The Growth of Incarceration in the United States: Exploring Causes and Consequences

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The Crime Prevention Effects of Incarceration[1]

As discussed in previous chapters, the growth in U.S. incarceration rates over the past 40 years was propelled by changes in sentencing and penal policies that were intended, in part, to improve public safety and reduce crime. A key task for this committee was to review the evidence and determine whether and by how much the high rates of incarceration documented in Chapter 2 have reduced crime rates. In assessing the research on the impact of prison on crime, we paid particular attention to policy changes that fueled the growth of the U.S. prison population—longer prison sentences, mandatory minimum sentences, and the expanded use of prison in the nation's drug law enforcement strategies.

We are mindful of the public interest in questions regarding the relationship between incarceration and crime. Indeed, as discussed in Chapters 3 and 4, the assertion that putting more people in prison would reduce crime was crucial to the political dynamic that fueled the growth in incarceration rates in the United States. In recent years, policy initiatives to reduce state prison populations often have met objections that public safety would be reduced. There is of course a plausibility to the belief that putting many more convicted felons behind bars would reduce crime. Yet even a cursory examination of the data on crime and imprisonment rates makes clear the complexity of measuring the crime prevention effect of incarceration. Violent crime rates have been declining steadily over the past two decades, which suggests a crime prevention effect of rising incarceration rates. For

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[1]This chapter draws substantially on Durlauf and Nagin (2011a, 2011b) and Nagin (2013a, 2013b).

the first two decades of rising incarceration rates, however, there was no clear trend in the violent crime rate—it rose, then fell, and then rose again.

There are many explanations for the lack of correspondence between rates of incarceration and rates of violent crime and crime rates more generally. However, one explanation deserves special emphasis: the rate of incarceration, properly understood, is not a policy variable per se; rather, it is the outcome of policies affecting who is sent to prison and for how long (Durlauf and Nagin, 2011a, 2011b). The effect of these policies on crime rates is not uniform—some policies may have very large effects if, for example, they are directed at high-rate offenders, while others may be ineffective. Thus, the committee's charge was to dig below the surface and review the research evidence on the impact of the specific drivers of the rise in U.S. incarceration rates on crime in the hope that this evidence would inform the larger policy discourse. In this regard, one of our most important conclusions is that the incremental deterrent effect of increases in lengthy prison sentences is modest at best. Also, because recidivism rates decline markedly with age and prisoners necessarily age as they serve their prison sentence, lengthy prison sentences are an inefficient approach to preventing crime by incapacitation unless the longer sentences are specifically targeted at very high-rate or extremely dangerous offenders.

A large body of research has studied the effects of incarceration and other criminal penalties on crime. Much of this research is guided by the hypothesis that incarceration reduces crime through incapacitation and deterrence. Incapacitation refers to the crimes averted by the physical isolation of convicted offenders during the period of their incarceration. Theories of deterrence distinguish between general and specific behavioral responses. General deterrence refers to the crime prevention effects of the *threat* of punishment, while specific deterrence concerns the aftermath of the failure of general deterrence—that is, the effect on reoffending that might result from the *experience* of actually being punished. Most of this research studies the relationship between criminal sanctions and crimes other than drug offenses.[2] A related literature focuses specifically on enforcement of drug laws and the relationship between those criminal sanctions and the outcomes of drug use and drug prices.

This chapter presents the results of the committee's examination of the crime prevention effects of imprisonment through deterrence or incapacitation. The first section provides an overview of deterrence and reviews

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[2]Drug sales, use, and possession are, of course, widely criminalized. While there are some long-standing national data collections on drug use and a few national surveys have asked about drug sales, there are no national time series on overall levels of drug crime. Thus, analyses of the relationship of imprisonment rates to crime rates provide no insight into impacts on drug crimes.

evidence on the deterrent effect of incarceration. The second section describes the theory of incapacitation and summarizes empirical research on incapacitation's effects. We then review panel studies examining the association between rates of incarceration and crime rates across states and over time. These studies do not distinguish between deterrence and incapacitation and might be viewed as estimating a total effect of incarceration on crime. The fourth section summarizes research on specific deterrence and recidivism. This is followed by a review of research on the effects of incarceration for drug crimes on drug prices and drug use. We then offer observations regarding gaps in knowledge about the crime prevention effects of incarceration.

DETERRENCE: THEORY AND EMPIRICAL FINDINGS

In the classical theory of deterrence, crime is averted when the expected costs of punishment exceed the benefits of offending. Much of the empirical research on the deterrent power of criminal penalties has studied sentence enhancements and other shifts in penal policy.

Theory

Most modern theories of deterrence can be traced to the Enlightenment-era legal philosophers Cesare Beccaria (2007) and Jeremy Bentham (1988). Their work was motivated by a mutual abhorrence of the administration of punishment without constructive purpose. For them that constructive purpose was crime prevention. As Beccaria observed, "It is better to prevent crimes than punish them" (1986, p. 93). Beccaria and Bentham argued that the deterrence process has three key ingredients—the severity, certainty, and celerity of punishment. These concepts, particularly the severity and certainty of punishment, form the foundation of nearly all contemporary theories of deterrence. The idea is that if state-imposed sanctions are sufficiently severe, criminal activity will be discouraged, at least for some. Severity alone, however, cannot deter; there must also be some probability that the sanction will be incurred if the crime is committed. Indeed, Beccaria believed that the probability of punishment, not its severity, is the more potent component of the deterrence process: "One of the greatest curbs on crime is not the cruelty of punishments, but their infallibility. . . . The certainty of punishment even if moderate will always make a stronger impression . . ." (1986, p. 58).

In contemporary society, the certainty of punishment depends on the probability of arrest given a criminal offense and the probability of punishment given an arrest. For a formal sanction to be imposed, the crime must be brought to official attention, typically by victim report, and the offender

must then be apprehended, usually by the police.[3] The offender must next be charged, successfully prosecuted, and finally sentenced by the courts. Successful passage through all of these stages is far from certain. The first step in the process—reporting of the crime—is critical, yet national surveys of victims have consistently demonstrated that only half of all crimes are brought to the attention of the police. Once the crime has been reported, the police are the most important factors affecting certainty—absent detection and apprehension, there is no possibility of conviction or punishment. Yet arrests ensue for only a small fraction of all reported crimes. Blumstein and Beck (1999) find that robberies reported to police outnumber robbery arrests by about four to one and that the offense-to-arrest ratio is about five to one for burglaries. These ratios have remained stable since 1980. The next step in the process is criminal prosecution, following which the court must decide whether to impose a prison sentence. In light of the obstacles to successful apprehension and prosecution, the probability of conviction is quite low, even for felony offenses (although it has increased since 1980). Moreover, because the majority of felony convictions already result in imprisonment, policies designed to increase the certainty of incarceration for those convicted—through mandatory prison sentences, for example—will have only a limited effect on the overall certainty of punishment.

The third component of the theory of deterrence advanced by Bentham and Beccaria, and the least studied, is the swiftness, or "celerity," of punishment. The theoretical basis for its impact on deterrence is ambiguous, as is the empirical evidence on its effectiveness. Even Beccaria appears to have based his case for celerity more on normative considerations of just punishment than on its role in the effectiveness of deterrence. He observed: "the more promptly and the more closely punishment follows upon the commission of a crime, the more just and useful will it be. I say more just, because the criminal is thereby spared the useless and cruel torments of uncertainty, which increase with the vigor of imagination and with the sense of personal weakness . . ." (Beccaria, 1986, p. 36).

