.07) ***	-0.18	(0.07) ***	-0.18	(0.07) **	-0.10	(0.05) *
Young age factor	0.04	(0.03)	0.03	(0.03)	0.03	(0.03)	0.02	(0.03)	0.00	(0.03)
<u>Urbanicity (ref=suburban)</u>										
Rural							-0.13	(0.09)		
Central City							-0.05	(0.06)		
<u>Age in 2003 (ref=18-25)</u>										
26-30			-0.41	(0.06) ***	-0.31	(0.06) ***	-0.31	(0.06) ***	-0.27	(0.06) ***
31-35			-0.17	(0.06) ***	-0.16	(0.06) ***	-0.16	(0.06) ***	-0.11	(0.06) *
36-40			-0.06	(0.06)	-0.15	(0.06) **	-0.15	(0.06) **	-0.07	(0.07)
41-45			-0.17	(0.06) ***	-0.31	(0.06) ***	-0.32	(0.06) ***	-0.28	(0.07) ***
46-50			-0.42	(0.08) ***	-0.63	(0.09) ***	-0.63	(0.09) ***	-0.57	(0.09) ***
51-89			-0.89	(0.10) ***	-1.02	(0.10) ***	-1.02	(0.10) ***	-0.98	(0.11) ***
<u>Race (ref=white)</u>										
Black			0.00	(0.05)	0.04	(0.05)	0.04	(0.05)	0.05	(0.05)
Other			-0.01	(0.12)	0.09	(0.12)	0.10	(0.12)	0.13	(0.13)
Female offender			-0.16	(0.08) **	-0.24	(0.08) ***	-0.24	(0.08) ***	-0.30	(0.08) ***
<u>Marital status</u>										
Married			-0.24	(0.06) ***	-0.19	(0.06) ***	-0.19	(0.06) ***	-0.21	(0.06) ***
Divorced or separated			-0.03	(0.05)	-0.08	(0.06)	-0.07	(0.06)	-0.08	(0.06)
Widowed, common law, unknown			0.35	(0.19) *	0.23	(0.19)	0.23	(0.19)	0.21	(0.18)
Number of dependents			0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.02)
<u>Education in 2003 (ref=8 years or less)</u>										
Some High School			-0.05	(0.07)	-0.05	(0.07)	-0.05	(0.07)	-0.02	(0.08)
GED			0.16	(0.07) **	0.00	(0.07)	0.00	(0.07)	0.00	(0.08)
High School Graduate			-0.24	(0.07) ***	-0.24	(0.07) ***	-0.24	(0.07) ***	-0.26	(0.08) ***
Some College or More			-0.24	(0.11) **	-0.29	(0.11) ***	-0.29	(0.11) ***	-0.31	(0.12) ***
<u>Pre-Prison Employment &amp; Earnings</u>										
Employed in quarter			-0.34	(0.11) ***	-0.03	(0.11)	-0.03	(0.11)	-0.05	(0.13)
Max wages in quarter (x 10k)			-0.60	(0.33) *	-0.63	(0.35) *	-0.62	(0.35) *	-0.69	(0.39) *
Sex offender					-0.50	(0.10) ***	-0.49	(0.10) ***	-0.61	(0.11) ***
Known mental illness status					-0.02	(0.05)	-0.02	(0.05)	-0.05	(0.05)
<u>#Prior Prison Spells (ref=0)</u>										
1					0.28	(0.04) ***	0.28	(0.04) ***	0.30	(0.05) ***
2 or 3					0.47	(0.05) ***	0.47	(0.05) ***	0.49	(0.05) ***
4 or more					0.68	(0.08) ***	0.68	(0.08) ***	0.66	(0.08) ***
<u>Type of Offense (ref=Assaultive)</u>										
Drug Offender					-0.03	(0.05)	-0.03	(0.05)	-0.05	(0.06)
Non-Assaultive Offender					0.11	(0.05) **	0.11	(0.05) **	0.10	(0.05) *
Years in Prison, Prior Spell					-0.10	(0.01) ***	-0.10	(0.01) ***	-0.11	(0.01) ***
<u>Substance Abuse History (ref=none)</u>										
Alcohol only					-0.03	(0.10)	-0.03	(0.10)	0.01	(0.10)
THC only					-0.06	(0.07)	-0.06	(0.07)	-0.02	(0.08)
Hard Drugs only					0.50	(0.08) ***	0.49	(0.08) ***	0.60	(0.08) ***
Alcohol & THC					0.17	(0.07) **	0.17	(0.07) **	0.17	(0.08) **
Hard Drugs & Alcohol/THC					0.47	(0.05) ***	0.47	(0.05) ***	0.48	(0.05) ***
<u>Year of release (ref=2003)</u>										
2000-2001	-0.93	(0.25) ***	-0.86	(0.25) ***	-0.82	(0.25) ***	-0.83	(0.25) ***	-0.72	(0.25) ***
2002	-0.72	(0.16) ***	-0.68	(0.15) ***	-0.69	(0.14) ***	-0.69	(0.14) ***	-0.54	(0.08) ***

note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

† Model 5 includes county fixed effects.

**Table 9. Cox Proportional Hazard Models of Time to Offense Resulting in 1st Arrest for 1/6 subsample (n=1,848)**

	1st Neighborhood			Time-Varying Neighborhoods								
	(1)			(2)		(3)		(4)				
	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>			
<u>Time-varying Neighb Characteristics</u>												
Cum Mean Disadvantage	-0.08	(0.03)	<i>0.013</i>	-0.09	(0.04)	<i>0.049</i>	-0.10	(0.04)	<i>0.030</i>	-0.09	(0.06)	<i>0.114</i>
Cum Mean Affluence	-0.07	(0.05)	<i>0.165</i>	0.03	(0.05)	<i>0.604</i>	0.02	(0.05)	<i>0.625</i>	0.09	(0.06)	<i>0.158</i>
Cum Mean Residential Stability	-0.01	(0.03)	<i>0.859</i>	0.01	(0.04)	<i>0.876</i>	0.01	(0.04)	<i>0.855</i>	0.03	(0.05)	<i>0.577</i>
Cum Mean Young Age Factor	0.04	(0.03)	<i>0.228</i>	0.00	(0.05)	<i>0.953</i>	0.00	(0.05)	<i>0.941</i>	0.03	(0.07)	<i>0.675</i>
Rural	-0.06	(0.11)	<i>0.609</i>	-0.12	(0.13)	<i>0.372</i>	-0.13	(0.13)	<i>0.313</i>	-0.14	(0.13)	<i>0.276</i>
Central City	0.09	(0.08)	<i>0.256</i>	-0.03	(0.10)	<i>0.779</i>	-0.02	(0.10)	<i>0.821</i>	-0.02	(0.09)	<i>0.805</i>
<u>Pre-Prison Neighborhood</u>												
Tract disadvantage										-0.09	(0.06)	<i>0.149</i>
Tract affluence										0.00	(0.04)	<i>0.961</i>
Tract residential stability										-0.03	(0.04)	<i>0.529</i>
Tract young age factor										-0.03	(0.06)	<i>0.613</i>
<u>Employment &amp; Earnings</u>												
Post-prison employment (cum avg)							-0.18	(0.07)	<i>0.017</i>	-0.18	(0.07)	<i>0.014</i>
Pre-prison employment	-0.21	(0.15)	<i>0.158</i>	-0.29	(0.18)	<i>0.109</i>	-0.27	(0.18)	<i>0.139</i>	-0.27	(0.18)	<i>0.132</i>
Pre-prison wages in quarter (x 10k)	-0.02	(0.21)	<i>0.905</i>	-0.18	(0.34)	<i>0.607</i>	-0.15	(0.33)	<i>0.654</i>	-0.14	(0.33)	<i>0.660</i>
<u>Age in 2003 (ref=18-25)</u>												
26-30	-0.17	(0.09)	<i>0.052</i>	-0.16	(0.10)	<i>0.098</i>	-0.17	(0.10)	<i>0.086</i>	-0.18	(0.10)	<i>0.076</i>
31-35	-0.32	(0.08)	<i>0.000</i>	-0.32	(0.09)	<i>0.001</i>	-0.31	(0.09)	<i>0.001</i>	-0.33	(0.10)	<i>0.001</i>
36-40	-0.46	(0.10)	<i>0.000</i>	-0.51	(0.11)	<i>0.000</i>	-0.51	(0.11)	<i>0.000</i>	-0.52	(0.11)	<i>0.000</i>
41-45	-0.46	(0.10)	<i>0.000</i>	-0.46	(0.11)	<i>0.000</i>	-0.45	(0.11)	<i>0.000</i>	-0.47	(0.11)	<i>0.000</i>
46-50	-0.72	(0.12)	<i>0.000</i>	-0.67	(0.13)	<i>0.000</i>	-0.68	(0.13)	<i>0.000</i>	-0.68	(0.13)	<i>0.000</i>
51-89	-1.06	(0.17)	<i>0.000</i>	-0.94	(0.20)	<i>0.000</i>	-0.95	(0.20)	<i>0.000</i>	-0.98	(0.20)	<i>0.000</i>
<u>Race (ref=white)</u>												
Black	0.28	(0.09)	<i>0.001</i>	0.18	(0.09)	<i>0.041</i>	0.17	(0.09)	<i>0.050</i>	0.17	(0.09)	<i>0.054</i>
Other	-0.10	(0.23)	<i>0.648</i>	-0.38	(0.28)	<i>0.183</i>	-0.40	(0.29)	<i>0.162</i>	-0.40	(0.29)	<i>0.165</i>
Female offender	-0.26	(0.11)	<i>0.022</i>	-0.17	(0.12)	<i>0.181</i>	-0.16	(0.12)	<i>0.195</i>	-0.16	(0.13)	<i>0.208</i>
<u>Marital status</u>												
Married	-0.09	(0.10)	<i>0.362</i>	-0.10	(0.11)	<i>0.355</i>	-0.10	(0.11)	<i>0.368</i>	-0.08	(0.11)	<i>0.467</i>
Divorced or separated	0.09	(0.08)	<i>0.239</i>	0.02	(0.08)	<i>0.769</i>	0.02	(0.08)	<i>0.787</i>	0.02	(0.08)	<i>0.797</i>
Widowed, common law, unknown	0.31	(0.28)	<i>0.270</i>	0.22	(0.27)	<i>0.407</i>	0.19	(0.27)	<i>0.486</i>	0.20	(0.27)	<i>0.462</i>
Number of dependents	0.00	(0.02)	<i>0.988</i>	0.02	(0.03)	<i>0.485</i>	0.02	(0.03)	<i>0.495</i>	0.02	(0.03)	<i>0.448</i>
<u>Education in 2003 (ref=8 years or less)</u>												
Some High School	0.04	(0.11)	<i>0.718</i>	0.05	(0.13)	<i>0.677</i>	0.07	(0.13)	<i>0.594</i>	0.07	(0.13)	<i>0.605</i>
GED	0.07	(0.11)	<i>0.540</i>	0.01	(0.13)	<i>0.931</i>	0.03	(0.13)	<i>0.825</i>	0.03	(0.13)	<i>0.840</i>
High School Graduate	-0.08	(0.13)	<i>0.534</i>	-0.11	(0.15)	<i>0.455</i>	-0.08	(0.15)	<i>0.578</i>	-0.09	(0.15)	<i>0.567</i>
Some College or More	-0.01	(0.16)	<i>0.934</i>	0.06	(0.18)	<i>0.732</i>	0.07	(0.19)	<i>0.712</i>	0.06	(0.19)	<i>0.731</i>
Sex offender	0.02	(0.10)	<i>0.828</i>	-0.07	(0.12)	<i>0.544</i>	-0.08	(0.12)	<i>0.491</i>	-0.08	(0.12)	<i>0.513</i>
Known mental illness status	0.08	(0.07)	<i>0.278</i>	0.07	(0.08)	<i>0.381</i>	0.06	(0.08)	<i>0.418</i>	0.06	(0.08)	<i>0.438</i>
<u>#Prior Prison Spells (ref=0)</u>												
1	0.66	(0.07)	<i>0.000</i>	0.68	(0.08)	<i>0.000</i>	0.69	(0.08)	<i>0.000</i>	0.69	(0.08)	<i>0.000</i>
2 or 3	0.82	(0.08)	<i>0.000</i>	0.96	(0.08)	<i>0.000</i>	0.96	(0.08)	<i>0.000</i>	0.97	(0.08)	<i>0.000</i>
4 or more	1.03	(0.13)	<i>0.000</i>	1.14	(0.15)	<i>0.000</i>	1.14	(0.15)	<i>0.000</i>	1.15	(0.15)	<i>0.000</i>
<u>Type of Offense (ref=Assaultive)</u>												
Drug Offender	-0.23	(0.09)	<i>0.010</i>	-0.17	(0.10)	<i>0.098</i>	-0.17	(0.10)	<i>0.094</i>	-0.18	(0.10)	<i>0.077</i>
Non-Assaultive Offender	0.09	(0.07)	<i>0.197</i>	0.15	(0.09)	<i>0.093</i>	0.15	(0.09)	<i>0.092</i>	0.14	(0.09)	<i>0.107</i>
Years in Prison, Prior Spell	-0.03	(0.01)	<i>0.004</i>	-0.03	(0.01)	<i>0.020</i>	-0.03	(0.01)	<i>0.042</i>	-0.02	(0.01)	<i>0.112</i>

Substance Abuse History (ref=none)

