

Have You Ever Been Convicted of a Crime? The Effects of Juvenile Expungement on Crime, Educational, and Labor Market Outcomes

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Job Market Paper

November 20, 2014

Abstract: Despite differing terminology, all fifty states and the District of Columbia have statutory remedies allowing records of juvenile delinquency to be treated as if they do not exist, eliminating the possibility that a future college or employer may learn of the record. Whereas most states require an application for such “expungement” of a juvenile record, in fourteen states the expungement is automatic. Based on unique data obtained from three application states, I find that expungement is rarely used when an application is required. To study the effect of expungement on youths, I develop a conceptual model to consider the dynamic incentives created by automatic expungement that predicts an increase in the incentives to initially commit crime but a reduction in the incentives to commit additional crime as an adult. Based on this model, I estimate the effects of expungement on juvenile arrest, recidivism as an adult, educational attainment, and future labor market outcomes. I find no response to the incentive for first time offenders in automatic states, but I do find a negative effect on long-term recidivism. I also find sizeable positive effects of expungement on college attendance and future earnings. These findings suggest that expungement is beneficial to former offenders with limited social costs.

JEL Classifications: K420, J130, K410

Keywords: Expungement, Juvenile, Crime, Education, Labor Income

The author is grateful to Jeff Biddle, Stacy Dickert-Conlin, Steven Haider, Scott Imberman, Chris Melde, and Leslie Papke for their guidance and suggestions. The author acknowledges Cook County Clerk Dorothy Brown and other participants at the 10th Annual Expungement Summit as well as countless other state officials for providing both institutional knowledge and raw data elements. The author acknowledges support from Institute of Education Sciences Grant R305B090011 to Michigan State University. This research was conducted with restricted access to Bureau of Labor Statistics (BLS) data. The views expressed are those of the author and do not represent the views of the U.S. Department of Education or the BLS.

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1. Introduction

Since the first juvenile court began hearing cases in 1899, the overarching philosophy of the juvenile court system has been to focus on the offender as opposed to the offense. Consequently, the juvenile court tends to provide more rehabilitative sanctions than punitive ones and most states maintain confidentiality of juvenile court proceedings and records, presumably to limit the stigma associated with appearance in juvenile court (Bilchik 1999). However, state statutes determine whether these records can be obtained by anyone from employers in sensitive industries, such as nursing homes or school districts, to the general public.¹

One dramatic example of the leniency of the juvenile court system is the case of expungement. The ability to expunge or seal one's juvenile record is a legal remedy available to juvenile offenders in every state.² Despite cross-state differences in terminology, juvenile expungement statutes contain a number of similar clauses.³ Conditional on certain requirements, these statutes allow those with records of juvenile delinquency that are not in custody to have their records either closed from all inspection or physically destroyed. However, the manner by which expungement is initiated is distinctly different: whereas most states require a petition of the court to expunge a juvenile record, fourteen states automatically expunge the record. Once

¹ Anecdotally, many citizens first learn that their juvenile record followed them when they apply for public assistance or certain jobs (Whigham 2012; Quevedo 2013).

² While expungement is also available to adults in many states, I focus on juveniles for two reasons. First, expungement is typically made more difficult for adults through more stringent eligibility requirements. More importantly, crimes committed by adults are not covered by the same confidentiality provisions available to many juvenile offenders, particularly with respect to the publication of names. Therefore, the growth of the internet has called the effectiveness of adult expungement into question (Calvert and Bruno 2010).

³ The terminology and specifics of these statutes differ by state. Other names include setting aside, destruction, expunction, erasure, and closing (see Appendix Table A1). Despite the differences in terminology, these statutes all describe a process that results in the delinquent activity being legally treated as if it never occurred. I use the term "expunge" or "expungement" throughout the remainder of the paper as an umbrella for all the different terms.

the record has been expunged the event can be treated as if it had not occurred on college and employment applications, and a criminal background check will not return any juvenile history.⁴

The existence of a juvenile record is potentially important because previous studies have found that a criminal history can be a barrier in many important economic markets. For example, prior literature documents that individuals with criminal histories can face struggles in the labor market (Grogger 1995; Pager 2003; Bushway 2004; Holzer et al. 2006; Holzer et al. 2007; Stoll and Bushway 2008; Finlay 2009). Criminal records can also affect the ability to gain higher education through eligibility for federal loans (Lovenheim and Owens 2014). The American Bar Association (2013) recently argued that the collateral consequences associated with having a record of juvenile delinquency can be more severe than the actual punishment for the crime, and further argued that expungement or sealing reduces these consequences. In response to these potential collateral consequences, a recent federal bill titled the Record Expungement Designed to Enhance Employment (REDEEM) Act (2014) attempts to make the process of expungement automatic for all nonviolent juvenile offenses.

In the first empirical paper on juvenile expungement, I consider three primary research questions. First, what are the incentives that are created by automatic expungement? Second, do expungement rates differ for states with automatic expungement and states that require a petition? Third, can I use automatic expungement to estimate an empirical effect of expungement in the markets for crime, educational, and labor market outcomes?

To answer these questions, I proceed in three steps. First, I develop a conceptual framework that captures the incentives implied by a policy of automatic expungement in the

⁴ There are some exceptions to this claim. State law enforcement officials may have access to expunged records. For example, in many states if the offender later commits a felony the expunged record can be used for sentencing purposes.

market for crime. Specifically, my model predicts an increase in first time criminal behavior among juveniles and a decrease in recidivism as an adult in automatic expungement states. Next, I present unique data collected from state agencies on the number of annual expungements in three application states. These data indicate a large difference in the expungement rate between automatic and application states, presumably due either to myopia or to the different costs associated with the application process. This allows me to infer that the policy effect of automatic expungement can be interpreted as the overall effect of expungement. I use this variation in my empirical work to identify the effects of expungement on crime, educational, and labor market outcomes.

As a preview of the empirical results, I find that automatic expungement does not lead to higher levels of first time juvenile crime, but that it does lead to lower rates of recidivism, higher rates of college attendance and graduation, and higher average earnings for those with records of juvenile delinquency. One plausible explanation consistent with these results is that juveniles are not appreciably forward looking. These findings suggest that there are large benefits to ex-offenders of expungement with limited costs to society.

2. Institutional Details

A record of juvenile delinquency typically begins with an interaction with law enforcement.⁵ Once the juvenile offender is in custody, prosecutors and the police determine whether to file a delinquency petition.⁶ As defined by the federal Office of Juvenile Justice and

⁵ According to the Office of Juvenile Justice and Delinquency Prevention law enforcement referrals accounted for 83 percent of all delinquency cases referred to juvenile court in 2009. The remaining referrals were made by others such as parents, victims, schools, and probation officers (2013a).

⁶ A petition is filed for all cases that appear in juvenile court. Cases that are not petitioned are diverted out of the official juvenile court system, either to a formal diversion program or by the juvenile simply being released to a parent or guardian.

Delinquency Prevention (OJJDP) (2013b), “a delinquency petition states the allegations and requests the juvenile court to adjudicate (or judge) the youth a delinquent, making the juvenile a ward of the court. This language differs from that used in the criminal court system (where an offender is convicted and sentenced).”

Each state also has provisions allowing a juvenile to be tried in the criminal court instead of the juvenile court, but use of these waivers is fairly uncommon. For example, in 2009 fewer than five percent of all drug, person, property, or public order cases involving juveniles were waived to criminal court (Puzzanchera et al. 2012).

A court appearance by a juvenile results in the production of an official court record. There are separate provisions regarding the treatment of juvenile records that depend on whether the juvenile is adjudicated delinquent. I focus on individuals that are adjudicated delinquent because these records have potential to be a significant barrier to future educational endeavors or employment.⁷

There are two mechanisms by which expungement can affect the application process for education or employment for those with a record of juvenile delinquency. First, in the majority of states expungement allows the underlying criminal activity to be treated as if it never occurred, meaning an applicant can legally respond to the question “Have you ever been convicted of a crime?” with “No.”⁸ Second, an expunged record will not be returned in a criminal background check if conducted by any employer or institution. Therefore, a nineteen year old who committed assault at age fourteen will have a record of juvenile delinquency if he

⁷ For example, the American Bar Association details the availability of juvenile records in different states to anyone from sensitive employers, to law enforcement officials, to the general public (2013). Regarding higher education, the Common Application asks college applicants to report if they have been adjudicated delinquent, but informs them that they are not required to answer “yes” if the adjudication has been expunged (Common Application 2014).

⁸ Note that a few states statutorily define adjudication separately from conviction, meaning those with a record of juvenile delinquency can still respond “No” to this question.

lives in a state where it is not expunged, while a similar nineteen year old will have no record in a state where it is expunged.

While all states offer juveniles the option to expunge a criminal history, there is an important difference in the process that I use in my empirical work to identify the effect of expungement. Conditional on eligibility, fourteen states are automatic expungement states, meaning the criminal record is expunged at some point in the future with no action required by the juvenile.⁹ The remaining states are application states, meaning a record of juvenile adjudication will not be expunged without a formal petition of the court.¹⁰ This petition may require various costs, including knowledge of institutional details, hiring of legal counsel, and payment of administrative fees. Understanding the effects of automatic expungement is particularly important in the current atmosphere of juvenile justice reform. The REDEEM Act of 2014 (2014), currently a bill in the senate, would make expungement automatic for all nonviolent juvenile offenses.

In Appendix Table A1 I briefly summarize the pertinent expungement statutes in each of the 50 states and the District of Columbia. I present further descriptive comparisons between the language of the state statutes in Appendix Table A2, including the number of states that specify the event can be treated as if it never occurred and the number of states where an expunged record can be used against an offender if he or she recidivates.

3. Literature Review

⁹ Eligibility for expungement varies by state. Some examples of eligibility requirements are age thresholds, remaining arrest free for a certain period of time, and providing evidence of rehabilitation. Statutory rules regarding expungement can also differ by crime within state. For example, in many states certain crimes are ineligible for expungement. These crimes are typically either violent in nature or require registration on an offender registry, as is the case with many sexual assaults.

¹⁰ Some states require either application or the court's own motion. I label these states as application states.

While the effects of expungement have not been empirically studied, several conceptual analyses exist. These papers typically argue the advantages and disadvantages of confidentiality of records and expungement for society (Gough 1966; Volenick 1975; Snow 1992; Funk 1995; Funk and Polsby 1998; Henning 2004; Ruddell and Winfree, Jr. 2006; Raphael 2007; Calvert and Bruno 2010; Pyne 2010; Weissman et al. 2010). The majority of these papers conclude that the benefits outweigh the costs and that society should make expungement easier for former offenders. However, Funk (1995) and Funk and Polsby (1998) warn that expungement could have large costs.

Other literatures provide some background that can be used to predict the effect of expungement. For example, one pertinent literature investigates the causes of crime and recidivism. Expungement statutes alter the incentives for potential offenders by lowering the marginal cost of being caught committing a first offense as a juvenile. Prior economic literature shows that juvenile criminals may respond rationally to incentives (Levitt 1998; Jacob and Lefgren 2003; Conlin et al. 2005; Mocan and Rees 2005; Carpenter 2007; Lochner 2010). For example, Levitt (1998) shows that juvenile criminals are responsive to the severity of criminal punishment in their state of residence. However, other literature provides evidence that juvenile criminals appear to be myopic (Lee and McCrary 2005).

Another pertinent literature discusses the effect of formal interaction with the justice system on recidivism. Generally, this literature finds that formal labeling and incarceration can lead to increased rates of recidivism (Becker 1963; Bernburg and Krohn 2003; Bernburg et al. 2006; Kurleycheck et al. 2006; Lanctôt et al. 2007; Bayer et al. 2009; Wilson and Hoge 2012; Aizer and Doyle, Jr. 2013). This literature is particularly applicable because expungement directly removes the formal label associated with a record of juvenile delinquency.

Focusing on the long-term outcomes, much literature in criminology, sociology, and economics studies the effect of delinquent behavior and official court involvement on educational attainment (Tanner et al. 1999; Sweeten 2006; Hjalmarsson 2008; Merlo and Wolpin 2008; Burdick et al. 2011; Gowen et al. 2011; Aizer and Doyle, Jr. 2013; Kirk and Sampson 2013). Generally, these papers conclude that delinquent behavior, court appearance, and incarceration have negative effects on high school completion and college enrollment depending on the severity of the involvement. For example, Hjalmarsson (2008) finds that individuals with convictions before age 16 are 16 percentage points less likely to graduate from high school. Coincidentally, using completely different data, Kirk and Sampson (2013) estimate that individuals who have been arrested are 16 percentage points less likely to enroll in college than otherwise identical individuals who have not been arrested. Tanner et al. (1999) find significant negative effects of contact with the criminal justice system on college graduation.

There are also studies, although fewer, on delinquency and labor market outcomes. Generally, adult workers who apply for employment with a criminal record can face significant scrutiny compared to their peers without a criminal history (Grogger 1995; Pager 2003; Bushway 2004; Holzer et al. 2006; Holzer et al. 2007; Stoll and Bushway 2008; Finlay 2009). Literature specific to juvenile offenders also confirms this result (Snow 1992; Tanner et al. 1999; Bernburg and Krohn 2003; Lanctôt et al. 2007; Gowen et al. 2011). These papers show that former juvenile offenders are more likely to be unemployed and have shorter job tenures, even ten or more years after the offense (Tanner et al. 1999).

4. Conceptual Framework

To consider how expungement affects the incentives to commit crimes, I construct a simple two-period model that captures the dynamic incentives created by expungement statutes

for the criminal behavior of individuals, ignoring any potential reactions of the juvenile justice system, police, or the labor market. I briefly lay out the structure and implications of the model here; see Appendix A for its complete development.

Suppose each individual has ability a , where a is distributed over $(0,1)$. In the first period everyone is simultaneously enrolled in school and participating in the low wage labor market, earning salary $S_1 a$. In the second period those individuals who have no criminal record move to the high wage market and earn $S_2 a$, where $S_2 > S_1$. Therefore, this model assumes that having a criminal record results in a future labor market penalty. In thinking about this framework, one can equate the first period of the model with being a juvenile and the second period with being an adult.

