

# Reconsidering Incarceration:

## *New Directions for Reducing Crime*

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By **Don Stemen**

*Director of Research, Center on Sentencing and Corrections*



## FROM THE DIRECTOR

After falling for more than a decade, in many parts of the United States crime rates appear to be inching up again. Although it is still too early to call this a trend, it is not hard to imagine this shift in direction leading to calls for tougher sentences and more incarceration—even though our prisons are already full and corrections in many states already absorbs so much of the available resources.

The last time we embarked down this path, there was little empirical evidence showing that jails and prisons represented the best way to reduce crime. Today, in contrast, researchers have so much data to draw on that, for anyone not schooled in research protocols and analysis, it can sometimes seem like there's too much information.

This report from Don Stemen, director of research in Vera's Center on Sentencing and Corrections, seeks to make sense of the current body of research literature on the relationship between crime and incarceration. As a comparison and analysis of what we now know about the relationship between crime and incarceration, it should help policymakers and others understand information that is complex, and sometimes seemingly contradictory. However, it also goes a step further, examining research in related fields that suggest alternatives to incarceration that promise similar or better results—sometimes at lower cost.

This report could not be more timely. For the past several years, political leaders on both sides of the aisle have been looking for cost-effective ways to increase public safety. Given the pragmatic demands of our times, we hope this report provides much needed guidance on the optimal use of incarceration, as well as alternative investment choices.



Michael P. Jacobson  
Director, Vera Institute of Justice

## EXECUTIVE SUMMARY

Current research on the relationship between incarceration and crime provides confusing and even contradictory guidance for policymakers. The most sophisticated analyses generally agree that increased incarceration rates have some effect on reducing crime, but the scope of that impact is limited: a 10 percent increase in incarceration is associated with a 2 to 4 percent drop in crime. Moreover, analysts are nearly unanimous in their conclusion that continued growth in incarceration will prevent considerably fewer, if any, crimes than past increases did and will cost taxpayers substantially more to achieve.

These outcomes raise the question of whether or not further increases in incarceration offer the most effective and efficient strategy for combating crime. Additional research examined in this report reveals several other variables that have also been shown to have a relationship with lower crime rates. An increase in the number of police per capita, a reduction in unemployment, and increases in real wage rates and education have all been shown to be associated with lower rates of crime.

Although these latter findings do not necessarily indicate a cause and effect relationship, they do suggest that policymakers with limited resources should weigh the modest benefits of more incarceration against potentially greater reductions in crime that might be realized from investing in other areas.



In the 1970s the United States embarked on one of the largest policy experiments of the 20th century—the expanded use of incarceration to achieve greater public safety. Between 1970 and 2005, state and federal authorities increased prison populations by 628 percent.<sup>1</sup> By 2005, more than 1.5 million persons were incarcerated in U.S. prisons on any given day, and an additional 750,000 were incarcerated in local jails.<sup>2</sup> By the turn of the 21st century, more than 5.6 million living Americans had spent time in a state or federal prison—nearly 3 percent of the U.S. population.<sup>3</sup> Having so many people imprisoned over the course of 30 years raises an obvious question: Has this experiment worked?

The most sophisticated studies available generally agree that increased incarceration rates have some impact on reducing crime rates, but the scope of that impact is limited.<sup>4</sup> For example, while the U.S. experienced a dramatic drop in crime between 1992 and 1997, imprisonment was responsible for just 25 percent of that reduction.<sup>5</sup> Seventy-five percent of the crime drop through the 1990s was attributable to factors other than incarceration.<sup>6</sup> As a result, many commentators argue that the pivotal question for policymakers is not “Does incarceration increase public safety?” but rather, “Is incarceration the most effective way to increase public safety?”

The emerging answer to the rephrased query is “no.” Analysts are nearly unanimous in their conclusion that continued growth in incarceration will prevent considerably fewer, if any, crimes—and at substantially greater cost to taxpayers.<sup>7</sup> In the future, policing strategies, unemployment, wages, education, and other factors associated with low crime rates may account for more significant reductions. Yet, policy and spending for public safety continue to focus heavily on imprisonment, effectively limiting investment in these promising alternatives.

This paper seeks to help officials understand the complexities and limitations of current research on incarceration and crime in the United States. It also examines research on several of the other factors that might be developed as part of an expanded notion of public safety.<sup>8</sup> Informed by this more inclusive understanding of current research, it suggests that effective public safety strategies should move away from an exclusive focus on incarceration to embrace other factors associated with low crime rates in a more comprehensive policy framework for safeguarding citizens.

# Estimating the Impact of Incarceration on Crime

Research has consistently shown crime rates to be affected by many factors, including economics, social and demographic characteristics, culture, politics, and incarceration rates. To date, policymakers' emphasis on incarceration for reducing crime has been premised, largely, on theories about its influence in incapacitating active offenders and deterring would-be offenders. However, thanks to rapid increases in crime and imprisonment through the 1970s and 1980s, followed by a sharp decrease in crime in the 1990s, we now have a large body of recent empirical work on the effects of incarceration to draw on as well.<sup>9</sup>

Much of this research seeks to quantify the association between the size of a jurisdiction's incarceration rate and its crime rate.<sup>10</sup> Led primarily by economists, these analyses have become increasingly sophisticated, examining many factors and looking at data across jurisdictions and over long periods of time.<sup>11</sup> Much of this research has confirmed a relationship between higher incarceration rates and lower crime rates. However, as Table 1 summarizes, recent studies vary widely in their conclusions about how strong this relationship is and, in some cases, whether it really exists after all.<sup>12</sup>

For example, using national-level data, researchers have found that a 10 percent higher incarceration rate is associated with anywhere from a 9 percent to a 22 percent lower crime rate.<sup>13</sup> In contrast, analyses using state-level data found a weaker association, concluding that a 10 percent increase in incarceration is associated with a crime rate that is anywhere from 0.11 percent to 4 percent lower.<sup>14</sup> Similar estimates have been generated from studies using county-level data, ranging from a 2 percent to a 4 percent crime-rate difference.<sup>15</sup> Moreover, several studies have found no relationship between incarceration rates and crime rates.<sup>16</sup> One study even found that higher incarceration rates were associated with *higher* crime rates in states with already high incarceration rates (incarceration rates above 325 inmates per 100,000 population).<sup>17</sup>

As these disparate findings suggest, the impact of incarceration on crime is inconsistent from one study to the next. One could use available research to argue that a 10 percent increase in incarceration is associated with no difference in crime rates, a 22 percent lower index crime rate, or a decrease only in the rate of property crime.<sup>18</sup> Therefore, to be guided by the available empirical research, policymakers clearly need to develop a more nuanced understanding of the literature.



**Table 1. Summary of Studies Estimating the Impact of Incarceration Rates on Crime Rates**

### Studies that do not account for simultaneity

<i>Study</i>	<i>Data</i>	<i>Estimated percentage change in crime rates due to a 10% increase in incarceration rates</i>
Devine, Sheley, and Smith (1988) <sup>19</sup>	National — 1948–1985	–28.4 (violent offenses) –19.9 (property offenses) –22.0 (index offenses)
Marvell and Moody (1997, 1998) <sup>20</sup>	National — 1958–1995	–7.9 (violent offenses) –9.5 (property offenses) –9.3 (index offenses)
Marvell and Moody (1994) <sup>21</sup>	49 states — 1971–1989	–1.6 (index offenses)
Besci (1999) <sup>22</sup>	50 states and D.C. — 1971–1993	–0.46 (violent offenses) –0.91 (property offenses) –0.87 (index offenses)
Rapheal and Winter-Ebmer (2001) <sup>23</sup>	50 states — 1971–1997	not significant (violent offenses) –1.1 (property offenses)
Donahue and Levitt (2001) <sup>24</sup>	50 states — 1973–1997	not significant (violent offenses) –1.6 (property offenses)
Levitt (2001) <sup>25</sup>	50 states — 1950–1999	–0.76 (property offenses) –1.3 (violent offenses)
DeFina and Arvanites (2002) <sup>26</sup>	50 states and D.C. — 1971–1998	not significant (murder, rape, assault, robbery) –1.1 (burglary) –0.56 (larceny) –1.4 (auto theft)
Kovandzic and Sloan (2002) <sup>27</sup>	57 Florida counties — 1980–1998	not significant (index offenses)
Washington State Institute for Public Policy (2003) <sup>28</sup>	39 Washington counties — 1980–2001	–2.4 (index offenses)
Liedka, Piehl, and Useem (2006) <sup>29</sup>	50 states and D.C. — 1970–2000	–0.118 (index offenses) (states with incarceration rates <325) +0.05 (index offenses) (states with incarceration rates >325)
Kovandzic and Vieraitis (2006) <sup>30</sup>	58 Florida counties — 1980–2000	not significant (index offenses)

