ABSTRACT

BODKIN, MARK R. Beyond Human and Social Capital Punishment: The Stigma of Incarceration, Race, and Their Effect on Earnings through the Life Course. (Under the direction of Steve McDonald.)

Incarceration is a stigmatizing event that is likely to lead to negative labor market outcomes. Prior research has linked incarceration to reduced earnings and slow wage growth, but little is known about individual differences that lead to divergent wage trajectories between formerly and never-incarcerated individuals. Moreover, race differences in these wage trajectories have yet to be fully explored. I employ a multilevel modeling technique (MLM) to examine hourly wage trajectories across the careers of incarcerated and non-incarcerated males using the National Longitudinal Survey of Youth (NLSY). I find that incarceration leads to a significant reduction in wages that is not explained by individual differences in human or social capital. This suggests that incarceration is a stigmatizing event with long-term labor market consequences. I do not find any evidence for a significant interaction between race and previous incarceration; however, additively, I find that formerly incarcerated white individuals earn as much as never-incarcerated African Americans through their late 40s.

Beyond Human and Social Capital Punishment: The Stigma of Incarceration, Race, and Their Effect on Earnings through the Life Course

by
Mark Ronald Bodkin

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APPROVED BY:

_____	_____
Stacy De Coster	Rodney L. Engen

_____
Steve McDonald
Chair of Advisory Committee

DEDICATION

For my parents

BIOGRAPHY

Mark Bodkin is a graduate student pursuing a doctoral degree in Sociology at North Carolina State University. He received his bachelor's degree in Sociology at The Ohio State University. His research areas of interest include crime, deviance, and social control with a focus on consequences of incarceration.

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INTRODUCTION

Sociologists have long been interested in how social inequality contributes to wage differences. Even when controlling for individual attributes such as human and social capital, researchers find effects of race and gender which they view as evidence of race and gender discrimination in the labor market (e.g., Tomaskovic-Devey 1993; Grodsky and Pager 2001). Recently, criminologists have begun exploring the stigma associated with a criminal record, and the discrimination formerly incarcerated individuals face as they reintegrate back into society upon their release from prison (Pager 2003; Western 2002). In fact, some have argued that formerly incarcerated individuals should be considered as not only a separate class, but as a caste, or status group, in our current social arrangement (Uggen, Manza, and Thompson 2006). Formerly incarcerated individuals constitute a group for whom discrimination remains acceptable in multiple domains of society including employment, family life, and civic participation (Uggen et al 2006).

It is important that we understand how incarceration shapes labor market outcomes, particularly because the United States' "felon class" is currently estimated to be more than 16 million Americans, or 7.5% of the adult population (Uggen et al 2006). Surely, this number will continue to increase as more individuals exit prisons annually stemming from the mass incarceration witnessed over the past two decades. Two lines of work provide relevant information to this issue. Western's (2002) work has informed us that previously incarcerated individuals indeed do earn less than those never-incarcerated. Consistent with prior research on status attainment and labor market outcomes in social inequality, he posits that this may

be explained partially by differences in social and human capital across ex-convicts and never-incarcerated individuals.

Pager's (2003) work is also informative to the issues at hand with its emphasis on the decision-making of employers. Her research demonstrates that there is a stigma associated with a criminal record and incarceration, and it complicates employment prospects for ex-felons. I propose that this stigma follows individuals throughout their career trajectories, perhaps because of the types of jobs they are able to secure, which are typically jobs in the secondary labor market characterized by low-pay and high turnover (Irwin 2005). Among the most important findings from Pager's research is that the effect of incarceration on the attitudes of employers toward potential employees is much stronger for blacks than for whites. This raises intriguing questions about whether the disproportionate race effect of incarceration on securing employment is evident also in their wage trajectories over the life course. The existing research has been relatively silent on this issue.

The current study assesses the effect of incarceration on long-term wage trajectories at the individual level. Specifically, the study estimates a model predicting long-term wages that takes into consideration factors known to impact wages, including human and social capital (see Tomaskovic-Devey 1993; Grodsky and Pager 2001; Western 2002). If incarceration impacts wages above and beyond these factors, this provides evidence that the stigma of incarceration impacts the decisions of employers and ultimately the labor market outcomes of ex-offenders. The logic here is akin to the logic utilized in classic status attainment models to uncover race discrimination in labor market outcomes (e.g., Tomaskovic-Devey 1993; Grodsky and Pager 2001). Because prior research has suggested

that the impact of incarceration on employer's attitudes toward hiring ex-offenders is particularly strong for African Americans, I estimate models in which I interact race and previous incarceration. Prior research on wages has not considered the possibility that race and incarceration represent a double disadvantage for individuals (Western 2002). As a result, little is known about the long-term interactive effects of race and previous incarceration. Do these negative consequences persist throughout the life course? It seems that the effects of stigma vary across race and need to be explored in the context of contributing to wage differences across the life course.

In an analysis of the National Longitudinal Survey of Youth (NLSY) data, I employ a hierarchical growth curve modeling technique to examine the long-term effects of race and human and social capital on wages among formerly incarcerated and never-incarcerated individuals. Specifically, I assess the extent to which the low wage trajectories experienced by formerly incarcerated workers are due to their lack of productivity enhancing skills, social capital deficits, or the stigma associated with prior incarceration. I further examine whether the stigma associated with incarceration differs across race. The findings show that formerly incarcerated individuals experience significantly reduced earnings compared to never-incarcerated individuals after controlling for within and between-person differences in human capital, social capital, delinquency, and other job-related characteristics. Notably, African Americans earn significantly less than whites regardless of whether they were incarcerated or not. I do not find any evidence for a significant interaction between race and previous incarceration; however, additively, I find that formerly incarcerated white individuals earn as much as never-incarcerated African Americans through their late 40s.

PRIOR RESEARCH ON INCARCERATION AND EARNINGS

Research examining the impact of incarceration on earnings typically estimates the effect of incarceration on earnings by linking official arrest records with earnings data from unemployment insurance reports (for examples see Nagin and Waldfogel 1995; Tyler and Kling 2007; Sabol 2007). This research shows that the short-term earnings penalty associated with incarceration ranges from 10 to 30 percent (Lott 1992a; Waldfogel 1994a; Nagin and Waldfogel 1995; Petit and Lyons 2007; Tyler and Kling 2007; Sabol 2007). It should be noted, however, that this research is limited by the fact that it is based solely on information on ex-offenders with jobs covered by unemployment insurance and thereby cannot speak to the earnings of ex-offenders whose jobs are not covered by such insurance. Moreover, these studies are typically limited to only 2 or 3 years of post-release earnings data, which does not speak to the long-term consequences of incarceration.

