Implications of Criminal Justice System Adaptation for Prison Population Growth and Corrections Policy

As has been well documented, the size of correctional populations in the United States, especially, the U.S. prison population, grew dramatically during the past 30 years. The number of offenders in U.S. prisons increased five-fold from about 320,000 in 1980 to 1.6 million in 2009 (West, 2010). The total number of adults under correctional supervision (on probation or parole, in prison or in jail) increased four-fold from 1.8 million in 1980 to 7.3 million in 2008 (Bureau of Justice Statistics, 2010), so that by the end of 2008, about 3.2% of adults in the U.S. (or one in 31) were under some form of correctional supervision (Glaze and Bonczar, 2009).

Much research has been devoted to exploring the dynamics of the increase in the U.S. prison population, both in terms of its causes and consequences. A very general consensus emerging from this research is that the growth was driven primarily by policy responsiveness rather than criminal behavior, but there is much less consensus about the specific ways in which the variety of sentencing policies enacted during the 1980s and 1990s caused the growth and even less consensus on other factors associated with the growth. The uncertainty about how various factors contributed to the growth suggests that the state of knowledge about how sentencing and corrections policy affected prison population growth may be insufficiently grounded to guide policy making.

Moreover, even if the state of knowledge about the causes and consequences of prison population growth were more firmly established, it is not clear what type of policy guidance is desired. The often-repeated truism about the decentralized and political nature of criminal justice policy in the U.S. suggests why: There is not a consensus goal or aim of sentencing and corrections policy towards which policy guidance can be provided. For example, even in the current era of tight budgetary pressures in states when most are attempting to cut back on corrections expenditures, some states are expanding prison capacity to alleviate overcrowding.

On the other hand, with the unveiling of the Norval Morris project, the National Institute of Corrections has posed a question for research and policy: “How can we safely and systematically reduce the corrections population?” and has sponsored efforts to develop plans to suggest how this can be done. In 2008, a group of advisors to the Norval Morris project (the Keystone Group) set a goal of working to reduce the U.S. incarceration rate by 50 percent in eight years. Using as a blueprint the 2007 report Unlocking America: Why and How to Reduce America’s Prison Population (Austin, et al., 2007), the Keystone Group commissioned Austin to prepare a blueprint for achieving the goal of halving the U.S. incarceration rate. Austin’s report (2007, 2010) outlined an approach for reducing the prison population that is based on controlling admissions into prison by diverting certain categories of offenders and reducing length of stay for all groups to mid-1980s levels. Austin’s main point is to show that the reduction is feasible
if certain changes were made. His blueprint has not yet fully addressed the second part of the question, the impacts on public safety.

But diverting certain classes of offenders from prison may be difficult because the criminal justice system’s response to policy changes can be difficult to predict. That conclusion, drawn from research on prison population growth and the exercise I undertook to decompose changes in the prison population over time, suggests that it may be difficult to achieve goals for which there is widespread agreement, such as diverting lower-risk offenders from prison, unless there is a coordinated, criminal justice system-wide response to achieving this goal.

In the rest of this paper, I (first) report on the results of a two-period decomposition of the change in the number of prisoners under jurisdiction of state correctional authorities (the state prison population) into stages of criminal justice processing and from that exercise identify some implications for managing prison populations. Second, I summarize research on the growth of the prison population as it relates to the findings from the decomposition. Third, I suggest a general policy research agenda.

**Declining growth in state prison populations**

Motivating this exercise in understanding how the criminal justice system has responded to crime and how this has led to changes in the state prison population is the fact that since the mid-1990s the annual rate of change in the number of prisoners has declined (almost monotonically) from a peak of 9.9% in 1993 to a decrease of 0.2% in 2009 (figure 1). By 1996, the annual growth rate had declined to less than 5%, and during the decade of the 2000s, it averaged less than 1.5% per year.

> INSERT FIGURE 1

Accompanying the slowing in the growth in the number of state prisoners was a divergence between the number of offenders in state prisons and the incarceration rate of state prisoners, followed by an eventual leveling off and apparent stability in the incarceration rate during the 2000s (figure 2). Although shown on different scales, the number of state prisoners and the state prisoner incarceration rate both increased at similar rates during the 1980s through the mid-1990s. Thereafter, the two trends began to diverge, and the relative flatness in the slope of the incarceration rate during the 2000s implies that the increase in state prisoners has roughly kept pace with the growth in the U.S. resident population.

> INSERT FIGURE 2

The timing of the slowing of growth and flattening of the incarceration rate for state prisoners coincides directly with the conclusion of the implementation of the major sentencing reforms that were implemented during the 1980s and 1990s. As Stemen, et
al. (2005) and Sabol, et al. (2002) document, during these two decades states adopted a wide variety of reforms that arose from dissatisfaction with indeterminate sentencing, parole release, early release based on sentence reductions for good time, and the rehabilitative focus of corrections (Bales et al., 2010). Behind the changes in sentencing policy were shifting political conditions in which various groups helped to facilitate the introduction of a law-and-order regime (Gottschalk, 2006).

The panoply of sentencing policies that were adopted are well-known; they included replacing indeterminate sentencing and parole release systems with determinate sentencing and mandatory release; introducing various forms of structured- or guideline-based sentencing systems; introducing minimum sentencing requirements, both in the form of mandatory minimum sentences for various classes of offenders (particularly drug offenders) as well as the truth-in-sentencing reforms; violent-offender provisions that enhanced sentencing severity; expansion of the range of habitual offender laws; and eliminating or reducing good time reductions. But what is noteworthy about the array of reforms is that, per Stemen, by 1996, states virtually stopped introducing policies of these types. The noteworthy exception was that in a few states, habitual-offender statutes were introduced as late as 1999. Hence, it appears that by the middle of the 1990s a major era for sentencing reform had come to an end.

That the ending of the implementation of sentencing reforms coincided with the beginning of the slowing of the growth of the prison population may be mere coincidence. But by the same token, that coincidence in timing raises an important question: If by the mid-1990s, a sentencing structure that focused ostensibly on getting tough on crime was in place, why did the prison population start to grow at a declining rate and why did the incarceration rate for state prisoners exhibit a trend towards stability rather than continue to increase under the regime that was associated with its growth?

I cannot answer that question with the relatively simple analysis that I perform, but my analysis shows how various stages of the criminal justice system have been associated with slowing of growth over time. By identifying where the shifts occurred, I hope to identify some of the challenges associated with achieving goals of reducing prison admissions or shortening length of stay that are fundamental to the Norval Morris project’s goals as well as to point to areas for future policy research on correctional populations.

Prior efforts to decompose change in prison population growth

I perform two exercises in decomposing changes in the state prison population into various components or stages of the criminal justice system. I am interested in how the system responded to declining crime, which stages of the process were associated with the observed changes in incarceration rates, and whether the relative importance of
various stages changed over time as the rate of growth in incarceration slowed. I compare changes over two periods, 1994 to 2000, a period in which prison population growth was relatively fast, and 2000 to 2006, a period in which the prison population growth rate averaged about 1.5% per year and the trend in the incarceration rate nearly stabilized.

My effort is informed by prior efforts to decompose the change in the prison population into stages to represent the criminal justice system response to crime. The work, notably that by Blumstein and Beck (1999, 2005), Raphael and Stoll (2007, 2009), and Raphael (2009) identifies various stages of the criminal justice system that exert comparatively large influences on the prison population. Blumstein and Beck and Raphael and Stoll, for example, analyzed change in the incarceration rate for state prisoners in relation to crime rates and the criminal justice system response, as measured by arrests, prison admissions, and length of stay. They consistently found that state prison population growth during the 1980s and 1990s was driven by sentencing policy, as measured by the effects of admissions and length of stay on the size of state prison populations.

More specifically, Blumstein and Beck (2005) estimated the contributions to changes in state prison populations of crimes, arrest, prison admission, and expected time served for offenders entering prison on a new court commitment for two periods, 1980 to 1991 and 1992 to 2001. They estimated expected time served on new court commitments as the ratio of the total prison stock to the number of new court commitments. Under stable population assumptions, this estimate includes the increment of time served for parole violations arising from new court commitments. Between the two periods, they uncovered changes in each factor’s relative contribution to the overall change in the prison population. For the 1980 to 1991 period, crime rates accounted for 22% of the change, but for the 1991 to 2002 period, the contribution of crime declined to zero. The contribution of prison admissions, which accounted for 63% of the change from 1980 to 1991, declined to 40% during 1991 to 2002. The declining contribution of prison admissions between the two periods was picked up by expected time served. Expected time served’s contribution to the growth in state prison populations increased to 60% during the 1991-2002 period, up from 40% in the first period. By dividing the 1980 to 2002 period into subperiods, Blumstein and Beck are able to show a change in the criminal justice system’s response over time, specifically, the increased importance of length of stay in prison to the growth in the prison population.

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1 The measure of expected time served measures the time to be served by persons entering prison on new court commitments. It takes into account time served by those not yet released, those released by any method (including death), and it takes into account the incremental time served upon recommitment for parole violations on an initial new court commitment. When prison population and admissions growth are stable, the stock to flow ratio estimate of expected time served used by Blumstein and Beck will equal actual time to be served by a cohort of new court commitments.
Taking a slightly different approach Raphael and Stoll (2009) (summarized in Raphael 2009) present a model of a steady-state incarceration process that relates crime rates to prison admissions and time served. They decompose changes in incarceration rates between 1984 and 2002 into behavioral (crime) components, prison admissions, and expected time served. A notable feature of their approach is their effort to take into account the impacts of incarceration on crime and to assess the policy response in relation to these effects. To estimate the impact of incarceration on crime, they estimate the counterfactual crime rate—the crime rate that would have occurred but for the impact of incarceration—and analyze changes in prison admissions and length of stay relative to this counterfactual rate. Their counterfactual crime rates are based on estimates of the combined incapacitation and deterrent effects on crime (Johnson and Raphael, 2007). By explicitly incorporating the endogenous relationship between crime and incarceration into their decomposition, they are able to correct for possible overestimates of the effects of policy response to crime.