### Studies that do account for simultaneity

<i>Study</i>	<i>Data</i>	<i>Estimated percentage change in crime rates due to a 10% increase in incarceration rates</i>
Levitt (1996) <sup>31</sup>	50 states and D.C. — 1971–1993	–3.8 (violent offenses) –2.6 (property offenses)
Spelman (2000) <sup>32</sup>	50 states and D.C. — 1971–1997	–4.0 (index offenses)
Spelman (2005) <sup>33</sup>	254 Texas counties — 1990–2000	–4.4 (violent offenses) –3.6 (property offenses)

**EVALUATING THE FINDINGS: THE LIMITS OF RESEARCH.** All studies are not equal in design and value, of course. Different findings often arise because of crucially important methodological choices that researchers make and which the literature has only recently begun to address and settle. These include:

- the choice of whether to study the relationship between incarceration and crime at the county, state, or national level (i.e., the level of *aggregation* used);<sup>34</sup>
- whether a study accounts for the fact that incarceration and crime occupy a two-way street in which each influences the other (i.e., whether an analysis controls for *simultaneity*); and
- the number of other factors affecting crime that a study takes into account (i.e., the *specification* of other factors potentially associated with crime rates).

Such technical decisions can produce tremendous differences in results, leading researchers and policymakers to strikingly different conclusions.

On which findings should policymakers rely, then? “[I]f...results are to converge on a defensible estimate,” argues William Spelman, perhaps the leading researcher in this area, “[t]hey must measure effects at the lowest level of aggregation possible,” “account for simultaneity,” and control for as many other factors as possible.<sup>35</sup> Accordingly, the most reliable studies are those conducted at the state or county level that account for simultaneity and consider a significant number of crime-related factors. To date, only three studies—two by Spelman and one by Steven D. Levitt—include all three of these criteria.<sup>36</sup> Interestingly, all three have produced a fairly consistent finding, associating a 10 percent higher incarceration rate with a 2 to 4 percent lower crime rate.<sup>37</sup>

Levitt’s and Spelman’s findings have garnered a great deal of attention from both supporters and opponents of a continued emphasis on incarceration. Supporters take the findings as a confirmation that prison works, concluding that every 10 percent increase in incarceration rates will produce a 2 to 4 percent decrease in crime rates. Opponents, on the other hand, see the findings as a confirmation that prison does not work very well at all. They maintain that even a 4 percent decrease in crime is not much for a 10 percent increase in incarceration.<sup>38</sup> Indeed, Spelman himself characterizes a 2 to 4 percent crime reduction as a fairly limited impact given the sizable financial obligation states have incurred in incarcerating so many people.

An even more complex picture emerges from analyses focusing on the neighborhood level.<sup>39</sup> A growing body of research examining specific neighborhoods finds that more incarceration can actually lead to *increasing* crime rates.<sup>40</sup> Several recent studies maintain that communities may reach an incarceration “tipping point.” Dina Rose and Todd Clear, for example, found that the level of crime in several Florida communities increased after the incarceration rate of

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individuals from those communities reached a certain level.<sup>41</sup> Rose and Clear argue that high rates of imprisonment break down the social and family bonds that guide individuals away from crime, remove adults who would otherwise nurture children, deprive communities of income, reduce future income potential, and engender a deep resentment toward the legal system. As a result, as communities become less capable of maintaining social order through families or social groups, crime rates go up.<sup>42</sup>



**APPLYING THE RESEARCH FINDINGS: PERILS FOR POLICY.** Setting aside the possibility of such tipping points, even if a limited relationship between crime and incarceration were established, a precise ratio could not be applied to policymaking in every location. This is because empirical research on incarceration and crime is not meant to be a prescription for future imprisonment policies at the local level, even though this is how some seek to use it. Research only provides an estimate of *average* relationships between incarceration and crime rates across jurisdictions. Thus, such findings are a blunt instrument whose applicability to any specific jurisdiction is dubious.

Research, therefore, cannot predict the impact of future prison increases in a given state. What happens in any particular jurisdiction will depend on a variety of factors that have yet to be contemplated by crime and incarceration research. Some of these are environmental, such as social preferences, economic changes, and political activity. Others are practical: the size of a state's current prison population, the way offenders are sanctioned or incarcerated, and the types of offenders a state chooses to incarcerate. In the debate about the impact of incarceration on crime, such issues are generally overlooked by both sides and largely absent in the academic literature they draw upon. This is surprising given the practical influence these considerations can exert on the bigger issue of how crime and incarceration interact. The following brief discussion of each of these factors may help illustrate the limitations.

## The Size of State Prison Populations

The size of a state's prison population and crime rate will influence the impact of increases in incarceration rates. To date, most arguments for more incarceration to further reduce crime have relied on Spelman's estimate that a 10 percent increase correlates with a 2 to 4 percent lower crime rate. Even if that estimate is accurate, however, for a state with an already high incarceration rate the costs of increasing incarceration by 10 percent to achieve a 2 to 4 percent reduction in crime could be tremendous. For example, California and Nebraska had very similar crime rates in 2003 of approximately 4,000 index offenses



per 100,000 people in the population. To achieve a 2 to 4 percent reduction, California, with a prison population of 162,678 inmates, would have to incarcerate an additional 16,089 inmates.<sup>43</sup> To achieve the same rate of reduction, Nebraska, with a prison population of 3,976, would have to incarcerate just 400 additional inmates. If the average cost to incarcerate an offender for one year is \$22,650, California would spend \$355 million *more* than Nebraska to achieve the same level of public safety.<sup>44</sup> The cost incurred per unit of crime reduction, then, is substantially larger for California. Thus, an increase in incarceration in a state with an already large prison population may require a huge boost in actual prison populations that may be difficult to sustain economically.

Raymond Liedka, Anne Piehl, and Bert Useem have confirmed, moreover, that increases in prison populations in states with already large prison populations have less impact on crime than increases in states with smaller prison populations.<sup>45</sup> States experience “accelerating declining marginal returns, that is, a percent reduction in crime that gets ever smaller with ever larger prison populations,” they argue.<sup>46</sup> Thus, increases in incarceration rates are associated with lower crime rates at low levels of imprisonment, but the size of that association shrinks as incarceration rates get bigger. Eventually, they say, there is an “inflection point” where increases in incarceration rates are associated with *higher* crime rates. This inflection point occurs when a state’s incarceration rate reaches some point between 325 and 492 inmates per 100,000 people. In other words, states with incarceration rates above this range can expect to experience higher crime rates with future increases in incarceration rates. (This state-level phenomenon recalls the neighborhood effects of high incarceration rates cited by Rose and Clear.)

## The Content of Punishment

Incarceration is not the only punishment that may reduce crime rates. Other types of punishment, including fines, probation, community service, drug treatment, or other sanctions have also been shown to suppress crime. These alternative sanctions are not considered in the crime control studies noted above, however. Had they increased at the same time as the expansion of imprisonment, these sanctions may have contributed—in part or even completely—to the effects found in those studies. Similarly, the content of incarceration—the quality of inmates’ experience in prison—may matter greatly as well. Studies so far have only considered how the size of prison populations affects crime rates. Although some research has examined how related factors like the length of stay in prison or changes in supervision policies after release influence recidivism, no studies apparently have considered how or whether such factors affect crime rates.

The research on crime rates has not examined the impact of prison-based programming, either. States vary a great deal in the amount and content of programs offered to inmates. A large body of literature has found that the design and content of specific programs can reduce individual recidivism rates.<sup>47</sup> For example, drug treatments using therapeutic community models or rehabilitative programs tailored to the risks and needs of offenders have been shown to reduce recidivism, while boot camps and unstructured rehabilitation programs have been found to have no positive influence on recidivism.<sup>48</sup> Given this demonstrated impact on recidivism, it stands to reason that programming during incarceration could also affect incarceration's influence on crime rates.

## The Types of Offenders in Prison

The type of offenders a state decides to incarcerate may also be a relevant factor. Franklin Zimring and Gordon Hawkins argue that continued expansion of the prison system does little more than increase the number of individuals in the criminal justice net without reducing criminal offending or crime rates.<sup>49</sup> U.S. prisons already housed the most serious violent offenders in the early 1980s, they argue; prison expansion since then has resulted in nothing more than the imprisonment of large numbers of nonviolent, "marginal" offenders. Thus, since the worst offenders had already been incarcerated, Zimring and Hawkins contend that increasing incarceration rates through the 1990s did nothing to impact the crime rate.