Alcohol only	0.64 (0.11)	0.000	0.42 (0.13)	0.001	0.42 (0.13)	0.001	0.43 (0.13)	0.001
THC only	0.70 (0.10)	0.000	0.65 (0.11)	0.000	0.64 (0.11)	0.000	0.64 (0.11)	0.000
Hard Drugs only	0.61 (0.13)	0.000	0.47 (0.14)	0.001	0.49 (0.14)	0.001	0.49 (0.15)	0.001
Alcohol & THC	0.63 (0.12)	0.000	0.40 (0.13)	0.002	0.39 (0.13)	0.002	0.40 (0.13)	0.002
Hard Drugs & Alcohol/THC	0.86 (0.07)	0.000	0.71 (0.08)	0.000	0.71 (0.08)	0.000	0.71 (0.08)	0.000
<u>Year of release (ref=2003)</u>								
2000-2001	-0.10 (0.33)	0.767	-0.37 (0.38)	0.334	-0.30 (0.38)	0.421	-0.33 (0.37)	0.378
2002	-0.06 (0.14)	0.678	-0.09 (0.15)	0.564	-0.07 (0.15)	0.632	-0.10 (0.15)	0.503

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**Table 10. Cox Prop Hazard Models of Time to Offense Resulting in 1st Felony Conviction for 1/6 subsample (n =1,848)**

	1st Neighborhood			Time-Varying Neighborhoods								
	(1)			(2)			(3)			(4)		
	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>
<u>Time-varying Neighb Characteristics</u>												
Cum Mean Disadvantage	-0.10	(0.04)	0.012	-0.12	(0.05)	0.024	-0.13	(0.05)	0.014	-0.05	(0.06)	0.446
Cum Mean Affluence	0.01	(0.07)	0.883	0.05	(0.06)	0.462	0.05	(0.06)	0.462	0.06	(0.07)	0.400
Cum Mean Residential Stability	0.02	(0.04)	0.673	0.04	(0.05)	0.439	0.04	(0.05)	0.444	0.06	(0.06)	0.319
Cum Mean Young Age Factor	0.00	(0.04)	0.931	0.04	(0.06)	0.553	0.04	(0.06)	0.566	0.16	(0.08)	0.044
Rural	-0.27	(0.15)	0.071	-0.28	(0.17)	0.093	-0.31	(0.17)	0.067	-0.34	(0.17)	0.047
Central City	0.17	(0.10)	0.085	0.13	(0.11)	0.217	0.14	(0.11)	0.187	0.14	(0.11)	0.200
<u>Pre-Prison Neighborhood</u>												
Tract disadvantage										-0.02	(0.08)	0.761
Tract affluence										-0.10	(0.05)	0.043
Tract residential stability										-0.03	(0.05)	0.503
Tract young age factor										-0.18	(0.06)	0.002
<u>Employment &amp; Earnings</u>												
Post-prison employment (cum avg)							-0.24	(0.10)	0.018	-0.25	(0.10)	0.016
Pre-prison employment	-0.19	(0.18)	0.294	-0.21	(0.17)	0.220	-0.19	(0.18)	0.285	-0.18	(0.18)	0.310
Pre-prison wages in quarter (x 10k)	-0.13	(0.24)	0.601	-0.30	(0.32)	0.355	-0.25	(0.32)	0.432	-0.26	(0.33)	0.438
<u>Age in 2003 (ref=18-25)</u>												
26-30	-0.37	(0.13)	0.003	-0.35	(0.13)	0.009	-0.35	(0.13)	0.009	-0.38	(0.14)	0.005
31-35	-0.66	(0.12)	0.000	-0.66	(0.13)	0.000	-0.65	(0.13)	0.000	-0.67	(0.13)	0.000
36-40	-0.68	(0.13)	0.000	-0.72	(0.14)	0.000	-0.71	(0.14)	0.000	-0.72	(0.14)	0.000
41-45	-1.07	(0.14)	0.000	-1.05	(0.14)	0.000	-1.03	(0.14)	0.000	-1.06	(0.15)	0.000
46-50	-1.24	(0.16)	0.000	-1.27	(0.18)	0.000	-1.26	(0.18)	0.000	-1.25	(0.17)	0.000
51-89	-1.52	(0.22)	0.000	-1.49	(0.23)	0.000	-1.52	(0.23)	0.000	-1.56	(0.23)	0.000
<u>Race (ref=white)</u>												
Black	0.18	(0.11)	0.095	0.06	(0.11)	0.564	0.06	(0.11)	0.605	0.09	(0.11)	0.385
Other	0.36	(0.22)	0.105	0.17	(0.23)	0.463	0.14	(0.23)	0.535	0.21	(0.24)	0.383
Female offender	-0.08	(0.14)	0.570	-0.11	(0.14)	0.433	-0.10	(0.14)	0.458	-0.15	(0.14)	0.306
<u>Marital status</u>												
Married	-0.01	(0.13)	0.936	0.01	(0.13)	0.937	0.02	(0.13)	0.854	0.04	(0.13)	0.768
Divorced or separated	0.21	(0.10)	0.036	0.18	(0.11)	0.104	0.17	(0.11)	0.124	0.20	(0.11)	0.072
Widowed, common law, unknown	0.25	(0.30)	0.405	0.24	(0.33)	0.454	0.22	(0.32)	0.488	0.25	(0.31)	0.410
Number of dependents	-0.01	(0.03)	0.760	0.02	(0.03)	0.481	0.02	(0.03)	0.524	0.01	(0.03)	0.646
<u>Education in 2003 (ref=8 years or less)</u>												
Some High School	0.13	(0.15)	0.392	0.15	(0.15)	0.318	0.18	(0.15)	0.247	0.17	(0.15)	0.273
GED	0.15	(0.15)	0.319	0.15	(0.15)	0.320	0.18	(0.16)	0.242	0.17	(0.16)	0.281
High School Graduate	0.15	(0.17)	0.367	0.32	(0.17)	0.059	0.36	(0.17)	0.035	0.38	(0.17)	0.025
Some College or More	0.15	(0.22)	0.504	0.30	(0.26)	0.250	0.30	(0.26)	0.240	0.26	(0.26)	0.321
Sex offender	0.24	(0.15)	0.120	0.31	(0.16)	0.051	0.30	(0.16)	0.052	0.30	(0.16)	0.056
Known mental illness status	0.06	(0.09)	0.478	0.00	(0.09)	0.982	0.00	(0.09)	0.964	0.02	(0.09)	0.858
<u>#Prior Prison Spells (ref=0)</u>												
1	1.08	(0.10)	0.000	0.95	(0.10)	0.000	0.95	(0.10)	0.000	0.96	(0.10)	0.000
2 or 3	1.36	(0.12)	0.000	1.26	(0.12)	0.000	1.24	(0.12)	0.000	1.25	(0.12)	0.000
4 or more	1.77	(0.17)	0.000	1.58	(0.19)	0.000	1.59	(0.19)	0.000	1.55	(0.19)	0.000
<u>Type of Offense (ref=Assaultive)</u>												
Drug Offender	-0.16	(0.11)	0.134	-0.14	(0.11)	0.201	-0.15	(0.11)	0.200	-0.13	(0.11)	0.265
Non-Assaultive Offender	0.12	(0.10)	0.215	0.12	(0.11)	0.241	0.13	(0.11)	0.241	0.14	(0.11)	0.190

Years in Prison, Prior Spell	0.03 (0.01)	0.018	0.03 (0.01)	0.045	0.03 (0.01)	0.025	0.05 (0.02)	0.001
<u>Substance Abuse History (ref=none)</u>								
Alcohol only	2.03 (0.17)	0.000	1.38 (0.17)	0.000	1.37 (0.17)	0.000	1.36 (0.17)	0.000
THC only	1.98 (0.15)	0.000	1.50 (0.15)	0.000	1.49 (0.15)	0.000	1.53 (0.15)	0.000
Hard Drugs only	1.86 (0.17)	0.000	1.32 (0.19)	0.000	1.34 (0.18)	0.000	1.34 (0.19)	0.000
Alcohol & THC	2.11 (0.15)	0.000	1.47 (0.16)	0.000	1.47 (0.16)	0.000	1.49 (0.16)	0.000
Hard Drugs & Alcohol/THC	2.13 (0.13)	0.000	1.63 (0.13)	0.000	1.63 (0.13)	0.000	1.65 (0.13)	0.000
<u>Year of release (ref=2003)</u>								
2000-2001	-0.22 (0.46)	0.638	-0.49 (0.52)	0.353	-0.38 (0.50)	0.454	-0.25 (0.50)	0.612
2002	-0.06 (0.16)	0.709	0.06 (0.12)	0.635	0.07 (0.11)	0.543	0.09 (0.12)	0.447

**Table 11. Cox Proportional Hazard Models of Time to 1st Return to Prison for New Offense for 1/6 subsample (n=1,848)**

	1st Neighborhood			Time-Varying Neighborhoods								
	(1)			(2)		(3)		(4)				
	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>
<u>Time-varying Neighb Characteristics</u>												
Cum Mean Disadvantage	-0.03	(0.05)	0.638	0.02	(0.07)	0.744	-0.02	(0.07)	0.809	0.00	(0.09)	0.977
Cum Mean Affluence	0.08	(0.08)	0.293	0.07	(0.08)	0.372	0.07	(0.08)	0.394	0.11	(0.09)	0.222
Cum Mean Residential Stability	0.00	(0.04)	0.939	-0.05	(0.06)	0.352	-0.05	(0.05)	0.340	-0.05	(0.07)	0.478
Cum Mean Young Age Factor	0.05	(0.04)	0.175	0.10	(0.07)	0.176	0.10	(0.07)	0.176	0.19	(0.10)	0.053
Rural	-0.02	(0.18)	0.901	-0.04	(0.19)	0.814	-0.10	(0.19)	0.601	-0.10	(0.19)	0.592
Central City	0.11	(0.12)	0.371	0.00	(0.14)	0.991	0.05	(0.14)	0.753	0.04	(0.14)	0.779
<u>Pre-Prison Neighborhood</u>												
Tract disadvantage										-0.05	(0.09)	0.579
Tract affluence										-0.01	(0.07)	0.880
Tract residential stability										0.00	(0.05)	0.991
Tract young age factor										-0.12	(0.08)	0.132
<u>Employment &amp; Earnings</u>												
Post-prison employment (cum avg)							-0.89	(0.13)	0.000	-0.91	(0.12)	0.000
Pre-prison employment	-0.19	(0.24)	0.446	-0.20	(0.32)	0.532	-0.12	(0.31)	0.692	-0.11	(0.31)	0.713
Pre-prison wages in quarter (x 10k)	0.17	(0.31)	0.576	0.14	(0.46)	0.767	0.31	(0.44)	0.482	0.30	(0.44)	0.501
<u>Age in 2003 (ref=18-25)</u>												
26-30	-0.26	(0.15)	0.076	-0.23	(0.15)	0.125	-0.27	(0.16)	0.090	-0.27	(0.16)	0.090
31-35	-0.68	(0.14)	0.000	-0.66	(0.16)	0.000	-0.64	(0.16)	0.000	-0.66	(0.17)	0.000
36-40	-0.92	(0.18)	0.000	-0.85	(0.18)	0.000	-0.82	(0.19)	0.000	-0.81	(0.19)	0.000
41-45	-1.35	(0.18)	0.000	-1.30	(0.18)	0.000	-1.20	(0.18)	0.000	-1.21	(0.18)	0.000
46-50	-1.81	(0.24)	0.000	-1.83	(0.27)	0.000	-1.85	(0.26)	0.000	-1.87	(0.26)	0.000
51-89	-1.91	(0.31)	0.000	-1.87	(0.34)	0.000	-1.97	(0.36)	0.000	-2.01	(0.36)	0.000
<u>Race (ref=white)</u>												
Black	0.07	(0.13)	0.598	-0.10	(0.13)	0.434	-0.13	(0.14)	0.336	-0.13	(0.14)	0.363
Other	0.20	(0.40)	0.612	0.02	(0.43)	0.971	-0.17	(0.47)	0.713	-0.13	(0.47)	0.785
Female offender	-0.05	(0.16)	0.768	-0.18	(0.18)	0.327	-0.11	(0.20)	0.590	-0.11	(0.19)	0.578
<u>Marital status</u>												
Married	-0.31	(0.19)	0.098	-0.22	(0.20)	0.269	-0.21	(0.21)	0.319	-0.19	(0.21)	0.375
Divorced or separated	0.26	(0.12)	0.032	0.28	(0.13)	0.035	0.24	(0.14)	0.087	0.27	(0.14)	0.053
Widowed, common law, unknown	0.51	(0.29)	0.073	0.64	(0.29)	0.026	0.51	(0.27)	0.060	0.51	(0.27)	0.059
Number of dependents	-0.04	(0.03)	0.211	-0.01	(0.03)	0.660	-0.02	(0.04)	0.651	-0.02	(0.04)	0.596
<u>Education in 2003 (ref=8 years or less)</u>												
Some High School	0.29	(0.21)	0.181	0.25	(0.20)	0.204	0.35	(0.20)	0.084	0.35	(0.21)	0.086
GED	0.37	(0.22)	0.089	0.28	(0.20)	0.169	0.40	(0.21)	0.052	0.41	(0.21)	0.053
High School Graduate	0.13	(0.22)	0.570	0.07	(0.22)	0.756	0.24	(0.22)	0.278	0.25	(0.22)	0.273
Some College or More	0.25	(0.32)	0.445	0.19	(0.35)	0.577	0.37	(0.30)	0.223	0.35	(0.31)	0.250
Sex offender	-0.06	(0.17)	0.726	-0.17	(0.19)	0.377	-0.20	(0.19)	0.283	-0.20	(0.19)	0.297
Known mental illness status	0.22	(0.11)	0.043	0.19	(0.11)	0.075	0.18	(0.11)	0.100	0.19	(0.11)	0.086
<u>#Prior Prison Spells (ref=0)</u>												
1	2.22	(0.16)	0.000	2.27	(0.17)	0.000	2.31	(0.17)	0.000	2.30	(0.17)	0.000
2 or 3	2.78	(0.16)	0.000	2.84	(0.16)	0.000	2.83	(0.16)	0.000	2.85	(0.16)	0.000
4 or more	3.32	(0.25)	0.000	3.19	(0.27)	0.000	3.23	(0.26)	0.000	3.20	(0.27)	0.000
<u>Type of Offense (ref=Assaultive)</u>												
Drug Offender	-0.58	(0.15)	0.000	-0.56	(0.16)	0.000	-0.57	(0.16)	0.000	-0.55	(0.16)	0.001
Non-Assaultive Offender	-0.18	(0.12)	0.153	-0.15	(0.13)	0.252	-0.15	(0.13)	0.268	-0.14	(0.13)	0.291