Research on the long-term impact of incarceration suggests that ex-offenders experience instability in both employment and wages over time (Waldfogel 1994b). Western's (2002) study, for instance, demonstrated that, incarcerated individuals experienced significant declines in real wages as they progressed through the life course, with a nearly 30% reduced wage growth. This indicates that the negative effects of incarceration on earnings are long-term and persist over the life course. This may be because incarceration restricts access to career jobs that offer wage growth (Sampson and Laub 1993). Career jobs offer individuals strong earnings growth early in their adult lives. They are located in the primary sector of the labor market and are characterized by continuity of employment, acquisition of firm-specific human capital, and upward mobility. Thus, earnings typically

increase with age for workers in the primary labor market. Non-career jobs, however, are located in the secondary labor market which includes entry level and service occupations. In the next section, I discuss a number of mechanisms that may explain why wage trajectories between formerly-incarcerated and never-incarcerated individuals diverge.

MECHANISMS LINKING INCARCERATION TO LOWER EARNINGS

Drawing on the sociology of work literature, Western (2002) posits that the erosion of human capital and weakened social capital resulting from time spent in prison may be relevant for understanding the lower earnings and slow wage growth of ex-convicts. He further suggests, however, that deficits in social and human capital may not fully explain weak wage trajectories. Instead, he offers that the stigma associated with incarceration may exert effects on wage trajectories that are above and beyond variables typically considered relevant for understanding earnings over the life course. This is consistent, of course, with the argument that ex-offenders are a class or caste of individuals who are discriminated against overtly in society and particularly in the labor market (see Uggen, Manza, and Thompson 2006).

STIGMA

Incarceration is a stigmatizing event that leads to negative consequences in the labor market. One explanation for these negative consequences is that employers are reluctant to hire individuals with a criminal record. A study of 3,000 employers in four major metropolitan areas found that two-thirds of employers would not knowingly hire an ex-con (Visher and Kachnowski 2007). Similarly, Holzer and colleagues (2007) surveyed

employers in the Los Angeles area about their willingness to hire ex-offenders and found that over 40% would "probably not" or "definitely not" hire an individual with a criminal record. Employers may be reluctant to hire ex-offenders because they may be perceived as unreliable and untrustworthy. They also may be perceived as a danger to customers, which would explain why the industries most likely to hire ex-offenders are those with little customer contact, such as manufacturing, construction, and transportation (Holzer et al 2007).

Some evidence suggests that the stigma of a criminal record may acutely affect African-Americans. For example, Pager's (2003) study of Milwaukee employers found that even when controlling for appearance, qualifications and resumes, whites *with* criminal records were more likely to get a second interview than African-Americans *without* such records. This suggests either that African-Americans are perceived by employers as criminal, less reliable, dangerous, or poor workers even in the absence of a criminal record, or perhaps that employers are more willing to forgive white offenders for their transgressions, assuming that they were situational. Thus, when confronted with an African American applicant, employers may rely on racial stereotypes when making employment decisions. This evidence suggests that formerly incarcerated African Americans may be doubly disadvantaged with respect to earnings and employment over the life course.

HUMAN CAPITAL

Human capital refers to the individual skills and capabilities obtained through personal investments in education and training (Becker 1974). These investments have the ability to help individuals develop marketable skills and expertise which helps to improve

their earnings prospects. Previous research has established that human capital is a strong predictor of labor market outcomes, especially with regards to race (e.g., O'Neill 1990; Tomaskovic-Devey 1993; Grodsky and Pager 2001). While human capital differences account for only a tiny proportion of the gender pay gap, variability in human capital attainment across race largely explains racial inequalities in earnings (see Tomaskovic-Devey 1993 and Grodsky and Pager 2001 for a discussion).

Incarceration has the potential to suspend the accumulation of human capital because incarcerated individuals are removed from the labor force, resulting in large gaps in employment trajectories. Research suggests that employers are unwilling to hire individuals with questionable employment histories who also have a prison record (Pager 2003). For example, a study of Los Angeles area employers found that employers were more willing to hire individuals with spotty work histories, low educational attainment, and long periods of unemployment than they were to hire ex-offenders (Holzer et al 2007). This suggests that even if deficits in human capital are produced by incarceration and are important for understanding labor market outcomes, they are not the sole explanation for these outcomes.

One explanation for why human capital deficits cannot fully explain labor market outcomes is that it often is possible for offenders to accrue human capital while incarcerated (Bureau of Justice Statistics 2003). One avenue for doing so entails enrolling in GED courses. Earning a GED in prison may signal to employers that an individual has productive attributes like higher cognitive abilities or motivation levels despite their convict status (Spence 1973). Conventional wisdom suggests that offenders who participate in prison-based

education should fair better than those who do not; however, research has not fully supported this hypothesis (Sabol 2007; Tyler and Kling 2007).

Another way offenders are able to accumulate human capital while incarcerated is through prison-based programming. Some scholars have found participating in job training while incarcerated increases the chances of short- and long-term employment (Visher and Kachnowski 2007); others have found that such training is negatively associated with post-release employment (Sabol 2007). Understanding these mixed findings likely requires a more in-depth analysis of the type of training afforded prisoners, as well as the types of jobs available to this population. When the training matches available jobs, offenders are likely to benefit from their training. When there is a mismatch, benefits are likely to be limited or nonexistent. Some researchers have argued that vocational programming in prison is not designed to serve inmates by preparing them for the external labor market but is instead designed to serve the labor market conditions internal to the prison (Sabol 2007). While many prisoners are afforded opportunities to increase their human capital while incarcerated, the literature suggests that human capital accumulated in prison is not as effective in improving post-release labor market outcomes as is human capital accumulated by those not incarcerated.