Raphael and Stoll’s method for estimating time served also differs from the stock/flow approach used by Blumstein and Beck, but their estimates are consistent with those derived by Blumstein and Beck. Raphael and Stoll derive estimates of time served for cohorts of prison admissions by directly measuring actual time served for those offenders in their sample for whom this can be observed and estimating time served for those whose data on time served are censored. To do this they use BJS data from the National Corrections Reporting Program (NCRP), which contains individual, offender-level records of prison admissions and releases. They create synthetic prison admissions cohorts by searching for and matching detailed categories of offenders in admissions cohorts to the same categories in subsequent years’ release cohorts. For offenders serving an exceedingly long time in prison, they estimate a closed form distribution and apply it to their admissions records.

With their attempt to consider the impacts of incarceration on crime and the subsequent impact on incarceration rates, Raphael and Stoll conclude that crime (the behavioral component of their model) accounted for about 17 percent of the nonparolee incarceration rate increase between 1984 and 2002; they attributed the remaining 83% of the total change to time served and admissions combined, where increases in time served accounted for about a third (35%) of the total change in incarceration rates and prison admissions (the propensity to incarcerate given the crime committed) accounted for 48 percent of the increase.

Using a different approach to analyze the effects of prison admissions and time served on the change in state prison populations in 11 states, Pfaff (2009) concludes that prison admissions, not length of stay, accounted for most of the change in the prison populations in the 11 states in his analysis. Pfaff first calculates the actual distribution of time served for prison admissions in 11 states using BJS’ NCRP data over the period from 1983 to 2002. Pfaff does not report mean expected time served for his admissions cohort, unlike Raphael & Stoll who computed means from their distribution by assuming
expected values for time served for the intervals of their empirical distributions. Rather, Pfaff calculates and reports the actual percentiles of the distribution of time served until release for prison admissions over the period from the early 1980s through 2002. He reports the median, 75th, and 90th percentiles of the distribution for each state. He finds that the typical inmate serves one to two years (median time) and 75% of inmates are released within 4 to 5 years of admission and (2) the trends in distribution of time served generally were comparatively constant over time, at least for median time served.

He then develops two counterfactuals to assess the effects of admissions and time served on the change in the prison population. First, he simulates change in prison populations if the level of admissions was fixed at an initial year and releases were allowed to vary according to their actual patterns; second he simulates change if the release patterns were fixed at an initial year and admissions were allowed to vary according to their actual patterns. He concludes from his counterfactual analyses that admissions growth rather than release patterns account for change in prison populations in his 11 states. Pfaff does not quantify the magnitude of this effect, but his graphical analysis shows that release patterns (reflecting time served) have minor effects on prison population growth.

Pfaff’s analysis raises questions about the effects on prison population growth attributed to time served, but as he points out, his data are limited to 11 states, not the nation as a whole, and his group of 11 excluded several large states (e.g., Pennsylvania, Texas, New York, Florida, Georgia) whose patterns could have differed from those for who he was able to generate distributions. Moreover, by tracking actual time served for admissions cohorts, he was not able to estimate a 99th percentile of the time served distribution, as the tail of the distribution could reflect sentences served by the most serious offenders. He acknowledges this limitation and points out that many of the most serious offenders—those sentenced to life without parole or death sentences and that would fall within the 99th percentile of time served—may never be released.

As Pfaff also acknowledges, interpreting the median or other percentiles of the distribution of time served as indicators of changes in time served could pose inferential challenges. For example, if a state locks up a larger number of less serious offenders (with shorter sentences) while at the same time increasing the length of time served by the most serious offenders, median time served could decrease while the prison population increases, as the increase in time served by the most serious offenders would drive up the size of the prison population.

The current exercise

In decomposing change in the prison population, I generally follow Blumstein and Beck’s approach but make two modifications. First, in decomposing the change in state prison populations (the state prisoner incarceration rate) into stages I add a stage for
prosecution to the stages that they used. Specifically, I decompose the change in the state incarceration rate into stages associated with criminal behavior (offenses), police responsiveness (arrests), prosecution (felony convictions), sentencing decisions (prison admissions), and expected length of stay in prison. Blumstein and Beck combined the felony conviction and sentencing stages into a single stage for prison admissions, which measured the transition from arrests to new court commitments into prison. The addition of the felony conviction stage provides for the measure of an additional decision point, as the movement from arrests to new court commitments could arise either from changes in the number of felony convictions or changes in the probability of imprisonment given conviction.

Second, to assess adaptation or change in the criminal justice system response, I also decompose a longer-run period into two subperiods. Specifically, the longer-run period that I use runs from 1994 to 2006. The two subperiods run from 1994 to 2000 and from 2000 to 2006. The reasons for these periods are as follows: The base year, 1994, occurred during a period of relatively rapid increase in prison population growth, so I chose it to represent this period. The midpoint, 2000, represents a point in time when the trend in the incarceration rate for state prisoners began to flatten out. The end year, 2006, was chosen because it was the most recent year for which BJS data on felony convictions—the data used to represent the prosecution stage—were available at the time of this analysis. Therefore, the period from 1994 to 2000 covers a period of comparatively rapid increase in incarceration, while the period from 2000 to 2006 covers a period of comparatively little change in the incarceration rate. I did not replicate the analyses of Blumstein and Beck or of Raphael and Stoll for the period of the 1980s and 1990s; rather, given the consistency in what they found, I relied on their findings to describe that period. Third, following Raphael and Stoll, I incorporated into the analysis estimates based on counterfactual crime rates.

Unlike the prior work, which used annual observations for each stage of processing for the years covered by the analyses and averaged effects across all years within periods covered, I chose points in time and analyzed changes between these points. The absence of annual data on felony convictions was one reason for this choice; thus, my results are potentially biased by the choice of years; however, sensitivity analysis of trends suggests that my basic findings are not affected by the chosen years.

As the point of this exercise is to determine adaptation of the criminal justice system, I summarize the key findings here. There is evidence of adaptation by the criminal justice system from 1994 to 2006, specifically:

- Violent crime rates declined over time and the decline was associated with an increase in convictions and length of stay. The majority of the decline occurred from 1994 to 2000, and during that period, the increase in the number of convictions per violent crime arrest and the increase in expected time served for violent offenders accounted for the majority of the increase in violent offenders.
in state prisons. However, between 2000 and 2006, expected time served for violent offenses remained relatively flat, but the increase in convictions per arrest was the major contributor to the increase in violent offenders in prison during this period. In both periods, the increase in convictions led to an increase in prison admissions for violent offenders, as the ratio of prison admissions to convictions remained relatively constant.

- Property crime offenses followed a pattern similar to that of violent crimes for the 1994 to 2000 period, but from 2000 to 2006 the expected length of stay for property offenders did not increase (as it did for violent offenders). As with violent offenders, the increase in convictions per arrest, rather than an increase in the use of prison given conviction, was responsible for increases in prison admissions of property offenders.

- For drug crimes, the increase in prison population stemmed from increases in drug arrests. Convictions, prison admissions rates, and length of stay did not have major impacts on the drug incarceration rate with the exception that length of stay reduced the drug incarceration rate from 2000 to 2006.

- The source of prison admissions growth differed between violent and property crimes on the one hand and drug crimes on the other hand.

- Decreases in length of stay for property and drug offenses from 2000 to 2006 contributed to offsetting the upward effects of convictions and arrests, respectively.

**Trends in prison population growth and incarceration rates**

The core imprisonment data are shown in table 1. Between 1994 and 2006, the number of sentenced prisoners in state prisons increased by almost 417,000 persons (from 914,000 to 1,331,000) and the majority of this increase came from the increase in violent offenders in state prisons. The increase in violent offenders accounted for almost two-thirds of the overall increase in state prisoners over this period. Most of the increase in violent offenders occurred from 1994 to 2000, the period of more rapid expansion of the prison population. However, during both subperiods shown in table 1, the number of violent offenders in state prisons increased at a faster rate than the overall rate of growth of state prisoners. The increase in property offenders accounted for about one-third (32%) of the total increase in state prisoners between 2000-2006. Drug offenders’ contribution to the increase in state prison populations decreased from 16% of the total change between 1994-2000 to 12% of the total change between 2000-2006.

>>>>>> INSERT TABLE 1 <<<<<<<<<<<
The incarceration rate for state prisoners—the dependent variable in the decomposition analysis—increased to 445 from 351 per 100,000 residents. As described previously, the majority of this increase occurred between 1994 and 2000, when the incarceration rate increased to 429 from 351 per 100,000. Violent offenders’ incarceration rate increased from 166 to 235 per 100,000, and within the broader violent offense category, the incarceration rate increased for all subcategories.

The property and drug offense incarceration rates did not increase as rapidly as the increase for violent offenders. Overall, for property offenders, the incarceration rate increased from 81 to 85 per 100,000 between 1994 and 2000 and remained at that level through 2006. The drug offender rate increased from 78 to 89 per 100,000 from 1994 to 2000 and by 2006, it showed a slight decline to 87 per 100,000.

