



ARTICLE

Prison Crime and the Economics of Incarceration

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Abstract. As the United States's prison and jail populations have skyrocketed, a wealth of empirical scholarship has emerged on the benefits and costs of incarceration. The benefits, from an empirical perspective, consist of the amount of crime prevented by locking people up, as well as the value of that prevented crime to society. The costs consist of direct state expenditures, lost inmate productivity, and a host of other collateral harms. Once these benefits and costs are quantified, empirical scholars can assess whether it "pays," from an economic perspective, to incarcerate more or fewer criminals than we currently do.

Drawing on this academic literature, policymakers at all levels of government have begun using cost-benefit analysis to address a wide range of criminal justice issues. In addition to evaluating broader proposals to increase or decrease incarceration rates, policymakers are assessing the costs and benefits of myriad narrower reforms that implicate the economics of incarceration. In each of these areas, policymakers rely heavily on empirical scholars' work, whether by adopting their general methods or incorporating their specific results.

While these economic analyses of incarceration offer important insights, they suffer from a near-universal flaw: They fail to account for crime that occurs within prisons and jails. Instead, when scholars and policymakers measure the benefits of incarceration, they look only to crime prevented "in society." Similarly, when they measure the costs, they ignore the pains of victimization suffered by inmates and prison staff. This exclusion is significant, as prison crime is rampant, both in relative and absolute terms.

To address this oversight, this Article makes several contributions. First, it provides a comprehensive review of the literature on the benefits and costs of incarceration, and it explores a range of ways in which policymakers are applying this economic framework. Second, it makes a sustained normative argument for the inclusion of prison crime in our

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economic calculus. Third, it draws on the scarce available data to estimate the impact that the inclusion of prison crime has on our cost-benefit analyses. As might be expected, once prison crime is accounted for, the economics of incarceration become significantly less favorable.

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Introduction

The past few decades have seen an explosion in the number of Americans behind bars.¹ In 1980, there were 503,600 inmates in our nation's prisons and jails.² By 2015, that number had jumped to 2,172,800.³ When individuals on parole and probation are taken into account, the adult correctional population in the United States is nearly 7,000,000, or 1 in 37.⁴ What's more, the United States is an outlier. Although other Western democracies have seen increases in their prison populations over the same period,⁵ the United States currently incarcerates "more than any other country on Earth,"⁶ in both overall and per capita terms.⁷ Indeed, while the United States has only 5% of the world's population, it claims nearly one-quarter of the world's prisoners.⁸

Given the sheer size of our recent carceral surge, it is natural to ask whether we are now locking *too* many people up, and how we would know if we were. A plethora of empirical research has tried to answer these questions using traditional principles of cost-benefit analysis. According to this framework, the benefits of incarceration are measured in terms of the value of crime that is avoided by putting criminals behind bars. The costs are measured by looking to the expenses associated with constructing and operating prisons and jails, the productivity that is lost to society when individuals are incarcerated, and the collateral effects that incarceration has on inmates'

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1. See Steven Raphael & Michael A. Stoll, *Introduction to DO PRISONS MAKE US SAFER?: THE BENEFITS AND COSTS OF THE PRISON BOOM* 1, 3 (Steven Raphael & Michael A. Stoll eds., 2009).
 2. *Key Statistic: Jail Inmates*, BUREAU JUST. STAT., <https://perma.cc/BW3P-8AXE> (archived Oct. 6, 2018) (to access data, click "View the live page," then download the "Excel" file beneath the "Figure and Table" header). The Bureau of Justice Statistics (BJS) continuously updates its prison and jail population estimates. The numbers used in this Article are reflective of those available when originally accessed by the Author.
 3. *Id.* There are some signs that this trend has been moderating or even reversing in recent years. Local jail and state prison populations peaked in 2008 and 2009, respectively, and both have been declining, with some exceptions, since then. See *id.* Federal prison populations peaked more recently, in 2012. See *id.*
 4. See DANIELLE KAEBLE & LAUREN GLAZE, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 250374, *CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2015*, at 1 (2016), <https://perma.cc/8UUE-CBFC>.
 5. See Frieder Dünkler, *The Rise and Fall of Prison Population Rates in Europe*, CRIMINOLOGY EUR. (Eur. Soc'y of Criminology, Lausanne, Switz.), no. 2, 2016, at 2, 4 fig.1.
 6. See Barack Obama, *Commentary, The President's Role in Advancing Criminal Justice Reform*, 130 HARV. L. REV. 811, 816 (2017).
 7. See Roy Walmsley, Int'l Ctr. for Prison Studies, *World Prison Population List (Tenth Edition)* 1, 3 (n.d.), <https://perma.cc/66AE-PBW8>.
 8. See *Smart Justice*, ACLU, <https://perma.cc/VX6R-4NEH> (archived Oct. 6, 2018); see also *Jailhouse Nation: How to Make America's Penal System Less Punitive and More Effective*, ECONOMIST (June 20, 2015), <https://perma.cc/6ZRQ-LBWB>.

families and communities. Once the benefits and costs are tallied, scholars are able to determine whether it “pays” to incarcerate more or fewer people than we currently do.⁹

Drawing on this academic literature, policymakers at all levels of government are also using cost-benefit analysis to address a wide range of criminal justice issues.¹⁰ In addition to evaluating general proposals to increase or decrease incarceration rates,¹¹ policymakers are assessing myriad specific reforms that implicate the economics of incarceration. These include changes to substantive and sentencing laws, investments in alternative crime-prevention strategies, and intervention programs aimed at reducing recidivism among those already incarcerated.¹² In each of these areas, policymakers are relying heavily on the work done by empirical scholars, whether by adopting these scholars’ general methods or by incorporating their specific findings.

Of course, by focusing narrowly on quantifiable costs and benefits, researchers and policymakers risk overlooking important (even crucial) considerations, such as the unfairness inherent in imposing certain sentences,¹³ or the radically disproportionate impact that incarceration has on minority groups.¹⁴ Any prescriptions drawn from these economic analyses must therefore be read with appropriate qualifications. Cost-benefit analysis nevertheless provides a powerful framework through which to evaluate the criminal justice system. After all, if everything else is held equal, we should try to make policy changes whose benefits exceed their costs.

While analyses involving the economics of incarceration yield important insights, they suffer from a near-universal flaw: They do not account for crime committed inside prisons and jails. Instead, when scholars and policymakers

9. See generally, e.g., John J. DiIulio, Jr. & Anne Morrison Piehl, *Does Prison Pay?: The Stormy National Debate over the Cost-Effectiveness of Imprisonment*, BROOKINGS REV., Fall 1991, at 28; Anne Morrison Piehl & John J. DiIulio, Jr., “*Does Prison Pay?*” Revisited: *Returning to the Crime Scene*, BROOKINGS REV., Winter 1995, at 20.

10. See *infra* Part II.

11. See *infra* Part II.A.

12. See *infra* Part II.B.

13. For example, the U.S. Supreme Court has held that certain prison sentences are categorically unconstitutional. See, e.g., *Miller v. Alabama*, 567 U.S. 460, 489 (2012) (holding that the Eighth Amendment precludes juveniles from being sentenced to mandatory life without parole for any crime); *Graham v. Florida*, 560 U.S. 48, 74 (2010) (holding that the Eighth Amendment precludes juveniles from being sentenced to life without parole for crimes other than homicide).

14. See generally MICHELLE ALEXANDER, *THE NEW JIM CROW: MASS INCARCERATION IN THE AGE OF COLORBLINDNESS* (rev. ed. 2012); TODD R. CLEAR, *IMPRISONING COMMUNITIES: HOW MASS INCARCERATION MAKES DISADVANTAGED NEIGHBORHOODS WORSE* (2007); DEVAH PAGER, *MARKED: RACE, CRIME, AND FINDING WORK IN AN ERA OF MASS INCARCERATION* (2007); BRUCE WESTERN, *PUNISHMENT AND INEQUALITY IN AMERICA* (2006).

calculate the benefits of incarceration, they look only to the gross amount of crime avoided in society. Similarly, when they calculate the costs of incarceration, they almost always fail to consider the costs of victimization behind bars. For economic analyses of incarceration, and the laws and programs that rely on those analyses, prison crime simply doesn't count.

This exclusion is significant.¹⁵ Although available data is scarce, the information we have suggests that crime, especially violent crime, is rampant in prisons and jails. As an illustration, the most recent National Inmate Survey, conducted by the Bureau of Justice Statistics (BJS), found that between 3% and 4% of inmates "reported experiencing one or more incidents of sexual victimization by another inmate or facility staff in the past 12 months or since admission to the facility, if less than 12 months."¹⁶ Compare this with the national self-reported rate of rape and sexual assault over the same period, according to the BJS's National Crime Victimization Survey (NCVS): less than 0.15%.¹⁷ While both of these figures may reflect significant undercounting,¹⁸ they imply that the amount of sexual victimization that occurs inside prisons and jails, *in absolute terms*, is within an order of magnitude of the amount that occurs outside.¹⁹ And sex crimes are only one type of victimization that occurs behind bars. By failing to account for such a substantial amount of crime, scholars and policymakers paint an unrealistically favorable picture of the economics of incarceration. They correspondingly understate the value of programs that keep people out of prisons and jails.

In order to address this oversight and more accurately assess the costs and benefits of incarceration, this Article makes several contributions. First, Part I surveys the literature on the economics of incarceration, with particular attention to studies that measure the amount of crime that incarceration prevents, the value of that prevented crime to society, and the costs of incarceration. Part II then explores a range of different policy applications involving the economic framework introduced in Part I. As Part II illustrates, policymakers at all levels of government are applying a cost-benefit

15. It is not, however, the only significant exclusion. As discussed below, the empirical literature may overlook many of the collateral costs of incarceration as well. *See infra* notes 121-27 and accompanying text.

16. *See* ALLEN J. BECK, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 245694, PREA DATA COLLECTION ACTIVITIES, 2014, at 3 (2014), <https://perma.cc/JYK3-NSG3>.

17. *See* JENNIFER L. TRUMAN ET AL., BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 243389, CRIMINAL VICTIMIZATION, 2012, at 2 tbl.1 (2013), <https://perma.cc/CK66-2D54>.

18. *See* TED R. MILLER ET AL., NAT'L INST. OF JUSTICE, U.S. DEP'T OF JUSTICE, NCJ 155282, VICTIM COSTS AND CONSEQUENCES: A NEW LOOK 2 (1996), <https://perma.cc/2KFN-W5AH>.

19. *See* Jill Filipovic, Opinion, *Is the US the Only Country Where More Men Are Raped than Women?*, *GUARDIAN* (Feb. 21, 2012, 11:18 AM EST), <https://perma.cc/MZA4-MDCM>.

framework to evaluate not only general proposals to increase or decrease the prison population, but also a host of specific laws and programs that implicate the economics of incarceration.

Next, Part III highlights the near-universal manner in which prison crime is excluded from economic analyses, and it examines the possible justifications for this exclusion. Although these justifications are rarely articulated, they appear to rely either on the view that prison crime is part of the punishment that criminals deserve, or on the related view that prison crime is preferable to crime in the outside world. Part III argues that these views are misguided, and it draws on the concept of economic “standing” to show that we are not justified in excluding prison crime from our cost-benefit analyses.

Finally, Part IV looks to the scarce data available on the prevalence of prison crime, and it estimates the impact that inclusion of this data has on economic analyses of incarceration. Even when we confine our inquiry to the costs associated with violent victimization, Part IV finds that accounting for prison crime has a significant impact on our cost-benefit analyses: Regardless of the assumptions we use, the costs of incarceration increase substantially.

I. The Economics of Incarceration

A. The Benefits of Incarceration

The goal of incarceration, from an economic perspective, is to reduce crime. Specifically, empirical scholars quantify the benefits of incarceration by measuring two variables: the amount of crime prevented by locking people up and the avoided costs of prevented crime. Both steps of this calculus are complicated and controversial. With respect to the amount of crime prevented, the effects of incarceration are difficult to quantify due to the plethora of methodological approaches available²⁰ and the number of possible confounding variables.²¹ With respect to the costs of prevented crime, quantification has repeatedly “vexed economists,”²² because many costs of crime are indirect—such as the money spent on locks and security systems—while others are direct, but intangible—such as the pain, suffering, and psychological trauma suffered by victims. Notwithstanding the empirical uncertainty in the area, this Part aims to provide a range of estimates of the

20. See Tomislav V. Kovandzic & Lynne M. Vieraitis, *The Effect of County-Level Prison Population Growth on Crime Rates*, 5 CRIMINOLOGY & PUB. POL'Y 213, 214 (2006).

21. See, e.g., William Spelman, *Prisons and Crime, Backwards in High Heels*, 29 J. QUANTITATIVE CRIMINOLOGY 643, 644 (2013) (discussing techniques to “separate the effects of prison on crime . . . from the effects of crime on prison”).

22. See John J. Donohue III, *Assessing the Relative Benefits of Incarceration: Overall Changes and the Benefits on the Margin*, in *DO PRISONS MAKE US SAFER?*, *supra* note 1, at 269, 284.

benefits of incarceration by surveying the literature on the crime-prevention effect of incarceration and the avoided social costs of prevented crime.

1. The crime-prevention effect

Even the fiercest critic of mass incarceration must acknowledge that national crime rates have plummeted as prison populations have soared.²³ In 1980, when the number of inmates was less than a quarter of what it is today,²⁴ the reported violent crime rate in the United States was nearly 600 incidents per 100,000 inhabitants, according to the Federal Bureau of Investigation's Uniform Crime Reports (UCR).²⁵ By 2014, that number had dropped to 376.²⁶ Similarly, in 1980, the country's reported property crime rate was over 5,300 incidents per 100,000 people. By 2014, it was under 2,600.²⁷ Although there have been interruptions in this downward trajectory—crime rose in the mid- to late 1980s before starting to fall again in the early 1990s²⁸—the trend has held uniformly across each subcategory of crime reported by the UCR.²⁹

Of course, correlation does not imply causation, and empirical scholars have suggested a number of alternative explanations for the crime drop the United States has experienced over the past few decades. Economic growth is

23. See John J. Donohue III, *Economic Models of Crime and Punishment*, 74 SOC. RES. 379, 379-80 (2007) (describing the recent crime drop as one of the “three monumental stories [that] have dominated the national American crime scene” over the past forty-five years).

24. See *supra* notes 1-3 and accompanying text.

25. See *State-by-State and National Crime Estimates by Year(s)*, UNIFORM CRIME REPORTING STAT., <https://perma.cc/3AKP-LPX2> (archived Oct. 8, 2018) (to access data, click “View the live page,” then select “United States—Total” under the header “Choose one or more states,” then select “Violent crime rates” and “Property crime rates” under the header “Choose one or more variable groups,” then select “From 1980 to 2014” under “Choose years to include,” then click “Get Table” on the left side of the page).

26. *Id.*

27. *Id.*

28. For graphs depicting the recent crime drop, both nationally and by city, see *Crime in America's Big Cities Is Almost Universally Falling*, ECONOMIST (Sept. 27, 2016), <https://perma.cc/5L34-MW5E>.

29. The UCR's definition of violent crime includes murder, rape, robbery, and aggravated assault, all of which dropped significantly over the period in question (murder from 10.2 per 100,000 inhabitants to 4.5; rape from 36.8 per 100,000 to 26.4; robbery from 251.1 per 100,000 to 102.2; and aggravated assault from 298.5 per 100,000 to 232.5). See *State-by-State and National Crime Estimates by Year(s)*, *supra* note 25. The UCR's definition of property crime includes burglary, larceny-theft, and motor vehicle theft, which all dropped significantly as well (burglary from 1,684.1 per 100,000 inhabitants to 542.5; larceny-theft from 3,167.0 per 100,000 to 1,837.3; and motor vehicle theft from 502.2 per 100,000 to 216.2). See *id.*

one frequently cited driver,³⁰ as are increases in police forces³¹ and a decline in the crack cocaine epidemic.³² John Donohue and economist Steven Levitt (coauthor of the bestseller *Freakonomics*³³) have provocatively suggested that legalized abortion following *Roe v. Wade*³⁴ explains as much as half of the crime decline that has occurred since the early 1990s,³⁵ and recent studies point even to reductions in ambient lead levels as a significant cause of the crime drop.³⁶

However, while the United States's decreasing crime rate likely has multiple explanations, the increase in incarceration is almost certainly one of them. Indeed, empirical researchers are nearly uniform in their assessment that increases in incarceration cause at least some decrease in crime.³⁷ While incarceration can theoretically reduce crime through multiple mechanisms, researchers have focused on incapacitation and deterrence,³⁸ as there is little evidence that American prisons and jails rehabilitate inmates.³⁹ Some researchers have tried to isolate the incapacitation effect of incarceration,

30. See, e.g., FRANKLIN E. ZIMRING, *THE GREAT AMERICAN CRIME DECLINE* 63, 68 (2007); Richard Rosenfeld & Robert Fornango, *The Impact of Economic Conditions on Robbery and Property Crime: The Role of Consumer Sentiment*, 45 *CRIMINOLOGY* 735, 755-58 (2007).

31. See, e.g., Alfred Blumstein & Joel Wallman, *The Crime Drop and Beyond*, 2 *ANN. REV. L. & SOC. SCI.* 125, 135-38 (2006); Steven D. Levitt, *Understanding Why Crime Fell in the 1990s: Four Factors That Explain the Decline and Six That Do Not*, *J. ECON. PERSP.*, Winter 2004, at 163, 176-77.

