**Project Title:** Prison Credentials, Race, and Post-Incarceration Employment: A Mixed Methods Study

**Submission Date:** April 8, 2019

**Funding Opportunity Number:** NIJ-2019-15466

**Contact Information for Applicant Academic Institution:**

Name: The Ohio State University

Point of Contact: Laurie Rosenberg (Senior Sponsored Program Officer)

Address: 1960 Kenny Road, Columbus, OH, 43210-1016

Telephone Number: 614-688-4175

E-mail Address: rosenberg.1045@osu.edu

**Contact Information for Principal Investigator (Doctoral Student):**

Name: Sadé Lindsay

Address: 238 Townshend Hall

1885 Neil Avenue

Columbus, Ohio 43210

Telephone Number: 614-804-9825

E-mail Address: Lindsay.131@osu.edu

TABLE OF CONTENTS

STATEMENT OF THE RESEARCH PROBLEM

The U.S. incarceration rate is five times greater than it was four decades ago when the prison boom began (The Pew Center 2011). Roughly 95 percent of those incarcerated eventually return to society (Hughes and Wilson 2003). Within five years of release, about three-quarters of prisoners are rearrested. More than half of those rearrested are re-incarcerated within the first year (Durose, Cooper, and Snyder 2014), making reentry and reintegration an important, contemporary social issue. Securing employment is one critical way to break this vicious cycle.

Criminological theories posit that bonds to employment are vital for preventing crime, promoting prosocial behavior, and lowering recidivism (Sampson and Laub 2003; Uggen 2000). Desistance from crime depends on opportunities for individuals to acquire conventional roles and responsibilities, which are granted through key life events like employment and marriage. Stable employment redirects behavior away from crime and increases pro-social bonds to community and conventional others (Sampson and Laub 2003). It can also propel formerly incarcerated people (FIP) into making cognitive transformations or identity shifts toward crime-free beliefs and values (Giordano, Cernkovich, and Rudolph 2002). Yet, FIP, especially Black men, face numerous challenges upon release that make acquiring employment difficult (Decker et al. 2015; Pager 2003; Sugie 2018; Uggen et al. 2014). Criminal stigma confines them to joblessness, or low-paying, low-skilled work without the necessary prosocial, desistance-promoting properties.

Although FIP have little agency regarding the stigma others attach to their criminal records (Becker 2963), they can pursue opportunities to improve their job prospects upon release by acquiring marketable skills and educational credentials (i.e. human capital) while incarcerated. Human capital is the knowledge, habits, and social and personality attributes that individuals can transfer into labor, and then economic value (Becker 1993). Improving human capital is important for securing employment, particularly for those with criminal records (Becker 1993; Klerman and Karoly 1994). Given offenders enter facilities poorly educated and with less skills than their non-incarcerated counterparts (Harlow 2003), prison job training may be a key turning point in the life course, providing inmates with valuable skills required in an increasingly competitive labor market.

Few empirical studies assess whether prison credentials are effective in combating barriers to employment. These studies find prison credentials increase wages, lowers rates of recidivism, and that these effects vary by race (Cho and Tyler 2013; Cundiff 2016; Duwe and Clark 2014; Tyler and Kling 2006). However, the lack of extensive research is concerning, given that policies heavily emphasize prison job training and education as ways to decrease prison populations, help FIP gain employment, and lower recidivism. In fact, many states now mandate education and training for prisoners (Rampey et al. 2016), and federal and state policy, such as the First Step Act, incentivize program participation by offering sentence reductions.

 Prior research has three limitations that my dissertation will address. First, previous studies rely on observational data. While observational data can denote the strength and magnitude of the correlation between prison credentials and employment, these data cannot make causal inferences due to selection and omitted variable biases. Selection and omitted variable biases could work through both individual characteristics and institutional practices. At the institutional level, enrollment in programs relies on factors such as good behavior and time to release (Wilson, Gallagher, and MacKenzie 2000). At the individual level, people who possess prison credentials may have attributes, such as higher intelligence and motivation, which might lead to securing better employment even without a credential (Tyler and Kling 2006).