The analysis of incarceration rates shows that from the mid-1990s into the later part of the 2000s, the emphasis of states’ incarceration practices was on violent offenders and not on property and drug offenders. By 2000, the incarceration rates for property and drug offenders had stabilized from the increases that had occurred during the 1990s, and into the 2000s, only for violent offenders did the incarceration rate continue to increase. Specifically, from 2000 to 2006, the overall incarceration rate for state prisoners increased by 16 points from 429 to 445, while the incarceration rate for violent offenders increased by 27 points (from 209 to 236). The increase in the incarceration rate for violent offenders was offset by a decrease in the rate for drug and other offenders. Hence, as state prison population growth has slowed, the emphasis of incarceration policy has been on violent offenders.

Trends in offending rates

Because the UCR does not report offense data for all crime, I followed prior efforts to decompose prison population growth by using arrest rates for certain crime categories to represent their offense rates. These include fraud, drug offenses, and weapons offenses. The total offense rate was based on a combination of offenses for Part I crimes plus arrests for Part II crimes net of arrests for suspicion, curfew, and runaway (as these crimes pertain primarily to juveniles).2

Table 2 documents the well-known decline in crime. From 1994 to 2006, the number of Part 1 violent offenses per 100,000 residents declined from 714 to 474 (or a one-third drop in the rate of violent crime) and the property crime rate declined by 28%. For both Part 1 violent and property crimes the bulk of the decline occurred between 1994 and 2000.

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2 In this table, the violent crime category includes only the Part 1 UCR violent crimes of murder, rape, robbery, and aggravated assault; other violent crimes are not included within the category total.
For the offense categories based upon arrest data, particularly drug offenses, a different pattern emerges. The drug offending (arrest) rate increased over this period but the overall increase in the drug offending rate was due to an increase in the drug possession arrests rate, which increased from 381 to 521 per 100,000, while the rate for drug trafficking decreased from 139 to 111 per 100,000. As drug offending is measured by arrests rather than reported crimes and policing of drug crimes is highly discretionary, it is difficult to determine the extent to which the increase in the trend stems from increases in enforcement activities by law enforcement or increases in drug offending behavior. If the trends stem from underlying changes in offending behavior (assuming no change in law enforcement activity), then the changes in drug possession and drug trafficking arrests signal a fairly sizeable change in the nature of drug offending.

The other crime type of note in which the offending rate (when measured by arrest rates) departed from the pattern of comparatively large decline was other violent crime, a category derived primarily from the simple assault arrests, many of which include crimes of intimate partner or domestic violence. The comparatively slower decline in offending rate for simple assaults could be associated with increased reporting (and arresting) for domestic violence.

The not unreasonable assumption of using drug and other arrest rates to measure offending rates for these offense categories has implications in assessing the stages of the criminal justice system associated with imprisonment rates. These implications (discussed later) in turn affect the areas in which research is required to better understand how to manage correctional population change.

Among the implications of these trends in offending rates for prison population growth are that if policy variables remained constant at their 1994 levels, one would expect to observe a decrease in the number of admissions into prison upon conviction for violent and property offenses and an increase in the number of admissions for drug crimes. If other policy variables remained constant and expected length of stay remained at 1994 levels, then the expected number of violent and property offenders in 2006 would decline relative to 1994, and the expected number of drug offenders would increase.

Trends in arrests

The second panel of table 2 reports the ratio of arrests per 100 offenses. This ratio represents the number of arrests within a year over the number of reported crimes within a year. Arrests occurring in one year may actually relate to crimes that occurred in a prior year, so these ratios are not strictly transactions of arrests per crime. Nonetheless, the trends in the arrest rates provide indications of the law enforcement response to crime.

The trend in arrest-to-crime ratios for all violent crimes is comparatively constant over time, while for specific categories of violence, the trends varied. Declining arrest-to-
crime ratios for homicide and rape were offset by a very slight increase in the ratio of aggravated assault and a flat trend for robbery. As robbery and assault comprise much larger fractions of all violent crime arrests, their trends drive the overall trend for all violent crimes. Conversely, the arrest-to-crime ratio for all property offenses trended downward slightly over the entire period. This decline stemmed from a decline in the larceny arrest-to-crime ratio, and as larceny offenses comprise the largest share of property crime arrests, changes in this category dominate the overall trend.

The relatively small changes in the trends in arrest-to-crime ratios suggest that policing changes would exert comparatively small effects on prison population change, all else being equal.

*Trends in felony convictions*

The third panel in table 2 shows the ratio of the number of felony convictions per 100 arrests. The felony conviction stage measures a combination of prosecution and court responsiveness, although given the high rates of conviction given that charges are filed, the ratio of felony convictions to arrests may better reflect prosecutors' decisions to move forward on a case than judicial decisions related to case. Given the ratio of prison admissions to convictions, the next stage better reflects judicial decision-making. Hence, the felony conviction to arrest ratio gives an indication of prosecutors' response to the case brought to them by the police.

As with the arrest-to-crime ratios, the conviction-to-arrest ratios are based on the number of felony convictions occurring within a year, even though case processing statistics that track time from arrest-to-conviction show that for some crime types (e.g., murder) median time from arrest to conviction is about a year, although the median case processing time for all offenses is about three months (Cohen and Kyckelhahn, 2010). In addition, arrests reported in the UCR include crimes that are not prosecuted as felonies, so this ratio should not be interpreted strictly as a probability of felony conviction given felony arrest. Nonetheless, available data from BJS suggest that the trends in case processing times are relatively constant, and the ratio of convictions-to-arrests provide an indication of prosecutors' responses to crime.

Not shown in the table, the total number of felony convictions increased by almost 30% over this period from 872,000 to 1.1 million (Rosenmerkel, et al., 2009). The increase in the number of felony convictions is indicated by the overall increase in the ratio of felony convictions to arrests, which increased (by 31%) from 6.1 felony convictions per 100 arrests in 1994 to 8 per 100 in 2006.

The overall increase in the felony conviction rate came from relatively sizable increases in the rate for violent and property offenses, while at the same time, the conviction rate for drug offenses remained constant. Felony convictions per 100 arrests for violent crimes increased by almost 60% between 1994 and 2006 (from 21 to 34). The increase
for violence came from a near doubling in the rate for aggravated assault (from 12 to 23 per 100 arrests between 1994 and 2006). For other types of violent crime, the trend in felony convictions per arrest was upward, with variations in the rate of increase, and for some crime types, the upward trend leveled off after 2000 (e.g., murder, robbery).

The felony conviction rate for property crimes also increased (from 13 to 21 per 100 arrests). The burglary conviction rates increased by a third, and the conviction rate for fraud dropped between 1994 and 2000 before increasing in 2006. The burglary and fraud conviction rates exhibited the largest upward trends.

By contrast, the felony drug conviction to drug arrest ratio for all drug offenses remained constant at 20 convictions per arrest in 1994 through 2006. Within drug offenses, the felony conviction-to-arrest ratio for drug trafficking and drug possession arrests diverged. The number of felony convictions per 100 drug trafficking arrests increased from 46 to 64 per 100, while this ratio for drug possession arrests remained relatively constant (with a slight dip between 1994 and 2000). In response to an increase in the volume of drug possession cases, the relatively constant proportion of cases resulting in a conviction suggests a comparatively large volume of drug possession cases being diverted from felony prosecution. This may reflect the presence of drug courts providing an opportunity for alternatives to prosecution.

The increase in conviction rates for violence and property crimes can be expected to exert upward pressure on prison populations. The question raised by the increase in convictions is whether its effect on prison population change is to offset or overcompensate for the effect of decline in violent and property crime rates. The increase in drug arrest rates combined with a constant conviction rate leads to the expectation of an increase in drug commitments into prison, unless there has been a change in the court’s response to convictions.

Trends in prison admissions

Figure 3 shows the trends in the number of new court commitments into prison from 1994 to 2006 for violent, property, and drug offenders. For each crime type, the number of admissions generally increased over the entire period, with the exception of property offenders. For property offenders, the trend in the number of admissions was relatively flat from 1994 to 2000 before it increased. For drug offenders, the number of new court commitments trended upward at a faster rate than did the number of violent offender admissions. As the analysis of trends below reveals, the source of increase in admissions varied among these crime types.

>>>>>>> INSERT FIGURE 3 <<<<<<<<<<<<
Table 3 shows trends in the ratio of prison admissions for a new court commitment to felony convictions. This ratio reflects judicial decision making, whether or not constrained by guidelines or mandatory minimum sentencing laws.

Across major crime categories—violent, property, and drug offenses—the ratio of new court commitments to convictions increased very slightly or remained flat over the 1994-2006 period. Increases for all violent and all property offenders were on the order of 1 or 2 new court commitments per 100 convictions, while within specific offense groups, there were larger increases or declines over the period. Notably, the ratio of new court commitments per murder conviction exceeded 100, meaning more prison admissions than convictions. These higher than plausible ratios reflect some measurement problems associated with crime classification and some case-processing problems associated with the timing of convictions in relation to prison admissions. Nonetheless, the increase in the ratio of new court commitments to convictions for murder suggests no decrease in the likelihood that a convicted murderer would be sentenced to prison. And while the ratio of new court commitments to convictions for rape decreased, the ratio for other sexual assault increased over time. These differences also reflect offense classification and measurement issues that arise from the comparison of different data sources (the NCRP for admissions and the NJRP for convictions). Overall, though, for rape and sexual assault, the general trend for these two offenses combined is one of an overall slight increase in the ratio of new court commitments to convictions. Robbery and aggravated assault crimes also exhibited slight increases in the ratio of prison admissions to convictions.