32. See, e.g., Benjamin Bowling, *The Rise and Fall of New York Murder: Zero Tolerance or Crack's Decline?*, 39 *BRIT. J. CRIMINOLOGY* 531, 551 (1999); cf. Jeff Grogger & Michael Willis, *The Emergence of Crack Cocaine and the Rise in Urban Crime Rates*, 82 *REV. ECON. & STAT.* 519, 528 (2000) (concluding that the arrival of crack cocaine in the late 1980s and early 1990s led to a rise in violent crime).

33. STEVEN D. LEVITT & STEPHEN J. DUBNER, *FREAKONOMICS: A ROGUE ECONOMIST EXPLORES THE HIDDEN SIDE OF EVERYTHING* (2005).

34. 410 U.S. 113 (1973).

35. See John J. Donohue III & Steven D. Levitt, *The Impact of Legalized Abortion on Crime*, 116 *Q.J. ECON.* 379, 414-15 (2001).

36. See, e.g., Jennifer L. Doleac, *New Evidence That Lead Exposure Increases Crime*, *BROOKINGS: UP FRONT* (June 1, 2017), <https://perma.cc/G8LP-G736>; Kevin Drum, *Lead: America's Real Criminal Element*, *MOTHER JONES* (Feb. 11, 2016, 10:58 PM), <https://perma.cc/WF7G-34LB>.

37. See Donohue, *supra* note 22, at 275-79 tbl.9.1 (surveying the literature and finding only one study that suggests higher incarceration levels generally lead to more crime).

38. See, e.g., Daniel S. Nagin et al., *Imprisonment and Reoffending*, 38 *CRIME & JUST.* 115, 115 (2009).

39. See *id.* at 121 (finding that most studies suggest incarceration either increases or has no effect on future crime, while "[o]nly a few studies find evidence of a preventive effect"); cf. M. Keith Chen & Jesse M. Shapiro, *Do Harsher Prison Conditions Reduce Recidivism?: A Discontinuity-Based Approach*, 9 *AM. L. & ECON. REV.* 1, 3 (2007) (finding that harsher prison conditions do not reduce recidivism and may instead increase it).

either by estimating the amount of crime that inmates commit when they are not incarcerated (the more crime committed when inmates are not behind bars, the more crime prevented by locking them up),⁴⁰ or by measuring the increase in crime that occurs when inmates are unexpectedly released.⁴¹ Others have tried to isolate incarceration's deterrent effect by measuring, for example, the short-term influence that sentencing enhancements have on crime.⁴²

Because these approaches each measure only one type of effect in isolation, they necessarily fail to account for the total effect that incarceration has on crime. To fill this gap, a third line of research tries to move past specific mechanisms and measure the aggregate crime-prevention effect of incarceration.⁴³ To measure this effect, researchers usually calculate the relationship between changes in crime rates and changes in incarceration rates,⁴⁴ or between changes in crime rates and changes in "instrumental variables," such as the status of prison crowding litigation, which affect the

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40. See Magnus Lofstrom & Steven Raphael, *Incarceration and Crime: Evidence from California's Public Safety Realignment Reform*, 664 ANNALS AM. ACAD. POL. & SOC. SCI. 196, 198-200 (2016) (describing such studies); Martin H. Pritikin, *Is Prison Increasing Crime?*, 2008 WIS. L. REV. 1049, 1083 (same). For examples of studies that measure the incapacitation effect in this way, see DiIulio & Piehl, *supra* note 9, at 31-32 (drawing on self-reported crime rates from a survey of Wisconsin prisoners in order to estimate the incapacitation effect of incarceration); and Piehl & DiIulio, *supra* note 9, at 24-25 (providing similar data from a self-report survey of New Jersey prisoners).
41. See Paolo Buonanno & Steven Raphael, *Incarceration and Incapacitation: Evidence from the 2006 Italian Collective Pardon*, 103 AM. ECON. REV. 2437 (2013) (calculating the incapacitation effect of incarceration by measuring the increase in crime that occurred after the Italian government collectively pardoned one-third of the nation's inmates).
42. See, e.g., David S. Abrams, *Estimating the Deterrent Effect of Incarceration Using Sentencing Enhancements*, AM. ECON. J.: APPLIED ECON., Oct. 2012, at 32 (isolating the deterrent effect of incarceration by measuring the short-term influence of gun possession sentence enhancements on commission rates of gun crimes); see also NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *THE GROWTH OF INCARCERATION IN THE UNITED STATES: EXPLORING CAUSES AND CONSEQUENCES* 134-40 (Jeremy Travis et al. eds., 2d prtng. 2014) (surveying studies of the deterrent effect of incarceration).
43. See William Spelman, *What Recent Studies Do (and Don't) Tell Us About Imprisonment and Crime*, 27 CRIME & JUST. 419, 423 (2000) (distinguishing "bottom-up" measurement approaches—which are "well suited to identifying the incapacitation effects of prison"—from "top-down" approaches—which "cannot in general separate incapacitative effects from deterrent and rehabilitative effects, [but] are much better suited than the bottom-up methods to identifying the full effects"); Jody Sundt et al., *Is Downsizing Prisons Dangerous?: The Effect of California's Realignment Act on Public Safety*, 15 CRIMINOLOGY & PUB. POL'Y 315, 319 (2016).
44. See, e.g., Zsolt Becsi, *Economics and Crime in the States*, FED. RES. BANK ATLANTA ECON. REV., First Quarter 1999, at 38, 49-52; Raymond V. Liedka et al., *The Crime-Control Effect of Incarceration: Does Scale Matter?*, 5 CRIMINOLOGY & PUB. POL'Y 245, 258-59 (2006); Thomas B. Marvell & Carlisle E. Moody, Jr., *Prison Population Growth and Crime Reduction*, 10 J. QUANTITATIVE CRIMINOLOGY 109, 121-22 (1994).

crime rate only by affecting the incarceration rate.⁴⁵ By painting an aggregate picture, these studies give us the most comprehensive understanding of the crime-prevention effect of incarceration (although they are not free from methodological criticisms⁴⁶).

In quantifying the crime-prevention effect, scholars generally measure the “elasticity” of crime with respect to incarceration, where elasticity is defined as the change in crime, expressed as a percentage, that is caused by a one percent increase in incarceration.⁴⁷ An elasticity of -1.0 , for example, means that a one percent increase in incarceration leads to a one percent *decrease* in crime. An elasticity of 0.5 , by contrast, means that a one percent increase in incarceration leads to a one-half percent *increase* in crime.

Elasticities can be calculated for individual crimes (to see, for example, how a one percent increase in incarceration affects the murder rate specifically),⁴⁸ or they can be calculated for crime generally (to see the effect that incarceration has on all crimes).⁴⁹ Although general elasticities can obscure important differences—larcenies and murders are both counted simply as “crimes”—they are useful for rough approximations, and they offer some benefits that specific elasticities lack.⁵⁰ For simplicity’s sake, the rest of this Part will confine itself to the literature on general elasticities.

The empirical literature has yielded a number of estimates for the elasticity of crime with respect to incarceration, and these estimates “do not tightly cluster around a single number, but rather range considerably.”⁵¹ According to William Spelman, our best estimate of elasticity is “in the neighborhood of -0.30 ,” but “[a]ny figure between -0.20 and -0.40 can be defended, and we should not be too surprised to find that the result is anywhere between -0.10 and -0.50 .”⁵²

45. See Steven D. Levitt, *The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation*, 111 Q.J. ECON. 319, 323 (1996); see also William Spelman, *Jobs or Jails?: The Crime Drop in Texas*, 24 J. POL’Y ANALYSIS & MGMT. 133, 139-41 (2005) (discussing additional instrumental variables that may be available to empirical researchers).

46. See, e.g., Steven N. Durlauf & Daniel S. Nagin, *Imprisonment and Crime: Can Both Be Reduced?*, 10 CRIMINOLOGY & PUB. POL’Y 13, 24-26 (2011).

47. See Donohue, *supra* note 23, at 387.

48. See, e.g., Becsi, *supra* note 44, at 50 tbl.5; Levitt, *supra* note 45, at 342 tbl.VII; Liedka et al., *supra* note 44, at 271 tbl.7; Marvell & Moody, *supra* note 44, at 132 tbl.V.

49. See, e.g., Charles L. Cappell & Gresham Sykes, *Prison Commitments, Crime, and Unemployment: A Theoretical and Empirical Specification for the United States, 1933-1985*, 7 J. QUANTITATIVE CRIMINOLOGY 155, 188 (1991); Liedka et al., *supra* note 44, at 259 tbl.2; Marvell & Moody, *supra* note 44, at 131 tbl.IV.

50. See Spelman, *supra* note 43, at 484.

51. Donohue, *supra* note 22, at 274; see *id.* at 281 tbl.9.2.

52. Spelman, *supra* note 43, at 484.

When using these elasticity estimates, it is important to keep in mind a few caveats. First, economists tend to assume that elasticities are constant, despite the fact that elasticities themselves may vary with incarceration rates.⁵³ Second, elasticities are generally calculated with respect to only the handful of “index crimes” measured by the UCR⁵⁴—murder, rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft⁵⁵—thereby leaving out a significant number of non-index crimes, such as drug offenses.⁵⁶ And finally, the elasticity of crime is usually measured with respect to changes in state prison populations, which ignores the effects of increases in the populations of federal prisons as well as state and local jails.⁵⁷

With these caveats in mind, and assuming that the elasticity of crime falls somewhere within the range provided by Spelman, we can estimate the amount of crime prevented by incarcerating the marginal inmate. As just discussed, elasticities are generally calculated with respect to state prison populations, which totaled 1,330,300 in 2015.⁵⁸ An additional prisoner would thus increase the incarcerated population by $1 / 1,330,300$. Multiplying this increase by the range of elasticities provided by Spelman (–0.10 to –0.50), and multiplying again by the total number of index crimes committed in 2015 (which we can approximate as being somewhere around 28,000,000)⁵⁹—yields a

53. See Liedka et al., *supra* note 44, at 249-51, 259-63.

54. See, e.g., Donohue, *supra* note 22, at 286 (expressly limiting its inquiry to index crimes); Spelman, *supra* note 43, at 422 (same).

55. See *Crime in the United States, 2015: Table 1*, FBI: UCR, <https://perma.cc/MEB7-7EVE> (archived Oct. 9, 2018) [hereinafter *2015 UCR Crime Rate Statistics*]. While arson is technically included as an index crime as well, see *Crime in the United States, 2015: Offenses Known to Law Enforcement*, FBI: UCR, <https://perma.cc/E2FG-72FA> (archived Oct. 9, 2018), it is excluded from estimate totals due to insufficiency of data, see *2015 UCR Crime Rate Statistics, supra*.

56. See Marvell & Moody, *supra* note 44, at 136.

57. See Spelman, *supra* note 43, at 435-36.

58. *Key Statistic: Jail Inmates, supra* note 2.

59. The exact number used in this Article—28,072,472—was calculated by taking the reported number of instances of each index crime in the 2015 UCR and scaling it up by the estimated reporting rate for each crime. For the reported numbers, see *2015 UCR Crime Rate Statistics, supra* note 55 (murders: 15,696; rapes: 90,185; robberies: 327,374; aggravated assaults: 764,449; burglaries: 1,579,527; larceny-thefts: 5,706,346; motor vehicle thefts: 707,758). For the reporting rates, see Rucker Johnson & Steven Raphael, *How Much Crime Reduction Does the Marginal Prisoner Buy?*, 55 J.L. & ECON. 275, 298 n.14 (2012) (murder: 1 (i.e., it is assumed all murders are reported); rape: 0.325; robbery: 0.572; aggravated assault: 0.553; burglary: 0.502; larceny-theft: 0.262; motor vehicle theft: 0.788).

These numbers are similar to those found by Donohue. See Donohue, *supra* note 22, at 281 tbl.9.2 (estimating that 28,892,802 crimes occurred in 2005). They are somewhat higher than those reported in the NCVS. See *NCVS Victimization Analysis Tool (NVAT)*, BUREAU JUST. STAT., <https://perma.cc/A3SR-45V2> (archived Oct. 10, 2018) [hereinafter *footnote continued on next page*]

crime-prevention effect of roughly 2 to 11,⁶⁰ meaning that somewhere between 2 and 11 index crimes are avoided annually by incarcerating the marginal prisoner. In order to convert this range into a monetary benefit of incarceration, empirical scholars estimate the cost that each of these avoided crimes would have imposed on society. Accordingly, the next Subpart surveys the literature on the costs of crime.

2. The costs of crime

Crime imposes an astonishing array of costs on society: Personal property is taken or destroyed; victims are killed or injured; money is spent to prevent future crimes and adjudicate past crimes. While estimates vary considerably as to the magnitude of this burden, some economists place the total cost of crime in the United States in the realm of trillions of dollars per year.⁶¹

Significant disagreement exists regarding the appropriate methodology for measuring the costs of crime—economists disagree, for example, about whether the value of stolen property should be counted as a cost or merely as a transfer from victim to offender.⁶² Nevertheless, scholars generally recognize three categories of costs associated with crime: costs borne by victims (both tangible and intangible), costs borne by society (both preventative and remedial), and costs borne by offenders.⁶³ These categories are often framed

NCVS Victimization Analysis Tool] (to access data, click “View the live page”; then select “Quick Tables”; then download files labeled “2012-2016” under the header “Select trend period” in the rows titled “Rape/sexual assault, robbery, aggravated assault, and simple assault” and “Household burglary, motor vehicle theft, and theft”) (reporting 16,438,214 index crimes in 2015, calculated by summing the values for “rape/sexual assault,” “robbery,” “aggravated assault,” “household burglary,” “motor vehicle theft,” and “theft” (capitalization altered)). But the NCVS likely underreports. See MILLER ET AL., *supra* note 18, at 10.

60. The unrounded numbers used in this Article are 2.11 and 10.55.

61. See, e.g., David A. Anderson, *The Aggregate Burden of Crime*, 42 J.L. & ECON. 611, 630 (1999).

62. Compare Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies, and Theft*, 5 W. ECON. J. 224, 228 (1967) (“Theft, of course, is a pure transfer, and therefore might be assumed to have no welfare effects at all.”), with Ted R. Miller et al., *Costs of Alcohol and Drug-Involved Crime*, 7 PREVENTION SCI. 333, 336 (2006) (“[W]e do not count gains criminals get illegally as . . . societal benefits. In proscribing these actions, legislatures implicitly state that the gains are ill-got and do not benefit society.”), and Mark A. Cohen, *Valuing Crime Control Benefits Using Stated Preference Approaches* 5 n.2 (Vanderbilt Univ. Law Sch. Law & Econ., Working Paper No. 08-09, 2007), <https://perma.cc/2TPC-F2Q5> (“I have included the cost of the stolen money as a ‘cost’ of the crime The victim did not voluntarily give up this amount of money and as a society[,] we have made it illegal to take it from her.”).

63. See Mark A. Cohen et al., *The Costs and Consequences of Violent Behavior in the United States*, in 4 UNDERSTANDING AND PREVENTING VIOLENCE 67, 72-73 (Albert J. Reiss, Jr. & Jeffrey A. Roth eds., 1994).

and subdivided in different ways—for instance, some scholars separately consider tangible and intangible costs,⁶⁴ while others consider criminal justice costs separately from other social costs⁶⁵—but the categories nevertheless provide a consistent paradigm within which different costs of crime can be classified.

Scholars also tend to take one of two general approaches in measuring the costs of crime: a “bottom-up” approach, which attempts to calculate the individual cost components in each category and add them together, or a “top-down” approach, which attempts to infer the costs of crime holistically from individuals’ stated or revealed preferences.⁶⁶ In this Subpart, I will begin by discussing the bottom-up approach for estimating costs, before proceeding to examine top-down approaches. I will conclude by offering a range of estimates for the costs of crime prevented by incarcerating the marginal prisoner.

Beginning with the costs of crime borne by victims, the most obvious are the tangible costs of destroyed or stolen property, the expenses associated with medical and other victim services, and lost wages.⁶⁷ Scholars estimate these costs by looking to a number of sources, including self-reported data from the NCVS⁶⁸ as well as state-level data from hospital records and workers’ compensation cases.⁶⁹ As noted above, researchers disagree about whether the value of stolen property should be counted as a social cost. Gary Becker, for example, has argued that “frauds, thefts, etc., do not involve true social costs but are simply transfers, with the loss to victims being compensated by equal gains to criminals,”⁷⁰ and many subsequent researchers have followed his

64. See, e.g., Kathryn E. McCollister et al., *The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation*, 108 DRUG & ALCOHOL DEPENDENCE 98, 102-03 (2010) (first analyzing tangible costs, then analyzing intangible costs); Andrew S. Rajkumar & Michael T. French, *Drug Abuse, Crime Costs, and the Economic Benefits of Treatment*, 13 J. QUANTITATIVE CRIMINOLOGY 291, 302-09 (1997) (same).

65. See, e.g., Mark A. Cohen & Alex R. Piquero, *New Evidence on the Monetary Value of Saving a High Risk Youth*, 25 J. QUANTITATIVE CRIMINOLOGY 25, 33-34 (2009).

66. See Mark A. Cohen et al., *Studying the Costs of Crime Across Offender Trajectories*, 9 CRIMINOLOGY & PUB. POL’Y 279, 285 (2010).