Others have noted as well that the increased incarceration of drug offenders has helped reduce the effectiveness of incarceration.<sup>50</sup> Between 1980 and 2005, the number of inmates incarcerated for drug possession in state prisons or local jails grew by more than 1,000 percent.<sup>51</sup> By 2004, 419,000 drug possessors were incarcerated in state prisons or local jails at a cost of nearly \$8.3 billion annually.<sup>52</sup> Ilyana Kuziemko and Steven D. Levitt argue that the continued increase in the number of drug offenders in prisons may lead to a "crowding out" effect, in which the high number of incarcerated drug offenders prevents the incarceration of offenders prone to more serious crime, thereby reducing the effectiveness of incarceration to reduce crime.<sup>52a</sup>

Analysts agree with apparent unanimity that future increases in incarceration rates for such offenders will do less and cost more.<sup>53</sup> Washington State, for example, concluded that while more incarceration has led to less crime in the state, the benefits of additional prison expansion will be smaller and more expensive to achieve.<sup>54</sup> Specifically, an increase in the incarceration rate in 2003 prevented considerably fewer crimes than did previous similar-size increases. The state further concluded that while incarcerating violent and high-volume property offenders continued to generate more benefits than

costs, in the future each additional person incarcerated will result in fewer prevented crimes. Washington even found that increasing the incarceration rate for drug offenders in the 1990s actually had a negative impact overall, as it now costs more to incarcerate additional drug offenders than the average value of the crimes prevented by their imprisonment. Money should not be the sole measure by which policymakers evaluate the effectiveness or attractiveness of a policy, of course. However, financial implications are a relevant concern of officials facing limited public resources and a seemingly endless list of areas in need of investment.



## Estimating the Impact of Other Factors on Crime

Between 1990 and 2005, the crime rate in the United States fell dramatically to its lowest point in 30 years.<sup>55</sup> However, as noted earlier, according to Spelman only 25 percent of this crime drop through the 1990s could be explained by increasing incarceration rates.<sup>56</sup> The remaining 75 percent, therefore, must be due to factors other than incarceration. Indeed, researchers have identified a number of such factors including, for example, fewer young persons in the population, smaller urban populations, decreases in crack cocaine markets, lower unemployment rates, higher wages, more education and high school graduates, more police per capita, and more arrests for public order offenses.<sup>57</sup> An examination of just a few of these indicates that future investment in other policy areas may be not only more effective but also more cost effective than continued investment in increased prison populations (see Table 2).

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**POLICING.** Several authors have found an association between increases in the number of police per capita and lower crime rates. For example, using city-level data, Levitt found that a 10 percent increase in the size of a city's police force was associated with an 11 percent lower violent crime rate and a 3 percent lower property crime rate.<sup>58</sup> Thomas Marvel and Carlisle Moody similarly found a 10 percent increase in the size of a city's police force associated with a 3 percent reduction in index crime rates.<sup>59</sup> Using county-level data, Tomislav Kovandzic and John J. Sloan also found associations between the size of police forces and crime, concluding that a 10 percent increase in the number of police was associated with a 1.4 percent lower index crime rate.<sup>60</sup> At the state-level, however, Marvel and Moody found no association between the size of the police force and crime rates. This disparate finding suggests that the impact of increased police presence may be felt only at the local level.<sup>61</sup>

Using Marvel and Moody's estimate tying a 10 percent increase in the size of a city's police force to a 3 percent decrease in the index crime rate, we can imagine how a crime reduction policy focusing on policing might operate in, say, New York City, where the 2004 index crime rate was 2,800 offenses per 100,000 people in the population. To achieve a 3 percent reduction in the crime rate by increasing incarceration, New York City—with a prison population of 33,564 inmates—would have to incarcerate an additional 3,300 inmates at a cost of approximately \$121.5 million per year.<sup>62, 63</sup> With a police force of 39,110 sworn police officers, the city could achieve the same reduction in crime by hiring 3,911 more police officers at a cost of \$97.2 million per year.<sup>64, 65</sup> Compared to policing, then, incarceration would cost the city \$24.3 million more to achieve the same level of public safety.<sup>66</sup>

It is important to note that in the same way the content of incarceration policy may affect how imprisonment relates to crime, so too may the content of policing policy influence how crime develops. Poorly structured policing policies could negate the positive potential of an increase in officers. Also, an increase in the number of police would not necessarily translate directly into more law enforcement and arrests. Provided such concerns are taken into account, however, this example illustrates the promise of increasing policing as an alternative to increasing incarceration.<sup>67</sup>

**UNEMPLOYMENT AND WAGES.** Incarceration, employment, and income interact on several levels in the United States. Incarceration creates problems of low earnings and irregular employment for individuals after release from prison by dissuading employers from hiring them, disqualifying them from certain professions, eroding job skills, limiting acquisition of work experience, creating behaviors inconsistent with work routines outside prison, and undermining social connections to good job opportunities.<sup>68</sup> Research has

**Table 2. Summary of Studies Estimating the Impact of Other Social Factors on Crime Rates**

## Police per Capita

<i>Study</i>	<i>Data</i>	<i>Estimated percentage change in crime rates due to a 10% increase in indicator</i>
Marvell and Moody (1996)	56 U.S. cities — 1971–1992	–3 (index offenses)
Marvell and Moody (1996)	49 states — 1971–1992	not significant (index offenses)
Levitt (1997)	59 U.S. cities — 1970–1992	–11 (violent offenses) –3 (property offenses)
Kovandzic and Sloan (2002)	57 Florida counties — 1980–1998	–1.4 (index offenses)

## Unemployment Rate

<i>Study</i>	<i>Data</i>	<i>Estimated percentage change in crime rates due to a 10% increase in indicator</i>
Levitt (1996) <sup>83</sup>	50 states and D.C. — 1971–1993	not significant (violent offenses) 10 (property offenses)
Levitt (1997)	59 U.S. cities — 1970–1992	not significant (violent offenses) 10.4 (property offenses)
Rapheal and Winter-Ebmer (2001)	50 states — 1971–1997	not significant (violent offenses) 16.3 (property offenses)
Gould et al. (2002)	705 counties — 1979–1997	not significant (violent offenses) 16.6 (property offenses)

## Real Wages

<i>Study</i>	<i>Data</i>	<i>Estimated percentage change in crime rates due to a 10% increase in indicator</i>
Gould et al. (2002)	705 counties — 1979–1997	–25.3 (violent offenses) –12.6 (property offenses) –13.5 (index offenses)
Raphael and Winter-Ebmer (2001)	50 states — 1971–1997	–1.6 (violent offenses) not significant (property offenses)
Grogger (1998)	Individual survey data (1980)	–10 (index offenses)

## High School Graduation Rate

<i>Study</i>	<i>Data</i>	<i>Estimated percentage change in crime rates due to a 10% increase in indicator</i>
Lochner and Moretti (2004)	50 states — 1960, 1970, 1980	–9.4 (index offenses)



shown that men with criminal records experience no growth in earnings and, therefore, have few choices other than day labor.<sup>69</sup> At the community level, neighborhoods with high incarceration rates may be shunned by employers. Further, as John Hagan argues, incarceration can generate social connections to illegal rather than legal employment, thus, potentially increasing crime.<sup>70</sup>

Indeed, researchers have found that economic shifts have significantly affected crime rates in the last decade. Using state-level data, Steven Raphael and Rudolf Winter-Ebmer found that a 10 percent decrease in a state's unemployment rate corresponded with a 16 percent reduction in property crime rates; the researchers concluded that, between 1992 and 1997, "slightly more than 40 percent of the decline [in the overall property crime rate] can be attributed to the decline in unemployment."<sup>71</sup> Liedka, Piehl, and Useem produced similar findings, also using state-level data.<sup>72</sup> Analyses using county-level data have produced estimates that find a similar association between unemployment and crime; Eric Gould, Bruce Weinberg, and David Mustard, for example, found that a 10 percent reduction in unemployment rates was associated with a 16.6 percent reduction in property crime.<sup>73</sup> Both studies found no association, however, between unemployment and violent crime.<sup>74</sup> Raphael and Winter-Ebmer conclude that "the magnitudes of the crime-unemployment effects...suggest that policies aimed at improving the employment prospects of workers facing the greatest obstacles can be effective tools for combating crime."<sup>75</sup>