Deterrence theory is underpinned by a rationalistic view of crime. In this view, an individual considering commission of a crime weighs the benefits of offending against the costs of punishment. Much offending, however, departs from the strict decision calculus of the rationalistic model. Robinson and Darley (2004) review the limits of deterrence through harsh punishment. They report that offenders must have some knowledge of criminal penalties to be deterred from committing a crime, but in practice often do not. Furthermore, suddenly induced rages, feelings of threat and paranoia, a desire for revenge and retaliation, and self-perceptions of

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[3]Crime may also be sanctioned entirely outside of the criminal justice system through retaliation by the victim or by others on the victim's behalf.

brilliance in the grandiose phase of manic-depressive illness all can limit a potential offender's ability to exercise self-control. Also playing a role are personality traits and the pervasive influence of drugs and alcohol: in one study, 32 percent of state prison inmates reported being high on drugs at the time of their crime, and 17 percent committed their crime to get money to buy drugs (Mumola and Karberg, 2006). The influence of crime-involved peers who downplay the long-term consequences of punishment is relevant as well.

Taken together, these factors mean that, even if they knew the penalties that could be imposed under the law, a significant fraction of offenders still might not be able to make the calculation to avoid crime. Because many crimes may not be rationally motivated with a view to the expected costs of punishment, and because offenders may respond differently to the severity, certainty, and swiftness of punishment, the magnitude of deterrent effects is fundamentally an empirical question. Furthermore, deterrent effects may depend on the type of sanction and its severity. Sanctions may be effective in some circumstances for some people but ineffective in other circumstances or for others.

Empirical Findings

Empirical studies of deterrence have focused primarily on sentence enhancements that introduce additional prison time for aggravating circumstances related to the crime or the defendant's criminal history. The earliest attempts after the 1970s to measure the effects of severity examined the deterrent effects of sentence enhancements for gun crimes. A series of studies (Loftin and McDowell, 1981, 1984; Loftin et al., 1983) considered whether sentence enhancements for use of a gun when engaged in another type of crime (such as robbery) deter gun use in the commission of a crime. While this research yielded mixed findings, it generally failed to uncover clear evidence of a deterrent effect (but see McDowall et al. [1992] for evidence of reductions in homicides).[4]

There is, however, an important caveat to keep in mind when extrapolating from these studies to understand the link between severity and deterrence: studies that failed to find a deterrent effect for sentence enhancements for use of a gun in committing a crime also found that the sentences ultimately imposed in these cases were in fact not increased.

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[4]Pooling city-specific results to obtain a combined estimate of the impact of mandatory sentence enhancements for gun crimes, McDowall and colleagues (1992, p. 379) suggest that "the mandatory sentencing laws substantially reduced the number of homicides; however, any effects on assault and robbery are not conclusive because they cannot be separated from imprecision and random error in the data."

Thus, criminals may not have been deterred from using a gun because the real incentives were not changed. This observation is a reminder of Tonry's (2009b) commentary on the inconsistent administration of mandatory minimum sentencing.

Kessler and Levitt (1999) examine the deterrent impact of California's Proposition 8, passed in 1982. Proposition 8 anticipated the three strikes laws passed by many states, including California, in the 1990s, which substantially increased sentences for repeat commission of specified felonies. Kessler and Levitt estimate a 4 percent decline in crime attributable to deterrence in the first year after the proposition's enactment. Within 5 to 7 years, the effect grew to a 20 percent reduction, although the authors acknowledge that this longer-term estimate includes incapacitation effects.

The findings of Kessler and Levitt (1999) are challenged by Webster and colleagues (2006). They point out that Kessler and Levitt's findings are based on data from alternate years. Using data from all years, Webster and colleagues find that crime rates in the relevant categories started to fall before Proposition 8 was enacted and that the slope of this trend remained constant during the proposition's implementation.[5] (See Levitt [2006][6] for a response and Raphael [2006] for analysis that supports Webster and colleagues [2006].)

One exception to the paucity of studies on the crime prevention effects of sentence enhancements concerns analyses of the deterrent effect of California's "Three Strikes and You're Out" law, which mandated a minimum sentence of 25 years upon conviction for a third strikeable offense.[7] Zimring and colleagues (2001) conclude that the law reduced the felony crime rate by at most 2 percent and that this reduction was limited to those individuals with two strikeable offenses. Other authors (Stolzenberg and D'Alessio, 1997; Greenwood and Hawken, 2002), who, like Zimring and colleagues (2001), examine before-and-after trends, conclude that the law's crime prevention effects were negligible. The most persuasive study of California's three strikes law is that of Helland and Tabarrok (2007). As discussed below, this study finds an effect but concludes that it is small.

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[5]In other words, the drop in crime after the passage of Proposition 8 "may simply be the result of a preexisting decline over time," consistent with the possibility that "by the time that legislative change is enacted, levels of crime have often already begun to drop for reasons not tied to variations in threatened punishment" (Webster et al., 2006, p. 441).

[6]According to Levitt (2006, p. 451), the arguments made by Kessler and Levitt (1999) "were based on the fact that after Proposition 8, eligible crimes fell more in California than noneligible crimes, and most importantly, the relative movements of eligible and noneligible crimes in California systematically differed from those in the rest of the United States after Proposition 8, but not before."

[7]Strikeable offenses include murder, robbery, drug sales to minors, and a variety of sexual offenses, felony assaults, other crimes against persons, property crimes, and weapons offenses (Clark et al., 1997).

One challenge for research on sentence enhancements is that because entire jurisdictions are affected by a sentencing reform, the "treated" defendants are necessarily compared with those in other times or places who are likely to differ in unmeasured ways. Six recent studies present particularly convincing evidence on the deterrent effect of incarceration by constructing credible comparisons of treatment and control groups, and they also nicely illustrate heterogeneity in the deterrence response to the threat of imprisonment. Weisburd and colleagues (2008) and Hawken and Kleiman (2009) studied the use of imprisonment to enforce payment of fines and conditions of probation, respectively, and found substantial deterrent effects. Helland and Tabarrok (2007) analyzed the deterrent effect of California's third-strike provision and found only a modest deterrent effect. Ludwig and Raphael (2003) examined the deterrent effect of prison sentence enhancements for gun crimes and found no effect. Finally, Lee and McCrary (2009) and Hjalmarsson (2009) examined the heightened threat of imprisonment that attends coming under the jurisdiction of the adult courts at the age of majority and found no deterrent effect. These studies are described further below.

Weisburd and colleagues (2008) present findings of a randomized field trial of different approaches to encouraging payment of court-ordered fines. Their most salient finding involves the "miracle of the cells"—that the imminent threat of incarceration provides a powerful incentive to pay delinquent fines, even when the incarceration is only for a short period. This finding supports the notion, discussed earlier, that the certainty rather the severity of punishment is the more powerful deterrent. It is true that in this study, there was a high certainty of imprisonment for failing to pay the fine among the treatment group. Nonetheless, the term used by Weisburd and colleagues—the "miracle of the cells" and not the "miracle of certainty"—emphasizes that certainty is a deterrent only if the punishment is perceived as costly enough.

This point is further illustrated by Project HOPE (Hawaii's Opportunity Probation with Enforcement). In this randomized experiment, the treatment group of probationers underwent regular drug testing (including random testing). The punishment for a positive test or other violation of conditions of probation was certain but brief (1-2 days) confinement. The intervention group had far fewer positive tests and missed appointments and significantly lower rates of arrest and imprisonment (Kleinman, 2009; Hawken and Kleiman, 2009; Hawken, 2010).[8]

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[8]The success of Project HOPE has brought it considerable attention in the media and in policy circles. Its strong evaluation design—a randomized experiment—puts its findings on a sound scientific footing and is among the reasons why its results are highlighted in this report. Still, there are several reasons for caution in assessing the significance of the results.