SOCIAL CAPITAL

While human capital is a personal resource for status attainment, social capital is thought of as a social resource accessible through an individual's direct and indirect ties. Social capital has been defined as investment and use of embedded resources in social

relations for expected returns (Lin 2000). A substantial body of empirical literature suggests that social capital affects socioeconomic attainment by helping individuals obtain jobs through formal and informal networks (Granovetter 1995; Lin 1999). However, not all social groups are able to receive expected returns from their social capital. This inequality in social capital occurs when a certain group clusters at relatively disadvantaged socioeconomic positions, and the general tendency is for individuals to associate with those of similar group or socioeconomic characteristics (Lin 2000: 786). Previous research has shown that racial minorities are more likely to rely on strong ties with redundant resources, such as family and kin, for job search information (Green et al 1999), and this networking tendency reinforces poor social capital (Lin 2000). Thus, race differences in labor market outcomes can also be produced by race differentials in social capital.

Incarcerated individuals are likely to have deficits in their social capital and networks (Lin 2000). Kin and nonkin social networks provide social resources that can lead to a variety of desirable outcomes, including access to employment, access to training and education, as well as social support. Through network ties, resources such as information, personal contacts, and financial assistance are available to help individuals accomplish goals (Coleman 1988). Scholars have posited that social capital is largely unavailable to individuals returning to society from prison because the neighborhoods and communities to which they re-enter society are dramatically different than from before going to prison (Hagan and Coleman 2001). In addition, punitive social policies, such as the 1997 Adoption and Safe Families Act (ASFA), made it more difficult for formerly incarcerated individuals

to reunite with their families, undermining reciprocity and trust leading to negative social capital (Hagan and Coleman 2001).

Others have argued that the types of contacts and networks individuals have access to while incarcerated results in disadvantageous outcomes. For instance, prison environments are inherently criminogenic and may intensify attachments to other criminals, thereby increasing criminal social capital and criminal opportunities but doing little by way of affording ex-offenders ties to conventional others and opportunities (Jankowski 1991; Venkatesh 2000). The negative impact of incarceration on social capital is evidenced also in family relationships with ex-offenders witnessing lower likelihoods of marriage and cohabitation (Lopoo and Western 2005). Finally, incarceration can further undermine social capital by limiting access to apprenticeships and careers in crafts and the public sector. Prior research has shown that entry to trades and public sector employment depends largely on referral networks (Granovetter 1995, 173-74).

HYPOTHESES

Incarceration reduces wages from 10 to 20 percent and wage growth by nearly 30 percent (Western 2002). However, little is known about the individual differences that contribute to divergent wage trajectories among ex-offenders and non-offenders. Scholars have emphasized the importance of the stigma associated with incarceration in relation to reducing access to employment outcomes (Western 2002; Pager 2003), noting that employers are hesitant to hire ex-offenders because they are perceived as untrustworthy (Holzer et al 2007; Visher and Kachnowski 2007). As a result of this stigma, formerly incarcerated

individuals are typically restricted to the secondary labor market which is characterized by high-turnover, low-pay, and usually part-time or temporary jobs (Nagin and Waldfogel 1998; Irwin 2005). Alternatively, the flattened wage trajectories formerly incarcerated individuals experience could be due to factors such as low levels of human capital and social capital deficits, suggesting that the association between incarceration and reduced wages is spurious. Thus, my first three hypotheses are as follows:

Hypothesis 1: Incarceration will lead to a significant reduction in wages over time.
Hypothesis 2: Higher levels of human and social capital will be positively related to wages over time.
Hypothesis 3: The total effect of incarceration on wages over time will be reduced when human and social capital variables are taken into consideration.

Any remaining effect of prior incarceration after taking into account human and social capital variables is likely attributable to the stigma associated with incarceration. In other words, formerly incarcerated individuals may be discriminated against in the labor market beyond the penalties they pay for lower levels of human and social capital.

These stigma effects may be particularly salient for African Americans (Pager 2003). Alternatively, previous studies have found that official labeling has a much larger subjective impact on whites than African Americans (Ageton and Elliot 1974; Chiricos et al 2007), and whites anticipate more discrimination and devaluation upon their release from prison (Winnick and Bodkin forthcoming). This may be due to the fact that incarceration has

become a more normative event for African American males. Thus, it could be argued that incarceration is more stigmatizing for white individuals because they are far less likely to be incarcerated in their lifetimes (Pettit and Western 2004). In an attempt to clarify the relationship between the stigma of incarceration and race, I assess the possibility that the stigma of previous incarceration is conditioned by race. Statistically speaking, I expect to find that race and prior incarceration interact to produce low wage trajectories. My fourth hypothesis is as follows:

Hypothesis 4: Incarceration and race will interact in their impact on wages over time, controlling for human and social capital variables.

DATA AND METHODS

DATA

The data used in this study are drawn from the first 22 waves of the National Longitudinal Survey of Youth (NLSY). The NLSY is a longitudinal survey that used three independent probability samples designed to represent the entire United States population on January 1, 1979: (1) a cross-sectional sample of persons born January 1, 1957 through December 31, 1964; (2) a supplemental sample designed to oversample civilian Hispanic, Black, and economically disadvantaged non-Hispanic, non-Black youth; and (3) a military sample of young persons serving in the military as of September 30, 1978. The NLSY is a rich source of data for analyzing a number of different labor market outcomes, including earnings, and it is uniquely suited to study wage disparities among both white and black disadvantaged populations.

The NLSY contains data on youth detention and adult incarceration. The source of time-varying data on adult incarceration is found in the annual residence item that identifies respondents who were interviewed in prison or jail. The annual residence item measures incarceration with error because the respondent's incarceration status was only obtained at the time of interview (Western 2002: 530). Because of this, prison or jail spells less than 12 months are underobserved; however, the majority of prison sentences (which are typically longer than a year) are observed accurately. In addition, Western (2002) compared trends in the incarceration rates in the NLSY with trends from aggregate data for the United States population as a whole (e.g., Bureau of Justice Statistics), and concluded that NLSY correctional residence item provides reasonable coverage of the prison population as a whole over the study period.

To make use of a multilevel longitudinal analytic technique, I converted the original NLSY flatfile dataset into a person-period data set consisting of respondents' observations from 22 waves of data (1979-2006). I analyze data from 46,245 person-wave observations nested within 4,176 white and African American male respondents that remained after attrition and listwise deletion of missing data.