Years in Prison, Prior Spell	-0.02 (0.02)	<i>0.180</i>	-0.04 (0.02)	<i>0.042</i>	-0.03 (0.02)	<i>0.200</i>	-0.02 (0.02)	<i>0.441</i>
<u>Substance Abuse History (ref=none)</u>								
Alcohol only	2.14 (0.20)	<i>0.000</i>	1.59 (0.19)	<i>0.000</i>	1.64 (0.19)	<i>0.000</i>	1.64 (0.19)	<i>0.000</i>
THC only	1.83 (0.18)	<i>0.000</i>	1.35 (0.19)	<i>0.000</i>	1.34 (0.19)	<i>0.000</i>	1.33 (0.19)	<i>0.000</i>
Hard Drugs only	1.80 (0.21)	<i>0.000</i>	1.38 (0.21)	<i>0.000</i>	1.48 (0.22)	<i>0.000</i>	1.49 (0.22)	<i>0.000</i>
Alcohol & THC	2.11 (0.19)	<i>0.000</i>	1.48 (0.19)	<i>0.000</i>	1.50 (0.19)	<i>0.000</i>	1.50 (0.19)	<i>0.000</i>
Hard Drugs & Alcohol/THC	2.04 (0.16)	<i>0.000</i>	1.52 (0.15)	<i>0.000</i>	1.51 (0.15)	<i>0.000</i>	1.51 (0.15)	<i>0.000</i>
<u>Year of release (ref=2003)</u>								
2000-2001	-0.29 (0.60)	<i>0.624</i>	-0.48 (0.65)	<i>0.457</i>	-0.13 (0.59)	<i>0.818</i>	-0.10 (0.58)	<i>0.868</i>
2002	0.18 (0.18)	<i>0.304</i>	0.16 (0.23)	<i>0.488</i>	0.17 (0.25)	<i>0.511</i>	0.15 (0.26)	<i>0.570</i>



**Table 12. Cox Prop Hazard Models of Time to 1st Return to Prison for Technical Violation for 1/6 subsample (n=1,868)**

	1st Neighborhood			Time-Varying Neighborhoods								
	(1)			(2)		(3)		(4)				
	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>
<u>Post-Prison Neighb (weighted means)</u>												
Tract disadvantage	-0.02	(0.05)	0.729	0.03	(0.06)	0.589	0.00	(0.06)	0.947	0.05	(0.07)	0.478
Tract affluence	-0.15	(0.09)	0.119	-0.12	(0.08)	0.123	-0.13	(0.08)	0.113	-0.04	(0.10)	0.676
Tract residential stability	-0.03	(0.05)	0.583	-0.03	(0.05)	0.491	-0.04	(0.05)	0.465	0.00	(0.06)	0.967
Tract young age factor	-0.01	(0.06)	0.851	0.19	(0.08)	0.013	0.21	(0.08)	0.010	0.28	(0.09)	0.002
Rural	-0.31	(0.19)	0.106	-0.21	(0.20)	0.290	-0.27	(0.21)	0.194	-0.28	(0.21)	0.172
Central City	0.04	(0.13)	0.759	-0.10	(0.15)	0.475	-0.12	(0.15)	0.425	-0.12	(0.15)	0.428
<u>Pre-Prison Neighborhood</u>												
Tract disadvantage										-0.12	(0.09)	0.175
Tract affluence										-0.06	(0.06)	0.343
Tract residential stability										-0.05	(0.05)	0.306
Tract young age factor										-0.09	(0.07)	0.181
<u>Employment &amp; Earnings</u>												
Post-prison employment (cum avg)							-0.92	(0.11)	0.000	-0.92	(0.11)	0.000
Pre-prison employment	-0.11	(0.27)	0.679	-0.08	(0.28)	0.762	0.00	(0.27)	0.999	0.00	(0.26)	0.998
Pre-prison wages in quarter (x 10k)	-0.41	(0.49)	0.393	-0.46	(0.52)	0.374	-0.30	(0.48)	0.525	-0.32	(0.49)	0.522
<u>Age in 2003 (ref=18-25)</u>												
26-30	-0.19	(0.15)	0.216	-0.18	(0.15)	0.229	-0.22	(0.15)	0.144	-0.24	(0.15)	0.124
31-35	-0.17	(0.15)	0.252	-0.14	(0.15)	0.342	-0.12	(0.15)	0.428	-0.14	(0.15)	0.367
36-40	-0.06	(0.15)	0.669	-0.06	(0.15)	0.675	-0.07	(0.15)	0.665	-0.08	(0.16)	0.593
41-45	-0.34	(0.19)	0.079	-0.33	(0.19)	0.080	-0.33	(0.19)	0.088	-0.35	(0.19)	0.068
46-50	-0.69	(0.21)	0.001	-0.68	(0.21)	0.001	-0.74	(0.21)	0.000	-0.74	(0.21)	0.001
51-89	-0.65	(0.26)	0.011	-0.67	(0.25)	0.009	-0.82	(0.26)	0.001	-0.83	(0.26)	0.001
<u>Race (ref=white)</u>												
Black	0.13	(0.12)	0.275	0.10	(0.12)	0.403	0.07	(0.13)	0.599	0.09	(0.13)	0.506
Other	0.12	(0.40)	0.760	0.11	(0.39)	0.780	0.03	(0.41)	0.943	0.05	(0.41)	0.906
Female offender	-0.24	(0.19)	0.190	-0.24	(0.18)	0.202	-0.21	(0.19)	0.251	-0.23	(0.19)	0.218
<u>Marital status</u>												
Married	-0.03	(0.16)	0.834	-0.02	(0.16)	0.884	0.02	(0.16)	0.917	0.03	(0.17)	0.855
Divorced or separated	0.26	(0.13)	0.037	0.27	(0.13)	0.029	0.27	(0.13)	0.036	0.26	(0.13)	0.038
Widowed, common law, unknown	-0.17	(0.45)	0.703	-0.13	(0.47)	0.780	-0.22	(0.46)	0.630	-0.21	(0.47)	0.648
Number of dependents	0.01	(0.03)	0.819	0.01	(0.03)	0.762	0.00	(0.03)	0.986	0.00	(0.04)	0.978
<u>Education in 2003 (ref=8 years or less)</u>												
Some High School	0.07	(0.16)	0.640	0.08	(0.16)	0.611	0.16	(0.17)	0.335	0.16	(0.17)	0.345
GED	-0.06	(0.16)	0.720	-0.03	(0.16)	0.858	0.08	(0.17)	0.638	0.08	(0.17)	0.646
High School Graduate	-0.33	(0.19)	0.085	-0.31	(0.19)	0.103	-0.17	(0.20)	0.390	-0.17	(0.20)	0.399
Some College or More	0.10	(0.21)	0.645	0.18	(0.21)	0.396	0.30	(0.21)	0.162	0.29	(0.21)	0.184
Sex offender	0.48	(0.16)	0.003	0.43	(0.16)	0.007	0.43	(0.16)	0.008	0.43	(0.16)	0.008
Known mental illness status	0.19	(0.11)	0.100	0.22	(0.11)	0.055	0.18	(0.12)	0.121	0.19	(0.12)	0.097
<u>#Prior Prison Spells (ref=0)</u>												
1	0.27	(0.12)	0.019	0.27	(0.12)	0.021	0.31	(0.12)	0.009	0.31	(0.12)	0.009
2 or 3	0.19	(0.14)	0.166	0.18	(0.14)	0.180	0.19	(0.14)	0.165	0.20	(0.14)	0.157
4 or more	0.52	(0.22)	0.019	0.51	(0.22)	0.020	0.57	(0.22)	0.008	0.56	(0.22)	0.011
<u>Type of Offense (ref=Assaultive)</u>												
Drug Offender	-0.21	(0.13)	0.109	-0.21	(0.13)	0.118	-0.21	(0.14)	0.115	-0.22	(0.14)	0.106
Non-Assaultive Offender	0.10	(0.12)	0.413	0.13	(0.12)	0.309	0.14	(0.13)	0.275	0.13	(0.13)	0.312

Years in Prison, Prior Spell	0.00 (0.02)	0.996	0.00 (0.02)	0.845	0.01 (0.02)	0.506	0.02 (0.02)	0.296
<u>Substance Abuse History (ref=none)</u>								
Alcohol only	0.15 (0.22)	0.495	0.12 (0.22)	0.567	0.15 (0.22)	0.496	0.15 (0.22)	0.498
THC only	-0.06 (0.19)	0.771	-0.04 (0.19)	0.822	-0.10 (0.19)	0.611	-0.10 (0.19)	0.599
Hard Drugs only	0.40 (0.18)	0.029	0.37 (0.18)	0.046	0.45 (0.18)	0.014	0.47 (0.18)	0.010
Alcohol & THC	-0.12 (0.22)	0.574	-0.16 (0.22)	0.475	-0.18 (0.22)	0.421	-0.17 (0.23)	0.461
Hard Drugs & Alcohol/THC	0.21 (0.10)	0.041	0.18 (0.10)	0.078	0.17 (0.11)	0.108	0.17 (0.11)	0.102
<u>Year of release (ref=2003)</u>								
2000-2001	-1.73 (0.81)	0.032	-1.64 (0.80)	0.040	-1.38 (0.80)	0.085	-1.37 (0.77)	0.076
2002	-0.78 (0.11)	0.000	-0.71 (0.13)	0.000	-0.63 (0.13)	0.000	-0.65 (0.13)	0.000