Due to potential biases, previous studies cannot discern whether prison credentials actually signal criminal stigma or human capital. Employers are likely unaware of an applicant’s capabilities until they are hired and trained, which is an investment (Spence 1973). Thus, they seek characteristics that they perceive signal a good return on their investment, such as education, and employment and criminal history (Spence 1973). This employer discretion oftentimes increases the likelihood of discrimination. As a result, deciding how to signal human capital obtained while incarcerated without also signaling criminal stigma may be a dilemma for FIP, with implications for the effectiveness of policies that simply pose removing criminal history questions as solutions to decreasing employer discrimination (i.e. ban the box [BTB]).

Second, prior research largely focuses on educational credentials (e.g. GED or college degree), rather than trade or apprenticeship training (Cho and Tyler 2013; Cundiff 2016; Duwe and Clark 2014; Tyler and Kling 2006). While education is an essential way to signal human capital to employers, apprenticeship certificates may be more advantageous for obtaining the types of jobs that most FIP have access to immediately upon release. GEDs alone are not nearly enough to distinguish oneself from other applicants in a competitive labor market, and college degrees, though increasing among prisoners, are still extremely rare (Harlow 2003). Moreover, FIP that pursue post-GED or college credentials once released likely must work to afford attending school, highlighting the importance that prison training may have in this process.

Third, studies do not examine FIP’s and employers’ perceptions of prison training to understand mechanisms contributing to inequalities, which is necessary to make empirically sound policy recommendations (Reskin 2003). To do so requires a mixed methods approach. To my knowledge, only two studies in this area use such an approach. Uggen et al. (2014) find a weak effect of misdemeanor arrests on employment and use interviews with employers to explain this finding. Pager and Quillian (2005) find that employer attitudes hiring FIP in interviews are incongruent with actual hiring behaviors in the audit. Still, the mechanisms influencing prison job training’s effect on employment has yet to be explored qualitatively.

RESEARCH QUESTIONS AND HYPOTHESES

I aim to build upon prior research and address its limitations using a mixed methods design, which includes an online experimental correspondence audit and qualitative, in-depth interviews with employers and formerly incarcerated men.

**[RQ1]** What is the effect of prison job training on post-incarceration employment? Earnings of dropouts who obtain GEDs are about 15% to 20% higher than those of low-skilled uncredentialed dropouts (Murnane, Willett, and Boudett 1999; Murnane, Willett, and Tyler 2000). Similarly, prison educational course participation produces higher subsequent earnings among education program participants compared to nonparticipants (Steurer, Smith, and Tracy 2001). Differences are even greater among those with college degrees (Cundiff 2016). Therefore:

*H1a: FIP who possess a prison apprenticeship credential when applying for a job will have higher employer callback rates than FIP who do not.*

Due to selection and omitted variable biases, previous studies could have overestimated prison credential’s effect on employment (Tyler and Kling 2006). Contact with the criminal justice system can signal to employers that an individual is less trustworthy and rule abiding. The stigma attached to criminal status can precede the existence of any secondary or positive characteristics, including prison credentials. This is plausible given the strong effect that a criminal record, specifically incarceration, has on employment (Pager 2003; Pettit and Lyons 2009; Western 2006). Pettit and Lyons (2009) find that a prison spell significantly decreases employment prospects and wages, and Uggen et al. (2014) provide further evidence that incarceration carries a higher stigma than a misdemeanor. After accounting for potential biases, there are two alternative possibilities:

*H1b: FIP who possess a prison apprenticeship credential when applying for a job will have lower employer callback rates than applicants with a clean record and no job training.*

*H10: FIP who possess a prison apprenticeship credential when applying for a job will not have a significantly different employer callback rate from applicants with a clean record and no job training.*

**[RQ 2]** Does the effect of prison job training on post-incarceration employment vary by race? Race is necessary to consider given its historical significance in education, employment, and criminal justice discrimination (Alexander 2010; Bowen and Bok 1998; Roscigno 2007). Blacks without a criminal record are disadvantaged compared to their Whites counterparts in the labor market (Gaddis 2014). Like race, a criminal record is stigmatizing and further restricts opportunities, which does not bode well for Black men, who the criminal justice system disproportionately affects (Shannon et al. 2017). Educational training has traditionally been a route for Blacks to close economic gaps with Whites (Bowen and Bok 1998), and the same could be true for prisoners who are disproportionately Black.