Research has also considered the relationship between real wages and crime. Using national-level data, Gould, Weinberg, and Mustard determined that a 10 percent increase in real wages saw a 13 percent lower index crime rate—specifically, a 12 percent lower property crime rate and a 25 percent lower violent crime rate.<sup>76</sup> At the state level, Raphael and Winter-Ebmer found that a 10 percent increase in per capita income saw a 1.6 percent lower violent crime rate; Liedka, Piehl, and Useem found similar associations at the state level.<sup>77</sup> Using individual-level data, Jeffrey Grogger found that a 10 percent increase in real wages was associated with a 10 percent decrease in crime participation at the individual level.<sup>78</sup> In examining the crime drop of the 1990s, Grogger and Michael Willis suggested that a better economy allowed more young people opportunities in the labor market rather than in crime. They attributed the crime drop largely to the expanding economy.<sup>79</sup>

**EDUCATION.** The link between crime and education has also begun to attract research attention. Lance Lochner and Enrico Moretti, for example, have shown an increase in citizens' education levels to be associated with lower crime rates: specifically, a one-year increase in the average education of citizens results in a 1.7 percent lower index crime rate. In addition, they associated a 10 percent increase in graduation rates with a 9.4 percent lower index crime

rate. Combined with Gould and his colleagues' findings on the link between wages and crime, Lochner and Moretti argue that "a 10 percent increase in high school graduation rates should reduce arrest rates by 5 to 10 percent through increased wages alone."<sup>80</sup> "[A] 1 percent increase in male high school graduation rates would save as much as \$1.4 billion" nationally through crime reduction, they conclude.<sup>81</sup>

Moreover, prison-based education programs have been found to significantly reduce recidivism rates for offenders after release.<sup>82</sup> In their recent examination of the effects of prison education participation across three states, researchers Stephen Steurer, Linda Smith, and Alice Tracy did not consider the impact of such education programs on overall crime rates, but their findings of significantly reduced recidivism for individuals who participated in such programs underscore the impact of education on reentry success.

## Beyond Incarceration

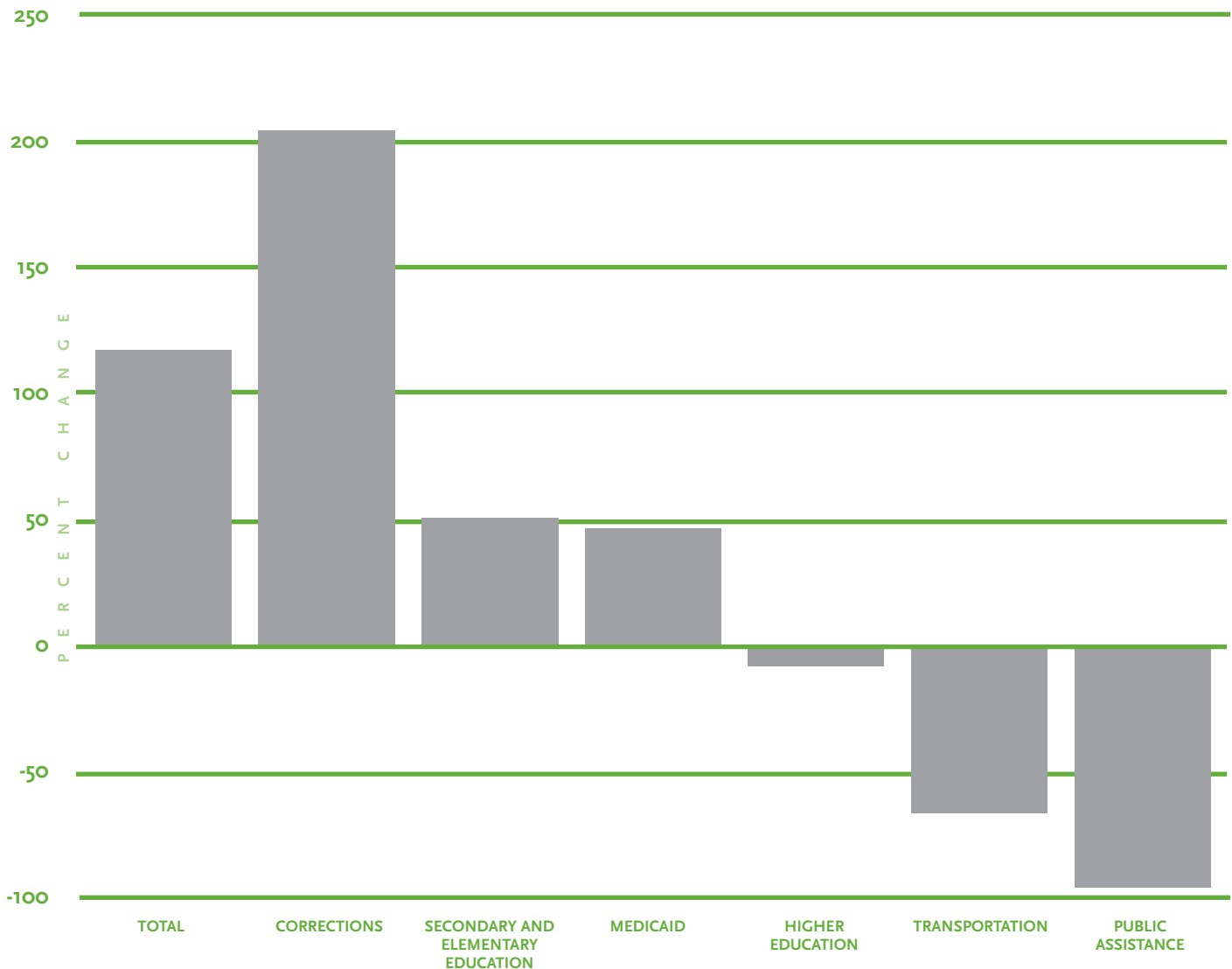
Given the demonstrated influence of these other factors on crime and the decreasing impact of incarceration, criminal justice policymakers appear to have placed undue emphasis on incarceration. As William Spelman has cautioned, "It is no longer sufficient, if it ever was, to demonstrate that prisons are better than nothing. Instead, they must be better than the next-best use of the money."<sup>84</sup>

Yet, in the past two decades, spending on these other factors has been cut. Corrections expenditures were the only state budget category other than Medicaid to increase as a percentage of total state spending over the past 20 years.<sup>85</sup> Between 1985 and 2004, states increased corrections spending by 202 percent. By comparison, spending on higher education grew by just 3 percent, Medicaid by 47 percent, and secondary and elementary education by 55 percent; spending on public assistance decreased by more than 60 percent during the same period (see Figure 1).<sup>86</sup> Public opinion appears to be in harmony with a move away from incarceration spending. Whereas 75 percent of Americans believed that too little money was spent on halting rising crime rates in 1994, by 2002, this had declined to 56 percent. In contrast, during the same period the proportion of Americans responding that too little money was spent on welfare increased from 13 percent to 21 percent.<sup>87</sup>

Such approaches are not new to criminal justice policy discussions. Many commentators have argued for a crime reduction policy that focuses on the labor market by addressing employment, wages, and education.<sup>89</sup> In the lim-

ited areas where such policies have been implemented, they have targeted individuals believed to be at high risk of crime involvement, such as high school dropouts, inner-city youth, offenders, and ex-offenders. But a broader approach would require a shift in criminal justice policy away from reactive responses to criminal offending and toward a proactive attempt to address the underlying causes of criminal offending. It also requires a more general shift in policymaking attitudes toward the view that public safety may best be served by protecting citizens from the factors that can contribute to crime.