**Table 13. Cox Proportional Hazard Models of Time to 1st Abscond for 1/6 subsample (n=1,868)**

	1st Neighborhood			Time-Varying Neighborhoods								
	(1)			(2)			(3)			(4)		
	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>	Coef	(SE)	<i>p-value</i>
<u>Post-Prison Neighb (weighted means)</u>												
Tract disadvantage	-0.03	(0.05)	<i>0.583</i>	0.01	(0.07)	<i>0.864</i>	0.00	(0.07)	<i>0.966</i>	0.01	(0.09)	<i>0.946</i>
Tract affluence	-0.09	(0.08)	<i>0.283</i>	-0.02	(0.07)	<i>0.807</i>	-0.03	(0.07)	<i>0.722</i>	0.08	(0.09)	<i>0.392</i>
Tract residential stability	-0.13	(0.06)	<i>0.038</i>	-0.17	(0.06)	<i>0.003</i>	-0.17	(0.06)	<i>0.003</i>	-0.14	(0.08)	<i>0.085</i>
Tract young age factor	0.03	(0.05)	<i>0.456</i>	0.15	(0.07)	<i>0.041</i>	0.16	(0.07)	<i>0.032</i>	0.19	(0.10)	<i>0.046</i>
Rural	-0.33	(0.20)	<i>0.087</i>	-0.23	(0.20)	<i>0.245</i>	-0.26	(0.20)	<i>0.193</i>	-0.27	(0.20)	<i>0.181</i>
Central City	-0.05	(0.11)	<i>0.653</i>	-0.25	(0.12)	<i>0.041</i>	-0.25	(0.13)	<i>0.047</i>	-0.25	(0.13)	<i>0.045</i>
<u>Pre-Prison Neighborhood</u>												
Tract disadvantage										-0.15	(0.09)	<i>0.091</i>
Tract affluence										0.00	(0.06)	<i>0.965</i>
Tract residential stability										-0.04	(0.08)	<i>0.589</i>
Tract young age factor										-0.04	(0.12)	<i>0.705</i>
<u>Employment &amp; Earnings</u>												
Post-prison employment (cum avg)							-0.40	(0.11)	<i>0.000</i>	-0.40	(0.11)	<i>0.000</i>
Pre-prison employment	-0.26	(0.25)	<i>0.302</i>	-0.27	(0.26)	<i>0.299</i>	-0.21	(0.26)	<i>0.424</i>	-0.21	(0.26)	<i>0.412</i>
Pre-prison wages in quarter (x 10k)	-0.01	(0.24)	<i>0.980</i>	-0.02	(0.25)	<i>0.931</i>	0.02	(0.24)	<i>0.940</i>	0.02	(0.24)	<i>0.925</i>
<u>Age in 2003 (ref=18-25)</u>												
26-30	-0.29	(0.15)	<i>0.049</i>	-0.30	(0.15)	<i>0.042</i>	-0.32	(0.15)	<i>0.032</i>	-0.34	(0.15)	<i>0.024</i>
31-35	-0.08	(0.14)	<i>0.563</i>	-0.10	(0.15)	<i>0.502</i>	-0.09	(0.15)	<i>0.549</i>	-0.11	(0.15)	<i>0.451</i>
36-40	-0.23	(0.15)	<i>0.130</i>	-0.21	(0.15)	<i>0.160</i>	-0.21	(0.15)	<i>0.160</i>	-0.23	(0.15)	<i>0.137</i>
41-45	-0.41	(0.17)	<i>0.016</i>	-0.39	(0.17)	<i>0.021</i>	-0.39	(0.17)	<i>0.024</i>	-0.41	(0.17)	<i>0.016</i>
46-50	-0.34	(0.21)	<i>0.095</i>	-0.35	(0.20)	<i>0.083</i>	-0.38	(0.20)	<i>0.066</i>	-0.38	(0.21)	<i>0.068</i>
51-89	-1.06	(0.28)	<i>0.000</i>	-1.07	(0.28)	<i>0.000</i>	-1.13	(0.27)	<i>0.000</i>	-1.16	(0.28)	<i>0.000</i>
<u>Race (ref=white)</u>												
Black	0.05	(0.12)	<i>0.671</i>	0.08	(0.14)	<i>0.581</i>	0.06	(0.14)	<i>0.687</i>	0.05	(0.14)	<i>0.698</i>
Other	-0.06	(0.39)	<i>0.874</i>	-0.07	(0.39)	<i>0.853</i>	-0.12	(0.39)	<i>0.766</i>	-0.09	(0.39)	<i>0.816</i>
Female offender	-0.27	(0.17)	<i>0.117</i>	-0.28	(0.17)	<i>0.097</i>	-0.28	(0.17)	<i>0.104</i>	-0.29	(0.17)	<i>0.090</i>
<u>Marital status</u>												
Married	-0.20	(0.15)	<i>0.197</i>	-0.16	(0.15)	<i>0.294</i>	-0.14	(0.16)	<i>0.383</i>	-0.12	(0.15)	<i>0.429</i>
Divorced or separated	-0.13	(0.14)	<i>0.336</i>	-0.13	(0.14)	<i>0.348</i>	-0.11	(0.13)	<i>0.409</i>	-0.13	(0.14)	<i>0.357</i>
Widowed, common law, unknown	0.34	(0.51)	<i>0.507</i>	0.35	(0.50)	<i>0.489</i>	0.27	(0.51)	<i>0.598</i>	0.28	(0.52)	<i>0.584</i>
Number of dependents	-0.06	(0.04)	<i>0.098</i>	-0.06	(0.04)	<i>0.119</i>	-0.06	(0.04)	<i>0.073</i>	-0.06	(0.04)	<i>0.069</i>
<u>Education in 2003 (ref=8 years or less)</u>												
Some High School	-0.25	(0.15)	<i>0.092</i>	-0.22	(0.15)	<i>0.141</i>	-0.19	(0.15)	<i>0.208</i>	-0.20	(0.15)	<i>0.188</i>
GED	-0.18	(0.16)	<i>0.262</i>	-0.16	(0.16)	<i>0.313</i>	-0.13	(0.16)	<i>0.421</i>	-0.14	(0.16)	<i>0.400</i>
High School Graduate	-0.64	(0.18)	<i>0.000</i>	-0.63	(0.18)	<i>0.001</i>	-0.58	(0.18)	<i>0.002</i>	-0.58	(0.18)	<i>0.002</i>
Some College or More	-0.34	(0.28)	<i>0.236</i>	-0.32	(0.29)	<i>0.274</i>	-0.27	(0.29)	<i>0.357</i>	-0.27	(0.29)	<i>0.349</i>
Sex offender	-0.76	(0.24)	<i>0.001</i>	-0.79	(0.23)	<i>0.001</i>	-0.80	(0.24)	<i>0.001</i>	-0.80	(0.24)	<i>0.001</i>
Known mental illness status	0.04	(0.12)	<i>0.758</i>	0.06	(0.12)	<i>0.616</i>	0.04	(0.12)	<i>0.730</i>	0.04	(0.12)	<i>0.707</i>
<u>#Prior Prison Spells (ref=0)</u>												
1	0.34	(0.11)	<i>0.003</i>	0.36	(0.11)	<i>0.001</i>	0.38	(0.11)	<i>0.001</i>	0.38	(0.11)	<i>0.001</i>
2 or 3	0.48	(0.13)	<i>0.000</i>	0.49	(0.12)	<i>0.000</i>	0.49	(0.12)	<i>0.000</i>	0.50	(0.13)	<i>0.000</i>
4 or more	0.57	(0.23)	<i>0.012</i>	0.56	(0.23)	<i>0.015</i>	0.55	(0.23)	<i>0.016</i>	0.57	(0.23)	<i>0.014</i>
<u>Type of Offense (ref=Assaultive)</u>												
Drug Offender	-0.11	(0.15)	<i>0.459</i>	-0.10	(0.15)	<i>0.509</i>	-0.10	(0.15)	<i>0.508</i>	-0.10	(0.15)	<i>0.504</i>
Non-Assaultive Offender	0.15	(0.12)	<i>0.210</i>	0.15	(0.12)	<i>0.208</i>	0.16	(0.12)	<i>0.192</i>	0.15	(0.12)	<i>0.232</i>

Years in Prison, Prior Spell	-0.10 (0.02)	0.000	-0.10 (0.02)	0.000	-0.09 (0.02)	0.000	-0.09 (0.02)	0.000
<u>Substance Abuse History (ref=none)</u>								
Alcohol only	-0.02 (0.21)	0.932	-0.05 (0.21)	0.808	-0.04 (0.21)	0.836	-0.04 (0.22)	0.856
THC only	-0.12 (0.19)	0.536	-0.12 (0.18)	0.519	-0.14 (0.18)	0.439	-0.15 (0.18)	0.398
Hard Drugs only	0.44 (0.20)	0.023	0.41 (0.19)	0.036	0.45 (0.20)	0.020	0.46 (0.19)	0.018
Alcohol & THC	0.04 (0.20)	0.833	-0.01 (0.21)	0.957	-0.02 (0.21)	0.924	-0.01 (0.21)	0.960
Hard Drugs & Alcohol/THC	0.37 (0.11)	0.000	0.33 (0.11)	0.002	0.33 (0.11)	0.002	0.33 (0.11)	0.002
<u>Year of release (ref=2003)</u>								
2000-2001	-0.50 (0.49)	0.310	-0.44 (0.49)	0.368	-0.32 (0.49)	0.515	-0.37 (0.54)	0.488
2002	-0.70 (0.16)	0.000	-0.59 (0.13)	0.000	-0.54 (0.13)	0.000	-0.58 (0.17)	0.000

**Table 14. Growth Curve Logit Models of Quarterly Formal Employment Among Michigan Parolees**

	(1)		(2)		(3)		(4)		(5)	
	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend
<u>1st Post-Prison Neighborhood</u>										
Tract Disadvantage	-0.241*** (0.015)	-0.002 (0.002)	-0.131*** (0.018)	-0.004 (0.002)	-0.132*** (0.018)	-0.005 (0.003)	-0.116*** (0.018)	-0.004 (0.003)	-0.067*** (0.020)	-0.002 (0.003)
Tract Affluence	0.112*** (0.029)	0.002 (0.004)	0.133*** (0.028)	0.001 (0.004)	0.122*** (0.028)	-0.001 (0.004)	0.104*** (0.028)	-0.002 (0.004)	0.076** (0.030)	-0.002 (0.004)
Tract Residential Stability	-0.003 (0.017)	0.001 (0.003)	-0.018 (0.016)	0.001 (0.003)	-0.030* (0.016)	0.000 (0.003)	-0.028 (0.015)	-0.001 (0.003)	-0.028 (0.018)	-0.001 (0.003)
Tract Young Age Factor	0.024 (0.018)	-0.003 (0.003)	0.034 (0.018)	-0.003 (0.003)	0.037* (0.018)	-0.003 (0.003)	0.042* (0.018)	-0.003 (0.003)	0.034 (0.018)	-0.003 (0.003)
Rural (ref: suburban)									0.028 (0.071)	-0.012 (0.009)
Central City									-0.133** (0.050)	-0.013 (0.007)
County Unemployment Rate									-0.047*** (0.013)	0.002 (0.002)
County Unemp Rate Squared									0.002 (0.004)	0.000 (0.000)
<u>Timing Controls</u>										
Days From Release to 1st Quarter (x1k)	0.743 (0.615)	-0.017 (0.086)	0.673 (0.623)	-0.013 (0.086)	0.617 (0.624)	-0.011 (0.086)	0.451 (0.630)	-0.005 (0.086)	0.448 (0.631)	0.001 (0.086)
Released 2000,2001	-4.244*** (0.173)	0.477*** (0.026)	-4.349*** (0.191)	0.488*** (0.028)	-4.426*** (0.187)	0.490*** (0.027)	-4.481*** (0.190)	0.497*** (0.027)	-4.558*** (0.210)	0.502*** (0.027)
Released 2002	-1.185*** (0.084)	0.148*** (0.002)	-1.150*** (0.069)	0.147*** (0.003)	-1.165*** (0.046)	0.150*** (0.004)	-1.205*** (0.050)	0.153*** (0.004)	-1.216*** (0.052)	0.153*** (0.004)
Released on EM	-0.024 (0.095)	0.008 (0.014)	-0.107 (0.073)	0.009 (0.013)	-0.063 (0.083)	0.008 (0.015)	-0.068 (0.063)	0.008 (0.016)	-0.060 (0.064)	0.007 (0.016)
Released to Center	0.205 (0.166)	0.043* (0.019)	0.155 (0.119)	0.047** (0.017)	0.175 (0.124)	0.044** (0.017)	0.170 (0.096)	0.043* (0.018)	0.184** (0.068)	0.042* (0.018)
Calendar Quarter 2 (ref: quarter 1)	-0.054*** (0.013)		-0.055*** (0.013)		-0.055*** (0.013)		-0.056*** (0.013)		-0.056*** (0.013)	
Calendar Quarter 3	0.003 (0.014)		0.004 (0.014)		0.004 (0.014)		0.004 (0.014)		0.005 (0.014)	
Calendar Quarter 4	0.131*** (0.013)		0.133*** (0.014)		0.135*** (0.014)		0.137*** (0.014)		0.138*** (0.014)	
Quarter Quadratic Trend	-0.017*** (0.001)		-0.017*** (0.001)		-0.017*** (0.001)		-0.017*** (0.001)		-0.017*** (0.001)	
<u>Demographics</u>										
Release Age 26-30 (ref: 17-25)			0.068 (0.056)	0.008 (0.008)	-0.012 (0.058)	0.006 (0.008)	-0.035 (0.056)	0.005 (0.008)	-0.035 (0.056)	0.005 (0.008)
Release Age 31-35			0.005 (0.053)	0.013 (0.008)	-0.067 (0.056)	0.014 (0.008)	-0.133* (0.057)	0.011 (0.008)	-0.130* (0.057)	0.011 (0.008)
Release Age 36-40			-0.014 (0.058)	0.005 (0.008)	-0.082 (0.061)	0.009 (0.009)	-0.160** (0.061)	0.005 (0.009)	-0.154* (0.061)	0.004 (0.009)
Release Age 41-45			-0.108 (0.060)	0.004 (0.009)	-0.169*** (0.063)	0.009 (0.009)	-0.235*** (0.064)	0.004 (0.009)	-0.236*** (0.063)	0.003 (0.009)
Release Age 46-50			-0.347*** (0.069)	0.013 (0.009)	-0.402*** (0.074)	0.017 (0.010)	-0.453*** (0.074)	0.010 (0.010)	-0.452*** (0.074)	0.010 (0.010)
Release Age 51-89			-0.858*** (0.084)	0.038*** (0.011)	-0.981*** (0.088)	0.038** (0.012)	-0.977*** (0.091)	0.032** (0.012)	-0.974*** (0.091)	0.032** (0.012)
Black			-0.368*** (0.047)	0.010 (0.007)	-0.386*** (0.048)	0.010 (0.007)	-0.377*** (0.048)	0.009 (0.007)	-0.362*** (0.047)	0.009 (0.007)
Other Race (ref: white)			-0.082 (0.110)	0.003 (0.019)	-0.135 (0.111)	-0.003 (0.018)	-0.095 (0.112)	-0.003 (0.018)	-0.096 (0.113)	-0.002 (0.018)
Female			0.026 (0.096)	-0.005 (0.012)	0.136 (0.095)	-0.007 (0.013)	0.138 (0.095)	-0.007 (0.012)	0.138 (0.096)	-0.007 (0.013)
Married (ref: Single)			0.140** (0.051)	0.014 (0.008)	0.121* (0.051)	0.013 (0.008)	0.074 (0.052)	0.011 (0.008)	0.075 (0.052)	0.011 (0.008)
Divorced/Separated			0.075 (0.047)	-0.004 (0.007)	0.114* (0.047)	-0.003 (0.007)	0.092 (0.048)	-0.004 (0.007)	0.090 (0.048)	-0.004 (0.007)
Other MS (Widowed, Common Law)			-0.370* (0.157)	0.035 (0.018)	-0.279 (0.152)	0.041* (0.018)	-0.326* (0.146)	0.043* (0.018)	-0.321* (0.147)	0.044* (0.019)