A similar pattern of a general increase in new court commitments given conviction occurred for property offenders, even though the patterns for specific types of property offenses varied. For example, burglary rates of prison commitments increased from 1994 to 2000 then declined slightly, while those for motor vehicle theft increased consistently over the 1994 to 2006 period.

The trend in the ratio of prison commitments to convictions for all drug crimes was flat throughout the entire period, although there is some indication of a slight increase in the ratio for drug possession offenses and a decline for drug trafficking offenses.

The court’s response to convictions was to maintain a high level of use of prison for serious violent offenses and possibly even increase slightly the use of prison given conviction for serious violent offenses. For property offenses, the trend in the use of prison also did not decrease and exhibited a slight upward movement, while for drug offenders, the trend in the use of prison was flat.

Given the relatively small changes in the ratio of prison admissions to convictions for violent and property offenders, the general increase in the number of commitments for
these two crime categories stemmed from the increase in convictions per arrest. For drug crimes, the general increase in commitments stemmed from the increase in drug arrests.

Implications of these trends for prison populations are that the number of prison admissions for violence and property offenses would increase slightly because of the increase in the probability of receiving a prison sentence. By comparison, the relative flatness in the probability of receiving a prison sentence for all drug offenses implies that increases in drug offender admissions would arise from another source rather than the court’s decision making.

**Trends in expected length of stay**

Expected length of stay is measured as a stock to flow ratio, where the stock is the number of offenders in prison at yearend and the flow is the number of new court commitments. Following Blumstein & Beck (1999), this measure of length provides an estimate of the expected time served on a new court commitment, taking into account the probability that a new court commitment will return to prison as a conditional release violator and serve additional time on the original commitment. This approach to estimating time served assumes that the proportion of new court commitments that return to prison as parole violators is constant. During the 1994 to 2006 period, parole violators as a fraction of all admissions into prison remained at about 35% of the total. If the fraction of commitments that were parole violators was increasing, this measure would overestimate mean expected time served.3

The stock/flow estimates of time served show an overall increase from 2.3 years in 1994 to 2.8 years in 2000, followed by a slight decline to 2.5 years in 2006. Expected time served varied by crime type, with violent offenders serving longer time than property offenders and property offenders serving longer than drug offenders. Time served for violent offenders increased from 4.6 to 5.8 years, but the majority of this increase occurred between 1996-2000. Within violent offenses, time served increased for each category except aggravated assault. For aggravated assault, time served in 2006 (3.1 years) was slightly lower than in 1994 (3.2 years).

For all property offenses, the trend in expected length of stay followed the trend for all violent offenses: an increase from 1994-2000, followed by a leveling off. Time served on

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3 Another approach to estimating time served by parole violators is to take separate stock/flow ratios for prisoners who entered as new court commitments and for prisoners who entered as parole violators. Under this approach, the estimate of time served pertains to each type of admission and not to the total time served on a new court commitment. This approach requires few assumptions about changes in the number of parole violators and it generates a separate estimate for the time served on the original new court commitment and for each entry as a parole violator. However, this approach also requires data on the type of commitment of the prison stock, and these data were not consistently available during the study period.
new court commitments for burglary offenses increased between 1994 and 2000 (from 2.6 to 2.9 years) and then leveled off or declined slightly by 2006. For larceny, time served declined over the period, as occurred for motor vehicle theft and fraud.

For drug offenders, the trend in expected time served on a new court commitment decreased slightly from 2000 to 2006 (by 4 months) after increasing to 2.3 years from 2.1 years from 1994 to 2000.

The upward trends in time served on a new court commitment for violent offenses suggest that time served will exert upward pressure on the prison population, especially for more serious offenses. For property and drug offenses, the expectation is that the effect of time served will vary between periods, first exerting upward pressure on the prison population, then diminishing during the later period.

*Trends in parole violators*

Over time, parole violators increased as a percentage of commitments, and their contribution to prison populations has increased. However, during the study period, parole violators comprised about 35% of admissions into state prisons, and their contribution to admissions remained relatively constant (Sabol, West, and Cooper, 2009). While parole violators are an important segment of the prison population, their number of admissions do not figure directly into the decomposition exercise because their contribution to prison population change is captured in the time served measure.

*Decomposition of changes from 1994-2000*

Table 4 shows the results of the decomposition of the change in incarceration rates for the 1994 to 2000 period. The results for the first period (1994-2000) indicate that had the criminal justice system response in 2000 remained as it were in 1994, the overall decline in crime would have led to a reduction in the incarceration rate of about 40 points. The decline in violent crime would have reduced the violent incarceration rate by 48 points, and the property incarceration rate would have declined by 18 points. Conversely, as drug crime rates increased during this period, the increase in drug crimes accounted for a 6-point increase in the incarceration rate for drug offenders. In terms of the number of prisoners, the overall decline in crime would have resulted in about 110,000 fewer prisoners in 2000 than the actual number if the criminal justice system response had not changed from what it was in 1994.

>>>>>> INSERT TABLE 4 <<<<<<<<<<<<<<<<<<<<<<<<<

In terms of the overall incarceration rate, the increase in convictions per arrest and expected length of stay exerted strong upward influence on the incarceration rate. The conviction to arrest ratio accounted for a 33-point increase in the overall incarceration rate, almost completely counter-balancing the effects of the decline in crime rates. The
increase in expected time served contributed a 74-point increase to the incarceration rate.

The contribution of the conviction stage coupled with the relatively small effects associated with the prison admission stage (the ratio of new court commitments to felony convictions) indicates that the increase in new court commitments into prison was due primarily to the increase in felony convictions and not to an increase in judges’ use of prison for convicted felons. The number of new court commitments per violent felony offense increased during this period (and accounted for an 8-point increase in the incarceration rate for violent offenders, as well as a 10-point increase in the overall incarceration rate), but the increase in the use of prison was small relative to the increase in the volume of felony convictions.

As table 4 shows, the amounts of the contribution to the change in the incarceration rate and the direction of the influence can be positive or negative. To provide relative magnitudes of effects, I calculated the percent contribution of each stage to the sum of the absolute value of the amount of change attributable to each stage. This calculation shows that overall the conviction stage and time served combined to account for 68% of the absolute value of changes; crime rates contributed 25% of the total change, and the remaining 7% was attributed to the prison admission-to-conviction ratio (or the sentencing stage). These overall findings are generally consistent with previous findings that show that changes in crime account for a minority of the increase in incarceration rates for state prisoners.

Across violent and property crimes, the general direction of the criminal justice system response was consistent, but the magnitude of the response varied. (The discussion that follows is based on relative contributions of each stage to the sum of the absolute value of each stage’s contribution). The conviction stage and expected time served accounted for 55% of the total changes in incarceration rates for violent offenders and about 50% of the increase for property offenders. Arrests per crime contributed more (12%) for property than for violent offenders (4%). For both violent and property crimes, the decline in crime accounted for about one-third of the total change.

For drug offenses, the pattern differed. Increases in drug crime rates (measured by arrests) accounted for 45% of the increase in drug incarceration rates between 1994-2000, and increases in expected time served accounted for another 44%. The conviction stage contributed only 1.6% to the total change, while the prison admission stage add 10%, the largest contribution for this stage among the crime types.

Decomposition of changes from 2000-2006

Table 5 shows the results for the 2000 to 2006 period. During the 2000 to 2006 period, the response of the criminal justice system changed from that observed for the first period. Notably, while crime rates continued to exert downward pressure on the
incarceration rate, the relative magnitude of the effects diminished. The major
difference between the two periods is that the effects of time served changed
dramatically. From 1994–2000, time served consistently exerted upward pressure on
the prison population across all offense categories. During 2000–2006, time served
contributed to reductions in the incarceration rate for property and drug offenders, and
while it increased the incarceration rate for violent offenders, the magnitude of the
effect of time served on violent incarceration rates diminished.

> INSERT TABLE 5

Convictions continued to push up the incarceration rate for violent and property
offenders but made a negligible contribution to the incarceration rate for drug
offenders. Overall, the conviction stage had the largest upward effect on incarceration
rates during 2000 to 2006, but the upward pressure on incarceration rates from the
conviction stage was almost entirely offset by the effects of time served, which occurred
primarily for drug and property offenders.

For drug offenders, the continued increase in drug crimes (arrests) would have led to an
increase in the drug incarceration rate of 11 points were it not for the offsetting effects
of time served, which accounted for a 14-point reduction in the incarceration rate of
drug offenders. For violent and property offenders, the effects of crime were to reduce
the incarceration rates for these groups, but the magnitude of the effects of crime
decreased during 2000 to 2006 (as compared to 1994 to 2000).

Adaptation of the criminal justice system and implications for managing growth

Overall, and as occurred during 1994 to 2000, the criminal justice system response was
largely responsible for changes in incarceration rates during the 2000 to 2006 period.
What is most striking about the two periods is the fairly dramatic change in the effects
of length of stay on incarceration rates. One possible explanation for the change in the
effects of length of stay is that the estimates of length of stay for 1994 are
underestimates, and the underestimate in 1994 results in an increase in length of stay
during the 1994 to 2000 period. The resultant increase, in turn, accounts for the effects
of length of stay on the growth in the prison population over the 1994 to 2000 period.
Recall that these estimates are based on stock/flow ratios that assume a stable
population model. As Patterson and Preston (2008) point out, however, stock/flow
ratio estimates of length of stay can be biased downward (compared to their gold
standard of life table estimates assuming stationary population) during periods of prison
population growth. Their simulations show that as the growth rate of the prison
population increases, the magnitude of the bias in the stock/flow estimate increases. As

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4 I conducted a similar decomposition of changes in prison admission rates. The results of that analysis
also show that the conviction stage, rather than the prison admission decision, was primarily responsible
for admissions growth. Results are available upon request.
the growth rate of the prison population in 1994 (9%) was faster than in 2000 (slightly more than 1%), the stock/flow estimates of time served could be biased downward more for 1994 than 2000. The effects of such a bias would be larger for violent offenders than others, as the growth in violent offenders was faster than for other offense groups. Ultimately, if the estimates of time served in 1994 are biased downward, this means that the contribution of length of stay to prison population growth during the 1994 to 2000 period was less than reported above.