In each period the individual can choose whether to commit a crime or not. I describe the crime decision in period t using the binary variable C_t , where $C_t = 0$ denotes choosing no crime and $C_t = 1$ denotes choosing to commit a crime. Assume that the individual earns his salary in each period whether or not he commits a crime and all individuals are caught committing a crime with probability q . If he succeeds in committing the crime without being caught the individual earns an additional payoff b . However, if he is caught committing a crime he has to give up a fraction of his salary f in that period.

I use this framework to assess criminal behavior under two different policy regimes: automatic expungement and no expungement. First, consider the regime with no expungement. Given the simple specification of this framework, there exists a unique cutoff value in a that separates the individuals into two distinct types: those who commit a crime in both periods and those who commit crimes in neither period.¹¹ Those who commit crimes never choose $(C_1, C_2) =$

¹¹ This finding, which is clearly unrealistic, is a result of the simplicity of the model. The model could easily be extended to allow for the other outcomes; for example, adding a period specific idiosyncratic marginal benefit of

(1, 0). The intuition for this result is apparent in the marginal benefits and costs. The marginal benefit from committing a crime is the same in both periods. However, the wage penalty associated with a criminal record implies that the marginal cost of committing a crime in the first period is larger than the marginal cost of committing a crime in the second period conditional on committing a crime in the first period. Therefore, one would never choose $(C_1, C_2) = (1, 0)$. Lastly, the human capital development aspect of the model, where second period earnings are greater than first period earnings if no crime is committed, implies that no one will choose $(C_1, C_2) = (0, 1)$.

Next consider the regime with automatic expungement. In this regime no one incurs the labor market penalty in the second period because no one has a criminal record. There also exist unique cutoff values in a with automatic expungement separating the individuals into three types: low a , medium a , and high a . As in the regime with no expungement, the individuals with low a choose to commit a crime in both periods. However, the removal of the labor market penalty changes behavior in two ways: it reduces the marginal cost of committing a crime in the first period and it increases the marginal cost of committing a crime in the second period conditional on committing a crime in the first period. This implies that individuals with medium a will choose $(C_1, C_2) = (1, 0)$. Lastly, as in the regime with no expungement, individuals with high a will choose not to commit a crime in either period.

Figure 1 summarizes how criminal behavior varies with a across these two policy regimes. In the regime with no expungement, the individual's decision is entirely based on his ability relative to a_2 . In the automatic expungement regime, the behavior changes as described above, but only between a_1 and a_3 . Automatic expungement takes the individuals with $a_1 <$

crime would cause the other outcomes to be chosen as well. However, since my goal is only to understand the incentives, I keep the model simple.

$a < a_2$, who commit a crime in both periods in the regime with no expungement, and creates an incentive for these individuals to choose $C_2 = 0$. Automatic expungement also takes the individuals with $a_2 < a < a_3$, who commit a crime in neither period without expungement, and creates an incentive for these individuals to choose $C_1 = 1$.

I proceed by empirically estimating the effect of automatic expungement on criminal behavior, the pursuit of education, and labor market outcomes. The model predicts that automatic expungement states will have higher rates of first time juvenile offense and lower rates of recidivism, where recidivism is defined as committing a crime as both a juvenile and an adult.¹² Analyzing whether juvenile criminals respond to the incentives created by expungement statutes adds to the crime literature by introducing a new set of incentives that have not been previously studied. I can also empirically test some of the assumptions of the model by analyzing the effect of automatic expungement on pursuit of higher education and future salaries. A comparison of these outcomes can provide the first evidence of the impact of expungement policies.

5. Data

The very nature of the expungement process presents a challenge for empirical work. No survey asks former offenders if they have had a record expunged, and some states do not keep administrative records regarding individual expungements. To obtain evidence on the usage of expungement, I contacted officials in the State Administrative Office of the Courts as well as the State Police or Criminal Justice Information System in all 50 states and the District of Columbia

¹² As in footnote 10, the simplifying assumptions of this model imply the unrealistic finding that those with low a have perfect recidivism. However, the takeaway from the model is the reduction in recidivism due to automatic expungement, not the magnitude of this reduction.

to locate these statistics. In response to this inquiry, three application states (Colorado, Michigan, and Washington) were able to provide comprehensive aggregate statistics and one other application state (Maine) responded with anecdotal evidence.¹³ I use these data to understand how often expungement by application is used.

The primary data sources for the empirical work are the pertinent state statutes detailed in Appendix Table A1 and the National Longitudinal Survey of Youth of 1997 (NLSY97). The NLSY97 is an annual longitudinal survey of 8,984 individuals who were between age 12 and 16 on December 31, 1996. The survey is unique in its collection of data related to crime. Each wave collects self-reported information about arrests, charges, convictions, and incarcerations, along with a rich set of demographic and economic information about the respondent and his or her family.¹⁴ Many previous studies use this dataset to analyze juvenile arrest and criminal behavior (Levitt and Lochner 2001; Sweeten 2006; Lochner 2007; Hjalmarsson 2008; Merlo and Wolpin 2008; Hjalmarsson 2009; Finlay 2009; Brame et al. 2014; Lovenheim and Owens 2014).

Throughout my analysis of NLSY97 data I assume individuals have a record of adjudication if they report that they were convicted or adjudicated in juvenile court and their age at the time of survey is less than the age of criminal majority in their state of residence. During the years of analysis in this paper, the age of criminal majority is 16 in three states, 17 in ten states, and 18 in the remaining states.¹⁵ I test the robustness of my primary results to changes in this assumption at the end of Section 7.

¹³ Appendix Table A3 presents all of the data I collected from various states. Note that this table includes some data from automatic states that reported statistics for expungements by application. Expungement by application is available in these states for those interested in expungement before the automatic process occurs.

¹⁴ Thornberry and Krohn (2000) argue that self-report data on delinquency are valid for research purposes.

¹⁵ There have been two recent changes: Connecticut raised its age from 16 to 18 (beginning to take effect in 2010) and Massachusetts raised its age from 17 to 18 in 2013 (Mendel 2013; OJJDP 2013b).

For the purpose of my analysis I assign the state of residence for the individual in 1997. State assignment is critical as it determines whether the individual lives in an automatic or application state. While this method of assignment ensures that the state of residence is known for all respondents, it could introduce bias if juvenile offenders are mobile across states, particularly if they commit a crime in a state other than their assigned state. My results are robust to a number of different assignment strategies, such as the state of residence in other years. The preferred assignment strategy results in 20 percent of the sample residing in automatic expungement states. This is consistent with the average fraction of the juvenile population that lived in automatic expungement states between 2006 and 2010.

I use data from a number of other sources to provide important covariates throughout my analysis. See Appendix B for a discussion of these data sources.

6. Empirical Strategy

The preceding discussion highlights the importance of understanding the effect of expungement. However, the nature of the statutes and available data limit the options for empirically estimating this effect. For example, only one state, Vermont, has changed from application to automatic status in the past thirty years, and data are not available for analysis around the timing of the change in 1995. Because of these concerns with identification, the typical empirical tools used to estimate clear causal effects are not suitable.¹⁶ Instead, I use several simpler, but distinct, strategies that exploit cross-state variation to provide a collage of evidence on the effects of the policy.

¹⁶ For example, an instrumental variables framework is not feasible as there does not appear to be a valid instrument--something that affects expungement policy but not the other outcomes.

6.1 Empirical Concerns

To focus the discussion regarding empirical concerns that exist with exploiting cross-state variation, consider the regression model:

$$y_{is} = \beta \mathbf{X}_{is} + \gamma \text{Auto}_s + \rho \text{Justice}_s + \varepsilon_{is} \quad (1)$$

The outcome variable y_{is} contains measures of crime, educational, and labor market outcomes for individual i who lives in state s . The vector \mathbf{X}_{is} contains race, ethnicity, gender, parental characteristics, and household composition, among other important predictors for the outcomes of interest. The coefficient of interest, γ , measures the effect of automatic expungement on the given outcome conditional on all of the other covariates.

One advantage of using the NLSY97 is that I have an extremely rich set of individual level covariates available to include in \mathbf{X}_{is} . Importantly for my identification strategy, these data allow me to control for underlying propensities to commit crime or succeed in the education and labor markets.

There are two major concerns that threaten estimation of γ , the first of which is reverse causality. More specifically, it may be the case that states with lower arrest rates choose to have more lenient expungement policies. This argument does not appear to be a major concern because many of the expungement statutes date back to the early twentieth century when juvenile crime rates were much lower. Despite fluctuations in the crime and arrest rates over time, virtually none of the statutes have been changed.

The second concern with this model is omitted variable bias. More specifically, Justice_s in equation (1) is unobserved and likely to be positively correlated with Auto_s .¹⁷ Quite simply, it

¹⁷ The implication of this argument is that Justice_s is the only unobserved covariate biasing estimation of γ . That is, conditional on the detailed covariates in \mathbf{X}_{is} , what remains in ε_{is} is not likely to be correlated with Auto_s .

is likely that states choosing to automatically expunge records of juvenile delinquency also focus their juvenile justice environment on maximizing the chance of rehabilitation. In such a case, if Justice_s was not appropriately controlled for, the estimated effect of the automatic expungement policy would reflect the direct effect of the expungement policy as well as this other unmeasured juvenile justice environment.¹⁸

To provide more empirical evidence regarding these potential concerns, I compare observable covariates across automatic and application states in Table 1. The crime-specific covariates at the top of Table 1 do not support the story of reverse causality. Specifically, there are no significant differences in arrest or incarceration rates. Furthermore, while the arrest rate or incarceration rate is slightly higher in application states, in other categories, such as the violent crime rate or state expenditures on the justice system, the means are larger for automatic states.

Similarly, the bottom panel of Table 1 shows that there do not appear to be significant differences in demographics and economic indicators between the states.¹⁹ The only means that are statistically different from each other in Table 1 are the fraction of the population that is black, which is larger in application states, and the fraction of the population that is Hispanic, which is larger in automatic states. The concerns created by these differences are diminished given the rich set of individual level covariates I include in my analysis. Therefore, the findings in both panels support the notion that automatic and application states do not appear to be systematically different.

¹⁸ While one could tell a story where states with an automatic expungement policy tend to adopt a stricter juvenile justice system to offset this lenience, therefore suggesting that the correlation is negative, such an argument would seem to be more applicable when the policy environment was simpler, with perhaps just two or three policies counteracting each other.

¹⁹ Figure 2 shows that there does not appear to be any systematic geographical difference between the states. Additionally, although not listed in Table 1, there do not appear to be any discernible political differences, as measured by the political party of the governor, senators, and other state officials, between the states.

6.2 Empirical Techniques

I use two different techniques to mitigate the concern of omitted variable bias. In the first technique I add a covariate to my weighted least squares regression that is likely to be correlated with Justice_s. The proxy variable I use, based on Levitt (1998), divides the number of juveniles in residential placement by the total level of reported crime to measure the severity of the state juvenile justice system. My second technique identifies within-state treatment and control groups, allowing me to include state fixed effects in difference-in-differences framework.

To implement the first technique I estimate a cross-sectional regression by weighted least squares and include the detailed covariates available in the NLSY97. Using these covariates as well as the results of Table 1, where there do not appear to be systematic differences between the states, the remaining major concern is failing to capture the underlying juvenile justice environment. I compare the results of the regression without the proxy variable to those that include the variable reflecting the severity of the juvenile justice system, thereby controlling for Justice_s. Therefore, this first technique identifies the effect of automatic expungement using cross-state variation conditional on a rich set of covariates.

My second technique uses difference-in-differences to effectively remove all fixed attributes from equation (1), including Justice_s, by focusing on within-state variation. I include state fixed effects to compare individuals who have been convicted of juvenile crimes to their peers who have not been convicted within the same state.²⁰ This alleviates the concern of unobserved cross-state differences biasing the estimated effect of automatic expungement.

An example of this difference-in-differences strategy can be expressed as follows:

²⁰ I use the term “convicted” when working with the NLSY97 because it is the term used in the survey. In the text of the question itself the survey is specific in asking if the respondent was either convicted or adjudicated.

$$y_{is} = \delta_1 \mathbf{X}_{is} + \delta_2 \text{JuvConvict}_{is} + \theta [\text{Auto}_s \times \text{JuvConvict}_{is}] + \rho_s + \omega_{is} \quad (2)$$

The outcomes I consider in this analysis are long-term recidivism, college attendance and graduation, and average future income.²¹ I define \mathbf{X}_{is} in equation (2) as in equation (1). In this framework the coefficient of interest is θ , the coefficient on the interaction between living in an automatic expungement state and being convicted in a juvenile court.

The key aspect to the validity of this strategy is selection of the control group. A potential concern with this method is that the effects of the juvenile justice system may differ for these groups and therefore not be captured by this technique. The strength of the assumption of constant effects of Justice_s across treatment and control group varies by the outcome being considered. For example, consider the market for higher education. It seems plausible that the effects of the juvenile justice system are similar for those who are convicted and those who are arrested but not convicted. However, in the market for long-term recidivism this assumption is much stronger.

I test the robustness of my results to different treatment and control groups to alleviate this concern. For example, consider a change of the treatment group to individuals arrested, but not convicted. These individuals likely interact with a similar juvenile justice environment as those who are arrested and convicted, but expungement should not have an impact on their outcomes. Therefore, if I use those arrested but not convicted as the treatment group and those never arrested as the control group, I change the expected results of the analysis holding constant the unobserved juvenile justice environment. If the results of this analysis, where I expect no

²¹ Because the treatment and control groups are defined by arrest and conviction, I am unable to use this technique to analyze the probability of initial arrest. I measure long-term recidivism using an indicator for ever being arrested after age 20. I choose age 20 because this will allow sufficient time for individuals who are incarcerated as juveniles to be released. According to the Census of Juveniles in Residential Placement, in 2010 the median range of days since committed individuals had been admitted was 91 to 180 days (Sickmund et al. 2013).

effect, are similar to the analysis using juvenile convicts as the treatment group, this would be evidence that the effect I am capturing is due to the unobserved juvenile justice environment and not to expungement. However, finding a large effect for those convicted but zero for those arrested and not convicted would be compelling evidence that I am capturing the effect of expungement.

For all empirical analyses my preferred calculations of standard errors are clustered at the state level to correct for the within-state correlation that exists in my data (Donald and Lang 2007). However, in some cases this causes the standard errors to shrink. Therefore, I also present non-clustered standard errors in the Appendix for all key results.