**Figure 1. Percentage Change in State Spending, 1985-2004**



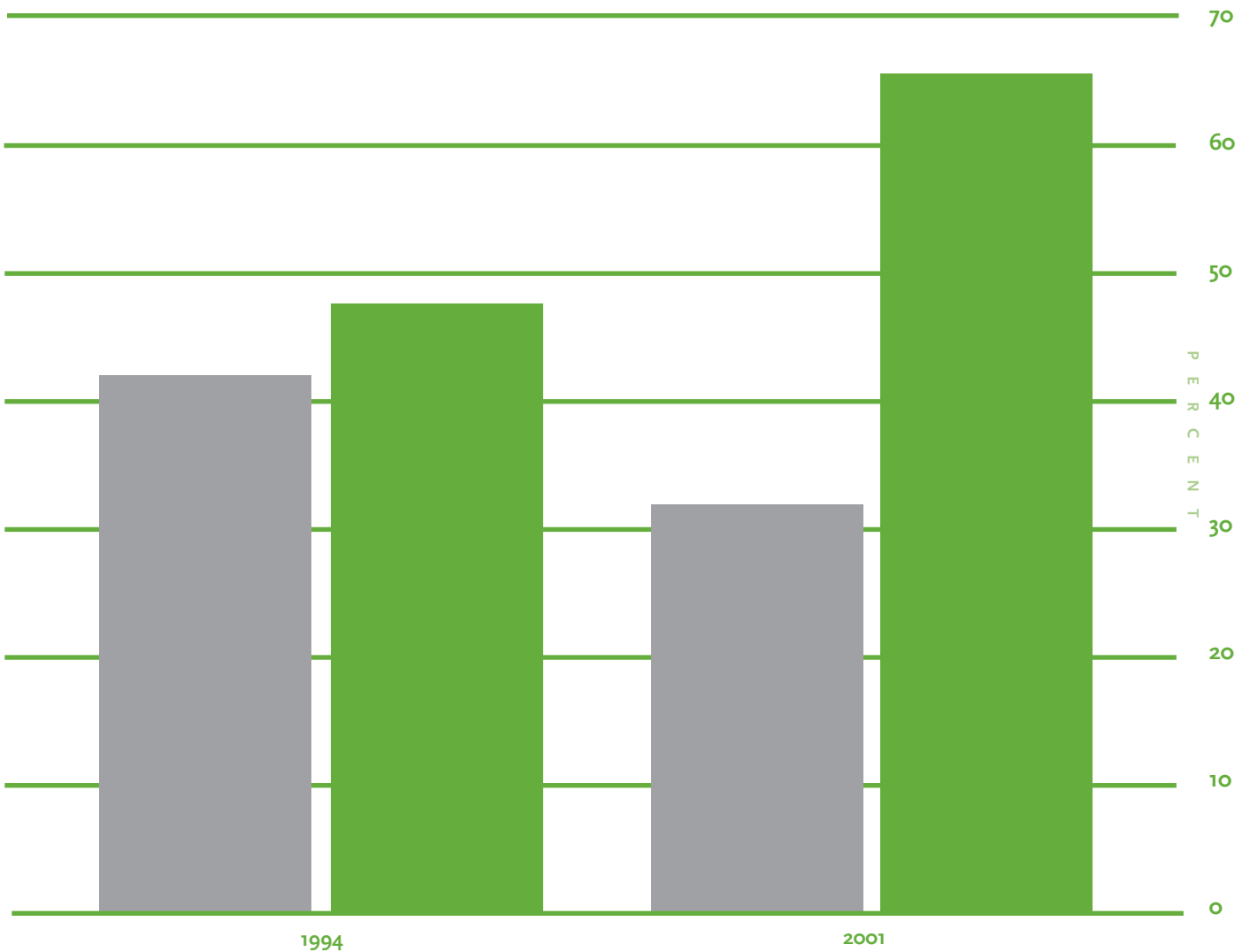
Source: National Association of State Budget Officers, State Expenditure Reports annual series.



Moreover, the public favors a policy that addresses the underlying causes of crime rather than simply responds to crime after it occurs. Polling by Peter D. Hart Research Associates, for example, shows the public questioning whether incarceration is the best crime control policy. In 1994, 42 percent of Americans favored responding to crime with stricter sentencing; by 2001, this had decreased to just 32 percent. Conversely, in 1994, only 48 percent of Americans said they favored addressing the underlying causes of crime; by 2001, this had increased to 65 percent (see Figure 2).<sup>88</sup>

**Figure 2. Public Support for Approaches to Crime, 1994 and 2001**

■ = TOUGHER RESPONSES TO CRIME  
■ = ADDRESS THE CAUSES OF CRIME



Source: Peter D. Hart and Associates.

## Toward a New Approach to Public Safety



After 15 years of declining crime rates, many analysts are claiming that “prison works.” But, as Elliot Currie notes, “if ‘prison works’ is the answer, what was the question?”<sup>90</sup> If the question is whether it is possible to prevent individuals from committing crimes by putting them in prison, then prison certainly works; it works to punish and incapacitate those who have committed crimes. But if the question is what is the best way to reduce crime, “prison works” may not be the most helpful response. Does a five-year prison sentence “work” better to reduce crime than a two-year prison sentence? Does a two-year prison sentence for nonviolent offenders “work” as well as a two-year prison sentence for violent offenders?

The most salient question of all may be, Do the resources devoted to prison “work” better to ensure public safety than if those resources were devoted to something else?<sup>91</sup> Prisons are not the only way to fight crime. Policymakers could spend money on more judges, better staffed or equipped law enforcement, or better-trained probation and parole officers. They could invest, as this paper indicates, in other, non-criminal-justice areas shown to affect crime: education, employment, economic development, etc. The impact of incarceration on crime is limited and diminishing. The public’s support for reactive crime control is also in decline. It is therefore fitting that we reconsider the continued emphasis on and dedication of resources to incarceration.

Public safety cannot be achieved only by responding to crime after it occurs; research shows that it may also depend on protecting people against those factors that have been shown to be associated with high crime rates, such as unemployment, poverty, and illiteracy. By pursuing crime reduction chiefly through incarceration, states are forgoing the opportunity to invest in these other important areas. As state policymakers continue to feel pressure to introduce measures to keep crime rates low, they would therefore do well to look beyond incarceration for alternative policies that not only may be able to accomplish the important task of protecting public safety, but may do so more efficiently and more effectively.

