Returning Home? Incarceration and Mobility Behavior Across Geographic Scales*

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Returning Home? Incarceration, Reentry, and Residential Mobility Decisions

Abstract

Each year over 700,000 individuals are released from prison and reenter neighborhoods across the country. The incredible growth of the American "felon class" has spurred a wealth of research on the individual-level consequences of incarceration. However, despite emerging research noting the importance of residential location on both successful reentry and general well-being little is known about the mobility behavior of individuals exiting correctional confinement. The current study draws on locational attainment and incarceration-effects literatures to argue that release from correctional confinement should increase the likelihood of residential mobility, but that this effect should be limited to moves that cover relatively shorter-distances. Results from the National Longitudinal Survey of Youth largely support this expectation. Even after accounting for known individual-level correlates of mobility decisions, the likelihood of making either a cross-tract or cross-county move is higher for those individuals exiting prison at any given mobility interval. Correctional contact is largely unrelated, however, to inter-state moves. Additional analyses also suggest that the impact of incarceration on mobility behavior is similar across racial and ethnic groups. These results have important implications for understanding both the consequences of incarceration as well as the more general sorting of households into neighborhoods of varying quality.

Returning Home? Incarceration, Reentry, and Residential Mobility Decisions

The expansion of the American penal state is one of the most significant developments of the last 30 years. During this period, the correctional population more than quadrupled, and there are currently over 2 million individuals housed in state and federal prisons (Lynch & Sabol, 2001; West, Sabol, & Greenman, 2010). Because very few convicted offenders spend the rest of their lives in prison, the rapid and massive expansion of the prison population fueled an equally impressive increase in the number of individuals released from prison. Currently, over 700,000 individuals leave state and federal prisons each year and become part of America's "felon class" (Uggen, Manza, & Thompson, 2006). Furthermore, rather than a direct response to rising crime rates, much of the increase in the use of incarceration stemmed from policy decisions such as the "war on drugs" which has left the United States with the highest incarceration rate in the world (Walmsley, 2007).

Increased scholarly attention to the "collateral consequences" of incarceration has identified a number of ways in which incarceration both reflects and creates social inequality (Uggen and Manza 2002; Travis 2005; Pager 2003; Western 2002; Massoglia 2008b; Lopoo and Western 2005; Wakefield and Uggen 2010). More recently, researchers have become interested in the impact of incarceration on ex-inmate residential outcomes (Clear, 2007; Geller & Curtis, 2011; Hipp, Turner, & Jannetta, 2010; J. Travis, 2005). Research of this type appears especially useful given the importance of residential and household characteristics for the prospects of successful reentry (Hipp, Petersilia, & Turner, 2010; Kirk, 2009; Kubrin & Stewart, 2006; Roman & Travis, 2006; Steiner, Makarios, & Travis, 2011). However, with the exception of a few studies (see especially Kirk 2009), this line of research has largely ignored the larger patterns of mobility behavior that drive residential destinations and individual outcomes. Similarly, the rich research literature examining the sorting of individuals and households into neighborhoods of varying quality has typically not considered the implications of the sizeable population flows in to and out of prison each year. Given that the African American incarceration rate is roughly seven times greater than the white incarceration rate, the disproportionate use of incarceration could have implications for the reproduction of racially segmented housing markets.

The current study starts to fill these gaps in the literature by examining the impact of incarceration on mobility behavior. In doing so, I blend research on incarceration effects with research on locational attainment to argue that incarceration should foster mobility, especially in the local context. I place incarceration alongside well-known correlates of mobility and show that the process of exiting correctional confinement is associated with an increased likelihood of mobility, especially at smaller geographic scales. This paper is organized as follows. I start by briefly reviewing incarceration and reentry trends, as well as the mounting evidence on the collateral consequences of incarceration. I then discuss the correlates of residential mobility, noting how mobility decisions are often structured around important life-course transitions. Drawing on both the incarceration effects and locational attainment literatures, I then discuss a number of reasons why we might expect that individuals exiting prison would be unlikely to return to their pre-prison residence. I also argue that incarceration could be expected to have a stronger impact on short-distance as opposed to long-distance mobility. After providing an overview of the data, key measures, and analytic strategy, I present evidence suggesting that incarceration encourages residential mobility, and that a robust incarceration effect remains after accounting for several potential sources of spuriousness. I conclude by noting several implications of my results, as well as future steps I will take as the current study moves forward.

Prisoner Reentry and Incarceration Effects

The facts surrounding the expansion of the American correctional system are, at this point, well known (for an overview see Wakefield and Uggen 2010). Following decades of relative stability, the incarceration rate began to climb in the 1970s by a rate of about 6% per year, and recently has hovered around 500 per 100,000 of the population (Wakefield and Uggen 2010). Rather than a direct response to crime rates, the prison boom was largely fueled by policy changes as America became "tough on crime" and fought the "war on drugs" (J. Travis, 2005). The United States now has the highest incarceration rate in the world, with levels of incarceration five to seven times higher than countries with similar economic, social or demographic profiles (Walmsley, 2007). What has been termed the "felon class" comprises about 7 percent of the total adult population, over 20 percent of the black adult population, and fully one-

third of the black adult male population (Uggen et al., 2006).

