A QUANTITATIVE ANALYSIS OF PRISON CLOSURES: 2006-2013

By

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PRISON CLOSURES: 2006-2013

Abstract

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Imprisonment rates in the United States have been increasing considerably for over three decades - quintupling between 1972 and 2010. The growth of the imprisoned population was soon followed by a surge of correctional facility construction, with more than 1000 prisons built in the last 75 years – Texas alone built 120 facilities between 1980 and 2000. Prisons have closed periodically over time, however, starting in 2007, states started closing prisons at an accelerated rate. This thesis has two primary objectives. The first is to chart the timing, pace and pattern of prison closures. To accomplish this, a unique dataset of all closed correctional facilities since 1995 was constructed. The second objective is to use fixed-effects regression to estimate the effect of closures on the overall imprisonment rate, prison admissions and prison releases. The results indicate that the reductions of prison *beds* are concentrated primarily in the South and Midwest, while the reduction of prison *facilities* are concentrated in just four states. Further, the predictive models indicate that prison closures are hastening releases, even when controlling for functionalist and conflict indicators that are primarily used to account for changes in prison populations.

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INTRODUCTION

Mass incarceration has been a defining feature of recent U.S. social control policy. Mass incarceration, as Garland (2001) defined it, is demarcated by historically unprecedented incarceration rates, especially as it affects marginalized groups in society. In the United States, mass incarceration reached historic levels in 2009 with 1,615,487 people in federal and state prisons and an additional 767,000 in county jails. Overall, there has been a 500 percent increase in U.S. incarceration rates since the 1970s (Drucker 2011). In 2012, the United States incarceration rate of 753 per 100,000 exceeded that of Russia, North Korea and Iran (Hartney 2013). The U.S. comprises five percent of the world's population but twenty-five percent of the incarcerated population (Hartney 2006).

Growth in imprisonment facilities has accompanied increased rates of incarceration. In 1923, the United States had 61 prisons. In 1974, there were 592, and in 2000, 1,023 (Lawrence 2004). Texas alone built 120 prisons between 1980 and 2000. Florida had a prison in 78 percent of its counties (Lawrence 2004).

Beginning in 2007, however, states began closing prisons. Between 2011 and June 2014, twenty-five states closed 89 correctional facilities representing a total of 42,555 prison beds. Coinciding with prison closures, prison populations declined. Since the peak of imprisonment in 2009, when 1,615,487 people were incarcerated in state and federal facilities, prison population declined over the next three years. Reduction in the imprisoned population in the U.S. accelerated from 5,575 in 2010 to 15,023 in 2011, to 28,600 in 2012 (Bureau of Justice Statistics 2010; 2011; 2012). While prison closures may represent a significant shift from mass incarceration, but their effect on prison populations is unknown. Anecdotally, it appears that both

prison closures are increasing and imprisoned populations are decreasing, but empirical evidence to support such a claim requires documentation. Prison closures may represent a reduction of prison populations, but they could also signify the housing of the same number of prisoners in fewer facilities.

We know that there is variability in prison closures across place and over time. The Vera Institute reported as early as 2002 that prison closures were occurring in 13 states and called for further research to determine if this could be a nationwide trend, rather than a regional or localized phenomenon. This study represents the first analysis of the pace and geographical distribution of prison closures in the United States. We do not yet know whether prison closures represent an idiosyncratic phenomenon, perhaps to earlier high rates of incarceration or a significant change in U.S. criminal justice policy. This research will explore these issues because existing data sources do not address these questions. A unique dataset was constructed in order to determine where and when prison closures are occurring. Based on that analysis, the effect of closures on imprisoned populations will be examined.

The goal of this project is to begin the research needed to determine whether prison closures represent a significant change in punishment practice in the American criminal justice system. This study will employ a two-step process utilizing time series analysis in answering two primary research questions:

In the United States where and when have prison closures occurred between 2006 to 2013?

To what extent do prison closures affect state imprisonment rates, including prison admissions and releases?

A multistep process is needed to answer these questions. First, the rate, pattern and timing of state prison closures must be determined. For this purpose a unique dataset identifying all closed prisons since 2006 were created. This is the first dataset of its kind and its analysis will be imperative to answering the first foundational research question.

The second, and more theoretically interesting step, is to determine the effect of prison closures on state prison populations and prison admissions and releases. This step requires combining prison closure data with the United States Bureau of Justice Statistics correctional population data, U.S. Census data and theoretically-based control variables.

Crime rates and economic factors are often used to explain changes in prison populations. These factors map on to functionalist and conflict based sociological perspectives. The functionalist perspective directly links changes in crime rates to variations in imprisonment rates. Conversely, the conflict perspective asserts that extra-legal elements determine imprisonment rates, such as unemployment rates and poverty. To assess the independent effect of prison closures on imprisoned populations, these leading explanations will need to be accounted for. Prison closures might indicate the end of an era of punitive punishment in America or may just be a response to lower crime rates and improving economic conditions.

Trends in Imprisonment

Imprisonment trends in the United States have considerable variability whether looking at changes across states or over time. For this review, past research is examined using the term

"imprisonment", defined as the total imprisoned population that is under the jurisdiction of the state[1].

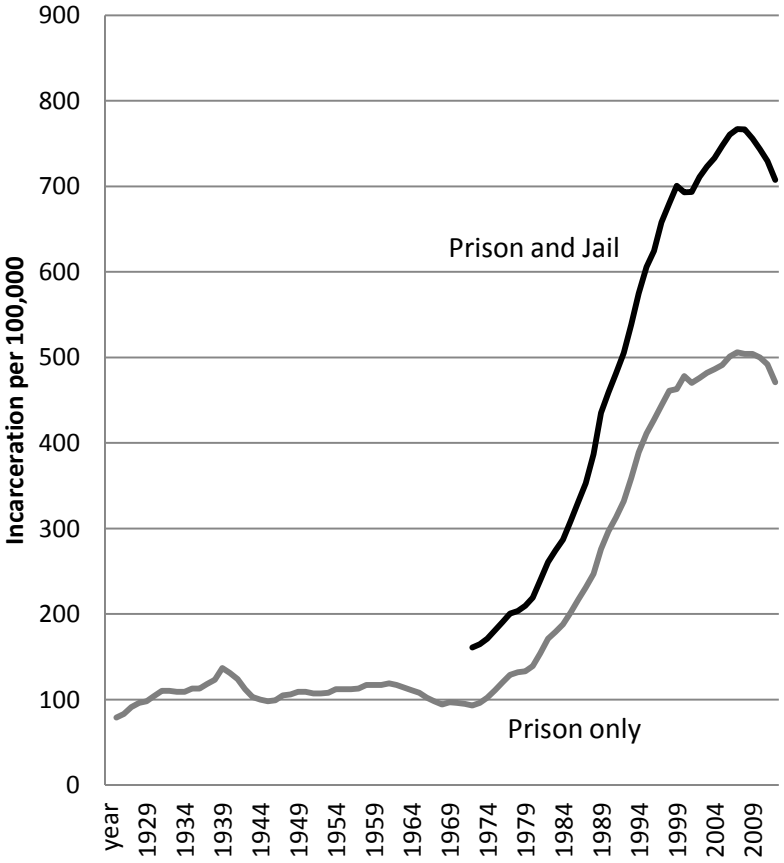
Until 1972, imprisonment rates in the United States were relatively stable (see Figure 1, from Travis et.al. 2012). Between 1925 and 1972 the combined state and federal prison population averaged 110 per 100,000, and peaking at 137 per 100,000 in 1939 (Travis et.al, 2012). Between 1973 and 2000, imprisonment rates increased annually at an average of 7 percent (Travis et.al 2012). The imprisonment rate culminated in 2008 at 506 per 100,000. Although by 2012 the imprisonment rate had declined to 471 per 100,000, it was still 4.3 times the historical average of 110 per 100,000 (Glaze and Herberman 2013).

The national imprisonment rate quintupled between 1972 and 2010, but imprisonment trends between states show remarkable variability. During this period, imprisonment rates for Maine and Minnesota increased by only 100 per 100,000 population, while southern states (Louisiana, Mississippi, Oklahoma and Texas) showed much greater increases (Travis et. al. 2012). For example, Louisiana's imprisonment rate grew by 700 per 100,000 in 2000, peaking at 867 in 2010. However, since 2010 some states have seen constant declines (Delaware, Georgia, Texas and New York) (Travis et.al. 2012).

Coinciding with declines in some states and an overall decrease in imprisonment are prison closures. Are prison closures a signifier of the end of mass incarceration? Although there has been a steady upward trend of prison closures since 2007, it is unclear whether this

[1] The jurisdictional population includes those imprisoned within the borders of a state, those sentenced in the state but serving sentences in another state, and a small proportion of inmates serving sentences of more than a year in county facilities (jails). The term incarceration refers to the total number of inmates that are in state facilities and jails at a given time.[1] This differs from imprisonment because the term incarceration includes all incarcerated persons regardless of place of confinement or length of sentence. Although the concepts of imprisonment and incarceration are different measurements, their trends over time are similar and utilized in this literature review to describe changes in prison populations.

Figure 1 U.S. state and federal imprisonment rate (1925-2012) and total incarceration including prison and jail inmates (1972-2012) per 100,000 residents.



Source: Maguire, K. (Ed.). (n.d.). Sourcebook of Criminal Justice Statistics Online. Albany, NY: University at Albany, Hindelang Criminal Justice Research Center.

signifier of the end of mass incarceration? Although there has been a steady upward trend of prison closures since 2007, it is unclear whether this represents a significant shift in American penal policy or if closures are a byproduct of decreasing crime rates or economic factors.