There is a strong independent effect of race on employment, with Blacks receiving lower response rates than whites (Pager 2003; Pager and Quillian 2005; Uggen et al. 2014). For example, Pager (2003) finds that the effect of a criminal record is 40% larger for Blacks, and that Whites with felony criminal records receive more callbacks than Blacks without criminal records. Following this research:

*H2: Black applicants will have lower employer callback rates than White applicants.*

There may also be notable differences in the impact of prison job training within racial groups. Because Blacks enter prisons with less human capital than Whites (Harlow 2003), they may have more to gain from obtaining a credential and prove in redeeming themselves in the eyes of employers. In fact, Tyler and Kling (2006) find no difference in the effect of a prison GED on post-release earnings among Whites. However, they discover a 20% increase in earnings among nonwhites who obtained a prison GED compared to nonwhites who did not. Therefore, the impact of a prison credential may not close the interracial gap between applicants with similar levels of human capital but could have stronger intra-racial effects among Blacks.

*H3: Differences in employer callback rates between formerly incarcerated Blacks with and without a prison apprenticeship credential will be significantly larger than callback rate differences among Whites with and without a prison apprenticeship credential.*

Finally, recent research examining the effect of BTB laws on employment find that in the absence of a criminal background question on an application, employers use racial stereotypes to discriminate against demographic groups that include more ex-offenders, specifically Blacks (Agan and Starr 2017; Holzer, Raphael, and Stoll 2006; Sugie 2017). Thus, employers may assume that Black applicants unable to signal a clean record, indeed, possess a criminal record.

*H4: Black applicants with a clean criminal record who confront a criminal record question on an application will have higher employer callback rates than Black applicants with a clean criminal record who do not confront a criminal record question.*

While the audit will capture whether prison credentials signal criminal status or human capital, and racial variation in its effect, the qualitative interviews will consider **[RQ3]** how employers evaluate prison job training when making hiring decisions and **[RQ4]** how FIP perceive training impacts the job search process.I will ask employers about their background, opinions and experiences hiring individuals with criminal histories, views on prison credentials, and general hiring practices. One advantage of mixed methods is that these interviews can determine whether their attitudes align with their employment practices. I will also ask FIP questions about their experiences finding post-incarceration work, perspectives on how prison credentials help or hinder the job search process, and the ways they manage criminal stigma that may be attached to credentials while searching for work.

PROJECT DESIGN AND IMPLEMENTATION

**Employer Audit**. First, I will conduct an online correspondence audit. I am interested in two experimental conditions: a prison apprenticeship certificate and race. All applicants will have a GED and minimal work experience. Since my primary interest lies within the effect of a credential, each employer will receive matched resumes from same race applicants, with the only difference being the presence of an apprenticeship certificate. This approach gives me the within employer effect of a certificate, maximizing statistical power of my main predictor of interest (Vuolo, Uggen, and Lageson 2016). There will be two control resumes; one that signals a criminal record through a prison GED and one that does not signal a record. Each employer will receive the treatment resume and I will randomly assign one of the controls as a match.

The second condition is race. I will randomly send the resumes of White and Black male FIP to different employers, which will result in between employer race effects. I will signal race through the applicant’s name, choosing names most unique to 25-year-old U.S. born White and Black applicants. This method is commonly used in other correspondence audit studies (Bertrand and Mullainathan 2004; Gaddis 2014; Quadlin 2018). Thus, there will be a total of six resumes: three Black and three White applicants possessing either a prison apprenticeship certificate and GED (treatment), a GED from prison (control A), or a non-prison GED (control B).