Number Dependents	-0.013 (0.014)	-0.005* (0.002)	0.003 (0.014)	-0.005* (0.002)	0.010 (0.014)	-0.004* (0.002)	0.010 (0.014)	-0.004* (0.002)		
Number Dependents X Female	-0.050 (0.044)	0.005 (0.006)	-0.061 (0.044)	0.005 (0.006)	-0.064 (0.044)	0.005 (0.006)	-0.067 (0.044)	0.005 (0.006)		
<u>Criminal Justice Characteristics</u>										
Sex Offender			0.241*** (0.066)	-0.006 (0.010)	0.214** (0.067)	-0.133* (0.064)	0.213** (0.067)	-0.006 (0.010)		
Known Mental Illness			-0.194*** (0.042)	-0.008 (0.006)	-0.183*** (0.042)	0.214*** (0.039)	-0.189*** (0.042)	-0.007 (0.006)		
Drug Offender (ref: Assaultive)			-0.232*** (0.049)	0.004 (0.007)	-0.204*** (0.049)	0.115** (0.042)	-0.212*** (0.049)	0.004 (0.007)		
Non-Assaultive Offender			-0.135*** (0.041)	-0.005 (0.006)	-0.125** (0.040)	0.190*** (0.039)	-0.126** (0.040)	-0.004 (0.006)		
2nd Prison Sentence (ref: First Sentence)			-0.103** (0.040)	-0.013* (0.006)	-0.130** (0.041)	0.143*** (0.037)	-0.129** (0.041)	-0.010 (0.006)		
3rd or 4th Prison Sentence			-0.160** (0.056)	-0.027*** (0.008)	-0.190*** (0.057)	0.311*** (0.051)	-0.189*** (0.057)	-0.022** (0.008)		
5th or more Prison Sentence			-0.118 (0.074)	-0.023* (0.011)	-0.156* (0.075)	0.239** (0.074)	-0.154* (0.076)	-0.017 (0.012)		
Years in Prison, Prior Spell			0.058*** (0.005)	0.000 (0.001)	0.061*** (0.005)	-0.062*** (0.005)	0.062*** (0.005)	0.000 (0.001)		
SA History: Alcohol (vs. None)			-0.020 (0.080)	0.003 (0.011)	-0.069 (0.079)	0.011 (0.070)	-0.075 (0.079)	0.003 (0.012)		
SA History: THC			-0.096 (0.060)	-0.026** (0.010)	-0.066 (0.061)	0.205*** (0.059)	-0.066 (0.061)	-0.026** (0.010)		
SA History: Hard Drugs			-0.148 (0.081)	-0.010 (0.011)	-0.141 (0.082)	0.212** (0.070)	-0.144 (0.082)	-0.011 (0.011)		
SA History: Alcohol & THC			-0.015 (0.069)	-0.014 (0.010)	0.001 (0.069)	0.079 (0.068)	-0.012 (0.069)	-0.013 (0.010)		
SA History: Hard Drugs & Alcohol/THC			-0.051 (0.044)	-0.036*** (0.006)	-0.044 (0.043)	0.166*** (0.038)	-0.053 (0.043)	-0.036*** (0.006)		
<u>Human Capital</u>										
Some High School (ref: 8 years or less)					0.139* (0.063)	0.015 (0.009)	0.135* (0.063)	0.015 (0.009)		
GED					0.337*** (0.065)	0.000 (0.009)	0.332*** (0.065)	0.001 (0.009)		
High School Graduate					0.421*** (0.067)	0.024* (0.010)	0.411*** (0.067)	0.024* (0.009)		
Some College or More					0.452*** (0.088)	0.026* (0.013)	0.443*** (0.088)	0.027* (0.013)		
Pre-Prison Quarter Formal Employment					0.514*** (0.043)	-0.008 (0.006)	0.515*** (0.043)	-0.008 (0.006)		
Pre-Prison Quarter Formal Wages (\$)					-0.000* (0.000)	0.000* (0.000)	-0.000* (0.000)	0.000* (0.000)		
Constant	-0.796*** (0.032)	0.167*** (0.014)	-0.633*** (0.055)	0.157*** (0.016)	-0.366*** (0.072)	0.178*** (0.017)	-0.814*** (0.093)	0.172*** (0.019)	-0.792*** (0.094)	0.177*** (0.019)
<u>Variance Components</u>										
Individual Level	2.822	0.067	2.797	0.067	2.730	0.066	2.668	0.066	2.675	0.066
Neighborhood Level	0.082	0.001	0.067	0.030	0.032	0.001	0.024	0.002	0.009	0.001
N person-quarters	97,369		97,369		97,369		97,369		97,369	
N individuals	10613		10613		10613		10613		10613	
N tracts	2,105		2,105		2,105		2,105		2,105	

Robust SEs in parentheses; \* p < 0.05, \*\* p < 0.01 \*\*\* p < 0.001

**Table 15. Growth Curve Models of Quarterly Ln(Wages) Among Michigan Parolees**

	(1)		(2)		(3)		(4)		(5)	
	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend
<u>1st Post-Prison Neighborhood</u>										
Tract Disadvantage	-0.436*** (0.026)	-0.007* (0.003)	-0.243*** (0.031)	-0.009* (0.004)	-0.240*** (0.031)	-0.008 (0.004)	-0.211*** (0.030)	-0.007 (0.004)	-0.131*** (0.035)	-0.003 (0.005)
Tract Affluence	0.235*** (0.056)	0.004 (0.008)	0.273*** (0.053)	0.003 (0.008)	0.251*** (0.053)	-0.000 (0.008)	0.216*** (0.052)	-0.003 (0.008)	0.166** (0.055)	-0.004 (0.008)
Tract Residential Stability	0.014 (0.031)	0.004 (0.005)	-0.016 (0.030)	0.004 (0.004)	-0.040 (0.029)	0.003 (0.004)	-0.037 (0.028)	0.002 (0.004)	-0.032 (0.031)	0.000 (0.005)
Tract Young Age Factor	0.037 (0.032)	-0.003 (0.004)	0.056 (0.031)	-0.003 (0.005)	0.058 (0.031)	-0.003 (0.005)	0.067* (0.031)	-0.003 (0.005)	0.057 (0.031)	-0.003 (0.005)
Rural (ref: suburban)									0.045 (0.132)	-0.029 (0.017)
Central City									-0.236** (0.088)	-0.028* (0.012)
County Unemployment Rate									-0.073** (0.023)	0.003 (0.003)
County Unemp Rate Squared									0.003 (0.007)	0.001 (0.001)
<u>Timing Controls</u>										
Days From Release to 1st Quarter (x1k)	1.874 (1.100)	-0.077 (0.158)	1.782 (1.105)	-0.080 (0.156)	1.788 (1.095)	-0.081 (0.155)	1.552 (1.095)	-0.079 (0.153)	1.541 (1.094)	-0.069 (0.153)
Released 2000,2001	-3.601*** (0.184)	0.401*** (0.036)	-3.569*** (0.183)	0.397*** (0.037)	-3.632*** (0.180)	0.391*** (0.037)	-3.611*** (0.190)	0.390*** (0.036)	-3.641*** (0.200)	0.388*** (0.034)
Released 2002	-1.720*** (0.180)	0.225*** (0.005)	-1.658*** (0.151)	0.223*** (0.006)	-1.675*** (0.106)	0.224*** (0.008)	-1.702*** (0.115)	0.224*** (0.008)	-1.704*** (0.113)	0.224*** (0.008)
Released on EM	-0.025 (0.153)	0.015 (0.025)	-0.152 (0.112)	0.015 (0.024)	-0.081 (0.130)	0.014 (0.028)	-0.101 (0.100)	0.013 (0.028)	-0.097 (0.103)	0.013 (0.029)
Released to Center	0.510 (0.262)	0.061* (0.024)	0.402* (0.195)	0.065** (0.023)	0.418* (0.194)	0.061** (0.023)	0.391* (0.155)	0.060* (0.025)	0.382** (0.139)	0.059* (0.028)
Calendar Quarter 2 (ref: quarter 1)	-0.038 (0.022)		-0.037 (0.022)		-0.037 (0.022)		-0.037 (0.022)		-0.037 (0.022)	
Calendar Quarter 3	0.055* (0.023)		0.055* (0.023)		0.055* (0.023)		0.055* (0.023)		0.056* (0.023)	
Calendar Quarter 4	0.280*** (0.025)		0.280*** (0.025)		0.280*** (0.025)		0.280*** (0.024)		0.280*** (0.024)	
Quarter Quadratic Trend	-0.028*** (0.002)		-0.028*** (0.002)		-0.028*** (0.002)		-0.028*** (0.002)		-0.028*** (0.002)	
<u>Demographics</u>										
Release Age 26-30 (ref: 17-25)			0.191 (0.099)	0.016 (0.014)	0.054 (0.100)	0.012 (0.015)	0.010 (0.097)	0.010 (0.014)	0.012 (0.097)	0.009 (0.014)
Release Age 31-35			0.104 (0.094)	0.028 (0.014)	-0.009 (0.097)	0.028 (0.015)	-0.127 (0.098)	0.020 (0.015)	-0.121 (0.098)	0.019 (0.015)
Release Age 36-40			0.096 (0.102)	0.007 (0.015)	0.010 (0.107)	0.013 (0.016)	-0.123 (0.105)	0.003 (0.016)	-0.114 (0.105)	0.003 (0.016)
Release Age 41-45			-0.006 (0.106)	0.000 (0.015)	-0.084 (0.110)	0.009 (0.016)	-0.202 (0.109)	-0.003 (0.016)	-0.202 (0.109)	-0.004 (0.016)
Release Age 46-50			-0.372** (0.116)	0.018 (0.016)	-0.437*** (0.123)	0.025 (0.017)	-0.534*** (0.122)	0.011 (0.017)	-0.529*** (0.122)	0.009 (0.017)
Release Age 51-89			-1.089* (0.132)	0.031 (0.020)	-1.233*** (0.142)	0.027 (0.021)	-1.234*** (0.145)	0.015 (0.021)	-1.224*** (0.144)	0.015 (0.021)
Black			-0.672* (0.091)	0.008 (0.014)	-0.699*** (0.090)	0.009 (0.013)	-0.677*** (0.088)	0.008 (0.013)	-0.645*** (0.089)	0.008 (0.014)
Other Race (ref: white)			-0.170 (0.200)	0.004 (0.034)	-0.264 (0.200)	-0.009 (0.033)	-0.199 (0.201)	-0.007 (0.033)	-0.198 (0.201)	-0.004 (0.033)
Female			-0.067 (0.162)	-0.002 (0.021)	0.088 (0.160)	-0.002 (0.021)	0.088 (0.160)	-0.002 (0.021)	0.091 (0.161)	-0.001 (0.021)
Married (ref: Single)			0.251** (0.091)	0.035* (0.015)	0.212* (0.091)	0.032* (0.016)	0.130 (0.090)	0.027 (0.015)	0.129 (0.090)	0.027 (0.015)
Divorced/Separated			0.128 (0.082)	-0.003 (0.012)	0.189* (0.082)	-0.000 (0.012)	0.149 (0.083)	-0.004 (0.012)	0.145 (0.083)	-0.004 (0.012)
Other MS (Widowed, Common Law)			-0.434 (0.222)	0.027 (0.029)	-0.243 (0.211)	0.038 (0.028)	-0.293 (0.204)	0.037 (0.028)	-0.295 (0.204)	0.039 (0.028)

Number Dependents	-0.013	-0.011**	0.011	-0.010**	0.024	-0.009*	0.024	-0.009*		
	(0.024)	(0.004)	(0.024)	(0.004)	(0.024)	(0.004)	(0.024)	(0.004)		
Number Dependents X Female	-0.082	0.008	-0.093	0.007	-0.097	0.006	-0.101	0.006		
	(0.070)	(0.009)	(0.069)	(0.009)	(0.069)	(0.009)	(0.069)	(0.009)		
<u>Criminal Justice Characteristics</u>										
Sex Offender			0.403***	-0.005	0.356**	-0.007	0.355**	-0.005		
			(0.121)	(0.018)	(0.121)	(0.018)	(0.121)	(0.018)		
Known Mental Illness			-0.340***	-0.018	-0.318***	-0.017	-0.323***	-0.016		
			(0.072)	(0.011)	(0.071)	(0.011)	(0.070)	(0.011)		
Drug Offender (ref: Assaultive)			-0.345***	0.001	-0.298***	0.002	-0.306***	0.003		
			(0.085)	(0.013)	(0.084)	(0.013)	(0.083)	(0.013)		
Non-Assaultive Offender			-0.262***	-0.009	-0.242***	-0.008	-0.242***	-0.007		
			(0.072)	(0.011)	(0.070)	(0.011)	(0.070)	(0.011)		
2nd Prison Sentence (ref: First Sentence)			-0.203**	-0.030**	-0.230**	-0.025*	-0.230**	-0.025*		
			(0.070)	(0.011)	(0.071)	(0.011)	(0.071)	(0.011)		
3rd or 4th Prison Sentence			-0.351***	-0.052***	-0.387***	-0.044**	-0.383***	-0.045***		
			(0.093)	(0.013)	(0.094)	(0.013)	(0.094)	(0.013)		
5th or more Prison Sentence			-0.281*	-0.040*	-0.327**	-0.030	-0.323**	-0.030		
			(0.119)	(0.018)	(0.119)	(0.019)	(0.119)	(0.019)		
Years in Prison, Prior Spell			0.096***	0.002	0.099***	0.002	0.099***	0.002		
			(0.010)	(0.002)	(0.010)	(0.002)	(0.010)	(0.002)		
SA History: Alcohol (vs. None)			0.028	0.005	-0.043	0.003	-0.051	0.002		
			(0.147)	(0.021)	(0.144)	(0.021)	(0.143)	(0.021)		
SA History: THC			-0.200	-0.049**	-0.153	-0.047**	-0.155	-0.046**		
			(0.102)	(0.017)	(0.102)	(0.016)	(0.102)	(0.016)		
SA History: Hard Drugs			-0.239	-0.026	-0.236	-0.025	-0.242*	-0.026		
			(0.123)	(0.018)	(0.123)	(0.018)	(0.122)	(0.018)		
SA History: Alcohol & THC			-0.061	-0.029	-0.037	-0.026	-0.054	-0.027		
			(0.121)	(0.018)	(0.120)	(0.018)	(0.119)	(0.018)		
SA History: Hard Drugs & Alcohol/THC			-0.124	-0.067***	-0.116	-0.065***	-0.131	-0.065***		
			(0.072)	(0.011)	(0.071)	(0.011)	(0.071)	(0.011)		
<u>Human Capital</u>										
Some High School (ref: 8 years or less)					0.178	0.025	0.171	0.025		
					(0.105)	(0.015)	(0.104)	(0.015)		
GED					0.453***	0.009	0.445***	0.009		
					(0.108)	(0.016)	(0.108)	(0.016)		
High School Graduate					0.663***	0.053***	0.646***	0.053**		
					(0.114)	(0.016)	(0.114)	(0.016)		
Some College or More					0.734***	0.057*	0.719***	0.057*		
					(0.155)	(0.023)	(0.155)	(0.023)		
Pre-Prison Quarter Formal Employment					0.810***	-0.001	0.809***	-0.001		
					(0.075)	(0.012)	(0.075)	(0.012)		
Pre-Prison Quarter Formal Wages (\$)					-0.000	0.000*	-0.000	0.000**		
					(0.000)	(0.000)	(0.000)	(0.000)		
Constant	2.346***	0.294***	2.552***	0.275***	3.055***	0.317***	2.404***	0.294***	2.442***	0.303***
	(0.054)	(0.021)	(0.093)	(0.023)	(0.124)	(0.027)	(0.153)	(0.029)	(0.156)	(0.030)
<u>Variance Components</u>										
Quarter Level	5.630		5.630		5.628		5.628		5.628	
Individual Level	6.302	0.101	6.214	0.100	6.001	0.099	5.826	0.098	5.825	0.098
Neighborhood Level	0.205	0.000	0.103	0.000	0.110	0.000	0.088	0.000	0.067	0.000
N person-quarters	97,369		97,369		97,369		97,369		97,369	
N individuals	10613		10613		10613		10613		10613	
N tracts	2,105		2,105		2,105		2,105		2,105	