Trends in Prison Closures

Prison closures are an increasingly frequent occurrence. During 1995 to 2014, the period for which I collected data, 237 prisons closed. A prison closure is defined as the ceasing of operations of a correctional facility. The closing of a correctional facility happens for a variety of reasons. These include a reduction of sentenced prisoners, budget constraints that prevent the funding of operations or dilapidated conditions that are beyond repair, to name a few. About one-third of the prison closures occurred between 1995 and 2005 when 81 prisons closed (34 percent). In just the following nine years, 156 additional prison closures, representing the final 66 percent of all prisons closed during the 19 years of data collected[2]. Finally, the number of states that closed more than one prison has accelerated. In the earlier decade, 1995 to 2005, only six states that closed more than one prison. By 2014, the total number of multi-closure states had reached 29. The totality of the evidence indicates that the absolute number of prison closures is increasing, and increasing at an accelerated rate.

Between 1995 and 2014 the geographic variability of prison closures also diversified. Between 1995 and 2005, only 3 regions had states that closed prisons, whereas after 2005, all regions had closures. Moreover, by 2013, all but 13 states had shuttered at least one correctional facility. The accelerated rate and increased geographic variability show that prison closures are indeed a trend that deserves additional exploration.

The main focus of this paper is to assess the impact of prison closures on the size of imprisoned populations. This is accomplished by controlling for the most relevant alternative

[2] Further, since the original data collection that covered 1995 to 2014, additional data that extends to September of 2015 shows 15 more prison closures have occurred.

explanations for prison population decline or growth, framed around two of the leading theoretical perspectives in the sociological literature – functionalist and conflict theory. Through this lens, the independent impact of prison closures is analyzed.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

To isolate the independent effects of prison closures, this study incorporates two prominent theoretical frameworks often used to account for shifting imprisonment rates: functionalist and conflict perspectives. Some theorists come from a functionalist perspective and pose that crimes rates are central to changing prison populations. Functionalists claim that as crime rates increase or decrease, prison populations would change in the same direction. Nonetheless, many criminologists are skeptical of a strong relationship between crime rates and imprisonment, suggesting instead that the increased use of imprisonment disproportionately impacts the poor, minorities and other disadvantaged groups.

Conversely, conflict theorists would claim that extralegal predictors impact the size of prison populations. Most prominently, conflict theorists assert that the economic environment impacts the scale of imprisonment. According to this line of reasoning, high unemployment creates a surplus labor population, which is controlled through increased imprisonment. However, unemployment rates varied throughout the period of mass imprisonment and the percent of Americans below the poverty line increased by less than 2.5 percent from 2006 to

2013 (Current Population Survey Annual Social and Economic Supplements 2013). There is variation in unemployment and a relatively stable percent of the population below the poverty threshold across the period under observation even though imprisonment shows an upward linear trend. This signifies that these factors should be examined (and controlled for) to determine their effects in an era of decreasing prison populations.

The enforcement of conformity by society upon its members, either by law or social pressure – known by sociologists as social control – is a well-established field of inquiry in sociology. The main theoretical understandings of social control are based in the conflict and functionalist perspectives. Both of these perspectives of punishment have fundamentally different - even contradictory - underlying assumptions and interpretations for social control. The functionalist perspective conceives of society as separate but interrelated parts that serve a particular purpose to maintain order, while the conflict orientation emphasizes coercion and power to maintain social control. To evaluate the independent effect of prison closures on imprisoned populations, the measures historically used by functionalist and conflict theorists must be controlled for. For the functionalists, the most important predictor of imprisonment are crime rates. For conflict sociologists, imprisonment research relies heavily on economic indicators, especially unemployment rates.

Functionalist Perspective

The functionalist tradition in sociology conceives of society as a moral entity. First developed by Emile Durkheim, he proposed that social order is possible because society is more than the sum of its parts. Each part plays a functional role that helps to maintain a relatively

stable society as a whole. Proponents of the functionalist perspective believe that this inter-related process produces order and stability.

Functionalism is based on the idea that society has common beliefs and shared moral sentiments that erect what he termed a "collective conscious" that guides human behavior (Durkheim 1893:39). It is through the collective conscious that the division of labor, the main focus of Durkheim's writing, is understood and passed down to "link successive generations to one another" and how it is "diffused across society as a whole" (Durkheim 1893:39). However, this is only the initial function of the collective conscious.

For Durkheim, the collective conscious serves an additional fundamental purpose—social solidarity. Social solidarity depicts connections between individuals that allow them to form a cohesive social unit. Solidarity serves two different functions, the first of which is social integration (Durkheim 1893).

The second function of solidarity is to construct a bond of unity between individuals, united around a common goal or against a common enemy, such as the unifying principle that defines the use of imprisonment as the leading practice to deal with severe deviance (Durkheim 1893). The formation of social solidarity produces distinct expectations of what is considered acceptable and unacceptable behavior (sociologists refer to these expectations as norms). The responses to these cleavages often produce deviance and crime. Durkheim states that, "we must not say that an action shocks the collective conscious because it is criminal, but rather that it is criminal because it shocks the collective conscience. We do not condemn it because it is a crime, but it is a crime because we condemn it" (Durkheim 1893:87). Whereas Marx sees crime as a source of conflict and repression, the functional perspective associated with Durkheim perceives

crime as a mechanism of change and a barometer of a healthy society. “Punishment achieves a natural solidarity, an unintentional reinforcement of shared beliefs and relations which give way to a shared ideology” (Taylor 2011:213). Functionalists argue that imprisonment increases primarily as a result of the growth of crime. Simply put, as crime rates increase, higher rates of imprisonment will follow. However, the research indicates that these two phenomena’s are at best tentatively related. Crime rates have varied considerably while imprisonment has steadily increased.

Functionalism is not without its detractors. Functionalism has been criticized for its reliance on the assumption that social order is maintained without negative consequences. Gramsci (1922), among others, claim that functionalism reproduces the status quo by downplaying the role of individual agency and being unable to account for social change. The societal consequences of social solidarity for communities is that the unity it develops forms cleavages within society that can be based on class, race, gender, or a variety of additional socially constructed beliefs. The following section evaluates past principal empirical inquiries on imprisonment, concentrating on the measurement considered central to the functional perspective – crime rates.

Crime Rates

The association between rates of crime and increased punitive punishment are complex. While a functionalist perspective would assume that crime rates and incarceration rates are highly correlated because prisons function as a tailored institution to combat the problem of crime, as demonstrated in Table 2 (taken from Travis et.al. 2012), national crime rates have decreased while imprisonment has increased. The time-series graph displays the property crime

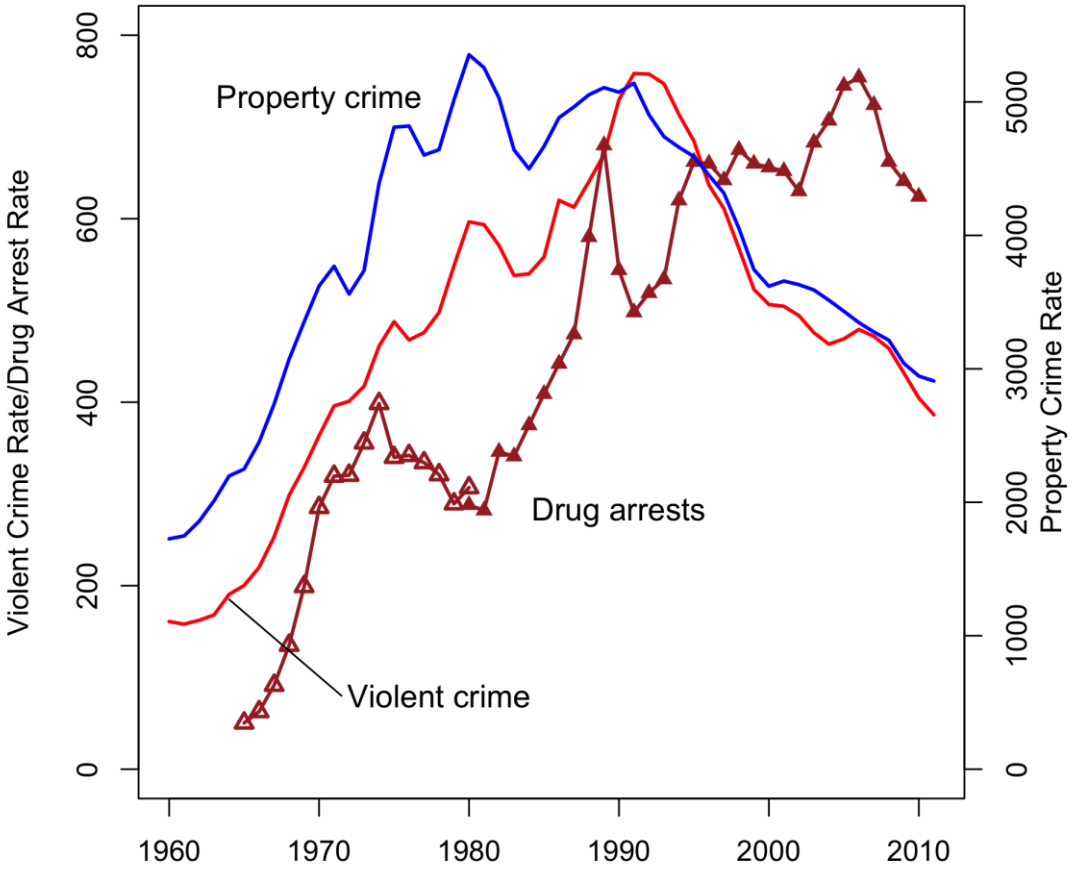
rate (which includes burglary, larceny/theft, and motor vehicle theft), the violent crime rate (which includes felony assault, murder, rape and robbery) and the drug arrest rate.

