Race and Incarceration

Racialized Re-entry: Labor Market Inequality After Incarceration

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Why do some people succeed in the labor market after incarceration but others do not? We study the transition from prison to work with data on monthly employment and earnings for a sample of men and women observed for a year after incarceration. More than in earlier research, the data provide detailed measurement of temporary and informal employment and richly describe the labor market disadvantages of formerly incarcerated men and women. We find that half the sample is jobless in any given month and average earnings are well below the poverty level. By jointly modeling employment and earnings, we show that blacks and Hispanics have lower total earnings than whites even after accounting for health, human capital, social background, crime and criminal justice involvement, and job readiness. A decomposition attributes most of the earnings gaps to racial and ethnic inequalities in employment. Qualitative interviews suggest that whites more than blacks and Hispanics find stable, high-paying jobs through social networks. These findings support a hypothesis of racialized re-entry that helps explain the unusual disadvantage of African Americans at the nexus of the penal system and the labor market.

Why do some succeed in the labor market after incarceration but others do not? Men and women just out of prison face formidable obstacles. Poor labor market outcomes result from poor schooling, a lack of work experience, and continuing criminal involvement. Through the effects of criminal stigma or eroded human capital, incarceration itself has been found to reduce employment by as much as a third, and hourly wages by 10–20 percent (Mueller-Smith 2014; Western 2006; cf. Kling 2006; see Holzer 2009 for a review). In recent birth cohorts of black men, where over half of high-school dropouts have been imprisoned, finding work after

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incarceration has become a regular part of the functioning of low-wage labor markets. Understanding the transition from prison to the labor market thus illuminates the problems of racial inequality and poverty, more generally.

Despite the risks of unemployment and bad jobs, labor market outcomes after incarceration vary greatly. A large body of research focuses on racial inequality. The racialization of incarceration is reflected most obviously in disparities: imprisonment rates are five to eight times higher for African Americans than whites, and twice as high for Hispanics (Travis et al. 2014, 56–64). Prison admissions and releases are also spatially concentrated in poor minority neighborhoods (Clear 2007; Sampson and Loeffler 2010; Simes 2016).

Racial inequality on the labor market may result not just from disparities in incarceration but also from racial differences in criminal stigma and network support. The stigma of incarceration appears to be greater for black job seekers than for whites (Pager 2003; Pager et al. 2009). Whites with criminal records have also been found to have better network connections to job opportunities than blacks and Hispanics (Sullivan 1989). African Americans with friends and family out of prison may also be less likely to recommend them for jobs in case they are unreliable or otherwise unsuccessful (Smith 2007). Intensified criminal stigma and weak ties to the labor market create a kind of *racialized re-entry* in which economic opportunities after incarceration are more limited for minorities, and African Americans in particular.

Despite a significant literature on post-incarceration employment, previous research has faced shortcomings of data and analysis. Quantitative studies relied on national survey data that missed the informal employment that is common among disadvantaged workers (e.g., Freeman 1992; Grogger 1995; Western 2002). Such studies also used standard measures of human capital and poorly controlled for acute disadvantages—such as drug addiction and physical disability—that hamper job seeking after incarceration. Studies of administrative records (usually from unemployment insurance) tend to under-estimate employment among those with criminal records (e.g., Kling 2006; Mueller-Smith 2014; Pettit and Lyons 2007; cf. Kornfeld and Bloom 1999). Audit studies are suggestive of racial inequality after incarceration, but they draw from a random sample of employers, not from those who are likely to be contacted by job seekers with criminal records (Pager 2003). The audit design thus over-estimates minority disadvantage when minority job seekers avoid discriminatory employers (Heckman and Siegelman 1993).

Besides data limitations in earlier research, analysis of earnings often provides an ad hoc treatment of high rates of unemployment among released prisoners. Joblessness is often ignored, either by excluding zero earners or in linear regressions that neglect the bunching of the unemployed in the lower tail of the earnings distribution (e.g., Kling 2006; Lyons and Pettit 2011; Waldfogel 1994). If the limitations of data and analysis are more serious for formerly incarcerated minorities than whites, racial inequality after incarceration may be under-estimated.

We examine the hypothesis of racialized re-entry with data on the labor market experiences of a sample of men and women from the Boston Re-entry Study (BRS) who were followed from prison in Massachusetts through their first year

after incarceration. The BRS was designed to measure the transition from prison to community and the tenuous employment that follows. Intensive follow-up in the year after incarceration yields monthly employment and earnings data at a time when labor market experiences are volatile. The dataset richly measures the deficits of health and human capital that are common among formerly incarcerated job seekers. Samples of black, white, and Hispanic former prisoners enable analysis of racial and ethnic inequalities. We fit a two-part model to monthly employment and earnings that jointly estimates the probability of employment and the level of earnings, given employment. For a high-unemployment sample like released prisoners, the two-part model incorporates the high risk of joblessness in estimates of earnings. Qualitative interview data describe the job-finding process, helping us to interpret quantitative estimates of racial inequality.

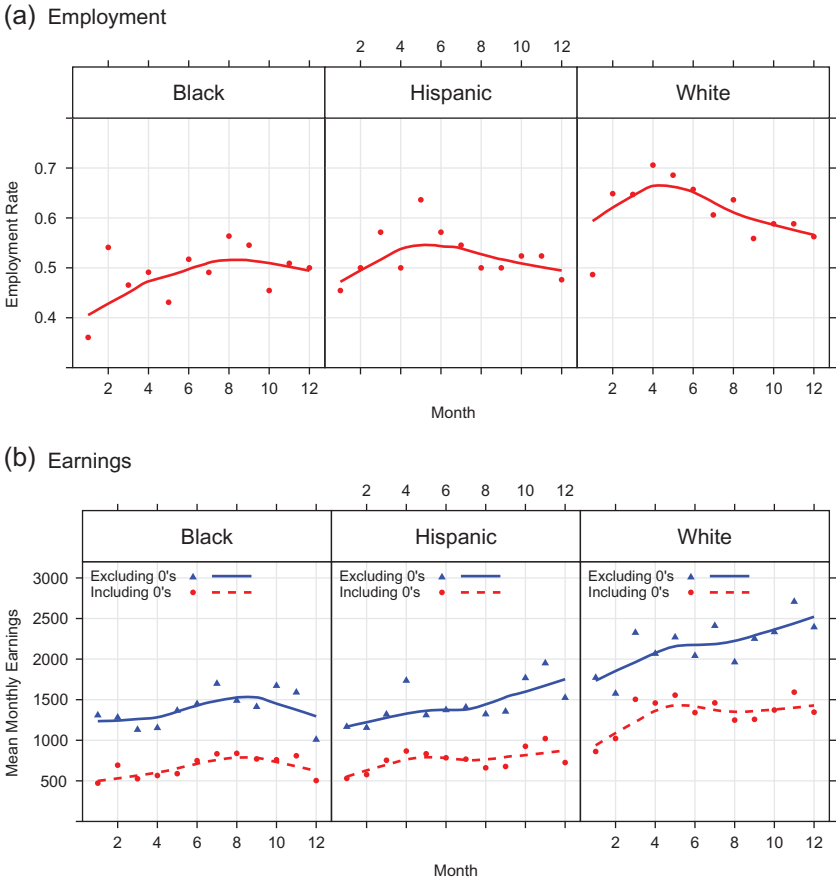
Employment and Earnings After Incarceration