VARIABLES

The dependent variable for this analysis is the log of the respondent's hourly wages (standardized to constant 2005 dollars). The models are built around four substantive predictors of interest: incarceration, human capital, social capital, and race. ***Previous incarceration*** is measured with a dummy variable coded as 1 if the respondent was

interviewed in prison in any previous years and 0 if not. This variable is used to estimate the effect of incarceration on earnings after release. Consistent with prior research on status attainment, human capital is measured using three variables: education, work experience, and cognitive ability (Tomaskovic-Devey 1993; Grodsky and Pager 2001; Western 2002). *Education* is a time-varying variable measuring the respondent's highest grade completed in year *t*. *Work experience* is also a time-varying predictor measuring the number of weeks worked in year *t*. *Cognitive ability* is a time-invariant predictor and is measured by the respondent's score on the Armed Forces Qualifying Test (AFQT) administered in 1980[1].

While the NLSY does not contain direct measures of *social capital*, previous researchers have used parent measures of class to approximate an individual's social capital (McDonald and Elder 2006). In the absence of a direct measure of social capital, I utilized the educational attainment of the respondent's parent with the highest level of education[2]. In addition, I included *marital status* as an additional indicator of social capital because one's spouse may provide one with networks helpful for obtaining employment, particularly if the spouse was not in prison.

Race is measured by a dummy variable, coded 0 if white and 1 if black. I excluded other minorities from the analyses for the following reasons: (1) according to the Bureau of Justice Statistics (2006), whites and African Americans comprise the vast majority of the

[1] The AFQT score for each individual is an approximation of cognitive ability and is constructed using the summated raw scores of four sections of the Armed Services Vocational Aptitude Battery (ASVAB): arithmetic reasoning, word knowledge, paragraph comprehension, and numerical operations. A number of studies have shown the importance of measuring cognitive ability when examining labor market outcomes (e.g., Murnane et al 1995).

[2] A sensitivity analysis was conducted where I estimated models using mother's education and father's education separately. The findings remained substantively the same in size and direction whether mother's education, father's education, or highest of the two was used.

United States' prison population (34% and 38% respectively); (2) it is analogous to Pager's (2003) research on the stigma of a criminal record; and (3) previous research on racial differences in earnings inequality tends to focus on the white/black pay gap (e.g., Tomaskovic-Devey 1993; Grodsky and Pager 2001).

The control variables in the analyses include: current incarceration status, involvement in delinquency during the adolescent years, age, and job-related characteristics. *Current incarceration* status is coded as 1 if the respondent was interviewed in prison or jail in the current year and 0 if not. As Western (2002) notes, many respondents in the NLSY reported earnings while incarcerated. These earnings may have come from prison employment or from the labor market prior to prison if incarceration was recent. Controlling for current incarceration status is necessary in order to prevent confusing *prior incarceration* with the lost earnings experienced while incarcerated (Western 2002).

Involvement in delinquency during the adolescent years is controlled in attempt to account for stable characteristics of individuals. Scholars have posited that some individuals have an underlying trait that results in a tendency to commit crimes regardless of other social factors. Among these have included genetic propensities (Guo et al 2008; Rowe and Osgood 1984), biological factors (Fishbein 1990), and psychological factors (Wilson and Hernstein 1985; Eysenck 1990; Nagin and Paternoster 2000). In addition to predicting criminality, these stable individual differences may also be related to labor market outcomes (Gottfredson and Hirschi 1990). In short, both incarceration and negative labor market outcomes may be products of some underlying individual propensity. To account for this possibility, I control for *delinquency* by constructing a scale of self-reported delinquency included in the 1980

wave of the NLSY. Items in the scale included self-reported drug and alcohol use, theft, and assault among others.

Age is used in the analysis both as an indicator of time and to control for the increases in earnings individuals accrue over the life course. In addition, a quadratic age term is included to capture and control for the documented decline in real wages over the duration of the data collection period (Morris and Western 1999; Western 2002).

Job-specific controls included *employment status, union membership, type of industry,* and *public sector employment.* Because unemployed individuals may have missing values on these job-specific controls, I used an embedded dummy variable approach to minimizing lost cases due to missing data (Hardy and Reynolds 2004). Using an embedded dummy variable for employment status allows me to retain cases that would have had missing data on industry, sector, and union membership. Additionally, my analysis includes controls *for school enrollment status, urban residence, region of residence,* and *local unemployment rates,* which may also exert an effect on earnings.

Descriptive statistics for the entire data collection period (1979-2006) for select independent variables are reported for formerly incarcerated, never incarcerated, and the entire analytic sample in Table 1. As Table 1 shows, formerly incarcerated individuals are characterized by considerable disadvantage when compared to never incarcerated individuals. Formerly incarcerated individuals are disproportionately African American (63%). They are also less educated and have less work experience, and lower values of social capital than non-incarcerated individuals. They are more delinquent and less likely to

be married than non-incarcerated individuals. Finally, formerly incarcerated individuals earn, on average, nearly $5 less per hour than non-incarcerated individuals.

ANALYTIC STRATEGY

I employ a multilevel modeling (MLM) technique to test the hypotheses above (see Raudenbush and Bryk 2002; Singer and Willett 2003). MLM techniques account for the nested nature of longitudinal data by nesting observations hierarchically in conceptually meaningful levels, such as students within schools, or people within cities within states. I use a two-level MLM approach to nest person-period observations within-people. In other words, data at Level 1 include multiple observations from a given respondent at a given wave of data, and data at Level 2 are time-invariant respondent characteristics. In addition, the MLM approach is advantageous because it allows for the use of unbalanced data (e.g., it is not necessary for every individual to be assessed at the same time). This allows me to use respondent age as my time indicator despite individual age differences at each point of data collection. Finally, a MLM framework has an additional advantage over other longitudinal approaches (i.e., fixed-effects models) in that it is able to examine the effect of time-invariant predictors such as race on growth because these predictors drop out of fixed-effects models (see Phillips and Greenberg 2008).