For the 2000 to 2006 period, as the growth rate in the prison population was roughly comparable (about 1% to 2%), any downward bias in length estimates due to prison population growth are likely to be negligible. Consequently, the effects of length over the 2000 to 2006 period, slowing prison population growth for property and drug offenders and continuing to slightly increase it for violent offenders, are likely to hold even when using a measure of length of stay that relaxes the assumption about stable populations.

Ultimately, a downward bias in the estimate of length of stay for a base year of comparison (such as 1994) raises a timing question. If length of stay either stabilized or declined over time, then eventually, it would contribute to the slowing of the growth of state prison populations. The question becomes one of when this occurred. Whether that occurred in 2000 (as suggested by the analysis above) or before 2000 is not relevant to this discussion, as since 2000, changes in length of stay have contributed to slowing in growth in the prison population.

The findings about the conviction stage, which I interpreted as representing prosecutors’ decisions to bring forth criminal cases to trial, represent a new contribution to this type of decomposition analysis. What they point out is that admission growth has been driven primarily by the cases brought to trial and not by court decisions to increase the use of prison sentences for convicted offenders. During both periods, the prisons admission stage (representing judges’ sentencing decisions) contributed relatively small amounts to the change in incarceration rates, but the conviction stage contributed relatively large amounts. This raises two important questions.

First, in the discussions about reducing prison population that the Norval Morris Project has sparked (e.g., Austin 2010), the goal of that effort is to be achieved in part by diverting certain categories of offenders away from prison by reducing the use of prison sentences. However, the analysis reported above indicates that diversion is complicated by the fact that judges’ sentencing decisions are not the only contributor to diversion or prison admissions. Rather, as shown above, prosecutors’ decisions to go to court with cases resulted in an increase in prison admissions even though judges did not increase the rate at which they sentenced offenders to prison. Similarly, enhanced policing of drug crimes also led to increases in prison admissions, even though prosecutors did not increase the rate at which they proceeded with drug cases and judges did not increase the rate at which they sentenced drug offenders to prison.
diversion is to be achieved, it will have to be accomplished in part by coordinating efforts with prosecutors and the police.

Second, the increase in felony convictions raises questions about the composition of cases coming before the court. Given the limitations of the data used in this analysis, it is not possible to determine whether the nature and severity of convicted cases differs over time. In other words, it is unknown whether the offender types in cases prosecutors are bringing to the courts differ in terms of the distribution of risk they pose. On the one hand, the riskiness of the offender pool brought to the court could remain the same over time even as crime rates declined, but assessing this would require detailed data on offenses and criminal history of convicted offenders, which currently are not available. An alternative explanation for the volume of cases brought to the court is one based on capacity, that is, on the number of prosecutors and their workloads. Under this explanation, even as crime rates decline and the number of arrests per crime remains constant (as occurred in both periods above) the number of convictions per arrest could increase due to capacity of prosecutors’ offices to move the cases into court.

Analogous to the conviction stage, the drug arrest stage also raises questions that relate to managing correctional populations. Not only did drug arrest rates increase during both periods that I analyzed, but the increase came primarily from increases in drug possession arrests, as the drug trafficking arrest rate decreased. In subsequent stages of criminal justice processing, the response moderated the effect of increasing arrest rates. But the increase in drug arrests carried through the system and led to the increase in prison admissions for drug crimes.

From the perspective of managing prison populations, the response of the police to the decline in violent and property crimes by increasing arrests for drug possession crimes needs to be taken into consideration. What’s unknown from the UCR arrest data is the extent to which arrests for drug possession reflect a lessening of charges (e.g., smaller quantities of drug sales get classified as drug possession) or an increase in enforcement for relatively minor offenses. The enforcement of drug possession laws may represent a “broken windows” or zero-tolerance strategy, for example, New York City’s smoking marijuana in public view laws. In this case, despite a lack of evidence that such approaches reduce crime (Harcourt and Ludwig, 2007), the policing of disorder crimes has strong political support. This has implications for diversion policies. If the types of drug crimes going forward for prosecution are those involving sales (possession with intent), this may present more challenges for diversion than if the cases going forward are drug possession cases.

More generally, the police response to drug crimes also illustrates the complications of the criminal justice system response to crime and the potential effects on prison populations. As violent and property crimes went down and arrests per these types of offenses stabilized, arrest rates for drug crimes went up. What this meant for prison
admissions was that the source of admissions varied across stages of the process. Arrests for drug crimes led to increases in drug crime admissions, while convictions led to increases in admissions for violent and property crimes. Hence, if diversion from prison is one of the methods designed to reduce the prison population, then the police response needs to be coordinated along with the prosecutors’ response in order to achieve these goals.

A final observation about the adaptation of the criminal justice to changes in crime over these two periods is that there has been an increased emphasis on violent crimes. Admissions and length of stay for violence increased during both periods, and admissions growth stemmed from increases in convictions of felony offenders. Expected time served for violent offenders appears to have stabilized over time, but it has not decreased, as has occurred for property and drug offenders. The result is a state prison population that consists disproportionately of violent offenders and that through reductions in length of stay is reducing the size of non-violent offenders in prison.

A major limitation of this analysis is that it is limited to data describing the offenses of offenders. A more thorough analysis of the response of the criminal justice system to changing crime patterns would include information on the criminal history of offenders. The combination of offense and criminal history would allow for an assessment of how the system responds to offender risk, as represented by these two variables.

**A brief foray into empirical research on prison population growth**

The former discussion aimed to describe the criminal justice system’s adaptation over time and the consequences for prison population growth. It is severely limited in that it cannot address causal issues related to prison population growth even if it can point out areas for consideration and research. To remedy this deficiency to some degree, I provide a cursory overview of empirical research on the growth of the prison population. I rely heavily on reviews done by others, notably John Pfaff’s (2008) systematic review of the twenty major studies he could locate on factors influencing prison population growth. The general consensus from this review is that the state of knowledge about the particular factors affecting growth is relatively rough, and the main reason for the relatively weak state of knowledge is that it is really difficult to identify the causal effects of policy and crime on prison population growth when these factors are inter-related causally.

In his thorough review of empirical studies on prison population growth, Pfaff (2009) identifies four broad schools of thought about prison population growth, as well as several less comprehensive theories. He classifies the work of twenty major studies that he identified in a review of every empirical article on prison growth that was published in fifty-nine journals in criminology, economics, law, political science, and sociology between January 1990 and May 2006 into theories related to crime, to economics,
demographics, and politics. He also identifies four less global explanations, which include the deinstitutionalization of the mental health system, the expansion of prison capacity, the imposition of population caps by federal courts, and the fiscal health of the states.

He reviewed the studies’ findings and assessed their methodologies, focusing on the choice of dependent variables, simultaneity bias, other sources of bias and model dependency (e.g., corrections for serial correlation), and data sources. He concluded that the studies pointed to several broad but limited claims: Prison admissions increase with the crime rate (support for the crime theories), with the size of the population aged 24 to 35, and with the percent of the population that is black, (support for demographic theories) and prison admissions decrease with personal income per capita (support for economic theories). With respect to the total prison population, it was found to increase with the crime rate, the percent of the population between 18 and 35, and the percent of the population that is black.

Theories of crime and imprisonment may be relatively simple—suggesting that there is a positive association between the two, taking into account lags—and the strength and directness of this relationship has been long been challenged (e.g., Blumstein and Moitra, 1979; Zimring and Hawkins, 1983). Despite the absence of a positive relationship between crime rates and incarceration rates in the aggregate, Pfaff’s review indicated that the evidence on this relationship was comparatively strong. The reviewed studies that included measures of crime rates consistently found a positive association between crime, particularly violent crime, and prison admissions or prison populations. Specifically, for the fourteen studies in his review that examined the relationship between crime and prison populations, he found that crime rates influenced prison admissions but concluded that, due to the failure in all but one of the studies (Listokin 2003) to address simultaneity in the relationship between prison admissions and crime, the studies underestimated the effect of crime on prison populations.

Like Pfaff, Spelman, in a review of studies of the prison and crime relationship (Spelman 2008) also concludes that crime rates, particularly violent crime rates, influence prison population growth. Spelman goes into great lengths to discuss the specification issues related to understanding this relationship. He was motivated by the fact that in the set of studies he reviewed, which he characterized as using essentially the same data—state panels that measured crime and prison rates for each state in the U.S. over time, covering slightly different time periods—defined their key variables in the same way, dealt with cross-sectional dependence in similar ways, used a similar set of control variables, and found similar findings for the control variables, that there existed a wide divergence in findings about the prison and crime relationship. His review of three specification issues—serial dependence, long-run and short-run effects, and causality—led to several conclusions. First, he did not find a long-run relationship between crime and prison; second, different approaches to addressing serial correlation can lead to
biased results; and third, despite the inadequacy of the current set of instruments available to isolate causal direction, he found that increases in prison populations are generally associated with decreases in subsequent crime rates and that increases in crime rates are associated with subsequent increases in prison populations. On this point, he argues that researchers need to focus on identifying appropriate instruments, not on denying the need for them. Concurring with Pfaff, Spelman’s findings suggest that ignoring the effects of the simultaneous relationship between prisons and crimes may lead to underestimates of the effects of crime on prison populations.