The nature of the sampling framework used by the NLSY97, where black and Hispanic respondents are oversampled, implies that the sampling is endogenous because race is a significant predictor of arrest. As a result, I present weighted estimates in all analyses to ensure consistency (Solon, Haider, and Wooldridge 2013).²² I report unweighted analogs of the primary findings in the Appendix.

6.3 Do Juveniles Apply For Expungement?

In Table 2 I provide the years of data that are available and average annual expungements I collected from the application states. To interpret the data more easily, I include the average number of cases handled formally in each of the states over the years 1997 to 2010. This is a measure of the amount of court activity that leads to the production of records of juvenile delinquency. I calculate the expected adjudication rate by multiplying the average number of

²² In particular, the NLSY samples 100 PSUs in the cross-sectional sample and 100 PSUs in the oversample, with only 147 of the PSUs not overlapping between the two. The nonrandom nature of the oversampling requires weighting for consistency (National Longitudinal Surveys 2014).

formally handled cases by 60 percent, the approximate rate for petitioned delinquency hearings to result in adjudication since 1985 (Puzzanchera et al. 2012). Dividing expungements by expected adjudications gives a rough estimate of a rate of expungement of records for each state.

Table 2 shows that rates of expungement are extremely low in states that do not allow for automatic expungement, both in raw levels and as a percentage of expected adjudications. I estimate that the average expungement rate among these three application states is between 0.2 percent and 10.7 percent. Additionally, although unable to provide statistics, a representative from the Maine Juvenile Justice Advisory Group informed me that leading juvenile prosecutors in Maine recalled handling fewer than 50 motions to expunge juvenile records during the past 20 years (K. McGloin, personal communication, August 26, 2013).

There are multiple explanations for this finding. One possibility is that the monetary and non-monetary costs associated with application for expungement are too high, deterring individuals from applying.²³ Another possibility, consistent with findings in the literature specific to youth, is that juveniles are extremely myopic (Lee and McCrary 2005; Oreopoulos 2007). Thus, they choose not to apply for expungement because the benefits of such application will not be realized until much later in their lifetimes.²⁴

In the remainder of the paper I directly examine the overall policy effect of a state adopting automatic expungement. Importantly, the empirical results in Table 2 imply that the rate of expungement in application states is near zero, suggesting that this policy effect is approximately equivalent to studying the effects of expungement itself.

²³ For example, some states require affidavits from the applicant reflecting his or her behavior as well as affidavits from others regarding the character of the applicant. There are also direct monetary costs, such as remittance of court fees or hiring of legal assistance.

²⁴ Myopia does not explain why former offenders do not apply for expungement when they are older. One explanation for this result is that the negative effect of a juvenile record slowly diminishes over time. Another is that former offenders never revisit their decision not to pursue expungement.

7. Results

The NLSY97 data I use contains 1,267 individuals who were arrested as a juvenile, 779 juveniles who were charged, 403 juveniles who were convicted, and 181 juveniles who were incarcerated. Appendix Table A4 provides additional descriptive statistics for the overall sample.²⁵

In Table 3 I focus on the differences in the means of important covariates across automatic and application states for those never arrested, those arrested but not convicted, and those convicted as a juvenile. Among those individuals who were convicted of a crime, the descriptive statistics suggest that outcomes in automatic expungement states are consistent with the conceptual framework; average rates of recidivism are smaller in automatic states, while rates of college attendance, college graduation, and average future income are all larger in automatic states than in application states. Furthermore, the means for these variables in the automatic states are very similar to the means for those arrested but not convicted. These findings are consistent if automatic expungement serves to increase the means of these variables and the policy itself is exogenous to these outcomes.

The other means in Table 3 confirm that the weighted estimates I am using are plausible. Unsurprisingly, the number of females in the arrest and conviction samples suggests that males are more likely than females to be arrested, consistent with national trends.²⁶ Table 3 also shows

²⁵ I drop 1,515 observations from the original sample. These individuals missed at least one of the first five waves of the survey, and I am therefore unable to determine if these individuals had an arrest as a juvenile. These statistics are weighted by the NLSY97 sampling weights for 1997 that use the cumulative cases method. This method provides a weight for everyone in the sample and adjusts for the oversampling of blacks and Hispanics.

²⁶ I approximate the percentage of arrestees that are female using the arrest rates by gender. According to the OJJDP Statistical Briefing Book, the juvenile arrest rate for males in 2010 was 6,702 per 100,000 population and the arrest rate for females was 2,918 per 100,000 population (2013a). These rates imply that approximately 30.3 percent of arrests in 2010 were of females.

that racial differences exist across automatic and application states.²⁷ Other than these racial differences, the descriptive statistics are fairly similar across automatic and application states.

In Table 4 I compare the baseline difference in the probability of juvenile arrest among the respondents in the NLSY97 from the different states. Each of the columns of this table estimate a linear probability model using weighted least squares where the outcome is a binary indicator of ever being arrested as a juvenile. In column (1) I present results from a regression using all of the detailed NLSY97 covariates but excluding the severity measure. In column (2) I add the proxy variable to the regression to determine the effect of the unobserved juvenile justice environment. In columns (3) and (4) I repeat this exercise, but I also include a standardized measure of ability, the Armed Services Verbal Aptitude Battery (ASVAB), which contains the Armed Forces Qualifying Test (AFQT).²⁸ This examination is used in previous literature as an underlying measure of respondent's ability (Neal and Johnson 1996).

Across all columns I find no significant effect of automatic expungement on juvenile arrest in this sample.²⁹ Although the direction of the estimated coefficient is positive, the magnitude of this effect is very small. Assuming that the severity measure is a feasible proxy

²⁷ The direction of this difference for those convicted of a juvenile offense is not consistent with the findings in Table 1. This could be due to the small selected sample that makes up juvenile convicts in the NLSY97.

²⁸ The ASVAB was administered voluntarily in the first wave of the NLSY97. As a result, ASVAB scores are missing for many of the individuals who are arrested as juveniles. When I include ASVAB in the analysis I also include an indicator for ASVAB being missing. However, this fundamental difference in the sample with ASVAB scores affects both the magnitude and the interpretation of the ASVAB estimate. Another measure of ability that is available is self-reported eighth grade achievement. Respondents in the NLSY97 are asked to report their grades in eighth grade as "mostly As," "about half As and Bs," "mostly Bs," and so on. If I define good grades as receiving mostly Bs or better and include this indicator in the analysis instead of ASVAB, the results are generally similar.

²⁹ Appendix Tables A6, A7, and A8 show similar analysis using arrest rates from the Uniform Crime Reports. The estimated coefficients are from a regression of average arrest rates for the specified population for specific crimes over the years 2006 to 2010 on a number of pertinent state-level covariates. The crimes in the eight columns are ordered in terms of likelihood to be expunged. Therefore, this analysis determines if juveniles are committing less serious crimes at differential rates between the states, possibly as a result of the incentives created by expungement statutes. This also tests the predicted unconditional reduction in second period crime from the conceptual framework by using adult arrest rates. The estimated coefficient on the automatic identifier in these tables is never statistically significant at conventional levels, indicating that the arrest rates for all of the crimes are not different across automatic and application states.

variable for Justice_s, this finding suggests that the unobserved juvenile justice environment is not a big concern in this analysis once I have conditioned on the rich set of covariates. This result continues to support the finding that there are not large differences between automatic and application states other than their expungement policy.

The signs and significance of the other covariates in Table 4 are generally consistent with expectations and previous studies. The small, insignificant effect of black is surprising given the national trend in arrests showing black juveniles arrested at much higher rates than whites (OJJDP 2013a). However, this is not the first paper to find that the difference in arrest rates across races appears to be much smaller in the NLSY97 than in national statistics (Brame et al. 2014).³⁰ Additionally, other studies have found that conditioning on important covariates, such as family socioeconomic status, make the effect of race insignificant in determining risk of juvenile arrest (Fite et al. 2009).

In Table 5 I present the results of weighted least squares regressions using dependent variables that reflect the long-term costs and benefits associated with expungement in my conceptual framework.³¹ Each panel of Table 5 contains the results from estimation of equation (1) for a different subset of the population, including those who are convicted as a juvenile, those who are arrested but not convicted, and those who are never arrested.³² Columns (1) through (4) measure reduced recidivism, pursuit of higher education, and legal employment, where these outcomes are defined such that positive results would be considered social benefits. As in Table 4, these estimates include the proxy variable to control for unobserved differences in the juvenile

³⁰ A comparison of means test shows that black juveniles are arrested at a significantly higher rate than white juveniles in the NLSY97.

³¹ The unweighted analogs to Tables 6 and 7 appear in Appendix Tables A9 and A10.

³² As discussed in Section 6, I cluster standard errors at the state level in Tables 4 and 5. Appendix Tables A11 and A12 show the standard errors for Table 6 and Table 7 without clustering.

justice system, and the coefficients of interest are those on the indicator for automatic expungement.

The coefficient in the top panel of column (1) shows that individuals convicted as a juvenile who live in an automatic expungement state are 13.3 percentage points more likely to remain arrest-free after age 20, with this coefficient statistically significant at the five percent level.³³ This result is consistent with the prediction in my conceptual framework that automatic expungement causes a reduction in crime in the second period. It is reassuring that I do not find this reduction among those who are arrested and not convicted or those who are never arrested, as the incentive created by expungement should not affect these populations.

The next two long-term outcome variables are educational outcomes. College attendance, the outcome variable in column (2), is defined by one's response to his or her highest grade completed as "first year of college" or more.³⁴ The outcome variable in column (3) is an indicator for college graduation defined as receiving a Bachelor's Degree or higher. These outcomes are important for two reasons: first, a record of delinquency may need to be disclosed in the college application process, affecting the probability of admission for former delinquents, and second, having a record of juvenile delinquency can affect the incentives to invest in human capital development. The estimated coefficients imply that living in an automatic expungement state increases the probability of college attendance for juvenile convicts by 10.1 percentage points and college graduation by 6.6 percentage points, with both estimates statistically

³³ One concern with this analysis is that individuals who are incarcerated for long periods may be incapacitated, resulting in no future arrests. However, including an indicator in the regression for ever being incarcerated does not change the results.

³⁴ In unreported results I do not find an effect of expungement on high school graduation. While one can imagine a story where a teenager who is convicted in an application state responds by dropping out of high school, this story is not apparent in the data.

significant at the ten percent level.³⁵ Again, the findings for the other two panels are close to zero and generally not statistically significant.³⁶

In column (4) I further extend the analysis of long-term outcomes to the labor market. To understand the effects of a record of delinquency, I focus on the natural logarithm of average income between 2008 and 2010. Note that the average age among the respondents is 25.8 to 27.8 between 2008 and 2010.³⁷

The results of this analysis suggest a positive effect of automatic expungement on average income for those convicted as a juvenile. The reported coefficient on income implies that, among those with a record of juvenile delinquency, individuals who lived in automatic expungement states earned 21.2 percent higher income, on average, between 2008 and 2010 than those who lived in application states. Some or all of this difference may be driven by the difference in college attendance, as it is a well-documented fact that the earnings profile of individuals with a college education, even early in one's career, is much higher than those who never attend college (Chenevert and Litwok 2013). While the coefficient on average income in the top panel is not statistically significant at conventional levels, the magnitude of this coefficient is much larger than the estimate in the other two panels, where I do not expect to find an effect.

Generally, the results in Table 5 show strong, compelling results for a reduction in recidivism and an effect on income. Furthermore, if I include the ASVAB measure from Table 5

³⁵ This marginal statistical significance is lost if I choose not to cluster the standard errors.

³⁶ The significant negative point estimate for college graduation in the sample of respondents who are never arrested is peculiar. However, this result is not very robust; if I include the ASVAB measure in the analysis or choose not to cluster the standard errors the statistical significance is lost.

³⁷ The timing of this analysis, when many of the respondents have not yet reached age 30, implies that this measure of current income may not be a good proxy for permanent income (Haider and Solon 2006). I use the income measure over multiple years to draw conclusions about labor market implications, not to make statements about permanent income.

the magnitudes for recidivism and income do not change and are both statistically significant. However, the effects on education, which are marginally significant, are not very robust. If I include the ASVAB measure in Table 5 I lose the statistical significance on the education effects, although the estimated coefficients remain positive.

In Table 6 I turn to the difference-in-differences identification strategy. In each panel of Table 6 I specify a different treatment and control group and report estimates of equation (2). In the first two panels, where juvenile convicts are the treatment group, I would expect to find an effect of expungement. The different control groups provide robustness for the assumption that the unobserved juvenile justice environment affects the treatment and control group equally. As previously discussed, the bottom panel acts as a falsification exercise while holding the juvenile justice environment fixed. The coefficients of interest in this table are the coefficients on the interaction between either juvenile conviction or juvenile arrest and living in an automatic expungement state.

In column (1) the effect of expungement on future arrest remains statistically significant at conventional levels, implying either a 15.3 or a 12.0 percentage point increase in the probability of remaining arrest-free after age 20, depending on the control group. Thus, consistent with my conceptual framework, there remains supportive evidence that expungement of a record has an effect on future criminal behavior.

The positive estimate on educational outcomes in Table 6 is fairly similar to Table 5. Taking all of these results together, I find that automatic expungement raises the rate of college attendance among former juvenile offenders by approximately five to ten percentage points, although this is marginally statistically significant at best. Similarly, although the direction of

the coefficient is still positive, there is not a statistically significant effect on college graduation across the two tables.

Moving to labor market outcomes, there remains a large difference in average income of either 27.6 or 22.5 percent, depending on the control group. These estimates are similar in magnitude to the estimate in Table 5. However, unlike the estimates in Table 5, the coefficients in Table 6 are both statistically significant at the ten percent level.

Comparing the estimated effect for juvenile convicts to the control group in the first two panels of Table 6 provides a simple plausibility check. Despite the consistent finding of positive effects across the columns, the magnitude of the estimates on the interaction terms is almost always smaller than the primary effect of juvenile conviction. For example, while juvenile convicts in automatic expungement states may be 8.6 percentage points more likely to attend college than their peers who were never arrested, the primary effect of being a juvenile convict suggests they will remain significantly less likely to attend college.