We motivate the analysis with a year-long series showing monthly employment and earnings from the BRS sample. In these data, employment is defined as working for pay in a given month, including all informal, casual, and temporary jobs. Earnings includes pay from any job, excluding illegal earnings. Earnings are measured in nominal dollars recorded in 2012 and 2013.

Figure 1 shows the employment and earnings dependent variables that are analyzed below. Monthly employment rates in the year after incarceration begin at a low level but increase through the first four to six months after prison release. Employment rates for black respondents never consistently exceeded 50 percent, implying a median earnings of zero or close to zero throughout the year after prison release. Hispanics reported higher employment rates that also hovered around 50 percent for the second part of the year. Employment rates were significantly higher for whites. More than 60 percent were in some type of work for eight of the twelve months after incarceration. Employment rates for whites clearly decline from a peak of 70 percent in month four after prison release, reflecting a rising rate of re-incarceration.

The lower panel of figure 1 reports monthly average earnings. The figure shows a series of unconditional earnings that includes the unemployed (who have zero earnings). To separate the effects of unemployment, we also report a series of conditional earnings that includes only the employed (who have positive earnings). When the unemployed are counted in average earnings, blacks made around $500 a month, annually equivalent to about half the federal poverty line for an individual. Among the employed, black respondents averaged around $1,300 a month, about half the median earnings for black workers in the U.S. labor market as a whole. Earnings for Hispanics were slightly higher. Average monthly earnings for employed respondents exceeded $1,500, equal to about 60 percent of monthly earnings for Hispanic workers in the general labor market. Whites averaged about $2,500 a month for positive earners by the end of the first year after incarceration. Average earnings for whites also increased strongly over the year, reaching 80 percent of average monthly earnings for whites in the labor market as a whole (see Bureau of Labor Statistics 2014, 7).

Figure 1. In the twelve months after prison release: (a) monthly employment rate by race and ethnicity; (b) mean monthly earnings including zero earners and excluding zero earners by race and ethnicity, Boston Re-entry Study ($N = 116$).



These patterns are similar to those found nationally and in other jurisdictions. Published tabulations with national survey data and administrative records also show a relatively low level of wages among formerly incarcerated blacks and Hispanics compared to whites (Lyons and Pettit 2011; Western 2002). Large race effects, indicating the low economic status of blacks and Hispanics, have also been widely estimated while controlling for incarceration in studies of administrative data and national surveys (Geller et al. 2011; Grogger 1995; Lyons and Pettit 2011; Western 2002).

Research on Post-Incarceration Employment

Two main lines of research have studied the labor market experiences of men and women released from prison. One examines variation after prison release,

in which formerly incarcerated African Americans and Hispanics face greater obstacles to employment than whites. The second line of research traces the obstacles to employment after incarceration to social and economic disadvantages, many of which emerged well before incarceration.

The labor market disadvantage of formerly incarcerated minorities has been linked to intensified criminal stigma and weak network connections to employment. Devah Pager's (2007; Pager et al. 2009) research on criminal stigma examines not incarceration specifically, but the criminal record that accompanies imprisonment. Pager's audit studies in Milwaukee and New York City found that callback rates for white job seekers with criminal records were two to three times higher than for black job seekers who presented equivalent resumés. Pager (2007, 115) argued that a criminal record reinforces racial stereotypes and black job seekers with criminal records faced "an intensification of stigma." The audit studies showed that personal interaction with employers in a job interview could moderate the negative effects of a criminal record, but whites had greater opportunity for personal interaction than blacks (Pager et al. 2009, 201–202).

While the audit method examines an anonymized labor market in which employer and job seeker are unknown to each other, qualitative field studies emphasize personal connections. Mercer Sullivan's (1989) field research with criminally involved white, black, and Hispanic youth in New York City found steadier employment and higher pay among whites by the time they reached their early twenties. Sullivan's three study groups had similar levels of education, and all had trouble at school, but the white youth came from families and neighborhoods with higher levels of income and employment. Family connections to jobs were common for the young white men but rare among African Americans. The employment experiences of Hispanics were also found to differ from those of blacks. Hispanics experienced high rates of employment but largely in a secondary labor market with low-wage jobs (see also Black 2010). Sullivan (1989, 103) concluded that "personal networks, not human capital in the form of either education or work experience, accounted for most of the disparities between the neighborhood groups." Sandra Smith (2007) similarly found that network ties shaped employment opportunities after incarceration. In her analysis, African Americans with prison records were more likely to seek work by themselves and family and friends seldom recommended them. In the low-wage labor market where employers often rely on referrals, poor black job seekers with criminal records were disadvantaged by social networks that were uncooperative and distrusting.

In short, African Americans have been found to face the greatest stigma after incarceration, and the greatest isolation from employment opportunities. The stigma and social network accounts of the economic disadvantage of blacks and Hispanics after incarceration together suggest that re-entry is racialized: even among very disadvantaged job seekers who have just left prison, blacks and Hispanics are relatively disadvantaged in the labor market (see also Lyons and Pettit 2011).

Labor market outcomes may be relatively poor for formerly incarcerated blacks and Hispanics, but nearly all those released from prison—regardless of race or ethnicity—face significant obstacles to steady employment. Our analysis

accounts for three main sources of unemployment and low wages: (1) deficits of human capital, health, and social background, (2) the moment of transition from prison to community, and (3) crime and criminal justice involvement.

Formerly incarcerated men and women average low levels of schooling and work experience. Deficits of human capital are indicated by high rates of high-school dropout and backgrounds of instability and poverty in childhood (Black 2010; Sampson and Laub 1993; Western and Pettit 2005). Poor health in the prison population also reduces readiness for work. The incarcerated suffer from high rates of infectious and chronic disease, mental illness, and disorders related to substance use (Travis et al. 2014; Wildeman and Muller 2012, 202–232). Drug use itself can be disabling for employment, particularly for those with histories of addiction (Henkel 2011). Health problems are often co-occurring, compounding the impediments to employment (Schnittker et al. 2012). To capture the effects of health, human capital, and social background, we control for high-school dropout, employment, and housing instability prior to arrest, chronic pain and disease reported at baseline, school, and residential changes while growing up, living in a single-parent family, and self-reported histories of mental illness and drug and alcohol abuse.