Although increased sentence lengths accompanied the prison boom, an almost universal fact of correctional confinement is the eventual release of convicted offenders. Currently, the average sentence length is roughly two years and less than 10 percent of all state inmates serve a sentence that exceeds five years (West et al., 2010). The emergence of the felon class has spurred a broad research literature that examines the "collateral consequences" of incarceration. This line of research has examined the role that incarceration plays in both reflecting and reinforcing a number of social inequalities (Wakefield & Uggen, 2010). On the one hand, disadvantaged individuals commit a disproportionate amount of those crimes that result in imprisonment (especially drug related crimes).[1] As such, rather than simply housing the criminal, prisons also disproportionately house the jobless, the poor, the racial minority, and the uneducated.

On the other hand, incarceration has emerged alongside institutions like the labor market and the educational system as an important mechanism of stratification. While some life-course transitions serve to foster desistance and conformity by facilitating strong social bonds (Laub, Nagin, & Sampson, 1998; Sampson & Laub, 1990), correctional contact disrupts the attainment of major life events (Sampson & Laub, 1992) and is increasingly conceptualized as a negative transition that fosters social and economic marginality (Western, 2006). For example, ex-inmates face a number of obstacles in the labor market, including decreased employment prospects (Pager, 2003),depressed earnings, and slow wage growth (Western, 2002). Incarceration has also been linked to an increased likelihood of divorce (Lopoo & Western, 2005; Massoglia, Remster, & King, 2011) and decreased health functioning (Massoglia 2008, 2008; Schnittker and John 2007). The consequences of incarceration extend beyond the individual, as parental incarceration has been linked to a range of behavioral problem in children (Wildeman, 2010), and aggregate incarceration rates have been linked to political outcomes (Uggen & Manza, 2002) as well as community-level crime rates (Hipp & Yates, 2009).

[1] In their review of the relationship between incarceration and stratification, Wakefield and Uggen (2010) cite research noting that entry into prison is also partially determined by variations in the exposure to police surveillance, in the likelihood of charges resulting in convictions, and in sentencing patterns.

More recently, researchers have also started examining the residential consequences of incarceration. Several studies have pointed to the importance of neighborhood location (especially neighborhood disadvantage) on the likelihood of recidivism (Hipp, Petersilia, et al., 2010; Kubrin & Stewart, 2006). Incarceration has also been linked to a number of housing insecurities, especially homelessness (Geller & Curtis, 2011; Metraux & Culhane, 2006). Ex-inmates are also geographically concentrated in space among the more disadvantage areas of metropolitan areas (Visher & Farrell, 2005). However, while correctional release is a certainty for most convicted offenders, little is known about where individuals go after they leave prison. Research by Kirk (2009), for example, demonstrated the importance of mobility on the likelihood of recidivism, but we know little about the role incarceration plays in fostering or possibly even inhibiting mobility behavior.[2] After first discussing general theory and research on residential mobility and neighborhood attainment, I outline a number of reasons why we would expect correctional contact to increase the likelihood of mobility, especially at smaller geographic scales.

Prisoner Reentry and Mobility Behavior

Traditional accounts of mobility suggest that households compare their current dwelling to available alternatives through a rational choice process. If the current residence does not meet current needs, the household is said to feel dissatisfaction or stress (Rossi, 1980; Speare, Goldstein, & Frey, 1975). If this stress reaches a certain threshold, the household may seek a residential change to a more suitable dwelling. Life cycle transitions are the most common correlates of mobility, including age, marital status, family size and family income (South & Deane, 1993). Young adults (between the ages of 20 and 35) are typically the most mobile, with rates of migration dropping considerably after the mid-30s (Clark, 1986). Marriage and homeownership encourage residential stability, with rates of mobility higher among renters and divorced, separated, and never-married individuals (Clark, 1986; Lee & Hall, 2009).

[2] As a point of clarification, it should be noted that correctional confinement is itself a residence, and one that often takes convicted offenders far from home. This process of what has been termed "coercive mobility" (Clear, 2007) is both interesting and relevant, but the concern in the present paper is differences in where individuals live before prison and where they reside after release.

In general, researchers have largely overlooked how the considerable population flows into and out of prison impact mobility and locational attainment (but see Hipp, Turner, et al. 2010). This is a notable gap in the literature for a number of reasons. First, the incarceration experience itself entails mobility for those who are convicted and sentenced to confinement. Clear and colleagues have referred to this as "coercive mobility" and have examined the ways in which mobility through confinement impacts neighborhood organization and neighborhood crime (Clear, 2007, 2008; Clear, Rose, & Ryder, 2001; Clear, Rose, Waring, & Scully, 2003). Second, the scope of the ex-inmate population and the yearly additions to it are significant. As of 2000, over 4 million ex-inmates were residing in neighborhoods across the country, and over 700,000 individuals leave prison every year (Raphael & Stoll, 2004; West et al., 2010). Current estimates suggest that 1 of every 100 adults is under some form of correctional supervision (PEW, 2008), which likely has meaningful consequences on the sorting of households into neighborhoods of varying quality. Finally, existing research has documented links between residential mobility, neighborhood characteristics, and the likelihood of recidivism. This line of research has shown that changing neighborhoods following prison can reduce the likelihood of recidivism (Kirk, 2009), but that residing in disadvantaged and resource-poor neighborhoods increases the likelihood of recidivism (Hipp, Petersilia, et al., 2010; Kubrin & Stewart, 2006).