# Endnotes

- 1 Bureau of Justice Statistics, *Prisoners 1925-1985* (Washington, DC: Bureau of Justice Statistics, 1986). Paige M. Harrison and Allen J. Beck, *Prison and Jail Inmates at Midyear 2005* (Washington, DC: Bureau of Justice Statistics, 2006).
- 2 Paige M. Harrison and Allen J. Beck, 2006.
- 3 Thomas P. Bonczar, *Prevalence of Imprisonment in the U.S. Population, 1974-2001* (Washington, DC: Bureau of Justice Statistics, 2003).
- 4 William Spelman, "What Recent Studies Do (and Don't) Tell Us about Imprisonment and Crime" *Crime and Justice* 27 (2000): 419.
- 5 William Spelman, 2000.
- 6 These include factors such as lower unemployment, higher wages, and more police per capita.
- 7 William Spelman, 2000; William Spelman, "Jobs or Jails? The Crime Drop in Texas" *Journal of Policy Analysis and Management* 24 (2005): 133-165; Steven D. Levitt, "Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six that Do Not" *Journal of Economic Perspectives* 18, no. 1 (2004): 163-190 ("...sharply declining marginal benefits of incarceration are a possibility" p. 179); Ilyana Kuziemko and Steven D. Levitt, "An Empirical Analysis of Imprisoning Drug Offenders" *Journal of Public Economics* 88 (2004): 2043-2066 ("For typical values of the costs of crime, even the most generous estimates of the crime reduction attributable to prison...suggest that current levels of incarceration are excessive." p. 2063); Tomislav V. Kovandzic and Lynne M. Vieraitis, "The Effect of County-Level Prison Population Growth on Crime Rates" *Crime and Public Policy* 5 no. 2 (2006): 213-244; Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, "The Crime-Control Effect of Incarceration: Does Scale Matter?" *Crime and Public Policy* 5 no. 2 (2006): 245-276 ("The findings developed here go beyond the claim...that continued prison expansion has reached a point of declining marginal returns. Instead, accelerating diminishing marginal returns were found." p. 272); Washington State Institute for Public Policy, *The Criminal Justice System in Washington State: Incarceration Rates, Taxpayer Costs, Crime Rates, and Prison Economics* (Olympia, WA: Washington State Institute for Public Policy, 2003); Anne Morrison Piehl and John J. Dilulio, "Does Prison Pay? Revisited" *The Brookings Review* 13 no. 1 (1995) (findings indicate that when drug offenders are included in calculations, continued prison expansion is not cost effective).
- 8 Several recent publications have made a similar effort to provide policymakers with a resource to use in the policy debate over crime control. See, e.g., James Austin and Tony Fabelo, *The Diminishing Returns of Increased Incarceration: A Blueprint to Improve Public Safety and Reduce Costs* (Washington, DC: JFA Institute, 2004); Eric Lotke, Deborah Stromberg, and Vincent Schiraldi, *Swing States: Crime, Prisons, and the Future of the Nation*, (Washington, DC: Justice Policy Institute, 2004); Jenni Gainsborough and Marc Mauer, *Diminishing Returns: Crime and Incarceration in the 1990s* (Washington, DC: The Sentencing Project, 2000); Ryan S. King, Marc Mauer, and Malcolm C. Young, *Incarceration and Crime: A Complex Relationship* (Washington, DC: The Sentencing Project, 2005). The most recent publication by The Sentencing Project (2005) provides the most thorough treatment to date, highlighting the contradictory descriptive evidence used to support continued increases in incarceration and discussing the findings of empirical studies on the topic. However, these worthy publications leave room for further analysis of the academic studies on which policy arguments are based in a way that allows policymakers to critically engage with the research and assess the strengths and weaknesses of alternative arguments.
- 9 For a thorough review of the literature, see, e.g., William Spelman, "The Limited Importance of Prison Expansion," in *The Crime Drop in America*, eds. A. Blumstein and J. Wallman (Cambridge: Cambridge University Press, 2000).
- 10 The incarceration rate is defined as the number of sentenced persons in prison per 100,000 population. Analysts use either the national incarceration rate (the number of sentenced persons in state or federal prison per 100,000 U.S. population) or state incarceration rates (the number of sentenced persons in a particular state's prisons per 100,000 state population). The crime rate is defined as the number of crimes reported to police per 100,000 population, based on the Uniform Crime Reports produced annually by the FBI. When analysts or the media refer to the "crime rate," they generally mean the index crime rate, which is based on a set of eight violent and property crimes—murder and non-negligent manslaughter, forcible rape, aggravated assault, robbery, burglary, larceny-theft, and motor vehicle theft. Analysts may also use the violent crime rate (which is based only on the crimes of murder and non-negligent manslaughter, forcible rape, aggravated assault, and robbery) or the property crime rate (which is based only on the crimes of burglary, larceny-theft, and motor vehicle theft).
- 11 These studies principally attempt to estimate the "elasticity of the crime rate"—that is, the percentage change in the crime rate that is associated with a certain percentage change in the incarceration rate. These studies are not looking at changes or growth in incarceration and crime rates; rather, they are looking at associations between different levels of incarceration and crime rates. Research is not, however, making a causal connection between the increase in one state's incarceration rate and a direct decrease in that state's crime rate. This is often misstated in both the research and the polemical and political uses of the research.
- 12 Research estimating the elasticity of crime rates has generally relied on one of two sets of data to reach this conclusion: national data or state data. Analyses relying on national-level data include incarceration and crime rates for the entire United States and examine relationships between these rates over time. Analyses relying on state-level data include incarceration and crime rates for each state and examine relationships between these rates both across states (i.e., comparing states to each other) and within states over time (i.e., comparing a state to itself over time). A third approach is slowly emerging—using county-level data to examine the relationship between incarceration and crime in a single state. Analyses relying on such data include incarceration and crime rates for each county in a particular state and examine relationships between these both across counties (i.e., comparing counties to each other) and within counties over time (i.e., comparing a county to itself over time). Combined, all of these studies have produced little consensus on how strong that relationship may be, resulting in widely divergent estimates of the association between incarceration and crime.
- 13 Joel A. Devine, Joseph F. Sheley, and M. Dwayne Smith, "Macroecomic and Social-Control Policy Influences on Crime Rate Changes, 1948-1985" *American Sociological Review* 53 (1988): 407-420; Thomas B. Marvell and Carlisle E. Moody, "The Impact of Prison Growth on Homicide" *Homicide Studies* 1 (1997): 205-233; Thomas B. Marvell and Carlisle E. Moody, "The Impact of Out-of-State Prison Population on State Homicide Rates: Displacement and Free Rider Effects" *Criminology* 36 (1998): 513-535.
- 14 Zsolt Besci, "Economics and Crime in the States" *Federal Reserve Bank of Atlanta Economic Review* First Quarter (1999): 39-56; William Spelman, 2000.
- 15 Washington Institute for Public Policy, 2003; Spelman, 2005.

- 16 See Tomislav V. Kovandzic and John Sloan, 2002; Tomislav V. Kovandzic and Lynne M. Vieraitis, 2006. In other cases, they conclude that incarceration rates are unrelated to violent crime rates, in particular (see, e.g., Rapheal and Winter-Ebmer, 2001; Defina and Arvanites, 2002; Levitt, 2001). For example, a Florida study by Tomislav Kovandzic and Lynne Vieraitis (2002) found no association between incarceration rates and crime rates. In contrast, researchers Thomas Marvel and Carlisle Moody (1994) found that higher incarceration rates were generally related to lower index crime rates—but they also found “little or no impact on murder, rape, or assault.” Indeed, according to Marvel and Moody, higher incarceration rates were associated with lower crime rates *only* for robbery, burglary, larceny, and motor vehicle theft. Researchers Robert DeFina and Thomas Arvanites (2002) similarly found that higher incarceration rates were associated with lower crime rates for burglary, larceny, and motor vehicle theft, but not for murder, rape, assault, or robbery. In one of the most sophisticated studies, Steven D. Levitt (2001) established a very modest association between incarceration rates and property crime rates—with a 10 percent higher incarceration rate associated with a 1.6 percent lower property crime rate—but no association between incarceration and violent crime (Steven Levitt, “Alternative Strategies for Identifying the Link between Unemployment and Crime” *Journal of Quantitative Criminology* 17 (2001): 377-390).
- 17 Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, 2006.
- 18 See also William Spelman, (2000, 2005) and Steven Levitt (2004), which provide thorough reviews of the research.
- 19 The estimates of the effects on index, violent, and property crime rates are taken from William Spelman (2000). Devine, Sheley, and Smith (1988) report only estimates for the effects on homicide (-18.8), robbery (-30.9), and burglary (-19.9).
- 20 Thomas B. Marvell and Carlisle E. Moody, 1997; Thomas B. Marvell and Carlisle E. Moody, 1998. The estimates of the effects on index, violent, and property crime rates are not reported in Marvell and Moody (1997, 1998); the estimates here are taken from William Spelman (2000).
- 21 Thomas B. Marvell and Carlisle E. Moody, “Prison Population Growth and Crime Reduction” *Journal of Quantitative Criminology* 10 (1994): 109-140. The estimates of the effects on index, violent, and property crime rates are not reported in Marvel and Moody (1994); Marvel and Moody report only estimates for the effects of individual offenses—homicide, rape, assault, robbery, burglary, larceny, and motor vehicle theft. The estimates here are taken from William Spelman (2000).
- 22 Zsolt Besci, 1999: 39-56.
- 23 Steven Raphael and Rudolf Winter-Ebmer, “Identifying the Effect of Unemployment on Crime” *Journal of Law and Economics* 44 (2001): 259-283.
- 24 John J. Donohue and Steven D. Levitt, “The Impact of Legalized Abortion on Crime” *Quarterly Journal of Economics* 116 no. 2 (2001): 379-420.
- 25 Steven D. Levitt, “Alternative Strategies for Identifying the Link between Unemployment and Crime” *Journal of Quantitative Criminology* 17 no. 4 (2001): 377-390.
- 26 Robert H. Defina and Thomas M. Arvanites, “The Weak Effect of Imprisonment on Crime: 1971-1998” *Social Science Quarterly* 53 (2002): 407-420.
- 27 Tomislav V. Kovandzic and John Sloan, “Police Levels and Crime Rates Revisited: A County-Level Analysis from Florida (1980-1998)” *Journal of Criminal Justice* 30 (2002): 65-76.
- 28 Washington State Institute for Public Policy, 2003.
- 29 Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, “The Crime-Control Effect of Incarceration: Does Scale Matter?” *Crime and Public Policy* 5 no. 2 (2006): 245-276.
- 30 Tomislav V. Kovandzic and Lynne M. Vieraitis, “The Effect of County-Level Prison Population Growth on Crime Rates” *Criminology and Public Policy* 5 no. 2 (2006): 213-244.
- 31 Steven D. Levitt, “The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation” *Quarterly Journal of Economics* 111 no. 2 (1996): 319-351.
- 32 William Spelman, 2000.
- 33 William Spelman, 2005.
- 34 William Spelman (2005) noted similar differences in studies looking at the effects of unemployment rates on crime rates. Studies using high levels of aggregation (i.e., at the national or state level) were unlikely to show that unemployment had any effect on crime rates. In other words, when studies used national or state-level data, researchers found that unemployment has no effect on crime rates. However, when analyses used county, metropolitan, or city-level data, researchers found that unemployment did affect crime rates; most of these studies found that a 10 percent decrease in the unemployment rate leads to a 2 percent decrease in the crime rate. At the neighborhood level, the impact is even greater, with a 10 percent decrease in the unemployment rate leading to an 11 percent decrease in crime rates.
- 35 William Spelman, 2005: 137.
- 36 Steven D. Levitt, 1996; William Spelman, 2000, 2005.
- 37 Note that the county-level work by the Washington State Institute for Public Policy (2003) found a similar decrease of 2.4 percent in the crime rate; however, the Washington study did not account for simultaneity in its analysis. For a contrary finding, see Kovandzic and Sloan (2002), which also uses county-level data without accounting for simultaneity; in this study, the authors found no effect of incarceration on crime rates.
- 38 For example, in 1972, when the prison population was 196,000, the U.S. would have needed to incarcerate an additional 19,609 offenders to achieve this 2 to 4 percent reduction in crime. However, in 2004, when the prison population was nearly 1.5 million, an additional 149,422 offenders would have had to have been incarcerated to achieve the same result—nearly the entire 1972 prison population.
- 39 Such a local focus makes sense since crime and law enforcement are local phenomena that are best understood by close examination of their smallest constituent parts. Indeed, decisions and policies on how to respond to specific instances and levels of crime are not made at the national or state level but are made at the county, municipal, precinct, or beat-level. And, as the growing literature on the neighborhood effects of incarceration indicates, imprisonment and its effects are local phenomena as well, with incarcerated populations mostly coming from and returning to the same neighborhoods or even the same blocks. Crime data, for example, is now collected and tracked at the block-level in many places. Police departments make staffing and resource decisions based on detailed analyses of trends in such data across municipalities, neighborhoods, and blocks. Research increasingly shows that prison and jail populations are not made up of a cross section of state or county residents that is equally dispersed across a region. Rather, incarcerated populations mostly come from and return to the same neighborhoods or even the same blocks. See e.g. James P. Lynch and William J. Sabol, *Prisoner Reentry in Perspective* (Washington, DC: Urban Institute, 2001).
- 40 Dan Kahan, “Social Influence, Social Meaning, and Deterrence” *Virginia Law Review* 83 (1997): 349; James P. Lynch and William J. Sabol, “Assessing the Effects of Mass Incarceration on Informal Social Control in Communities” *Criminology and Public Policy* 3 (2004): 267-294;