The worlds of crime and legal work can compete for the time and energy of people released from incarceration. The formerly incarcerated may stay out of the formal labor market where they continue to rely on income from the drug trade or other illegal work. Those who continue to be criminally involved after incarceration face a higher risk of re-incarceration which also prevents employment. In addition to criminal involvement after incarceration, the experience of imprisonment may also harm economic prospects. Lengthy periods of incarceration, particularly at high levels of custody, reduce the possibility of gaining work experience. To account for continuing criminal involvement after incarceration, we control for re-incarceration and a time varying measure of criminal activity. The experience of incarceration is controlled with covariates for time served in prison, the offense charged, and whether the respondent was housed in medium or maximum security.

Finally, research on the transition from prison to community emphasizes what Christy Visher and Jeremy Travis (2003) have called "the moment of release," the first few days immediately after incarceration. Because prison release is a cumulative social process, social isolation in the first week after release, marked by idleness and estrangement from family, may hamper job searching and other forms of self-help in the following months (Western et al. 2015). Those released from prison also vary in their employability. Job readiness at the time of prison release means both preparation for the habits and routines of work, and a material capacity to participate in the labor market. Those with a work release job in prison, stable housing upon release, and a driver's license are more equipped to search for work and are relatively employable at the point of prison release. Our analysis controls for social isolation and job readiness immediately after release from incarceration.

Rich covariate data in the Boston Re-entry Study allows an analysis that accounts for the unusual frailty of the prison population, the circumstances of

the moment of transition from prison to community, and criminal involvement. While these explanations help account for the low earnings of all prisoners, they may also account for racial inequalities after incarceration. If educational attainment, health status, employability, and rates of criminal desistance are lower among blacks and Hispanics, this may explain poor labor market outcomes after prison release. In this case, incarceration would be less a source of cumulative racial disadvantage, than a marker of the extreme social and economic marginalization that was significantly established prior to incarceration.

A Two-Part Model for Employment and Earnings

Analyzing earnings in a sample with a high rate of unemployment is challenging because there is little consensus about the treatment of zero earnings. Studies of formerly incarcerated workers have omitted zero earners (Lyons and Pettit 2011; Nagin and Waldfogel 1998; Waldfogel 1994; Western 2002), imputed a small positive constant for log transformation (Western 2006), or provided little detail about the analysis of zero earners (Grogger 1995; Kling 2006). These ad hoc approaches are unsatisfactory because unemployment rates among released prisoners are high and theoretically important, selection into employment is non-random, and analysis of positive earnings over-estimates economic well-being (Western and Pettit 2005).

We model earnings after incarceration as two distinct processes: an employment process (getting a job) and an earnings process (getting paid, having found a job). In each month, t ($t = 1,\ldots, 12$), respondent i ($i = 1,\ldots, N$) is paid monthly earnings that may be zero if the respondent is not employed. We fit a two-part model to earnings, y_{it}, that includes a logistic regression for the probability of employment, $\pi_{it} = \Pr(y_{it} > 0)$, and a regression for expected earnings, $\mu_{it} = E(y_{it} | y > 0)$, conditional on being employed. If $\boldsymbol{x}_{it}$ is a vector of covariates (including an intercept), B_i is a dummy variable for black respondents, and H_i is a dummy variable for Hispanic respondents, then the employment and earnings processes are written as the following:

$$\text{logit}(\pi_{it}) = \alpha_1 B_i + \alpha_2 H_i + \boldsymbol{x}_{it}'\boldsymbol{\alpha}_3 + \tau_t,$$

$$\log \mu_{it} = \beta_1 B_i + \beta_2 H_i + \boldsymbol{x}_{it}'\boldsymbol{\beta}_3 + \theta_t, \text{ for } y_{it} > 0$$

where the earnings regression is estimated only for those who are employed, and τ_t and θ_t are time fixed effects. In the current specification, the employment equation is fit with a logistic regression and the equation for positive earnings is fit with a generalized linear model from the gamma family.[1] Unlike the sample selection model that treats the unemployed as having potential but unobserved earnings, the two-part model treats unemployment as yielding a true zero (see Wooldridge 2010, Chapter 17; Dow and Norton 2003 compare two-part and sample selection models). Treating zeroes as unobserved but potential positive earnings underestimates the relevant earnings gap in this case where

unemployment reduces income and impairs economic well-being. The two equations in the two-part model are assumed to be independent, conditional on covariates, and can be estimated separately with standard software. The two-part model provides a useful expression for expected earnings, given covariates and race, that accounts for unemployment. Expected earnings is written as the product of the employment rate and expected earnings for those who are employed:

$$E(y_{it}|\boldsymbol{x}_{it},\ B_i,\ H_i) = \pi_{it} \times \mu_{it}. \quad (1)$$

By allowing for the truncation of the earnings distribution at zero, the model produces accurate estimates of the marginal gaps in earnings between whites and minorities that account for the high rate of minority unemployment. Below, we decompose marginal race gaps in earnings into components due to race differences in employment and race differences in earnings, given employment. Given the panel structure of the data, standard errors of the coefficients are adjusted to allow for clustering of observations by respondent.

Data

Monthly employment and earnings data are constructed from four BRS interviews conducted in the year after prison release. The BRS interviewed a sample ($N = 122$) of men and women in Massachusetts prisons within a month of release from incarceration and then repeatedly over a 1-year follow-up period. Four follow-up interviews at one week, two months, six months, and twelve months after prison release provide a detailed history of work and wages. The sample, drawn from a cohort returning from prison to Boston, was recruited from fifteen of the eighteen facilities in the state prison system. Baseline data were collected in the ten months from May 2012. The sample is similar demographically and in criminal history to the full prison population and represents a quarter of all state prison releases to Boston in the study period (Western et al. 2015). Like the national prison population, the BRS sample has a median age in the mid-thirties, a low level of average schooling, is disproportionately black and Hispanic, and has little history of employment. The analysis below is based on a sample size of 116, after excluding six respondents with significantly missing data on earnings and employment.