Economic theories of prison population growth posit a relationship between economic conditions and prison populations, so when economic conditions worsen, or when offenders from lower socio-economic backgrounds are arrested and prosecuted, economic status influences the likelihood of incarceration. For tests of economic theories that included measures of employment, unemployment, income levels, and income inequality, Pfaff found wide variation in estimated effects, including inconsistent estimates in some studies (in which the estimated effects on a variable even varied in sign). He also points out that there may be unacknowledged sources of endogeneity in the economic conditions and prison population model. The first is “statistical”, in that offical unemployment statistics do not include prisoners. Consequently, every unemployed person sent to prison increases the prison population and at the same time decreases the unemployed population. The second is “causal.” Western (2006) addresses the statistical form and demonstrates that correcting for it eliminates much of the employment gain for young black men during the 1990s. The causal form is more complicated. Prison may influence unemployment rates by reducing employment opportunities for those who were incarcerated, and it may reduce unemployment (by increasing employment) for those living where prisons are located. Because the direction of the effect of prison on (un)employment may go in either direction, it may not be possible to identify this relationship with aggregate (state-level) data.

Demographic theories may either simply relate trends in incarceration to the demographic composition of the population (that is, the size of the incarceration-prone age, race, gender groups in a population) or they may link punitive criminal justice policies to a racial groups. For example, Tonry’s (1995) well-known work argues that race helped to motivate the war on drugs, which in turn led to expansion of the prison population. Empirical studies of demographic variables’ effects on the prison population suggest that both prison admissions and prison populations rise with the percent of the population that is between 24 and 35 and the percent of the population that is black.

Political theories suggest that conservative politicians drive prison population growth or that politicians use crime as a wedge issue to secure votes. A small number of the papers that Pfaff reviewed included measures of the political conservatism of the electorate, and the results were fairly consistent, in that incarceration rates were lower in states with more a liberal electorate.
Despite the consistency in some of the findings for the theories that he outlines, Pfaff’s major conclusion from his review is that the empirical efforts to test the theories suffer from “important limitations that inhibit their ability to identify causal effects accurately” (Pfaff, 2008: 548). These include: Problems with the choice of dependent variable, whether one measures prison admissions or the total prison population. Use of the total prison population is complicated by the fact that the prison population is the product of admissions and length of stay, and the length of stay component complicates specifying the relationship between a variable (e.g., crime rate, current or lagged) and the prison population, as well as interpreting the effects. Third, the highly decentralized and heterogeneous nature of the criminal justice system in the U.S. complicates interpretation of coefficients when using aggregate data on prison admissions or the prison population. As he points out, for example, if the coefficient on a well-formulated regression shows that the percent black in a state increases the prison population by 3 inmates per 100,000, then how would one interpret this coefficient? Would it arise because the independent actors—the police, prosecutors, defense attorneys, judges—in the criminal justice system acted in a coordinated manner to produce the result, or would it simply be the net effect of all of these decision-makers’ decisions? Unless the regression takes into account all of these decisions in the criminal justice system, the coefficient on the percent black variable does not give us much information, and it certainly does not provide actionable information. More pointedly, as percent black is not a policy variable, one could not manipulate it to reduce the prison population.

Endogenous relationships confound almost every empirical analysis of the growth of the prison population. Pfaff concluded that a common problem that characterized the empirical literature was the failure to account for endogenous relationships between prison population and several explanatory variables. Given the complexity of the relationship between the prison system and social institutions, endogenous relationships can characterize almost any analysis of this type. This is clear for the prison crime relationship, the unemployment and prison relationship, as well as for other variables such as prison capacity, social disorder, and plausible sentencing policies (Marvel and Moody, 1997). In his review, Pfaff found that only four of the twenty papers acknowledged that crime and prison populations are endogenous and, with one exception, none considered other endogenous relationships.

Most of the studies that Pfaff reviewed also included measures for sentencing policy variables as control variables. These were generally included as indicator variables for a particular type of policy, such as structured sentencing, voluntary guidelines, and three strike laws. Effects varied. Structured sentencing either had a negative effect on prison population size, or the effect depended upon the type of guidelines adopted. The effects of guidelines also varied. Work by Stemen et al. (2005), which falls outside of Pfaff’s review, also shows inconsistent effects of sentencing policy variables on prison population growth.
The difficulty associated with measuring the effects of sentencing policy on prison population growth stems the difficulties associated with measuring their various dimensions in a manner that is suitable for regression analysis. There is great heterogeneity in the actual sentencing practices across the states. The sentencing policies vary so much in their form, intent, and implementation that it is difficult to isolate the effects of broad categories of policies (such as determinate sentencing). The effects of a policy may differ among states so that, in the aggregate, the effects are canceled out, and the complications associated with specifying the models, along with the limitations of the available data to take into account the effects, strain the capacity of the empirical toolkit. The complexity associated with analyzing sentencing reforms was summarized by Raphael (2009) who, in commenting on what he described as an excellent article by Spelman (2009) on the rise of the U.S. incarceration rate, described the enormous challenges associated with analyzing state sentencing policy variables with the aim of identifying exogenous variation in a state’s incarceration rate. Raphael says “[i]n all such efforts, I have generally failed…to find a consistent relationship between sentencing policy measures and changes in incarceration rates that survive basic specification tests...” (Raphael, 2009: 92).

**Concluding observations and suggestions for policy research**

This review of research and the decomposition analysis point to the simple fact that identifying and analyzing the factors associated with prison population growth, and consequently designing policies and practices to manage the growth, is a very complicated task. The decomposition analysis points out that changes in the criminal justice system occur over time as it adapts to crime and sentencing practices. The review of empirical research on the growth of the prison population suggests that the enterprise faces some difficult challenges. Further, the empirical research that aims to test theory related to prison population growth also faces challenges associated with policy relevance. Several tentative suggestions for moving forward include the following:

**Focus on comparative analysis using the states as laboratories**

In the aggregate, state prison population growth has declined and the actual number of state prisoners decreased in 2009. However, patterns of growth vary considerably among the states, and some continue to have increasing prison populations in the midst of the aggregate decline. Pennsylvania, for example, after several years of slow growth, saw relatively rapid expansion in its prison population around the mid-2000s, and the state is expanding capacity to address prison overcrowding. By comparison, New York has had declining prison population growth since the late 1990s. Of course, there is a complicated mixture of patterns of growth among the states. Qualitative and descriptive studies of the processes of growth in states can help to identify the specific
factors behind population change, and cross-state comparisons can help to identify similarities and differences.

For example, Useem (2010) describes how a coordinated effort among New York State’s correctional agencies and recent changes in sentencing policy contributed to declining prison populations. Alternatively, California’s correctional system cannot be characterized as coordinated. In fact Weisberg (2010) characterizes it as a system plagued by regulatory mismatches, failures to collect and transmit data on offenders that can be used to make informed decisions, disincentives that mitigate against cost-effective practice, and as situated in a poorly coordinated political economy of incarceration. Yet, in recent years, California’s prison population has declined. Understanding how two very different correctional systems could produce outcomes of declining prison populations that would contribute to our understanding of how prison populations grow in different environments.

Better understanding of system-wide responses

The simple decompositions that I performed indicated that there were changes over time in the components of the criminal justice system that were related to prison population growth. A better understanding of these relationships is needed in order to understand how policy changes affect the prison population and provide guidance about expected and possible unintended responses to policy change. For example, how is early release of prisoners related to arrest rates? What are the impacts of policing strategies based on zero-tolerance on prosecution and, ultimately, incarceration rates?

Understanding the interrelationships among components of the justice system does not readily lend itself to sophisticated statistical analysis, due in part to the absence of data on all stages. However, building on the theme of comparative studies among states, perhaps an in-depth set of case studies within states can be a fruitful approach to understanding these issues. Robert Yin’s (2003) approach to explanatory case studies, in which the analysis is based on pattern-matching techniques that are based on theoretical propositions against which the evidence is evaluated, coupled with the use of multiple case studies (as replicated), offers a rigorous approach to this type of endeavor. Yin’s more rigorous approach requires a high degree of construct validity, control over observation, and inference, presenting a high level of challenge as compared to descriptive case studies.

Address risk issues associated with declining length of stay

If length of stay is declining for drug and property offenders, as indicated above, this raises several questions about managing corrections growth. First, BJS data show that, in the aggregate, the decline in length of stay is associated with increases in the rates of mandatory release and expiration of sentence, and less so with increases in parole release (Sabol, West, and Cooper 2009). This suggests that a part of the recent decline
in length of stay is due to “timing out” of sentences imposed rather than to the efforts of parole boards to shorten sentences. On the other hand, if parole boards are to get involved in making early release decisions to shorten time served, this raises important questions about risk and public safety. Recently, a number of papers have addressed the problem of what Bhati (2009) calls “risk suppression.” Risk suppression refers to the portion of an offender’s risk that is not measured by available data, because decision makers such as judges, prosecutors, parole boards, and others use information to make decisions that are not observed by researchers who construct risk instruments. Specifically, as Bushway and Smith (2007) point out, if current sentences are based on efforts by decision makers to use all of the information available to them to predict the risk of an offender and assign punishment based on risk, then it would be impossible to distinguish the true behavior of individual offenders from the behavior that results from their non-random assignment to punishment.