There is one contingency, which is whether applicants encounter a criminal record question on the application. The treatment resume and control A will always answer “yes” to a criminal background question. Thus, the first condition tests a criminal record with human capital accumulated through a certificate, while the second tests a criminal record without such accumulation. Control B will always answer “no.” In this case, Black applicant directly signal that they do not have a record. When a Black applicant is randomly assigned control B and does not confront a criminal record question, however, this condition tests the assertion that they are disadvantaged because employers continue to use race as a proxy for a criminal record (Vuolo, Lageson, and Uggen 2017).

*Treatment—Prison Credential.* The treatment will be a certification in heating, ventilation, and air conditioning (HVAC), which is nationally in demand and available in many correctional facilities. Apprenticeships teach hands-on skill development in a trade with the goal of enhancing employability. The US Department of Labor requires participants to maintain a daily record of training, plus 144 hours of related instruction per 2,000 hours of on-the-job instruction. Thus, participants receive both instruction and direct work experience.

*Location and Sample.* Building on recent audit studies, I will use online job postings (Gaddis 2018; Quadlin 2018).The sample frame will be determined using *Indeed*, which is a commonly used online job search platform. Research assistants and I will collect job postings weekly until we reach a sample 1,500 submissions, which well exceeds the sample size requirement for matched audits (see [Vuolo, Uggen, and Lageson 2016] for calculations).

I will gather a geographically diverse sample by applying for HVAC-related positions in five states that cover four regions. When choosing states, I consider incarceration rates and presence of BTB laws (Kaeble and Cowhig 2018). California represents the West Coast, incarcerating 670 per 100,000 residents, and possesses BTB laws in the public and private sectors. Because the South is expansive, I sample from Texas to represent the Southwest and Georgia to represent the Southeast. Texas and Georgia incarcerate 1,050 and 1,160 per 100,000 residents, respectively. Texas has no state-wide BTB protections, while Georgia has such laws in the public sector. To represent the Midwest, I will use Ohio, which incarcerates 790 per 100,000 residents, and offers BTB protections in the public sector. Lastly, I use New York from the East Coast, which has BTB laws in the public sector and incarcerates 480 per 100,000 residents.

*Validity.* External validity is a common concern in audit studies (Gaddis 2018). I address this by expanding my sampling frame to five states in each major geographic region and selecting a credential that is consistently in demand. Still, results can only be generalizable to FIP with credentials in similar markets as HVAC, such as maintenance, electrical technicians, plumbing, and mechanics. Prior studies also use a single, yet common industry (Denver 2017; Denver, Siwach, and Bushway 2017; DeWitt et al. 2017).

*Data Collection.* I will hire five undergraduate research assistants, including a lead assistant. I will assign each assistant one state. At the beginning of each week, they will create a new tab in an Excel spreadsheet, search “HVAC” on *Indeed*, and compile the available positions’ information. They will include hyperlinks to positions, company names, years of experience required, exact job titles, credentials and skills required or preferred, locations, language about criminal background checks, hiring timeframes, contact names and numbers, and any other details deemed relevant. The lead research assistant and I will check all spreadsheets weekly to ensure there are no duplicate positions. I will randomize the order of positions weekly and alternate between submitting job applications for paired Blacks and Whites. I will note the exact date and time I submit each application, and the racial pairs that I use to apply to a position.

*Recording responses.* I will check the voicemails and emails of each applicant weekly for three months after the initial submission. In the spreadsheet, I will note whether the applicant received a callback, and if so, the exact date and time. Responses fall into four categories. The first is a nonresponse, which is common in employer audit studies. I will assume a nonresponse after three months. The second is a negative response, where the employer says no. Given the number of applications employers receive for a position, this response is unlikely. The third is a positive response, where the employer wants to interview the candidate. Finally, the employer may ask for more information, which will be a positive response (Uggen et al. 2014).