67. See McCollister et al., *supra* note 64, at 102.

68. See *Data Collection: National Crime Victimization Survey (NCVS)*, BUREAU JUST. STAT., <https://perma.cc/8G64-EFG5> (archived Oct. 10, 2018).

69. See MILLER ET AL., *supra* note 18, at 10, 12-14 (discussing the shortcomings of the NCVS and describing other data sources used to supplement NCVS results).

70. Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 171 n.3 (1968). Becker did add the caveat, however, that the value of the stolen goods might be used as a proxy for the costs incurred by the thief, which would in turn qualify as “true social costs.” *Id.*

lead.⁷¹ Other scholars contend, however, that theft does create a social cost, either because the value of the stolen item is a proxy for the uncompensated costs of replacing it,⁷² or because morality requires us “to disregard criminals’ utility in any social-welfare calculations.”⁷³ As Part III.B below will argue, advocates of this latter position are correct to use moral judgment in determining which kinds of utility should count.

In addition to tangible costs, victims of crime bear intangible costs, such as pain and suffering, fear of future victimization, and lost quality of life.⁷⁴ For some crimes, like motor vehicle theft, intangible costs are relatively minor compared to tangible costs.⁷⁵ For others, particularly for violent crimes such as rape and assault, intangible costs dominate.⁷⁶ Unlike monetary losses, intangible costs cannot be measured directly; there is no market for pain and suffering. Instead, economists must approximate these costs by looking to sources like civil jury awards.⁷⁷ Such methods are not perfect, but they provide at least an approximation for empirical scholars who take a “bottom-up” approach.

Crime also imposes significant costs on society, such as the costs to the justice system of responding to different offenses. These include the resources required for arrests, investigations, and processing,⁷⁸ which are calculated by looking to “the probability of an offender ending up at each stage of the

71. See, e.g., Rajkumar & French, *supra* note 64, at 294 (“In the case of stolen property, unless it is damaged or destroyed, it is typically not counted as a social loss because it is transferred to another member of society, namely, the criminal.” (citation omitted)).

72. See, e.g., McCollister et al., *supra* note 64, at 107.

73. Donohue, *supra* note 22, at 286 (citing *The Cost of Crime: Understanding the Financial and Human Impact of Criminal Activity: Hearing Before the S. Comm. on the Judiciary*, 109th Cong. 64-70 (2006) (statement of Jens Ludwig, Professor, Georgetown Public Policy Institute); MARK A. COHEN, *THE COSTS OF CRIME AND JUSTICE* (2005); and William N. Trumbull, *Who Has Standing in Cost-Benefit Analysis?*, 9 J. POL’Y ANALYSIS & MGMT. 201 (1990)).

74. See generally Paul Dolan et al., *Estimating the Intangible Victim Costs of Violent Crime*, 45 BRIT. J. CRIMINOLOGY 958 (2005).

75. See Mark A. Cohen, *Pain, Suffering, and Jury Awards: A Study of the Cost of Crime to Victims*, 22 LAW & SOC’Y REV. 537, 546 tbl.3 (1988) (finding that the costs of car theft to victims are almost entirely composed of direct monetary costs).

76. See *id.* (finding that the costs of pain and suffering associated with rape were nearly ten times the direct monetary costs, with similar figures for assault).

77. Mark Cohen is credited with originating this method, see *id.*, and it has been adopted in several subsequent studies, see, e.g., MILLER ET AL., *supra* note 18, at 15; Cohen et al., *supra* note 63, at 98; McCollister et al., *supra* note 64, at 102.

78. See Aaron Chalfin, *Economic Costs of Crime*, in 2 THE ENCYCLOPEDIA OF CRIME AND PUNISHMENT 543, 547 (Wesley G. Jennings ed., 2016).

criminal justice system, multiplied by criminal justice costs for each stage.⁷⁹ While economists often include the costs of incarceration in their calculations of justice system costs,⁸⁰ it is important to exclude those costs when calculating the benefits of incarceration (otherwise we would conclude that the costs of incarceration could be avoided by incarcerating people).⁸¹

In addition to justice system costs, empirical researchers count crime-prevention expenditures as costs borne by society, whether those expenditures are private purchases of locks or firearms, or public investment in police forces and fire departments.⁸² It is difficult in practice to calculate these costs with respect to individual crimes avoided, given that preventative costs are incurred in order to protect against crime in general,⁸³ but such costs should in theory scale down as the crime level is reduced.

Finally, when calculating the social costs of crime, scholars look to the costs borne by the offender, typically in terms of the “lost productivity of law-abiding citizens who turn to crime rather than pursue a lawful career that could directly benefit society.”⁸⁴ The inclusion of such costs assumes that criminals would in fact be engaging in socially productive behavior if they were not engaged in crime,⁸⁵ and the loss of this productivity is measured through such proxies as estimated forgone earnings.⁸⁶

As may be evident at this juncture, bottom-up approaches are valuable for their ability to give us insights into the specific cost centers of crime. However, as was the case with bottom-up approaches to measuring the crime-prevention effect,⁸⁷ certain categories will inevitably be left out.⁸⁸ In order to fill these gaps, empirical scholars have adopted a number of top-down methods to measure the costs of crime holistically. The most straightforward of these

79. Mark A. Cohen, *The Monetary Value of Saving a High-Risk Youth*, 14 J. QUANTITATIVE CRIMINOLOGY 5, 11 (1998).

80. See, e.g., Cohen et al., *supra* note 63, at 131-34, 136-39; Cohen, *supra* note 79, at 16 tbl.III; Cohen & Piquero, *supra* note 65, at 33-35; McCollister et al., *supra* note 64, at 103; Rajkumar & French, *supra* note 64, at 303.

81. To the extent that justice system costs are dependent on the existence of incarceration (as may be the case, for example, with certain sentencing proceedings), those costs should be excluded as well.

82. See Anderson, *supra* note 61, at 612.

83. See Cohen, *supra* note 79, at 8.

84. See Rajkumar & French, *supra* note 64, at 294. Scholars also sometimes include the expenses offenders incur in order to commit crimes, such as the purchase of weapons. See Cohen et al., *supra* note 63, at 84.

85. See, e.g., Donohue, *supra* note 22, at 292.

86. See Cohen, *supra* note 79, at 16.

87. See *supra* note 43 and accompanying text.

88. See Cohen et al., *supra* note 66, at 285.

methods is the contingent valuation survey, which asks individuals how much they would pay to reduce their risk of victimization by a certain amount.⁸⁹

Top-down measures theoretically encompass the entire cost of crime borne by individuals, including intangible costs of victimization and private costs associated with crime prevention.⁹⁰ As a result—and perhaps for other reasons—top-down measures often yield higher estimates of the costs of crime.⁹¹ Whether these measures incorporate the costs borne by public actors and offenders is less clear, as it is possible that private individuals do not consider such costs when deciding how much they would spend to avoid crime. However, as the costs borne by individuals (either as victims or on prevention) make up the lion's share of the costs of crime, any omissions associated with top-down measures are likely insignificant.⁹²

The variety of methodologies just discussed—and the politically charged nature of studying crime and mass incarceration—has led scholars to arrive at widely differing estimates of the costs of crime. In order to give as comprehensive a picture as possible, this Subpart concludes by surveying a fairly generous range of cost calculations. Two studies, one by John Donohue and one by Aaron Chalfin, provide thorough reviews of the literature on the costs of crime,⁹³ and I take the lowest and highest estimates across both of these. In keeping with the use of general elasticities above,⁹⁴ I calculate the weighted average cost of a generic prevented crime,⁹⁵ so that the crime-prevention effect calculated in Part I.A.1 above can be converted into a monetary benefit of incarcerating the marginal prisoner.

89. See, e.g., Cohen & Piquero, *supra* note 65, at 35; Mark A. Cohen et al., *Willingness-to-Pay for Crime Control Programs*, 42 CRIMINOLOGY 89, 90-91 (2004). Respondents' willingness to pay will, of course, be limited by their ability to pay. See Robin Gregory et al., *Valuing Environmental Resources: A Constructive Approach*, 7 J. RISK & UNCERTAINTY 177, 186 (1993).

90. See Cohen & Piquero, *supra* note 65, at 35.

91. See Chalfin, *supra* note 78, at 549 ("This either indicates that juries tend to underestimate the cost of pain and suffering to crime victims or, alternatively, that individuals overestimate the pain and suffering associated with victimization.").

92. See Cohen & Piquero, *supra* note 65, at 35.

93. See Chalfin, *supra* note 78, at 550 tbl.1, 552 fig.1(a); Donohue, *supra* note 22, at 287 tbl.9.4, 292 tbl.9.6.

94. See *supra* text accompanying notes 48-52.

95. In weighting the costs of individual crimes, I use the same reported numbers and reporting rates as used in note 59 above. Murder has a weight of 0.06% ((15,696 / 1) / 28,072,472); rape has a weight of 0.99% ((90,185 / 0.325) / 28,072,472); robbery has a weight of 2.04% ((327,374 / 0.572) / 28,072,472); aggravated assault has a weight of 4.92% ((764,449 / 0.553) / 28,072,472); burglary has a weight of 11.21% ((1,579,527 / 0.502) / 28,072,472); larceny-theft has a weight of 77.58% ((5,706,346 / 0.262) / 28,072,472); and motor vehicle theft has a weight of 3.20% ((707,758 / 0.788) / 28,072,472).

After adjusting for inflation, the lowest estimates from the Donohue and Chalfin studies yield a weighted average cost of \$5,432 per crime in 2015 dollars.⁹⁶ The highest estimates yield a weighted average cost of \$28,613.⁹⁷ Multiplying each end of this range by the low and high estimates for the crime-prevention effect calculated above (roughly 2 and 11 crimes prevented, respectively),⁹⁸ we can arrive at a range of estimates for the benefits of incarcerating the marginal prisoner: \$11,462 to \$301,903. This range is arguably too wide, as it multiplies extreme estimates of both the crime-prevention effect and the costs of crime, but it is nevertheless helpful in determining the order of magnitude of the benefits of incarceration. Having surveyed the literature on the benefits of incarcerating the marginal prisoner, we can now turn to the literature on its costs.

B. The Costs of Incarceration

As the preceding Subpart demonstrates, the literature on the benefits of incarceration is rich. Empirical work on the social costs of incarceration, by comparison, is somewhat underdeveloped.⁹⁹ Some of this disparity may owe to the fact that the costs of operating prisons and jails are more readily reported to, and made available by, public agencies,¹⁰⁰ and thus require less methodolog-

96. The lowest estimate comes from Mark Cohen's analysis. See Chalfin, *supra* note 78, at 550 tbl.1 (citing Cohen, *supra* note 75) (costs of crimes other than murder); *id.* at 552 fig.1(a) (citing Cohen, *supra* note 75) (costs of murder).

The costs of each crime were weighted as discussed in note 95 above and adjusted from 2010 dollars to 2015 dollars using the annual Consumer Price Index data. See *CPI—All Urban Consumers (Current Series)*, BUREAU LAB. STAT., <https://perma.cc/4TBR-H7BS> (archived Oct. 10, 2018) (to access data, click "View the live page"; then select "U.S. All items, 1982-84"; then click "Retrieve data" in the lower left of the page; then select the date range in the top middle of the subsequent page; then check the box labeled "Include annual averages"; then click "Go" (capitalization altered)). Unless otherwise noted, all dollar amounts in this Article have been converted into 2015 dollars using the same methodology.

97. The highest estimate comes from Mark Cohen and colleagues' analysis. See Donohue, *supra* note 22, at 292 tbl.9.6 (citing Cohen et al., *supra* note 89). The costs of each crime were weighted as discussed above, see *supra* note 95, and adjusted from 2006 dollars, see *supra* note 96.

98. See *supra* note 60 and accompanying text.

99. See Thomas J. Miles & Jens Ludwig, *The Silence of the Lambdas: Deterring Incapacitation Research*, 23 J. QUANTITATIVE CRIMINOLOGY 287, 300 (2007) ("If research on measuring the dollar benefits from crime control is in its infancy, then research on monetizing the social costs from mass incarceration is in the pre-natal stage." (footnote omitted) (citation omitted)).

100. See, e.g., TRACEY KYCKELHAHN, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 239672, STATE CORRECTIONS EXPENDITURES, FY 1982-2010, at 4 tbl.2 (2014), <https://perma.cc/6HQA-L4AU> (detailing annual per capita expenditures on state corrections institutions).

ical nuance to calculate. At the same time, incarceration does create significant indirect and intangible costs, which are as difficult to conceptualize and measure as those created by crime itself. While economists and other empirical scholars tend to acknowledge these costs, they rarely quantify them, except occasionally with rough ballpark estimates. For the sake of simplicity, this Subpart will begin by discussing the more straightforward literature on direct government expenditures before moving on to survey estimates of other, less easily quantifiable costs of incarceration.

1. Government expenditures

Incarceration is expensive. As of 2010, total state correctional expenditures neared \$50 billion annually, with the vast majority of those expenditures going toward the construction and operation of correctional facilities.¹⁰¹ The magnitude of these costs should be unsurprising given the considerable size of the prison population and the fact that prisons are required to provide myriad services, including “adequate levels of security,” “program and administrative staff,” “food and programming,” “infrastructure maintenance and upkeep,” and, “increasingly, higher levels of specialized health care for a growing population with significant levels of physical and mental health concerns.”¹⁰²

When discussing government expenditures on incarceration, economists generally speak in terms of averages.¹⁰³ It is important to note, however, that the cost of incarcerating the marginal prisoner is less than the cost of incarcerating the average prisoner, as only certain direct costs, such as food and clothing, increase with each additional inmate.¹⁰⁴ As a result, the average cost of incarceration should be treated as a ceiling when assessing the economics of incarceration. Another important caveat in examining the literature on the costs of incarceration is that direct government expenditures change

101. *See id.* at 1-2, 2 fig.2.

102. CHRIS MAI & RAM SUBRAMANIAN, VERA INST. OF JUSTICE, THE PRICE OF PRISONS: EXAMINING STATE SPENDING TRENDS, 2010-2015, at 7 (2017), <https://perma.cc/KPN6-MWE3>.

103. *See, e.g.*, BRUCE WESTERN, FROM PRISON TO WORK: A PROPOSAL FOR A NATIONAL PRISONER REENTRY PROGRAM 7 (2008), <https://perma.cc/58J9-WU6G>; David S. Abrams, *The Imprisoner's Dilemma: A Cost-Benefit Approach to Incarceration*, 98 IOWA L. REV. 905, 946 (2013) (“One simple way to estimate incarceration costs per prisoner is by simply obtaining state budget data and dividing it by the prison population.”); John J. DiIulio, Opinion, *Prisons Are a Bargain, by Any Measure*, BROOKINGS (Jan. 16, 1996), <https://perma.cc/XPQ8-LDTB>.

104. *See* Levitt, *supra* note 45, at 347 (distinguishing between “the average costs of running prisons” and “the marginal costs of an additional prisoner, which [are] almost certainly lower”); *see also* WESTERN, *supra* note 103, at 26 (same).

considerably over time,¹⁰⁵ such that different studies rely on different estimates depending on the year in which they were published.

As suggested by the discussion above, the magnitude of direct costs is relatively uncontroversial, and estimates tend to cluster in a fairly narrow range. One of the most recent attempts to measure direct costs comes from the Vera Institute, which surveyed corrections departments in forty-five states and found that state prison expenditures averaged \$33,274 per inmate in 2015.¹⁰⁶ This estimate is consistent with a recent report by the BJS, which found that institutional operations and capital outlay averaged \$31,861 per inmate.¹⁰⁷ It is also consistent with the Donohue study discussed above—which estimates average operating and capital costs of \$33,856¹⁰⁸—as well as a number of other recent estimates of direct costs.¹⁰⁹ Given the lack of disagreement among available studies, it seems safe to say that state governments spend somewhere between \$30,000 and \$35,000 per year to incarcerate the average prisoner.

2. Other costs

Whereas estimating state expenditures on incarceration is straightforward, quantifying other costs can be both theoretically and practically challenging. Perhaps the most readily acknowledged “other” cost of incarceration is the cost of lost productivity of imprisoned offenders.¹¹⁰ As

105. See, e.g., THE PEW CTR. ON THE STATES, ONE IN 100: BEHIND BARS IN AMERICA 2008, at 11-13 (2008), <https://perma.cc/KK9Z-5GJ8> (detailing the rise in incarceration costs over time).

106. MAI & SUBRAMANIAN, *supra* note 102, at 7.

107. This number was calculated by adding the 2010 expenditures on “institutional current operations” and “institutional capital outlay,” see KYCKELHAHN, *supra* note 100, app. at 11 tbl.2 (capitalization altered) (\$38.6 billion), dividing by the “number of inmates,” see *id.* at 4 tbl.2 (capitalization altered) (1,316,858), and adjusting from 2010 dollars, see *supra* note 96.

108. This number was calculated by adding the average annual operating costs of \$25,797, see Donohue, *supra* note 22, at 299, to the annual capital costs of \$3,000 per prisoner, see *id.* at 300, and adjusting from 2006 dollars, see *supra* note 96.