Robust SEs in parentheses; \* p < 0.05, \*\* p < 0.01 \*\*\* p < 0.001



**Table 16. Growth Curve Logit Models of Quarterly Formal Income Below the Poverty Line Among Michigan Parolees**

	(1)		(2)		(3)		(4)		(5)	
	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend	Intercept	Linear Trend
<u>1st Post-Prison Neighborhood</u>										
Tract Disadvantage	0.258*** (0.014)	-0.000 (0.002)	0.142*** (0.018)	0.002 (0.003)	0.144*** (0.018)	0.002 (0.003)	0.129*** (0.018)	0.002 (0.003)	0.081*** (0.020)	0.000 (0.003)
Tract Affluence	-0.143*** (0.028)	0.001 (0.003)	-0.172*** (0.027)	0.002 (0.004)	-0.156*** (0.027)	0.003 (0.004)	-0.133*** (0.027)	0.004 (0.004)	-0.094** (0.029)	0.005 (0.004)
Tract Residential Stability	-0.019 (0.018)	-0.001 (0.002)	0.001 (0.019)	-0.001 (0.002)	0.016 (0.018)	-0.000 (0.002)	0.016 (0.018)	0.000 (0.002)	0.008 (0.019)	0.001 (0.003)
Tract Young Age Factor	-0.007 (0.017)	0.001 (0.002)	-0.029 (0.017)	0.001 (0.003)	-0.027 (0.017)	0.001 (0.003)	-0.031 (0.017)	0.001 (0.003)	-0.024 (0.018)	0.001 (0.003)
Rural (ref: suburban)									0.011 (0.070)	0.016 (0.009)
Central City									0.132** (0.046)	0.014* (0.006)
County Unemployment Rate									0.050*** (0.013)	-0.003 (0.002)
County Unemp Rate Squared									-0.005 (0.003)	-0.000 (0.000)
<u>Timing Controls</u>										
Days From Release to 1st Quarter (x1k)	-1.809** (0.605)	0.138 (0.080)	-1.615** (0.617)	0.133 (0.080)	-1.612* (0.627)	0.132 (0.080)	-1.473* (0.634)	0.125 (0.080)	-0.001* (0.001)	0.000 (0.000)
Released 2000,2001	3.418*** (0.125)	-0.416*** (0.020)	3.471*** (0.135)	-0.417*** (0.023)	3.550*** (0.125)	-0.420*** (0.023)	3.579*** (0.138)	-0.425*** (0.022)	3.623*** (0.135)	-0.428*** (0.022)
Released 2002	0.743*** (0.097)	-0.109*** (0.006)	0.730*** (0.079)	-0.108*** (0.004)	0.739*** (0.064)	-0.111*** (0.005)	0.773*** (0.071)	-0.113*** (0.006)	0.778*** (0.066)	-0.114*** (0.005)
Released on EM	0.007 (0.040)	-0.009 (0.012)	0.058* (0.025)	-0.007 (0.013)	0.022 (0.050)	-0.006 (0.014)	0.017 (0.037)	-0.005 (0.015)	0.014 (0.039)	-0.005 (0.015)
Released to Center	-0.480*** (0.129)	0.002 (0.015)	-0.422*** (0.072)	-0.006 (0.017)	-0.426*** (0.082)	-0.003 (0.016)	-0.420*** (0.065)	-0.002 (0.017)	-0.419*** (0.047)	-0.002 (0.016)
Calendar Quarter 2 (ref: quarter 1)	-0.059*** (0.013)		-0.060*** (0.013)		-0.062*** (0.013)		-0.063*** (0.013)		-0.063*** (0.014)	
Calendar Quarter 3	-0.085*** (0.012)		-0.086*** (0.012)		-0.088*** (0.012)		-0.090*** (0.012)		-0.090*** (0.012)	
Calendar Quarter 4	-0.190*** (0.013)		-0.192*** (0.013)		-0.197*** (0.013)		-0.200*** (0.014)		-0.202*** (0.014)	
Quarter Quadratic Trend	0.015*** (0.001)		0.016*** (0.001)		0.016*** (0.001)		0.016*** (0.001)		0.016*** (0.001)	
<u>Demographics</u>										
Release Age 26-30 (ref: 17-25)			-0.236*** (0.049)	-0.007 (0.007)	-0.145** (0.050)	-0.009 (0.007)	-0.115* (0.050)	-0.008 (0.007)	-0.115* (0.050)	-0.007 (0.007)
Release Age 31-35			-0.232*** (0.050)	-0.015* (0.007)	-0.158** (0.051)	-0.019** (0.007)	-0.076 (0.052)	-0.016* (0.007)	-0.078 (0.052)	-0.015* (0.007)
Release Age 36-40			-0.290*** (0.051)	0.005 (0.007)	-0.244*** (0.052)	-0.002 (0.008)	-0.147** (0.053)	0.002 (0.008)	-0.152** (0.053)	0.002 (0.008)
Release Age 41-45			-0.302*** (0.055)	0.008 (0.008)	-0.263*** (0.058)	-0.000 (0.008)	-0.164** (0.058)	0.004 (0.008)	-0.163** (0.058)	0.004 (0.008)
Release Age 46-50			-0.160** (0.060)	0.000 (0.008)	-0.122 (0.064)	-0.008 (0.008)	-0.032 (0.064)	-0.003 (0.009)	-0.032 (0.064)	-0.002 (0.009)
Release Age 51-89			0.356*** (0.077)	-0.017 (0.011)	0.491*** (0.079)	-0.024* (0.012)	0.536*** (0.084)	-0.019 (0.012)	0.532*** (0.084)	-0.019 (0.012)
Black			0.458*** (0.046)	-0.017* (0.007)	0.504*** (0.047)	-0.020** (0.007)	0.503*** (0.047)	-0.020** (0.007)	0.492*** (0.047)	-0.020** (0.007)
Other Race (ref: white)			0.118 (0.112)	-0.006 (0.016)	0.212* (0.108)	-0.003 (0.016)	0.188 (0.107)	-0.004 (0.016)	0.190 (0.108)	-0.004 (0.016)
Female			0.353*** (0.085)	-0.029* (0.012)	0.288*** (0.084)	-0.027* (0.012)	0.302*** (0.086)	-0.028* (0.012)	0.301*** (0.087)	-0.027* (0.012)
Married (ref: Single)			-0.153** (0.047)	-0.020** (0.008)	-0.131** (0.048)	-0.020** (0.008)	-0.083 (0.048)	-0.018* (0.008)	-0.082 (0.048)	-0.019* (0.008)
Divorced/Separated			-0.112** (0.043)	0.007 (0.006)	-0.164*** (0.043)	0.008 (0.006)	-0.141** (0.043)	0.010 (0.006)	-0.139** (0.044)	0.010 (0.006)
Other MS (Widowed, Common Law)			0.160 (0.131)	0.030* (0.015)	0.032 (0.123)	0.030 (0.016)	0.063 (0.121)	0.029 (0.016)	0.067 (0.122)	0.028 (0.016)

Number Dependents			-0.004	0.007***	-0.016	0.007***	-0.025	0.006***	-0.025	0.006***
			(0.013)	(0.002)	(0.013)	(0.002)	(0.013)	(0.002)	(0.013)	(0.002)
Number Dependents X Female			0.057	0.000	0.061	0.001	0.065	0.001	0.067	0.001
			(0.038)	(0.005)	(0.038)	(0.005)	(0.038)	(0.005)	(0.038)	(0.005)
<u>Criminal Justice Characteristics</u>										
Sex Offender					-0.158*	0.003	-0.133*	-0.133*	-0.132*	0.003
					(0.063)	(0.009)	(0.064)	(0.064)	(0.064)	(0.009)
Known Mental Illness					0.227***	0.004	0.214***	0.214***	0.221***	0.004
					(0.039)	(0.006)	(0.039)	(0.039)	(0.039)	(0.006)
Drug Offender (ref: Assaultive)					0.138**	-0.002	0.115**	0.115**	0.123**	-0.002
					(0.043)	(0.006)	(0.042)	(0.042)	(0.042)	(0.006)
Non-Assaultive Offender					0.198***	-0.006	0.190***	0.190***	0.190***	-0.007
					(0.039)	(0.005)	(0.039)	(0.039)	(0.040)	(0.005)
2nd Prison Sentence (ref: First Sentence)					0.141***	0.013*	0.143***	0.143***	0.141***	0.012*
					(0.037)	(0.005)	(0.037)	(0.037)	(0.037)	(0.006)
3rd or 4th Prison Sentence					0.312***	0.024***	0.311***	0.311***	0.310***	0.022**
					(0.050)	(0.007)	(0.051)	(0.051)	(0.052)	(0.007)
5th or more Prison Sentence					0.232**	0.026*	0.239**	0.239**	0.238**	0.025*
					(0.073)	(0.010)	(0.074)	(0.074)	(0.075)	(0.011)
Years in Prison, Prior Spell					-0.056***	0.000	-0.062***	-0.062***	-0.062***	0.000
					(0.005)	(0.001)	(0.005)	(0.005)	(0.005)	(0.001)
SA History: Alcohol (vs. None)					-0.034	-0.001	0.011	0.011	0.016	-0.002
					(0.072)	(0.010)	(0.070)	(0.070)	(0.070)	(0.010)
SA History: THC					0.233***	0.012	0.205***	0.205***	0.205***	0.012
					(0.058)	(0.008)	(0.059)	(0.059)	(0.059)	(0.009)
SA History: Hard Drugs					0.224**	0.015	0.212**	0.212**	0.217**	0.015
					(0.069)	(0.010)	(0.070)	(0.070)	(0.071)	(0.010)
SA History: Alcohol & THC					0.096	0.013	0.079	0.079	0.092	0.012
					(0.067)	(0.010)	(0.068)	(0.068)	(0.067)	(0.010)
SA History: Hard Drugs & Alcohol/THC					0.175***	0.030*	0.166***	0.166***	0.175***	0.030*
					(0.038)	(0.005)	(0.038)	(0.038)	(0.038)	(0.005)
<u>Human Capital</u>										
Some High School (ref: 8 years or less)							-0.123*	-0.005	-0.121	-0.005
							(0.062)	(0.009)	(0.062)	(0.009)
GED							-0.221***	-0.002	-0.220***	-0.003
							(0.063)	(0.009)	(0.063)	(0.009)
High School Graduate							-0.430***	-0.013	-0.424***	-0.013
							(0.064)	(0.009)	(0.064)	(0.009)
Some College or More							-0.511***	-0.016	-0.508***	-0.015
							(0.086)	(0.011)	(0.086)	(0.011)
Pre-Prison Quarter Formal Employment							-0.377***	0.006	-0.377***	0.006
							(0.041)	(0.006)	(0.041)	(0.006)
Pre-Prison Quarter Formal Wages (\$)							-0.000*	-0.000*	-0.000*	-0.000*
							(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.801***	-0.189***	1.848***	-0.180***	1.483***	-0.186***	1.845***	-0.185***	1.831***	-0.191***
	(0.029)	(0.011)	(0.049)	(0.013)	(0.064)	(0.014)	(0.087)	(0.017)	(0.089)	(0.017)
<u>Variance Components</u>										
Individual Level	3.412	0.069	3.377	0.067	3.306	0.068	3.271	0.068	3.276	0.108
Neighborhood Level	0.120	0.001	0.120	0.006	0.126	0.006	0.118	0.006	0.068	0.006
N person-quarters	97,369		97,369		97,369		97,369		97,369	
N individuals	10613		10613		10613		10613		10613	
N tracts	2,105		2,105		2,105		2,105		2,105	