Studies of employment after incarceration face two large challenges: data and measurement. First, standard administrative and survey data sources suffer from under-enumeration. Men and women released from prison tend to be weakly attached to households, more likely to live in group quarters (like homeless shelters) and have low rates of enrollment in social insurance plans. Because they are weakly attached to households, the formerly incarcerated are likely to be unobserved in household surveys (Pettit 2012). Low rates of social insurance enrollment reduce coverage of the formerly incarcerated in administrative records on unemployment insurance (Kornfeld and Bloom 1999). Under-count may be the highest among the most disadvantaged, biasing statistical analysis of earnings

(Western et al. 2016). Overcoming earlier data limitations, the BRS was designed to produce high rates of study participation among the most disadvantaged prison releasees. Indeed, the response rate over five interview waves—in a low-education, mostly male and homeless sample—exceeded 90 percent.

Second, men and women released from prison rely on temporary and informal employment that is poorly measured with traditional data sources. Monthly employment and earnings in the BRS were measured with survey questions that asked respondents about all jobs and earnings since the last interview. Measured earnings thus counts all incomes from work including, for example, day labor for cash helping with home improvements or snow clearance for a family member. Employment and earnings also count all formal employment that ranges from hourly jobs in food service to skilled jobs as unionized workers in the construction industry. The survey interviews were supplemented with more open-ended conversations with respondents, providing qualitative data on job search and hiring. Unlike studies of unemployment insurance records or large national samples, the BRS thus provides near-complete enumeration of monthly employment and earnings that surpasses traditional measures, in a key moment of transition immediately after incarceration.

Beyond the measurement of labor market outcomes, the distinctive disadvantages and process of re-entry for the formerly incarcerated are poorly measured in standard surveys. Mental illness and drug addiction often follow a history of school failure and childhood trauma that is often unobserved but associated with employment insecurity in later life (e.g., Black 2010; Fader 2013). The BRS measures adverse life experiences in childhood and adolescence and a detailed inventory of health conditions. Readiness for prison release and later criminal involvement are also viewed as important for successful re-entry (Petersilia 2003; Travis 2005) but are often weakly measured in national surveys. In contrast, the BRS provides detailed data on the moment of release and criminal offending.

Although the BRS data address problems of under-enumeration and measurement that have challenged prior research, Boston is in some ways a best-case scenario. People with felony records in Massachusetts have access to federal benefits and about 80 percent of the sample were enrolled in food stamps within six months of prison release. Nearly all respondents received health care through Medicaid, the federal program for low-income individuals and families. The Boston labor market in the study period also had a relatively low unemployment rate. The construction industry, an important source of employment for men with prison records, was unionized and often paid $40–$50 an hour. As in other New England states, incarceration rates were low but racial disparities were high. In short, although relatively advantaged compared to those nationwide, the Boston respondents were similar to other prison releasees throughout the northeast of the United States.

With detailed data on labor market outcomes and their correlates, our empirical strategy aims to isolate racial and ethnic differences in employment and earnings that are unrelated to the moment of prison release, crime and criminal justice involvement, and a large number of pre-existing differences in health and

productivity. A similar approach is taken in studies of discrimination where residual differences in earnings, after controlling for human capital, are attributed to differential treatment by employers in the labor market (Blank, Dabady, and Citro 2004, Chapter 7). In our approach, however, we use qualitative data on job seeking to interpret quantitative estimates of race and ethnic gaps in employment and earnings.

Race and ethnicity are coded as three categories for non-Hispanic blacks, non-Hispanic whites, and Hispanics. Non-Hispanic blacks include mostly African Americans but also a small number of respondents of Cape Verdean and West Indian descent. Hispanics are mostly Puerto Rican but the sample also includes a few Dominicans, Hondurans, and a few respondents of unspecified Hispanic origin. The white ethnicities reported to us by respondents included mostly Irish, Italian, and Portuguese.

Covariates used in the regression analysis are described in table 1. Respondents' health, human capital, and social background are measured in the baseline survey. The scales for employability and social isolation measure job readiness and social support at the moment of release. The criminal involvement scale records new criminal charges, illegal income, and drug use. We also include a dummy variable for monthly incarceration status. Racial differences in the experience of incarceration are captured by time served, offense, and the security level of incarceration. The regressions also control for age and sex.

Descriptive statistics for the regression variables show that whites were older with higher education and greater stability in family background compared with blacks and Hispanics (table 2). Despite these advantages, whites were in poor health and reported high rates of addiction. Substance use and poor health among white prisoners has also been reported in national data (Maruschak et al. 2015; National Center on Addiction and Substance Abuse 2010). High rates of drug addiction among whites are associated with illegal drug use after incarceration, contributing to a relatively high level of criminal involvement. Whites also tended to serve longer in prison compared with blacks, but two months less on average than Hispanics. At prison release, whites scored lower on the employability index and were more likely to be socially isolated in the first week after incarceration. Thus, whites enjoyed higher rates of employment and earnings after incarceration, but the descriptive statistics indicate that they were relatively disadvantaged by their health, criminal involvement, drug use, and social isolation.

Results

Estimates from the two-part model indicate large employment and earnings disadvantages for blacks and Hispanics that persist even after controlling for schooling, social background, addiction, physical disability, the transition from prison, and crime and contact with the criminal justice system. We supplement the quantitative results with evidence on job search and employment from qualitative interviews.

Table 1. Variables used in regression analysis of monthly employment and earnings in the year after prison release

Variable	Description
Dependent variables	
Employed	Dummy variable for positive monthly earnings
Monthly earnings	Continuous measure of earnings in dollars from all jobs in a given month
Demographics	
Race/ethnicity	Categorical variable for non-Hispanic blacks, non-Hispanic whites, and Hispanics (whites are the reference category)
Age	Baseline age included as linear and quadratic terms in regression analysis
Female	Dummy variable for female respondents
Human capital, health, and social background	
H.S. dropout	Dummy variable for no high-school diploma including GED's
Chronic pain	Dummy variable for back pain, arthritis, or disability reported at baseline
Chronic disease	Dummy variable for chronic or infectious disease reported at baseline
Drug addiction	Dummy variable for a history of drug addiction reported at baseline
Mental illness	Dummy variable for history of mental illness reported at baseline
Pre-arrest employment	Dummy variable for working at time of arrest before incarceration
Pre-arrest unstable housing	Dummy variable for unstable housing at time of arrest before incarceration
Home change	Count of number of changes of residence before age 18
School change	Count of number of unscheduled school changes before age 18
Single parent family	Dummy variable for living with single parent or other guardian at 14
Transition from prison	
Employability at release	Standardized scale summing three measures of employability at prison release: a work release job in prison, a valid driver's license at release, and stable housing at release (not in a homeless shelter or on the streets)
Isolation in first week	Standardized scale summing time spent without family and in no activity in the first week after release

(*Continued*)