109. See, e.g., CHRISTIAN HENRICHSON & RUTH DELANEY, CTR. ON SENTENCING & CORR., VERA INST. OF JUSTICE, THE PRICE OF PRISONS: WHAT INCARCERATION COSTS TAXPAYERS 10 fig.4 (2012), <https://perma.cc/7RHH-VQ34> (estimating the average annual taxpayer cost per state prison inmate to be \$34,006 in 2015 dollars); WESTERN, *supra* note 103, at 7 (estimating the total annual correctional spending in the United States to average \$30,864 in 2015 dollars).

110. See DAVID P. CAVANAGH & MARK A.R. KLEIMAN, BOTECH ANALYSIS CORP., A COST BENEFIT ANALYSIS OF PRISON CELL CONSTRUCTION AND ALTERNATIVE SANCTIONS 9 (1990); Abrams, *supra* note 103, at 948-50; Mark A. Cohen, *Measuring the Costs and Benefits of Crime and Justice*, in 4 CRIMINAL JUSTICE 2000, at 263, 276 (David Duffee ed., 2000); John J. Donohue III & Peter Siegelman, *Allocating Resources Among Prisons and Social Programs in the Battle Against Crime*, 27 J. LEGAL STUD. 1, 5 (1998); Donohue, *supra* note 22, at 300-01; Levitt, *supra* note 45, at 347.

discussed in the context of the costs of crime,¹¹¹ inmates are prevented from making beneficial contributions to society during the time they spend behind bars. While not all inmates would be legally employed if they were free, many of them would be,¹¹² and their forgone wages can serve as a rough proxy for the value lost to society. Of course, any estimate of lost productivity must be adjusted to account for value created while in prison, as many incarcerated individuals engage in socially beneficial employment.¹¹³

Over the past few decades, empirical scholars have offered a number of estimates for the social cost of lost inmate productivity, all of which fall within the same order of magnitude, even if they do not cluster as tightly as estimates of the direct costs of incarceration.¹¹⁴ Based on these estimates, it seems likely that the average annual cost of lost productivity is somewhere between \$9,000 and \$18,000.¹¹⁵

Much more controversial than the social costs of lost productivity are the costs of inmates' lost freedom.¹¹⁶ All else being equal, inmates would presumably prefer not to be incarcerated, and their loss of liberty by itself creates significant disutility. While the existence of this disutility is clear, its role in our social calculus is not, with disagreement on the topic reflecting the larger debate over the role of criminals' preferences in our cost-benefit analyses.¹¹⁷ Some scholars argue that inmates' loss of freedom should not be counted as a social cost, because "such deprivation is the purpose of incarceration," while others contend that "the deprivations and impositions of incarceration still reflect a human loss."¹¹⁸ Notable scholars in the latter camp include David Abrams and Chris Rohlfs, who have attempted to calculate the value that inmates place on their freedom by looking at criminal defendants'

111. See *supra* notes 84-86 and accompanying text.

112. See Cohen et al., *supra* note 63, at 137 (reporting the results of a survey finding that "about 60 percent of inmates' main source of income came from wages"); Donohue, *supra* note 22, at 300 (assuming that "75 percent of offenders were employed before prison").

113. For an extreme example, see Julia Lurie, *30 Percent of California's Forest Firefighters Are Prisoners*, MOTHER JONES (Aug. 14, 2015, 10:00 AM), <https://perma.cc/7UFH-7N9Z>.

114. See, e.g., CAVANAGH & KLEIMAN, *supra* note 110, at 15 (estimating an annual cost of lost employment of \$17,203 in 2015 dollars); Cohen et al., *supra* note 63, at 137 (\$11,027); Cohen & Piquero, *supra* note 65, at 34 (\$16,719); Donohue, *supra* note 22, at 301 (\$9,405); Rajkumar & French, *supra* note 64, at 304 (\$12,844).

115. These numbers are calculated by rounding down the lowest estimate and rounding up the highest estimate in note 114 above.

116. See Cohen et al., *supra* note 63, at 137-38.

117. See *supra* notes 70-73 and accompanying text; *infra* Part III.B.

118. See Donohue, *supra* note 22, at 301 (characterizing both sides of the debate); see also Cohen & Piquero, *supra* note 65, at 34 (same).

bail posting decisions.¹¹⁹ Given the paucity of data on the topic (Abrams suggests that his article with Rohlfs is the only recent study¹²⁰), it is hard to say what value we should assign to lost freedom, assuming we do decide to include it in our estimates of the costs of incarceration.

Even more difficult to quantify than the costs of lost freedom are the many collateral costs that incarceration imposes on prisoners and their families. With respect to prisoners, evidence suggests that incarceration adversely affects future employment prospects,¹²¹ exacerbates mental illness,¹²² and may cause higher rates of recidivism after release.¹²³ Imprisonment can also increase the risk of “transmission of communicable diseases such [as] AIDS among inmates and their nonincarcerated intimates.”¹²⁴ The effects on prisoners’ families are not limited to the transmission of disease, as incarceration “undermines marital relations and thus increases a woman’s risk of violence at the hands of her partner.”¹²⁵ Furthermore, the loss of a breadwinner often leads to reduced quality of life for inmates’ families, as well as increased dependence on public welfare benefits.¹²⁶ Finally, since most prisoners are parents to minor children,

119. See David S. Abrams & Chris Rohlfs, *Optimal Bail and the Value of Freedom: Evidence from the Philadelphia Bail Experiment*, 49 *ECON. INQUIRY* 750, 751 (2011) (“If a defendant posts bail at a given level, we infer that his value of freedom exceeds the cost of posting that amount.”). Abrams has regularly included the value of lost freedom in his assessments of the costs of incarceration. See, e.g., David S. Abrams, *How Do We Decide How Long to Incarcerate?*, in *EMPIRICAL LEGAL ANALYSIS: ASSESSING THE PERFORMANCE OF LEGAL INSTITUTIONS* 63, 83 (Yun-chien Chang ed., 2014) [hereinafter Abrams, *How Do We Decide*]; Abrams, *supra* note 103, at 948-50.

120. Abrams, *supra* note 103, at 949.

121. See Bruce Western et al., *The Labor Market Consequences of Incarceration*, 47 *CRIME & DELINQ.* 410, 417-20 (2001); Michael Mueller-Smith, *The Criminal and Labor Market Impacts of Incarceration* 28-31 (Aug. 18, 2015) (unpublished manuscript), <https://perma.cc/9UZB-79FX>. But see Jeffrey Grogger, *The Effect of Arrests on the Employment and Earnings of Young Men*, 110 *Q.J. ECON.* 51, 66 (1995) (“[T]he effects of an arrest on employment and earnings are moderate in magnitude and fairly short-lived.”).

122. See Jamie Fellner, *Essay, A Corrections Quandary: Mental Illness and Prison Rules*, 41 *HARV. C.R.-C.L. L. REV.* 391, 403 (2006).

123. See Mueller-Smith, *supra* note 121, at 24-28; cf. Rafael Di Tella & Ernesto Schargrodsky, *Criminal Recidivism After Prison and Electronic Monitoring*, 121 *J. POL. ECON.* 28, 30 (2013) (studying electronic monitoring in Argentina and “find[ing] a large, negative, and significant correlation between electronic monitoring and rearrest rates”).

124. Raphael & Stoll, *supra* note 1, at 2 (emphasis added).

125. WESTERN, *supra* note 14, at 7.

126. See, e.g., CAVANAGH & KLEIMAN, *supra* note 110, at 15 (estimating that the welfare costs of imprisoning an inmate for a year would average \$5,161 per inmate in 2015 dollars). But see Donohue & Siegelman, *supra* note 110, at 5 (arguing that welfare payments should be counted as transfers, not social costs). Even if welfare payments to families were counted as costs, incarceration may yield countervailing savings in terms of

footnote continued on next page

incarceration “disrupts parent-child relationships, alters the networks of familial support, and places new burdens on governmental services such as schools, foster care, adoption agencies, and youth-serving organizations.”¹²⁷

Assigning a number to this array of costs is a formidable task, and it is unsurprising that scholars tend to account for them using rough guesses. Donohue, for example, has estimated that all collateral costs could add up to around \$30,000 per inmate per year,¹²⁸ and others have made similar estimates.¹²⁹ Spelman likewise has suggested that the total social costs of incarceration (including lost productivity and collateral costs) are about twice the magnitude of its direct costs.¹³⁰ In order to do justice to this uncertainty and provide a comprehensive range, I assume that the collateral costs of incarceration fall somewhere between \$15,000 and \$45,000 per year. In doing so, I acknowledge that the true collateral costs of incarceration may be significantly higher.

With these assumptions articulated, we can estimate the total social cost of incarcerating the marginal prisoner as falling somewhere between \$54,000 per year—the sum of the low end of estimates for government expenditures, lost productivity costs, and collateral costs—and \$98,000 per year—the sum of the high end of estimates for each of these inputs. In the next Part, I will explore how policymakers are relying on these estimates, and on the estimates derived in Part I.A above, to assess the costs and benefits of a range of criminal justice reforms.

II. Applying the Economic Framework

Until recently, the foregoing studies would have been primarily of academic interest. Indeed, while cost-benefit analysis has long been integral to legislation and regulation in a host of areas, the criminal justice system had

welfare payments that no longer must be paid to the prisoner. See CAVANAGH & KLEIMAN, *supra* note 110, at 15; ABRAMS, *supra* note 103, at 950.

127. JEREMY TRAVIS ET AL., JUSTICE POLICY CTR., URBAN INST., FAMILIES LEFT BEHIND: THE HIDDEN COSTS OF INCARCERATION AND REENTRY 1 (2005), <https://perma.cc/2GNB-69P3>; see also Robert H. DeFina & Lance Hannon, *The Impact of Adult Incarceration on Child Poverty: A County-Level Analysis, 1995-2007*, 90 PRISON J. 377, 380 (2010) (“[I]ncreases in incarceration have caused significant increases in child poverty.”); Rucker C. Johnson, *Ever-Increasing Levels of Parental Incarceration and the Consequences for Children*, in DO PRISONS MAKE US SAFER?, *supra* note 1, at 177, 202. See generally WESTERN, *supra* note 14, at 131-67 (discussing the effects of incarceration on marriage and family life).

128. Donohue, *supra* note 22, at 301 (adjusted to 2015 dollars).

129. See, e.g., Gregory A. Knott, *Cost and Punishment: Reassessing Incarceration Costs and the Value of College-in-Prison Programs*, 32 N. ILL. U. L. REV. 267, 271 (2012).

130. See William Spelman, *Crime, Cash, and Limited Options: Explaining the Prison Boom*, 8 CRIMINOLOGY & PUB. POL’Y 29, 30 (2009).

remained more or less immune.¹³¹ This is no longer the case. In the past decade in particular, numerous efforts have been made by nonprofit and government actors to integrate the empirical methods and results discussed in Part I above into criminal justice policymaking. On the nonprofit side, organizations like the Vera Institute, Pew, and the MacArthur Foundation have collaborated with state and local lawmakers to promote economic approaches to reform.¹³² On the government side, multiple states have created institutes and commissions whose statutory mandates include conducting cost-benefit analyses of criminal justice proposals.¹³³

This Part will explore the ways in which policymakers are applying Part I's economic framework to analyze a wide range of reforms. Part II.A will survey attempts to evaluate changes in the overall incarceration rate, and Part II.B will dive deeper into analyses of specific laws and programs that implicate the economics of incarceration. As will become clear, policymakers are regularly relying on cost-benefit models to inform decisions regarding the criminal justice system.

A. Population-Level Applications

One of the most straightforward applications of Part I's economic model is a comparison of the costs and benefits of changing the incarceration rate. By conducting these population-level analyses, policymakers can begin to assess whether our current levels of incarceration are justified from an economic perspective, or whether society would benefit from an increase or decrease in the prison population. Any recommendations derived from such assessments will of course require qualification, as the economic perspective focuses primarily on welfare—at the expense of other critical values like equality and fairness—and leaves open important questions about the methods policymakers should use to change the incarceration rate. These analyses are nevertheless powerful tools for those seeking to reform the criminal justice system. After all, if everything else is constant, we should try to make changes whose benefits exceed their costs.

131. See Abrams, *supra* note 103, at 908-09; Darryl K. Brown, *Cost-Benefit Analysis in Criminal Law*, 92 CALIF. L. REV. 323, 334-35 (2004).

132. See generally CHRISTIAN HENRICHSON & JOSHUA RINALDI, VERA INST. OF JUSTICE, COST-BENEFIT ANALYSIS AND JUSTICE POLICY TOOLKIT (2014), <https://perma.cc/4CAP-R5XX>; *Pew-MacArthur Results First Initiative*, PEW CHARITABLE TR., <https://perma.cc/T7BF-X2TK> (archived Oct. 12, 2018).

133. See, e.g., *About SPAC*, ILL. SENT'G POL'Y ADVISORY COUNCIL, <https://perma.cc/HK6Q-Y2CV> (archived Oct. 12, 2018); *About the Criminal Justice Commission*, OREGON.GOV, <https://perma.cc/27JM-2TZV> (archived Oct. 12, 2018); *Who We Are*, WASH. ST. INST. FOR PUB. POL'Y, <https://perma.cc/BKY3-LBWY> (archived Oct. 12, 2018).

To illustrate the role that population-level applications can play in our policy analyses, we can begin by evaluating the costs and benefits of a range of changes to the prison population. Each of the columns in Table 1 below represents an increase in the number of state prisoners—of which there were 1,330,300 in 2015¹³⁴—and each of the rows represents a different pairing of assumptions about the marginal costs and benefits of incarcerating an additional inmate. The “high” and “low” estimates are taken from the ranges derived at the end of Parts I.A and I.B above.¹³⁵ The value in each cell is the net annual benefit given a particular change in the incarceration rate and the cost and benefit assumptions. For example, if the marginal costs of incarceration are high (\$98,000) and the marginal benefits are low (\$11,462), a 5% increase in the incarceration rate will yield a net annual cost of approximately \$5.8 billion. If the marginal costs of incarceration are low (\$54,000), by contrast, and the marginal benefits are high (\$301,903), then a 5% increase in the incarceration rate will yield a net annual benefit of approximately \$16.5 billion.

Table 1
Net Annual Benefit of Changing the Incarceration Rate¹³⁶

Marginal Costs	Marginal Benefits	Change in Incarceration Rate		
		5%	10%	15%
High	Low	(\$5,756,071,675)	(\$11,512,143,350)	(\$17,268,215,026)
Low	Low	(\$2,829,411,675)	(\$5,658,823,350)	(\$8,488,235,026)
High	High	\$13,562,591,412	\$27,125,182,824	\$40,687,774,235
Low	High	\$16,489,251,412	\$32,978,502,824	\$49,467,754,235

In addition to estimating the costs and benefits of changing the current incarceration rate, we can use the results from Part I to calculate the “optimal” incarceration rate, at which the benefits of changing the prison population are equal to the costs.¹³⁷ The notion of optimality here is of course narrowly economic, but it still provides policymakers with a helpful benchmark against which to measure current incarceration rates. In Table 2 below, each of the columns represents a different elasticity assumption, while each row represents a different pairing of “high” and “low” estimates for marginal incarceration costs and for the cost of a single prevented crime (CPC). These

134. *Key Statistic: Jail Inmates*, *supra* note 2.

135. The estimates range from \$11,462 to \$301,903 for the benefits of incarcerating the marginal prisoner, *see supra* Part I.A.2, and from \$54,000 to \$98,000 for the costs, *see supra* Part I.B.2.

136. Net costs are represented by dollar amounts in parentheses.

137. *See* Donohue, *supra* note 23, at 388.

are also taken from the ranges derived in Parts I.A and I.B above.¹³⁸ The value in each cell is the optimal number of state prisoners given those assumptions.¹³⁹ Assuming an elasticity of -0.30 , for example, if the marginal costs of incarceration are high (\$98,000) and the cost of a single prevented crime is low (\$5,432), then the optimal state prison population is 549,015. If the marginal costs of incarceration are low (\$54,000) and the cost of a prevented crime is high (\$28,613), then the optimal state prison population is 2,891,428.

Table 2
The “Optimal” Incarceration Rate

Marginal Costs	CPC	Elasticity		
		-0.10	-0.30	-0.50
High	Low	169,172	549,015	902,922
Low	Low	304,151	924,610	1,383,577
High	High	849,273	2,056,318	2,419,878
Low	High	1,471,678	2,891,428	2,939,389

As these tables reveal, assumptions about costs and benefits have an enormous impact on our evaluations of the economics of incarceration. There are nevertheless a number of practical consequences that flow from these analyses. First, as will become clear in Part IV below, the estimates in the tables provide a baseline against which we can measure the effect that accounting for prison crime has on our economic calculus. Regardless of the assumptions we use, Part IV will demonstrate that the exclusion of prison crime causes us to paint a significantly distorted picture of the economics of incarceration.¹⁴⁰ Second, the estimates in these tables—like the ranges of underlying assumptions in Parts I.A and I.B above—are meant to offer as comprehensive a picture of the costs and benefits as possible. With the general orders of magnitude understood, policymakers can draw on the specific studies that they find most compelling.¹⁴¹

138. The estimates range from \$5,432 to \$28,613 for the costs of a prevented crime, *see supra* Part I.A.2, and from \$54,000 to \$98,000 for the costs of incarceration, *see supra* Part I.B.2.

139. This analysis assumes current levels of 28,072,472 annual crimes, *see supra* note 59, and 1,330,300 state prisoners, *see Key Statistic: Jail Inmates, supra* note 2. The formula for calculating optimal incarceration rates is derived in the Appendix below.