*DV.* I will combine responses into a binary variable, where one category indicates no response and a negative response and the other an interview and an inquiry for more information.

*IV.* The first predictor of interest is the credential variable, including the controls A and B, and the treatment signaling the HVAC certificate. The other predictor of interest is a binary variable for the race of applicants represented by traditionally Black and White names.

*Covariates.* To account for imperfect randomization, I will control for covariates I am unable to experimentally manipulate, including the times I submit applications, years of experience required, location, diversity or felon friendly statements, criminal background question, and any other covariates I encounter that I believe could influence the experiment.

*Analysis Plan.* I will compute employer callback rates for the treatment, the two control groups, and race by dividing each category’s positive responses by the overall number of within category submissions. Following Vuolo et al. (2016), I will run bivariate regressions to test for statistically significant differences between groups. Next, I will test my hypotheses using mixed effects logistic regression, including random effects for the employer, which allows for the average probability of an employer callback to vary across employers. First, I will compare the treatment with the randomly matched controls to test hypotheses 1a, 1b, and 10. Next, I will use the race variable to test for racial differences in responses predicted by hypothesis 2. Then, I will interact the prison credential and race variables to test hypothesis 3. Lastly, I will interact race and the presence of a criminal background question to test hypothesis 4.

**Qualitative Interviews.** I will conduct interviews with formerly incarcerated men in the Columbus, Ohio area and a random sample of employers from the audit (see interview guides in appendix #). I will interview employers after the audit, allowing me to adjust the interview guide based on quantitative results. Interviews with FIP do not have the same restriction. I will conduct these interviews throughout the entire study period. I will use grounded theory, which allows me to detect themes that emerge from the data and update my interview instrument periodically to reflect the study’s progression. I estimate interviewing 100 total participants (Pager and Quillian 2005; Uggen et al. 2014)

*Sample, Recruitment, and Data Collection.* I will randomly sample 50 employers from the jobs I apply to in the audit. The lead research assistant will send an email with information about the study and I will follow-up with a phone call. I will continue to randomly sample employers until I gather the desired sample size. I will not inform them of their role in the audit. I will simply invite them for an interview about their applicant screening and hiring procedures. At the beginning of the interview, I will administer a short demographic survey, which includes questions about age, gender, race, ethnicity, education level, job title, and years in current position. Due to geographic diversity, I will conduct interviews via phone or video call.

I will sample 50 formerly incarcerated men from various advocacy organizations in Columbus, Ohio, including IMPACT Community Action Agency, the Columbus Urban League, and Alvis 180 Degree Impact. My advisor, Dr. Mike Vuolo, has direct ties with these organizations and currently uses them to recruit participants for similar research. These groups help rebuild prosocial bonds through job training and help FIP find steady employment. I will obtain a sample diverse in age (18+), race, and levels of human capital (e.g. job training experience). I will get permission from organization leaders to post fliers with my email address and Google Voice phone number and visit programs weekly to recruit potential participants.

When possible, I will interview participants immediately. If they are unavailable, I will gather contact information and schedule an in-person interview in a public setting. At the beginning of the interview, I will administer a short demographic survey, which includes questions about age, gender, race, ethnicity, education level, and most recent criminal charge and length of sentence. Then, I will proceed with the interview guide, but also allow respondents to bring up topics that they find relevant. I will compensate employers and FIP with a $25 gift card.

*Data Analysis.* I will have interview recordings transcribed. I will write field notes and memos detailing common patterns and themes emerging from interviews (Charmaz 2006). Using transcripts, I will code both employer and FIP interviews twice (Charmaz 2006). Round one coding will identify descriptive codes that emerge in the data. Round two coding will consist of labeling the major conceptual themes across interviews.

POTENTIAL IMPACT

**Scholarly Products.** The main outcome of this project is a doctoral dissertation. I will submit the final dissertation to NIJ and OhioLINK. I will also submit manuscripts to top peer-reviewed sociology and criminology journals, such as *Criminology* and *American Sociological Review*.