Figure 2 below can be split into two distinct sections, pre and post 1995. Starting in the mid 1960s, crime rates increased dramatically. As a result, and due to the lagged effects of crime on imprisonment, imprisonment rates started to increase by 1970. However, by the early 1990s, the nation saw dramatic decreases in both violent and property crime rates. Even though the US was experiencing relatively low and declining property and violent crime rates, imprisonment continued to increase. The sustained and immense imprisonment increase has been occurring for 30 years, but during this same period crime rates have not only fluctuated as a whole, but rates for individual crimes have also been heterogeneous. Blumstein and Wallman (2006) found that the crime decline that started in the 1990s included both property and violent offenses. However, violent crimes have had much more persistent declines. Further, within violent crimes, murder and robbery demonstrate the steepest reductions in reported offenses. Additionally, there was temporal variability in the declines in both property and violent crimes. Between 1993 and 2000, murder rates decreased by 7.4 percent per year, while robbery rates decreased by 8 percent (Blumstein and Wallman 2006). In contrast, murder rates were flat from 2000 to 2004 (decreasing by .02 percent per year) and during the same period, robbery rates decreased by 1.5 percent annually. Certain property crimes show a distinctively different trajectory. Beginning in 1986, burglary rates decreased by 4.3 percent annually until 2000 and then increased by 1 percent until 2004. Finally, Blumstein and Beck (1999, 2005) partitioned out the possible sources of mass incarceration and found that increased imprisonment is not a result of increases in crime or police effectiveness, rather that policy choices that increased the rates of

prison commitments per arrest and increased prison terms accounted for nearly all of the upsurge in imprisonment.

Although crime rates might explain the initial increase in the use of imprisonment as the leading form of punishment, by 1995 the decrease in crime makes this explanation less plausible. The absence of a positive linear relationship between the crime and imprisonment rates suggests a need for other explanations (Jacobs et. al. 2006). Further, decreasing crime rates may explain the recent increase in prison closures, however, crime rates have been decreasing for two decades and the majority of prisons only started closing in 2007, indicating that imprisonment is less correlated with crime rates than previously thought. If findings support a functionalist explanation for changes in the prison population, then:

Figure 2 Violent and property crime rates per 100,000 population, 1960 to 2011, and the drug arrest rate per 100,000, 1980 to 2010**.**



Sources: Uniform Crime Reports. Drug crime rate, 1965-1980; Federal Bureau of Investigation. (1993). Age-Specific Arrests Rates and Race-Specific Arrests Rates for Selected Offenses, 1965-1992. Washington, DC: U.S. Department of Justice, Uniform Crime Reporting Program; Maguire, K. (Ed.). (n.d.). Sourcebook of Criminal Justice Statistics Online. (Table 3.1062.2011, property and violent crime rates) Albany, NY: University at Albany, Hindelang Criminal Justice Research Center. Available: http://www.albany.edu/sourcebook [June 2013]; and Uniform Crime Reports (drug arrest rates).

H_1: *Crime rates will be positively associated with imprisonment rates.*

H_{1a}: *Crime rates will be positively associated with new prison admission rates.*

H_{1b}: Crime rates will be negatively associated with prison release rates.

Conflict Perspective

An often-utilized viewpoint to account for extra-legal explanations for imprisonment is the conflict orientation, which has an extensive empirical history in the study of punishment and penology. This viewpoint emphasizes extra-legal rationalizations independent of offender behavior that influence imprisonment rates. Although conflict theory has several different iterations that have changed over time, for this study, traditional Marxism is utilized. Marxists see the implementation of formal social control as an instrument for the powerful to achieve and maintain a privileged economic position. More broadly, conflict theorists focus on "the fractures, conflicts, and competing interests within society and assumes an uneven distribution of self-interests in social control and of the power to implement them" (Liska 1997). Based on this conflict theoretical framework, there is a broad body of empirical work used to explain changing trends in imprisonment. This paper charts the past empirical work of scholars by focusing on the economic aspects considered to be the most important: unemployment. High unemployment characterizes the principal measurement for this perspective and will be controlled for while determining the independent association of prison closures on the United States prison population[3].

Economics and Imprisonment

[3] A second important factor of the conflict perspective is the political relationship that produces ideological cleavages and reinforces economic inequality. If ideology fails, then the use of formal social control (police; prisons) is applied to reinforce these underlying relationships. Past research has demonstrated that the change from Democrat to Republican governor has meaningful consequences for criminal justice policy (Jacobs 1998). It is the governor who prepares budgets, approves prison construction, appoints parole board members and generally has the greatest impact on prison capacity. However, given the current study's emphasis on change over time using a fixed-effects framework, the lack of variation in the political affiliation of a state's governor from 2006-2013 prevented its inclusion in the final statistical analysis.

Past empirical research using conflict theory to explain variations in criminal punishment (imprisonment) have had varied results. Conflict theory assumes that formal social control reflects the interests of the powerful and imprisonment is one way to control those that threaten their interests. That is, as threat increases, the level and extent of punishment increases.

Conflict theorists have explored the relationship between economic factors and imprisonment, often centering on control of the "underclass". For this paper, the underclass is defined as the marginalized surplus labor population created by high unemployment. As the United States experienced an economic decline starting in 2008, unemployment reached a level not seen since the Great Depression. In its wake, the 2008 economic decline produced an increased surplus labor population and past research has produced mixed results on how this has impacted prison populations.

In 1941, Rusche and Kirchheimer developed what has come to be known as the Rusche-Kirchheimer hypothesis. In its most simplistic form, it holds that

> every system of production tends to discover punishments, which correspond to its productive relationships. It is thus necessary to investigate the origin and fate of penal systems, the use or avoidance of specific punishments, and the intensity of penal practices as they are determined by social forces, above all by economic and then fiscal forces (Rusche and Kirchheimer 1935:423).

Basically, economic and fiscal forces determine, in this case, the imprisonment rate. Many analyses testing the Rusche-Kirchheimer hypothesis theorize that larger surplus labor populations, often measured as unemployment rates, resulted in increased imprisonment rates (Box and Hale 1982; Carol and Doubet 1983; Chiricos and Bales 1991; Greenberg 1977; Hale 1989a, 1989b; Hochstetler and Shover 1997; Inverarity and Grattet 1989; Inverarity and

McCarthy 1988; Jankovic 1977; Laffargue and Godefroy 1989; Lessan 1991; McCarthy 1990; McCullagh 1992; Michalowski and Pearson 1990). However, Jacobs and Helms (1995) found the unemployment-Imprisonment relationship unconvincing and D'Alessio and Stolzenberg (1995:350) claimed that Rusche and Kirchheimer "overstated the impact of employment on levels of incarceration."

In a review of 20 years of literature examining the unemployment-imprisonment relationship, Chiricos and Delone (1992) found that studies employing national and state level data often exhibited a positive (93 percent) and significant (66 percent) relationship. "Even the (weakest) support for the relationship of labor surplus to punishments shows positive relationships more than 70 percent of the time for individual data, 85 percent of the time for state data, and significant results that are five and seven times more likely than chance (Chiricos and Delone (1992:428).

Conflict theorists argue that imprisonment is positively associated to unemployment. That is, the higher the unemployment rate (surplus labor population), the higher the imprisonment rate. This research will operationalize the surplus labor population using unemployment to parse out the independent effects of prison closures on imprisoned populations. Following the conflict explanation of economic factors and imprisonment, I hypothesize that:

H_2: Unemployment rates will be positively associated with imprisonment rates.

H_{2a}: Unemployment rates will be positively associated with prison admission rates.

H_{2b}: Unemployment rates will be negatively associated with prison release rates.

In summary, both functionalist and conflict perspectives offer valid and alternative explanations for fluctuations in imprisonment. Functionalists view society as a system of inter-related parts that work in tandem to maintain order and imprisonment is a reaction to increased crime. Through this framework, as crime rates change, so should imprisonment. However, the evidence suggests that increased crime rates are not in tandem with increased Imprisonment. Violent and property crime have varied over time, while imprisonment has steadily increased.

Conflict theory seeks to explain variations in imprisonment rates through extralegal rationalizations - with economic cleavages as the main predictor. Conflict theorists accentuate power and coercion to sustain social control and imprisonment is how the powerful maintain their status and how subpopulations are marginalized. Increased unemployment has often been cited as the main economic factor predicting imprisonment trends due to increased competition for scarce resources from surplus labor populations.

Conflict and functionalist theories also diverge on the correlates of prison population declines. Conflict theorists would argue that as unemployment decreases, so should imprisonment and functionalists would argue that crime rates should be in tandem with imprisonment rates and hence, the number of prisons. To limit the possibility of a spurious association between prison closures and imprisonment, these alternative explanations for prison population variations will be accounted for.

This analysis will examine the effect of prison closures on U.S. imprisonment, prison admissions and prison release rates within states between 2006-2013. First, a comprehensive analysis of prison closures is needed to establish where and when prison closures have occurred from 2006 to 2013. This includes determining the rate, pattern and timing of closures. Next,

through further analysis, I will determine the effect of prison closures on the overall imprisoned population, net theoretical controls. Finally, since the overall imprisonment rate is determined by inputs into, and outflows out of, correctional facilities, prison admissions and releases will also be independently examined. All analyses use fixed effects regression from 2006 to 2013.