140. *See infra* Part IV.B.

141. In the case of elasticities, for example, policymakers may choose to rely on Spelman’s best estimate of -0.30 rather than the full range of estimates. *See supra* text accompanying notes 51-52.

Recent examples confirm that state and federal policymakers are in fact drawing on such studies in order to conduct population-level analyses. At the federal level, the White House Council of Economic Advisors (CEA) published a report in 2016 that assessed multiple aspects of the criminal justice system through an economic lens.¹⁴² As part of its analysis, the CEA calculated the costs and benefits of increasing the overall incarceration rate by 12%, or approximately 265,000 inmates.¹⁴³ Drawing on elasticity and cost of crime estimates from the studies cited in Part I above,¹⁴⁴ the CEA calculated that while a 12% increase would require \$10 billion in additional government expenditures, it would yield only \$2 to \$11 billion in prevented crime benefits, meaning that the net benefit to society would be between -\$8 and \$1 billion per year.¹⁴⁵ Given these results, the CEA concluded that “increased incarceration . . . fail[s] a cost-benefit test,” and it proposed “[w]orking with Congress and the States to . . . reduce high rates of incarceration.”¹⁴⁶

At the state level, statutorily created bodies like the Oregon Criminal Justice Commission (CJC)¹⁴⁷ and the Washington State Institute of Public Policy (WSIPP)¹⁴⁸ have also published reports assessing the costs and benefits of changing the prison population.¹⁴⁹ The CJC—again drawing on elasticity and cost of crime estimates from studies cited in Part I above¹⁵⁰—determined that while in 1994 each dollar spent on increasing the incarceration rate yielded \$3.31 in avoided costs of crime, that return had dropped to \$1.03 by

142. COUNCIL OF ECON. ADVISERS, EXEC. OFFICE OF THE PRESIDENT OF THE U.S., ECONOMIC PERSPECTIVES ON INCARCERATION AND THE CRIMINAL JUSTICE SYSTEM (2016), <https://perma.cc/88F4-BKM4>.

143. *See id.* at 55, 56 n.2.

144. *See, e.g., id.* at 35 tbl.1 (citing MILLER ET AL., *supra* note 18; Cohen et al., *supra* note 89; Donohue, *supra* note 22; McCollister et al., *supra* note 64; and Mueller-Smith, *supra* note 121); *id.* at 56 n.2 (citing Donohue, *supra* note 22; Johnson & Raphael, *supra* note 45; Liedka et al., *supra* note 44; Spelman, *supra* note 45; and Spelman, *supra* note 43).

145. *See* COUNCIL OF ECON. ADVISERS, *supra* note 142, at 55-56.

146. *Id.* at 5-6.

147. *See* Act of June 30, 1995, ch. 420, 1995 Or. Laws 1069 (codified as amended at OR. REV. STAT. §§ 137.651-.673, 184.351 (2017)).

148. *See* Act of June 15, 1983, ch. 76, § 122(3), 1983 Wash. Sess. Laws 2078, 2134. *See generally* WASH. STATE INST. FOR PUB. POLICY, WASHINGTON STATE INSTITUTE FOR PUBLIC POLICY: ORIGINS AND GOVERNANCE (2009), <https://perma.cc/NKM9-RAGS>.

149. *See* CRIMINAL JUSTICE COMM’N, STATE OF OR., REPORT TO THE LEGISLATURE 11 tbl.3 (2007), <https://perma.cc/N7SY-T87M>; WASH. STATE INST. FOR PUB. POLICY, THE CRIMINAL JUSTICE SYSTEM IN WASHINGTON STATE: INCARCERATION RATES, TAXPAYER COSTS, CRIME RATES, AND PRISON ECONOMICS 8 tbl.3 (2003), <https://perma.cc/C76Y-4QX9>.

150. *See, e.g.,* CRIMINAL JUSTICE COMM’N, *supra* note 149, at 9 n.8 (citing Spelman, *supra* note 45; and Spelman, *supra* note 43); *id.* at 11 n.12 (citing MILLER ET AL., *supra* note 18).

2005.¹⁵¹ The WSIPP reached similar conclusions in an earlier report on the costs and benefits of incarcerating three types of offenders: violent, property, and drug.¹⁵² While the WSIPP found that in 2001, each dollar spent on incarcerating violent and property offenders yielded more than a dollar in avoided costs of crime, it found that each dollar spent on incarcerating drug offenders did not.¹⁵³ The WSIPP also found that even for violent and property offenders, the cost-benefit ratio of incarceration had deteriorated over time, and it suggested that “[a]dditional research on the costs and benefits of sentencing and prevention policies could help lead to a better allocation of taxpayer dollars.”¹⁵⁴

These examples showcase some of the ways in which policymakers are applying Part I’s economic framework to assess the costs and benefits of changing the incarceration rate. Although these population-level analyses yield only general prescriptions regarding the direction in which policy efforts should move, they function as a starting point for further discussion regarding specific proposals. As the next Subpart will show, policymakers at all levels of government are actively engaged in such discussion, and they are applying Part I’s methods and results to a wide range of criminal justice reforms.

B. Policy-Level Applications

With the population-level economics of incarceration understood, policymakers are poised to ask a range of specific questions. First, if population-level analyses suggest that we should increase (or decrease) the prison population, what are the costs and benefits of different laws and programs aimed at achieving this end? Second, how do the economics of incarceration compare to the economics of other initiatives, like early childhood education? And third, for those individuals who are already incarcerated, what are the most effective intervention strategies for reducing their risk of recidivism—a risk that carries with it potential future costs of both crime and incarceration? As this Subpart illustrates, policymakers at all levels of government are actively trying to answer these questions by applying the economic framework outlined in Part I above.

1. Changing the incarceration rate

Government actors have assessed a number of different options for changing the incarceration rate. These range from changes in sentencing practices, to reclassifications of substantive crimes, to programs aimed at

151. *Id.* at 11 tbl.3.

152. See WASH. STATE INST. FOR PUB. POLICY, *supra* note 149, at 8 tbl.3.

153. See *id.*

154. *Id.* at 7.

releasing prisoners early.¹⁵⁵ In North Carolina, for example, the statutorily created Youth Accountability Planning Task Force¹⁵⁶ worked with the Vera Institute to quantify the costs and benefits of a proposal to increase the state's age of juvenile jurisdiction from sixteen to eighteen.¹⁵⁷ Vera's analysis—which accounted for added expenditures on the juvenile justice system, reduced expenditures on the adult criminal justice system, decreased victimization and taxpayer costs due to reduced recidivism, and increased lifetime earnings for targeted youths—found that the proposal would create over \$50 million in net benefits per each annual cohort of sixteen- and seventeen-year-olds who were handled as juveniles rather than adults.¹⁵⁸

In Washington, a similar analysis was conducted by the WSIPP regarding an expiring law that provided for “earned release time” for inmates who “demonstrate[d] good behavior and participate[d] in treatment programs in prison.”¹⁵⁹ The WSIPP found that the earned release time program not only saved taxpayers money up front by reducing the amount of time inmates spent in prison, but also created benefits down the road by reducing long-term recidivism and by increasing earnings for offenders.¹⁶⁰ Against these benefits, the WSIPP weighed the costs associated with near-term increases in crime (again drawing on elasticity estimates from studies discussed in Part I above), and it concluded that the earned release time program generated \$7,179 in net benefits per participant, with a benefit-to-cost ratio of 1.88.¹⁶¹

Like its counterparts in North Carolina and Washington, the Illinois Sentencing Policy Advisory Council (SPAC)—another statutorily created body¹⁶²—recently applied Part I's economic framework to assess the costs and benefits of legislation that proposed reforms to the criminal justice system.¹⁶³

155. *Cf.* Abrams, *supra* note 103, at 953-65 (conducting a cost-benefit analysis for each of these types of policy changes).

156. *See* Current Operations and Capital Improvements Appropriations Act of 2009, No. 2009-451, §§ 18.9(a)-(i), 2009 N.C. Sess. Laws 914, 1110-12.

157. *See* CHRISTIAN HENRICHSON & VALERIE LEVSHIN, VERA INST. OF JUSTICE, COST-BENEFIT ANALYSIS OF RAISING THE AGE OF JUVENILE JURISDICTION IN NORTH CAROLINA, at iii (2011), <https://perma.cc/YR7J-9BNK>.

158. *See id.* (not adjusted for inflation).

159. *See* WASH. STATE INST. FOR PUB. POLICY, INCREASED EARNED RELEASE FROM PRISON: IMPACTS OF A 2003 LAW ON RECIDIVISM AND CRIME COSTS, REVISED 1 (2009), <https://perma.cc/PXS4-HL9N>.

160. *See id.* at 8.

161. *See id.* at 7-9 (not adjusted for inflation); *see also, e.g., id.* at 8 n.23 (citing Spelman, *supra* note 43).

162. *See* Act of Aug. 25, 2009, No. 96-0711, 2009 Ill. Laws 6930 (codified as amended at 730 ILL. COMP. STAT. ANN. 5/5-8-8 (West 2018)).

163. *See* ILL. SENTENCING POLICY ADVISORY COUNCIL, HOUSE BILL 3355—HOUSE AMENDMENT 1, at 1 (2017), <https://perma.cc/7BMN-SSLN>.

Among other changes, the legislation proposed increases in the dollar threshold for felony theft, decreases in penalties for drug offenses, restrictions on prison admission for those projected to serve short sentences, and reclassification of the types of crimes that could trigger a third-strike sentencing enhancement.¹⁶⁴ Taking all the changes together, SPAC estimated that the legislation would decrease the prison population by 7,900 inmates each year, which—after weighing the countervailing effects of decreased taxpayer costs and increased victim costs—would yield a net benefit between \$362 and \$405 million over three years.¹⁶⁵

2. Alternatives to incarceration

In addition to analyzing the costs and benefits of policies aimed at changing the incarceration rate, lawmakers frequently rely on the economic framework to assess the relative returns of alternative social programs. While governments are not always in a position to choose between spending on incarceration and spending on other programs, it is necessarily the case that “a dollar spent in one area is unavailable for another.”¹⁶⁶ The CEA report cited above, for example, found that while \$10 billion invested in increased incarceration would yield a net benefit between –\$8 and \$1 billion due to decreased crime, the same amount invested in police would yield a net benefit between \$4 and \$38 billion.¹⁶⁷ The report also found that increasing the minimum wage to \$12 per hour would be more cost effective than investing in incarceration, as it would lead to a net benefit between \$8 and \$17 billion.¹⁶⁸

At the state level as well, policymakers have looked at a range of alternatives to incarceration. In Washington, for example, the WSIPP analyzed the costs and benefits of pre-K education for low-income children, as well as of an intensive nurse visitation program for low-income women having their first child.¹⁶⁹ It found that pre-K yielded \$12,196 per participant in net benefits of

164. *See id.*

165. *Id.* (not adjusted for inflation).

166. THE PEW CTR. ON THE STATES, *supra* note 105, at 16.

167. COUNCIL OF ECON. ADVISORS, *supra* note 142, at 55.

168. *Id.* at 56.

169. *See* WASH. STATE INST. FOR PUB. POLICY, EVIDENCE-BASED PUBLIC POLICY OPTIONS TO REDUCE FUTURE PRISON CONSTRUCTION, CRIMINAL JUSTICE COSTS, AND CRIME RATES 8-10 (2006), <https://perma.cc/7XQS-GAMM>.

avoided victimization and criminal justice system expenditures (with a benefit-to-cost ratio of over 20), while the nursing program yielded \$14,283 in net benefits for participant mothers and \$12,822 in net benefits for participant children.¹⁷⁰

Another alternative to incarceration that policymakers have explored is to establish drug courts, which provide a treatment-oriented substitute to criminal prosecution for offenders with substance abuse issues.¹⁷¹ One recent drug court evaluation comes from the New Mexico Department of Corrections (NMDOC), in a report prepared for the New Mexico Legislative Finance Committee.¹⁷² In its report, the NMDOC conducted an economic analysis of a number of different crime-reducing strategies, including New Mexico's drug court program, which had suffered from recent funding cuts.¹⁷³ The NMDOC found that an average investment of \$3,205 in each drug court participant yielded \$20,336 in reduced victimization and criminal justice system expenditures,¹⁷⁴ and it urged the legislature to appropriate additional funds.¹⁷⁵ A similar study by the National Institute of Justice analyzed drug courts across a range of jurisdictions and found significant net benefits as well.¹⁷⁶

3. Intervention programs

While the programs discussed above focus on keeping people out of prison in the first place, policymakers also regularly analyze reforms that try to reduce recidivism among those already incarcerated. These "intervention programs"¹⁷⁷ take a variety of forms, but they commonly include services such

170. See *id.* at 9 exhibit 4 (not adjusted for inflation); see also THE PEW CTR. ON THE STATES, *supra* note 105, at 16 ("One rigorous study that followed severely disadvantaged children into adulthood showed that participation in pre-kindergarten dramatically reduced participation in juvenile and adult crime, and increased high school graduation, employment and earnings, with a total benefit-cost ratio of 16 to 1.").

171. See *Problem Solving Courts: Program Types*, N.M. CTS., <https://perma.cc/G992-EZJX> (archived Oct. 13, 2018).

172. See N.M. CORR. DEP'T, NO. 12-07, REDUCING RECIDIVISM, CUTTING COSTS AND IMPROVING PUBLIC SAFETY IN THE INCARCERATION AND SUPERVISION OF ADULT OFFENDERS (2012), <https://perma.cc/5VZK-27SP>.

173. See *id.* at 18.

174. See *id.* at 17 tbl.1.

175. See *id.* at 38.

176. See P. MITCHELL DOWNEY & JOHN K. ROMAN, NAT'L INST. OF JUSTICE, U.S. DEP'T OF JUSTICE, NCJ 246769, COST-BENEFIT ANALYSIS: A GUIDE FOR DRUG COURTS AND OTHER CRIMINAL JUSTICE PROGRAMS 23 tbl.2 (2014), <https://perma.cc/AJJ9-HBQN>.

177. See WASH. STATE INST. FOR PUB. POLICY, *supra* note 169, at 2.

as education in prison,¹⁷⁸ therapy and drug treatment,¹⁷⁹ and reentry assistance.¹⁸⁰ As an exhaustive accounting of such programs would be unwieldy, this Subpart highlights two recent examples of economic analyses that policymakers have conducted with respect to intervention efforts.

One notable application comes from the Office of Planning, Research & Evaluation (OPRE), an office within the U.S. Department of Health and Human Services. The OPRE analyzed a New York-based program that “provides temporary, paid jobs and other services in an effort to improve participants’ labor market prospects and reduce the odds that they will return to prison.”¹⁸¹ Relying on studies cited in Part I above,¹⁸² the OPRE calculated the program’s costs and benefits to taxpayers, victims, and participants. These included increased government expenditures on the program itself, reduced future expenditures on prisons and jails, reduced future victimization costs, and increased earnings among participants.¹⁸³ Taking all of these into account, the OPRE found that the program provided a net benefit of \$4,907 per person, with a benefit-to-cost ratio of 2.36.¹⁸⁴

Around the same time that the OPRE was conducting its analysis, the Iowa Department of Corrections was collaborating with Pew and the MacArthur

178. *See, e.g.*, ILL. SENTENCING POLICY ADVISORY COUNCIL, ILLINOIS RESULTS FIRST: A COST-BENEFIT TOOL FOR ILLINOIS CRIMINAL JUSTICE POLICYMAKERS 2 fig.1 (2016), <https://perma.cc/WH9N-JFED>; PEW-MACARTHUR RESULTS FIRST INITIATIVE, NEW YORK’S INVESTMENT IN EVIDENCE-BASED POLICYMAKING 10 (2016), <https://perma.cc/AZ6Z-8WTP>; ARACELI VALLE, ALASKA JUSTICE INFO. CTR., UNIV. OF ALASKA ANCHORAGE, ALASKA RESULTS FIRST INITIATIVE: ADULT CRIMINAL JUSTICE PROGRAM BENEFIT COST ANALYSIS 45 tbl.7-1 (2017), <https://perma.cc/SW66-HXUL>.

179. *See, e.g.*, INST. FOR MUN. & REG’L POLICY, CENT. CONN. STATE UNIV., STATE OF CONNECTICUT: RESULTS FIRST; BENEFIT-COST ANALYSES OF ADULT CRIMINAL AND JUVENILE JUSTICE EVIDENCE-BASED PROGRAMS 20 tbl.2 (2017), <https://perma.cc/7V2D-SAUE>; ANN SHIRLEY LEYMON, CRIMINAL JUSTICE COMM’N, STATE OF OR., RESULTS FIRST: FINAL BENEFIT-COST ANALYSIS REPORT ON DEPARTMENT OF CORRECTIONS 2 tbl.1 (n.d.), <https://perma.cc/YC8Q-B7Y6>; PEW-MACARTHUR RESULTS FIRST INITIATIVE, IOWA’S CUTTING-EDGE APPROACH TO CORRECTIONS: A PROGRESS REPORT ON PUTTING RESULTS FIRST TO USE 4 fig.1 (2013), <https://perma.cc/2X4L-MGQK>.