Richard B. Freeman, "Why Do So Many Young American Men Commit Crimes and What Might We Do About It?" *Journal of Economic Perspectives* 10 (1995): 25-42; Daniel Nagin and Joel Waldfogel, "The Effect of Conviction on Income through the Life Cycle" *International Review of Law and Economics* 18 (1998): 25-40; Joel Waldfogel, "The Effect of Criminal Conviction on Income and the Trust Reposed in the Worker" *Journal of Human Resources* 29 (1994): 62-81; Bruce Western and Kathy Beckett, "How Unregulated is the U.S. Labor Market: The Penal System as a Labor Market Institution" *American Journal of Sociology* 104 (1999): 1030-1060. A growing body of literature has examined the socially detrimental "unintended" consequences of incarceration (see, e.g., Dina R. Rose and Todd Clear "Incarceration, Social Capital, and Crime: Implications for Social Disorganization Theory" *Criminology* 36 no. 3 (1998): 441-480; Mark Mauer and Meda Chesney-Lind, *Invisible Punishment: The Collateral Consequences of Mass Imprisonment* (New York: New Press, 2002); Mary Pattillo, David Weiman, and Bruce Western, *Imprisoning America: The Social Effects of Mass Incarceration* (New York: Russell Sage Foundation Publications, 2004)). Unfortunately, the same types of sophisticated statistical analyses that have been conducted at the national, state, and county levels do not yet exist at the neighborhood level. As a result, there are no existing numerical estimates of how differences in crime rates may interact with incarceration rates at the neighborhood level. Nonetheless, the neighborhood research conducted so far and the conclusions drawn from it should temper the willingness of observers to unquestioningly embrace findings from studies based on higher levels of aggregation, especially those at the state or national levels.

41 Dina Rose and Todd R. Clear, 1998.

42 Richard B. Freeman, 1995; Daniel Nagin and Joel Waldfogel, 1998; Joel Waldfogel, 1994; Bruce Western and Kathy Beckett, 1999. Others argue that an expanding prison system also does little more than increase the number of individuals in the criminal justice net without reducing criminal offending or crime rates. For example, Franklin Zimring and Gordon Hawkins (1997) argue that U.S. prisons already housed the most serious, violent offenders in the early 1980s and did not need to expand to get more violent offenders off of the streets; the prison expansion since the 1980s resulted in nothing more than the imprisonment of large numbers of nonviolent, "marginal" offenders. Thus, the authors argue that, at the neighborhood level, increasing incarceration rates over the last 30 years did nothing to impact the crime rate since the worst offenders were already incarcerated. See Franklin Zimring and Gordon Hawkins, *Crime Is Not the Problem: Lethal Violence in America*, New York, Oxford University Press, 1997).

43 This corresponded to an incarceration rate of 692 inmates per 100,000 population.

44 Bureau of Justice Statistics, *State Prison Expenditures, 2001* (Washington, DC: Bureau of Justice Statistics, 2004).

45 Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, 2006: 259.

46 Ibid.

47 See, e.g., Lawrence W. Sherman, Denise C. Gottfredson, Doris L. MacKenzie, John Eck, Peter Reuter, and Shawn D. Bushway, *Preventing Crime: What Works, What Doesn't, What's Promising* (Washington, DC: National Institute of Justice, 1998).

48 Lawrence W. Sherman, Denise C. Gottfredson, Doris L. MacKenna, John Eck, Peter Reuter, and Shawn D. Bushway, 1998.

49 Franklin Zimring and Gordon Hawkins, 1997.

50 Anne Morrison Piehl and John J. Dilulio, 1995; Washington State Institute for Public Policy, 2003. Ilyana Kuziemko and Steven Levitt also argue that the continued increase in the number of drug offenders in prisons may lead to a "crowding out" effect, in which the high number of incarcerated drug offenders prevents the incarceration of more

crime-prone offenders; see Ilyana Kuziemko and Steven D. Levitt, "An Empirical Analysis of Imprisoning Drug Offenders" *Journal of Public Economics* 88 (2004): 2043-2066, p. 2059.

51 Paige M. Harrison and Allen J. Beck, *Prisoners in 2005* (Washington, DC: Bureau of Justice Statistics, 2005).

52 The estimated number of inmates is based on an analysis of data collected through the *Survey of Inmates in Local Jails* and the *Survey of Inmates in State Correctional Facilities* conducted by the Bureau of Justice Statistics. The costs of incarceration are based on the conservative estimated cost of \$20,000 per inmate per year.

52a Ilyana Kuziemko and Steven Levitt, 2004

53 See, e.g., William Spelman, 2000, 2001; Steven D. Levitt, 2004; Anne Morrison Piehl and John J. Dilulio, 1995; Washington State Institute for Public Policy, 2003; Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, 2006; Tomislav V. Kovandzic and John Sloan, 2002; Tomislav V. Kovandzic and Lynne M. Vieraitis, 2006; Ilyana Kuziemko and Steven D. Levitt, 2004.