Despite the lack of empirical evidence on the impact of incarceration on mobility behavior, there are a number of reasons to suggest that spells of confinement should foster mobility. Drawing on the incarceration-effects literature, one potential pathway through which incarceration could create mobility is the stigma associated with the ex-felon label. Stigma based explanations have been implicated in a number of the "collateral consequences" of incarceration including employment (Pager, 2003), wages (Western, 2002), health functioning (Schnittker & John, 2007), and marital instability (Lopoo & Western, 2005). Pager (2003) refers to the ex-felon label as a "negative credential" that qualifies ex-cons for discrimination and social exclusion. For example, ex-felons are often stripped of voting rights and prohibited from securing certain types of employment (Petersilia, 2003). Stigmatized sub-groups often experience high rates of residential mobility, due in part to their sensitivity to "push" factors that are

associated with unplanned and involuntary mobility (Aviram, 1990; Dear & Wolch, 1987; Rossi, 1989). Because the ex-felon label is so notoriously "sticky" (Braman, 2004), and given that the label serves as such a strong source of status dishonor (Pager, 2003) it is fairly easy to place ex-inmates among the most marginalized sub-groups in society. As such, a stigma-based explanation would suggest that exiting prison is associated with an increased likelihood of mobility, leading to my first hypothesis:

H1: Individuals exiting prison will be more likely than never incarcerated individuals to move.

Limited descriptive evidence gives initial support for this expectation. For example, descriptive accounts of reentry have documented a fair amount of mobility among recently released offenders (Visher & Farrell, 2005; Visher, Kachnowski, La Vigne, & Travis, 2004). However, because stigma cannot be directly measured beyond simple correctional contact, I cannot conclude that mobility behavior is driven by stigma without first ruling out a number of alternative mechanisms though which an incarceration effect might operate. If exiting prison remains a robust predictor of mobility behavior after accounting for these alternative mechanisms, than a sigma-based explanation is more plausible.

Recently, researchers have also pointed to the physical separation associated with confinement as a mechanism driving some of the collateral consequences of incarceration. The separation argument has been especially useful in understanding the incarceration-divorce and incarceration-employment relationships (Massoglia, Remster, et al., 2011). Regarding divorce, physical separation could contribute to decreases in spousal interaction, create an unbalanced division of labor, or through changes in compatibility during confinement (Massoglia, Remster, et al., 2011). Regarding employment, incarcerated individuals might experience eroded job skills and fractured social networks during their spells of confinement that make if difficult to find or maintain stable employment upon release (Western, 2002). Similarly, individuals who are incarcerated for longer periods of time likely have fewer ties to their former acquaintances and communities upon release. This leads to my second hypothesis:

H2: Individuals serving longer prison sentences will be more likely to move than individuals serving shorter prison sentences.

Beyond those mechanisms specified in the incarceration effects literature, ex-inmates in the

aggregate also exhibit a number of characteristics that should increase their likelihood of mobility. For one, the demographics of the prison population overlap with several correlates of mobility. That is, rather than representing a random sample of the population, individuals who go to prison are disproportionately young, unemployed, unmarried or divorced, uneducated, and of minority status (Western, 2006). Many of these same characteristics, as noted above, have been associated with an increased likelihood of mobility behavior (Clark, 1986; Lee & Hall, 2009; South & Deane, 1993).[3] This overlap implies that accounting for these individual-level characteristics will attenuate a portion of the incarceration-effect:

H3: Individual demographic and socioeconomic characteristics will account for any observed relationship between incarceration and mobility behavior.

In addition to an association between incarceration and general mobility behavior, there are also reasons to expect that incarceration might play a stronger role on short-distance, rather than long-distance, mobility patterns. Most moves tend to be intra-county, often ending in the same neighborhood or no more than a few miles away. This has largely been attributed to the limited nature of a household's "awareness space," or the larger context in which they have access and information (Lee & Hall, 2009). While the traditional mobility model has been found to apply to both mobility and migration (Bach & Smith, 1977), some individual characteristics are more associated with migration than residential mobility, and these characteristics are also implicated in the incarceration experience. For example, additional investments in education create opportunities for long-distance mobility by creating employment opportunities, expanding a household's awareness space, and establishing skills that ease the severing of exiting social ties (Long, 1973). Furthermore, career transitions appear to be more predictive of long-distance rather than short-distance mobility, especially for those in more prestigious and higher paying positions (Lee & Hall, 2009; Sandefur & Scott, 1981). Ex-inmates, as a group, experience education and employment deficits both before and after prison. Prisoners tend to have little education leading up to prison, with most having dropped out of high school (Western 2006), and few take advantage of opportunities while

[3] Processes at the family and household-level are also relevant here. For instance, the incarcerated individual's household could move during the spell of confinement, making a move necessary to ensure continuity of housing. Respondents who experience a divorce either while or directly following confinement may also find it necessary to move following release. These processes will be examined in subsequent analyses.

incarcerated to remedy this educational deficit (Petersilia 2003). Furthermore, the incarceration experience itself creates problems in the labor market, including decreased employment prospects (Pager, 2003) and labor force non-participation (Apel & Sweeten, 2010). As such, any effect of incarceration on mobility behavior might be limited to short-distances moves:

H4: Any observed relationship between incarceration and mobility behavior will be observed for short-distance moves, but not long-distance moves.