DATA AND METHODS

The current study seeks to describe prison closures across place and over time and then analyze the effects of state prison closures on imprisonment rates, including prison admissions and releases from 2006-2013 for 44 states and 352 state-years. The unit of analysis is driven by theoretical concerns and by practical methodological constraints. Theoretically, major decisions on imprisonment are made at the state level. Thus the increasing or decreasing use of imprisonment relies on decisions (e.g. corrections budgets, prison construction) that are made by state, not local, governments. Further, states have geographic and political boundaries that do not change over time.

The sampling frame for this study is all 50 states in America, however only 44 states are used in the statistical models. The omission of six states in this analysis is due to the fact that six states (Alaska, Connecticut, Delaware, Hawaii, Rhode Island and Vermont) report imprisonment counts that include jails and prisons. Jail population trends might differ from imprisonment trends and so states that have an integrated reporting system were excluded. The District of Columbia also has a unified reporting system and is omitted from the analysis.

The use of 44 states is broadly representative of all U.S. states. Therefore, the state-level unit of analysis decision must consider aggregation bias. Aggregation bias is the information loss that comes from aggregating micro-level data into macro-level analyses. Practical

constraints drove the decision to use state-level data in this research. Much of the data employed are only available at the state level. However, measuring variables at the state level reduces variation and sample size, thus increasing the standard error and reducing the likelihood of finding observed effects.

Yearly observations are made, which also has it is own theoretical concerns and practical constraints. The cumulative prison population data are only available as yearly counts recorded on December 31 of each year. The cumulative prison population is calculated using two opposing and distinct *flows* – inputs and outputs. The *inputs* into correctional facilities are prison admissions, defined as all prisoners who are admitted to a state facility. The *outputs* from prisons are inmates who have been released from a state facility. These *flows* comprise the total prison population and data are taken as the cumulative number of released or admitted inmates in a given year. This necessitates year as the time unit of analysis.

Dependent Variables

Three different dependent variables are utilized to measure variations in imprisonment: overall imprisonment rates, prison admission rates and prison release rates in the United States between 2006-2013. All models will be estimated using fixed effects regression.

Imprisonment Rate

The first model will estimate the effects of prison closures on the imprisonment rate within a state, net theoretically based control variables. For this paper, the cumulative imprisonment rate in the United States represents the total custodial population. The custodial population includes all prisoners with a sentence of more than one year in the physical custody of the state and housed in a state facility on December 31 of each year. This differs from the

jurisdictional population, which also counts inmates that were sentenced in one state, but imprisoned in another. However, a state's custodial population is the appropriate measurement when considering how the reduction in prison capacity (closures) impacts a state's imprisonment rate because prisoners serving sentences outside the state do not directly impact the capacity in the state of origination. Rates per 100,000 population are calculated using state population counts from the United States Census (United States Census). Data on counts of the custodial population were garnered from the Bureau of Justice's (BJS) National Prisoners Statistics Program (NPS), which began in 1926 under a mandate from Congress to collect statistics on correctional facilities and inmates. The NPS is an annual census that produces national and state-level data on the number of prisoners in state and federal prison facilities. In each jurisdiction (50 states), a questionnaire is completed (a web-based survey is also available) by a central agency reporting for institutions within the correctional system. The information is derived from a complete enumeration rather than a survey so it is less affected by sampling error. Response error is held to a minimum through telephone follow-ups completed by BJS staff.

Prison Admissions

The second model will estimate the effects of prison closures (net control variables) on prison admission rates. The population dynamics of imprisonment rates incorporate two factors: the *inflow* and *output* of inmates. These two *flows* are the determining factors in calculating the cumulative imprisonment rate and represent varying policy decisions for distributing punishment to offenders. Prison admissions represent the *input* of prisoners into an institution and are an important determinant of the overall size of the imprisoned population. Therefore, the second dependent variable is the *prison admissions* rate, defined as all prisoners admitted to a state

facility, including probation and parole violators[4]. Another option is new court commitments, which includes all prisoners admitted to a facility for a new sentence and excludes probation and parole violators. On average, 35 percent of admissions to state prison are a result of parole violations (66 percent in California), rather than for the commission of new crimes (Vera 2011). Since this analysis aims to measure the effect of a prison closing in a given state on that state's imprisoned populations, excluding probation and parole violators would miss a significant portion of the admitted prison population in which to track changes over time. Prison admissions data are also garnered form the National Prisoners Statistics Program. These data are a cumulative total of all inmates admitted to a state facility in a given year, collected on December 31 of each year. Prison admissions are measured as a rate per 100,000 population using state population counts from the United States Census.

Prison Releases

The final dependent variable is *prison releases*. The second flow, or the *output* of inmates leaving prison, represents the newly released prisoner exiting a correctional facility. The *outflow* of prisoners by release from a prison also impacts the cumulative size of the correctional population[5]. For this paper, a prison release is defined as a conditional or unconditional release from a state facility. A conditional release occurs if the released prisoner, upon violating the conditions of release, can be imprisoned again for any of the sentences for which they have been released (e.g., parole violation). Conditional releases include inmates placed on probation after serving their sentence, and inmates released on parole. An unconditional release is defined as

[4] An analysis using prison admissions without probation and parole violators reveled the same trends. Further, since probation and parole violators represent over one-third of new prison admissions, including all admitted offenders reduces bias and presents a fuller picture of the admissions process.

[5] A prisoner's sentence length is also an important consideration when computing imprisonment rates. However, sentence length is essentially a function of all prisoners released and this effect is captured in the prison release variable.

the conclusion of a sentence. These include the expiration of sentences and commutations (sentence lengths were changed). These data are a cumulative total of all inmates released from a state prison in a given year through December 31, and were acquired from the National Prisoners Statistics Program. Rates per 100,000 population are calculated using state population counts from the United States Census.

Independent Variables

Prison Closures

The main independent variable is prison closures. A prison closure is when the state terminates the operation of a prison; there are no longer any prisoners housed. This can happen due to budget cuts, a reduction in sentenced inmates, or dilapidated facilities among other possibilities. Prison closures are measured by a count of the number of prison beds that are inside a closed prison[6]. As part of the larger dataset used for this study, I developed a novel dataset on all closed prisons since 1995. Because no such data existed, compiled data included all federal and state correctional facilities, including juvenile centers, work camps, forestry camps, correctional hospitals, processing centers and community correctional centers. The 1995, 2000 and 2005 Census of State and Federal Adult Correctional Facilities (CSFAC) were used in the construction of these data, which were compiled by the U.S. Bureau of the Census on behalf of the Bureau of Justice Statistics. CSFAC is a mail-out/mail or fax back census of all state and Federal prison facilities, including private facilities operating under contract with state governments. Data were collected every five to seven years on June 30 starting in 1971, but there has not been a Census since 2005. Data collected include facility characteristics

[6] A binary measurement of the prison closure variable as open/closed would sacrifice specificity, as prisons come in various sizes. For example, several facilities hold as few as 50 inmates, while the Louisiana State Penitentiary (Angola) accommodates almost 5000 offenders (and 2000 guards).

(confinement space, inmate populations), operations (expenditures) and programs (education and counseling programs). The 1995 sample of 1,500 facilities were matched to the 2000 facility data by an identification code. Any prisons that did not match were systematically tracked down to confirm their status. The same method was utilized for the 2005 facility data. Since there has not been a Census since 2005, prison closure data collected after then were facilitated by the *On The Chopping Block* reports (Porter 2011; 2012; 2013) from the Sentencing Project. The Sentencing project is a nationally recognized criminal justice advocacy nonprofit organization. Established in 1986, The Sentencing Project is considered a credible source of information and analysis for policymakers, academics, advocacy organizations and the media. The *On The Chopping Block* reports from the Sentencing Project lists the prisons that are slated for closure. Those that were listed were verified to confirm their status as open or closed. To assist in confirming the validity of the closure data, individual closings were verified by multiple sources, including state Department of Corrections websites, newspaper reports and public records. Collaborations with academics and nonprofit criminal justice reform organizations provided additional information on closures. A subset of the closure data from 2006-2013 is used for this study and includes only state adult facilities. Therefore, no federal, juvenile, community correctional, forestry camps, private or other types of facilities are used in the present analyses. These types of omitted facilities represent the minority of state inmates and comparisons between state and federal, or adult and juvenile inmates are beyond the scope of this paper.

Crime Rates

The analysis includes several theoretically relevant independent variables. Failing to include those variables that are relevant to imprisonment rates, prison admissions, and releases can lead to spurious associations. *Crime* indicators are provided by the supplement to the

Uniform Crime Reports (UCR), *Crime in the United States*. Virtually every scholar needing crime statistics utilizes the UCR data. They are a nationwide effort of nearly 18,000 city, university and college, county, state, tribal, and federal law enforcement agencies that voluntarily report crimes known to the police. Law enforcement agencies report the number of known index crimes that include property (arson, burglary, larceny-theft, and motor vehicle theft) and violent (aggravated assault, forcible rape, murder and robbery) offenses. Property and violent crime rates have long been used in imprisonment research and would seem to have an association to imprisonment rates and prison admissions in particular[7]. The more or fewer people that are arrested and convicted of crimes will directly impact changes in imprisonment rates. In 2013, inmates convicted of violent crimes comprised 53.8 percent (707,500 people) of the prison population, followed by those convicted of property crimes (18.8 percent; 247,100) and drug crimes (16 percent; 210,000) (Bureau of Justice Statistics 2013).