Table 1. ***continued***

Variable	Description
Crime and criminal justice involvement	
Offense	Categorical variable for original offense including drugs, violence, property, firearms, and other offenses, from prison records (violent offenses are the reference category)
Security level	Dummy variables for release from medium or maximum security (minimum security and pre-release are the reference category)
Time served	Time served in prison in months, from prison records
Crime scale	Time-varying standardized scale summing three indicators of criminal behavior at each survey wave: criminal charge, use of illegal drugs, and illegal income. Charge is coded from arrest records; drugs and illegal income are self-reported
Re-incarceration	Time-varying dummy variable for re-incarceration in a given month, coded from court records

Evidence from the Model Estimates

We first fit a model that includes only the race effects, time fixed effects for each month of observation, and controls for age and sex (table 3). Race and ethnicity gaps in employment in this model are not significant but they are substantively large and, as shown below, contribute to significant differences in the marginal black-white gap in monthly earnings. The point estimates indicate that the odds of employment for blacks are about 40 percent lower than for whites (1−exp[−.546] = .42), and nearly 50 percent lower for Hispanics (1−exp[−.629] = .47). Without accounting for covariates, earnings are about 40 percent lower for employed blacks and Hispanics compared with whites.

Controlling for covariates, the employment coefficients for blacks and Hispanics increase in magnitude reflecting the observed health disadvantage of white respondents. The black employment coefficient doubles when covariates are included, and the odds of white employment are about three times higher (exp[1.026] = 2.8) than for observably similar blacks. The odds of employment among whites are also three times higher (exp[1.046] = 2.8) than for Hispanics similarly reflecting the relative health and criminal desistance among formerly incarcerated Hispanics.

The earnings coefficients become smaller when adjusting for covariate characteristics. Similar to the model that omits covariates, estimates indicate that employed blacks earn just two-thirds that of employed whites (exp[−.398] = .67). Hispanic respondents also earn less than whites on average, although in this case, the white-Hispanic gap is small and not statistically significant.

Other coefficients indicate low employment rates for high-school drop outs and those with a continuing involvement in crime. Low education and crime are more weakly associated with low wages among the employed. While the

Table 2. Means of employment, earnings, and covariates by race, Boston Re-entry Study

	Race/ethnicity			
	White	Black	Hispanic	All
Dependent variables				
Employed	.63	.50	.52	.54
Monthly earnings ($)	1,384.39	700.18	755.65	913.20
Monthly positive earnings ($)	2,183.74	1,393.93	1,453.18	1,676.61
Demographics				
Age (years)	39.81	35.32	33.52	36.29
Female	.10	.18	.09	.14
Human, capital, health, and social background				
High-school dropout	.49	.63	.76	.62
Chronic pain	.48	.34	.14	.34
Chronic disease	.40	.43	.29	.39
Drug addiction	.77	.39	.48	.52
Mental illness	.58	.39	.38	.44
Pre-arrest employment	.61	.55	.56	.57
Pre-arrest unstable housing	.25	.22	.05	.20
Home change	1.94	2.18	2.00	2.07
School change	1.95	2.27	1.10	1.95
Single parent family	.52	.75	.67	.67
Transition from prison				
Employability at release	−.25	.10	.12	.00
Isolation in first week	.19	−.10	−.03	.00
Crime and criminal justice involvement				
Drug offense	.13	.22	.29	.21
Property offense	.15	.16	.14	.15
Firearms offense	.00	.14	.05	.08
Other offense	.09	.18	.04	.13
Medium security	.38	.44	.42	.42
Maximum security	.15	.14	.09	.13
Time served (months)	34.73	30.03	36.42	32.67
Crime scale	.35	−.13	−.19	.00
Re-incarcerated	.09	.04	.10	.07
No. of respondents	36	58	22	116
No. of observations	377	649	250	1,276

Table 3. Results from two-part model of monthly employment (logistic regression) and log earnings (gamma regression) in a sample of formerly incarcerated men and women, Boston Re-entry Study (figures in parentheses are absolute *t* statistics)

		Positive log		Positive log
	Employment	Earnings	Employment	Earnings
Race and ethnicity				
Black	−.546 (1.59)	−.456** (2.93)	−1.026** (2.87)	−.398** (3.14)
Hispanic	−.629 (1.33)	−.418* (2.27)	−1.046 (1.87)	−.132 (.77)
Demographics and schooling				
Age	.116 (1.16)	.078 (1.49)	.138 (1.28)	.076 (1.84)
Age squared	−.002 (1.36)	−.001 (1.32)	−.002 (1.43)	−.001 (.21)
Female	−.818 (1.91)	−.450** (3.05)	−.887 (1.65)	−.527* (2.26)
High-school dropout	-	-	−.810* (2.26)	−.307* (2.31)
Moment of prison release				
Employability	-	-	.277 (1.58)	.003 (.05)
Social isolation	-	-	−.199 (1.11)	−.155 (1.88)
Crime and criminal justice involvement				
Crime scale	-	-	−.360* (2.13)	−.046 (.88)
Re-incarceration	-	-	−3.245** (6.29)	−3.216** (5.75)
Intercept	−1.196 (.62)	6.103** (6.38)	−.132 (.06)	5.859** (7.99)
Pre-release covariates	No	No	Yes	Yes
Monthly fixed effects	Yes	Yes	Yes	Yes
Pseudo R^2	.05	.12	.23	.29
No. of respondents	116		116	
No. of observations	1276		1276	

*$p < .05$ **$p < .01$.

Note: Standard errors are adjusted for clustering by respondent. Pseudo R^2 statistics are the squared correlation of the dependent variables with their predicted values.

association between crime and unemployment may be suggestive of a causal effect, particularly in cases of relapse to drug use for those with pre-existing addictions, unemployment is also likely to contribute to criminal involvement. Re-incarceration is strongly associated with unemployment and those who were employed in the month of re-incarceration also received very low earnings. Finally, although the estimate falls below conventional statistical significance, respondents with high levels of job readiness (measured by a work release job in prison, a driver's license, and stable housing) reported high levels of employment. Coefficient estimates for other covariates are reported in the Appendix table A1.

Regression coefficients cannot be directly interpreted as the marginal effects of predictors on total earnings because total earnings depends on both employment and the level of positive earnings. To simplify interpretation, we can calculate marginal race and ethnicity gaps in earnings, fixing the covariates at their mean values and averaging over the employment and earnings equations. For given values of the covariates, $\boldsymbol{x}$, and race, total monthly earnings can be estimated from Equation (1) by $\tilde{y} = \hat{p} \times \hat{y}$, where $\hat{p}$ and $\hat{y}$ are the empirical estimates of π and μ, the predicted monthly employment rate and the predicted level of monthly positive earnings. Estimates of monthly earnings can be used to calculate marginal earnings gaps between blacks and whites, and Hispanics and whites.