**Policy Implications.** This study will contribute to social science research showing the adverse effects of a criminal record on employment. Policymakers and practitioners assume that increasing levels of human capital among incarcerated populations should increase employability (Spence 1973); however, including criminal stigma and race could muddle this relationship. In BTB states or jobs where employers do not ask about criminal record, listing prison credentials on applications can still provide employers with information about criminal histories.

Employers could question the credential’s legitimacy and the holder’s character due to their criminal status and race, leaving otherwise qualified applicants with little means of improving employment prospects. In this case, policy could focus on best practices for signaling human capital acquired in prison or incentivizing employers who hire formerly incarcerated people with credentials. Alternatively, employers could perceive prison credentials as an effort to improve oneself and skills, resulting in credentialed applicants faring better. Here, policy may focus on increasing access to apprenticeships in prison.

Further, FIP’s motivations for obtaining credentials are based in redemption and self-improvement (Rampey et al. 2016), and they exhibit this partially through obtaining employment (Blumstein and Nakamura 2009). If these efforts do not materialize into quality employment, they could grow frustrated and cease their search efforts (Sugie 2018), increasing their chances of re-offending. FIP also have agency in the search process, meaning they make decisions regarding the jobs they apply for and the information they disclose. Results will provide details about the various techniques FIP use when applying to jobs, which can inform correctional programs preparing prisoners for reentry.

My dissertation will illustrate the various ways criminal stigma can permeate the job search process. This work has implications beyond employment discrimination laws and prison policies, with ramifications for recent BTB-like policies entering higher education, such as removing criminal background questions on the Common Application.

CAPABILITIES AND COMPENTENCIES

**Management Plan and Organization.** I will be responsible for training undergraduate researchers, data collection and analysis, and manuscript preparation. I have experience working with and training roughly 20 assistants in other projects and designed and conducted studies that utilize qualitative interviews and experiments (see Personal Statement). Lastly, I have a record of successfully disseminating results via peer-reviewed journal and news media articles (see CV).

Dr. Mike Vuolo, the dissertation committee chair, will offer feedback and suggestions throughout the duration of the study. Dr. Vuolo has experience with various types of data collection and methods, including audit studies. Dr. Vuolo has published papers that assess criminal records and employment, and post-release employment policies (see CV). Dr. Vuolo and I will meet bi-weekly to discuss the study’s progress. Dissertation committee members, Drs. Dana Haynie and Ryan King, are experts in the areas of crime, incarceration, and race. They will provide vital feedback on dissertation drafts, journal article manuscripts, and presentations.

**Dissemination to Broader Audiences.** I have disseminated prior research to a broader audience (see CV), which I will continue doing with my dissertation. I will present at conferences that are well-attended by policymakers and academics, such as the *American Society of Criminology*, the *Academy of Criminal Justice Sciences,* and the *American Sociological Association* meetings. I will publish press releases through Ohio State’s research news department and send op-ed pitches to news outlets like *The Conversation* and *The Atlantic*. I also plan to write blogposts on my professional website, which are linked to my social media pages like Twitter and Facebook.

REFERENCES

Agan, Amanda, and Sonja Starr. 2017. "Ban the Box, Criminal Records, and Racial Discrimination: A Field Experiment." *The Quarterly Journal of Economics* 133: 191-235.

Alexander, Michelle. 2010. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. The New Press.

Bowen, William G., and Derek Bok. 2016. *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions*. Princeton University Press.

Becker, Gary. S. 1993. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: University of Chicago Press.

Becker, Howard. 1963. *Outsiders: Studies in the Sociology of Deviance*. New York: Free Press.

Bertrand, Marianne, and Sendhil Mullainathan. 2004. "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review* 94: 991-1013.

Blumstein, Alfred, and Kiminori Nakamura. 2009. "Redemption in the Presence of Widespread Criminal Background Checks." *Criminology* 47: 327-359.