Helland and Tabarrok (2007) examine the deterrent effect of California's "Three Strikes and You're Out" law among those convicted of strikeable offenses. They compare the future offending of those convicted of two previous strikeable offenses and those convicted of one strikeable offense who also had been tried for a second strikeable offense but were convicted of a nonstrikeable offense. The two groups had a number of common characteristics, such as age, race, and time spent in prison. The authors find an approximately 20 percent lower arrest rate among those convicted of two strikeable offenses and attribute this to the much more severe sentence that would have been imposed for a third strikeable offense.

Ludwig and Raphael (2003) examine the deterrent effect of sentence enhancements for gun crimes that formed the basis for a much-publicized federal intervention called Project Exile in Richmond, Virginia. Perpetrators of gun crimes, especially those with a felony record, were the targets of federal prosecution, which provided for far more severe sanctions for weapon use than those imposed by Virginia state law. The authors conducted a careful and thorough analysis involving comparison of adult and juvenile homicide arrest rates in Richmond and comparison of the gun homicide rates of Richmond and other cities with comparable preintervention homicide rates. They conclude that the threat of enhanced sentences had no apparent deterrent effect.

The shift in jurisdiction from juvenile to adult court that occurs when individuals reach the age of majority is accompanied by increased certainty and severity of punishment for most crimes. Lee and McCrary (2009) conducted a meticulous analysis of individual-level crime histories in Florida to see whether felony offending declined sharply at age 18—the age of majority in that state. They report an immediate decline in crime, as predicted, but it was very small and not statistically significant.[9]

As of this writing, the results have yet to be replicated outside of rural Hawaii. This is also a complex intervention, and the mechanisms by which compliance with conditions of probation is achieved are not certain. Specifically, a competing interpretation to deterrence for the observed effects is that probationers were responding to an authoritative figure. Nevertheless, the interpretation that certain but nondraconian punishment can be an effective deterrent is consistent with decades of research on deterrence (Nagin, 1998, 2013b). That such an effect appears to have been found in a population in which deterrence has previously been ineffective in averting crime makes the finding potentially very important. Thus, as discussed later in this chapter, research on the deterrent effectiveness of short sentences with high celerity and certainty should be a priority, particularly among crime-prone populations.

[9]The finding that the young fail to respond to changes in penalties associated with the age of majority is not uniform across studies. An earlier analysis by Levitt (1998) finds a large drop in the offending of young adults when they reach the age of jurisdiction for adult courts. For several reasons, Durlauf and Nagin (2011a, 2011b) judge the null effect finding of Lee and McCrary to be more persuasive in terms of understanding deterrence. First, Levitt (1998) focuses on differences in age measured at annual frequencies, whereas Lee and McCrary mea-

In another analysis of the effect, if any, of moving from the jurisdiction of juvenile to adult courts, Hjalmarsson (2009) uses the 1997 National Longitudinal Survey of Youth to examine whether young males' perception of incarceration risk changed at the age of criminal majority. Youth were asked, "Suppose you were arrested for stealing a car, what is the percentage chance that you would serve time in jail?" The author found that subjective probabilities of being sent to jail increased discontinuously on average by 5.2 percentage points when youth reached the age of majority in their state of residence. While youth perceived an increase in incarceration risk, Hjalmarsson found no convincing evidence of an effect on their self-reported criminal behavior.

In combination, the above six studies demonstrate that debates about the deterrent effect of legal sanctions can be framed in terms argued by Beccaria and Bentham more than two centuries ago: Does the specific sanction deter or not, and if it does, are the crime reduction benefits sufficient to justify the costs of imposing the sanction? The Helland and Tabarrok (2007) study is an exemplar of this type of analysis. It concludes that California's third-strike provision does indeed have a deterrent effect, a point conceded even by Zimring and colleagues (2001). However, Helland and Tabarrok (2007) also conclude, based on a cost-benefit analysis, that the crime-saving benefits are so small relative to the increased costs of incarceration that the lengthy prison sentences mandated by the third-strike provision cannot be justified on the basis of their effectiveness in preventing crime.

The above six studies suggest several important sources of the heterogeneity of the deterrent effect of imprisonment. One source relates to the length of the sentence. Figure 5-1 shows two different forms of the response function that relates crime rate and sentence length. A downward slope is seen for both, reflecting the deterrence effect of increased severity. Both curves have the same crime rate, C_1, at the status quo sentence length, S_1. Because the two curves are drawn to predict the same crime rate for a zero sanction level, the absolute deterrent effect of the status quo sanction level is the same for both. But because the two curves have different shapes, they also imply different responses to an incremental increase in sentence length to S_2. The linear curve (A) is meant to depict a response function in which there is a sizable deterrent effect accompanying the increase to S_2, whereas the nonlinear curve (B) is

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sure age in days or weeks. At annual frequencies, the estimated effect is more likely to reflect both deterrence and incapacitation; hence Levitt's results may be driven by incapacitation effects rather than deterrence per se. Second, the analysis by Lee and McCrary is based on individual-level data and therefore avoids the problems that can arise because of aggregation (Durlauf et al., 2008, 2010). The individual-level data studied by Lee and McCrary also are unusually informative on their own terms because they contain information on the exact age of arrestees, which allows for the calculation of very short-run effects of the discontinuity in sentence severity (e.g., effects within 30 days of turning 18).
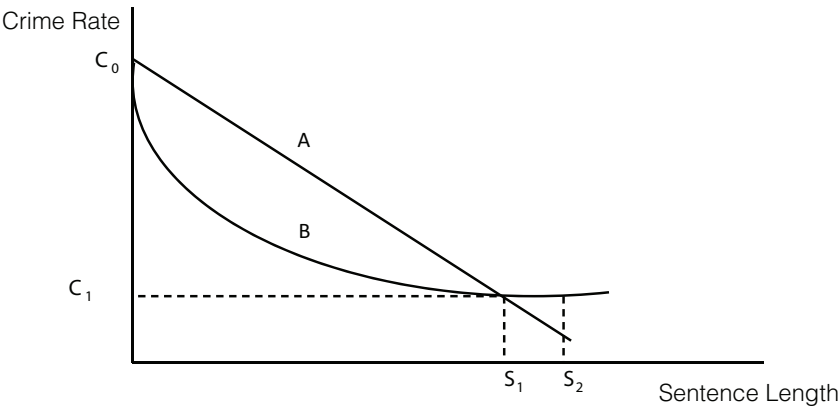
FIGURE 5-1 Marginal versus absolute deterrent effects.
SOURCE: Nagin (2013a).

meant to depict a small crime reduction response due to diminishing deterrent returns to increasing sentence length. In curve B in Figure 5-1, the largest reductions in crime will be obtained with small increases in short sentences.

The evidence on the deterrent effect of sentence length suggests that the relationship between crime rate and sentence length more closely resembles curve B in Figure 5-1 than curve A. Ludwig and Raphael (2003) find no deterrent effect of enhanced sentences for gun crimes; Lee and McCrary (2009) and Hjalmarsson (2009) find no evidence that the more severe penalties that attend moving from the juvenile to the adult justice system deter offending; and Helland and Tabarrok (2007) find only a small deterrent effect of the third strike of California's three strikes law. As a consequence, the deterrent return to increasing already long sentences is modest at best.

The fine payment (Weisburd et al., 2008) and Project HOPE (Kleiman, 2009; Hawken and Kleiman, 2009; Hawken, 2010) experiments also suggest that that curve B, not curve A, more closely resembles the dose-response relationship between crime and sentence length. Although these programs were designed to achieve behavioral changes other than simple crime prevention (payment of criminal fines and cessation of drug use, respectively), in both cases the subjects of the program demonstrated increased compliance with court orders, an important justice system goal. In the case of Project HOPE, subjects also showed substantially reduced levels of criminal offending. The results of these studies suggest that, unlike increments to long sentences, short sentences do have a material deterrent effect on a crime-prone population.