180. *See, e.g.*, CINDY REDCROSS ET AL., OFFICE OF PLANNING, RESEARCH & EVALUATION, U.S. DEP’T OF HEALTH & HUMAN SERVS., OPRE REPORT 2011-18, MORE THAN A JOB: FINAL RESULTS FROM THE EVALUATION OF THE CENTER FOR EMPLOYMENT OPPORTUNITIES (CEO) TRANSITIONAL JOBS PROGRAM 67 tbl.4.4 (2012), <https://perma.cc/X67A-TTZZ>; JOHN ROMAN ET AL., URBAN INST. JUSTICE POLICY CTR., IMPACT AND COST-BENEFIT ANALYSIS OF THE MARYLAND REENTRY PARTNERSHIP INITIATIVE 18 (2007), <https://perma.cc/65SW-SLN3>.

181. REDCROSS ET AL., *supra* note 180, at v.

182. *See, e.g., id.* at 51 n.12 (citing MILLER ET AL., *supra* note 18; and McCollister et al., *supra* note 64).

183. *See id.* at 67 tbl.4.4, 68.

184. *See id.* at 67 tbl.4.4.

Foundation to assess a range of intervention strategies for prisoners and probationers.¹⁸⁵ As a result of this collaboration, the Department of Corrections found that prison-based education, drug treatment, and cognitive behavioral programs were all cost effective, with cognitive behavioral programs returning \$37.70 in avoided victim and criminal justice system costs for each dollar spent.¹⁸⁶ Given these promising findings, the Department of Corrections concluded that the “[e]xpansion of [intervention] programs to serve additional prison inmates . . . would further reduce admissions to jails and prisons and keep Iowans safer.”¹⁸⁷

* * *

As each of the foregoing examples shows, policymakers at all levels are actively applying Part I’s economic model to a wide range of criminal justice proposals. Not only are reformers assessing the costs and benefits of changing the overall incarceration rate, but they are also evaluating specific laws and programs that implicate the economics of incarceration. While these applications—and the economic framework on which they rest—yield important insights, the next Part will argue that they also suffer from a widespread flaw: They fail to account for crime that occurs inside prisons and jails.

III. Accounting for Prison Crime

A. A Flaw in the Economic Framework

Scholars and policymakers account for myriad costs and benefits when conducting analyses involving the economics of incarceration. One item, however, is almost always excluded: crime that occurs inside prisons and jails.¹⁸⁸ This exclusion is significant, as “[c]rime does not stop at the door of the

185. See IOWA DEP’T OF CORR., RETURN ON INVESTMENT: EVIDENCE-BASED OPTIONS TO IMPROVE OUTCOMES 1 (2012), <https://perma.cc/9QZJ-CQ9Y>; PEW-MACARTHUR RESULTS FIRST INITIATIVE, *supra* note 179, at 1.

186. IOWA DEP’T OF CORR., *supra* note 185, at 2.

187. *Id.* at 5.

188. See, e.g., Matt DeLisi, Special Report, *Criminal Careers Behind Bars*, 21 BEHAV. SCI. & L. 653, 654 (2003) (“Traditionally, prison has been viewed as a period of downtime not only for the offender but also for the academician interested in data collection. As a result, criminal career researchers have commonly viewed prison as a period of criminal inactivity.”); Catherine M. Sharkey, Book Note, *Out of Sight, Out of Mind: Is Blind Faith in Incapacitation Justified?*, 105 YALE L.J. 1433, 1433 n.3 (1996) (reviewing FRANKLIN E. ZIMRING & GORDON HAWKINS, *INCAPACITATION: PENAL CONFINEMENT AND THE RESTRAINT OF CRIME* (1995)) (“Studies of the effect of incarceration on crime rates usually ignore crime within prisons.”).

prison,¹⁸⁹ but is instead shifted to some degree from society at large to the world behind bars.¹⁹⁰ To the extent that prison crime *should* be included in our calculus, its exclusion therefore creates an artificially favorable picture of policies that increase the incarceration rate.¹⁹¹ This exclusion correspondingly creates an artificially unfavorable picture of laws and programs that reduce recidivism—such as those discussed in Parts II.B.2 and II.B.3 above—as it understates the benefits to society of keeping people out of prison.

Conceptually, there are two ways in which we might include prison crime in our estimates of incarceration’s costs and benefits. First, we could include prison crime when calculating the benefits of avoided victimization. If we calculated the *net* benefits of victimization avoided through increased incarceration—accounting not only for the decreased victimization outside of prison, but also the increased victimization inside of prison—then the benefits of incarcerating the marginal inmate would decrease. Conversely, the benefits of reducing recidivism would increase, as victimization would be avoided both outside and inside of prison. Second, we could include the costs of prison crime in our estimates of the costs of incarceration (in addition to those categories of costs already aggregated in Part I.B above), thereby causing these cost estimates to increase.

In practice, neither of these approaches has been adopted by scholars or policymakers. Instead, when analysts of either stripe measure the crime-prevention effect of incarceration, they look only to crime prevented “out on the street”¹⁹² or “in the community.”¹⁹³ Crime that occurs within prisons is ignored. In some cases, the exclusion of prison crime appears to be unconscious; analysts

189. WILLIAM R. BELL, PRACTICAL CRIMINAL INVESTIGATIONS IN CORRECTIONAL FACILITIES 1 (2002); see also Linda S. Beres & Thomas D. Griffith, *Do Three Strikes Laws Make Sense?: Habitual Offender Statutes and Criminal Incapacitation*, 87 GEO. L.J. 103, 113 n.64 (1998).

190. See Guyora Binder & Ben Notterman, *Penal Incapacitation: A Situationist Critique*, 54 AM. CRIM. L. REV. 1, 46 (2017) (“We might better refer to the aim of separating potentially violent offenders from the innocent as ‘segregation’ rather than ‘incapacitation’ of offenders.”); Markus Dirk Dubber, *Recidivist Statutes as Arational Punishment*, 43 BUFF. L. REV. 689, 709 (1995) (“[I]mprisonment does not eliminate crime, it merely shifts the locus of crime from one side of the prison wall to the other.”).

191. See Sharkey, *supra* note 188, at 1433 n.3 (“Crimes committed within the prison walls, if explicitly acknowledged in a utilitarian analysis of incapacitation, would reduce the calculated social benefit of crimes averted in society.”).

192. See WILLIAM SPELMAN, CRIMINAL INCAPACITATION 4 (1994).

193. See Leo Carroll, Reaction Essay, *Prison Siting, Rural Development, Racism, and Justice Reinvestment*, 3 CRIMINOLOGY & PUB. POL’Y 481, 484 (2004) (“Offenders in prison cannot commit crimes in the community.”); Doris Layton MacKenzie, *Criminal Justice and Crime Prevention*, in PREVENTING CRIME: WHAT WORKS, WHAT DOESN’T, WHAT’S PROMISING 9-1, 9-6 (1997) (“Crime is reduced because the incarcerated offenders are prevented from committing crimes in the community.”).

simply equate “crime” with “crime outside of prison.”¹⁹⁴ In other cases, the exclusion is acknowledged, although with varying degrees of explicitness.¹⁹⁵

Similarly, prison crime is almost entirely absent from the literature on the costs of incarceration. As discussed in Part I.B above, empirical work on incarceration costs tends to quantify government expenditures and lost inmate productivity,¹⁹⁶ with additional rough estimates provided for the collateral costs that incarceration imposes on inmates’ families and communities.¹⁹⁷ Although scholars often reference inmates’ lost freedom as a potential cost of incarceration¹⁹⁸—and although this freedom should presumably include freedom from victimization in prison—few attempts have been made to quantify freedom’s value,¹⁹⁹ and even those scholars who reference lost freedom rarely discuss prison crime specifically.²⁰⁰ Indeed, there appears to be only one recent study that has tried to quantify the costs of incarceration *inclusive* of prison crime,²⁰¹ and even that study calculates only the costs associated with prison rape and sexual assault, excluding the costs associated with all other types of prison crime.²⁰²

194. *Cf., e.g.*, Marc Mauer & Michael Coyle, *The Social Cost of America’s Race to Incarcerate*, in *CRIMINAL JUSTICE: RETRIBUTION VS. RESTORATION* 7, 15 (Eleanor Hannon Judah & Michael Bryant eds., 2004) (“[I]f half the population were in prison and guarded by the other half, we would no doubt see reduced crime . . .”).

195. *See, e.g.*, DORIS LAYTON MACKENZIE, *WHAT WORKS IN CORRECTIONS: REDUCING THE CRIMINAL ACTIVITIES OF OFFENDERS AND DELINQUENTS* 12 (2006) (“[F]or as long as offenders are incarcerated they clearly cannot commit crimes outside of prison.”); Abrams, *How Do We Decide*, *supra* note 119, at 64 (“[O]ffenders are unable to commit crimes (outside of prison) during their period of incarceration.”); Philip J. Cook & Jens Ludwig, *Economical Crime Control*, in *CONTROLLING CRIME: STRATEGIES AND TRADEOFFS* 1, 14 (Philip J. Cook et al. eds., 2011) (“[O]ffenders who are locked up or otherwise incapacitated are unable to commit crimes—at least crimes against victims on the ‘outside.’”).

196. *See, e.g.*, Anderson, *supra* note 61, at 620-24; Cohen, *supra* note 79, at 16-17; McCollister et al., *supra* note 64, at 103; Rajkumar & French, *supra* note 64, at 294, 302-04.

197. *See, e.g.*, Donohue, *supra* note 22, at 301; Knott, *supra* note 129, at 271; Spelman, *supra* note 130, at 30.

198. *See, e.g.*, CAVANAGH & KLEIMAN, *supra* note 110, at 12 tbl.1; MILLER ET AL., *supra* note 18, at 11; Cohen et al., *supra* note 63, at 137-38; Cohen, *supra* note 110, at 276; Cohen & Piquero, *supra* note 65, at 34; Donohue, *supra* note 22, at 301.

199. *See supra* notes 119-20 and accompanying text.

200. *See, e.g.*, Cohen et al., *supra* note 63, at 138-39 (raising the possibility that “one potential cost associated with jailing offenders is the higher rate of injury and death in prison,” but declining to include that cost in their calculations).

201. *See* Michael McLaughlin et al., *The Economic Burden of Incarceration in the U.S.* 6-9 (Concordance Inst. for Advancing Soc. Justice, Wash. Univ. in St. Louis George Warren Brown Sch. of Soc. Work, Working Paper No. CI072016, 2016), <https://perma.cc/X3HR-MLTJ>; *see also id.* at 21 (“[N]o study has yet estimated the aggregate burden of incarceration.”).

202. *See id.* at 8-9.

Policy applications are no different in this regard. In many of the examples cited in Part II above, the costs of incarceration are limited to include only direct government expenditures.²⁰³ Furthermore, even in those applications that do account for other social costs of incarceration—such as lost inmate productivity, or the collateral costs imposed on prisoners’ families and communities—there is no discussion of victimization in prison or jail.²⁰⁴

It is hard to know why prison crime is so widely excluded from analyses involving the economics of incarceration, but there are two likely explanations: First, from a pragmatic standpoint, the major public data sources for reported crime in the United States do not include crime that occurs within prisons and jails.²⁰⁵ As a result, the multitude of studies and applications that rely on these data sources when calculating elasticities of crime with respect to incarceration omit the impact of incarceration on prison crime. Relatedly, statistics on prison crime are often based on surveys and are thus subject to a number of reporting difficulties,²⁰⁶ especially given that “snitching” is often met with retaliation from fellow inmates.²⁰⁷ To the extent that analysts find self-report studies to be unreliable, they may be less inclined to use them.

Perhaps more significant than these pragmatic problems are the normative decisions that analysts make to discount the costs associated with prison crime.²⁰⁸ These decisions are rarely articulated explicitly, but they appear to rest on the view that criminals have given up their right to be free from suffering,²⁰⁹ or that crimes are better imposed on convicted criminals than on

203. See, e.g., HENRICHSON & LEVSHIN, *supra* note 157, at 11-16; ILL. SENTENCING POLICY ADVISORY COUNCIL, *supra* note 163, at 2; ROMAN ET AL., *supra* note 180, at 15.

204. See, e.g., CRIMINAL JUSTICE COMM’N, *supra* note 149, at 43; WASH. STATE INST. FOR PUB. POLICY, *supra* note 149, at 8 n.6.

205. See Josh Voorhees, *A City of Convicts*, SLATE (June 30, 2014, 9:07 AM), <https://perma.cc/E6TK-VCT3>; see also Email from Crime Stats, FBI, to author (June 19, 2017, 7:44 AM) (on file with author) (confirming that prison crime is not included in the UCR); Email from Jennifer L. Truman, Statistician, Bureau of Justice Statistics, U.S. Dep’t of Justice, to author (Oct. 6, 2017, 10:27 AM) (on file with author) (confirming that with minor exceptions, prison crime is not included in the NCVS).

206. See Pritikin, *supra* note 40, at 1076.

207. See James E. Robertson, *Surviving Incarceration: Constitutional Protection from Inmate Violence*, 35 DRAKE L. REV. 101, 117 (1985-1986).

208. See GUYORA BINDER, *THE OXFORD INTRODUCTIONS TO U.S. LAW: CRIMINAL LAW* 73-74 (Dennis Patterson ed., 2016) (“[T]he unexamined equation of incarceration with incapacitation reflects indifference to the welfare of offenders.”); JOHN KAPLAN ET AL., *CRIMINAL LAW: CASES AND MATERIALS* 69 (3d ed. 1996) (“The position that only nonoffenders deserve protection from crime is . . . a principle of desert rather than utility.”).

209. See, e.g., *Rhodes v. Chapman*, 452 U.S. 337, 347 (1981) (“To the extent that [prison] conditions are restrictive and even harsh, they are part of the penalty that criminal offenders pay for their offenses against society.”); Craig Hemmens & James W. Marquart, *Friend or Foe?: Race, Age, and Inmate Perceptions of Inmate-Staff Relations*, *footnote continued on next page*

innocent civilians.²¹⁰ Although such views may find support in our popular discourse,²¹¹ they are fundamentally misguided, as they fail to accord victims of prison crime appropriate standing in our cost-benefit analyses. As the next Subpart will illustrate, an adequate theory of standing requires us to include all private harms in our economic analyses unless there is a normative justification for excluding them. Part III.C will then argue that attempts to justify the exclusion of prison crime—such as those just mentioned—are questionable at best and fatally flawed at worst.

B. Who Has Standing in Our Cost-Benefit Analyses?

Underlying the question of prison crime's role in the economics of incarceration is the more fundamental question of who has standing in our cost-benefit analyses.²¹² The concept of economic standing parallels that of legal standing and was discussed briefly above in the contexts of the social costs of theft²¹³ and lost freedom.²¹⁴ In assessing who has economic standing, analysts must define “whose [costs and] benefits are to count in the summation of costs and benefits to individuals affected by a project or policy.”²¹⁵ Or, more precisely, analysts must define *which* costs and benefits are to count, as individuals may have standing with respect to some preferences but not others.²¹⁶ Issues of standing are thus logically prior to issues of measurement

28 J. CRIM. JUST. 297, 297 (2000) (“The prison experience has historically been meant to be unpleasant, and prisoners have been expected to suffer to some degree.”).

210. See Binder & Notterman, *supra* note 190, at 45 (“The failure of incapacitation’s proponents to consider prison violence suggests that their aim was not to reduce the risk of violent crime as such, but to redistribute that risk from innocents to past offenders.”); Susan Dimock, *Criminalizing Dangerousness: How to Preventively Detain Dangerous Offenders*, 9 CRIM. L. & PHIL. 537, 550 (2015) (“Each society must determine what level of risk of violence is acceptable. If dangerous offenders exceed that level, we must ask whether society or members of the dangerous group should bear the costs of their threat.”).

211. For a particularly tasteless example, see Andres Jauregui, *New York Post to Jared Fogle: ‘Enjoy a Footlong in Jail,’* HUFFPOST (Aug. 20, 2015, 11:29 AM ET), <https://perma.cc/2ZUU-TT34>.

212. Dale Whittington and Duncan MacRae, Jr. are often credited with introducing the concept of standing to the literature on cost-benefit analyses. See generally Dale Whittington & Duncan MacRae, Jr., *The Issue of Standing in Cost-Benefit Analysis*, 5 J. POL’Y ANALYSIS & MGMT. 665 (1986).

213. See *supra* notes 70-73 and accompanying text.

214. See *supra* notes 117-20 and accompanying text.

215. Whittington & MacRae, *supra* note 212, at 665.

216. See *id.* at 668 (acknowledging that criminals may not deserve standing with respect to all of their preferences, but denying “that convicted criminals lose all their rights, or that someone who violates the law on one occasion should have all his or her preferences in other spheres of life ignored”).

methodology, such as whether to use a “bottom-up” or “top-down” approach when calculating the magnitude of the crime-prevention effect²¹⁷ or the costs of crime.²¹⁸

For economists, the default position when conducting cost-benefit analyses is to accord standing to “every member of society.”²¹⁹ While this expansive view might seem to offer an easy answer regarding the proper treatment of prison crime, it really just raises the further question: Who counts as a “member of society”? As we saw in the previous Subpart, prison crime is often distinguished from crime in society or “in the community,”²²⁰ but this distinction is rarely explained. The default position provides no additional guidance in this respect,²²¹ and it fails as a result to help us decide which costs and benefits to include in our analyses.