54 See, e.g., Washington State Institute for Public Policy, 2003.

55 Federal Bureau of Investigation, *Uniform Crime Reports*.

56 William Spelman, "The Limited Importance of Prison Expansion," 2000.

57 Thomas B. Marvell and Carlisle E. Moody, 1996; Steven D. Levitt, 1996; Zsolt Besci, 1999; William Spelman, "The Limited Importance of Prison Expansion," 2000; Steven Rapheal and Rudolf Winter-Ebmer, 2001; Steven Rapheal and Rudolf Winter-Ebmer, 2001; William Spelman, 2005; Steven D. Levitt, 2001; Steven Rapheal and Rudolf Winter-Ebmer, 2001; Jeff Desimore, "The Effect of Cocaine Prices on Crime" *Economic Inquiry* 39 no. 4 (2001): 627-643; Jeff Grogger and Michael Willis, "The Emergence of Crack Cocaine and the Rise in Urban Crime Rates" *Review of Economics and Statistics* 82 no. 4 (2000): 519-529. Grogger and Willis, for example, maintain that, in the absence of crack cocaine, the crime rate in 1991 would have remained below its previous peak in the early 1980s. Using data from 29 large U.S. cities for the period 1981 to 1995, Desimore also finds that increases in cocaine prices reduce crime. This is consistent with prior analyses that found that the introduction of crack cocaine in the 1980s increased violent crime; the resulting increase in market competition for crack lowered cocaine prices and raised cocaine demand. Desimore concludes that increased drug enforcement raised cocaine prices in the 1990s and, in turn, reduced crime; Steven D. Levitt, 1996 (finds that unemployment only affects property crimes); John J. Donahue and Steven D. Levitt, 2001 (find that unemployment only affects property crimes); Zsolt Besci, 1999 (finds that unemployment only affects property crime, auto theft, and murder); Steven D. Levitt, 2001 (finds that unemployment only affects property crimes); Steven Rapheal and Rudolf Winter-Ebmer, 2001 (finds that unemployment only affects property crimes); Thomislav V. Kovandzic and John J. Sloan, 2002; Thomislav V. Kovandzic and Lynne M. Vieraitis, 2006 (unemployment affects robbery, assault, and larceny, but not homicide, rape, burglary, or auto theft); Steven Rapheal and Rudolf Winter-Ebmer, 2001; Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, 2006; Jeff Grogger, "Market Wages and Youth Crime" *Journal of Labor Economics* 16 no. 4 (1998): 756-791 (higher wages are associated with lower individual crime participation); Lance Lochner and Enrico Moretti, "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports" *American Economic Review* 94 no. 1 (2004); Thomas B. Marvell and Carlisle E. Moody, 1996 (more police per capita is associated with lower crime rates at the city level, but not the state level); Steven D. Levitt, "Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime" *American Economic Review* 87 no. 3 (1997): 270-290; Thomislav V. Kovandzic and John J. Sloan, 2002; Hope Corman and H. Naci Mocan, "A Time-Series Analysis of Crime, Deterrence, and Drug Abuse in New York City" *American Economic Review* 90 no. 3 (2000): 584-604; Steven D. Levitt, "Using Electoral Cycles in Police Hiring to

- Estimate the Effect of Police on Crime: A Reply" *American Economic Review* 92 no. 5 (2002): 1244-1250; William Spelman, 2005.
- 58 Steven D. Levitt, 1997.
- 59 Thomas B. Marvel and Carlisle E. Moody, 1996.
- 60 Thomislav V. Kovandzic and John J. Sloan, 2002.
- 61 Thomas B. Marvel and Carlisle E. Moody, 1996.
- 62 According to the New York State Division of Criminal Justice Services, New York City accounts for 53 percent of the admissions to New York State prisons. In 2004, there were 63,751 inmates in New York State prison; thus, New York City accounted for roughly 33,564 of these inmates. See <http://criminaljustice.state.ny.us/crimnet/ojsa/dispos/index.htm>.
- 63 New York State spends approximately \$36,835 per inmate per year for incarceration. See James J. Stephan, *State Prison Expenditures, 2001* (Washington, DC: Bureau of Justice Statistics, 2004).
- 64 In 2004, New York City employed a total of 39,110 police officers. See New York City Police Department web site at <http://www.nyc.gov/html/nypd/html/misc/pdfaq2.html#41> for number of sworn officers.
- 65 See New York City Police Department web site for current starting salaries of police officers at <http://www.nypd2.org/html/recruit/salary.html>.
- 66 This estimate does not take into account the fact that an increase in the number of police officers may lead to additional arrests and, as a result, higher incarceration rates in the long run. Thus, the actual difference in cost between additional police officers and higher incarceration may be less than the \$24.3 million estimate here.
- 67 An increase in the number of police would not necessarily mean simply an increase in law enforcement and arrests. Several authors have considered the relationship between changes in policing strategies and the levels of police presence on crime rates. John Eck and Edward Maguire, for example, considered the impact of community policing and zero-tolerance policing on crime rates in the 1990s, and while the authors find little consensus in previous research on the impact of different policing strategies on crime rates, they conclude that police have a direct impact on crime when they focus on a specific place or on a problem with such policing strategies. John E. Eck and Edward R. Maguire, "Have Changes in Policing Reduced Violent Crime?" *The Crime Drop in America* eds. A. Blumstein and J. Wallman (Cambridge: Cambridge University Press, 2000): 207-265.
- 68 See, e.g., Bruce Western, Becky Pettit, and Josh Guetskow, "Black Economic Progress in the Era of Mass Imprisonment," in *Invisible Punishment: The Collateral Consequences of Mass Imprisonment* eds. Marc Maurer and Meda Chesney-Lind (New York: New Press, 2003).
- 69 See, e.g., Daniel Nagin and Joel Waldfogel, 1998; Bruce Western, Jeffrey R. Kling, and David F. Weiman, "The Labor Market Consequences of Incarceration" *Crime and Delinquency* 47 (2001): 410-427.
- 70 John Hagan, "The Social Embeddedness of Crime and Unemployment" *Criminology* 31 (1993): 465-491.
- 71 Steven Rapheal and Rudolf Winter-Ebmer, 2001: 281.
- 72 Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, 2006. See also Zsolt Besci, 1999.
- 73 Eric D. Gould, Bruce A. Weinberg, and David B. Mustard, "Crime Rates and Local Labor Market Opportunities in the United States: 1979-1997" *Review of Economics and Statistics* 84 no. 2 (2002): 45-61. See also Thomislav Kovandzic and Lynne Vieraitis (2006) showing an association between unemployment and crime for robbery, assault, and larceny only.
- 74 See also Theodore G. Chiricos, "Rates of Crime and Unemployment: An Analysis of Aggregate Research Evidence" *Social Problems* 34 (April 1987): 187-212. Chiricos' review of research through the early 1980s similarly shows a significant positive effect of unemployment on property crimes but a weaker effect on violent crimes. He also finds that the association between unemployment and property crime is generally more significant for lower levels of aggregation.
- 75 Steven Rapheal and Rudolph Winter-Ebmer, 2001: 281. A separate body of literature has considered the relationship between poverty and income inequality and crime. See, e.g., Ching-Chi Hsieh and M.D. Pugh, "A Meta-Analysis of Recent Aggregate Data Studies" *Criminal Justice Review* 18 no. 2 (1993). In a review of recent studies, the authors find a strong association between poverty and violent crime.
- 76 Eric D. Gould, Bruce A. Weinberg, and David B. Mustard, 2002.
- 77 Steven Rapheal and Rudolph Winter-Ebmer, 2001; Raymond V. Liedka, Anne Morrison Piehl, and Bert Useem, 2006.
- 78 Jeffrey Grogger, 1998.
- 79 Jeffrey Grogger and Michael Willis, 2000; William Spelman (2005) also finds that less income inequality is associated with lower crime rates.
- 80 Lance Lochner and Enrico Moretti, 2004: 177.
- 81 Lance Lochner and Enrico Moretti, 2004.
- 82 Stephen J. Steurer, Linda Smith, and Alice Tracy, *Three State Recidivism Study* (Washington, DC: Office of Correctional Education, United State Department of Education, 2001).
- 83 Steven D. Levitt, 1996.
- 84 William Spelman, 2000.
- 85 National Association of State Budget Officers, Annual Reports.
- 86 In actual dollar amounts, the difference is more striking. Between 1985 and 2004, states increased spending on corrections by \$23 billion and cut spending on public assistance by \$20 billion; spending on higher education increased just \$1.7 billion during the same period.
- 87 While not as dramatic, public opinion regarding spending on health care changed as well. Between 1994 and 2001, the proportion of the public responding that too little money was spent on improving education increased from 71 percent to 73 percent (Sourcebook of Criminal Justice Statistics Online 2003 Table 2.41.)
- 88 The focus on crime itself is diminishing in importance among the public. The relative importance of social factors such as unemployment, income, and education has increased in the public's opinion in recent years, displacing crime as a primary public concern. In 1994, 36 percent of Americans thought that crime was one of the two most important issues for government to address; by 2004, this had decreased to just 3 percent. Crime is now much less of a concern for Americans, relative to other issues. Citizens ranked the economy (31 percent), health care (16 percent), employment (16 percent), education (11 percent), and the environment (4 percent) as more important issues for the government to address.
- 89 See, e.g., Daniel Nagin and Joel Waldfogel, 1998; Bruce Western, Jeffrey R. Kling, and David F. Weiman, 2001; John Hagan, 1993; Eric D. Gould, Bruce A. Weinberg, and David B. Mustard, 2002.
- 90 See Elliott Currie, *Crime and Punishment in America* (New York: Owl Books, 1998): 54.
- 91 See Elliott Currie, 1998.

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