Economic Instability

Economic instability is measured by the percent unemployed and percent in poverty at the state level. The economic indicators were supplied by the Bureau of Economic Analysis (2013). The BEA uses the census conducted by the Bureau of Labor Statistics (BLS) to produce annual state-level counts of unemployed persons and people below the poverty level. Citizens are classified as unemployed if they are currently available for work, have actively looked for a job in the previous four weeks, but do not have a job (Bureau of Labor Statistics 2013). However, this unemployment definition does not represent the totality of the unemployed as certain groups are not represented in the final unemployment rate. These include people that

[7] Drug offenses have been found to be a significant predictor of imprisonment, admission and release rates. However, drug offenses were insignificant across all models and in order to present the most parsimonious models possible, they were dropped from the final models.

have stopped looking for work and those that are institutionalized (e.g., those in prisons, mental hospitals, etc.). The BLS classifies people as being in poverty if their annual income falls below a set monetary threshold that takes into account the cost of living in a particular state and the size of the family. Since 1884, the BLS are the premier source for data measuring labor market activity, working conditions and price changes in the economy. State and local governments use the unemployment and poverty estimates from the BLS for planning and budgetary purposes. The poverty and unemployment variables are calculated using state population counts from the United States Census.

Demographic Indicators

Socio-demographic variables are also known to impact imprisoned populations. Social and demographic variables used in the analysis were percent African-American and percent Hispanic. States that have growth in minority populations have historically exhibited higher rates of imprisonment, prison admissions and releases. Counts of state African-American and Hispanic residents are taken from the U.S. Census and are calculated per 100,000 population.

Age

Statistically, the age group most likely to be imprisoned lies between ages 18-25. If this age group increases or decreases over time, imprisonment can be affected, so utilizing counts produced by the U.S. Census and rates calculated per 100,000 controls for the growth of this specific age group in each year of the analyses.

Corrections Budgets

Following Ellwood and Guetzkow (2009), I control for the absolute dollar figure of correctional funding in each state using the Survey of State Government Finances from the U. S. Census Bureau. Corrections' spending includes census codes 4 and 5. Code 4 is the spending on

"residential institutions or facilities for the confinement, correction, and rehabilitation of convicted adults" and code 5 is for "corrections activities other than facilities described under Corrections Institutions (code 4), local government correctional activities, and intergovernmental expenditures for corrections" (U.S. Bureau of the Census 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013). Correctional expenditures for years preceding 2013 were inflation-adjusted to 2013 dollars.

Descriptive Statistics

Table 1 presents the variable descriptions and means for 2006 and 2013, the initial and final observations. This table demonstrates that imprisonment, prison admissions and releases have all decreased, on average, from their initial rates in 2006. Imprisonment dropped from approximately 350 per 100,000 to 335, representing a 4.3 percent decline. Prison admissions (*inflows* into prison) saw the biggest decline from 215 per 100,000 to 192, or 11 percent. Prison releases, or *outputs* from prison, however, also decreased by 9 percent. This demonstrates that the U.S. is reducing the number of citizens sentenced to prison while at the same time decreasing the number of inmates that are released. This reveals the importance of disaggregating the measurement of imprisonment into its distinct flows - admissions and releases - to reduce aggregation bias. Due to these countervailing trends, it suggests that the overall imprisonment rate has only slightly declined. However, separating the flows into and out of prison suggests that the 4.3 percent decline in prison populations is primarily due to fewer people being sentenced to prison, but there are also fewer releases, in effect cancelling each other out.

Also notable from Table 1, both violent and property rates declined from 2006 to 2013. Violent crime rates declined from 426 per 100,000 to 355 (or 17 percent), on average. The

decrease in violent crime continues the downward trend observed throughout the 2000s. Property crime rates also decreased 14 percent from 2006 to 2013. Although property crime rates have gone up and down historically, this is the biggest seven-year decrease since the beginning of the 1990s.

Table 1. Variable Description and Means for 2006 and 2013

Variable Name	Description	Data Source	2006 Mean (Standard Deviation)	2013 Mean (Standard Deviation)
Dependent Variables				
Imprisonment Rate	All prisoners in physical custody of the state housed in a state facility serving a sentence of more than one year per 100,000 population	National Prisoners Statistics Program (NPS) from the Bureau of Justice Statistics	350.56 (122.27)	335.67 (111.91)
Prison Admissions	Prisoners admitted to a state facility including probation and parole violators, per 100,000 population	NPS	215.39 (79.21)	192.44 (73.41)
Prison Releases	Conditional and unconditional releases from a state facility, per 100,000 population	NPS	206.15 (83.15)	188.64 (74.47)
Independent Variables				
Prison Closures	Count of beds inside each closed prison	Self collected from Sentencing Project reports and CSFAC	0 (0)	215.92 (627.98)
Economic Instability				
Unemployed	Percent unemployed	Bureau of Economic Analysis (BEA)	4.40 (.99)	7.30 (1.73)
Poverty	Percent under the poverty threshold	BEA	13.20 (3.07)	15.61 (3.14)
Budgets	State corrections budgets using codes 4 and 5 inflation adjusted to 2013	Survey of State Government Finances, U.S. Census Bureau	851,527,743 (107,586,234)	963,145,623 (126,113,435)
Crime				
Violent	Violent crimes known to police, per 100,000 population	Uniform Crime Reports (UCR), Federal Bureau of Investigation	426.14 (173.42)	355.08 (122.65)
Property	Property crimes known to police, per 100,000 population	UCR	3238.89 (779.87)	2796.55 (574.69)
Demographic Indicators				
Black	Percent black	Annual Population Estimates (APE), U.S. Census Bureau	10.86 (9.83	11.16 (9.84)
Hispanic	Percent Hispanic	APE	8.50 (9.08)	9.93 (9.77)
Age	Percent between the age of 18-25	APE	13.29 (1.39)	13.07 (1.04)

Analytical Methods

This research examines changes in imprisonment rates, prison admissions and prison releases over time. To facilitate a longitudinal analysis, the data structure must include observations over time. The current study is based on an examination of annual panel data from 2006-2013 for 44 states. Panel data are data where multiple cases (in this case, states) are observed over two or more time points (in this case, years). Panel data are advantageous to cross-sectional in that they allow for the isolation of separate changes in independent and dependent variables, reduce the threat of multicollinearity, and increase the precision of estimates. This research design controls for time while simultaneously allowing for a stronger causal argument; the direction of association is more concrete when using multiple time points. The addition of fixed-effects for states helps mitigate omitted variable bias by controlling for unobserved state attributes correlated with the independent variables. Additionally, fixed-effects analyses remove the effects of time invariant variables, leaving the net effect of varying predictors. Period fixed effects were measured with a linear time trend variable to capture unmeasured effects that influence all states. This method reduces the quantity of degrees of freedom used so that more independent variables can be added to the model. The alternative option is to include dummy variables for each year, minus one year used for comparison. This method would increase the degrees of freedom used by six, as opposed to a linear time trend, which only uses only one.

The analysis of the effect of prison closures on imprisonment rates, prison admissions and releases followed best practices strategies for panel data and estimated a fixed-effects model. A Hausman test was used to determine whether a fixed or random effects model was more appropriate. A Hausman test compares a more efficient model (random-effects) against a less

efficient, but more consistent model (fixed-effects). The results denoted a significant P-value rejecting the null hypothesis that the coefficients estimated by the random effects estimator are identical to the fixed effects estimator. Residual plots indicate no obvious lack of fit, meaning the residuals were centered around zero and normally distributed. Following almost all imprisonment researchers, the independent variables were left in their natural state, but lagged one year because their impact on the dependent variables are not immediate. Estimation was carried out using STATA 13.

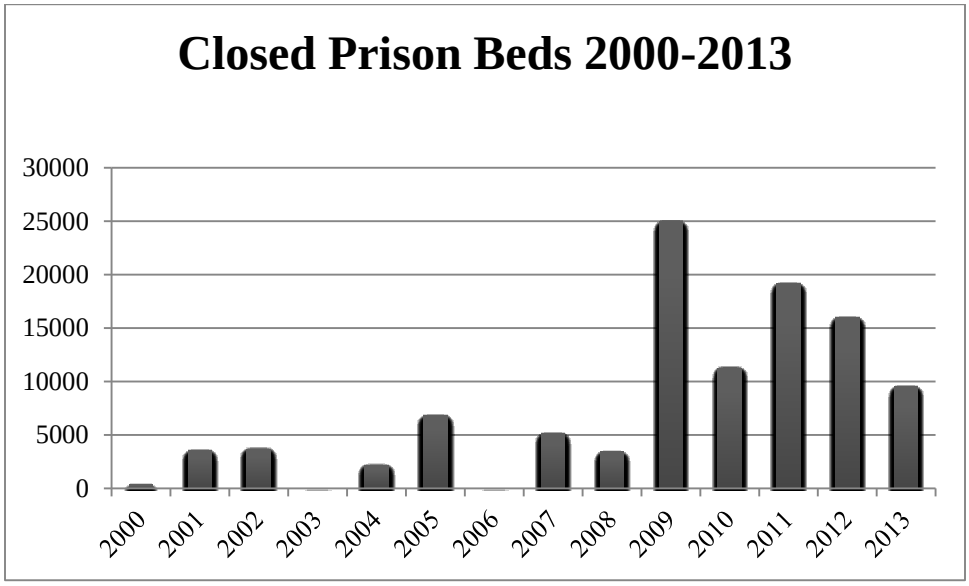
RESULTS

Until recently, punitive state sentencing policy and "law and order" political strategies provided the basis for prison construction, not prison closures, even coinciding with historically low crime rates. Now, however, anecdotal evidence suggests prisons across the U.S. are closing – and perhaps impacting overall imprisonment rates, or *inflows* and *outputs*. Moreover, the pattern and pace of prison closures may be geographically and temporally heterogeneous. States that closed prisons may have somewhat different trends regarding imprisonment, prison admissions and releases. And, it is not clear the extent to which prison closures actually contributed to reductions and geographic variability in prison populations, versus those declines being driven by decreasing crime rates, variations in economic conditions, or other factors.