Another major problem with the default position is that it counts all preferences equally, regardless of how unworthy they may seem. We saw this issue briefly in the context of theft, where some economists have argued that the costs suffered by victims are offset by the benefits that accrue to thieves.²²² The difficulties become even starker when we consider crimes like rape or murder. Should we really say that society benefits from the enjoyment that a perpetrator gets when committing such gruesome acts?²²³ According to the default view, the answer is yes: Criminals’ enjoyment should be taken into account when setting our optimal law enforcement policy.²²⁴ For many scholars, however—and probably for most nonacademics—treating the satisfaction of such criminals’ preferences as an economic gain is normatively unacceptable.²²⁵ A satisfactory

217. See *supra* Part I.A.1.

218. See *supra* Part I.A.2.

219. See Trumbull, *supra* note 73, at 201.

220. See *supra* notes 192-95 and accompanying text.

221. Cf. Ted Gayer & W. Kip Viscusi, *Determining the Proper Scope of Climate Change Policy Benefits in U.S. Regulatory Analyses: Domestic Versus Global Approaches*, 10 REV. ENVTL. ECON. & POL’Y 245, 245 (2016) (“[I]n both discussions of social welfare and the articulation of guidelines for benefit assessment, the populations whose welfare should be considered is often not well defined.”).

222. See *supra* notes 70-71 and accompanying text.

223. Cf., e.g., George J. Stigler, *The Optimum Enforcement of Laws*, 78 J. POL. ECON. 526, 527 (1970) (“[W]hat evidence is there that society sets a positive value upon the utility derived from a murder, rape, or arson? In fact the society has branded the utility derived from such activities as illicit.”).

224. Gary Becker is often credited with originating the default view. See Becker, *supra* note 70; see also, e.g., Donohue, *supra* note 23, at 381-85 (describing “the Becker model” (capitalization altered)).

225. See, e.g., Alan Randall, *Whose Losses Count?: Examining Some Claims About Aggregation Rules for Natural Resources Damage*, CONTEMP. ECON. POL’Y, Oct. 1997, at 88, 92 (“Utilitarianism is a totally untenable social philosophy if all preferences are considered equally valid and all acts to satisfy preferences equally legitimate.”).

theory of standing should thus provide a principled basis for distinguishing costs and benefits that count from those that do not.

Although the literature on economic standing is not particularly well developed, roughly two different frameworks have been proposed for making such distinctions. The first, which I will call the normative framework, suggests that we should rely on ethical judgments when deciding which costs and benefits to include in our economic analyses. This view is attributable to Dale Whittington and Duncan MacRae, Jr., who started the debate on economic standing in their article “The Issue of Standing in Cost-Benefit Analysis.”²²⁶ According to Whittington and MacRae, analysts should aim to “express the ethical consensus of a society” when deciding issues of standing.²²⁷ Whether to account for prison crime, on the normative view, thus reduces to whether society assigns a negative value to the harms associated with victimization behind bars. There will of course be disagreement about how analysts should discern society’s values—Whittington and MacRae suggest appealing to “public discussion and democratic debate”²²⁸—but determinations of standing are, on the normative view, fundamentally moral inquiries.

In opposition to the normative framework is what I will call the positive framework, according to which judgments of standing are taken to be natural consequences of the existence of certain institutions. One of the primary proponents of the positive view is Bill Trumbull, who has argued that standing decisions should flow logically from “social constraints” like laws or regulations.²²⁹ Another notable positivist is Richard Zerbe, who has sought to cast economic standing in terms of “the pattern of rights that are assumed in performing an analysis,”²³⁰ such that the decision whether to count certain costs or benefits is determined by whether parties have legally enforceable rights to avoid those costs or appreciate those benefits.²³¹ Whether to account for prison crime, on this view, depends on whether its victims’ right to be free from suffering is protected by some sort of legal or regulatory institution.

226. Whittington & MacRae, *supra* note 212.

227. *See id.* at 666; *see also* Steven Shavell, *Criminal Law and the Optimal Use of Nonmonetary Sanctions as a Deterrent*, 85 COLUM. L. REV. 1232, 1234 (1985) (“The benefits that society . . . derive[s] from a party’s act may be less than or equal to the party’s private benefits. . . . Allowing for a divergence between social and private benefits gives the analyst greater freedom to describe society’s values.”).

228. *See* Dale Whittington & Duncan MacRae, Jr., Comment, *Judgments About Who Has Standing in Cost-Benefit Analysis*, 9 J. POL’Y ANALYSIS & MGMT. 536, 545 (1990).

229. *See* Trumbull, *supra* note 73, at 202-05.

230. Richard O. Zerbe, Jr., Comment, *Does Benefit Cost Analysis Stand Alone?: Rights and Standing*, 10 J. POL’Y ANALYSIS & MGMT. 96, 97 (1991) (emphasis omitted).

231. *See id.* at 97-98; *see also* Jonathan Lesser & Richard O. Zerbe, Jr., *A Practitioner’s Guide to Benefit-Cost Analysis*, in HANDBOOK OF PUBLIC FINANCE 221, 244 (Fred Thompson & Mark T. Green eds., 1998).

The benefit of the positive framework is that it promises an objective basis for making decisions about economic standing. The problem is that it is either underdetermined or underinclusive. In the case of Trumbull's social constraints, for example, we are told that standing flows from laws and regulations, but we are not told how. To illustrate, Trumbull argues that criminal gains should be *excluded* from our social calculus, because criminal laws act as social constraints,²³² but he also argues that costs imposed on foreign nationals should be *included*, even though "[a] national border is a form of social constraint."²³³ Why is one social constraint relevant to determinations of standing while the other is not?²³⁴ Trumbull offers no persuasive explanation.²³⁵

Zerbe's focus on rights, by contrast, does tell us how to make standing decisions, but it fails to afford standing in a number of cases where it should. Consider, for example, any run-of-the-mill commercial scenario in which one company loses business to another. Assuming no tortious interference or unfair practices are involved, the losing company likely has no cognizable claim against its competitor. But we would almost certainly want to count the value of its loss in our economic analyses. Consider also the instances in which policymakers contemplate actions that will limit individuals' access to goods and services such as health care. In the United States, at least, where the Constitution guarantees few social or economic rights,²³⁶ the affected individuals will often lack a mechanism for redress. But surely we should still count their losses when conducting a cost-benefit analysis of the contemplated actions.

What these cases suggest is that there is more to economic standing than social constraints and rights, and that we will have to move beyond the positive view if we want to account for prison crime using a robust

232. See Trumbull, *supra* note 73, at 212.

233. See *id.* at 213-14.

234. See Whittington & MacRae, *supra* note 228, at 545 (raising a similar criticism of Trumbull's position).

235. For Trumbull's response to criticism of his position, see William N. Trumbull, *Reply to Whittington and MacRae*, 9 J. POL'Y ANALYSIS & MGMT. 548 (1990).

236. See Mark Tushnet, *Social Welfare Rights and the Forms of Judicial Review*, 82 TEX. L. REV. 1895, 1895 (2004) ("The conventional wisdom among scholars of U.S. constitutional law is that the Constitution—and indeed constitutions more generally—should not recognize, or be interpreted to recognize, so-called second generation social welfare rights, such as a right to shelter or a right to a minimum subsistence."). Compare, e.g., *San Antonio Indep. Sch. Dist. v. Rodriguez*, 411 U.S. 1, 35 (1973) (holding that there is no constitutionally protected right to education), with, e.g., *Gov't of the Republic of S. Afr. v. Grootboom* 2001 (1) SA 46 (CC) at 86 para. 93 (S. Afr.) (holding that there is a protected right under the South African Constitution "to housing, health-care, sufficient food and water, and social security to those unable to support themselves and their dependants").

framework. After all, positive institutions like laws reflect compromises among a wide range of values. When we decide, for example, that social and economic rights should not be constitutionally guaranteed, we are considering not only the well-being of vulnerable individuals, but also the competence of judges and the balance of power among the branches of government in our democracy.²³⁷ While the decisions we make will invariably advantage certain stakeholders over others, it does not follow that we should exclude the disadvantaged group's gains and losses from future analyses. Instead, we may still value these individuals' private benefits and costs, despite the fact that our social institutions hinder those benefits or ignore those costs.

Of course, there will be times when our existing institutions align with our decisions to value certain benefits or discount certain costs. It may be the case, for example, that a legal prohibition gives rise to a presumption against standing, such that the benefits derived from a proscribed act should generally be excluded from our economic analyses. Even such a presumption will be rebuttable, however, as there will inevitably be cases in which we want to count the benefits notwithstanding the prohibition (as, for example, when someone speeds to the hospital²³⁸). Determining when to rebut such a presumption—and determining what to do when no presumption applies—will require some degree of normative judgment. In exercising this judgment, we should start with the default rule that private gains are benefits and private losses are costs,²³⁹ but we should be prepared to exclude these gains and losses from our analyses when there are normative justifications for doing so.²⁴⁰ Deciding whether such justifications exist will of course involve contentious moral inquiries, but it will avoid the pitfalls of the positive view discussed above. In the next Subpart, I will apply a normative framework to the issue of prison crime, and I will argue that there is no principled basis on which to exclude the costs of its victimization from our economic analyses of incarceration.

237. *Cf., e.g., Rodriguez*, 411 U.S. at 31 (“[I]f the degree of judicial scrutiny of state legislation fluctuated, depending on a majority’s view of the importance of the interest affected, we would have gone ‘far toward making this Court a “super-legislature.”’” (quoting *Shapiro v. Thompson*, 394 U.S. 618, 661 (1969) (Harlan, J., dissenting))).

238. See HAROLD WINTER, *THE ECONOMICS OF CRIME: AN INTRODUCTION TO RATIONAL CRIME ANALYSIS* 3 (2008).

239. See *supra* text accompanying note 219.

240. See Eric A. Posner & Cass R. Sunstein, *Essay, Moral Commitments in Cost-Benefit Analysis*, 103 VA. L. REV. 1809, 1835-36 (2017).

C. Granting Standing to Victims of Prison Crime

As discussed above, scholars and policymakers rarely articulate their grounds for excluding prison crime from their economic analyses of incarceration.²⁴¹ To the extent that the exclusion is intentional, however, it appears to rest on one of two normative premises. The first is that criminals give up their right to be free from victimization—or that victimization becomes deserved—when they choose to break the law in the first place.²⁴² It is the premise that “offenses committed by prisoners on one another are to be expected; are part of the normal life of the prison; are, perhaps, part of the punishment of imprisonment.”²⁴³ The second premise is that regardless of whether victimization is part of the punishment, it is better for crime to be committed against convicted criminals than against innocent civilians.²⁴⁴ It is the premise that when it comes to crime committed inside as opposed to outside of prisons, we should “prefer[] the victimization of one population over another.”²⁴⁵

Either of these premises, if true, might provide a normative justification for excluding the costs of prison crime from our economic analyses of incarceration. However, as this Subpart will argue, each of these premises is flawed. While the first premise runs afoul of the moral limits that constrain the state’s ability to punish, the second relies on a peculiar and contestable conception of desert. Furthermore, even if the second premise were correct—that is, even if the victimization of inmates were morally preferable to that of innocent civilians—it would not follow that we should exclude the costs of prison crime altogether.

241. Note that this discussion is relevant only to exclusions of prison crime committed against *prisoners*. The exclusion of prison crime committed against staff members (such as guards) is almost certainly either unintentional or the product of pragmatic concerns such as those discussed in Part III.A above.

242. See *supra* note 209 and accompanying text; cf. Robert Weisberg, *Reality-Challenged Philosophies of Punishment*, 95 MARQ. L. REV. 1203, 1245 (2012) (“The position that only nonoffenders deserve protection from violence would seem to be a principle of retributive desert . . .”).

243. David A. Stoney et al., *Corrections and Criminalistics: Pragmatism, Principles, and Policy*, 36 J. FORENSIC SCI. 1416, 1417 (1991). This parallels the argument in the context of inmates’ lost freedom that “such deprivation is the purpose of incarceration.” See Donohue, *supra* note 22, at 301 (describing this argument); see also *supra* text accompanying note 118.

244. See *supra* note 210 and accompanying text.

245. See Kevin Bennardo, *Incarceration’s Incapacitative Shortcomings*, 54 SANTA CLARA L. REV. 1, 9 (2014).

1. Prison crime is not “part of the punishment”

The first premise—that victimization is in some sense part of inmates’ punishment—is the easiest to dispense with.²⁴⁶ It would be imprudent, however, to dismiss it without acknowledging how firmly ingrained it is in our history and popular discourse. From a historical perspective, the principle of *lex talionis*²⁴⁷—the law of retaliation—has been codified for thousands of years,²⁴⁸ and it is still frequently invoked in its biblical formulation: “Eye for eye, tooth for tooth, hand for hand, foot for foot.”²⁴⁹ The imposition of capital punishment today can be viewed as a continuing application of the principle.²⁵⁰ Similarly, in our popular discourse, the apparent endorsement of inmate victimization is widespread, particularly in the case of prison rape,²⁵¹ but also when it comes to the infliction of pain more generally. Even the President of the United States has suggested that police officers should take fewer precautions to protect criminal suspects from being injured.²⁵²

The problems with this retaliatory view of punishment are twofold. First, assuming for the sake of argument that it were legitimate to punish criminals in kind for the offenses that they commit, subjecting inmates to the unregulated administration of prison victimization would be an incredibly unreliable means of achieving this end. Indeed, the severity of victimization that inmates suffer may be not only uncorrelated, but in fact negatively correlated, with their level of desert. As Kevin Bennardo has observed in a thoughtful piece on the issue, “it is likely that the least hardened (and least culpable) offenders are the most likely to fall victim to inmate-on-inmate

246. As a preliminary matter, it is important to note that this position ignores the likely reality that a nontrivial number of inmates have been wrongfully convicted. *See, e.g.,* Beth Schwartzapfel & Hannah Levintova, *How Many Innocent People Are in Prison?*, MOTHER JONES (Dec. 12, 2011, 3:10 PM), <https://perma.cc/N37E-ZG42> (providing a “conservative estimate” that approximately 20,000 current inmates in the United States have been falsely convicted); *see also, e.g.,* Samuel R. Gross et al., *Rate of False Conviction of Criminal Defendants Who Are Sentenced to Death*, 111 PROC. NAT’L ACAD. SCI. 7230, 7234 (2014) (providing a “conservative” estimate that 4.1% of death row inmates have been falsely convicted).

247. For a nuanced discussion and defense of the principle, see generally Jeremy Waldron, *Essay, Lex Talionis*, 34 ARIZ. L. REV. 25 (1992).

248. *See* THE CODE OF HAMMURABI KING OF BABYLON §§ 196-197 (Robert Francis Harper trans., 2d ed. 1904) (c. 2250 B.C.E.) (“If a man destroy the eye of another man, they shall destroy his eye. . . . If one break a man’s bone, they shall break his bone.”).

249. *Exodus* 21:24 (King James).

250. *See* Waldron, *supra* note 247, at 25-26.

251. *See* Elizabeth Stoker Bruenig, *Why Americans Don’t Care About Prison Rape*, NATION (Mar. 2, 2015), <https://perma.cc/AD58-VPT7>.

252. *See* Mark Berman, *Trump Tells Police Not to Worry About Injuring Suspects During Arrests*, WASH. POST (July 28, 2017), <https://perma.cc/SM25-55VS>.

prison crime.”²⁵³ This intuition is supported by empirical data, such as a recent report by the National Prison Rape Elimination Commission, which found that “[m]ore than any other group of incarcerated persons, youth incarcerated with adults are probably at the highest risk for sexual abuse.”²⁵⁴

More important than these practical problems, however, are the theoretical reasons why “[b]eing violently assaulted [or otherwise victimized] in prison is . . . not ‘part of the penalty that criminal offenders pay for their offenses against society.’”²⁵⁵ These reasons can be illustrated clearly if we break the “pains of imprisonment” into their constituent parts.²⁵⁶ On the one hand, we can consider the deprivation of liberty and the imposition of sparse living conditions that are inherent in American prison life.²⁵⁷ It is at least facially plausible that these features of “[t]he prison experience ha[ve] historically been meant to be unpleasant,”²⁵⁸ and that we are correct to view the attendant pains as part of “the purpose of incarceration.”²⁵⁹ To the extent that we are justified in imposing such pains on inmates, we may, on the normative view, exclude them from our cost-benefit analyses.

On the other hand, however, we can consider the victimization that inmates suffer while they are incarcerated.²⁶⁰ If being victimized were truly a part of an inmate’s punishment—if it were legitimate for us to “exact an equivalent in pain and trouble from the perpetrator of the crime”²⁶¹—then there would be no reason for us to distribute prison crime in an accidental, as opposed to an intentional, manner. This is not to say that the state’s intentional victimization would be normatively equivalent to its passive toleration of

253. Bennardo, *supra* note 245, at 16.

254. NAT’L PRISON RAPE ELIMINATION COMM’N, NATIONAL PRISON RAPE ELIMINATION COMMISSION REPORT 18 (2009), <https://perma.cc/7VXR-7TAT>.

255. *Farmer v. Brennan*, 511 U.S. 825, 834 (1994) (quoting *Rhodes v. Chapman*, 452 U.S. 337, 347 (1981)).

256. See John J. Sloan III & J. Langly Miller, *Just Deserts, the Severity of Punishment and Judicial Sentencing Decisions*, 4 CRIM. JUST. POL’Y REV. 19, 23 (1990) (explaining that prison “depriv[es] the individual not only of his/her liberty, but also . . . of goods and services routinely available outside the institution,” as well as “of personal autonomy, opportunities for heterosexual relationships, and a feeling of personal security”).