For example, the oft-cited statistic that results from BJS studies of recidivism of offenders released from prison showing no relationship between recidivism and time served is interpreted as evidence for shortening time served. After all, if time served makes no difference in recidivism rates, then why not shorten time served and also contribute to reducing prison population size? This interpretation would be correct if in fact sentences served did not already reflect the judgments of decision makers on the risk that offenders posed. If their judgments of an offender’s risk level are based on factors that researchers do not observe but that result in time served that is reflective of risk, then recidivism should not vary with time served. In other words, decisions makers would have effectively managed risk by lowering it for higher-risk offenders to that of lower-risk offenders.

The issue of risk suppression suggests that new approaches to estimating risk are required. Bushway and Smith have suggestions about this, but the challenges associated with obtaining data that are uncontaminated by current sentencing regimes in order to conduct a more meaningful analysis of risk are huge. Opportunities may exist, however, within the states again. For example, the State of Pennsylvania recently enacted a comprehensive package of sentencing and corrections reform legislation that required the development of parole guidelines (Bergstrom and Mistick, 2010). The current risk instrument used by the Pennsylvania Board of Probation and Parole relies on four factors, but the goal is to develop an instrument that addresses public safety by preventing recidivism. Suffice it to say that additional research on risk as it relates to public safety and recidivism reduction is needed to assist parole boards in making decisions release decisions.

**Addressing endogeneity**

One conclusion from the empirical work on sentencing policy and prison population growth is that the issues are complicated and confounded by endogenous relationships. This is a thorny issue that won’t go away. Yet, if guidance is to be provided to policy
makers about how to manage prison population growth, the relationship between key policy variables and prison population needs to be identified. A solution to this problem is to search for and find good instruments to identify relationships, but the search is hampered by the interrelationships among variables. This doesn’t obviate the need to find instruments, but simply makes it more difficult. Raphael has concluded that sentencing policy variables don’t work as instruments; Pfaff suggests using abortion rates to identify relationships between crime and prison, but Cook and Laub (2002) have challenged the finding that abortion was associated with the crime drop because the timing of the relationship was off. Levitt’s (1996) instrument of court-ordered reductions in prison populations also has been challenged as a valid instrument to identify this relationship. Western (2006) points out scale effects, and Nagin (1999) argues that the court-ordered reductions apply only to early release schemes, such as abolition of parole and not general reductions in length of stay. Hence, the search for instruments to be used to analyze the prison and crime relationship is challenging, as is the search for instruments for other variables affecting prison population growth.

I don’t have many good suggestions for alternatives to instrumental variables other than the usual ones: Look for natural experiments; consider using matching techniques; give up the search and do other research. But in the absence of good efforts to identify causal relationships, perhaps the field of criminology can agree not to publish or promote work that either does not make good-faith efforts to identify relationships or that glosses over the issue. Such a consensus about publication would at least prevent correlational studies that pose as causal studies from getting much attention by policy makers.
**Method of Decomposition**

To assess the relative contributions of each of the components of growth in the prison population, I decomposed the change in the incarceration rate to identify the contribution of change associated with crime and several stages of criminal justice system processing, including criminal behavior (offenses, as measured by UCR reported offenses), arrest (as measured by UCR arrests), felony convictions (as measured by BJS National Judicial Reporting Program, or NJRP, data), prison admissions on a new court commitment (as measured by BJS National Prisoner Statistics, or NPS, data to which offense distributions drawn from the National Corrections Reporting Program, or NCRP, data on prison admissions are applied), and expected time served (as the ratio of the total prison population to the number new court commitments). Under stable population assumptions and constant rates of parole violations, this estimate of expected time served includes the incremental amount served on violations of the original commitment.

The analysis starts by assuming a model of stable population growth, in which the prison population at one time is determined by the flows between stages. Multiplying these transitions represented by the ratios identified in the trend analysis yields, by definition, the prison population (or incarceration rate).

These terms are defined as follows:

- \( P \) = Number of persons in the population
- \( O \) = Number of reported offenses
- \( A \) = Number of arrests
- \( CV \) = Number of felony convictions
- \( C \) = Number of prison admissions (new court commitments)
- \( LOS \) = Expected length of stay for offenders entering prison
- \( PP \) = Incarceration rate

From these, transition rates are defined as:

- \( o = O/P \) = the rate of offending within the population
- \( a = A/O \) = the rate of arrest, given offending
- \( cv = CV/A \) = the ratio of felony convictions to arrests
- \( pa = C/CV \) = the rate of prison admission, given conviction
- \( los = LOS \) = estimated length of stay

Using these transition rates, the imprisonment rate (PP) in a time period can be defined as:
where the “i” refers to the offense group, and the “t” refers to the time period. Specific offenses analyzed include murder and non-negligent manslaughter, rape, robbery, aggravated assault, other violent offenses, Part 1 property offenses, drug offenses, and other offenses. The number of offenses are not available for “other violent,” drug, and other offenses. The number of arrests for these offense categories are used to estimate the offense rate.

To obtain totals, such as the total number of Part 1 violent offenses, all violent offenses, and the total number of commitments (expected prisoners), the offense-specific equations are first developed, and then the offense-specific outcomes are summed to generate the respective totals. This essentially weights the transition rates by the offense-specific distributions.

To decompose the changes in the number of prisoners into the amounts attributed to changes in each of the factors, the following methods are employed, using the change in the number of prison admissions as an example:

\[
PP_{i,t+n} - PP_{i,t} = (o_{i,t+n} * a_{i,t+n} * cv_{i,t+n} * pai_{i,t+n} * losi_{i,t+n}) - (o_{i,t} * a_{i,t} * cv_{i,t} * pai_{i,t} * losi_{i,t})
\]

The difference in the incarceration rate can be decomposed into its component parts as follows:

\[
PP_{i,t+n} - PP_{i,t} = o_{i,t+n} * a_{i,t+n} * cv_{i,t+n} * pai_{i,t+n} * [losi_{i,t+n} - losi_{i,t}] + o_{i,t+n} * a_{i,t+n} * cv_{i,t+n} * [pai_{i,t+n} - pai_{i,t}] * losi_{i,t} + o_{i,t+n} * a_{i,t+n} * [cv_{i,t+n} - cv_{i,t}] * pai_{i,t} * losi_{i,t} + o_{i,t+n} * [ai_{i,t+n} - ai_{i,t}] * cv_{i,t} * pai_{i,t} * losi_{i,t} + [oi_{i,t+n} - oi_{i,t}] * ai_{i,t} * cv_{i,t} * pai_{i,t} * losi_{i,t}
\]

The first term on the right-hand side in the first row represents the amount of change in the incarceration rate due to changes in length of stay rate. The second row represents the amount due to changes in prison admissions; the third, the amount due to changes in convictions; the fourth, arrests; and the final row, the offense rate.
References


Western, Bruce, 2006, Punishment and Inequality in America, New York, Russell Sage Foundation.


Table 1: Number of state prisoners and incarceration rates, 1994, 2000, 2006

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>1,331,100</td>
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<td>209</td>
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<td>173,600</td>
<td>188,265</td>
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<td>30,800</td>
<td>62,413</td>
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<td>Other sexual assault</td>
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<td>83,100</td>
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<td>61</td>
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<tr>
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<td>116,800</td>
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<td>42</td>
<td>44</td>
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<td>255,503</td>
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<td>85</td>
<td>85</td>
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<tr>
<td>Burglary</td>
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<td>111,300</td>
<td>127,700</td>
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<td>40</td>
<td>43</td>
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<td>45,700</td>
<td>46,399</td>
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<td>15</td>
</tr>
<tr>
<td>Motor vehicle theft</td>
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<td>18,800</td>
<td>22,994</td>
<td>8</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Fraud/d</td>
<td>23,663</td>
<td>32,500</td>
<td>32,952</td>
<td>9</td>
<td>12</td>
<td>11</td>
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<tr>
<td>Other property</td>
<td>22,529</td>
<td>30,100</td>
<td>25,458</td>
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<tr>
<td>Drugs</td>
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<td>251,100</td>
<td>260,020</td>
<td>78</td>
<td>89</td>
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<tr>
<td>Other offenses/e</td>
<td>65,371</td>
<td>127,800</td>
<td>109,633</td>
<td>25</td>
<td>45</td>
<td>37</td>
</tr>
</tbody>
</table>


Note: Incarceration rates are per 100,000 resident population and may differ from BJS published rates.

a/Violent includes other violent crimes such as simple assault.
b/Murder includes nonnegligent manslaughter.
c/Fraud includes forgery, fraud, and embezzlement.
d/Other offenses/e includes weapons, other public order, and other crimes.
Table 2. Offense, arrest, and felony conviction rates by crime type, 1994, 2000, 2006

<table>
<thead>
<tr>
<th>Offense categories</th>
<th>Offending rates per 100,000</th>
<th>Arrests per 100 offenses</th>
<th>Felony convictions per 100 arrests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violent/a</td>
<td>713.6</td>
<td>506.5</td>
<td>473.6</td>
</tr>
<tr>
<td>Murder</td>
<td>9.0</td>
<td>5.5</td>
<td>5.7</td>
</tr>
<tr>
<td>Rape</td>
<td>39.3</td>
<td>32.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Other sexual assault/b</td>
<td>38.7</td>
<td>33.2</td>
<td>29.2</td>
</tr>
<tr>
<td>Robbery</td>
<td>237.8</td>
<td>145.0</td>
<td>149.4</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>427.6</td>
<td>324.0</td>
<td>287.5</td>
</tr>
<tr>
<td>Other violent/b</td>
<td>470.0</td>
<td>466.3</td>
<td>436.1</td>
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<tr>
<td>Property/c</td>
<td>4,660.2</td>
<td>3,618.3</td>
<td>3,334.5</td>
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<tr>
<td>Burglary</td>
<td>1,042.1</td>
<td>728.8</td>
<td>729.4</td>
</tr>
<tr>
<td>Larceny, excluding MVT</td>
<td>3,026.9</td>
<td>2,477.3</td>
<td>2,206.8</td>
</tr>
<tr>
<td>Motor vehicle theft</td>
<td>591.3</td>
<td>412.2</td>
<td>398.4</td>
</tr>
<tr>
<td>Fraud/d</td>
<td>211.0</td>
<td>168.2</td>
<td>136.8</td>
</tr>
<tr>
<td>Drugs</td>
<td>519.1</td>
<td>561.3</td>
<td>631.2</td>
</tr>
<tr>
<td>Other offenses/e</td>
<td>3,064.3</td>
<td>2,811.8</td>
<td>2,724.1</td>
</tr>
<tr>
<td>Total/f</td>
<td>5,482.1</td>
<td>4,862.3</td>
<td>4,713.9</td>
</tr>
</tbody>
</table>

Sources: Federal Bureau of Investigation, Uniform Crime Reports; Bureau of Justice Statistics' National Judicial Reporting Program.