As was the case with Table 5, the results in Table 6 show positive outcomes for former offenders as a result of automatic expungement.³⁸ Similarly, adding ASVAB to Table 6 does not affect the estimates for recidivism or income. Lastly, as with the falsification exercises in Table 5, the magnitudes of the effects of automatic expungement are very small and statistically no different from zero in all regressions in the bottom panel. Despite the differing sources of variation that are identifying the effect of expungement with each method, the estimates in Table

³⁸ One way to generalize the results of Tables 5 and 6 is to statistically test the direction of the coefficient of interest across all of the estimated equations. I estimate the system of equations in each panel of Table 5 and Table 6 as seemingly unrelated regressions, allowing for some correlation to exist between the underlying error terms in each of the regressions, and test the coefficients on automatic expungement across the entire system. I run this test for each panel separately. In all cases where I expect to estimate the effect of expungement (excluding falsification exercises), I can reject the null hypothesis that the effect of automatic expungement is zero. These findings suggest that there is an overall effect of juvenile expungement, despite the weaker results for each of the outcomes individually.

5 and Table 6 are remarkably similar. This lends further credence to the claim that the estimation in the top panels is capturing the effect of expungement.

I perform a number of robustness exercises for the primary results in Table 5 and Table 6. First, as discussed above, I try numerous strategies for assigning the state of residence to each respondent. For example, one strategy assigns the state of residence where the juvenile offender commits his or her first crime while using the 1997 state of residence for those who never commit crimes. This check does not have any significant impact on the results. Another robustness check focuses on the age of criminal majority. Instead of using the age of criminal majority specific to each state, I change the analysis to assume the definition of juvenile is age 16 or younger. The estimated results are no different as a result of this adjustment. The results of these robustness checks continue to support the finding that the effects I find are due to expungement and not influenced by a number of the assumptions I make in my preferred specification.

8. Discussion and Conclusion

This paper is the first to empirically evaluate cross-state variation in the usage and effectiveness of expungement. I identify the existence of automatic and application states and present a conceptual framework that captures the dynamic incentives created by a policy of automatic expungement. I also provide evidence from unique data I collected that the rate of expungement in automatic states is near one while the rate in application states is near zero.

My empirical analysis uses two very different estimation strategies, and both of these analyses support the implications of the conceptual framework. I do not find any evidence that the nature of expungement statutes affects the incidence of juvenile crime, the primary avenue through which there could be social costs from expungement. I then investigate the impact of

expungement on future crime, education, and labor market outcomes. Using data from the NLSY97 I show that there are benefits to former delinquents as a result of automatic expungement. Specifically, my results suggest that former offenders living in an automatic expungement state are less likely to recidivate after age 20, more likely to attend college, and earn a higher average salary in their late twenties.

The incentives discussed in the conceptual framework along with the empirical evidence on response to these incentives suggest that juvenile criminals behave with myopia, as has been discussed in prior literature (Lee and McCrary 2005; Oreopoulos 2007). Young offenders do not respond to the incentives that will only be realized in the future, such as application for expungement. They similarly do not consider future effects of their actions when deciding to commit a crime. Instead, these individuals only respond to these incentives when they are older and the consequences of their actions will be realized immediately.

The results of this paper address a new mechanism behind the findings in the crime literature: the effect of an observable record of juvenile delinquency. The coefficient estimates suggest that colleges and employers are considering individuals' criminal histories in the application process, and this is creating a significant barrier for many ex-offenders. The removal of these barriers to education and legal employment in automatic expungement states is another plausible explanation for my findings in these markets for adults. My analysis shows that this barrier created by the record of juvenile delinquency is separate from the effects of important covariates, and unobserved differences in state justice systems do not play a big role in explaining these results. Even when an ability measure is added to the model, the effects on future recidivism and employment remain significant.

Although there do not appear to be large costs to automatic expungement as measured by higher arrest rates in these states, there are other social costs that need to be considered for a complete cost-benefit analysis. For example, automatic expungement could lead to increased rates of statistical discrimination, as prior literature documents this response among employers in the absence of criminal background checks (Holzer et al. 2006).

The evidence I show could be extended with a larger scale data collection effort specifically focused on the mechanism behind my findings. It would be helpful to know precisely what colleges and employers are performing background checks as well as what information they are obtaining. Having truly causal evidence available for policy makers is extremely important for thinking about restructuring the process of expungement across states.

One of the challenges with this work is finding a strong source of identification. Unfortunately, states have not changed their expungement process significantly over time, and many of the statutes date back to the first half of the twentieth century. Despite my efforts to reduce the bias caused by differences across state justice systems, my current identification strategy fails to capture any other unobserved differences, such as community programs that may have an impact on the outcomes of former offenders. While I am unable to control for some of this unobserved heterogeneity, my results provide compelling evidence that there are not large, systematic differences between the two types of states. Therefore, I conclude that I am identifying the underlying relationship between juvenile records and important economic outcomes.

Generally, the process of expungement is one that deserves more attention in the literature. The ability to expunge one's juvenile record appears to be a very powerful legal remedy, and one that is not used either due to myopia or administrative barriers. There remains

room in the literature for a precise estimate of the impact of expungement on a number of important outcomes. However, the evidence presented in this paper implies that expungement of juvenile records is extremely beneficial to former offenders.

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Table 1

State Level Descriptive Statistics

	<i>Application</i> (N=37)		<i>Automatic</i> (N=14)	
	Mean	Std. Error	Mean	Std. Error
<i>Crime Indicators</i>				
Juvenile Arrest Rate (Violent and Property Crime, per 1,000 population)	6.306	0.396	5.607	0.529
Juveniles in Residential Placement (per 1,000 juvenile population)	0.230	0.016	0.213	0.022
Violent Crime Rate (per 1,000 population)	3.628	0.210	3.736	0.492
Property Crime Rate (per 1,000 population)	28.844	0.971	27.986	1.682
Adult Prison Population (per 1,000 adult population)	1.164	0.075	1.144	0.120
Fraction of Prisoners with Maximum Sentence more than One Year	0.960	0.015	0.900	0.043
Employed Police Officers (per 1,000 population)	2.590	1.153	2.145	0.253
State Expenditures (per 1,000 population)	269.612	92.990	311.342	150.506
<i>Background Indicators</i>				
Fraction of Population < 15	0.200	0.003	0.193	0.005
Fraction of Population 15 to 65	0.608	0.003	0.609	0.004
Median Household Income (1,000s)	52.881	1.229	53.695	2.428
Fraction of Population 25+ with High School Diploma	86.313	0.549	86.020	1.094
Fraction of Population 25+ with Bachelor's Degree	27.468	0.937	26.514	1.332
Fraction Black	0.137	0.020	0.072	0.018
Fraction Hispanic	0.088	0.005	0.126	0.016
Fraction Urban	0.750	0.022	0.705	0.049
Fraction of Population Living in Poverty	0.134	0.002	0.130	0.004
Fraction of Population Blue Collar Workers	0.237	0.003	0.225	0.004
Unemployment Rate	0.064	0.002	0.058	0.004
Head Start Participants (per 1,000 population)	3.796	0.250	3.669	0.409

Note: All variables are averaged over 2006 to 2010. State level education data unavailable in 2010, so these variables are averaged from 2006 to 2009. Blue Collar workers are defined as workers in production, transportation, construction, installation, and maintenance. State expenditures are state expenditures on the justice system. Crime rates and state expenditures unavailable for the District of Columbia.

Table 2

Aggregate Expungement Statistics in Application States

State	Colorado	Michigan	Washington
Average Formal Handlings (1997-2010)	16,112	47,351	18,711
Expected Adjudications (1997-2010)	9,667	28,411	11,263
Average Expungements	187.18	50	1,210.65
Average Expungements ÷ Expected Adjudications	0.019	0.002	0.107
Years of Data Available	2003-2013	2009-2013	1997-2013

Note: Formal handlings (delinquency petitions) come from the National Juvenile Court Data Archive, available at www.ojjdp.gov/ojstatbb/ezaco. The unit of count is cases disposed in all states with the exception of Colorado, where the unit of count is petitioned case filings by fiscal year, which include both delinquency and status offense cases. Therefore, the number reported as Average Formal Handlings for Colorado is likely biased upward. Note, however, that in the United States in 2009 there were 4.7 status offense cases for every 1,000 juveniles, while there were 49.3 delinquency cases per 1,000 juveniles (Puzzanchera et al. (2012). This implies that the magnitude of the bias is not likely to be particularly large.

Sources:

Colorado: Expungement case numbers come from Table 19 of the Annual Reports of the Judicial Branch of the State of Colorado.

Michigan: The number of juvenile set asides was obtained through contact with the Criminal History Unit of the Criminal Justice Information Center with the Michigan State Police.

Washington: Expungement numbers were obtained through communication with the Washington Administrative Office of the Courts.

Table 3

Descriptive Statistics by Regime

	<i>Application</i>		<i>Automatic</i>	
	Mean	Std. Error	Mean	Std. Error
<i>Juvenile Conviction</i>				
Female	0.315	0.029	0.300	0.052
Black	0.150	0.019	0.221	0.039
Hispanic	0.152	0.019	0.091	0.024
Not arrested after age 20	0.532	0.031	0.639	0.051
Ever Attended College	0.239	0.027	0.314	0.052
Graduated College	0.063	0.016	0.111	0.037
Average Income (1,000s, 2008-2010)	21.467	1.345	23.782	2.142
<i>Arrested, Not Convicted</i>				
Female	0.355	0.020	0.393	0.038
Black	0.208	0.015	0.207	0.027
Hispanic	0.135	0.012	0.175	0.025
Not arrested after age 20	0.671	0.020	0.639	0.037
Ever Attended College	0.344	0.020	0.342	0.038
Graduated College	0.098	0.014	0.089	0.023
Average Income (1,000s, 2008-2010)	25.772	1.016	23.892	1.524
<i>Never Arrested</i>				
Female	0.517	0.008	0.523	0.015
Black	0.144	0.004	0.154	0.009
Hispanic	0.112	0.004	0.179	0.010
Not arrested after age 20	0.860	0.005	0.846	0.011
Ever Attended College	0.658	0.007	0.611	0.015
Graduated College	0.349	0.007	0.301	0.014
Average Income (1,000s, 2008-2010)	29.996	0.366	29.793	0.704

Note: These statistics reflect responses from 7,469 respondents in the NLSY97 weighted by 1997 sampling weights (cumulative cases method). I drop 1,515 observations of individuals who missed at least one of the first five waves. I am unable to identify if these individuals had an arrest as a juvenile. Graduated college is an indicator of highest degree being Bachelor's or higher.

Table 4

Baseline Differences in Arrests

	(1) Juvenile Arrest	(2) Juvenile Arrest	(3) Juvenile Arrest	(4) Juvenile Arrest
Automatic Expunge	0.006 (0.022)	0.010 (0.020)	0.007 (0.019)	0.011 (0.018)
Parental Income (1997)	-0.003* (0.001)	-0.003* (0.001)	-0.001 (0.001)	-0.001 (0.001)
Age (1997)	0.000 (0.003)	0.000 (0.003)	-0.000 (0.002)	-0.000 (0.002)
Black	0.005 (0.015)	0.004 (0.015)	-0.025 ⁺ (0.014)	-0.025 ⁺ (0.014)
Hispanic	-0.014 (0.017)	-0.015 (0.017)	-0.034* (0.017)	-0.034 ⁺ (0.017)
Female	-0.097** (0.012)	-0.097** (0.012)	-0.091** (0.012)	-0.092** (0.012)
Living with Biological Mom	0.091** (0.012)	0.092** (0.012)	0.079** (0.012)	0.079** (0.012)
Other Household Composition	0.117** (0.022)	0.117** (0.022)	0.100** (0.021)	0.100** (0.020)
Custody Measure		2.421 (2.768)		2.287 (2.462)
ASVAB			-0.054** (0.006)	-0.054** (0.006)
N	7450	7450	7450	7450
R ²	0.063	0.063	0.082	0.082

Note: The dependent variable is a binary indicator of ever reporting arrest as a juvenile. All regressions are weighted using 1997 sampling weights (cumulative cases method). All regressions also include log of number of employed police officers per capita, log of expenditures on the state justice system per capita, unemployment rate, father's education, mother's education, an indicator for living in an urban area, log of Head Start enrollment, number of household members under 6 years old in 1997, household size in 1997, number of household members under 18 in 1997, and indicators for parental income, mother's education, or father's education missing. Columns (3) and (4) also include standardized ASVAB score along with an indicator for ASVAB missing. The reference group for household composition is living with both biological parents. Severity measure is the average number of juveniles in residential placement divided by average reported crime over 2006 to 2010. Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. Standard errors are clustered at the state level. + P<0.10, * P<0.05, ** P<0.01

Table 5

Long-Term Effects of Automatic Expungement: Proxy Variable Analysis

	(1) Not Arrested After Age 20?	(2) Attended College	(3) Graduated College	(4) log(Average Income)
<i>Juvenile Convict Sample (N=403)</i>				
Automatic Expunge	0.133* (0.052)	0.101+ (0.052)	0.066+ (0.037)	0.212 (0.135)
R ²	0.083	0.147	0.227	0.181
<i>Juvenile Arrest Sample (N=859)</i>				
Automatic Expunge	-0.018 (0.029)	0.010 (0.047)	0.001 (0.028)	0.066 (0.077)
R ²	0.069	0.200	0.176	0.173
<i>Never Arrested Sample (N=6188)</i>				
Automatic Expunge	-0.002 (0.015)	-0.011 (0.017)	-0.025* (0.012)	-0.001 (0.040)
R ²	0.054	0.140	0.181	0.107

Note: Each panel restricts the sample to one of three categories: those who are never arrested as a juvenile, those who are arrested but not convicted, and those who are convicted. All regressions are weighted using 1997 sampling weights (cumulative cases method). Standard errors are clustered at the state level. Average income is calculated over 2008 to 2010. Additional covariates are the same as column (2) in Table 4. Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. An example of the full regression output appears in Appendix Table A13. + P<0.10, * P<0.05, ** P<0.01