Growth curves for hourly wages are modeled by including age (grand mean centered, or population average value) and a quadratic term for age. Two of the theoretically relevant time-varying variables of interest (Level 1 variables), education and work experience, are group-mean centered, or centered around each individual's cross-time average. Variability in

both the intercept (e.g., variation in the average hourly wages across persons) and linear slope (e.g., variation in the instantaneous rate of change within persons) is estimated by including a random effect at Level 2[3]. I included a random effect for previous incarceration as well because the effect of prior incarceration may vary across individuals. In addition, the cross-time means, or individual average values for the time-varying human capital variables (education and work experience) at Level 1 are grand-mean centered (e.g., the population average) and included as Level 2 predictors for the intercept and linear slope.

This analytic strategy allows me to separately examine both between-person and within-person effects of theoretically relevant human capital variables on hourly wages across people and over time (see Horney, Osgood and Marshall 1995; Kim, McHale, Crouter, and Osgood 2007). Significant effects at Level 1 for time-varying variables suggest that within-person changes in predictors (e.g., incarceration, accruement of human capital, or marital status over time) co-vary with fluctuations in hourly wages, controlling for other individual characteristics. At Level 2, significant effects for time-invariant predictors (e.g., race, cognitive ability, social capital) suggest the existence of between-person linkages among variables, similar to the estimates typically found in OLS regression.

RESULTS

UNCONDITIONAL AND LEVEL 1 BASELINE MODELS

The analysis begins by first estimating the unconditional means and unconditional growth models (see Raudenbush and Bryk 2002). These unconditional models are useful

[3] I did not include a random effect for the quadratic age term (age squared) because no significant variation existed around the trajectory curvature for individual hourly wages.

because they partition and quantify the variation in wages in two ways: first, across people without regard to time (unconditional means model) and second, across both people and time (unconditional growth model). The results establish whether or not there is systematic variation in wages worth exploring and where that variation resides (see Singer and Willett 2003 for discussion).

Table 2 displays the results for the unconditional and Level 1 baseline models. The unconditional means model (Model 1) predicts the average wages without any covariates included. In addition, the unconditional means model contains useful information about the proportion of wage variation between people. The intraclass correlation coefficient measures the proportion of variance in wages that is between groups (i.e., Level 2 units). The intraclass correlation coefficient shows that 42.7% of the explainable variance in wages is between-people, while the rest of the explainable variance resides within-people.

The unconditional growth model (Model 2) includes no predictors other than time. Based on previous research documenting the decline in real wages over the course of study (Morris and Western 1999; Western 2002), I included both a linear and quadratic age term (grand-mean centered) to capture the trajectory and curvature of wages. The results of Model 2 suggest that individual wages increased linearly over time until they reached a tipping point in late adulthood and then began to decline. Comparing the variance components of Model 2 to Model 1, I find a decline of .279 (from .197 to .142) and conclude that approximately 27.9% of the within-person variation in wages is associated with linear and quadratic time.

The nested Level 1 models that include the within-person, time-varying predictors and controls helps determine the best-fitting Level 1 model. Model 5 displays the results of the Level 1 baseline model. Without taking into account between-person differences, previous incarceration is negatively related to wages, net of within-person differences in human capital, social capital, and controls for job characteristics, spatial characteristics, and current incarceration. This is consistent with hypotheses 1 and 2. In addition, consistent with previous studies, the human capital variables are positively related to wages. Individuals with more education and work experience earn more over time than those with less education and work experience. Marital status, an indicator of social capital, is also positively associated with wages indicating that married individuals earn more than do non-married individuals over time. Both of these findings are net of within-individual differences in incarceration, job, and spatial characteristics. A series of deviance tests confirmed that Model 5 is the best fitting Level 1 model. This model thereby serves as the baseline of comparison for the subsequent two-level models[4].

EFFECTS OF HUMAN CAPITAL, SOCIAL CAPITAL, AND INCARCERATION

Upon specifying the Level 1 (within-person) baseline model, I test the hypothesis that incarceration leads to a significant reduction in wages over time when human capital, social capital, and other stable individual differences are held constant. Table 3 displays the results of the nested MLMs predicting hourly wages. As expected, higher levels of social capital and human capital are positively related to the average individual wage starting point (e.g.,

[4] All Models in Table 3 were estimated including all control variables listed in Table 2; however, in order to save space their coefficients are not included in Table 3.

intercept) and wage growth over time (e.g., linear slope). In other words, individuals with higher levels of social capital and human capital earn more early in their lives, and their wages grow at a faster rate than individuals with lower values of human and social capital. This finding lends support to hypothesis 2.

Model 9 shows that prior incarceration is negatively related to both average wage starting points and linear growth. This suggests that formerly incarcerated individuals earn less on average and over time than non-incarcerated individuals. Figure 1 displays the wage trajectories of formerly incarcerated and non-incarcerated individuals graphically. As the graph shows, formerly incarcerated individuals begin making significantly less than non-incarcerated individuals, and their wages grow significantly slower over time. This confirms the hypothesis that incarceration leads to a significant loss in wages over time net of within-person and between-person differences in human capital and social capital.

Western (2002) found that when period effects were included to account for the severe penalty individuals paid for low levels of education and work experience during the late 1980s, the effect of incarceration on aggregate wage inequality diminished (approximately 30% to 10%). Consistent with Western (2002), the models show a negative effect for incarceration on wages. A large portion of this effect is mediated by between-person differences in social and human capital, which supports the third hypothesis. This is also reflected in the Level 2 variance estimates for the intercept. While adding predictors for social capital at Level 2 only explains an additional 1% (.129-.118/.129) of the between-person variance around the intercept, human capital predictors increase the amount of explainable Level 2 variance by 12.1% (.129-.104/.129). Altogether, the full MLM with

controls explains approximately 19.2% of the explainable Level 2 variance in the average wages of formerly incarcerated and non-incarcerated individuals.

RACIAL DIFFERENCES IN INCARCERATION AND WAGES

To test the hypothesis that the effect of incarceration is conditioned by race, I include a main effect for race on the intercept and linear slope, as well as a cross-level interaction term between race and prior incarceration. Model 7 displays the main effects of race on the average starting value and linear growth of wages (-.224 and -.010 respectively). The model predicts that net of within-person differences in incarceration African American individuals will earn significantly less than whites, and their wages will grow at a slower rate over time. This relationship is displayed graphically in figure 2. Inclusion of race at Level 2 accounts for 7.1% (.129-.121/.129) of the explainable variance around the intercept for wages. Much like the effect of incarceration, the main effect of race on both the intercept and linear slope was substantially mediated by between-person and within-person differences in social and human capital as evidenced in Model 9.