The conclusion that increasing already long sentences has no material deterrent effect also has implications for mandatory minimum sentencing. Mandatory minimum sentence statutes have two distinct properties. One is that they typically increase already long sentences, which we have concluded is not an effective deterrent. Second, by mandating incarceration, they also increase the certainty of imprisonment *given conviction*. Because, as discussed earlier, the certainty of conviction even following commission of a felony is typically small, the effect of mandatory minimum sentencing on certainty of punishment is greatly diminished. Furthermore, as discussed at length by Nagin (2013a, 2013b), all of the evidence on the deterrent effect of certainty of punishment pertains to the deterrent effect of the certainty of apprehension, not to the certainty of postarrest outcomes (including certainty of imprisonment given conviction). Thus, there is no evidence one way or the other on the deterrent effect of the second distinguishing characteristic of mandatory minimum sentencing (Nagin, 2013a, 2013b).

INCAPACITATION

Crime prevention by incapacitation has an appealing directness—the incarceration of criminally active individuals will prevent crime through their physical separation from the rest of society. In contrast with crime prevention based on deterrence or rehabilitation, no assumptions about human behavior appear to be required to avert the social cost of crime.

Despite the apparent directness and simplicity of incapacitation, estimates of the size of its effects vary substantially. Most estimates are reported in terms of an elasticity—the percentage change in the crime rate in response to a 1 percent increase in the imprisonment rate. Spelman (1994) distinguishes between two types of incapacitation studies—simulation and econometric studies. Simulation studies are based on the model of Avi-Itzhak and Schinnar (1973), described below. The earliest simulation-based estimates are reported by Cohen (1978). Her elasticity estimates range from –0.05 to –0.70, meaning each 1 percent increase in imprisonment rates would result in a crime reduction of 0.05 to 0.7 percent. Later estimates by DiIulio and Piehl (1991), Piehl and DiIulio (1995), and Spelman (1994) fall within a narrower but still large range of about –0.10 to –0.30—a 0.1 to 0.3 percent crime reduction for a 1 percent increase in imprisonment.

Econometric studies also examine the overall relationship between the crime rate and the imprisonment rate. These studies are discussed in greater detail in the next section. The range of elasticity estimates from these studies is similarly large—from no reduction in crime (Marvell and Moody, 1994; Useem and Piehl, 2008; Besci, 1999) to a reduction of about –0.4 or more (Levitt, 1996). These divergent findings are one of the key reasons the

committee concludes that we cannot arrive at a precise estimate, or even a modest range of estimates, of the magnitude of the effect of incarceration on crime rates.

Many factors contribute to the large differences in estimates of the crimes averted by incapacitation. These factors include whether the data used to estimate crimes averted pertain to people in prison, people in jail, or nonincarcerated individuals with criminal histories; the geographic region from which the data are derived; the types of crimes included in the accounting of crimes averted; and a host of technical issues related to the measurement and modeling of key dimensions of the criminal career (National Research Council, 1986; Cohen, 1986; Visher, 1986; Piquero and Blumstein, 2007). Here we focus on two issues that are particularly important to estimating and interpreting incapacitation effects: the estimate of the rate of offending of active offenders and the constancy of that rate over the course of the criminal career.

Research on incapacitation effects derives from what has come to be called the "criminal career" model first laid out in a seminal paper by Avi-Itzhak and Schinnar (1973). These authors assume that active offenders commit crimes at a mean annual rate (denoted by λ) over their criminal career (averaging τ years in length).[10] The extent of punishment is described by the probability of arrest, conviction, and incarceration for a given crime and the length of time spent in prison.

At the level of the population, this framework yields an accounting model that calculates the hypothetical level of crime in society in the absence of incarceration and the fraction of that level prevented by incarceration as a function of the probability of incarceration and the average length of the sentence served. The theory, as already noted, is appealingly simple. The model has no behavioral component. It views the prevention of crime not as a behavioral response to punishment, as in deterrence, but as the result of the simple physical isolation of offenders. We return to the implications of these behavioral assumptions below, but first consider two other key assumptions of the Azi-Itzhak and Shinnar framework that has been so influential in research on incapacitation. The first concerns the assumption that λ is constant across offenders, and the second is that it remains unchanged over the duration of the criminal career.

Constancy of λ Across the Population

The most influential source of data for calculating λ—or the average rate at which active offenders commit crimes—has been the RAND Second

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[10]It is further assumed that, while the offenders were active, they committed crimes according to a Poisson process and that career length was exponentially distributed.

Inmate Survey, for which a sample of 2,190 incarcerated respondents in California, Michigan, and Texas was interviewed in the 1970s. The survey recorded respondents' criminal involvement in the 3 years before their current incarceration (Petersilia et al., 1978). The most important finding of this survey was that λ is far from being constant across inmates; to the contrary, it is highly skewed. Table 5-1 is taken from Visher's (1986) reanalysis of the RAND data. For robbery, the mean to median ratio is 8.3, 12.6, and 5.2 for California, Michigan, and Texas, respectively. For burglary, these respective ratios are 15.9, 17.2, and 11.0. The difference between the median and the 90th percentile is even more dramatic. With the exception of robbery in Texas, that ratio always exceeds 20 to 1. The skewness of the offending rate distribution has crucial implications for the calculation of incapacitation effects: as a matter of accounting, the estimated size of incapacitation effects will be highly sensitive to whether the mean, median, or some other statistic is used to summarize the offending rate distribution.

Skewness in the offending rate distribution also has important implications for projecting the marginal incapacitation effect of changes in the size of the prison population. This is due to the important concept of "stochastic selectivity" (Canela-Cacho et al., 1997). Stochastic selectivity formalizes the observation that unless high-rate offenders are extremely skillful in avoiding apprehension, they will be represented in prison disproportionately relative to their representation in the population of nonincarcerated

TABLE 5-1 Differences in Distributions of λ for Inmates Who Reported Committing Robbery or Burglary, by State

Statistic	California	Michigan	Texas
Robbery			
25th pct.	2.1	1.4	0.9
50th pct.	5.1	3.6	2.5
75th pct.	19.8	13.1	6.2
90th pct.	107.1	86.1	15.2
Mean	42.4	45.4	13.1
Burglary			
25th pct.	2.3	1.9	1.2
50th pct.	6.2	4.8	3.1
75th pct.	49.1	24.0	9.9
90th pct.	199.9	258.0	76.1
Mean	98.8	82.7	34.1

NOTE: Data were computed as part of the reanalysis.
SOURCE: Visher (1986).

offenders. This is the case because they put themselves at risk of apprehension so much more frequently than lower-rate offenders.

Thus, surveys of offending among the incarcerated will overstate the crime prevention benefits of further increases in the imprisonment rate. The basis for this conclusion is straightforward: because most of the high-rate offenders will already have been apprehended and incarcerated, there will be relatively few of them at large to be incapacitated by further expansion of the prison population. The implication is that the crime control benefits of incapacitation will decrease with the scale of imprisonment. Canela-Cacho and colleagues (1997) use the RAND Second Inmate Survey to estimate the actual magnitude of the model's prediction. Their findings are dramatic—they conclude that offending rates of the incarcerated are on average 10 to 50 times larger than those of the nonincarcerated. Figure 5-2 compares projections of the distribution of robbery offense rates for offenders who are and are not incarcerated. The distributions are starkly different—few high-rate robbers are at large because most have already been apprehended and represent a large share of the prison population.