Table 6

Long-Term Effects of Automatic Expungement: Difference-in-Differences Analysis

	(1) Not Arrested After Age 20?	(2) Attended College	(3) Graduated College	(4) log(Average Income)
<i>Treatment: Convicted</i>				
<i>Control: Arrested, Not Convicted</i>				
Juvenile Convict x Automatic Expunge	0.153* (0.057)	0.053 (0.056)	0.045 (0.056)	0.276+ (0.159)
Juvenile Convict	-0.133** (0.045)	-0.108* (0.043)	-0.027* (0.012)	-0.320** (0.083)
R ²	0.087	0.198	0.205	0.178
<i>Treatment: Convicted</i>				
<i>Control: Never Arrested</i>				
Juvenile Convict x Automatic Expunge	0.120* (0.047)	0.086 (0.054)	0.055 (0.054)	0.225* (0.104)
Juvenile Convict	-0.279** (0.038)	-0.316** (0.024)	-0.177** (0.012)	-0.473** (0.077)
R ²	0.094	0.176	0.198	0.124
<i>Treatment: Arrested, Not Convicted</i>				
<i>Control: Never Arrested</i>				
Juvenile Arrest x Automatic Expunge	-0.031 (0.038)	0.026 (0.052)	0.012 (0.031)	0.003 (0.090)
Juvenile Arrest	-0.145** (0.017)	-0.226** (0.026)	-0.155** (0.015)	-0.236** (0.047)
R ²	0.086	0.182	0.205	0.126

Note: Each panel specifies the assumed treatment and control group for this difference-in-differences analysis. All regressions are weighted using 1997 sampling weights (cumulative cases method). Standard errors are clustered at the state level. Average income is calculated over 2008 to 2010. Additional covariates are the same as column (2). Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. An example of the full regression output appears in Appendix Table A13. + P<0.10, * P<0.05, ** P<0.01

Figure 1

Crime Decision by Ability and Expungement Policy

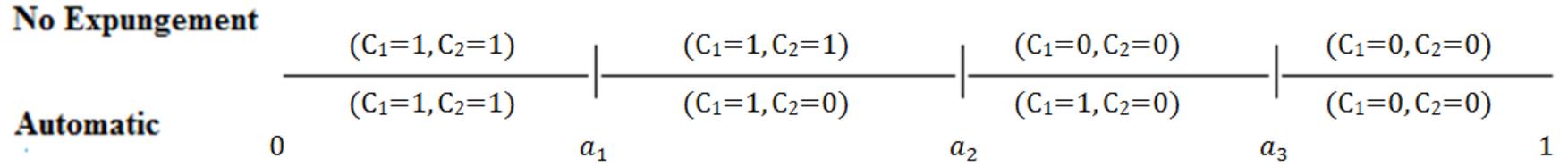
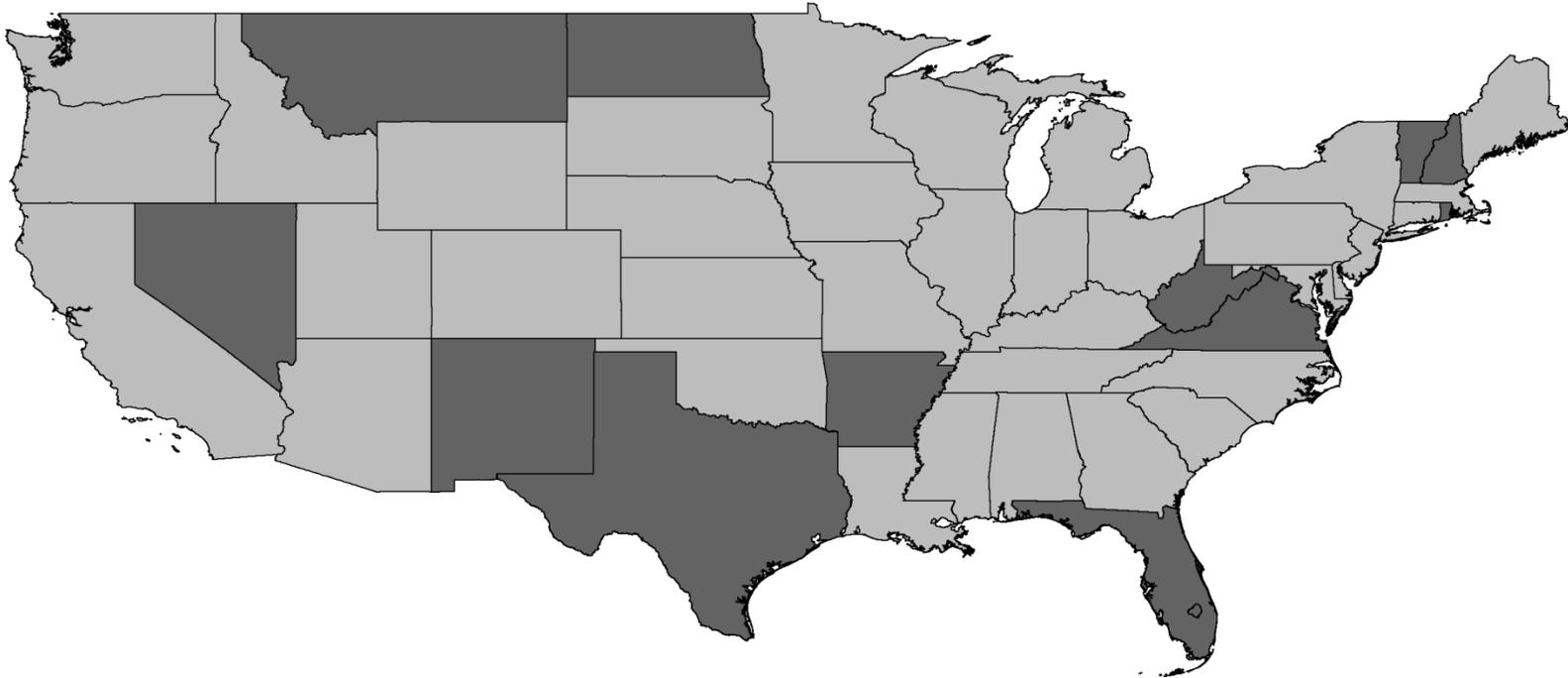


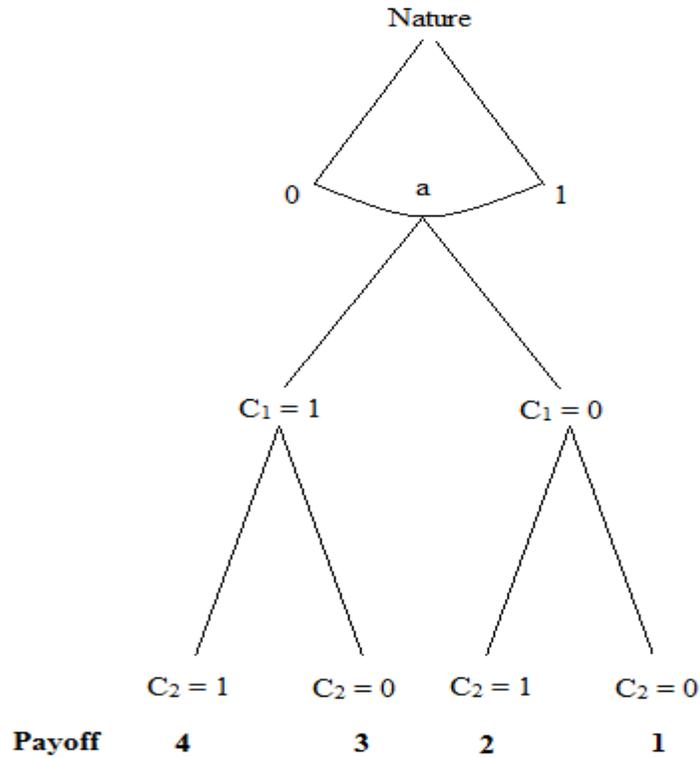
Figure 2

Automatic Expungement States: 2011



Notes: States with automatic expungement statutes appear in dark gray. Alaska and Hawaii (excluded from this picture) both have automatic expungement statutes.

Game Tree and Payoffs

**Payoffs:**No expungement

1. $C_1 = 0, C_2 = 0 : S_1 a + S_2 a$
2. $C_1 = 0, C_2 = 1 : S_1 a + S_2 a + (1 - q)b - qfS_2 a$
3. $C_1 = 1, C_2 = 0 : S_1 a + (1 - q)b - qfS_1 a + qS_1 a + (1 - q)S_2 a$
4. $C_1 = 1, C_2 = 1 : S_1 a + (1 - q)b - qfS_1 a + q[S_1 a + (1 - q)b - qfS_1 a] + (1 - q)[S_2 a + (1 - q)b - qfS_2 a]$

Automatic expungement

1. $C_1 = 0, C_2 = 0 : S_1 a + S_2 a$
2. $C_1 = 0, C_2 = 1 : S_1 a + S_2 a + (1 - q)b - qfS_2 a$
3. $C_1 = 1, C_2 = 0 : S_1 a + (1 - q)b - qfS_1 a + S_2 a$
4. $C_1 = 1, C_2 = 1 : S_1 a + (1 - q)b - qfS_1 a + S_2 a + (1 - q)b - qfS_2 a$

I make the following assumptions in solving this game. The discount rate between the two periods is equal to one. Because q is a probability it must be between 0 and 1. For simplicity I assume q and b are uncorrelated with a , so all individuals are committing crimes with the same payoff and have the same probability of being caught. I also assume that q is large enough to impact behavior, so $q > \frac{1-f}{f}$. Therefore, I must assume f is between $\frac{1}{2}$ and 1. The lower bound for f ensures that the assumption above remains within the bounds of q , and the upper bound ensures that one does not give up more than his entire salary if caught committing a crime.

I begin by solving the game in the world with no expungement. Using the payoffs above I can use backwards induction to determine how many people in the population will choose each action. Define the following three points (note that a_1 is the indifference point between payoffs 1 and 2 and a'_2 is the indifference point between payoffs 3 and 4):

$$a_1 = \frac{(1-q)b}{qfS_2}$$

$$a_2 = \frac{2(1-q)b}{q[S_2 - S_1 + fS_2 + fS_1 - qfS_2 + qfS_1]}$$

$$a'_2 = \frac{(1-q)b}{q^2fS_1 + (1-q)qfS_2}$$

I can show that $a_1 < a_2 < a'_2$ and in this world individuals with $a < a_2$ choose $C_1 = 1, C_2 = 1$, while individuals with $a > a_2$ choose $C_1 = 0, C_2 = 0$.

Proof of $a_1 < a_2 < a'_2$:

$$q > \frac{1-f}{f}$$

$$fS_2 > S_2 - S_1 + fS_1 - qfS_2 + qfS_1$$

$$\frac{2(1-q)b}{q[S_2 - S_1 + fS_2 + fS_1 - qfS_2 + qfS_1]} > \frac{(1-q)b}{qfS_2}$$

$$a_2 > a_1$$

$$\frac{f-1}{f} < q$$

$$(S_1 - S_2)(f-1) > qf(S_1 - S_2)$$

$$S_2 - S_1 + fS_1 > qfS_1 + (1-q)fS_2$$

$$\frac{(1-q)b}{q^2fS_1 + (1-q)qfS_2} > \frac{2(1-q)b}{q[S_2 - S_1 + fS_2 + fS_1 - qfS_2 + qfS_1]}$$

$$a'_2 > a_2$$

To prove the result of the game I use a number of cases:

Case 1: Suppose $a < a_1$. Then the individual always chooses $C_1 = 1, C_2 = 1$.

Proof by contradiction: Because $a < a_1$, it is trivial to see the individual will always choose $C_2 =$

1. Suppose the individual chooses $C_1 = 0$. This implies:

$$\begin{aligned} S_1a + S_2a + (1-q)b - qfS_2a \\ > S_1a + (1-q)b - qfS_1a + q[S_1a + (1-q)b - qfS_1a] + (1-q)[S_2a \\ &+ (1-q)b - qfS_2a] \\ a > \frac{(1-q)b}{qfS_1 - qS_1 + qS_2 - q^2fS_2 + q^2fS_1} \end{aligned}$$

But I can show:

$$\begin{aligned} q &> \frac{1-f}{f} \\ q &> \frac{(1-f)(S_2 - S_1)}{f(S_2 - S_1)} \end{aligned}$$

$$\begin{aligned}
q^2f(S_2 - S_1) &> q(1 - f)(S_2 - S_1) \\
qfS_2 &> qfS_1 - qS_1 + qS_2 - q^2fS_2 + q^2fS_1 \\
\frac{(1 - q)b}{qfS_1 - qS_1 + qS_2 - q^2fS_2 + q^2fS_1} &> \frac{(1 - q)b}{qfS_2} \\
\frac{(1 - q)b}{qfS_1 - qS_1 + qS_2 - q^2fS_2 + q^2fS_1} &> a_1
\end{aligned}$$

This implies $a > a_1$, a contradiction. So the individual always chooses $C_1 = 1, C_2 = 1$.

Case 2: Suppose $a_1 < a < a_2$. Then the individual chooses $C_1 = 1, C_2 = 1$.

Proof by contradiction. Because $a_1 < a < a'_2$ the individual will choose $C_2 = 1$ if at point **A** in the game tree, and the individual will choose $C_2 = 0$ if at point **B** in the game tree. Suppose the individual chooses $C_1 = 0$. This implies:

$$\begin{aligned}
S_1a + S_2a &> S_1a + (1 - q)b - qfS_1a + q[S_1a + (1 - q)b - qfS_1a] + (1 - q)[S_2a \\
&\quad + (1 - q)b - qfS_2a] \\
a &> \frac{2(1 - q)b}{q[S_2 - S_1 + fS_2 + fS_1 - qfS_2 + qfS_1]} \\
a &> a_2
\end{aligned}$$

a contradiction. So the individual always chooses $C_1 = 1, C_2 = 1$.

Case 3: Suppose $a_2 < a < a'_2$. Then the individual chooses $C_1 = 0, C_2 = 0$.

Proof by contradiction. Because $a_1 < a < a'_2$ the individual will choose $C_2 = 1$ if at point **A** in the game tree, and the individual will choose $C_2 = 0$ if at point **B** in the game tree. Suppose the individual chooses $C_1 = 1$. This implies:

$$\begin{aligned}
S_1a + S_2a &< S_1a + (1 - q)b - qfS_1a + q[S_1a + (1 - q)b - qfS_1a] + (1 - q)[S_2a \\
&\quad + (1 - q)b - qfS_2a] \\
a &< \frac{2(1 - q)b}{q[S_2 - S_1 + fS_2 + fS_1 - qfS_2 + qfS_1]}
\end{aligned}$$

$$a < a_2$$

a contradiction. So the individual always chooses $C_1 = 0, C_2 = 0$.