Existing research also documents racial variation in the effect of incarceration in certain contexts. This is not entirely surprising, given the wide racial variation in the use of incarceration to begin with. The black incarceration rate, for example, is almost 7 times higher than the white incarceration rate. Black males without a high school degree are especially at risk of incarceration, as roughly 60% of this group will experience correctional contact at some point during the life course. Black and white parolees also tend to live in quite different neighborhoods following incarceration, with black ex-inmates residing in some of the most disadvantaged neighborhoods in the country (Hipp, Turner, et al., 2010). That said, in some cases, correctional contact is more detrimental for whites. For example, the labeling effects on secondary deviance appear to be strong for whites than for blacks (Chiricos, Barrick, Bales, & Bontrager, 2007) Emerging evidence also suggests that correctional contact has the biggest impact on the neighborhood characteristics of white ex-inmates (Massoglia, Firebaugh, & Warner, 2011). Furthermore, racial variation has been documented in the mobility process. Blacks who expect to move are less able than comparable whites to translate their mobility expectations into a move, and are more likely than whites to experience an involuntary move (Crowder, 2001). While I do not advance a specific prediction on racial variation in the effect of incarceration on mobility decisions, I do estimate parallel models for white, black, and Hispanic respondents to determine if the incarceration-effect on mobility behavior is racial invariant.

In sum, there are several reasons to expect that transitioning out of prison will foster increased mobility behavior. Some of these expectations, such as individual processes, family processes, and physical separation are more easily measured than others. For example, stigma is often captured simply

through correctional confinement, which implies that the confinement experience itself accurately reflects the convict label.[4] The preliminary models here start by focusing on how transitions out of prison, physical separation, and important individual level characteristics predict mobility across geographic levels. As I note in the discussion, the coding and analytic strategies will be modified moving forward to more explicitly place incarceration alongside key individual and family processes to assess the relative magnitude of the incarceration-mobility relationship.

Data and Methods

Examining how incarceration impacts residential mobility decisions requires data that contains both incarceration and residential histories. Most publicly available data falls short on one or both of these requirements. Longitudinal social surveys, for example, are limited in their sparse and limited measures of criminal justice system involvement and correctional confinement (Massoglia & Warner, 2011). Correctional data, on the other hand, is often short-term and lacks information of key life-course transitions and background characteristics, including residential history. However, access to otherwise restricted data from the 1979 National Longitudinal Survey of Youth (NSLY79) has created an opportunity to examine individual transitions between prisons and communities across time.

The NLSY79 is a nationally representative social survey that has regularly interviewed an original group of 12,686 respondents since 1979. Respondents were interviewed yearly from 1979 to 1994 and biennially since 1994, given me up to 23 waves of data per respondent. The 1979 start date is ideal for the purposes of the current study, because the NLSY79 respondents were transitioning into adulthood as correctional policies shifted and the correctional system began to grow. After a review for scientific merit, the Bureau of Labor Statistics (BLS) allows researchers to access restricted geocoded data that identifies the respondent's state, county, and census tract location at each wave of data collection. These residential locators are only accessible at the BLS offices in Washington, DC, and allow me to merge rich longitudinal data (accessed via the NLS Web Investigator) with geographically derived

[4] An alternative mechanism that could contribute to mobility decisions and which is not addressed here is the desire to "start over" following prison. Limited descriptive evidence suggests that recently released offenders do desire a "fresh start" and may relocate in hopes of achieving successful reentry (Visher et al. 2004).

characteristics.

Mobility Across Geographic Scales. To measure mobility behavior, I first transformed the 23 waves of individual data into 23 mobility intervals, and created measures of mobility by comparing residential locations at the beginning and end of consecutive intervals. The empirical analyses that follow examine mobility behavior at three geographic scales: inter-tract, inter-county, and inter-state. At each geographic level, moves are dichotomous measures (coded 1) for respondents who live in a different geographic area at the end of the mobility interval than they did at the beginning of the interval. While measuring mobility using residential locators provided by the NLSY79 will capture all those moves made between survey periods, I should note a few limitations. First, all intra-tract moves will be missed, which is unfortunate given the very localized nature of many moves (Clark, 1986). Second, using the geographic locators taken at each survey point will underestimate total mobility, which may be problematic because there may be something distinct about individuals who move a great deal (Fischer, 2002).[5]

Incarceration History. Individual histories of incarceration are measured in the NLSY79 using an annual residence item. Interviews are conducted with incarcerated individuals at the correctional facilities in which they are housed, and existing research has made a strong case that this protocol captures spells of incarceration with certainty (Western, 2002). Researchers have utilized this research design to establish some of the individual-level consequences of incarceration including depressed wage growth (Western 2002), poor health functioning (Schnitker and John 2007; Massoglia 2008a), and divorce (Lopoo and Western 2005; Massoglia et al. 2011). I use this residence item to create two measures of correctional contact for the 683 respondents who were interviewed in prison at least once. The first is a dichotomous measure (coded 1) during each mobility interval that an individual leaves prison. This variable is meant to

[5] To ensure that any shifts in census tract boundaries do not create artificial moves, I use tract boundaries that are standardized to the 2000 census tract boundaries. A final issue that has not been thoroughly explored is missing residential locators, particularly at the tract level. On average, full residential locators are available for 85% of the NLSY79 respondents per any given wave. At some waves, however, census tract locators are unavailable for much larger proportions of the sample, nearing 40% in some cases.

capture individual transitions between prison and the community, which I label correctional release.[6] The second measure is a count variable capturing the length of confinement. Consecutive waves of prison residence are summed to create this measure, which captures the physical separation created by incarceration.