Direct evidence of stochastic selectivity is reported by Vollaard (2012), who studied the introduction of repeat-offender sentence enhancements in the Netherlands. These enhancements increased sentences from 2 months to 2 years for offenders with 10 or more prior convictions—mainly older men with histories of substance abuse who were involved in shoplifting and other property crimes. The sentence enhancements initially had a large crime-reducing effect, but the effect declined as they were administered to less serious offenders with fewer prior convictions. Recent work by Johnson and Raphael (2012) on the crime prevention effect of imprisonment also suggests that the size of the effect diminishes with the scale of imprisonment. They estimate substantial declines in the number of crimes averted per prisoner over the period 1991 to 2004 compared with 1978 to 1990. This finding also is consistent with the results of an earlier analysis by Useem and Piehl (2008), who conclude that crime reduction benefits decline with the scale of imprisonment, and with Owens' (2009) finding of modest incapacitation effects based on her analysis of 2003 data from Maryland.

Constancy of λ Over the Criminal Career

The criminal career model assumes that the offending rate is constant over the course of the criminal career. However, large percentages of crimes are committed by young people, with rates peaking in the midteenage years for property offenses and the late teenage years for violent offenses, followed by rapid declines (e.g., Farrington, 1986; Sweeten et al., 2013); in an application of group-based trajectory modeling (Nagin, 2005), Laub and Sampson (2003) show that the offending trajectories of all identified groups
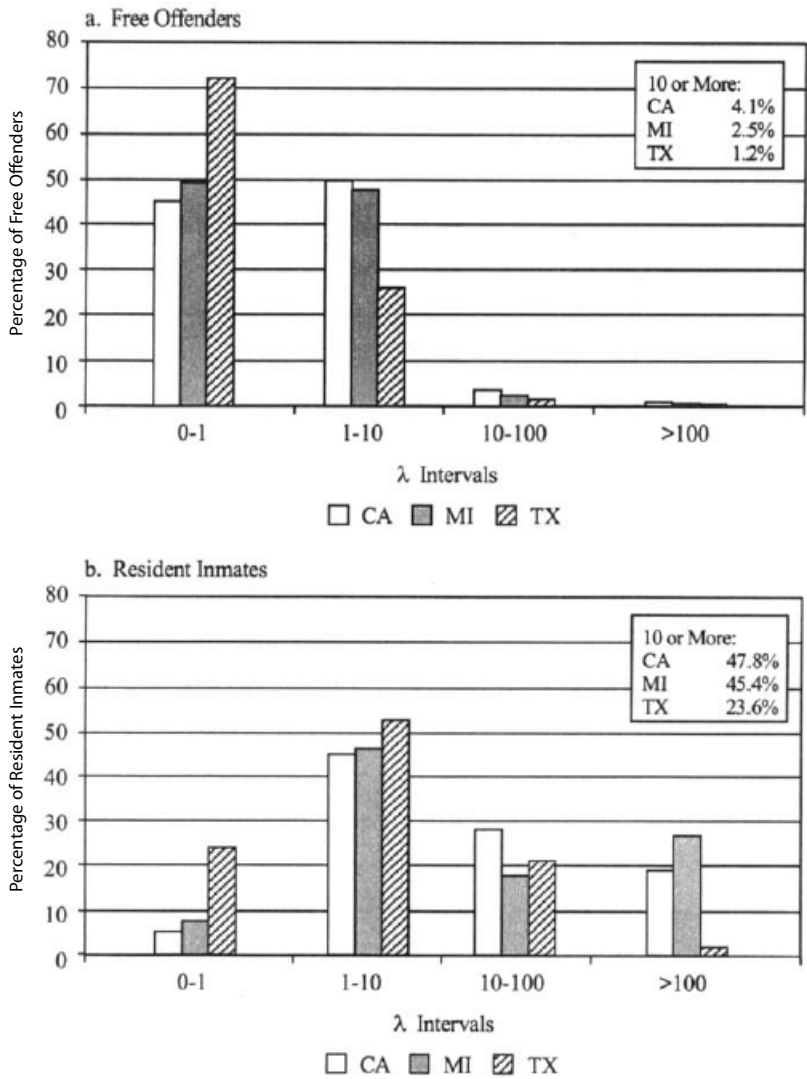
FIGURE 5-2 Distribution of offense rates (λ) among free offenders and resident inmates.
SOURCE: Canela-Cacho et al. (1997).

decline sharply with age. The implication is that estimates of offending rates of prison inmates based on self-reports or arrest data for the period immediately prior to their incarceration will tend to substantially overstate what their future offending rate will be, especially in their middle age and beyond. This conclusion is reinforced by the criminal desistance research of Blumstein and Nakamura (2009), Bushway and colleagues (2011), and Kurlychek and colleagues (2006). Blumstein and Nakamura (2009), for example, find that offending rates among the formerly arrested are statistically indistinguishable from those of the general population after 7 to 10 years of remaining crime free.[11]

Other Considerations

Beyond the constancy of the offending rate across offenders and over the criminal career, several other assumptions relate to the effectiveness of imprisonment as a public safety strategy. Three assumptions are particularly relevant here.

The first has to do with the phenomenon of replacement, as discussed in Box 5-1. From the inception of research on incapacitation, it has been recognized that incarceration of drug dealers is ineffective in preventing drug distribution through incapacitation because dealers are easily replaced. Miles and Ludwig (2007) argue that analogous market mechanisms may result in replacement for other types of crime.

Second, the criminal career model assumes that the experience of incarceration has no impact, positive or negative, on the intensity and duration of postrelease offending. As discussed later in this chapter, evidence of this effect is generally poor, but there is reason to suspect that the experiences of imprisonment may exacerbate postrelease offending.

Third, the criminal career model assumes away co-offending, a phenomenon that is particularly common among juveniles and young adults. In so doing, the model implicitly assumes that incapacitation of one of the co-offenders will avert the offense in its entirety—a dubious assumption. Indeed, Marvell and Moody (1994) conclude that failure to account for co-offending may inflate incapacitation estimates by more than a third.[12]

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[11]Most active career offenders also desist from crime at relatively early ages—typically in their 30s (Farrington, 2003). The "age-crime curve" and the short residual lengths of criminal careers are among the principal reasons why it can be difficult to implement ideas about "selective incapacitation" of high-rate offenders—it is easy to identify high-rate serious offenders retrospectively but not prospectively.

[12]We also note that in their reanalysis of the RAND data, Marvell and Moody make further adjustments for many of the other factors already discussed. The adjustments result in a 77 percent reduction in their estimate of the incapacitation effect compared with the RAND estimate.

BOX 5-1
Replacement Effects and Drug Arrests

For several categories of offenders, an incapacitation strategy of crime pre-vention can misfire because most or all of those sent to prison are rapidly replaced in the criminal networks in which they participate. Street-level drug trafficking is the paradigm case. Drug dealing is part of a complex illegal market with low barriers to entry. Net earnings are low, and probabilities of eventual arrest and imprisonment are high (Levitt and Venkatesh, 2000; Caulkins and Reuter, 2010; Reuter, 2013). Drug policy research has nonetheless shown consistently that arrested dealers are quickly replaced by new recruits (Dills et al., 2008; MacCoun and Martin, 2009). At the corner of Ninth and Concordia in Milwaukee in the mid-1990s, for example, 94 drug arrests were made within a 3-month period. "These arrests, [the police officer] pointed out, were easy to prosecute to conviction. But . . . the drug market continued to thrive at the intersection" (Smith and Dickey, 1999, p. 8).