Notes:

a/Includes murder, rape, robbery, and aggravated assault.
b/Excluded from the violent total and based upon the number of arrests for these crime types.
c/Includes burglary, larceny, and motor vehicle theft.
d/Not included in the property category total and based upon the number of arrests for fraud and embezzlement.
d2/Included in other offense category.
e/Includes all other Part 2 crime arrests and crime categories not included in the categories shown above.
f/Total based upon all arrests.

~ Not shown because arrests are used to estimate offending rates.
Table 3. Prison admissions and expected length of stay, 1994, 2000, 2006

<table>
<thead>
<tr>
<th>Offense categories</th>
<th>New court commits per 100 convictions</th>
<th>New court commits per 100 arrests</th>
<th>Expected length of stay (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murder</td>
<td>56.8</td>
<td>59.7</td>
<td>58.9</td>
</tr>
<tr>
<td>Rape</td>
<td>112.3</td>
<td>138.5</td>
<td>137.4</td>
</tr>
<tr>
<td>Other sexual assault</td>
<td>74.4</td>
<td>56.2</td>
<td>45.0</td>
</tr>
<tr>
<td>Robbery</td>
<td>70.2</td>
<td>82.2</td>
<td>107.5</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>65.6</td>
<td>77.1</td>
<td>73.0</td>
</tr>
<tr>
<td>Other violent</td>
<td>38.9</td>
<td>41.0</td>
<td>42.2</td>
</tr>
<tr>
<td>Property</td>
<td>33.3</td>
<td>43.3</td>
<td>44.2</td>
</tr>
<tr>
<td>Burglary</td>
<td>34.5</td>
<td>35.3</td>
<td>37.9</td>
</tr>
<tr>
<td>Larceny, excluding MVT</td>
<td>40.3</td>
<td>47.7</td>
<td>44.6</td>
</tr>
<tr>
<td>MVT</td>
<td>26.9</td>
<td>25.1</td>
<td>26.9</td>
</tr>
<tr>
<td>Fraud</td>
<td>36.6</td>
<td>55.9</td>
<td>59.2</td>
</tr>
<tr>
<td>Drugs</td>
<td>19.5</td>
<td>17.8</td>
<td>23.4</td>
</tr>
<tr>
<td>Weapons</td>
<td>35.4</td>
<td>34.7</td>
<td>35.6</td>
</tr>
<tr>
<td>Other offenses</td>
<td>29.0</td>
<td>31.9</td>
<td>43.0</td>
</tr>
<tr>
<td>Total</td>
<td>21.0</td>
<td>24.3</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>36.8</td>
<td>37.9</td>
<td>39.0</td>
</tr>
</tbody>
</table>

Sources: BJS' National Prisoner Statistics and National Corrections Reporting Program data.
Note: Offense categories are as described in table ___.

Table 4: Amount of change in incarceration rate from 1994-2000 due to stages of criminal justice processing.

<table>
<thead>
<tr>
<th>Offense category</th>
<th>Crime</th>
<th>Arrest</th>
<th>Conviction</th>
<th>Prison admissions</th>
<th>Expected time served</th>
<th>1994-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violent</td>
<td>-48.3</td>
<td>5.5</td>
<td>38.4</td>
<td>8.3</td>
<td>39.0</td>
<td>43</td>
</tr>
<tr>
<td>Murder</td>
<td>-16.7</td>
<td>-2.8</td>
<td>4.8</td>
<td>6.8</td>
<td>26.0</td>
<td>18</td>
</tr>
<tr>
<td>Rape</td>
<td>-2.4</td>
<td>-1.6</td>
<td>5.1</td>
<td>-3.5</td>
<td>0.2</td>
<td>-2</td>
</tr>
<tr>
<td>Other sexual assault</td>
<td>-3.0</td>
<td>0.0</td>
<td>4.8</td>
<td>3.9</td>
<td>2.8</td>
<td>8</td>
</tr>
<tr>
<td>Robbery</td>
<td>-19.6</td>
<td>-2.0</td>
<td>8.5</td>
<td>6.6</td>
<td>12.7</td>
<td>6</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>-7.5</td>
<td>1.6</td>
<td>9.9</td>
<td>1.9</td>
<td>4.5</td>
<td>10</td>
</tr>
<tr>
<td>Property</td>
<td>-18.2</td>
<td>-5.9</td>
<td>14.4</td>
<td>1.6</td>
<td>11.5</td>
<td>3</td>
</tr>
<tr>
<td>Burglary</td>
<td>-11.8</td>
<td>-0.9</td>
<td>2.8</td>
<td>5.4</td>
<td>4.8</td>
<td>0</td>
</tr>
<tr>
<td>Larceny</td>
<td>-3.0</td>
<td>-1.7</td>
<td>2.8</td>
<td>-1.0</td>
<td>2.8</td>
<td>0</td>
</tr>
<tr>
<td>MVT</td>
<td>-2.4</td>
<td>-0.1</td>
<td>-1.3</td>
<td>2.2</td>
<td>0.2</td>
<td>-1</td>
</tr>
<tr>
<td>Fraud</td>
<td>-1.8</td>
<td>0.0</td>
<td>3.6</td>
<td>-1.0</td>
<td>1.7</td>
<td>2</td>
</tr>
<tr>
<td>Drugs</td>
<td>6.4</td>
<td>0.0</td>
<td>-0.2</td>
<td>-1.5</td>
<td>6.2</td>
<td>11</td>
</tr>
<tr>
<td>Other offenses</td>
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<td>2.1</td>
<td>3.1</td>
<td>13.6</td>
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</tr>
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<td>Total</td>
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<td>54.7</td>
<td>11.6</td>
<td>70.3</td>
<td>74</td>
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</tbody>
</table>

Note: Offenses are as described in table ___. 
Table 5: Amount of change in incarceration rate from 2000 to 2006 due to stages of criminal justice processing.

<table>
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<tr>
<th>Offense</th>
<th>Crime</th>
<th>Arrest</th>
<th>Convictions</th>
<th>Prison admission</th>
<th>Expected time served</th>
<th>Change in incarceration rate, 2000-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violent</td>
<td>-13.6</td>
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<td>4.6</td>
<td>26</td>
</tr>
<tr>
<td>Murder</td>
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<td>-0.4</td>
<td>-0.5</td>
<td>4.9</td>
<td>1</td>
</tr>
<tr>
<td>Rape</td>
<td>-0.4</td>
<td>-1.4</td>
<td>5.1</td>
<td>-2.8</td>
<td>9.4</td>
<td>10</td>
</tr>
<tr>
<td>Other sexual assault</td>
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<td>0.0</td>
<td>-1.4</td>
<td>7.6</td>
<td>3.5</td>
<td>6</td>
</tr>
<tr>
<td>Robbery</td>
<td>1.7</td>
<td>4.6</td>
<td>-2.6</td>
<td>-3.2</td>
<td>4.1</td>
<td>5</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>-4.7</td>
<td>-0.3</td>
<td>12.9</td>
<td>1.3</td>
<td>-6.4</td>
<td>3</td>
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<td>0.2</td>
<td>-0.4</td>
<td>2</td>
</tr>
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<td>-3.0</td>
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<td>3</td>
</tr>
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<td>-0.3</td>
<td>4.3</td>
<td>1.4</td>
<td>-4.3</td>
<td>-1</td>
</tr>
<tr>
<td>MVT</td>
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<td>-0.6</td>
<td>4.0</td>
<td>0.6</td>
<td>-2.7</td>
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<td>Fraud</td>
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<td>3.2</td>
<td>4.0</td>
<td>-5.6</td>
<td>-1</td>
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<tr>
<td>Drugs</td>
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<td>2.6</td>
<td>-14.8</td>
<td>-2</td>
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<tr>
<td>Other offenses</td>
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<td>10.2</td>
<td>1.3</td>
<td>-19.2</td>
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<td>8.0</td>
<td>-49.0</td>
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</tbody>
</table>

Note: Offense categories are as defined in table __.__.
Figure 1: Number of sentenced prisoners under state jurisdiction and annual growth rate (percent change), 1980-2009

Source: Bureau of Justice Statistics, National Prisoners Statistics
Figure 2: Number of sentenced prisoners under state jurisdiction and their incarceration rate (per 100,000 resident population), 1980-2009

Source: Bureau of Justice Statistics, National Prisoners Statistics
Figure 3