Because incarceration itself is a residence, and is explicitly measured here using an annual residence item, mobility intervals can become complicated. If residential locators are used while individuals are incarcerated, the impact of incarceration on residential mobility could be biased upward through the effect of "coercive mobility." On the other hand, the effect of incarceration on mobility might be masked for individuals housed in the same prison for longer periods of confinement. For these reasons, I dropped from the analyses all waves in which an individual is interviewed in prison. As such, for individuals transitioning out of prison, their mobility intervals start the wave before they are first interviewed in prison and end the wave after they are last interviewed in prison.

Control Measures. One of the goals of the present paper is to examine the impact of incarceration on residential mobility relative to other common correlates of mobility. As such, a number of individual level measures are included as controls. Demographic controls include age (and age-squared), race (captured via dummy variables for white [reference category], black, and Hispanic respondents), and gender. I measure educational attainment using years of school completed. Poverty status is a dummy variable coded 1 for those respondents whose family income was at or below the federally established poverty level (given family size and year). I also include dummy variables for respondents who report owning a home and respondents who report that they reside in (or receive financial support towards) public housing at the time of the interview. I also include dummy variables for respondents who are married at the time of the interview and respondents who are employed at the time of the interview. Finally, I include a count of the number of resident children, calculated using the household roster.

Analytic Strategy. Since residential mobility is captured here as a dichotomous measure, the

[6] Currently, individuals remain in the dataset if they return to prison. Thus, an individual can have multiple transitions between prison and the community across time. Future analyses will examine alternatives to managing the ex-inmate sample, including one alternative of removing reincarcerated individuals from the sample.

empirical models that follow are estimated using logistic regression techniques. The data are first transformed into mobility intervals, resulting in a working data set where individual characteristics at time *t* predict a change in residential location at time *t+1*. Because respondents contribute multiple mobility intervals to the data, estimates from standard logistic regression techniques can be biased because observations are not independent. As such, I cluster all standard errors to take into account that observations are nested within respondents. I estimate, in turn, inter-tract mobility, inter-county mobility, and inter-state mobility. Furthermore, as discussed above and because of racial discrepancies in the use of incarceration (Western, 2006), as well as racial variation in mobility behavior (Crowder, 2001), I present summary models by respondent race/ethnicity. All models are estimated using Stata v11.

Results

Table 1 displays descriptive statistics for the range of control measures used in the regression models that follow.[7] The descriptive statistics are based on person-period observations, and I present them broken down by correctional contact (individuals with and without a history of incarceration). Respondents in the NLSY79 with a history of incarceration display similar features to the general correctional population. While representing only 24% of the never-incarcerated sample, African Americans account for almost half of the respondents with a history of incarceration. A higher percentage of individuals with a history of incarceration are also (at any given point) unemployed, unmarried, live in public housing, do not own homes, and live in poverty.

----- TABLE 1 ABOUT HERE -----

Of the 683 NLYS respondents who were interviewed at least once in prison, a total of 629 exit prison and enter the working data as ex-inmates.[8] Simply examining ex-inmate pre- and post-prison census tracts gives initial support for hypotheses 1 and 4, which specify that the likelihood of mobility is

[7] Currently, the study is lacking descriptive information on mobility for the entire sample. Because output must be screened and approved by BLS staff before it is released this information is not currently available. More complete descriptive information will be included moving forward.

[8] The 55 respondents who do not re-enter the data following prison do so for one of three reasons: (1) their only spell of incarceration began at the first wave of data collection; (2) they were in prison for the first time at the last wave of data collection; or (3) they dropped out of the sample entirely after leaving prison.

higher for individuals exiting prison, but that this effect will be stronger for short-distance mobility. Roughly two-thirds of the NLSY79 ex-inmates live in different neighborhoods following their first spell of incarceration than they did before prison. Only 31 percent of ex-inmates live in a different county following prison and only 10 percent live in a different state. Examining all instances of correctional release (that is, taking repeat spells of incarceration into account) suggests that mobility might become more common for repeat offenders. Approximately 38 percent of all instances of correctional release involve a change of county and almost 20 percent involve a change of state.[9] What is not clear from this descriptive information, however, is if these ex-inmates move because of the incarceration experience, or because of other individual characteristics known to foster mobility. To explore this issue in more detail, I turn to the logistic regression results in tables 2 (inter-tract), and 3 (inter-county and inter-state), and 4 (by respondent race/ethnicity).

Table 2 presents the results of three nested logistic regression models predicting inter-tract mobility behavior. In model 1, I regress tract mobility only on instances of correctional release, which are coded 1 for those respondents who leave prison during any given mobility interval. I add a host of individual-level covariates in model 2 to determine if these characteristics mediate the incarceration-effect (as specified in hypothesis 3). Finally, I include a measure of sentence length in model 3, which tests hypothesis 2, that the incarceration effect could be driven physical separation.

----- TABLE 2 ABOUT HERE -----

Model 1 displays a strong association between exiting prison and making an inter-tract move. The likelihood of inter-tract mobility is more than quadrupled for those NLSY79 respondents who exit prison during any given mobility interval ($e^{1.54} = 4.65$). Adding a host of individual-level controls in model 2 mediates the incarceration effect somewhat (by about 13%), but it remains a strong predictor of inter-tract mobility behavior, with the odds of moving over 3.5 times higher for individuals exiting prison at any given mobility interval ($e^{1.34} = 3.83$). Accounting for physical separation mediates almost 40-percent of

[9] Inter-tract mobility descriptives are currently only available for the first instance of correctional release, so it is unclear if these desriptives would look different taking all instances of correctional release into account.

the effect of incarceration, and sentence length is also a positive predictor of mobility behavior. Thus, similar to the effect of incarceration on divorce (Massoglia, Remster, et al., 2011), at least a portion of the relationship between incarceration and inter-tract mobility is driven by variation in the length of physical separation. Even after accounting for separation, however, a significant effect remains for the measure of correctional release. The effect of age on mobility is non-linear, the effect starts out positive and then becomes increasingly negative. African American respondents are less likely to move than whites, and homeowners, those residing in public housing, and those with more children are less likely to move. Higher educated respondents and respondents in poverty are more likely to move.