Timing, Pace and Pattern of Prison Closures

As shown in Figure 3, the majority of prison closures happened after 2006.

Figure 3.



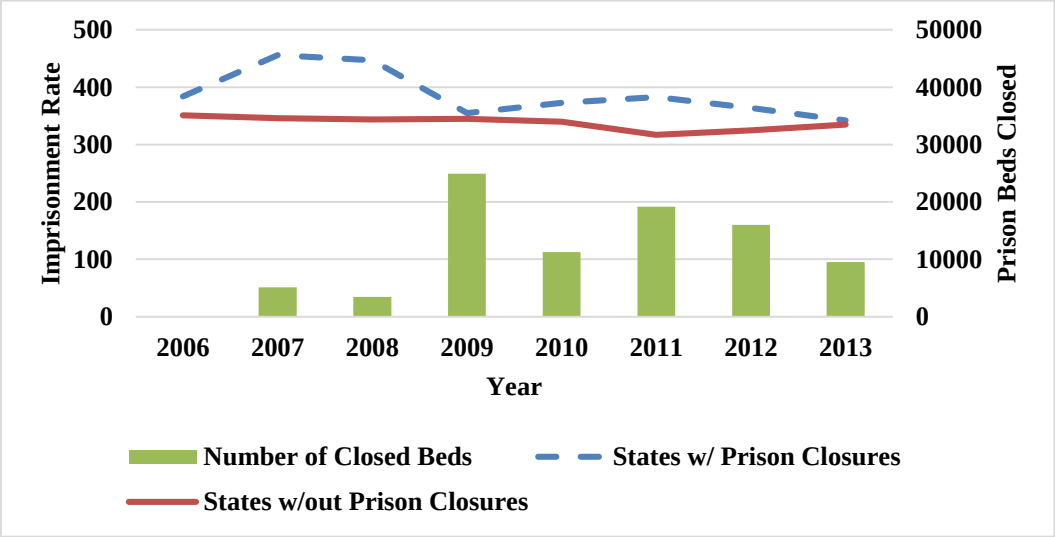
To assess the first research question, between 2007 and 2013, 31 states closed 120 prisons representing 86,429 prison beds (see **Table 2**). Leading in closures was Michigan, which closed 22 prisons over 2007-2013, representing 16,322 prison beds, followed by North Carolina (15 prisons, 10,416 beds), New York (13 prisons, 7561 beds) and Florida (11 prisons, 7418 beds). These four states accounted for 61 of the 120 prison closures, suggesting a clustering of closures in some states. Some 13 states did not close any prisons over the time period under observation.

Table 2. Number of Closed Prison Beds Per State-2006-2013

State	Facilities Closed	Beds Closed	State	Facilities Closed	Beds Closed
Alabama	0	0	Montana	0	0
Arizona	0	0	Nebraska	0	0
Arkansas	0	0	Nevada	3	2990
California	0	0	New Hampshire	1	315
Colorado	5	3042	New Jersey	1	1000
Connecticut	0	0	New Mexico	0	0
Florida	11	7415	New York	13	7551
Georgia	4	1009	North Carolina	15	10,414
Idaho	1	81	North Dakota	0	0
Illinois	2	1912	Ohio	0	0
Indiana	3	2800	Oklahoma	3	4100
Iowa	0	0	Oregon	1	326
Kansas	1	792	Pennsylvania	5	3588
Kentucky	2	1482	Rhode Island	1	324
Louisiana	4	3480	South Carolina	3	1052
Maine	1	50	South Dakota	0	0
Maryland	2	2986	Tennessee	1	600
Massachusetts	0	0	Texas	7	6581
Michigan	22	16322	Utah	0	0
Minnesota	2	1600	Vermont	1	45
Mississippi	2	2172	Virginia	3	2400
			TOTAL	**120**	**86,429**

Imprisonment trends in the United States are also geographically heterogeneous. On average, the imprisonment rate declined by four percent. However, if disaggregated into states that closed prisons and states that did not (see Figure 4), there are noticeable differences. Although prison closures occurred in all regions, states that closed prisons had a higher average initial imprisonment rate that declined consistently between 2006 and 2013. States that did not close prisons tended to have somewhat lower initial rates that were relatively stable, at least over the eight years under observation. For states that had no closures, 2006 imprisonment rates were an average of 328 per 100,000 population before increasing to 347 in 2010 and then declining to 335 per 100,000 population by 2013. States that closed prisons saw consistent declining imprisonment rates that start at 363 per 100,000 population in 2007 and by 2013 decrease to 335.

Figure 4. Imprisonment Trends Partitioned by whether States had Prison Closures

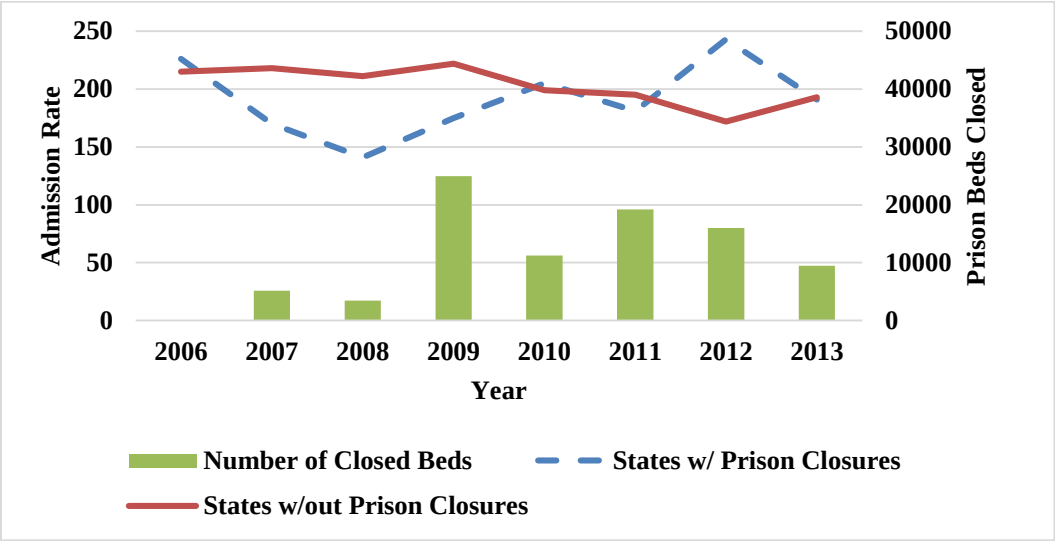


Note: No prison closures occurred in 2006.

Source: Bureau of Justice Statistics, National Prisoners Statistics Program.

Aggregating states into regions further demonstrates the variability of prison closures. All states in the Northeast region closed at least one prison, for a total of 21 closed prisons (12,506 beds). In the West, 5 of 11 states closed a prison (8474 beds) and two-thirds of states in the Midwest shuttered a facility (24,806 beds). In the South, typically considered the most punitive region, 12 out of 15 states closed prisons (43,691 beds). The South and Midwest regions contain the states with the highest average imprisonment rates and together reduced prison bed capacity by 68,497 beds. This suggests that a capacity realignment may be taking place in states and regions with higher rates of imprisonment. States without any closures experienced a more uniform and (generally) lower imprisonment rate over the time period whereas prison populations in states with prison closures steadily declined over time between 2007 and 2012.

Figure 5. Prison Admission Trends Partitioned by whether States had Prison Closures

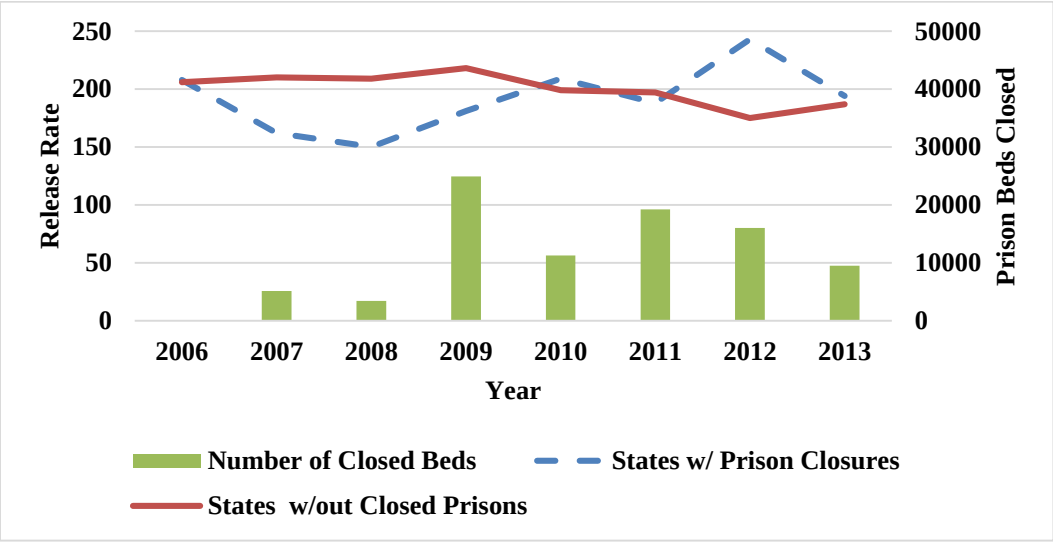


Note: No prison closures occurred in 2006.