Case 4: Suppose $a > a'_2$. Then the individual will always choose $C_1 = 0, C_2 = 0$.

Proof by contradiction: Because $a > a'_2$, it is trivial to see the individual will always choose $C_2 =$

0. Suppose the individual chooses $C_1 = 1$. This implies:

$$S_1a + S_2a < S_1a + (1 - q)b - qfS_1a + qS_1a + (1 - q)S_2a$$

$$a < \frac{(1 - q)b}{qS_2 - qS_1 + qfS_1}$$

But I can show:

$$q > \frac{f - 1}{f}$$

$$qf(S_2 - S_1) > fS_2 - fS_1 + S_1 - S_2$$

$$qS_2 - qS_1 + qfS_1 > q^2fS_1 + (1 - q)qfS_2$$

$$\frac{2(1 - q)b}{q[S_2 - S_1 + fS_2 + fS_1 - qfS_2 + qfS_1]} > \frac{(1 - q)b}{qS_2 - qS_1 + qfS_1}$$

$$a_2 > \frac{(1 - q)b}{qS_2 - qS_1 + qfS_1}$$

This implies $a < a_2$, a contradiction. So the individual always chooses $C_1 = 0, C_2 = 0$.

Next I solve the game in the world with automatic expungement.

Using the payoffs above, I can use backwards induction to determine how many people in the population will choose each action. Define the following points (note that a_1 , which is also defined above, is the indifference point between payoffs 1 and 2 and the indifference point between payoffs 3 and 4 in this world):

$$a_1 = \frac{(1-q)b}{qfS_2}$$

$$a_3 = \frac{(1-q)b}{qfS_1}$$

I can show that in this world individuals with $a < a_1$ choose $C_1 = 1, C_2 = 1$, individuals with $a_1 < a < a_3$ choose $C_1 = 1, C_2 = 0$, and individuals with $a > a_3$ choose $C_1 = 0, C_2 = 0$.

Proof of $a_1 < a_3$: It is trivial to see that $a_1 < a_3$ because $S_2 > S_1$.

I prove the result of the game using a number of cases:

Case 1: Suppose $a < a_1$. Then the individual always chooses $C_1 = 1, C_2 = 1$.

Proof by contradiction: Because $a < a_1$, it is trivial to see the individual will always choose $C_2 =$

1. Suppose the individual chooses $C_1 = 0$. This implies:

$$S_1a + S_2a + (1-q)b - qfS_2a > S_1a + (1-q)b - qfS_1a + S_2a + (1-q)b - qfS_2a$$

$$qfS_1a > (1-q)b$$

$$a > \frac{(1-q)b}{qfS_1}$$

$$a > a_3$$

This implies $a > a_1$, a contradiction. So, the individual always chooses $C_1 = 1, C_2 = 1$.

Case 2: Suppose $a_1 < a < a_3$. Then the individual chooses $C_1 = 1, C_2 = 0$.

Proof by contradiction. Because $a > a_1$, it is trivial to see the individual will always choose $C_2 =$

0. Suppose the individual chooses $C_1 = 0$. This implies:

$$S_1a + S_2a > S_1a + (1-q)b - qfS_1a + S_2a$$

$$qfS_1a > (1-q)b$$

$$a > \frac{(1-q)b}{qfS_1}$$

$$a > a_3$$

a contradiction. So the individual always chooses $C_1 = 1, C_2 = 0$.

Case 3: Suppose $a > a_3$. Then the individual chooses $C_1 = 0, C_2 = 0$.

Proof by contradiction. Because $a > a_1$, it is trivial to see the individual will always choose $C_2 = 0$. Suppose the individual chooses $C_1 = 1$. This implies:

$$S_1a + S_2a < S_1a + (1-q)b - qfS_1a + S_2a$$

$$qfS_1a < (1-q)b$$

$$a < \frac{(1-q)b}{qfS_1}$$

$$a < a_3$$

a contradiction. So the individual always chooses $C_1 = 0, C_2 = 0$.

Finally, to be able to compare across these policy regimes, I prove that $a_3 > a'_2$:

$$S_1 < S_2$$

$$qfS_1 < q^2fS_1 + qfS_2 - q^2fS_2$$

$$\frac{(1-q)b}{q^2fS_1 + qfS_2 - q^2fS_2} < \frac{(1-q)b}{qfS_1}$$

$$a'_2 < a_3$$

Analysis of Marginal Costs and Benefits

Another way to see the solution to the game is to compare the marginal costs and benefits in each of the policy regimes. Specifically, I can show the following in the world with no expungement:

- Marginal benefit of choosing $C_2 = 1 \mid C_1 = 0$: $(1-q)b$

- Marginal cost of choosing $C_2 = 1 \mid C_1 = 0$: qfS_2a
- Marginal benefit of choosing $C_2 = 1 \mid C_1 = 1$: $(1 - q)b$
- Marginal cost of choosing $C_2 = 1 \mid C_1 = 1$: $q^2fS_1a + q(1 - q)fS_2a$
- Marginal benefit of choosing $C_1 = 1$: $(1 - q)b$
- Marginal cost of choosing $C_1 = 1$: $qfS_1a + q(S_2 - S_1)a + C_2[q^2fS_1a - q^2fS_2a]$

This can be compared to a similar calculation in the world with automatic expungement:

- Marginal benefit of choosing $C_2 = 1 \mid C_1 = 0$: $(1 - q)b$
- Marginal cost of choosing $C_2 = 1 \mid C_1 = 0$: qfS_2a
- Marginal benefit of choosing $C_2 = 1 \mid C_1 = 1$: $(1 - q)b$
- Marginal cost of choosing $C_2 = 1 \mid C_1 = 1$: qfS_2a
- Marginal benefit of choosing $C_1 = 1$: $(1 - q)b$
- Marginal cost of choosing $C_1 = 1$: qfS_1a

The comparison of these costs and benefits has implications regarding behavior. Specifically, automatic expungement increases the marginal cost of choosing $C_2 = 1$ for individuals who choose $C_1 = 1$. That is, there is no labor market penalty for individuals who commit a crime in the first period, so choosing to commit a crime in the second period has the potential to be costlier if the individual is caught. Automatic expungement also reduces the marginal cost of choosing $C_1 = 1$. This difference is similarly due to the removal of the labor market penalty in the second period.

I use a number of different data sources to provide important covariates throughout my analysis. I describe those sources and the particular data elements I use in this section.

The primary source of data on crime and arrests at the state level are the Uniform Crime Reports (UCR) published by the Federal Bureau of Investigation. I use the total level of reported crime by state over 2006 to 2010 as the denominator of my proxy variable for the unobserved juvenile justice environment. I also use data from the UCR to calculate a number of the crime covariates included in Table 1, and I use arrest rates in my state analysis in Appendix Tables A5, A6, A7, and A8. Lastly, the UCR provides information on employed police officers and state expenditures on the justice system. I include these measures, scaled by population, as covariates in many analyses.

Another source of justice data I use is count data on the number of prisoners in custody. The Census of Juveniles in Residential Placement provides the number of juveniles in state custody over time. I use the average number of juveniles in residential placement between 2006 and 2010 as the numerator of my proxy variable for the unobserved juvenile justice environment.³⁹ The Bureau of Justice statistics collects similar data for counts of adult prisoners that are presented in Table 1.

The last source of justice data I use is the National Juvenile Court Data Archive (NJCDA). I use published data from the NJCDA on state and county juvenile court case counts to determine the number of petitioned delinquency case counts by state and year. I present this data as the denominator of the calculated expungement rate in Table 2.

³⁹ Note that data are only collected in 2006, 2007, and 2010 for this time period.

Lastly, I use data from a number of different sources for the other background covariates I include in my analyses. For example, I use population by age measures from the Surveillance, Epidemiology, and End Results (SEER) Program to standardize many of the covariates. I use data from the U.S. Census Bureau to determine the demographic indicators I include in Table 1. I also use data from the Bureau of Labor Statistics to calculate the unemployment rate and fraction of the population working in blue collar jobs. Data on the number of Head Start participants by state come from the Kids Count Data Center.

Appendix Tables

Table A1 Overview of Current Expungement Statutes by State (Automatic States in Gray)

State	Current Statute
Alabama	<p>Citation: Ala.Code 1975 § 12-15-136</p> <p>Terminology: Seal</p> <p>Brief Summary: Requires application: 2 years since entry of order or final discharge from supervision and no other convictions.</p>
Alaska	<p>Citation: AS § 47.10.090</p> <p>Terminology: Seal</p> <p>Brief Summary: Automatic sealing within 30 days of the child's 18th birthday or the day on which jurisdiction is released (whichever is later).</p>
Arizona	<p>Citation: A.R.S. § 8-348, 349</p> <p>Terminology: Set Aside, Destruction</p> <p>Brief Summary: Requires application: must be at least 18 years old, not convicted of a felony, and no pending criminal charges. Certain crimes require waiting until 25 years old. More specifics depend on the initial crime.</p>
Arkansas	<p>Citation: A.C.A. § 9-27-309, A.C.A. § 16-90-901 through 16-90-905</p> <p>Terminology: Expunge, Seal</p> <p>Brief Summary: Court may expunge record at any time and shall expunge record on 21st birthday. No specific requirements given for when an individual can apply for sealing.</p>
California	<p>Citation: Cal.Welf. & Inst.Code § 781</p> <p>Terminology: Seal</p> <p>Brief Summary: Requires application: must be either 18 years old or five years after end of jurisdiction/final discharge; certain offenses cannot be sealed</p>
Colorado	<p>Citation: C.R.S. § 19-1-306</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires application: certain offenses cannot be expunged, no pending charges, proof of rehabilitation to the court; amount of time required to wait depends on final disposition of the case.</p>
Connecticut	<p>Citation: C.G.S.A. § 46b-146</p> <p>Terminology: Erasure</p> <p>Brief Summary: Requires application: amount of time required to wait depends on nature of offense; no pending charges, child has reached 18 years of age.</p>

Delaware	<p>Citation: Del. Code Ann. tit. 10, § 1015</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires application: amount of time required to wait depends on nature of offense; no pending charges.</p>
District of Columbia	<p>Citation: DC ST § 16-2335</p> <p>Terminology: Seal</p> <p>Brief Summary: Requires motion of petitioner or Division’s own motion; two years after final discharge/entry of order not involving supervision, no subsequent convictions or adjudications.</p>
Florida	<p>Citation: F.S.A. § 943.059, F.S.A. § 943.0585, F.S.A. § 943.0515</p> <p>Terminology: Seal, Expunge</p> <p>Brief Summary: Petition required for sealing or early expungement: petitioner must obtain Certificate of Eligibility, certain crimes are ineligible to be expunged; if not a “serious” or “habitual” offender record is automatically expunged at age 24.</p>
Georgia	<p>Citation: Ga. Code Ann., § 15-11-79.2</p> <p>Terminology: Seal</p> <p>Brief Summary: Requires application or the court’s own motion: two years since the final discharge of the person, no pending charges, person has been rehabilitated.</p>
Hawaii	<p>Citation: HRS § 571-84</p> <p>Terminology: N/A</p> <p>Brief Summary: The statute states that all records are open to inspection only by the persons whose official duties are concerned with the juvenile court, except as otherwise ordered by the court. According to the Hawaii Office of the Public Defender, this statute implies that all criminal records are automatically “per se sealed” (American Bar Association 2013).</p>
Idaho	<p>Citation: I.C. § 20-525A</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires application: petitioner must be at least 18 years old, amount of time depends on the nature of the offense, certain crimes ineligible to be expunged.</p>
Illinois	<p>Citation: 705 ILCS 405/5-915</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires application: can apply when person has reached 17 years of age or all court proceedings have been terminated (whichever is later), certain crimes ineligible to be expunged, for more serious offenses must wait longer amount of time to apply.</p>
Indiana	<p>Citation: IC 31-39-8</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires application: any person may petition at any time; court will consider a number of factors in determining whether to grant the expungement.</p>
Iowa	<p>Citation: I.C.A. § 232.150</p> <p>Terminology: Seal</p> <p>Brief Summary: Requires application or the court’s own motion: person must be 18 years or older and two years must have elapsed since last action in case, no subsequent adjudications or convictions and no pending charges, restitution paid.</p>
Kansas	<p>Citation: K.S.A. 38-2312</p> <p>Terminology: Expunge</p>

	<p>Brief Summary: Requires application: person must be 23 years old or two years have elapsed since final discharge, certain crimes ineligible for expungement, no subsequent adjudications or convictions and no pending charges.</p>
Kentucky	<p>Citation: KRS § 610.330 Terminology: Expunge Brief Summary: Requires application: two years must have passed since court’s jurisdiction over the person or since person’s unconditional release, certain crimes ineligible for expungement, no subsequent adjudications or convictions and no pending charges.</p>
Louisiana	<p>Citation: LSA-Ch.C. Art. 917 - 920 Terminology: Expunge Brief Summary: Requires a motion: person must be 17 years of age or older, certain crimes ineligible for expungement, five or more years elapsed since most recent judgment, no criminal felony convictions and no criminal court convictions for misdemeanors involving a weapon, no outstanding indictment or charges.</p>
Maine	<p>Citation: 15 M.R.S.A. § 3308 Terminology: Seal Brief Summary: Requires a petition: three years must have passed since discharge from the disposition ordered for the crime, no subsequent adjudications or convictions, no pending charges.</p>
Maryland	<p>Citation: MD Code, Courts and Judicial Proceedings, § 3-8A-27 Terminology: Seal Brief Summary: Requires a petition or the court’s own motion. Records will be sealed if petitioner is over age 21.</p>
Massachusetts	<p>Citation: M.G.L.A. 276 § 100B Terminology: Seal Brief Summary: Requires a petition: three years since court appearance or final disposition, no subsequent adjudications or convictions (excluding certain motor vehicle offenses).</p>
Michigan	<p>Citation: M.C.L.A. 712A.18e Terminology: Set Aside Brief Summary: Requires application: offenses determine how many and which adjudications are eligible to be set aside; must wait one year following imposition of the disposition, one year following completion of any term of detention, or age 18 (whichever occurs latest).</p>
Minnesota	<p>Citation: M.S.A. § 260B.198 Subd. 6 Terminology: Expunge Brief Summary: Requires application. The court may expunge the adjudication of delinquency at any time that it deems advisable.</p>
Mississippi	<p>Citation: Miss. Code Ann. § 43-21-263 Terminology: Seal Brief Summary: Requires application or its own motion: child who was the subject of the cause has attained 20 years of age, if the youth court dismisses the cause or if the youth court sets aside an adjudication in the cause.</p>
Missouri	<p>Citation: V.A.M.S. 211.321 Terminology: Seal, Destroy</p>