Model 10 displays the cross-level interaction between race and prior incarceration. The coefficient for the interaction term is not significant indicating that the effect of prior incarceration does not depend on race. Thus, I do not find support for hypothesis 4. Rather, incarceration appears to have a similar negative impact on earnings for whites and African Americans; however, being African American is independently associated with negative outcomes as well. Figure 3 graphically displays these additive effects of race and previous incarceration for white and African American individuals. As the graph shows, formerly

incarcerated African Americans had the worst wage outcomes, while previously incarcerated white individuals were not significantly different from never-incarcerated African Americans with respect to earnings over time.

DISCUSSION

This study offers several important contributions to research on the effect of incarceration on earnings. First, I examined the individual differences, including racial differences, which lead to the divergent wage trajectories experienced by formerly incarcerated individuals. Second, I significantly expanded the time frame of the study compared to prior investigations which allowed me to examine the determinants of wages for white and African American men through their late 40s. Finally, I employed a different longitudinal analytic technique (MLM) than prior investigations which allowed me to estimate effects for time-invariant variables such as race. Broadly, the results of this study lend support to the idea that incarceration is a stigmatizing event that leads to poor labor market outcomes (Sampson and Laub 1993; Western 2002). This research suggests that formerly incarcerated individuals will likely suffer additional penalties in the labor market after serving their sentences and re-entering society.

While previous research had established a link between incarceration and reductions in earnings and aggregate wage inequality (Western 2002), the objective of this study was to begin exploring the individual differences that ultimately lead to the divergent wage trajectories between formerly incarcerated and never incarcerated individuals. Specifically, I tested whether the stigma associated with previous incarceration was negatively associated with reduced earnings over time after controlling for individual differences in human and

social capital. Overall, the results suggest that prior incarceration does, in fact, significantly reduce wages after controlling for a host of within-person and between-person characteristics. In other words, individuals who go to prison experience long-term wage penalties beyond the penalties they pay for lower levels of education, work experience, and social capital. While this study employed a different analytic technique to model incarceration's effect on wages than previous investigations using the NLSY (Western 2002), this finding is consistent with prior research on the effect of incarceration on wages.

However, the findings with regards to race are unique to this study. While Western (2002) was able to examine racial differences in incarceration and earnings using fixed effects models, he was unable to estimate main effects for race because one weakness of fixed effects models is that they do not produce coefficient estimates for time-invariant (Level 2) covariates (Phillips and Greenberg 2008). One advantage of using a MLM analytic technique in my analysis was its ability to obtain coefficient estimates for these fixed between-person characteristics, such as race, on both the average starting points (e.g., intercepts) and rate of growth (e.g., slopes).

African American males earned significantly less than white males over time beyond differences in incarceration, human capital, and social capital. In fact, formerly incarcerated white individuals were not significantly different than never-incarcerated African Americans in earnings. These racial disparities in the additive effects of previous incarceration and race are similar to previous research on the stigma of race and criminal record (Pager 2003). African Americans, whether formerly incarcerated or not, earn less on average than whites,

but the additive effects of being formerly incarcerated and black result in the worst long-term wage prospects.

While this research demonstrates that incarceration is associated with lower earnings over time, and the stigma associated with prior incarceration operates the same for whites and African Americans, future research is still warranted and should asses several issues. First, the NLSY does not include information on the type of criminal offense for which individuals were incarcerated. This information would be useful as previous research on employer preferences for hiring ex-offenders has demonstrated that some employers consider type of offense when making hiring decisions (Holzer et al 2007). In addition, the data do not provide specific information on length of incarceration, which could have implications for fluctuations in wages at later points in adulthood. Thus, future research is needed to assess whether the type of criminal offense and/or length of incarceration impact wage trajectories.

Second, there may be other job or labor market-related characteristics not included in the current analyses that account for between-person variation in the effect of prior incarceration. I assessed whether or not the effect of previous incarceration varies randomly across people and found that a substantial amount of its variation was between-people. Between-person differences in race, cognitive ability, and human and social capital were unable to explain any of the random variance in the effect of previous incarceration. Future research should assess whether length of time since incarceration and the age of first incarceration predicted wages. Relevant questions would include: Do individuals who go to and are released from prison earlier in their lives fair better in the labor market than those who enter and leave prison later in life? Do individuals serving longer sentences experience

worse labor market outcomes than those serving shorter sentences? Do repeated spells of incarceration lead to a more significant reduction in wages over time?

Third, future research is needed to assess whether Hispanic individuals experience similar earnings penalties as African Americans with respect to race. Employers may utilize similar racial stereotypes when hiring Hispanic individuals as they do for African Americans which might result in negative labor market outcomes. Similarly, another relevant question may be whether race effects are stronger for Hispanics or for African Americans.

Finally, the fact that a significant amount of random variation in the effect of prior incarceration exists after controlling for within and between-person differences in individuals level factors suggests that unmeasured or omitted variables may explain why the effect of previous incarceration differs between people. Such variables may include those related to the occupations of those formerly incarcerated, the number of jobs ever worked, job tenure, or other variables unmeasured in the NLSY.

The implications of these findings are particularly grim for formerly incarcerated individuals, especially given the fact that the United States prison population has witnessed unprecedented levels of expansion in recent decades (Blumstein and Beck 1999; Garland 2001; Western 2002). In 2003 alone, more than 650,000 individuals left prison and reentered communities across the United States. This number appears as though it will continue to increase annually if individuals are incarcerated at similar rates. Many of these individuals will return to society with few resources available to them. Finding employment after prison may be especially difficult given that formerly incarcerated individuals face unreceptive employers (Pager 2003; Holzer et al 2007), and even if they find steady employment they are

typically restricted to low-paying menial jobs in the secondary labor market (Irwin 2005). In short, incarceration is likely to significantly reduce individual wages over the long-term regardless of an individual's race and levels of human and social capital.