Despite the risks of drug dealing and the low average profits, many young disadvantaged people with little social capital and limited life chances choose to sell drugs on street corners because it appears to present opportunities not otherwise available. However, such people tend to overestimate the benefits of that activity and underestimate the risks (Reuter et al., 1990; Kleiman, 1997). This perception is compounded by peer influences, social pressures, and deviant role models provided by successful dealers who live affluent lives and manage to avoid arrest. Similar analyses apply to many members of deviant youth groups and gangs: as members and even leaders are arrested and removed from circulation, others take their place. Arrests and imprisonments of easily replaceable offenders create illicit "opportunities" for others.

ESTIMATING THE TOTAL EFFECT OF INCARCERATION ON CRIME

Instead of studying policy changes in specific jurisdictions or asking offenders about their levels of criminal involvement, another commonly used design analyzes the relationship between imprisonment rates and crime rates across states and over time. The usual specification regresses the logarithm of the crime rate on the logarithm of the incarceration rate, yielding an elasticity of the crime rate with respect to incarceration. This elasticity measures the expected percentage change in the crime rate for a 1 percent increase in the incarceration rate. Because the estimated elasticity does not distinguish between the effects of incapacitation and the effects of deterrence, researchers in this domain interpret it as estimating a "total effect" of incarceration on crime.

A key challenge for studies in this research tradition is the prob-lem of endogeneity—crime rates may affect incarceration rates even as

incarceration rates affect crime rates because an increase in crime may increase the numbers of arrests and prison admissions. Under these conditions, a coefficient from a regression of crime rates on imprisonment rates will reflect both the reductions in crime due to incapacitation and deterrence and the increase in incarceration due to increased crime. Estimates of the negative incarceration effect that do not adjust for this endogeneity will thus be biased toward zero, underestimating the degree to which imprisonment reduces crime.

Adjustment for endogeneity of this kind usually involves instrumental variables. In this problem context, an instrumental variable is a variable that (1) is not affected by the crime rate but (2) does affect the incarceration rate, and (3) has no effect on the crime rate separate from its effect on the incarceration rate. Although instrumental variables generally are difficult to find, researchers have argued that some policy changes meet these three conditions. Such policy changes may thus be useful instruments for identifying the causal effect of incarceration on crime, purged of the influence of crime on incarceration. We discuss these studies below.

A review by Donohue (2007) identifies eight studies of the relationship of crime rates to incarceration rates. Six of the eight studies use data from all or nearly all of the 50 states for varying time periods from the 1970s to 2000, and the remaining two use the RAND inmate surveys and county-level data from Texas. All find statistically significant negative associations between crime rates and incarceration rates, implying a crime prevention effect of imprisonment. However, the magnitudes of the estimates of this effect vary widely, from nil for a study allowing for the possibility that prevention effects decline as the scale of incarceration increases (Liedka et al., 2006) to –0.4 percent for each 1 percent increase in the incarceration rate (Spelman, 2000). Apel and Nagin (2011), Durlauf and Nagin (2011a, 2011b), and Donohue (2007) discuss the main limitations of these studies.

Western (2006) performed a Bayesian sensitivity analysis that adjusted regressions not accounting for endogeneity according to different beliefs about the effect of crime on incarceration. In an analysis of 48 states for the period 1971 to 2001, the assumption that crime had no effect on incarceration yielded an elasticity of the index crime rate to state incarceration rates of –0.07. Assuming strong endogeneity—that a 1 percent increase in crime produced a 0.15 percent increase in incarceration—yielded an elasticity of –0.18 that was more than twice as large, although this estimate was statistically insignificant. In short, the estimated elasticity of crime with respect to incarceration is acutely sensitive to beliefs about the dependence of incarceration on crime. The highest estimates of crime-incarceration elasticity imply that crime has a large effect on incarceration rates.

Explicit adjustment for endogeneity with instrumental variables is provided by Levitt (1996), Spelman (2000), and Johnson and Raphael (2012).

Levitt (1996) uses court-ordered prison releases and indicators for over-crowding litigation to form a set of instrumental variables. (Spelman [2000] uses the same instruments applied to a slightly longer time series.) Levitt argues that such court orders meet the test for providing a valid estimate of the effect of the incarceration rate on the crime rate. The orders are not affected by and have no direct effect on the crime rate, affecting it only insofar as they affect the imprisonment rate. Levitt's instrumental variables-based point elasticity estimates vary by specification and crime type, but some are as large as –0.4.

Even if one accepts Levitt's arguments about the validity of the prison overcrowding instrument, the estimated effects have only limited policy value. The instrument, by its construction, likely is measuring the effect on crime of the early release of selected prisoners, probably those nearing the end of their sentenced terms. It may also reflect the effect of diverting individuals convicted of less serious crimes to either local jails or community supervision. In either case, the estimates are not informative about the crime prevention effects, whether by deterrence or incapacitation, of sentence enhancements related to the manner in which a crime is committed (e.g., weapon use), to the characteristics of the perpetrator (e.g., prior record), or to policies affecting the likelihood of incarceration. More generally, the uncertainty about what is actually being measured inherently limits the value of the estimated effects for both policy and social science purposes.

A more recent instrumental variables-based study by Johnson and Raphael (2012) specifies a particular functional dependence of prison admissions on crime and uses this information to identify the incarceration effect. Identification is based on the assumption that prison populations do not change instantaneously in response to changes in the size of the criminal population. As in the non-instrumental variables-based analysis of Liedka and colleagues (2006), Johnson and Raphael conclude that the crime prevention effect of imprisonment has diminished with the scale of imprisonment, which was rising steadily over the period of their analysis (1978 to 2004). Their conclusion also is consistent with previously discussed findings of Canala-Cacho and colleagues (1997), Vollaard (2012), and Owens (2009).

In light of the incapacitation studies, evidence reported by Johnson and Raphael (2012) that the crime-incarceration elasticity is smaller at higher incarceration rates suggests that relatively low-rate offenders are detained by additional incarceration when the incarceration rate is high. However, even the incapacitation interpretation is cast in doubt by the aging of the U.S. prison population. Between 1991 and 2010, the percentage of prisoners in state and federal prisons over age 45 nearly tripled, from 10.6 percent to 27.4 percent (Beck and Mumola, 1999; Guerino et al., 2011). Thus, the apparent decline in the incapacitative effectiveness of incarceration with

scale may simply be reflecting the aging of the prison population (regardless of whether this is attributable to longer sentences), which coincided with rising imprisonment rates. Further complicating the decreasing returns interpretation is the changing composition of the prison population with respect to the types of offenses for which prisoners have been convicted. For more than four decades, the percentage of prisoners incarcerated for non-Part I Federal Bureau of Investigation (FBI) index crimes[13] has increased substantially (Blumstein and Beck, 1999, 2005). Thus, the reduction in crime prevention effectiveness may be due to the types of prisoners incarcerated rather than the high rate of incarceration itself.

All of these studies, whether instrumental variables-based or not, also suffer from an important conceptual flaw that limits their usefulness in understanding deterrence and devising crime control policy. Prison population is not a policy variable per se; rather, it is an outcome of sanction policies dictating who goes to prison and for how long—the certainty and severity of punishment. In all incentive-based theories of criminal behavior in the tradition of Bentham and Beccaria, the deterrence response to sanction threats is posed in terms of the certainty and severity of punishment, not the incarceration rate. Therefore, to predict how changes in certainty and severity might affect the crime rate requires knowledge of the relationship of the crime rate to certainty and severity as separate entities. This knowledge is not provided by the literature that analyzes the relationship of the crime rate to the incarceration rate.