Charmaz, Kathy. 2006. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Sage.

Cho, Rosa Minhyo, and John H. Tyler. 2013. "Does Prison-Based Adult Basic Education Improve Postrelease Outcomes for Male Prisoners in Florida?." *Crime & Delinquency* 59: 975-1005.

Cundiff, Patrick R. 2016. "Erasing the Mark of a Criminal Record: Examining the Effect of Education on Ex-Offender Employment." *Corrections* 1(2): 127-138.

Decker, Scott H., Natalie Ortiz, Cassia Spohn, and Eric Hedberg. 2015. "Criminal Stigma, Race, and Ethnicity: The Consequences of Imprisonment for Employment." *Journal of Criminal Justice* 43(2): 108-121.

Denver, Megan, Garima Siwach, and Shawn D. Bushway. 2017. "A New Look at the Employment and Recidivism Relationship through the Lens of a Criminal Background Check." *Criminology* 55: 174-204.

DeWitt, Samuel E., Shawn D. Bushway, Garima Siwach, and Megan C. Kurlychek. 2017. "Redeemed Compared to Whom? Comparing the Distributional Properties of Arrest Risk Across Populations of Provisional Employees With and Without a Criminal Record." *Criminology & Public Policy* 16(3): 963-997.

Durose, Matthew R., Alexia D. Cooper, and Howard N. Snyder. 2014. “Recidivism of Prisoners Released in 30 States in 2005: Patterns from 2005 to 2010.” Washington, DC: US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Duwe, Grant, and Valerie Clark. 2014. "The Effects of Prison-Based Educational Programming on Recidivism and Employment." *The Prison Journal* 94: 454-478.

Gaddis, Michael S. 2014. "Discrimination in the Credential Society: An Audit Study of Race and College Selectivity in the Labor Market." *Social Forces* 93: 1451-1479.

Gaddis, S. Michael. 2018. *Audit Studies: Behind the Scenes with Theory, Method, and Nuance.* New York: Springer.

Giordano, Peggy C., Stephen A. Cernkovich, and Jennifer L. Rudolph. 2002. "Gender, Crime, and Desistance: Toward a Theory of Cognitive Transformation." *American Journal of Sociology* 107: 990-1064.

Harlow, Caroline Wolf. 2003. "Education and Correctional Populations: Bureau of Justice Statistics Special Report."

Hughes, Timothy A., and Doris James Wilson. 2003. “Reentry Trends in the United States.” Washington, DC: US Department of Justice, Bureau of Justice Statistics.

Holzer, Harry J., Steven Raphael, and Michael A. Stoll. 2006. "Perceived Criminality, Criminal Background Checks, and the Racial Hiring Practices of Employers." *The Journal of Law and Economics* 49: 451-480.

Kaeble, Danielle, and Mary Cowhig. 2018. "Correctional Populations in the United States, 2016." Bureau of Justice Statistics. 1-13.

Klerman, Jacob Alex, and Lynn A. Karoly. 1994. "Young Men and the Transition to Stable Employment." *Monthly Labor Rev*iew 117: 31.

Murnane, Richard J., John B. Willett, and Kathryn Parker Boudett. 1999. "Do male dropouts benefit from obtaining a GED, postsecondary education, and training?" *Evaluation Review* 23: 475-503.

Murnane, Richard J., John B. Willett, Yves Duhaldeborde, and John H. Tyler. 2000. "How Important are the Cognitive Skills of Teenagers In Predicting Subsequent Earnings?." *Journal of Policy Analysis and Management* 19: 547-568.

Pager, Devah. 2003. "The Mark of a Criminal Record." *American Journal of Sociology* 108: 937-975.

Pager, Devah, and Lincoln Quillian. 2005. "Walking the Talk? What Employers Say Versus What They Do." *American Sociological Review* 70: 355-380.