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TABLES

Table 1: Descriptive Statistics for Formerly Incarcerated and Non-Incarcerated NLSY Men (1979-2006)

Variable	Full Sample	Formerly Incarcerated	Never Incarcerated
Fixed Covariates			
Race/Ethnicity			
Black	29%	63%	30%
White	71%	27%	70%
Delinquency	.056	1.02	.053
	(.690)	(1.01)	(.643)
Cognitive Ability (AFQT)	43.18	16.58	44.86
	(30.20)	(17.08)	(30.07)
Social Capital	12.34	11.01	12.43
	(2.93)	(2.52)	(2.94)
Time-Varying Covariates			
Log Wages (2005 Dollars)	15.33	10.70	15.64
	(.058)	(.592)	(.588)
Age (years)	30	32.68	30.22
	(6.44)	(6.97)	(7.03)
Education (years)	13.01	11.45	13.09
	(2.36)	(1.62)	(2.37)
Work Experience (weeks)	45.36	23.49	41.76
	(12.85)	(22.01)	(17.40)
Marital Status	47%	19.3%	48%
Sample Size	4,176	426	3,750

Source: *National Longitudinal Survey of Youth, Waves 1 through 22.*
Note: Table entries are means or percentages for all observations, and in parentheses, standard deviations

Table 2. Level 1 (within-person) Growth Curve Models Predicting Log Hourly Wages Among NLSY Men (1979-2006)

Fixed Effects	**Model 1** (Unconditional Means)	**Model 2** (Unconditional Growth)	**Model 3** (Incarceration)	**Model 4** (Human and Social Capital)	**Model 5** (Full Model with Controls)
Intercept	2.69*** (.006)	2.79*** (.007)	2.81*** (.007)	2.75*** (.007)	2.69*** (.014)
***Level 1 Coefficients*:**					
Age		.028*** (.001)	.029*** (.001)	.022*** (.001)	.019*** (.001)
Age²		-.001*** (.000)	-.001*** (.000)	-.001*** (.000)	-.001*** (.000)
Currently Incarcerated			-.234*** (.021)	-.183*** (.021)	-.165*** (.021)
Previously Incarcerated			-.386*** (.023)	-.239*** (.023)	-.237*** (.022)
Education				.056*** (.002)	.054*** (.002)
Work Experience				.004*** (.002)	.004*** (.000)
Marital Status				.076*** (.006)	.074*** (.006)
SMSA					.026*** (.007)
Urban					.028*** (.007)
Employment Status					.027*** (.007)
Enrollment Status					-.140*** (.009)
Unemployment Rate					-.018*** (.003)
Sector					.001 (.003)
Agriculture					-.107*** (.028)
Mining					-.011 (.049)
Manufacturing					.013 (.010)
Transportation					.022 (.014)
Retail					-.045*** (.011)
Insurance					.075*** (.022)

Table 2 Continued

Repair Services					-.021 (.014)
Personal Services					.035* (.017)
Entertainment					.010 (.043)
Professional					.015 (.013)
Public Administration					-.080*** (.019)
North East					.091*** (.012)
North Central					.003 (.010)
West					.100*** (.012)
Random Effects:					
Level 1 variance estimate	.197	.142	.141	.140	.138
Level 2 variance estimate					
For intercept	.147***	.158***	.150***	.107***	.099***
For Age slope (linear change)	-	.001***	.001***	.001***	.001***
For prev. incarceration slope	-		.179***	.141***	.129***

Source: *National Longitudinal Survey of Youth, Waves 1 through 22.*
Note: N=46,245 observations (L1) nested in 4,176 subjects (L2). Reference category is a white male, currently unemployed construction worker in a non-union job in the private sector, living in the South. Table entries are unstandardized (metric) regression coefficients (standard error in parentheses).
*** indicates p<.001. ** indicates p<.01. * indicate p<.05.

Table 3. Level 2 (between-person) Growth Curve Models Predicting Log Hourly Wages Among NLSY Men (1979-2006)

Fixed Effects	**Model 6** (L1 Baseline)	**Model 7** (Race)	**Model 8** (Social Capital)	**Model 9** (Full Model with Controls)	**Model 10** (Interaction)
Intercept	2.69***	2.75***	2.75***	2.65***	2.65***
	(.014)	(.015)	(.015)	(.013)	(.013)
***Level 1 Coefficients*:**					
Age	.019***	.023***	.022***	.020***	.020***
	(.001)	(.001)	(.001)	(.001)	(.001)
Age²	-.001***	-.001***	-.001***	-.001***	-.001***
	(.000)	(.000)	(.000)	(.000)	(.000)
Currently Incarcerated	-.165***	-.156***	-.157***	-.142***	-.142***
	(.021)	(.021)	(.021)	(.021)	(.021)
Previously Incarcerated	-.237***	-..189***	-.180***	-.084***	-.071*
	(.022)	(.022)	(..022)	(.022)	(.035)
Education	.054***	.052***	.047***	.029***	.029***
	(.002)	(.002)	(.002)	(..004)	(.004)
Work Experience	.004***	.004***	.004***	.003***	.003***
	(.000)	(.000)	(.000)	(.000)	(.000)
Marital Status	.074***	.067***	.065***	.055***	.055***
	(.006)	(.006)	(.006)	(.006)	(.006)
***Level 2 Coefficients*:**					
Effects on Intercept:					
Black Race		-.188***	-.168***	-.066***	-.064***
		(.012)	(.012)	(.013)	(.013)
Parent's Education			.016***	.006**	.006**
			(.002)	(.002)	(.002)
Delinquency				.026***	.026**
				(.008)	(.008)
Cognitive Ability (AFQT)				.003***	.003***
				(.000)	(.000)
Average Work Experience				.012***	.012***
				(.001)	(.001)
Average Education				.042***	.042***
				(.003)	(.003)
Effects on Linear Slope:					
Black Race		-.009***	-.006***	-.003*	-.003*
		(.001)	(.001)	(.001)	(.001)
Parent's Education			.002***	.001**	.001**
			(.000)	(.000)	(.000)
Delinquency				-.000	-.000
				(.001)	(.001)
Cognitive Ability (AFQT)				.000**	.000**
				(.000)	(.000)
Average Work Experience				.001***	.001***
				(.000)	(.000)
Average Education				.003***	.003***
				(.000)	(.000)
Effects on prev. incarc. slope					
Black Race					-.021
					(.043)

Table 3 Continued

Random Effects:					
Level 1 variance estimate	.138	.138	.138	.138	.138
Level 2 variance estimate					
For intercept	.099***	.092***	..091***	.080***	.080***
For age slope (linear change)	.001***	.001***	.001***	.001***	.001***
For prev. incarceration slope	.129***	.121***	.118***	.104***	.103***
% of Explainable L2 Variance around intercept Accounted For by Model	-- *(baseline)*	7.1%	8.1%	19.2%	19.2%

Source: *National Longitudinal Survey of Youth, Waves 1 through 22.*
Note: N=46,245 observations (L1) nested in 4,176 subjects (L2). Reference category is a white male, currently employed construction worker in a non-union job in the private sector, living in the South. Table entries are unstandardized (metric) regression coefficients (standard error in parentheses). All models control for employment status, union membership, enrollment status, private sector employment, job industry, and region of residence.
*** indicates p<.001. ** indicates p<.01. * indicate p<.05.