Thus, the results presented in Table 2 provide strong evidence that – even after accounting for sentence length – those respondents exiting prison at any particular mobility interval are more likely than other respondents to make an inter-tract move. Indeed, the odds of inter-tract mobility are more than doubled for those respondents exiting prison ($e^{0.86} = 2.37$). However, as suggested in hypothesis 4, there are several reasons to expect that the incarceration effect could be limited to short-distance mobility behavior. I explore the impact of incarceration on mobility across larger geographic scales in Table 3, which provides summary results for both inter-county mobility and inter-tract mobility. Because the effects of the control measures are consistent across the different outcomes, these coefficients are not displayed in Table 3. I instead focus on the effect of the incarceration measures for inter-county mobility in the top panel and inter-state mobility in the bottom panel.[10]

----- TABLE 3 ABOUT HERE -----

The results in Table 3 for inter-county mobility are strikingly similar to those presented in Table 2 for inter-tract mobility. That is, at any given mobility interval, those respondents exiting prison are more likely to make a move that crosses county lines, and this effect is largely unchanged by the inclusion of a range of individual-level controls. Indeed, the coefficient for correctional release actually increases slightly from Model 1 to Model 2. Accounting for sentence length mediates about one-quarter of the effect of correctional release, and both incarceration measures are positive and significant predictors of

[10] Coefficients and standard errors for all control measures are available from the author on request.

inter-county mobility in the full model. It is not until the outcome shifts to inter-state mobility that the incarceration effect is reduced to non-significance. This is not entirely surprising given the descriptive information noted above. Only 10 percent of all ex-inmates make an inter-state move upon their first release from prison, and less than 20 percent of ex-inmates make inter-state moves across all instances of correctional release (including re-incarceration). Indeed, not only is the effect of correctional release non-significant across the three models but the direction of the effect also changes directions when modeling inter-state mobility behavior. That is, there is limited evidence that the correctional experience actually decreases the likelihood of mobility (by about 20 percent) across larger geographic scales, as opposed to increasing the likelihood of both inter-tract and inter-county mobility. However, in no instance does this coefficient reach conventional levels of statistical significance.

Finally, given the broad racial disparities in the prison and reentry populations (West et al., 2010), coupled with racial disparities in mobility and neighborhood sorting (Logan & Alba, 1993), Table 4 examines parallel models for white, African American, and Hispanic respondents. Each model displays the results for a different geographic scale, and all individual level controls are included but not displayed to conserve space.

----- TABLE 4 ABOUT HERE -----

The results in Table 5 suggest that the effects of correctional release and sentence length are fairly similar for different racial and ethnic groups. The effect of correctional release on inter-tract mobility is strongest for whites (Coef. = 1.31), but the coefficient for white respondents is not significantly different from that for African Americans (Coef. = 0.71) or Hispanics (Coef. = 0.70). Indeed, for whites, correctional release drives the association for inter-tract mobility, while the coefficients for correctional release and sentence length are almost identical for inter-state mobility. The negative effect of correctional release on inter-state mobility for the full sample (seen in Table 3) appears to be driven by African American and Hispanic ex-inmates. Finally, Model 3 for Hispanics suggests that the likelihood of making an inter-state move for Hispanic ex-inmates increases as sentence length increases.

In sum, the results presented here provide strong evidence that correctional contact has a strong

effect on mobility behavior, especially moves that cover shorter-distances. Even after accounting for a range of individual characteristics, NLSY79 respondents exiting prison are significantly more likely to live in a different census tract and a different county compared to their pre-prison residential locations. A portion of this effect is driven by the physical separation created by incarceration, with the likelihood of both inter-tract and inter-county mobility heightened for individuals serving longer prison sentences. It is not until the empirical focus shifts to inter-state mobility that the correctional contact measures no longer predict mobility. Finally, the effect of incarceration similarly predicts inter-tract and inter-county mobility for white, African American, and Hispanic ex-inmates.

Discussion

After decades of unprecedented growth, the size of the United States correctional system recently experienced two consecutive years of decline (Glaze, 2011). This recent trend suggests a reevaluation of our overreliance on incarceration as a form of punishment, and is likely fueled in part by recent budgetary constraints at the state-level. That said, however, the fact remains that over 1.5 million individuals were housed in U.S. prisons in 2010, and the overwhelming majority of these convicted offenders will eventually leave prison and attempt to re-integrate back into society. One of the first questions these individuals must answer upon release is, "Where will I sleep tonight?" Emerging research points to the important of residential characteristics for the prospects of successful reentry, although little is known about the patterns of mobility that funnel ex-inmates into certain neighborhoods.