Pettit, Becky, and Christopher J. Lyons. 2009. "Incarceration and the Legitimate Labor Market: Examining Age‐Graded Effects on Employment and Wages." *Law & Society Review* 43: 725-756.

Pew Center on the States. 2008. “One in 100, Behind Bars in America.” Washington, D.C.: The Pew Charitable Trusts.

Quadlin, Natasha. 2018. "The Mark of a Woman’s Record: Gender and Academic Performance in Hiring." *American Sociological Review* 83: 331-360.

Rampey, Bobby D., Shelley Keiper, Leyla Mohadjer, Tom Krenzke, Jianzhu Li, Nina Thornton, and Jacquie Hogan. 2016. "Highlights from the US PIAAC Survey of Incarcerated Adults: Their Skills, Work Experience, Education, and Training: Program for the International Assessment of Adult Competencies: 2014 (NCES 2016-040).” Washington, DC: *US Department of Education*.

Reskin, Barbara F. 2003. "Modeling Ascriptive Inequality: From Motives to Mechanisms." *American Sociological Review* 68: 1-21.

Sampson, Robert J., and John H. Laub. 2003. "Life‐Course Desisters? Trajectories of Crime Among Delinquent Boys Followed to Age 70." *Criminology* 41: 555-592.

Shannon, Sarah KS, Christopher Uggen, Jason Schnittker, Melissa Thompson, Sara Wakefield, and Michael Massoglia. 2017. "The Growth, Scope, and Spatial Distribution of People with Felony Records in the United States, 1948–2010." *Demography* 54: 1795-1818.

Spence, Michael. 1973. “Job Market Signaling.” *Quarterly Journal of Economics* 87: 355–74.

Steurer, Stephen J., Linda G. Smith, and Alice Tracy. 2001. *Three State Recidivism Study*. Lanham, MD: Correctional Education Association.

Sugie, Naomi F. 2017. "Criminal Record Questions, Statistical Discrimination, and Equity in a ‘Ban the Box’ Era." *Criminology & Public Policy* 16: 167-175.

Sugie, Naomi F. 2018. "Work as Foraging: A Smartphone Study of Job Search and Employment after Prison." *American Journal of Sociology* 123: 1453-1491.

Tyler, John H., and Jeffrey R. Kling. 2006. *Prison-Based Education and Re-Entry into the Mainstream Labor Market*. National Bureau of Economic Research.

Uggen, Christopher. 2000. "Work as a Turning Point in the Life Course of Criminals: A Duration Model of Age, Employment, and Recidivism." *American Sociological Review* 529-546.

Uggen, Christopher, Mike Vuolo, Sarah Lageson, Ebony Ruhland, and Hilary Witham. 2014. "The Edge of Stigma: An Experimental Audit of the Effects of Low‐Level Criminal Records on Employment." *Criminology* 52: 627-654.

Vuolo, Mike, Christopher Uggen, and Sarah Lageson. 2016. "Statistical Power in Experimental Audit Studies: Cautions and Calculations for Matched Tests with Nominal Outcomes." *Sociological Methods & Research* 45: 260-303.

Vuolo, Mike, Sarah Lageson, and Christopher Uggen. 2017. "Criminal Record Questions in the Era of ‘Ban the Box’." *Criminology & Public Policy* 16: 139-165.

Vuolo M., Uggen C., Lageson S. 2018. “To Match or Not to Match? Statistical and Substantive Considerations in Audit Design and Analysis.” In: Gaddis S. (eds) Audit Studies: Behind the Scenes with Theory, Method, and Nuance. Methodos Series (Methodological Prospects in the Social Sciences), vol 14. Springer, Cham.

Western, Bruce. 2006. *Punishment and inequality in America*. Russell Sage Foundation.

Wilson, David B., Catherine A. Gallagher, and Doris L. MacKenzie. 2000. “A Meta-Analysis of Corrections-Based Education, Vocation, and Work Programs for Adult Offenders.” *Journal of Research in Crime and Delinquency* 37: 347–68.