FIGURES

Figure 1: Wage Trajectories for Formerly Incarcerated and Never-Incarcerated Males (1979-2006)

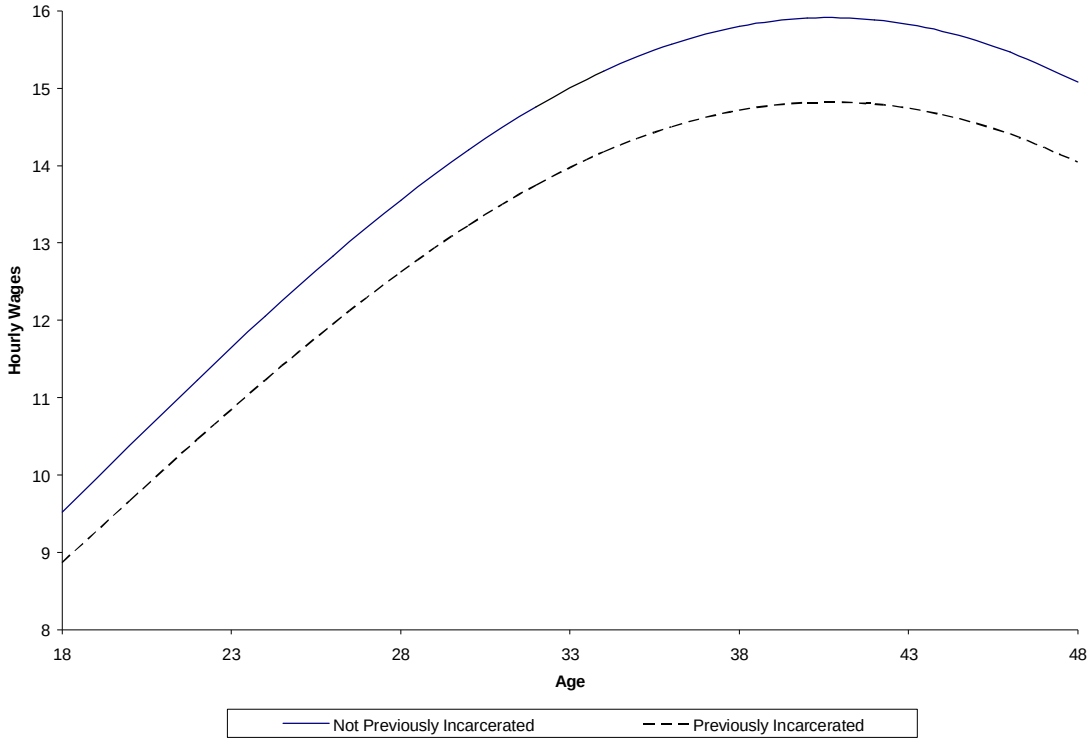

Figure 2: Wage Trajectories for African American and White Males (1979-2006)

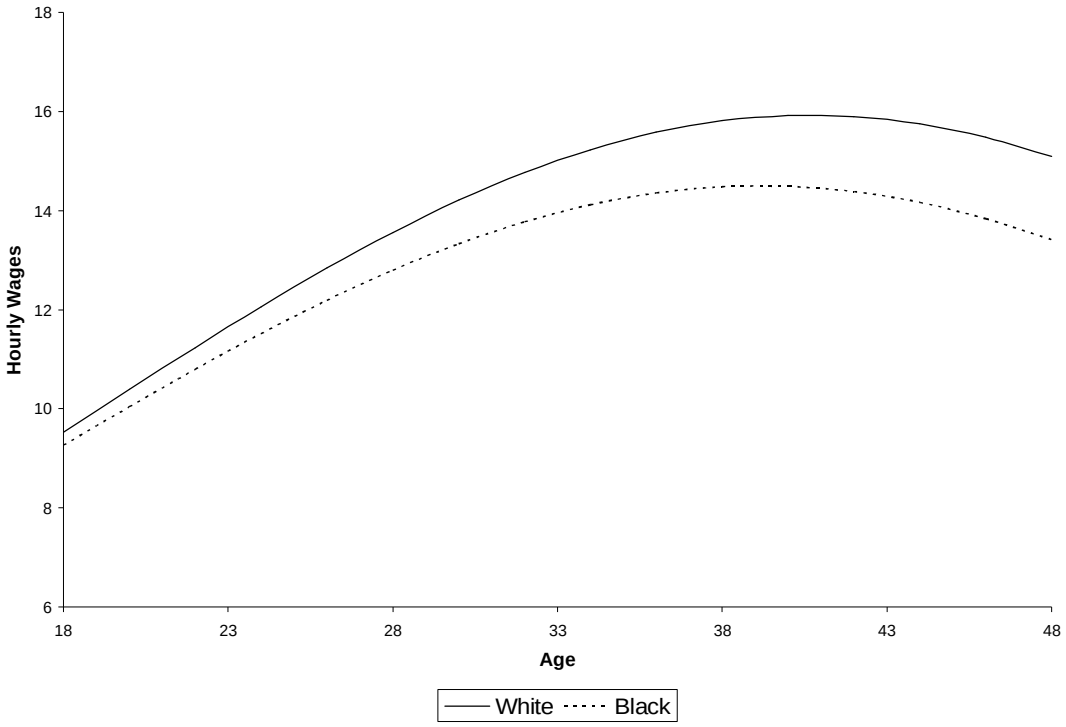

Figure 3: Wage Trajectories for Incarcerated and Never-Incarcerated African American and White Males (1979-2006)