The current study documents a strong association between release from correctional confinement and subsequent mobility behavior. This relationship was robust to a range of individual-level characteristics typically associated with mobility decisions, as well as variation in the sentence length. That both the measure of correctional contact and the measure of sentence length predict mobility behavior provides support for both stigma-based and separation-based arguments of incarceration-effects. Like other marginalized sub-groups, ex-inmates appear to experience rates of mobility that are higher than would otherwise be expected. Ex-felons are subject to a number of residential restrictions including limits on public housing residence and pre-approval of living arrangements (Geller & Curtis, 2011;

Petersilia, 2003). These types of restrictions likely constrain housing options and encourage residential moves.

Exiting correctional confinement fosters a similar likelihood of both inter-tract and inter-county mobility. It is not until the focus shifts to inter-state mobility that correctional release no longer predicts mobility behavior. That the effect for inter-tract and inter-county mobility are so similar, while the effect for inter-state mobility is so nominal, suggests that moves in the current study that cross tract and county lines may be capturing moves occurring within the same community or metropolitan area. Increased suburbanization has resulted in urban areas that contain several counties, and the results presented here may be capturing that. Indeed, Fishcer (2002) notes that a portion of the decrease in local moves could be attributed to an increased ability of American households to commute. This suggests that correctional contact works to foster moves that begin and end in the same community, but has little or no effect on the likelihood of making longer-distance moves (especially those that cross state lines).

Even though there are extensive discrepancies in the use of incarceration, as well as evidence of racial variation in mobility behavior, exiting prison impacts mobility similarly for white, African American, and Hispanic ex-inmates. Among white ex-inmates, physical separation played a stronger role for inter-county mobility than it did for inter-tract mobility; while among African American ex-inmates the opposite pattern was observed. Physical separation also fostered mobility across all geographic scales for Hispanic ex-inmates, while its impact was largely limited to mobility at smaller geographic scales for whites and African Americans. For the most part, however, the effect of correctional contact was fairly consistent across racial and ethnic groups. Perhaps the more appropriate empirical question for ex-inmate racial variation is the types of neighborhoods that ex-inmates move in to. In a study of Californian parolees, Hipp and colleagues (2010) found that black parolees lived in more disadvantaged neighborhoods than did white parolees. However, emerging evidence suggests that incarceration might create the greatest downward neighborhood mobility for white ex-inmates, who have "more to lose" (Massoglia, Firebaugh, et al., 2011). How migration patterns following prison contribute to these discrepant findings is an avenue for future research.

The results presented in the current study – and the data used to estimate the results – suffer from some notable limitation, some of which will be addressed in future steps. For example, while I can definitely capture moves that occur between data collection points, all other moves will be missed, which suggests that the results may underestimate the extent of total mobility. This is unfortunate for two reasons. First, highly mobile individuals and households are both distinct and theoretically interesting. Second, it is reasonable to expect that – given their marginalized status – ex-inmates may disproportionately fall into this highly mobile group. Furthermore, the NLSY does not survey respondents about their mobility thoughts, which his a key component to many mobility models (Speare et al., 1975). Similarly, the NLSY does not explicitly focus on offending behavior or criminal justice contact. While existing research suggests that the survey protocol captures spells of incarceration with certainty (see Western 2002), more detailed measures on offending and criminal justice contact would provide a more complete picture of the incarceration-mobility relationship.

Other shortcomings will be addressed moving forward. For example, the current coding of important life-cycle transitions reflects more the state of having made a particular transition, rather than the transition itself. This is important because, for instance, it is the transition into marriage that should be most relevant for mobility, rather than the state of marriage itself. Revised coding of these measures will allow for clearer conclusions about the role incarceration plays in fostering mobility in relation to other important life transitions. This would also allow for an examination of within-person mobility patterns over time, which would be a more robust test of the incarceration-mobility relationship. That is, for the same individual, what role does incarceration play on mobility as opposed to completing school, getting married, or having a child? Finally, more refined mobility measures would help tease out the impact of incarceration on mobility versus migration. One possible approach would be to revise the inter-tract mobility measure to capture moves that occur between tracts, but within the same county. This would likely provide a better measure of local moves than the simple tract comparison use now, which likely confounds both inter-county and inter-state moves.

These shortcomings and necessary future steps aside, the results presented here have a number of

research and policy implications. Researchers working in the incarceration-effects field have started to pay increasing attention to the role that housing and residential characteristics play in the reentry process. The present results further suggest that incarceration itself creates residential instability, especially within more localized areas. Furthermore, existing research in the locational attainment tradition has consistently found that African American households do not achieve residence in the same quality neighborhoods as comparable whites. However, these studies do not typically consider the sizeable black population flows into and out of prison each year. The black incarceration rate is seven times higher than the white incarceration rate, and approximately 60 percent of uneducated blacks males will spend time in prison at some point during the life course. These trends could contribute to the social reproduction of racially segmented housing markets (Sampson & Sharkey, 2008). Finally, criminal justice practitioners and policymakers should find the results of interest. Almost two-thirds of all individuals released from prison are eventually rearrested (Langan & Levin, 2002), and a recent report by the PEW Foundation suggests that reducing recidivism rates by just 10 percent would save over $600 million in averted costs in one year alone (PEW, 2011). As such, empirical research that examines the impact that incarceration has on mobility behavior should help create more targeted policies that promote housing stability amongst this marginalized sub-group. This is especially relevant given the role of stable housing as the "lynchpin that holds the reintegration process together" (Bradley et al. 2001:1).