Writing the earnings gap as a function of the employment rate and the average level of positive earnings yields a simple decomposition. For example, the average earnings gap between blacks (B) and whites (W) is given by

$$\begin{aligned} \tilde{y}_W - \tilde{y}_B &= \hat{p}_W \hat{y}_W - \hat{p}_B \hat{y}_B \\ &= \hat{y}_W (\hat{p}_W - \hat{p}_B) + \hat{p}_B (\hat{y}_W - \hat{y}_B) \end{aligned} \tag{2}$$

We call the term on the left-hand side of Equation (2), $\tilde{y}_W - \tilde{y}_B$, the total difference in earnings. The total difference is decomposed into two parts. The first is the employment component, $\hat{y}_W (\hat{p}_W - \hat{p}_B)$, reflecting the contribution of the racial gap in employment, $\hat{p}_W - \hat{p}_B$, to the overall earnings gap. The second is the earnings component, $\hat{p}_B (\hat{y}_W - \hat{y}_B)$, reflecting the contribution of the racial gap in positive earnings, $\hat{y}_w - \hat{y}_B$. The decomposition quantities and their standard errors can be obtained by simulation.[2]

Table 4 reports the decomposition of monthly earnings based on unadjusted estimates from the model that controls just for age and sex, and regression-adjusted estimates of the total earnings gaps that set all covariates to their mean values. Without regression adjustment, the white-black gap in monthly earnings is estimated to be $668, more than 90 percent of monthly earnings for black respondents. About two-fifths of the race gap in earnings is attributable to the high rate of joblessness among formerly incarcerated blacks and three-fifths is associated with the low level of pay among formerly incarcerated blacks who found employment. After regression adjustment, blacks are estimated to earn $561 less than observably identical whites. Three-fifths (339/561 = .60) of this

Table 4. Marginal black-white and Hispanic-white gaps in monthly earnings, decomposed into employment and earnings components (figures in parentheses are absolute *t* statistics)

	Unadjusted	Regression Adjusted
Black-white earnings gap		
Employment component	−274 (1.58)	−340* (2.55)
Earnings component	−394** (2.60)	−221** (2.78)
Total difference	−668** (2.87)	−561** (3.63)
Hispanic–White earnings gap		
Employment component	−317 (1.32)	−345 (1.87)
Earnings component	−351* (2.03)	−80 (.73)
Total difference	−668* (2.49)	−425* (2.01)

*$p < .05$; **$p < .01$.

Note: Marginal effects are calculated from predicted employment and earnings setting covariates at mean values.

race gap in earnings is attributable to the large and significant race gap in employment.

The lower panel in table 4 reports the white-Hispanic gap in total earnings. With relatively few whites and Hispanics in the small BRS sample, the earnings differences are not consistently significant. Still the pattern of results is similar to those for white-black earnings inequality. Adjusting only for age and sex, whites are estimated to earn $668 more each month than Hispanics, about 85 percent of annual Hispanic earnings in the year after prison release. The regression-adjusted gap in earnings is smaller than the unadjusted gap. About 80 percent of the regression-adjusted gap between whites and Hispanics is related to the relatively low rate of employment among Hispanics after incarceration (345/425 = .81). (Appendix table A2 checks robustness, reporting results from regressions omitting the Crime Scale and Re-incarceration.)

Averaging over the employment and earnings equations shows that whites enjoy a large earnings advantage over blacks and Hispanics in the year after prison release. The earnings advantage is undiminished by accounting for differences in health, human capital, social background, criminal involvement, and the moment of transition from prison to community. The large earnings gap results more from the high rate of unemployment among formerly incarcerated minorities, than the relatively low wages among those that find employment.

Unemployment, not pay, is the main driver of racial inequality in the labor market after incarceration.

Qualitative Evidence on Finding Work

Qualitative interviews help explain racial inequality in employment as the product of racial differences in social ties to employment and criminal stigma. Qualitative data were drawn from open-ended questions asked in the five survey-interviews, phone calls with respondents in between interviews, and interviews conducted with friends and family members, primarily respondents' mothers and sisters. The following analysis combines survey data with data from interview audio files to tabulate methods of job seeking, types of employment, and reasons for unemployment for different racial groups in the whole sample. For a subset of respondents for whom complete data were available, we constructed chronological narratives of the pre-incarceration and post-incarceration periods. The narratives included interview transcriptions and search terms that were chosen inductively through a review of the interview material. From these narratives and based on the initial tabulation of job seeking, we report on selected respondents who were quantitatively typical and who talked about their employment experiences in qualitative detail.

Whites in the re-entry study mostly found work through recommendations and referrals from their social networks (table 5). Social contacts supplied referrals around 85 percent of the time for white respondents. Whites were more likely to be connected to steady jobs in high-paying industries, mainly construction. The racial disparity in network referrals was largely due to white respondents' connections to people beyond friends and family, such as union officials or former employers. Nearly 30 percent of whites found work via these other network contacts in the year after prison, compared to just 8 percent of blacks and none of the Hispanics.

Black and Hispanic respondents were less likely to have social contacts who could connect them to stable, high-paying jobs. Hispanic respondents found work through family and friends nearly three-quarters of the time but were mostly referred to low-wage jobs. Many Hispanics also found jobs through other means: nearly a third of employed Hispanics were in work release jobs, mainly in food service, that began while they were incarcerated. Black respondents found jobs through networks around 60 percent of the time. More than whites or Hispanics, blacks relied on a variety of formal strategies, including online searches, applying in person, and applying to temporary employment agencies. Jobs for black respondents typically paid minimum wage ($8.50 an hour in Massachusetts) and tended to last for just a few months. As expected, finding work through formal methods or work release yielded more formal jobs, which was reflected in respondents' type of earnings. Around three-quarters of black and Hispanic respondents had taxes deducted from their wages in the year after prison release, whereas nearly half of white respondents were paid off the books.