	<p>Brief Summary: Requires application by the child or its own motion: child must have reached 17th birthday, must be in best interests of the child.</p>
Montana	<p>Citation: Mont. Code Ann. § 41-5-216 Terminology: Seal Brief Summary: Records are automatically sealed on youth's 18th birthday; if jurisdiction extends beyond 18th birthday records must be sealed upon termination of jurisdiction.</p>
Nebraska	<p>Citation: Neb.Rev.St. § 43-2,108.01 through Neb.Rev.St. § 43-2,108.05 Terminology: Seal Brief Summary: Requires a proceeding to seal the record: the court may order the record sealed if it finds the juvenile has been rehabilitated to a satisfactory degree; factors determining rehabilitation include age of the juvenile, nature of the offense, behavior of the juvenile after the disposition or sentence, and education and employment history of the juvenile.</p>
Nevada	<p>Citation: N.R.S. 62H.130 - 150 Terminology: Seal Brief Summary: IF UNDER 21: Requires a petition by the child or a probation officer on behalf of the child: must wait three years since last adjudicated or was last seen in court; during this three year period child must not have been convicted of a felony or misdemeanor involving moral turpitude, and child must have been rehabilitated to satisfaction of the court. WHEN CHILD REACHES 21: All records are automatically sealed (some crimes are excepted).</p>
New Hampshire	<p>Citation: N.H. Rev. Stat. § 169-B:35 Terminology: Closed Brief Summary: Once a delinquent reaches 21 years of age all records shall be closed and placed in an inactive file.</p>
New Jersey	<p>Citation: N.J.S.A. 2C:52-4.1 (expunge); N.J.S.A. 2A:4A-62 (seal) Terminology: Expunge, Seal Brief Summary: SEAL: Requires motion by the person who has been subject of a complaint or court's own motion: two years must have elapsed since final discharge or since last entry of the court not involving custody or supervision, no subsequent adjudications or convictions and no pending charges EXPUNGE: five years must have elapsed since final discharge or since last entry of the court not involving custody or supervision, no subsequent adjudications or convictions and no pending charges, certain offenses ineligible to be expunged, has never had previous offense expunged, did not complete any diversion program.</p>
New Mexico	<p>Citation: N. M. S. A. § 32A-2-26 Terminology: Seal Brief Summary: Before age 18 requires motion by or on behalf of the person who has been the subject of the delinquency proceedings: two years must have elapsed since release of person from custody or since entry of judgment not involving legal custody or supervision, no subsequent felony or misdemeanor involving moral turpitude and no pending charges, must show good cause for sealing. Upon age 18 or at the expiration of disposition (whichever occurs later) records are sealed automatically.</p>
New York	<p>Citation: Family Court Act § 375.2 Terminology: Seal Brief Summary: Requires motion of the respondent: motion may be filed at any time subsequent to the entering of finding of delinquency; motion may not be filed until the respondent is 16 years of age.</p>
North Carolina	<p>Citation: N.C.G.S.A. § 7B-3200</p>

	<p>Terminology: Expunction Brief Summary: Requires a petition of the court: person must have reached 18 years of age if undisciplined or 16 years of age if delinquent, certain offenses ineligible to be expunged, 18 months since person was released from juvenile court jurisdiction, no subsequent adjudications or convictions.</p>
North Dakota	<p>Citation: NDCC, 54-23.4-17 Terminology: Sealed Brief Summary: Juvenile or law enforcement records must be sealed at the conclusion of proceedings. Sealed records are eventually destroyed pursuant to rules and policies established by the Supreme Court.</p>
Ohio	<p>Citation: R.C. § 2151.356 Terminology: Seal (sealed records can later be expunged) Brief Summary: Requires application of the person or the court's own motion: certain crimes ineligible to be expunged, must wait six months from date of either termination of order of the court, unconditional discharge of the person, or court order that the child is no longer a juvenile offender registrant; the court will order the record sealed if the person has been sufficiently rehabilitated.</p>
Oklahoma	<p>Citation: 10A Okl.St. Ann. § 2-6-108 Terminology: Seal Brief Summary: The court may order the records sealed if one of a number of conditions occur: one year has elapsed since the later of dismissal/closure of the case by the court or notice to the court of final discharge of supervision, the person has no subsequent criminal offenses in either juvenile or adult proceedings, and no juvenile or criminal proceeding is pending; no adjudication occurred; completion of diversion program; completion of military mentor program.</p>
Oregon	<p>Citation: O.R.S. § 419A.262 Terminology: Expunction Brief Summary: Requires application of the person or on court's own motion: if the matter is contested the following must be true: five years must have elapsed since most recent termination, no subsequent convictions of any felony or Class A misdemeanor, no pending criminal proceedings or investigations.</p>
Pennsylvania	<p>Citation: 18 Pa.C.S.A. § 9123 Terminology: Expunge Brief Summary: Requires motion of the child, parent, guardian, or the court's own motion: six months have elapsed since the individual completed informal adjustment, diversion program, all terms and conditions of the sentence imposed following a conviction for a summary offense, all terms and conditions of the sentence imposed following a conviction for a violation; five years have elapsed since the final discharge of the person from commitment, placement, probation or any other disposition and referral; no subsequent convictions or adjudications, no pending charges, individual is 18 years or older.</p>
Rhode Island	<p>Citation: Gen.Laws 1956, § 14-1-6.1 Terminology: Seal Brief Summary: All court records shall be sealed upon final disposition of the case in the event of a no information, dismissal or not guilty finding or upon the completion of any sentence, probation and/or parole imposed.</p>
South Carolina	<p>Citation: Code 1976 § 63-19-2050 Terminology: Destruction</p>

	<p>Brief Summary: Requires petition by the person who committed the offense: certain offenses ineligible to be expunged, person must be at least 18 years of age, successfully completed any dispositional sentence imposed, and no subsequent criminal charges.</p>
South Dakota	<p>Citation: SDCL § 26-7A-114 through SDCL § 26-7A-116 Terminology: Seal Brief Summary: Requires court’s own motion or petition of any party to the action: must occur one year after the unconditional release of the child from the court’s jurisdiction or the discharge of the child by the Department of Corrections (whichever is later), no subsequent adjudications, no pending proceedings involving felonies, sexual contact offenses, or misdemeanors involving moral turpitude, child must be rehabilitated to court’s satisfaction.</p>
Tennessee	<p>Citation: T. C. A. § 37-1-153 Terminology: Expunction Brief Summary: Requires petition by someone who was tried and adjudicated: must be 18 years or older, at least one year removed from most recent delinquency adjudication, certain offenses ineligible to be expunged, maintained a consistent and exemplary pattern of responsible, productive and civic-minded conduct for one or more years immediately preceding the filing of the expunction petition or has made such an adjustment of circumstances that the court believes that expunction serves the best interest of the child and the community.</p>
Texas	<p>Citation: V.T.C.A., Family Code § 58.003; V.T.C.A., Family Code § 58.204 Terminology: Sealing Brief Summary: At age 21 record is automatically sealed under “Automatic Restriction to Access of Records.” Once this occurs the record can only be viewed by criminal justice agencies. Prior to age 21 requires application by the juvenile: two years must have passed since the final discharge of the person, no subsequent adjudications or convictions, no pending charges; These rules are slightly different for certain classes of offenses.</p>
Utah	<p>Citation: U.C.A. § 78A-6-1105 Terminology: Expunge Brief Summary: Requires petition by person who has been adjudicated: must be 18 years or older, one year must have passed from the termination of the jurisdiction of the juvenile court or since the person’s unconditional release from custody, certain offenses ineligible to be expunged.</p>
Vermont	<p>Citation: 33 V.S.A. § 5119 Terminology: Seal Brief Summary: NOTE: Statute change in 1996 changed Vermont to automatic sealing: for adjudications occurring after July 1, 1996 records are automatically sealed two years after the final discharge of the person unless the state’s attorney objects and the person has committed certain offenses or has not been sufficiently rehabilitated. For adjudications occurring before July 1, 1996: record will be sealed if on application of the child or on the court’s own motion the court finds: not convicted of certain offenses which are ineligible to be expunged, no pending charges or adjudications, the person’s rehabilitation satisfies the court.</p>
Virginia	<p>Citation: VA Code Ann. § 16.1-306 Terminology: Expunge Brief Summary: On January 2 of each year the clerk destroys all records connected with juvenile proceeding if the juvenile has attained age 19 and five years have elapsed since the date of the last hearing in any case of the juvenile which is subject to this section (ie: this occurs automatically). Records for certain offenses are ineligible to be destroyed.</p>

Washington	<p>Citation: West's RCWA 13.50.050</p> <p>Terminology: Seal</p> <p>Brief Summary: Requires a motion by the person who is the subject of the complaint: Specifics of the process depend on the offense which is trying to be sealed ; those who have gone through diversion programs may request that the records be destroyed.</p>
West Virginia	<p>Citation: W. Va. Code, § 49-5-18</p> <p>Terminology: Marked</p> <p>Brief Summary: One year after the juvenile's eighteenth birthday, or one year after personal or juvenile jurisdiction has terminated, whichever is later, the records of a juvenile proceeding are automatically marked and moved to a separate secure confidential place; Marking the juvenile records to show they are to remain confidential has the legal effect of extinguishing the offense as if it never occurred.</p>
Wisconsin	<p>Citation: W.S.A. 938.355 (4m)</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires petition of court: person must have reached 17 years of age, person must have satisfactorily complied with the conditions of dispositional order and that the juvenile will benefit from and society will be harmed by expungement.</p>
Wyoming	<p>Citation: W.S.1977 § 14-6-241</p> <p>Terminology: Expunge</p> <p>Brief Summary: Requires petition of the court: juvenile must have reached the age of majority, certain offenses ineligible to be expunged, no subsequent convictions, adjudications, or pending proceedings, rehabilitation of petitioner must satisfy the court.</p>

Note: While I include the primary citation for the pertinent statute, additional citations and explanations are available from the American Bar Association (2013).

Table A2

Summary of Expungement Statutes

	Yes	No	Specific States
Does the state have automatic expungement?	14	37	Automatic states: AK, AR, FL, HI, MT, ND, NH, NM, NV, RI, TX, VA, VT, WV
After expungement did the event ever occur?	15	36	States that do not specify event never occurred: AK, AL, AZ, DE, HI, MD, MN, MS, ND, NH, NJ, NY, OH, RI, SD
Can an expunged record be used if the offender recidivates?	37	14	States where statutes do not mention that record can be reopened conditional on recidivism: AZ, CA, CT, IA, ID, IN, KY, MD, OR, RI, SC, UT, VA, WY

Source: State statutes detailed in Table A1.

Note: This table is designed to show some of the variation in expungement statutes. The first row summarizes the states that have automatic expungement. The second row refers to states where after expungement the underlying criminal action is deemed to never have occurred by statute. The final row details if the record can be used against the juvenile if he or she commits a future crime.

Table A3

All Expungement Data

Year	<i>Application States</i>			<i>Automatic States</i>		
	Michigan	Washington	Colorado	Texas	Florida	Virginia
1997	.	1289	.	.	.	27116
1998	.	1327	.	123	.	27553
1999	.	1277	.	309	.	27789
2000	.	1366	.	517	.	26037
2001	.	1268	.	516	.	24308
2002	.	1355	.	754	7961	21874
2003	.	1393	158	805	9736	19331
2004	.	1309	149	810	10607	15215
2005	.	1350	182	1114	10860	13638
2006	.	1331	185	890	11416	10889
2007	.	1561	202	1560	12053	8164
2008	.	1736	146	1446	13497	5421
2009	29	1679	183	1697	14491	2470
2010	34	1158	191	2045	16945	360
2011	40	713	174	1776	17796	40
2012	48	416	246	2041	18272	36
2013	99	53	243	.	12947	21

Source:

Michigan: The number of juvenile set asides was obtained through contact with the Criminal History Unit of the Criminal Justice Information Center with the Michigan State Police.

Washington: Expungement numbers were obtained through communication with the Washington Administrative Office of the Courts.

Colorado: Expungement case numbers come from Table 19 of the Annual Reports of the Judicial Branch of the State of Colorado.

Texas: The number of expungements was obtained through contact with the Crime Records Service of the Department of Public Safety.

Florida: The number of Certificates of Eligibility (needed in the expungement process) was provided by the Florida Department of Law Enforcement.

Virginia: The number of expungements was obtained through contact with the Virginia Department of Juvenile Justice.

Note: The numbers reported for Texas and Florida reflect the number of expungements by application despite the fact that these states are automatic. Many automatic states allow for expungement by application before the automatic expungement occurs. The numbers reported for Virginia represent all automatic expungements in the state. These numbers decrease in recent years because the date associated with the statistic is the date of intake (or date of arrest), meaning that many recent cases are not yet eligible for automatic expungement. I was informed via communication with Florida and Virginia that the rate of expungement for those who are eligible is one.

Table A4

NLSY Descriptive Statistics

Overall (N=7,469)	Mean	Std. Dev.
Female	0.490	0.500
Black	0.153	0.360
Hispanic	0.128	0.334
Urban (1997)	0.685	0.465
Age (1997)	14.271	1.489
Live with both biological parents (1997)	0.534	0.499
Live with only biological mother (1997)	0.238	0.426
Household size (1997)	4.459	1.426
Total under 18 in household (1997)	2.367	1.190
Automatic State (1997)	0.200	0.400
HS Grad	0.806	0.395
Ever Attended College	0.594	0.491
Graduated College	0.299	0.458
Juvenile Arrest	0.164	0.371
Juvenile Charge	0.101	0.302
Juvenile Conviction	0.054	0.226
Juvenile Incarceration	0.021	0.144
Age (2008)	25.830	1.452
Average Income (1,000s) (2008-2010)	29.000	21.252

Note: These statistics reflect responses from 7,469 respondents in the NLSY97 weighted by 1997 sampling weights (cumulative cases method). I drop 1,515 observations of individuals who missed at least one of the first five waves. I am unable to identify if these individuals had an arrest as a juvenile. Graduated college is an indicator of highest degree being Bachelor's or higher.