TABLES

Table 1. Descriptive Statistics by Incarceration Status

	Respondens with History of Incarceration		Respondens without History of Incarceration	
	Mean	*SD*	*Mean*	*SD*
White	0.31	0.46	0.61	0.49
Black	0.49	0.50	0.24	0.42
Hispanic	0.20	0.40	0.16	0.36
Sentence Length	1.86	1.73	--	--
Age	26.72	8.27	29.37	8.88
Family Poverty Status	0.34	0.47	0.16	0.36
Years of Education	10.89	1.86	12.56	2.44
Homeowner	0.08	0.27	0.33	0.47
Public Housing Residence	0.09	0.29	0.04	0.21
Marital Status	0.19	0.39	0.43	0.49
Number of Kids	0.45	0.91	0.85	1.14
Employment Status	0.56	0.49	0.72	0.45

NOTES:
-- Mobility intervals: Full sample (168149, clustered on 12,065 respondents); Whites (91,522, clustered on 7068 respondents); Blacks (46,692, clustered on 3,055 respondents); Hispanics (29,935, clustered on 1,942 respondents)

Table 2. Logistic regression models predicting inter-tract mobility (NLSY79)

	Model 1	Model 2	Model 3
Incarceration Measures			
Correctional release	1.54 ***	1.34 ***	0.86 ***
	(.08)	(.09)	(.15)
Sentence length			0.27 ***
			(.07)
Control Measures			
Age		0.15 ***	0.15 ***
		(.01)	(.01)
$(Age)^2$ X 10		-0.02 ***	-0.02 ***
		(.00)	(.00)
White (reference)			
Black		-0.22 ***	-0.22 ***
		(.02)	(.02)
Hispanic		-0.03	-0.03
		(.02)	(.02)
Education		0.03 ***	0.03 ***
		(.00)	(.00)
Homeowner		-1.33 ***	-1.33 ***
		(.02)	(.02)
Public Housing		-0.18 ***	-0.18 ***
		(.03)	(.03)
Family Poverty		0.14 ***	0.14 ***
		(.02)	(.02)
Number of Children		-0.04 ***	-0.04 ***
		(.01)	(.01)
Married		0.03	0.03
		(.02)	(.02)
Employed		0.00	0.00
		(.02)	(.02)
Constant	-1.06 ***	-3.36 ***	-3.36 ***
	(.01)	(.09)	(.09)
-2 log likelihood	191,709.37	182,983.48	182,962.37
Pseudo R^2	0.002	0.05	0.05

NOTES:
* p<0.05; ** p<0.01; *** p<0.001
Robust standard errors (clustered on individuals) in parentheses
Sample size: 168,149 person observations (mobility intervals)

Table 3. Logistic regression models predicting inter-county and inter-state mobility behavior (NLSY79)

	Model 1	*Model 2*	*Model 3*
Inter-County Mobility			
Correctional release	1.18 ***	1.27 ***	0.95 ***
	(.08)	(.08)	(.12)
Sentence length			0.17 **
			(.05)
Constant	-1.97 ***	-3.45 ***	-3.45 ***
	(.01)	(.12)	(.12)
-2 log likelihood	130,654.24	126,297.16	126,282.41
Pseudo R^2	0.002	0.03	0.04
Inter-State Mobility			
Correctional release	-0.04	-0.10	-0.24
	(.12)	(.12)	(.16)
Sentence length			0.07
			(.05)
Constant	-2.06 ***	-4.31 ***	-4.31 ***
	(.01)	(.12)	(.12)
-2 log likelihood	136,648.65	133,848.88	133,847.74
Pseudo R^2	<0.001	0.02	0.02

NOTES:

* p<0.05; ** p<0.01; *** p<0.001

Robust standard errors (clustered on individuals) in parentheses; control variables (age, race, education, homeownership, public housing residence, family poverty status, number of children, marital status, and employment status) not displayed.

Sample size: 175,329 inter-county mobility intervals; 194,170 inter-state mobility intervals.

Table 4. Logistic regression models predicting mobility behavior across geographic levels, by respondent race/ethnicity (NLSY)

	Model 1 *Tract*	Model 2 *County*	Model 3 *State*
Whites			
Correctional release	1.31 ***	0.60 *	0.05
	(.37)	(.27)	(.30)
Sentence length	0.35	0.57 ***	0.06
	(.22)	(.15)	(.14)
Constant	-3.70 ***	-3.55 ***	-5.18 ***
	(.12)	(.15)	(.16)
African Americans			
Correctional release	0.71 ***	0.88 ***	-0.31
	(.19)	(.16)	(.25)
Sentence length	0.29 **	0.13 **	0.05
	(.09)	(.05)	(.07)
Constant	-3.32 ***	-3.34 ***	-3.32 ***
	(.17)	(.25)	(.23)
Hispanics			
Correctional release	0.70 *	0.77 *	-0.72
	(.34)	(.31)	(.38)
Sentence length	0.37 *	0.30 *	0.31 *
	(.18)	(.13)	(.15)
Constant	-3.24 ***	-4.85 ***	-4.02 ***
	(.20)	(.33)	(.29)

NOTES:

* p<0.05; ** p<0.01; *** p<0.001

Robust standard errors (clustered on individuals) in parentheses

Control variables not displayed.

Mobility intervals: Whites (91,522 inter-tract; 98,131 inter-county; 109,200 inter-state); African Americans (46,692 inter-tract; 47,203 inter-county; 51,893 inter-state); Hispanics (29,935 inter-county; 29,995 inter-county; 33,077 inter-state)

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