Table 5. Percentage distribution of methods of job finding and type of earnings among employed respondents, and reasons for not working for unemployed respondents, by race and ethnicity, Boston Re-entry Study

	White	Black	Hispanic
Method of finding current job			
All network referrals	84.9%	60.2%	72.7%
Family	9.4	20.5	24.2
Friends	56.6	36.1	48.5
Other network	28.3	8.4	0.0
Formal job search	18.9	43.4	3.0
Work release	1.9	9.6	30.3
Respondent-waves (*N*)	53	83	33
Type of earnings			
Taxable	54.9	73.2	77.4
Off the books	45.1	26.8	22.6
Total	100.0	100.0	100.0
Respondent-waves (*N*)	51	82	31
Reason for not working			
Criminal record	8.2	23.9	32.3
Other reasons	91.8	76.1	67.7
Total	100.0	100.0	100.0
Respondent-waves (*N*)	49	88	31

Note: Data are reported for respondents' primary job at the two-month, six-month, and twelve-month waves. Methods of job finding do not sum to 100 percent because respondents could report more than one method. Other network referrals include other sources, such as union officials or former employers.

With weak employment networks and reliant on formal methods for finding work, black respondents may have been more vulnerable to criminal record discrimination. Among the jobless, blacks attributed their unemployment to their criminal records nearly a quarter of the time (table 5). In contrast, whites used formal job search methods infrequently and only 8 percent reported their criminal record as an impediment to employment. Hispanics do not follow the same pattern of formal job search associated with self-reported criminal record discrimination. This may in part be associated with the unusually high rate of long-term joblessness in the small Hispanic sample. Other reasons that respondents provided for being unemployed, including being too old or sick to work, were more evenly distributed across race and ethnicity.

Qualitative interviews indicate the importance of network connections for whites. Patrick, aged 31, had served a year in prison. As a teenager in one of Boston's historically poor, white neighborhoods, he began to use heroin,

dropped out of high school, and attempted suicide. Patrick was in and out of trouble throughout adolescence, but he managed to join a construction union in his early 20s with the help of his father who was a union official. He worked steadily as a welder until losing his job at age 30 while using heroin regularly. In the first two months after prison release, Patrick was out of work and struggled to stay sober. He completed a course to update his trade certification and regained contact with his father. Soon after, he was offered a job on a construction site. By the six-month interview, he was earning about $5,200 each month and paying rent for an apartment that he shared with his father and brothers. Finding work was critical for his stability. "I can't really do anything else other than construction and crime," he told us. Patrick's history in the union and family connections smoothed the transition back to work after prison, and he remained employed a year later. Of the eight union members in the sample, all but two were white.

Hispanic respondents who found work were also likely to rely on social networks, but the jobs they found tended to pay less. At twelve months out of prison, employed white respondents who had found their jobs through network referrals earned an average of $3,000 each month, twice as much as Hispanics who had found work in the same way.

After dropping out of school at age 16, Johnny, a Hispanic man in his early 30s, estimated that he had spent half of his adult years working and the other half incarcerated. Throughout the year after his twenty-one-month prison term, he was consistently employed often working several casual jobs at a time. Upon release, he contacted an old friend who worked at a furniture warehouse. Johnny spent a few days a week at the warehouse doing furniture removal, paid in cash for each job. He also spent several days a week working at a car wash, a job he found through his brother. When the furniture warehouse closed after four months, Johnny's cousin referred him to a work crew where he was paid daily to do landscaping and maintenance work. Like Patrick, Johnny relied on his social networks to find work. However, his friends connected him to minimum-wage jobs and day labor. By the twelve-month interview, Johnny was earning about $1,500 per month, though his monthly earnings had fluctuated between $450 and $4,000 over the course of the year.

Black respondents were less likely than whites and Hispanics to find jobs through social networks, and instead relied on more formal means of job search. Among blacks who were employed at the twelve-month interview, over half had found work through an online database, newspaper advertisement, temporary employment agency, or employment program. Most worked in temporary jobs or at minimum wage in the service sector. Employment was unstable and job duration for blacks was about two months less on average compared to whites and Hispanics.

At the age of 28, one African American man, Dante, was released after serving a year and a half in prison. Since dropping out of high school at age 16, he had worked for half a year and spent a total of six years incarcerated. He earned his GED while in prison. After release, Dante moved in with his sister and her friend who lived in a working-class suburb just outside of Boston. He searched

for work online and at temporary employment agencies. In his third month out, Dante was hired for two jobs, as a prep cook in a fast-food restaurant and as a bus boy at a local sports arena. He held both jobs for three months, sometimes working up to fifty hours a week. He was ultimately forced to quit the fast-food restaurant because of his schedule at the arena: "They wanted me to choose jobs." Dante's arena job paid slightly more ($10.35 an hour), but his hours varied from week to week depending on games and events. When working, his monthly income averaged just over $500 and never exceeded $1,000 a month. The seasonal nature of Dante's work also put him at risk of unemployment. Though he held the bus boy job at his twelve-month interview, Dante had not worked for two consecutive months near the end of the year because business at the arena was slow.

Formal methods of job search, used mostly by black respondents, also exposed job seekers to criminal record discrimination. A handful of respondents volunteered information about their criminal record while searching for work, but most reported that employers learned about their record through a formal background check or by asking at an interview. We cannot know from the survey data whether unemployment resulted from employers' concerns about a criminal record but circumstances were sometimes suggestive. Some respondents reported that they had started a job and were fired weeks later when employers conducted a formal background check.

Since dropping out of high school in the twelfth grade, Keon, a thirty-year-old black man, had taken GED classes, worked steadily for two and a half years, and served five years in state prison. Throughout the year after release, Keon spoke to family and friends about employment and applied to jobs in person and online. At one month out of prison, he interviewed for a position at a department store and was told he had the job. Though Keon reported that he had a criminal record on the online application, his interviewer did not ask him about it. Three weeks later, however, he learned he had lost the job after his employer conducted a formal background check. Though Keon was able to find construction work for three months through a friend, earning about $1,000 a month, the work was temporary, and at the one-year interview, he had been unemployed for seven months. He had a newborn daughter, sold marijuana to contribute income to the household, and hoped to find a stable job on the books.

Discussion

Steady employment helps promote criminal desistance and social integration after incarceration (Sampson and Laub 1993; Sullivan 1989; Uggen 2000; Western et al. 2015). Panel data from a sample of men and women released from prison to the Boston area show high rates of unemployment and low earnings in the year after incarceration. Unemployment rates varied between 40 and 60 percent over the year and earnings averaged around $1,000 a month, approximately equal to the federal poverty line for an individual. Unemployment and low wages were associated not just with conventional

measures of human capital, such as prior work experience and schooling. Characteristics specific to the formerly incarcerated population, including criminal involvement and preparation for employment at prison release, were also associated with labor market outcomes.

Although we found poverty-level wages across the sample, blacks and Hispanics faced the most severe economic hardship. Supporting a hypothesis of racialized re-entry, racial, and ethnic inequality in employment and earnings persisted even after controlling for education, health, crime, re-incarceration, and a large number of background characteristics. In fact, white respondents were relatively disadvantaged in several ways. They had higher rates of physical disability and drug addiction, were less ready for employment, and more socially isolated immediately after prison release. Despite these disadvantages, their employment rates were higher and their earnings were nearly double those of formerly incarcerated blacks and Hispanics.