Robust SEs in parentheses; \* p < 0.05, \*\* p < 0.01 \*\*\* p < 0.001

**Table 17. Predictors of Quarterly Employment in the Formal Labor Market Among Michigan Parolees (Logit Coefficients)**

	(1)	(2)	(3)	(4)	(5)	(6)
<u>Time-varying Neighborhood Characteristics</u>						
Cum Mean Tract Disadvantage	-0.401*** (0.048)	-0.255*** (0.058)	-0.256*** (0.058)	-0.231*** (0.057)	-0.159* (0.062)	-0.171* (0.073)
Cum Mean Tract Affluence	0.238* (0.096)	0.256** (0.096)	0.218* (0.095)	0.188* (0.094)	0.155 (0.096)	0.140 (0.117)
Cum Mean Tract Residential Stability	0.010 (0.067)	0.000 (0.067)	-0.023 (0.066)	-0.017 (0.065)	-0.036 (0.067)	-0.023 (0.077)
Cum Mean Tract Young Age Factor	0.033 (0.061)	0.056 (0.062)	0.062 (0.061)	0.065 (0.060)	0.059 (0.062)	0.051 (0.064)
<u>Time-varying Geography Controls</u>						
Central City (ref: suburban)					-0.347*** (0.101)	-0.324** (0.104)
Rural					-0.311 (0.181)	-0.087 (0.211)
County Unemployment Rate					0.082 (0.112)	0.080 (0.112)
County Unemployment Rate Squared					-0.006 (0.007)	-0.006 (0.007)
<u>Pre-Prison Neighborhood</u>						
Tract Disadvantage						0.015 (0.080)
Tract Affluence						0.004 (0.116)
Tract Residential Stability						-0.020 (0.072)
Tract Young Age Factor						0.008 (0.093)
Central City (ref: suburban)						-0.084 (0.159)
Rural						-0.552* (0.267)
<u>Timing Controls</u>						
Days From Release to 1st Quarter (x1k)	-1.908 (3.211)	-1.423 (3.015)	-1.256 (2.966)	-1.630 (2.620)	-1.752 (2.622)	-1.626 (2.628)
Released 2000,2001	2.656 (0.694)	2.314 (0.861)	2.227 (0.849)	2.033* (0.744)	1.881* (0.742)	1.699* (0.738)
Released 2002	0.546 (0.462)	0.407 (0.525)	0.404 (0.517)	0.437 (0.453)	0.399 (0.452)	0.473 (0.452)
Released on EM	0.079 (0.470)	0.042 (0.534)	0.350 (0.527)	0.323 (0.462)	0.347 (0.462)	0.292 (0.464)
Released to Center	0.171 (0.476)	0.342 (0.550)	0.319 (0.542)	0.224 (0.474)	0.218 (0.474)	0.248 (0.473)
Days Quarter Start to Nhood Measure	-0.002*** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.002*** (0.000)
Calendar Quarter 2 (ref: quarter 1)	0.175** (0.062)	0.175** (0.072)	0.175** (0.072)	0.171** (0.072)	0.172** (0.072)	0.168** (0.073)
Calendar Quarter 3	0.276 (0.069)	0.278 (0.072)	0.279 (0.072)	0.275 (0.072)	0.277 (0.072)	0.278 (0.074)
Calendar Quarter 4	0.179* (0.065)	0.180* (0.072)	0.179* (0.072)	0.180* (0.072)	0.180 (0.072)	0.188 (0.074)
Quarters in Community Linear Trend	-0.120*** (0.037)	-0.118*** (0.028)	-0.118*** (0.028)	-0.122*** (0.027)	-0.121*** (0.027)	-0.119*** (0.028)
Quarters Quadratic Trend	0.003*** (0.004)	0.003*** (0.003)	0.003*** (0.003)	0.003*** (0.003)	0.003*** (0.003)	0.003*** (0.003)
<u>Demographics</u>						
Release Age 26-30 (ref: 17-25)		-0.319 (0.219)	-0.491* (0.217)	-0.487* (0.214)	-0.505* (0.214)	-0.523* (0.215)
Release Age 31-35		0.070 (0.219)	-0.084 (0.221)	-0.188 (0.219)	-0.199 (0.219)	-0.236 (0.220)
Release Age 36-40		-0.198 (0.219)	-0.343 (0.221)	-0.438 (0.219)	-0.444* (0.219)	-0.460* (0.220)

	(0.220)	(0.227)	(0.226)	(0.226)	(0.226)
Release Age 41-45	-0.190	-0.275	-0.428	-0.453	-0.491
	(0.244)	(0.252)	(0.252)	(0.252)	(0.253)
Release Age 46-50	-0.614*	-0.725**	-0.805**	-0.821**	-0.861**
	(0.267)	(0.279)	(0.278)	(0.277)	(0.279)
Release Age 51-89	-1.492***	-1.593***	-1.547***	-1.581***	-1.640***
	(0.335)	(0.348)	(0.350)	(0.350)	(0.352)
Other Race (ref: white)	0.470	0.382	0.481	0.543	0.577
	(0.464)	(0.453)	(0.444)	(0.443)	(0.444)
Black	-0.527**	-0.586***	-0.533**	-0.517**	-0.546**
	(0.164)	(0.170)	(0.167)	(0.168)	(0.183)
Female	-0.379	-0.099	-0.102	-0.098	-0.080
	(0.343)	(0.339)	(0.332)	(0.331)	(0.332)
Married (ref: Single)	0.457*	0.385	0.318	0.334	0.358
	(0.213)	(0.209)	(0.206)	(0.205)	(0.206)
Divorced/Separated	0.090	0.201	0.154	0.155	0.160
	(0.189)	(0.186)	(0.183)	(0.183)	(0.184)
Other MS (Widowed, Common Law)	0.135	0.351	0.143	0.123	0.117
	(0.647)	(0.634)	(0.626)	(0.624)	(0.627)
Number Dependents	-0.122*	-0.095	-0.084	-0.083	-0.079
	(0.055)	(0.054)	(0.054)	(0.053)	(0.053)
Number Dependents X Female	0.246	0.192	0.162	0.169	0.162
	(0.171)	(0.167)	(0.164)	(0.164)	(0.164)
<u>Criminal Justice Characteristics</u>					
Sex Offender		-0.053	-0.149	-0.157	-0.165
		(0.266)	(0.261)	(0.261)	(0.261)
Known Mental Illness		-0.439**	-0.404*	-0.387*	-0.383*
		(0.168)	(0.164)	(0.163)	(0.164)
Drug Offender (ref: Assaultive)		-0.120	-0.087	-0.097	-0.095
		(0.184)	(0.180)	(0.180)	(0.180)
Non-Assaultive Offender		-0.145	-0.111	-0.102	-0.092
		(0.169)	(0.166)	(0.166)	(0.166)
2nd Prison Sentence (ref: First Sentence)		-0.060	-0.127	-0.111	-0.111
		(0.162)	(0.162)	(0.161)	(0.162)
3rd or 4th Prison Sentence		-0.266	-0.278	-0.275	-0.272
		(0.188)	(0.189)	(0.188)	(0.189)
5th or more Prison Sentence		-0.696*	-0.696*	-0.699*	-0.686*
		(0.318)	(0.317)	(0.316)	(0.316)
Years in Prison, Prior Spell		0.138***	0.145***	0.146***	0.146***
		(0.022)	(0.022)	(0.022)	(0.024)
SA History: Alcohol (vs. None)		-0.231	-0.364	-0.381	-0.384
		(0.320)	(0.315)	(0.314)	(0.314)
SA History: THC		-0.300	-0.306	-0.295	-0.282
		(0.255)	(0.251)	(0.250)	(0.251)
SA History: Hard Drugs		-0.271	-0.245	-0.259	-0.261
		(0.327)	(0.323)	(0.322)	(0.322)
SA History: Alcohol & THC		-0.400	-0.349	-0.360	-0.366
		(0.297)	(0.292)	(0.291)	(0.292)
SA History: Hard Drugs & Alcohol/THC		-0.213	-0.213	-0.226	-0.235
		(0.162)	(0.159)	(0.159)	(0.160)
<u>Human Capital</u>					
Some High School (ref: 8 years or less)			0.367	0.365	0.383
			(0.261)	(0.260)	(0.260)
GED			0.574*	0.572*	0.583*
			(0.265)	(0.264)	(0.265)
High School Graduate			0.993***	0.972***	0.979***
			(0.275)	(0.274)	(0.275)
Some College or More			0.509	0.509	0.524
			(0.349)	(0.348)	(0.349)
Pre-Prison Quarter Formal Employment			0.881***	0.883***	0.884***
			(0.158)	(0.157)	(0.158)
Pre-Prison Quarter Formal Wages (\$)			0.000	0.000	0.000

				(0.000)	(0.000)	(0.000)
Constant	-1.468***	-0.987***	-0.906***	-1.797***	-1.917**	-1.825**
	(0.155)	(0.212)	(0.262)	(0.346)	(0.585)	(0.602)
N person-quarters	13,497	13,497	13,497	13,497	13,497	13,497
N individuals	1,759	1,759	1,759	1,759	1,759	1,759

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note: \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Table 18. Predictors of Quarterly Ln(wages) from Formal Employment Among Michigan Parolees**

	M1	M2	M3	M4	M5	M6
<u>Time-varying Neighborhood Characteristics</u>						
Cum Mean Tract Disadvantage	-0.396*** (0.053)	-0.266*** (0.066)	-0.263*** (0.065)	-0.237*** (0.065)	-0.162* (0.071)	-0.187* (0.093)
Cum Mean Tract Affluence	0.244* (0.120)	0.259* (0.119)	0.226 (0.116)	0.199 (0.113)	0.171 (0.115)	0.118 (0.155)
Cum Mean Tract Residential Stability	0.041 (0.073)	0.032 (0.073)	0.008 (0.072)	0.011 (0.071)	-0.012 (0.073)	-0.027 (0.089)
Cum Mean Tract Young Age Factor	0.019 (0.070)	0.045 (0.071)	0.052 (0.070)	0.056 (0.069)	0.052 (0.070)	0.046 (0.073)
<u>Time-varying Geography Controls</u>						
Central City (ref: suburban)					-0.368** (0.121)	-0.337** (0.125)
Rural					-0.316 (0.214)	-0.070 (0.260)
County Unemployment Rate					0.103 (0.126)	0.099 (0.125)
County Unemployment Rate Squared					-0.007 (0.008)	-0.007 (0.008)
<u>Pre-Prison Neighborhood</u>						
Tract Disadvantage						0.049 (0.090)
Tract Affluence						0.066 (0.137)
Tract Residential Stability						0.036 (0.075)
Tract Young Age Factor						0.012 (0.089)
Central City (ref: suburban)						-0.144 (0.158)
Rural						-0.591* (0.289)
<u>Timing Controls</u>						
Days From Release to 1st Quarter (x1k)	-0.275 (2.422)	0.081 (2.411)	0.198 (2.349)	0.108 (2.337)	0.310 (2.330)	0.323 (2.323)
Released 2000,2001	-0.958 (0.530)	-1.161* (0.525)	-1.227* (0.545)	-1.386* (0.550)	-1.358* (0.547)	-1.403** (0.544)
Released 2002	-0.235 (0.425)	-0.342 (0.421)	-0.435 (0.412)	-0.406 (0.416)	-0.372 (0.416)	-0.376 (0.414)
Released on EM	0.028 (0.412)	0.031 (0.409)	0.214 (0.390)	0.200 (0.381)	0.154 (0.383)	0.138 (0.381)
Released to Center	-0.121 (0.405)	-0.035 (0.406)	-0.007 (0.379)	-0.019 (0.381)	-0.022 (0.384)	0.013 (0.385)
Days Quarter Start to Nhood Measure	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Calendar Quarter 2 (ref: quarter 1)	-0.132** (0.049)	-0.132** (0.049)	-0.133** (0.049)	-0.132** (0.049)	-0.143* (0.057)	-0.145* (0.057)
Calendar Quarter 3	-0.053 (0.059)	-0.052 (0.059)	-0.052 (0.059)	-0.052 (0.059)	-0.048 (0.060)	-0.047 (0.060)
Calendar Quarter 4	0.160** (0.053)	0.161** (0.053)	0.160** (0.053)	0.159** (0.053)	0.149* (0.063)	0.146* (0.063)
Quarters in Community Linear Trend	0.277*** (0.033)	0.279*** (0.033)	0.274*** (0.033)	0.274*** (0.033)	0.274*** (0.033)	0.274*** (0.033)
Quarters Quadratic Trend	-0.022*** (0.003)	-0.023*** (0.003)	-0.022*** (0.003)	-0.022*** (0.003)	-0.022*** (0.003)	-0.022*** (0.003)
<u>Demographics</u>						
Release Age 26-30 (ref: 17-25)		-0.123 (0.203)	-0.321 (0.204)	-0.328 (0.202)	-0.348 (0.202)	-0.367 (0.201)
Release Age 31-35		0.255 (0.208)	0.082 (0.207)	-0.047 (0.208)	-0.060 (0.208)	-0.097 (0.208)
Release Age 36-40		0.088	-0.074	-0.192	-0.201	-0.214