These studies also were conducted at an overly global level. Nagin (1998) discusses two dimensions of sanction policies that affect incarceration rates. The first—"type"—encompasses three categories of policies: those that determine the certainty of punishment, such as by requiring mandatory imprisonment; those that affect sentence length, such as determinate sentencing laws; and those that regulate parole powers. The second dimension—"scope"—distinguishes policies with a broad scope, such as increased penalties for a wide range of crimes, from policies focused on particular crimes (e.g., drug offenses) or criminals (e.g., repeat offenders).

The 5-fold growth in incarceration rates over the past four decades is attributable to a combination of policies belonging to all cells of this matrix. As described in Chapter 3, parole powers have been greatly curtailed and sentence lengths increased, both in general and for particular crimes (e.g., drug dealing), and judicial discretion to impose nonincarcerative sanctions has been reduced (Tonry, 1996; Blumstein and Beck, 1999, 2005; Raphael and Stoll, 2009). Consequently, any impact of the increase in prison population

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[13]Part I index crimes are homicide, rape, robbery, aggravated assault, burglary, larceny/theft, motor vehicle theft, and arson.

on the crime rate reflects the effect of an amalgam of potentially interacting factors.

There are good reasons for predicting differences in the crime reduction effects of different types of sanctions (e.g., mandatory minimum sentences for repeat offenders versus prison diversion programs for first-time offenders). Obvious sources of heterogeneity in offender response include such factors as prior contact with the criminal justice system, demographic characteristics, and the mechanism by which sanction threats are communicated to their intended audience.

THE CRIMINAL INVOLVEMENT OF THE FORMERLY INCARCERATED

Research on incapacitation and deterrence focuses largely on the contemporaneous effect of incarceration—the crime prevented now by today's incarceration.[14] However, today's incarceration may also affect the level of crime in the future. In studying the lagged effects of incarceration on crime, researchers generally have focused on the criminal involvement of people who have been incarcerated. Two competing hypotheses appear plausible. On the one hand, people who have served time in prison may be less likely to be involved in crime because the experience of incarceration has deterred them or because they have been involved in rehabilitative programs. On the other hand, the formerly incarcerated may be more involved in crime after prison because incarceration has damaged them psychologically in ways that make them more rather than less crime prone, has brought them into contact with criminally involved peers, has exposed them to violent or other risky contexts, or has placed them at risk of crime because of imprisonment's negative social effects on earnings and family life (discussed in Chapters 8 and 9, respectively). A recent review of the literature on imprisonment and reoffending by Nagin and colleagues (2009) concludes that there is little evidence of a specific deterrent or rehabilitative effect of incarceration, and that all evidence on the effect of imprisonment on reoffending points to either no effect or a criminogenic effect.[15]

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[14]The committee is not aware of any research estimating the lagged effects of incapacitation on crime.

[15]It is important to distinguish the effect of imprisonment on recidivism from the effect of aging on recidivism. Studies of the effect of aging on recidivism examine how rates of recidivism change with age, whereas studies of the effect of imprisonment on recidivism examine how imprisonment affects recidivism compared with a noncustodial sanction such as probation. Thus, the conclusion that rates of recidivism tend to decline with age does not contradict the conclusion that imprisonment, compared with a noncustodial sanction, may be associated with higher rates of recidivism.

Whatever the effects of incarceration on those who have served time, research on recidivism offers a clear picture of crime among the formerly incarcerated. The Bureau of Justice Statistics has published two multistate studies estimating recidivism among state prisoners. Both take an annual cohort of prison releases and use state and federal criminal record databases to estimate rates of rearrest, reconviction, and resentencing to prison. Beck and Shipley (1989) examine criminal records for a 1983 cohort of released prisoners in 11 states, while Langan and Levin (2002) analyze a 1994 cohort in the 11 original states plus 4 others. Although the incarceration rate had roughly doubled between 1983 and 1994, the results of the two studies are strikingly similar: the 3-year rearrest rate for state prisoners was around two-thirds in both cohorts (67.5 percent in 1994 and 62.5 percent in 1983).

Research on recidivism recently has been augmented by studies of "redemption"—the chances of criminal involvement among offenders who have remained crime free (Blumstein and Nakamura, 2009; Kurlychek et al., 2006, 2007; Soothill and Francis, 2009). Although none of these studies examines desistance among the formerly incarcerated, their findings are suggestive and point to the need for research on long-term patterns of desistance among those who have served prison time. Using a variety of cohorts in the United States and the United Kingdom, this research finds that the offending rate of the formerly arrested or those with prior criminal convictions converges toward the (age-specific) offending rate of the general population, conditional on having been crime free for the previous 7 to 10 years. The redemption studies also show that the rate of convergence of the formerly incarcerated tends to be slower if ex-offenders are younger or if they have a long criminal history.

Rehabilitative programming has been the main method for reducing crime among the incarcerated. Such programming dates back to Progressive-era reforms in criminal justice that also produced a separate juvenile justice system for children involved in crime, indeterminate sentencing laws with discretionary parole release, and agencies for parole and probation supervision. For much of the twentieth century, rehabilitation occupied a central place in the official philosophy—if not the practice—of U.S. corrections. This philosophy was significantly challenged in the 1970s when a variety of reviews found that many rehabilitative programs yielded few reductions in crime (Martinson, 1974; National Research Council, 1978a). By the late 1990s, consensus had begun to swing back in favor of rehabilitative programs. Gaes and colleagues (1999) report, with little controversy, that well-designed programs can achieve significant reductions in recidivism, and that community-based programs and programs for juveniles tend to be more successful than programs applied in custody and with adult clients. Gaes and colleagues also point to the special value

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of cognitive-behavioral therapies that help offenders manage conflict and aggressive and impulsive behaviors.

Since the review of Gaes and colleagues, there have been several important evaluations of transitional employment and community supervision programs (Hawken and Kleiman, 2009; Redcross et al., 2012). Results for transitional employment among parole populations have been mixed. Over a 3-year follow-up period, prison and jail incarceration was significantly reduced by a 6-week period of transitional employment, but arrests and convictions were unaffected. Parole and probation reforms involving both sanctions that are swift and certain but mild and sanctions that are graduated have been shown to reduce violations and revocations. Because evaluation of such programs is ongoing, information about other postprogram effects is not yet available.

Researchers and policy makers often have claimed that prison is a "school for criminals," immersing those with little criminal history with others who are heavily involved in serious crime. Indeed, this view motivated a variety of policies intended to minimize social interaction among the incarcerated in the early nineteenth-century penitentiary. Much of the research reported in Chapters 6 through 9 on the individual-level effects of incarceration suggests plausible pathways by which prison time may adversely affect criminal desistance. Research suggests the importance of steady employment and stable family relationships for desisting from crime (Sampson and Laub, 1993; Laub and Sampson, 2003). To the extent that incarceration diminishes job stability and disrupts family relationships, it may also be associated with continuing involvement in crime. As previously indicated, Nagin and colleagues (2009) found that a substantial number of studies report evidence of a criminogenic effect of imprisonment, although they also conclude that most of these studies were based on weak research designs.

EFFECTS OF INCARCERATION FOR DRUG
OFFENSES ON DRUG PRICES AND DRUG USE

As discussed in Chapter 2, a large portion of the growth in state and federal imprisonment is due to the increased number of arrests for drug offenses and the increased number of prison commitments per drug arrest. Law enforcement efforts targeting drug offenses expanded greatly after the 1970s, with the arrest rate for drugs increasing from about 200 per 100,000 adults in 1980 to more than 400 per 100,000 in 2009 (Snyder, 2011). Sentencing for drug offenses also became more punitive, as mandatory prison time for these offenses was widely adopted by the states through the 1980s and incorporated in the Federal Sentencing Guidelines in 1986. Expanded enforcement and the growing use of custodial sentences for drug

offenses also produced a large increase in the incarceration rate for these offenses. From 1980 to 2010, the state incarceration rate for drug offenses grew from 15 per 100,000 to more than 140 per 100,000, a faster rate of increase than for any other offense category. State prison admissions for drug offenses grew most rapidly in the 1980s, increasing from about 10,000 in 1980 to about 116,000 by 1990 and peaking at 157,000 in 2006 (Beck and Blumstein, 2012, Figures 12 and 13).