Qualitative evidence showed that higher levels of employment and earnings among whites were associated with social network connections to relatively well-paying jobs. Because they were more likely to be exposed to the scrutiny of employers met through a formal job search, the stigma of a criminal record also appears to be more disqualifying for blacks in particular. These empirical results help synthesize a variety of findings in earlier studies, showing the relative disadvantage of black job seekers with criminal records (Pager 2003; Pager et al. 2009), and the network disadvantage of formerly incarcerated blacks and Hispanics (Black 2010; Smith 2007; Sullivan 1989).

Although we study variation among the incarcerated, the analysis has implications for understanding outcomes for those who have been to prison compared to those who have not. First, we find some evidence that the dynamics of prison release are associated with labor market outcomes. Job readiness at the moment of release—measured by housing stability, a driver's license, and work release employment—is related to improved employment months later. On the other hand, ongoing criminal involvement is closely associated with unemployment. Plausible estimates of the effects of incarceration should account for job readiness and crime. These factors have been overlooked in earlier observational studies of labor market outcomes. Understanding the effects of crime on employment is an important research question, but is also particularly challenging. A strong identification strategy that can separate the reciprocal effects will be essential to estimating how criminal involvement may limit participation in the labor market. Second, much of the employment we observed was highly informal and sometimes fleeting, unlikely to be covered by administrative records or conventional survey interviews. Relatively disadvantaged black workers relied more on the formal labor market where employment is more easily observed and white workers were more likely than black and Hispanic workers to be paid off the books. Indeed, only about half the earnings of formerly incarcerated whites would be reflected in tax records. Analysis of administrative data for this sample would have under-estimated the economic advantage of white respondents. We cannot know how this might bias estimates of the causal effect of incarceration without information on informal employment in a comparison

group, but the re-entry study data illustrate the difficulty of economic measurement in a highly marginal population. Third, separately modeling earnings and employment treats unemployment as a true zero in the estimation of total earnings. Such an approach provides a flexible model that allows some covariates—like job readiness and re-incarceration—to be more closely associated with employment than earnings.

Poverty-level earnings commonly follows incarceration but a few respondents found steady work in well-paying jobs. White unionized workers in skilled trades earned well above poverty wages despite long histories of incarceration, drug addiction, and crime. Some respondents had strong social connections to stable jobs that they held continuously through their first year after incarceration. These examples suggest how ties to skilled jobs can promote economic well-being even for workers who are deeply disadvantaged. Contrast the low incomes of minority respondents. Even when relatively advantaged by their personal characteristics, blacks and Hispanics had weaker network ties to well-paying jobs and faced intensified criminal stigma. They experienced more unemployment and earned less as a result. The network context of prison release thus emerges as central to economic well-being after incarceration. While the individual characteristics of men and women coming out of prison were associated with their fortunes after incarceration, a supportive network of well-connected family, friends, and associates that led to employment in skilled trades could moderate disabling disadvantages.

Researchers have widely explored the claim that the current era of mass incarceration has deepened social and economic inequality in America (Wakefield and Uggen 2010; Wakefield and Wildeman 2013; Western 2006). Our small longitudinal study of Boston prisoners cannot evaluate such a large claim of historical change. Still, we are able to observe in detail a type of compounded disadvantage produced by the close connections among incarceration, poverty, and racial inequality.

Labor market outcomes are worse for blacks and Hispanics than whites, despite the relatively poor health and high rates of drug addiction among whites. The results suggest that high rates of incarceration among blacks and Hispanics combine with the social conditions of poverty—characterized by social detachment from skilled employment and the stigma of criminality—to produce high rates of joblessness and low-wage employment. More generally, the significance of mass incarceration for racial inequality extends beyond racial disparities in imprisonment rates. The results reported here show how re-entry after incarceration is embedded in racially differentiated experiences of poverty. With the highest incarceration rates and returning to the most adverse economic environments, African Americans have the lowest earnings and bear the greatest weight of the compounded disadvantages of mass incarceration.

Notes

1. The log-gamma model is a common specification for positive skewed dependent variables. In this context, the model has the advantage of yielding expected values, μ_{it}, in

the raw scale of dollars, rather than log dollars which requires an approximation for transformation in the decomposition below. Linear regressions on log earnings yield similar estimates to the reported gamma regression results.

2. From a Bayesian perspective, posterior distributions of the coefficients, given non-informative priors, are approximately multivariate normal with means at the regression point estimates and covariances given by the estimated covariance matrices. Plugging random draws from these multivariate normal distributions for the coefficients into the marginal effect decomposition, yields random draws from the posterior distribution of the decomposition quantities. Draws from these posterior distributions are used to estimate standard errors for the earnings and employment components, and the total difference in earnings.

Appendix

Table A1. Two-part regression results for covariates in the analysis of employment and earnings (figures in parentheses are absolute *t* statistics)

	Employment	Log positive Earnings
Chronic pain	−.121 (.30)	.131 (.91)
Chronic disease	−.391 (1.07)	−.02 (.15)
Drug addiction	−.462 (1.11)	−.141 (.99)
Mental illness	−.153 (.38)	.024 (.16)
Pre-arrest employment	.601 (1.69)	.033 (.23)
Pre-arrest unstable housing	.066	.299
	(.17)	(1.60)
Home changes	.075 (.78)	−.052 (1.76)
School changes	.079 (.82)	.087 (2.08)
Single parent family	.150 (.43)	−.174 (1.18)
Drug offense	−.921 (1.87)	−.372 (2.10)
Property offense	−.186 (.38)	−.128 (.68)
Firearms offense	−.519 (.72)	.002 (.01)
Other offense	−.934	−.11

(*Continued*)

Table A1. ***continued***

	Employment	Log positive Earnings
	(1.85)	(.49)
Medium security	.031 (.06)	.314 (1.90)
Maximum security	−.579 (.93)	.369 (2.13)
Time served	.003 (.51)	.000 (.02)

Table A2. Marginal black-white and Hispanic-white gaps in monthly earnings, decomposed into employment and earnings components based on regressions reported in table 3, but excluding the effects of the Crime Scale and Re-Incarceration (figures in parentheses are absolute *t* statistics)

	Black-White Earnings gap	Hispanic-White Earnings gap
Employment component	−302 (1.96)	−328 (1.55)
Earnings component	−286 (2.74)	−92 (.66)
Total difference	−588 (3.21)	−420 (1.68)

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