Table A5

Descriptive Statistics by Crime

	<i>Application</i> (N=36)		<i>Automatic States</i> (N=13)		p-value (difference)
	Mean	Std. Error	Mean	Std. Error	
Disorderly Conduct	199.338	27.411	169.367	42.171	0.569
Drug Crimes	184.935	18.101	163.759	15.856	0.508
Larceny	371.805	31.340	360.697	44.275	0.851
Burglary	76.388	5.628	65.804	7.648	0.316
Aggravated Assault	52.374	5.294	42.817	6.553	0.328
Robbery	27.197	4.434	17.620	4.590	0.232
Rape	3.933	0.393	3.982	0.581	0.948
Murder	0.966	0.106	0.659	0.123	0.116

Note: This analysis reflects the juvenile arrest rate per 100,000 population, where “juvenile” is defined as being below the criminal age of majority. This analysis covers the years 2006 to 2010. Florida and Washington D.C. are excluded due to poor data quality.

Table A6

State Level Juvenile Crime Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Disorderly Conduct	Drug Offenses	Larceny	Burglary	Aggravated Assault	Robbery	Rape	Murder
Automatic	-23.503 (61.311)	-50.963 (32.235)	-82.627 (54.022)	-13.353 (11.385)	-9.356 (9.049)	-1.646 (6.963)	-0.326 (0.813)	-0.265 (0.185)
log(officers)	-68.189 (173.317)	-110.911 (91.124)	-409.032* (152.713)	-66.195* (32.183)	-20.939 (25.580)	-27.905 (19.683)	-2.236 (2.297)	-0.720 (0.523)
log(expenditures)	-37.228 (79.805)	71.870 ⁺ (41.959)	75.376 (70.317)	29.235 ⁺ (14.819)	38.970** (11.778)	21.765* (9.063)	1.372 (1.058)	0.300 (0.241)
Unemp Rate	-23.557 (20.921)	-23.488* (10.999)	-52.746** (18.434)	-0.397 (3.885)	-1.671 (3.088)	-0.805 (2.376)	-0.428 (0.277)	-0.055 (0.063)
Fraction Black	1.442 (3.884)	0.951 (2.042)	-0.714 (3.422)	1.493* (0.721)	0.952 (0.573)	1.233** (0.441)	-0.001 (0.051)	0.042** (0.012)
Fraction Hispanic	0.010 (0.012)	0.008 (0.017)	-0.002 (0.010)	0.007 (0.009)	0.005 (0.010)	-0.015 (0.012)	-0.009 (0.011)	0.025 ⁺ (0.015)
Fraction Urban	2.353 (2.429)	1.677 (1.277)	4.027 ⁺ (2.140)	0.247 (0.451)	0.708 ⁺ (0.358)	1.062** (0.276)	0.040 (0.032)	0.003 (0.007)
Observations	49	49	49	49	49	49	49	49

Note: This analysis uses average juvenile arrest rates from 2006 to 2010 for the listed crime among 49 states. The District of Columbia and Florida are excluded due to poor data quality. Officers and expenditures are expressed in per capita terms. The dependent variable is the juvenile arrest rate per 100,000 population. Standard errors appear in parentheses. + P < .10; * P < .05; ** P < .01.

Table A7

Proxy Variable Analysis

	(1) Disorderly Conduct	(2) Drug Offenses	(3) Larceny	(4) Burglary	(5) Aggravated Assault	(6) Robbery	(7) Rape	(8) Murder
Automatic (no severity)	-23.503 (61.311)	-50.963 (32.235)	-82.627 (54.022)	-13.353 (11.385)	-9.356 (9.049)	-1.646 (6.963)	-0.326 (0.813)	-0.265 (0.185)
Automatic (including severity)	-15.562 (63.251)	-45.133 (33.117)	-72.983 (55.512)	-13.302 (11.796)	-9.210 (9.375)	-1.611 (7.214)	-0.347 (0.842)	-0.271 (0.191)

Note: This table reports the coefficient on automatic from two separate regressions: one excluding a measure of severity of the juvenile justice system (identical to Table A5) and one including severity. The proxy for severity, based on Levitt (1998), is the number of juveniles in residential placement divided by the level of reported crime. The dependent variable is the juvenile arrest rate per 100,000 population. Standard errors appear in parentheses. + P < .10; * P < .05; ** P < .01.

Table A8

State Level Adult Crime Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Disorderly Conduct	Drug Offenses	Larceny	Burglary	Aggravated Assault	Robbery	Rape	Murder
Automatic	-14.697 (12.466)	-21.452 ⁺ (11.082)	-8.519 (8.960)	-2.011 (2.101)	-2.146 (4.375)	0.118 (0.889)	-0.035 (0.206)	-0.034 (0.107)
log(officers)	30.838 (35.240)	-13.245 (31.328)	-32.175 (25.328)	-2.480 (5.938)	1.273 (12.368)	-2.328 (2.514)	-0.728 (0.581)	-0.274 (0.303)
log(expenditures)	2.432 (16.226)	5.405 (14.425)	10.391 (11.662)	3.883 (2.734)	18.287** (5.695)	1.851 (1.158)	0.599* (0.268)	0.036 (0.140)
Unemp Rate	0.376 (4.254)	-1.150 (3.782)	-0.700 (3.057)	1.296 ⁺ (0.717)	2.002 (1.493)	0.617* (0.304)	-0.029 (0.070)	0.031 (0.037)
Fraction Black	-0.460 (0.790)	2.172** (0.702)	0.960 ⁺ (0.568)	0.365** (0.133)	0.344 (0.277)	0.184** (0.056)	0.015 (0.013)	0.034** (0.007)
Fraction Hispanic	-0.457 (0.667)	1.394* (0.593)	0.281 (0.480)	0.195 ⁺ (0.112)	0.450 ⁺ (0.234)	0.015 (0.048)	-0.001 (0.011)	0.016** (0.006)
Fraction Urban	-0.075 (0.494)	0.030 (0.439)	0.065 (0.355)	-0.097 (0.083)	-0.133 (0.173)	0.089* (0.035)	0.003 (0.008)	-0.005 (0.004)
Observations	49	49	49	49	49	49	49	49

Note: This analysis uses average adult arrest rates from 2006 to 2010 for the listed crime among 49 states, where adult is defined as being above the age of criminal majority. The District of Columbia and Florida are excluded due to poor data quality. Officers and expenditures are expressed in per capita terms. The dependent variable is the adult arrest rate per 100,000 population. Standard errors appear in parentheses. + P < .10; * P < .05; ** P < .01.

Table A9

Long-Term Effects of Automatic Expungement: Proxy Variable Analysis (Unweighted)

	(1) Not Arrested After Age 20?	(2) Attended College	(3) Graduated College	(4) log(Average Income)
<i>Juvenile Convict Sample (N=403)</i>				
Automatic Expunge	0.104* (0.054)	0.093* (0.045)	0.057+ (0.032)	0.287* (0.128)
R ²	0.093	0.139	0.215	0.174
<i>Juvenile Arrest Sample (N=859)</i>				
Automatic Expunge	-0.033 (0.030)	-0.005 (0.043)	0.017 (0.022)	0.034 (0.088)
R ²	0.071	0.183	0.149	0.179
<i>Never Arrested Sample (N=6188)</i>				
Automatic Expunge	-0.003 (0.017)	-0.002 (0.016)	-0.014 (0.013)	-0.032 (0.037)
R ²	0.061	0.135	0.176	0.115

Note: Each panel restricts the sample to one of three categories: those who are never arrested as a juvenile, those who are arrested but not convicted, and those who are convicted. Standard errors are clustered at the state level. Average income is calculated over 2008 to 2010. Additional covariates are the same as column (2) in Table 4. Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. An example of the full regression output appears in Appendix Table A13. + P<0.10, * P<0.05, ** P<0.01

Table A10

Long-Term Effects of Automatic Expungement: Difference-in-Differences Analysis (Unweighted)

	(1) Not Arrested After Age 20?	(2) Attended College	(3) Graduated College	(4) log(Average Income)
<i>Treatment: Convicted</i>				
<i>Control: Arrested, Not Convicted</i>				
Juvenile Convict x Automatic Expunge	0.113* (0.043)	0.077 (0.049)	0.019 (0.040)	0.237 (0.143)
Juvenile Convict	-0.130** (0.037)	-0.122** (0.035)	-0.023* (0.010)	-0.314** (0.082)
R ²	0.096	0.182	0.173	0.182
<i>Treatment: Convicted</i>				
<i>Control: Never Arrested</i>				
Juvenile Convict x Automatic Expunge	0.056 (0.046)	0.074+ (0.039)	0.044 (0.041)	0.216* (0.103)
Juvenile Convict	-0.268** (0.037)	-0.322** (0.018)	-0.159** (0.011)	-0.497** (0.079)
R ²	0.100	0.170	0.192	0.130
<i>Treatment: Arrested, Not Convicted</i>				
<i>Control: Never Arrested</i>				
Juvenile Arrest x Automatic Expunge	-0.048 (0.030)	-0.003 (0.047)	0.028 (0.026)	0.029 (0.102)
Juvenile Arrest	-0.136** (0.015)	-0.221** (0.028)	-0.141** (0.011)	-0.255** (0.050)
R ²	0.091	0.174	0.197	0.133

Note: Each panel specifies the assumed treatment and control group for this difference-in-differences analysis. Standard errors are clustered at the state level. Average income is calculated over 2008 to 2010. Additional covariates are the same as column (2). Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. An example of the full regression output appears in Appendix Table A13. + P<0.10, * P<0.05, ** P<0.01

Table A11

Long-Term Effects of Automatic Expungement: Proxy Variable Analysis (Non-clustered)

	(1) Not Arrested After Age 20?	(2) Attended College	(3) Graduated College	(4) log(Average Income)
<i>Juvenile Convict Sample (N=403)</i>				
Automatic Expunge	0.133* (0.071)	0.101 (0.064)	0.066 (0.043)	0.212 (0.162)
R ²	0.083	0.147	0.227	0.181
<i>Juvenile Arrest Sample (N=859)</i>				
Automatic Expunge	-0.018 (0.049)	0.010 (0.046)	0.001 (0.028)	0.066 (0.100)
R ²	0.069	0.200	0.176	0.173
<i>Never Arrested Sample (N=6188)</i>				
Automatic Expunge	-0.002 (0.014)	-0.011 (0.018)	-0.025 (0.017)	-0.001 (0.036)
R ²	0.054	0.140	0.181	0.107

Note: Each panel restricts the sample to one of three categories: those who are never arrested as a juvenile, those who are arrested but not convicted, and those who are convicted. All regressions are weighted using 1997 sampling weights (cumulative cases method). Average income is calculated over 2008 to 2010. Additional covariates are the same as column (2) in Table 4. Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. An example of the full regression output appears in Appendix Table A13. + P<0.10, * P<0.05, ** P<0.01

Table A12

Long-Term Effects of Automatic Expungement: Difference-in-Differences Analysis (Non-clustered)

	(1) Not Arrested After Age 20?	(2) Attended College	(3) Graduated College	(4) log(Average Income)
<i>Treatment: Convicted</i>				
<i>Control: Arrested, Not Convicted</i>				
Juvenile Convict x Automatic Expunge	0.153* (0.073)	0.053 (0.067)	0.045 (0.047)	0.276+ (0.152)
Juvenile Convict	-0.133** (0.038)	-0.108** (0.034)	-0.027 (0.020)	-0.320** (0.089)
R ²	0.087	0.198	0.205	0.178
<i>Treatment: Convicted</i>				
<i>Control: Never Arrested</i>				
Juvenile Convict x Automatic Expunge	0.120* (0.060)	0.086 (0.057)	0.055 (0.044)	0.225+ (0.126)
Juvenile Convict	-0.279** (0.032)	-0.316** (0.028)	-0.177** (0.018)	-0.473** (0.075)
R ²	0.094	0.176	0.198	0.124
<i>Treatment: Arrested, Not Convicted</i>				
<i>Control: Never Arrested</i>				
Juvenile Arrest x Automatic Expunge	-0.031 (0.043)	0.026 (0.043)	0.012 (0.030)	0.003 (0.090)
Juvenile Arrest	-0.145** (0.021)	-0.226** (0.021)	-0.155** (0.016)	-0.236** (0.050)
R ²	0.086	0.182	0.205	0.126

Note: Each panel specifies the assumed treatment and control group for this difference-in-differences analysis. All regressions are weighted using 1997 sampling weights (cumulative cases method). Average income is calculated over 2008 to 2010. Additional covariates are the same as column (2). Nineteen observations are lost in this analysis because expenditures are unavailable for the District of Columbia. An example of the full regression output appears in Appendix Table A13. + P<0.10, * P<0.05, ** P<0.01

Table A13 Effect on College Attendance for Juvenile Convicts (Full Output)

	(1) Attended College
Father's Education	0.029* (0.012)
Mother's Education	0.010 (0.007)
Parental Income (1997)	0.018+ (0.010)
Age (1997)	0.001 (0.017)
Urban	-0.075 (0.055)
Black	-0.026 (0.068)
Hispanic	-0.027 (0.107)
Female	0.095+ (0.050)
Biological Mom	0.009 (0.062)
Other Household Composition	-0.134+ (0.071)
Household Size (1997)	-0.008 (0.035)
Household Under 18 (1997)	-0.033 (0.035)
Automatic Expunge	0.101+ (0.052)
N	403
R ²	0.147

Note: The dependent variable is an indicator for ever attending college. The regression is weighted using 1997 sampling weights (cumulative cases method). The regression also includes state level unemployment rate, log of number of employed police officers, log of expenditures on the state justice system, log of median household income, log of Head Start enrollment, number of household members under 6 years old in 1997, juvenile custody measure to proxy for severity, and indicators for parental income, mother's education, or father's education missing. The reference group for household composition is living with both biological parents. Household under 18 reflects the number of household members under 18 at the time of interview in 1997. Standard errors are clustered at the state level. + P<0.10, * P<0.05, ** P<0.01