Source: Bureau of Justice Statistics, National Prisoners Statistics Program.

Prison admissions seem to show an opposing trend (see Figure 5). States that did *not* close a prison reduced prison admissions, on average from 218 per 100,000 in 2006 to 190 in 2013. However, states that closed prisons actually increased admissions from 169 per 100,000 population in 2007 to a peak of 242 in 2012, before decreasing to 191 in 2013. A reduction in overall imprisonment rates coupled with an increase in admissions for states that closed prisons would appear to be contradictory, although this can be reconciled by looking at prison releases in Figure 6. States that closed prisons had a release rate of 162 in 2007 that increased to 243 in 2012 before declining to 194 by 2013. Releases outpaced admissions in every year except 2007. More prison releases than admissions would lower the overall imprisonment rate even if admissions increased during the period under observation.

Figure 6. Prison Release Trends Partitioned by Whether States had Prison Closures



Note: No prison closures occurred in 2006.

Source: Bureau of Justice Statistics, National Prisoners Statistics Program.

Multivariate Analyses

Imprisonment Models

Now that the rate, pattern and timing of prison closures have been established, these data can now be utilized to determine their effect on imprisoned populations using fixed-effects regression techniques. The regression tables for imprisonment, prison admissions and prison releases are found in tables 3, 4 and 5, respectively. In the overall imprisonment analysis (Table 3), the linear time trend variable *time* shows a consistent downward trend in imprisonment. Exponentiating the coefficient for *time* (-2.984) shows on average a five percent reduction in prison populations per year. However, this reduction in imprisonment is explained away when the crime variables are added to the model. *Time* is also significant when controlling for economic instability, indicating a 5.6 percent downward trend per year, on average. Nonetheless, the full model signifies that when all variables are included, the time trend is not significantly different than zero.

With regard to the main independent variable of interest, prison closures, the regression analysis does not demonstrate a significant effect, net controls, on imprisonment rates. This indicates that prison closures do not measurably impact the overall size of a state's prison population from year to year. However, the violent crime variable is significant at the .05 level, supporting the functionalist perspective that an increase in crime will correspond with increased imprisonment. In the case of time-series fixed-effects coefficients, the data is interpreted as when X varies across *time* by one unit, Y increases or decreases by β units (Woolridge 2002). Specifically, the model demonstrates that for every increase of 1 violent crime per 100,000 population, there is a corresponding increase in imprisonment of .25 per 100,000, ceteris paribus.

However, the model also demonstrates that for every increase of 1 property crime per 100,000 population, there is a corresponding decrease of .33 in imprisonment per 100,000, ceteris paribus.

This paper takes a different approach than the typical logic of model building, which starts with a base model and then additional predictors are added to distinguish between the variance explained. The approach utilized here starts with the base model – the linear time trend variable *time* and *prison closure* indicator - then adds sets of variables that have been shown to be theoretically relevant. For example, the base model in the imprisonment analysis has an R^2 of .12. This base model explains 12 percent of the variance of the dependent variable (imprisonment rate). The more variance that is accounted for also equates to diminished error in prediction. The addition of the crime variables in model 4 increases the R^2 to .22, nearly doubling the variance explained to 22 percent and indicating that crime has the greatest independent effect on overall imprisonment. The full model, with an R^2 of .26, represents 26 percent of the variance explained, further reducing prediction error. Although the crime variables explain the majority of the overall variance, the addition of the demographic and economic instability indicators adds some explanatory power to the full model. So overall, prison populations are declining, and most of this reduction is due to declining crime rates, yet some of the decline is due to changes in demographic and economic conditions. The imprisonment model also indicates that there is no overall change in imprisonment due to prison closures, however, the following sections disaggregate imprisonment into distinct flows to isolate the inflow and output of inmates.

Prison Admissions Models

The admissions model (Table 4) represents the inflow of inmates to prisons. The linear time trend shows that prison admissions are declining by one percent per year even when controlling for prison closures. However, when taking into account the full model, it reduces to zero.

Statistically, prison closures have no effect on prison admissions. Consistent with the functionalist perspective, which expects that an increase in crime is correlated with an increase in imprisonment, violent crime is a predictor of prison admissions. Although marginally significant, a 1 per 100,000 increase in violent crime is associated with .14 per 100,000 increase in prison admissions, ceteris paribus. The admissions model also demonstrates negative evidence for hypotheses related to the conflict perspective in that an increase in unemployment *decreases* admissions. A one percent increase in unemployment corresponds with a 3.76 per 100,000 decrease in prison admissions. The most predictive factor of the prison admissions model is the economic instability indicators. *Unemployment*, *poverty* and *corrections budgets* accounted for an R^2 of .19, indicating they independently explain 19 percent of the variance in prison admissions. The second most predictive factor were demographics, which independently accounted for 14 percent of the variance in prison admissions. In the full model, the R^2 increases to .23, demonstrating that the inclusion of all predictors improves model fit.

Prison Releases Models

As shown in Table 5, the linear time trend variable *time* shows a consistent 4.6 percent downward trend per year in prison releases even when controlling for prison closures. However,

this trend is explained away in model 3 when crime is controlled for and also in model 4, which includes only the demographic indicators. In model 5, when estimating the economic indicators, *time* is significant, showing a 3.3 percent downward trend per year, but in the full model the time trend is not statistically significant, meaning it is not different, from zero.

The main variable of interest, *prison closures*, is significant in the prison releases models. For every 1000 prison beds that are closed, there is a corresponding 280 per 1000 increase in prison releases per year, ceteris paribus. As prisons are closing and states are reducing capacity, one way to reach equilibrium is to release prisoners. Equilibrium is the coalescing of incarceration needs (the number of inmates) with incarceration capacity (the number of available prison beds). The significant effect of prison closures on releases demonstrates that any effects of prison closures are happening on the back end of the criminal justice system process.

Table 3. The Estimated Impact of Prison Closures on Imprisonment Rates Using Fixed Effects: Evidence From State Panel Data, 2006 to 2013

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Time	-2.927* (1.197)	-3.412* (1.323)	-1.937	-1.475 (1.662)	-2.867* (1.307)	-.964 (1.403)
Prison Closures		-.158 (.129)	-.088	-.112 (.125)	-.124 (.139)	-.057 (.108)
Crime						
Violent			.282** (.085)			.246* (.086)
Property			-.030 (.017)			-.033* (.061)
Demographic Indicators						
Black				-5.970^{+} (3.402)		-3.103 (2.957)
Hispanic				-7.545 (5.175)		-6.425 (4.672)
Age				-10.028 (6.176)		-7.210 (5.610)
Economic Instability						
Unemployed					-1.525 (.911)	-.885 (.841)
Poverty					.655 1.988)	.464 (1.769)
Budgets					.00002***	.00002**
Constant	861.0*** (211.3)	947.9*** (234.2)	667.1** (217.8)	872.2** (292.9)	835.0*** (222.6)	689.0* (257.9)
N	352[1]	308	308	308	308	308
R^2	.10	.12	.22	.16	.14	.26

$^{+}$p<.10; *p<.05; **p<.01; ***p<.001

[1] Inconsistent observations are due to no lagged variables used in model 1.

Table 4. The Estimated Impact of Prison Closures on Prison Admissions Using Fixed Effects:
Evidence From State Panel Data, 2006 to 2013

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Time	-4.237** (1.304)	-4.450** (1.634)	-3.627 (2.544)	-1.834 (1.957)	-3.084 (1.752)	-1.685 (2.357)
Prison Closures		-.078 (.116)	.121 (.125)	-.111 (.115)	-.158 (.133)	.190 (.122)
Crime						
Violent			.179^{+} (.098)			.137^{+} (.080)
Property			-.021 (.017)			-.033 (.021)
Demographic Indicators						
Black				-1.426 (3.844)		2.524 (5.317)
Hispanic				-11.860 (11.264)		-11.055 (10.463)
Age				--3.157 (7.461)		-1.527 (6.303)
Economic Instability						
Unemployed					-3.641** (1.155)	-3.761** (1.178)
Poverty					1.398 (2.103)	1.582 (1.900)
Budgets					.00004***	.00004***
Constant	949.5*** (230.2)	987.3*** (288.8)	832.9 (499.1)	689.9* (272.0)	709.9** (293.1)	603.134 (411.4)
N	352[1]	308	308	308	308	308
R^2	.13	.11	.11	.14	.19	.23

$^{+}$p<.10; *p<.05; **p<.01; ***p<.001

[1] Inconsistent observations are due to no lagged variables used in model 1.