	(0.217)	(0.221)	(0.220)	(0.220)	(0.220)
Release Age 41-45	0.126	0.022	-0.161	-0.189	-0.224
	(0.243)	(0.256)	(0.251)	(0.252)	(0.251)
Release Age 46-50	-0.295	-0.441	-0.560*	-0.580*	-0.627*
	(0.255)	(0.261)	(0.262)	(0.261)	(0.259)
Release Age 51-89	-1.021***	-1.143***	-1.163***	-1.199***	-1.265***
	(0.286)	(0.294)	(0.308)	(0.308)	(0.309)
Other Race (ref: white)	0.416	0.284	0.374	0.435	0.465
	(0.501)	(0.503)	(0.481)	(0.475)	(0.478)
Black	-0.523**	-0.618***	-0.573***	-0.557**	-0.581**
	(0.169)	(0.175)	(0.173)	(0.173)	(0.182)
Female	-0.582	-0.310	-0.337	-0.326	-0.301
	(0.315)	(0.332)	(0.331)	(0.331)	(0.333)
Married (ref: Single)	0.511*	0.420*	0.345	0.362	0.383
	(0.215)	(0.212)	(0.207)	(0.206)	(0.206)
Divorced/Separated	0.128	0.231	0.176	0.176	0.192
	(0.192)	(0.186)	(0.183)	(0.182)	(0.183)
Other MS (Widowed, Common Law)	0.127	0.350	0.148	0.130	0.134
	(0.551)	(0.536)	(0.488)	(0.492)	(0.492)
Number Dependents	-0.118*	-0.092	-0.078	-0.076	-0.074
	(0.052)	(0.051)	(0.050)	(0.050)	(0.050)
Number Dependents X Female	0.266	0.227	0.206	0.211	0.203
	(0.167)	(0.167)	(0.162)	(0.162)	(0.161)
<u>Criminal Justice Characteristics</u>					
Sex Offender		-0.020	-0.119	-0.125	-0.130
		(0.270)	(0.267)	(0.266)	(0.266)
Known Mental Illness		-0.492**	-0.454**	-0.437**	-0.432**
		(0.154)	(0.153)	(0.153)	(0.154)
Drug Offender (ref: Assaultive)		-0.127	-0.094	-0.102	-0.099
		(0.177)	(0.172)	(0.170)	(0.170)
Non-Assaultive Offender		-0.245	-0.216	-0.206	-0.195
		(0.167)	(0.163)	(0.162)	(0.163)
2nd Prison Sentence (ref: First Sentence)		-0.052	-0.099	-0.087	-0.087
		(0.158)	(0.158)	(0.158)	(0.158)
3rd or 4th Prison Sentence		-0.262	-0.254	-0.248	-0.233
		(0.178)	(0.180)	(0.179)	(0.180)
5th or more Prison Sentence		-0.645**	-0.625*	-0.628*	-0.613*
		(0.238)	(0.246)	(0.246)	(0.247)
Years in Prison, Prior Spell		0.139***	0.146***	0.147***	0.147***
		(0.023)	(0.023)	(0.023)	(0.025)
SA History: Alcohol (vs. None)		-0.140	-0.279	-0.300	-0.302
		(0.331)	(0.316)	(0.318)	(0.319)
SA History: THC		-0.401	-0.413	-0.402	-0.389
		(0.224)	(0.225)	(0.223)	(0.223)
SA History: Hard Drugs		-0.270	-0.233	-0.243	-0.245
		(0.271)	(0.271)	(0.271)	(0.271)
SA History: Alcohol & THC		-0.522	-0.458	-0.470	-0.476
		(0.275)	(0.267)	(0.268)	(0.268)
SA History: Hard Drugs & Alcohol/THC		-0.325*	-0.324*	-0.338*	-0.341*
		(0.153)	(0.150)	(0.150)	(0.150)
<u>Human Capital</u>					
Some High School (ref: 8 years or less)			0.340	0.339	0.353
			(0.233)	(0.234)	(0.235)
GED			0.440	0.441	0.447
			(0.232)	(0.234)	(0.236)
High School Graduate			1.008***	0.991***	0.991***
			(0.254)	(0.255)	(0.256)
Some College or More			0.556	0.562	0.575
			(0.345)	(0.343)	(0.344)
Pre-Prison Quarter Formal Employment			0.851***	0.856***	0.856***
			(0.166)	(0.165)	(0.165)
Pre-Prison Quarter Formal Wages (\$)			0.000	0.000	0.000

				(0.000)	(0.000)	(0.000)
Constant	2.321***	2.588***	2.788***	1.953***	1.743**	1.856**
	(0.148)	(0.201)	(0.265)	(0.342)	(0.628)	(0.634)
N person-quarters	13,497	13,497	13,497	13,497	13,497	13,497
N individuals	1,759	1,759	1,759	1,759	1,759	1,759

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note: \*\*\* p<0.001, \*\* p<0.01, \* p<0.05



**Table 19. Logit Models of Income from the Formal Labor Market Below the Poverty Line Among Michigan Parolees**

	M1	M2	M3	M4	M5	M6
<u>Time-varying Neighborhood Characteristics</u>						
Cum Mean Tract Disadvantage	0.547*** (0.069)	0.344*** (0.084)	0.351*** (0.084)	0.322*** (0.083)	0.200* (0.091)	0.213* (0.105)
Cum Mean Tract Affluence	-0.257* (0.129)	-0.271* (0.129)	-0.202 (0.129)	-0.156 (0.129)	-0.115 (0.133)	-0.003 (0.159)
Cum Mean Tract Residential Stability	-0.080 (0.093)	-0.059 (0.093)	-0.022 (0.092)	-0.028 (0.092)	0.004 (0.095)	0.056 (0.108)
Cum Mean Tract Young Age Factor	0.082 (0.084)	0.031 (0.085)	0.030 (0.085)	0.030 (0.085)	0.036 (0.087)	0.025 (0.089)
<u>Time-varying Geography Controls</u>						
Central City (ref: suburban)					0.513*** (0.148)	0.448** (0.151)
Rural					0.290 (0.257)	-0.161 (0.305)
County Unemployment Rate					-0.085 (0.147)	-0.082 (0.147)
County Unemployment Rate Squared					0.007 (0.008)	0.007 (0.008)
<u>Pre-Prison Neighborhood</u>						
Tract Disadvantage						-0.035 (0.115)
Tract Affluence						-0.195 (0.161)
Tract Residential Stability						-0.110 (0.104)
Tract Young Age Factor						0.091 (0.137)
Central City (ref: suburban)						0.364 (0.229)
Rural						1.040** (0.383)
<u>Timing Controls</u>						
Days From Release to 1st Quarter (x1k)	0.783 (3.476)	1.049 (3.498)	0.799 (3.467)	0.810 (3.457)	0.508 (3.452)	0.684 (3.453)
Released 2000,2001	0.261 (0.946)	0.603 (0.952)	0.672 (0.927)	0.867 (0.915)	0.841 (0.909)	0.928 (0.910)
Released 2002	-0.130 (0.587)	0.067 (0.585)	0.280 (0.577)	0.314 (0.573)	0.269 (0.571)	0.317 (0.570)
Released on EM	-0.275 (0.601)	-0.258 (0.599)	-0.489 (0.597)	-0.461 (0.595)	-0.384 (0.593)	-0.368 (0.594)
Released to Center	0.125 (0.633)	-0.135 (0.628)	-0.242 (0.626)	-0.296 (0.627)	-0.307 (0.624)	-0.449 (0.636)
Days Quarter Start to Nhood Measure	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Calendar Quarter 2 (ref: quarter 1)	-0.012 (0.096)	-0.010 (0.096)	-0.010 (0.096)	-0.011 (0.096)	0.004 (0.105)	0.009 (0.105)
Calendar Quarter 3	-0.097 (0.096)	-0.099 (0.096)	-0.098 (0.096)	-0.099 (0.096)	-0.104 (0.097)	-0.107 (0.097)
Calendar Quarter 4	-0.296** (0.095)	-0.298** (0.095)	-0.298** (0.095)	-0.299** (0.095)	-0.278** (0.107)	-0.275* (0.107)
Quarters in Community Linear Trend	-0.381*** (0.038)	-0.385*** (0.038)	-0.377*** (0.038)	-0.377*** (0.038)	-0.378*** (0.038)	-0.378*** (0.038)
Quarters Quadratic Trend	0.028*** (0.004)	0.029*** (0.004)	0.028*** (0.004)	0.028*** (0.004)	0.028*** (0.004)	0.028*** (0.004)
<u>Demographics</u>						
Release Age 26-30 (ref: 17-25)		-0.192 (0.314)	0.071 (0.314)	0.087 (0.315)	0.107 (0.314)	0.122 (0.314)
Release Age 31-35		-0.829** (0.310)	-0.593 (0.317)	-0.473 (0.319)	-0.465 (0.318)	-0.422 (0.319)
Release Age 36-40		-0.694* (0.310)	-0.535 (0.317)	-0.409 (0.319)	-0.403 (0.318)	-0.392 (0.319)

	(0.310)	(0.324)	(0.327)	(0.327)	(0.327)
Release Age 41-45	-0.802*	-0.731*	-0.495	-0.467	-0.423
	(0.342)	(0.358)	(0.363)	(0.363)	(0.364)
Release Age 46-50	-0.309	-0.158	-0.032	-0.012	0.044
	(0.374)	(0.396)	(0.402)	(0.401)	(0.402)
Release Age 51-89	1.541**	1.651**	1.578**	1.607**	1.713**
	(0.521)	(0.540)	(0.546)	(0.543)	(0.545)
Other Race (ref: white)	0.020	0.276	0.175	0.082	0.007
	(0.632)	(0.630)	(0.624)	(0.620)	(0.619)
Black	0.861***	1.018***	0.981***	0.954***	0.898***
	(0.230)	(0.243)	(0.242)	(0.242)	(0.264)
Female	1.686**	1.230*	1.324*	1.295*	1.239*
	(0.548)	(0.541)	(0.541)	(0.538)	(0.538)
Married (ref: Single)	-0.775**	-0.660*	-0.571*	-0.594*	-0.636*
	(0.292)	(0.291)	(0.289)	(0.288)	(0.288)
Divorced/Separated	-0.243	-0.392	-0.345	-0.341	-0.384
	(0.263)	(0.263)	(0.262)	(0.262)	(0.262)
Other MS (Widowed, Common Law)	0.664	0.133	0.362	0.371	0.350
	(1.062)	(1.045)	(1.035)	(1.031)	(1.037)
Number Dependents	0.184*	0.145	0.125	0.123	0.121
	(0.078)	(0.078)	(0.078)	(0.078)	(0.078)
Number Dependents X Female	-0.388	-0.280	-0.235	-0.243	-0.230
	(0.267)	(0.265)	(0.265)	(0.263)	(0.261)
<u>Criminal Justice Characteristics</u>					
Sex Offender		-0.110	0.017	0.033	0.047
		(0.364)	(0.362)	(0.362)	(0.361)
Known Mental Illness		0.780**	0.731**	0.713**	0.696**
		(0.243)	(0.240)	(0.240)	(0.239)
Drug Offender (ref: Assaultive)		0.147	0.104	0.120	0.118
		(0.257)	(0.255)	(0.255)	(0.254)
Non-Assaultive Offender		0.551*	0.500*	0.488*	0.463*
		(0.238)	(0.236)	(0.236)	(0.235)
2nd Prison Sentence (ref: First Sentence)		0.136	0.164	0.141	0.145
		(0.227)	(0.231)	(0.231)	(0.230)
3rd or 4th Prison Sentence		0.704*	0.630*	0.628*	0.604*
		(0.276)	(0.279)	(0.278)	(0.278)
5th or more Prison Sentence		1.401**	1.344**	1.363**	1.339**
		(0.510)	(0.511)	(0.510)	(0.509)
Years in Prison, Prior Spell		-0.153***	-0.164***	-0.166***	-0.178***
		(0.030)	(0.030)	(0.030)	(0.033)
SA History: Alcohol (vs. None)		-0.034	0.148	0.173	0.161
		(0.432)	(0.429)	(0.428)	(0.426)
SA History: THC		0.841*	0.805*	0.794*	0.750
		(0.389)	(0.389)	(0.388)	(0.389)
SA History: Hard Drugs		0.129	0.073	0.084	0.066
		(0.476)	(0.474)	(0.473)	(0.471)
SA History: Alcohol & THC		0.752	0.716	0.734	0.749
		(0.435)	(0.435)	(0.434)	(0.434)
SA History: Hard Drugs & Alcohol/THC		0.380	0.349	0.366	0.356
		(0.234)	(0.233)	(0.233)	(0.233)
<u>Human Capital</u>					
Some High School (ref: 8 years or less)			-0.357	-0.343	-0.344
			(0.388)	(0.386)	(0.384)
GED			-0.264	-0.259	-0.241
			(0.397)	(0.395)	(0.394)
High School Graduate			-0.988*	-0.946*	-0.907*
			(0.404)	(0.403)	(0.402)
Some College or More			-0.602	-0.593	-0.567
			(0.502)	(0.500)	(0.500)
Pre-Prison Quarter Formal Employment			-1.072***	-1.074***	-1.059***
			(0.235)	(0.233)	(0.235)
Pre-Prison Quarter Formal Wages (\$)			-0.000	-0.000	-0.000

				(0.000)	(0.000)	(0.000)
Constant	4.088***	3.960***	3.414***	4.350***	4.425***	4.368***
	(0.224)	(0.306)	(0.370)	(0.505)	(0.811)	(0.835)
N person-quarters	13,497	13,497	13,497	13,497	13,497	13,497
N individuals	1,759	1,759	1,759	1,759	1,759	1,759

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note: \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Table 20. Summary of Statistically Significant Neighborhood Effects from Analysis of Recidivism and Labor Market Outcomes**

	Baseline Neighborhood Characteristics (N=11,064)				Time-Varying Neighborhood Characteristics (n=1,848)			
	Concentrated Affluence	Concentrated Disadvantage	Residential Stability	Young Age Composition	Concentrated Affluence	Concentrated Disadvantage	Residential Stability	Young Age Composition
<u>Recidivism Outcomes (Cox Models)<sup>a</sup></u>								
Arrest	-	-						
Felony Conviction								+
Return to Prison for New Conviction			-					+
Return to Prison for Technical Violation	-	+		-				+
Abscond	-	+	-					+
<u>Labor Market Outcomes (Growth-Curve Models)<sup>b</sup></u>								
Empoyment Status	+	-				-		
Logged Wages	+	-				-		
Income Above Poverty Line <sup>c</sup>	+	-				-		

<sup>a</sup> Based on Model 4 of Tables 3-12

<sup>b</sup> Based on Model 5 of Tables 13-15 & Model 6 of Tables 16-18. Summarizes effects on growth curve *intercept*; no significant effects found on linear trends in

<sup>c</sup> Summarizes models of income *below* poverty line, with signs reversed