As discussed in Chapter 4, successive iterations of the war on drugs, announced by the Nixon, Reagan, and Bush administrations, focused drug control policy on both the supply side and the demand side of the illegal drug market. The intensified law enforcement efforts not only were aimed chiefly at reducing the supply of drugs, but also were intended to reduce the demand for drugs. On the supply side, the specific expectation of policy makers has been that, by taking dealers off the streets and raising the risks associated with selling drugs, these enforcement strategies and more severe punishments would reduce the supply of illegal drugs and raise prices, thereby reducing drug consumption. On the demand side, penalties for possession became harsher as well, and criminal justice agencies became actively involved in reducing demand through the arrest and prosecution of drug users. As a result of this twin focus on supply and demand, incarceration rates for drug possession increased in roughly similar proportion to incarceration rates for drug trafficking (Caulkins and Chandler, 2006).

Much of the research on drug control policy—and specifically, on the effectiveness of law enforcement and criminal justice strategies in carrying out those policies—is summarized in two reports of the National Research Council (2001, 2011). On the supply side of the drug market, the 2001 report finds that "there appears to be nearly unanimous support for the idea that the current policy enforcing prohibition of drug use substantially raises the prices of illegal drugs relative to what they would be otherwise" (p. 153). However, the combined effect of both supply- and demand-side enforcement on price is uncertain (Kleiman, 1997; Kleiman et al., 2011; Reuter, 2013) because effective demand-suppression policies will tend to decrease rather than increase price. Thus, the well-documented reduction in the price of most drugs since the early 1980s (Reuter, 2013) may, in principle, be partly a reflection of success in demand suppression.[16] Nevertheless,

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[16]National data on drug price trends come from the System to Retrieve Information from Drug Evidence (STRIDE), which combines information on acquisitions of illegal drugs by the Drug Enforcement Administration (DEA) and the Metropolitan Police of the District of Columbia (MPDC). The underlying reporting base from DEA field offices is very sparse, and earlier National Research Council reports warn of the acute limitations of the STRIDE data. The data show large declines in the prices of cocaine and heroin since the early 1980s, and prices have largely been fluctuating around a historically low level over the past two decades. A typical estimate records a decline in the price of a pure gram of powder cocaine from $400

the ultimate objective of both supply- and demand-side enforcement efforts is to reduce the consumption of illicit drugs, and there is little evidence that enforcement efforts have been successful in this regard. The National Research Council (2001, p. 193) concludes: "In summary, existing research seems to indicate that there is little apparent relationship between severity of sanctions prescribed for drug use and prevalence or frequency of use, and that perceived legal risk explains very little in the variance of individual drug use." Although data often are incomplete and of poor quality, the best empirical evidence suggests that the successive iterations of the war on drugs—through a substantial public policy effort—are unlikely to have markedly or clearly reduced drug crime over the past three decades.

KNOWLEDGE GAPS

We offer the following observations regarding gaps in knowledge of the crime prevention effects of incarceration and research to address those gaps.

Deterrence and Sentence Length

The deterrent effect of lengthy sentences is modest at best. We have pointed to evidence from the Project HOPE experiment (Kleiman, 2009; Hawken and Kleiman, 2009; Hawken, 2010) and a fine enforcement experiment (Weisburd et al., 2008) suggesting that the deterrent effect of sentence length may be subject to decreasing returns. Research on the relationship between sentence length and the magnitude of the deterrent effect is therefore a high priority. Related research is needed to establish whether other components of the certainty of punishment beyond the certainty of apprehension, such as the probability of imprisonment given conviction, are effective deterrents.

Sentencing Data by State

A National Research Council report on the deterrent effect of the death penalty (National Research Council, 2012a) describes large gaps in state-level data on the types of noncapital sanctions legally available for the punishment of murder and on their actual utilization. Comparable gaps exist for other serious crimes that are not subject to capital punishment. As a consequence, it is not possible to compare postconviction sentencing practices across the 50 states. Development of a comprehensive database

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in 1981 to under $100 in 2007 (Fries et al., 2008). Similar price declines are found for heroin and crack cocaine.

that would allow for such cross-state comparisons over time is therefore a high priority.

CONCLUSION

Many studies have attempted to estimate the combined incapacitation and deterrence effects of incarceration on crime using panel data at the state level from the 1970s to the 1990s and 2000s. Most studies estimate the crime-reducing effect of incarceration to be small and some report that the size of the effect diminishes with the scale of incarceration. Where adjustments are made for the direct dependence of incarceration rates on crime rates, the crime-reducing effects of incarceration are found to be larger. Thus, the degree of dependence of the incarceration rate on the crime rate is crucial to the interpretation of these studies. Several studies influential for the committee's conclusions in Chapters 3 and 4 find that the direct dependence of the incarceration rate on the crime rate is modest, lending credence to a small crime-reduction effect on incarceration. However, research in this area is not unanimous and the historical and legal analysis is hard to quantify. If the trend in the incarceration rate depended strongly on the trend in crime, then a larger effect of incarceration on crime would be more credible. On balance, panel data studies support the conclusion that the growth in incarceration rates reduced crime, but the magnitude of the crime reduction remains highly uncertain and the evidence suggests it was unlikely to have been large.

Whatever the estimated average effect of the incarceration rate on the crime rate, the available studies on imprisonment and crime have limited utility for policy. The incarceration rate is the outcome of policies affecting who goes to prison and for how long and of policies affecting parole revocation. Not all policies can be expected to be equally effective in preventing crime. Thus, it is inaccurate to speak of the crime prevention effect of incarceration in the singular. Policies that effectively target the incarceration of highly dangerous and frequent offenders can have large crime prevention benefits, whereas other policies will have a small prevention effect or, even worse, increase crime in the long run if they have the effect of increasing postrelease criminality.

Evidence is limited on the crime prevention effects of most of the policies that contributed to the post-1973 increase in incarceration rates. Nevertheless, the evidence base demonstrates that lengthy prison sentences are ineffective as a crime control measure. Specifically, the incremental deterrent effect of increases in lengthy prison sentences is modest at best. Also, because recidivism rates decline markedly with age and prisoners necessarily age as they serve their prison sentence, lengthy prison sentences are an inefficient approach to preventing crime by incapacitation unless they

are specifically targeted at very high-rate or extremely dangerous offenders. For these reasons, statutes mandating lengthy prison sentences cannot be justified on the basis of their effectiveness in preventing crime.

Finally, although the body of credible evidence on the effect of the experience of imprisonment on recidivism is small, that evidence consistently points either to no effect or to an increase rather than a decrease in recidivism. Thus, there is no credible evidence of a specific deterrent effect of the experience of incarceration.

Our review of the evidence in this chapter reaffirms the theories of deterrence first articulated by the Enlightenment philosophers Beccaria and Bentham. In their view, the overarching purpose of punishment is to deter crime. For state-imposed sanctions to deter crime, they theorized, requires three ingredients—severity, certainty, and celerity of punishment. But they also posited that severity alone would not deter crime. Our review of the evidence has confirmed both the enduring power of their theories and the modern relevance of their cautionary observation about overreliance on the severity of punishment as a crime prevention policy.