Table 5. The Estimated Impact of Prison Closures on Prison Releases Using Fixed Effects: Evidence From State Panel Data, 2006 to 2013

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Time	-2.984*	-3.079*	-4.345	-1.537	-3.402*	-2.375
	(1.289)	(1.322)	(2.602)	(-1,810)	(1.845)	(2.288)
Prison Closures		.242^{+}	.251^{+}	.263^{+}	.276*	.276*
		(.123)	(.129)	(.119)	(.119)	(.114)
Crime						
Violent			.128			.106
			(.102)			(.086)
Property			-.029*			-.042*
			(.013)			(.19)
Demographic Indicators						
Black				1.844		4.650
				(3.351)		(4.683)
Hispanic				-10.801		-12.381
				(10.524)		(.465)
Age				2.893		3.635
				(7.300)		(6.003)
Economic Instability						
Unemployed					-1.359	-2.070*
					(.987)	(1.069)
Poverty					14.17	25.18
Budgets					.00004***	.00003***
Constant	726.8***	867.8***	1005.0^{+}	510.9^{+}	769.4*	692.9
	(227.5)	(275.7)	(511.2)	(260.1)	(309.7)	(432.6)
N	352[1]	308	308	308	308	308
R^2	.08	.09	.12	.12	.16	.22

$^{+}$p<.10; *p<.05; **p<.01; ***p<.001

[1] Inconsistent observations are due to no lagged variables used in model 1.

The prison release model that includes violent and property crime shows somme support for the functionalist related indicators. An increase of 1 property crime per 100,000 is related to a .42 per 100,000 *decrease* in prison releases, the direction hypothesized. So an increase in property crime reduces prison release rates the following year. As with prison admissions, *unemployment* is significant in the prison releases model. A 1 percent increase in unemployment is associated with a 2.1 per 100,000 decrease in prison releases. This result provides support for the conflict orientation, which claims that an increase in the surplus labor population (unemployment) is negatively associated with prison releases.

The most predictive independent factor for prison releases are the economic instability measures (model 5) with an R^2 of .16, explaining 16 percent of the variance. The second most predictive factors were crime and demographics, both with an R^2 of .12. The overall model fit improved when all variables were added in the full model with an R^2 of .22.

DISCUSSION

The purpose of this study was to explore the recent acceleration of prison closures and to identify where and when they are happening and what effects they may be having on the size of the imprisoned population. Regarding the first task of describing where and when closures transpired, during the time period between 2000-2005 the United States closed 17,300 prison beds, which is substantially less than the 86,429 closed between 2006-2013, indicating an acceleration of prison closures in the recent era. The results also indicate that prison closures are happening in all regions, but are concentrated in the South and Midwest. In the Southern region of the United States, typically considered the most punitive, 12 of 15 states closed a prison, reducing capacity by 43,691 beds. In the Midwestern region, two-thirds of states closed a prison,

reducing prison capacity by 24,806 beds. Together, the Southern and Midwestern regions have the highest average imprisonment rate of all regions combined, but combined to closed 68,497 prison beds or 79.25 percent of all closed beds between 2006-2013.

At the state-level, prison facility closures are clustered in just four states. Of the 120 correctional institutions that were shuttered during the eight years under observation, Michigan, North Carolina, New York and Florida collectively accounted for 61. However, correctional facilities were shuttered in the state with the highest imprisonment rate (Louisiana; 870 per 100,000) as well as the state with the lowest (Maine; 145 per 100,000). Yet, on average, states that closed prisons had a higher initial average imprisonment rate that decreased consistently between 2006 and 2013, while states with no closures tended to have somewhat lower imprisonment rates that stayed relatively stable. Although prison closures occurred in 31 of the 44 states analyzed in this study, the majority happened in regions and states considered to be the most punitive. So, although the majority of U.S. states have reduced prison capacity, the reduction of prison *beds* are concentrated primarily in the South and Midwest, while the reduction of prison *facilities* are concentrated in just four states: Michigan, North Carolina, New York and Florida.

In respect to the second research question exploring the effect of prison closures on imprisoned populations, the results demonstrate that closures do not impact the following year's total prison population when controlling for variables associated with the functionalist and conflict theoretical perspectives. Prison closures were also not statistically associated with prison admissions, net theoretical controls, meaning that prison closures have negligible effects on overall imprisonment rates or admissions to prison. With respect to prison releases, the prison

closure measure was significant and positively associated with subsequent prison releases. This finding provides evidence that closures are hastening prison releases - a product of the backend of the criminal justice system or *outflows*.

The descriptive statistics and fixed-effects modeling provide varied support for the hypotheses relating to the functionalist perspective. That crime rates will be positively associated with imprisonment (H_1) is not supported by the descriptive statistics. Crime rates decreased substantially from 2006 to 2013 while imprisonment increased dramatically from 2006 to 2011, and then remained relatively stable after that (decreased by .02 percent). However, the results of the multivariate regression models provided varied support in predicting that violent crime rates had a positive and significant effect on prison populations. Although, property crime also had a significant relationship, but it was not in the direction hypothesized.

Regarding H_{1a}, that crime rates will be positively associated with prison admissions, there was little support. Violent crime was marginally significant and corresponds with an increase in prison admissions, but there was no association between property crime and admissions. As for H_{1b}, that crime rates would be negatively associated with prison releases, the analysis indicated there is a negative association for property crime. However, the impact of violent crime on releases was not statistically different from zero. Crime rates, generally considered by functionalists to be the most impactful on imprisonment rates, garnered less support than expected as valid predictors in an era of changing imprisonment trends.

The results also provided mixed support for the hypotheses relating to the conflict perspective. That unemployment rates are positively associated with imprisonment (H_2) is not supported. There is no significant relationship between unemployment and overall imprisonment.

Further, regarding H_{2a}, that unemployment will have a positive association to prison admissions; the results indicate the opposite relationship. An increase in unemployment is statistically associated with a *decrease* in admissions. The results of the prison releases model indicate that an increase in unemployment is associated with a decrease in prison releases, demonstrating support for H_{2b}. The conflicting results between admissions and releases demonstrates further research is needed to assess the explanatory value of the conflict perspective during a period of decreasing imprisonment rates.

LIMITATIONS

There are a number of limitations in this research. First, is the issue of causality. Did increased closures cause reduced imprisoned populations or do reduced prison populations cause prison closures? Future research will incorporate both a longer time frame and more advanced modeling. The period between 2000-2005, when prison closures were rare, will provide a control group of sorts, allowing for a comparison between an era when few prisons closed to an era when many prison closures took place. Further, future analyses will utilize multilevel growth modeling. Prisons are nested inside of states and multilevel growth modeling allows for covariates to be measured at both the facility and state level, which permits for estimation of inter-state variability in intra-state patterns of change over time (Bollen and Curran 2006).

Another limitation of this research was the omission of a political measure. Past scholars understand incarceration as intensely political (Chambliss 1994; Foucault 1977; Garland 1990; Savelsberg 1994). Garland (1990) justifies a political approach when he writes that punishment should be seen "not in the narrow terms of the ‘crime problem’ but instead as one of the mechanisms for managing the underclass” (134). Although the political affiliation measure in

this study lacked the variability required to be included, forthcoming analyses will take advantage of added time points and more advanced modeling techniques to construct a more nuanced measure to account for the political environment.

An additional limitation in this study is the use of only state adult prisons. As states started closing prisons, juvenile facilities were the first to close. Including these facilities between 2006-2013 would have increased the total number of closed prisons by 48 facilities. However, juveniles represent a small fraction of incarcerated individuals. In 2013, there were 54,148 juveniles incarcerated, which pales in comparison to the more than 1.5 million adults in prison. Further, the juvenile criminal justice system is vastly different than the adult system (both inputs and outflows), making comparisons precarious.

This research has shown that prison closures are increasing, and at an increasing rate and the benefactors of closures on subpopulations is an important subsequent step. Aggregate analyses often mask effects for these subgroups that can often be detected in gender and race specific analysis. Future projects will explore how prison closures affect outflows by focusing on the racial and ethnic makeup of those released. Minorities have historically been the most likely to receive prison sentences, but there is no research that examines how prison closures are impacting their release rates. Furthermore, the effect of prison closures on female inmates has yet to be investigated. Although women are proportionally a small fraction of the total prison population, their numbers are growing and deserve equal attention by researchers.

Although the policy implications of prison closures are unclear at this early stage of decreasing imprisonment, the fiscal implications are quantifiable. In 2010, the average cost per inmate per year in the United States was $31,307 with the high end reaching $60,000 in

Connecticut, Washington State and New York, for a total cost to the United States of 64 billion. So just from 2007 to 2013, states that closed facilities saved a combined $2.7 billion.[8] The total cost to taxpayers for the 2015 fiscal year exceeds $74 billion, which exceeds the GDP of 133 nations. The money saved from prison closures and a reorganization of criminal sentencing policy could provide billions of dollars to fund education, healthcare or any number of social services that might divert future offenders from correctional institutions. For the first time in history a consensus is happening between the political left and right and the time is now for criminal justice reform (Clear 2015). Hopefully, this research will pave the way for those reforms.

CONCLUSION

This study described the timing, pace and pattern of prison closures and then utilized fixed-effects regression to analyze the effect of prison closures on overall imprisonment, prison admissions and releases. Between 2006-2013, 31 states closed 120 adult correctional facilities, representing a reduction of 86,429 prison beds. The results indicate that the rate of prison closures has accelerated over time and are clustered geographically in the Southern and Midwest regions, and concentrated in four states (Michigan, North Carolina, New York and Florida). States that closed prisons had higher initial imprisonment rates and demonstrated steeper declines from 2006-2013. States that did not close prisons tended to have somewhat lower initial imprisonment rates that remained relatively stable. Additionally, prison closures only had a

[8] State savings utilized by closing prisons was calculated using the mean cost of incarcerating and inmate for a year ($31,307) multiplied by the total number of beds closed (86,429). This figure is likely conservative due to closure states having higher inmate incarceration costs.

significant effect on prison releases indicating they are impacting offenders only after entry into the criminal justice system.

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