257. Not all prison systems exhibit these features. See, e.g., Erwin James, *The Norwegian Prison Where Inmates Are Treated Like People*, GUARDIAN (Feb. 25, 2013, 3:00 AM EST), <https://perma.cc/37Z7-DQA4>.

258. See Hemmens & Marquart, *supra* note 209, at 297.

259. See Donohue, *supra* note 22, at 301; *supra* note 118 and accompanying text.

260. See *infra* Part IV.

261. See Louis N. Robinson, *Contradictory Purposes in Prisons*, 37 J. CRIM. L. & CRIMINOLOGY 449, 450 (1947).

prison crime.²⁶² To the contrary, the moral distinction between doing and allowing harm is well established and highly intuitive²⁶³ (albeit fiercely contested²⁶⁴). Instead, it is to recognize that there is no principled basis for maintaining both that inmate victimization is a legitimate form of punishment and that we cannot inflict this victimization intentionally. After all, if prisoners deserved to be victimized, states would not simply be *permitted* to turn a blind eye to crime that occurred behind bars. They would also be affirmatively *authorized* to promote that victimization, since it is a good thing, all else being equal, to give people what they deserve.²⁶⁵ And if states were affirmatively authorized to promote victimization, then courts could decide at sentencing to impose a punishment of assault or rape on a convicted criminal.²⁶⁶ Or, to make things more analogous to the status quo, courts could impose particular probabilities of assault or rape on convicted criminals, and they could assign them to prisons whose risk characteristics corresponded with those probabilities (based, for example, on the prisons' historical victimization rates).

Obviously, such a sentencing policy would constitute a flagrant violation of the Eighth Amendment.²⁶⁷ More fundamentally, it would be repulsive from a moral perspective. The reason is not, as some have suggested, that “gratuitously allowing the beating or rape of one prisoner by another serves no

262. Cf. Carol S. Steiker, *No, Capital Punishment Is Not Morally Required: Deterrence, Deontology, and the Death Penalty*, 58 STAN. L. REV. 751, 758 (2005) (“[T]here are no good reasons to think that degrees of mens rea are meaningless for the government as actor.”).

263. See, e.g., Samuel Scheffler, *Doing and Allowing*, 114 ETHICS 215, 219 (2004) (“[P]eople . . . cannot accept any system of normative responsibility that does not, to some extent at least, assign them greater responsibility for what they do than for what they allow.”).

264. See *Doing vs. Allowing Harm*, STAN. ENCYCLOPEDIA PHIL. (updated Nov. 1, 2016), <https://perma.cc/ZL69-UXT5> (“[C]onsequentialists believe that doing harm is no worse than merely allowing harm while anti-consequentialists, almost universally, disagree.”).

265. See *infra* note 272 and accompanying text.

266. See Hugo Adam Bedau, *Retribution and the Theory of Punishment*, 75 J. PHIL. 601, 611 (1978) (criticizing the principle of *lex talionis* on the grounds that “either it is taken strictly with absurd results (e.g., should we punish a rapist by raping him? his wife or daughter?) or it is taken loosely or found to be inapplicable altogether (e.g., how can we punish a kidnapper according to *lex talionis*, if he has no children of his own?)”).

267. See, e.g., *Helling v. McKinney*, 509 U.S. 25, 31-32 (1993) (“It is undisputed that the treatment a prisoner receives in prison and the conditions under which he is confined are subject to scrutiny under the Eighth Amendment. . . . [W]hen the State takes a person into its custody and holds him there against his will, the Constitution imposes upon it a corresponding duty to assume some responsibility for his safety and general well being.” (second alteration in original) (quoting *DeShaney v. Winnebago Cty. Dep’t of Soc. Servs.*, 489 U.S. 189, 199-200 (1989))).

'legitimate penological objectiv[e].'²⁶⁸ To the contrary, one can imagine that the threat of rape or assault would serve significant, legitimate penological objectives, such as the deterrence of potential offenders.²⁶⁹ Instead, "our rejection of such extreme punishments points the way to a categorical, deontological limitation on the kinds of punishments we are justified in imposing."²⁷⁰ Where to draw this line is up for debate, but there is no question that rape, assault, and other forms of victimization are on the wrong side. To the extent that the retaliatory view of punishment is inconsistent with this conclusion, it therefore fails to provide us with a normative justification for excluding prison crime from our cost-benefit analyses.

2. Prison crime is not preferable

More difficult to contend with is the second premise, according to which "it is sometimes just to redistribute the risk of grave harm posed by dangerous offenders away from their future victims and on to those offenders instead."²⁷¹ Unlike the first premise, which runs headlong into the reductio discussed above, the view that prison crime is preferable has sustained intuitive appeal. All else being equal, it seems plausible that we would prefer for harm to befall morally culpable actors rather than morally blameless ones.²⁷² As this Subpart will illustrate, however, the second premise suffers from several problems, both practical and theoretical. Furthermore, even if it were true that prison crime is preferable to crime in the outside world, it would not follow that we should exclude prison crime from our calculus altogether.

As it is formulated above, the view that prison crime is preferable assumes that inmates who bear the risk of victimization are responsible for creating that risk in the first place. Framed as such, the view incorporates the philosophical principle of "fault forfeits first," according to which, "[i]f someone must suffer, it is better, *ceteris paribus*, that it be the faulty than the

268. See *Farmer v. Brennan*, 511 U.S. 825, 833 (1994) (alteration in original) (quoting *Hudson v. Palmer*, 468 U.S. 517, 548 (1984) (Stevens, J., concurring in part and dissenting in part)).

269. Cf. Cass R. Sunstein & Adrian Vermeule, *Is Capital Punishment Morally Required?: Acts, Omissions, and Life-Life Tradeoffs*, 58 STAN. L. REV. 703, 734 (2005) (discussing the punishment of torture as a possible deterrent).

270. See Steiker, *supra* note 262, at 752. See generally ROBERT NOZICK, ANARCHY, STATE, AND UTOPIA 30-33 (1974) (discussing deontological side constraints).

271. Dimock, *supra* note 210, at 550 (citing JEAN FLOUD & WARREN YOUNG, DANGEROUSNESS AND CRIMINAL JUSTICE 55 (1981)).

272. See *Desert*, STAN. ENCYCLOPEDIA PHIL. (Oct. 9, 2015), <https://perma.cc/W8WS-B8NC> ("[O]ther things being equal, it is a good thing when people get what they deserve.").

meritorious.”²⁷³ Put another way, where some parties must bear the costs of a given outcome, and where only some parties are responsible for the occurrence of that outcome, it is better that the responsible parties bear the costs over the innocent ones.²⁷⁴

While the fault forfeits first principle is intuitive, its application to the phenomenon of prison crime is misguided for several reasons. First, there is no guarantee that the inmates who impose “the risk of grave harm” on society are the same inmates who bear that risk in prison.²⁷⁵ To the contrary, despite the prevalence of violence in prison, fewer than half of all state and federal prisoners are incarcerated for violent offenses,²⁷⁶ and there is at least some evidence to suggest that victims of prison violence are more likely to be incarcerated for nonviolent crimes.²⁷⁷ By casting criminals as a monolithic group that both inflicts and bears the risks of crime, the application of the fault forfeits first principle overlooks the fact that significant numbers of inmates may not be responsible for creating the types of risks that they ultimately are made to bear.

Furthermore, even for those inmates who *have* imposed the same types of risks on society that they subsequently bear behind bars, the fault forfeits first principle assumes that the risk of crime is given,²⁷⁸ and that our only decision is whether to impose this risk on criminals or innocents. Such an assumption might be warranted in a world where we had reached some irreducible minimum of crime whose costs had to be borne by someone. The reality, however, is that there are ways of reducing the risk of crime, both outside and inside of prison, and to the extent these methods are effective, the risk of crime cannot be treated as fixed. Outside of prison, these methods include the implementation of social programs such as early childhood education²⁷⁹ and

273. Joel Feinberg, *Sua Culpa*, in *PHILOSOPHY OF LAW: CLASSIC AND CONTEMPORARY READINGS* 315, 320 (Larry May & Jeff Brown eds., 2010) (emphasis omitted).

274. See, e.g., SHELLY KAGAN, *THE GEOMETRY OF DESERT* 24 (2012).

275. See *supra* text accompanying notes 253-54.

276. See E. ANN CARSON & ELIZABETH ANDERSON, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 250229, *PRISONERS IN 2015*, at 14 tbl.9, 15 tbl.10 (2016), <https://perma.cc/6FRV-7CTU>.

277. See John Wooldredge & Benjamin Steiner, *Violent Victimization Among State Prison Inmates*, 28 *VIOLENCE & VICTIMS* 531, 541 tbl.2 (2013).

278. The principle of fault forfeits first presumes a forced choice, as expressed in the original formulation: “[F]ault forfeits first, *if forfeit there must be.*” Feinberg, *supra* note 273, at 320 (emphasis added) (emphasis omitted).

279. See THE PEW CTR. ON THE STATES, *supra* note 105, at 16.

drug treatment.²⁸⁰ Inside, they include decreases in overcrowding,²⁸¹ increases in supervision and staff training,²⁸² and mechanisms for regulating staff misconduct.²⁸³ By casting the distribution of victimization as a forced choice, the second premise tries to apply the fault forfeits first principle outside of its proper domain.

Here, a proponent of the view that prison crime is preferable might respond by arguing that the view can be divorced from the fault forfeits first principle. After all, even assuming that crime is not an inevitable phenomenon whose costs must be borne by someone, there is still the broader question of which is worse, all else being equal: a crime committed against an inmate, or the same crime committed against a similarly situated civilian. In answering that the latter is worse, the second premise undoubtedly appeals to our commonsense intuitions. If we subject these intuitions to further scrutiny, though, we find that they imply a peculiar and contestable conception of the nature of desert.

To elaborate on this point, it will be helpful to articulate two background principles from the philosophical literature. First is the principle that different people deserve different things, such that, all else being equal, morally praiseworthy people deserve good outcomes, and morally blameworthy people deserve bad ones.²⁸⁴ It is this principle that tells us (together with the assumption that criminals are morally blameworthy) that criminals deserve punishment, while innocent people do not. Closely related to the first principle is a second, distinct one: It is better, all else being equal, for people to get the outcomes they deserve than it is for them to get better or worse outcomes than they deserve.²⁸⁵ It is this principle that tells us that it is a good thing for a criminal to be punished, but a bad thing for an innocent person to be punished. A further implication of this second principle is that it is preferable for a criminal to be punished than for an innocent person to be punished.

280. *See id.* at 17-18. For a discussion of programs serving as alternatives to incarceration, see Part II.B.2 above.

281. *See* Cynthia-Lee Williams & Jeremy R. Porter, *An Examination of Inmate Physical Assaults on Jail Correctional Staff: Exploring Inmate-Level and Jail-Level Conditions in the United States*, 37 *DEVIANT BEHAV.* 1239, 1244-45 (2016).

282. *See* NAT'L PRISON RAPE ELIMINATION COMM'N, *supra* note 254, at 5-6.

283. *See infra* notes 323, 338 and accompanying text.

284. *See* Thomas Hurka, *The Common Structure of Virtue and Desert*, 112 *ETHICS* 6, 7 (2001) (noting the "common view" that "what people deserve is pleasure or pain, and they deserve it because they are virtuous or vicious").

285. *See* Bradford Skow, *How to Adjust Utility for Desert*, 90 *AUSTRALASIAN J. PHIL.* 235, 236 (2012) ("[W]hen there is a lack of fit between what people deserve and what they get, the intrinsic value of the world they inhabit goes down.").

While this last point may seem to suggest that it is also preferable for a criminal to be victimized instead of an innocent person, a further principle is required in order to reach that conclusion. After all, as was discussed in the previous Subpart, prison crime is not part of the punishment that criminals deserve for the offenses they commit against society.²⁸⁶ Instead, “inmates are receiving their state-sanctioned just deserts through the punishment of incarceration” itself, exclusive of prison crime.²⁸⁷ The burden of victimization thus creates a worse outcome than inmates deserve, which makes this victimization suboptimal from the perspective of the principle that it is best for people to get the outcome they deserve. The same is true of victimization suffered by innocent people, which—assuming that innocent people generally get what they deserve—also creates a suboptimal outcome.

The further principle, then, that is required to reach the conclusion that prison crime is preferable is that it is better for morally blameworthy people to get worse outcomes than they deserve than it is for morally praiseworthy (or less blameworthy) people to get worse outcomes than they deserve.²⁸⁸ More specifically, it is the principle that it is preferable for blameworthy people to be worse off than they deserve by a certain amount than it is for praiseworthy people to be worse off than they deserve by that same amount.²⁸⁹

This is a peculiar conception of desert, and it is contestable both in theory and in its practical application to prison crime. From a theoretical perspective, the principle that it is better for blameworthy individuals to get worse than they deserve conflicts with the intuition that individuals can repay their debts by receiving their just punishments.²⁹⁰ It also sits in tension with the view that blameworthy individuals can be rehabilitated and reintegrated as coequal members of society.²⁹¹ Of course, it may be the case that blameworthy individuals will have multiple components to their just punishments—such as incarceration followed by parole and community service—but once these components are endured, individuals should have the ability to regain their

286. See *supra* Part III.C.1.

287. Bennardo, *supra* note 245, at 16.

288. See KAGAN, *supra* note 274, at 98-99 (articulating such a view); see also Bradford Skow, Book Review, 124 ETHICS 417, 421-26 (2014) (reviewing KAGAN, *supra* note 274) (critiquing Kagan’s articulation).

289. See KAGAN, *supra* note 274, at 98-99.

290. Cf. Margaret Colgate Love, *Paying Their Debt to Society: Forgiveness, Redemption, and the Uniform Collateral Consequences of Conviction Act*, 54 HOW. L.J. 753, 759 (2011) (“[T]he goal of the criminal justice system must be the full and early reintegration of a convicted person into free society . . .”).

291. Cf. *id.* (arguing that the reintegration must be “with the same benefits and opportunities available to any other member of the general public” and “free of unwarranted collateral penalties and the stigma of conviction”).

moral footing. The principle that it is better for blameworthy individuals to get worse than they deserve denies this ability, and it suggests instead that these individuals should continue to live as second-class citizens whose well-being counts for less. It is of course possible for blameworthy individuals to improve their just deserts through praiseworthy action, but they will otherwise persist in a morally inferior state, even if they are punished and conform their actions to social norms.²⁹²

Furthermore, the principle that it is better for blameworthy individuals to get worse than they deserve is problematic in its application to prison crime, because it assumes that convicted criminals do not already get worse than they deserve, even before prison crime is taken into consideration. This assumption is hard to reconcile with multiple aspects of the American criminal justice system, such as the relative severity of our sentencing practices²⁹³ and the many collateral consequences that attend even minor convictions.²⁹⁴ While there will of course be criminals whose “state-sanctioned just deserts”²⁹⁵ are appropriately measured or are even too lenient, it seems likely that many punishments are excessive. And to the extent that inmates are already worse off than they deserve to be, it may not be the case, even according to the principle under consideration, that it is preferable to take them further away from their deserved level of well-being.²⁹⁶

The premise, then, that prison crime is preferable—like the premise that prison crime is part of the punishment—does not provide us with a robust justification for excluding the costs of victimization from our economic analyses of incarceration. Furthermore, even if we did concede that prison crime is preferable, we would not be justified in excluding it altogether from consideration. Instead, we would have to determine exactly how preferable it is, perhaps through the use of a scaling factor,²⁹⁷ and we would have to include it in our model after assigning it an appropriate weight. Given the compelling

292. It is of course possible that rehabilitation itself constitutes praiseworthy action, in which case some of the problems discussed here may be avoided.

293. See CONNIE DE LA VEGA ET AL., CTR. FOR LAW & GLOB. JUSTICE, UNIV. OF S.F. SCH. OF LAW, CRUEL AND UNUSUAL: U.S. SENTENCING PRACTICES IN A GLOBAL CONTEXT 15 (2012), <https://perma.cc/P56S-LGUY>.

294. See ALEXANDER, *supra* note 14, at 142-43; Adam Chandler, *Paying (and Paying and Paying) a Debt to Society*, ATLANTIC (May 31, 2016), <https://perma.cc/B8LS-YN8E>.

295. See Bennardo, *supra* note 245, at 16.

296. This follows from the point that it is preferable, according to the principle under consideration, for blameworthy people to be made worse off than they deserve *only by a certain amount*. See *supra* text accompanying note 289. If it were always preferable to make blameworthy people worse off than they deserved, regardless of how much worse off they already were, then there would be no limit to the burdens we could justifiably shift onto them.

297. See KAGAN, *supra* note 274, at 98-100.

reasons above for including prison crime wholesale, and the thorny moral questions such a weighing exercise would raise,²⁹⁸ the rest of this Article assumes that crime committed in prison is equivalent to crime committed outside.

IV. Rerunning the Numbers

A. The Costs of Prison Crime

Even if we accept that prison crime should be included in our cost-benefit analyses, we still must decide how to account for it. As discussed above, there are at least two ways in which we might incorporate prison crime into our economic analyses of incarceration.²⁹⁹ The first approach is to account for prison crime when calculating the benefits of avoided victimization. If we accounted for *all* victimization when assessing the economics of incarceration—including not only the crime-prevention effect of incarceration on society at large, but also its criminogenic effect on life behind bars—then the benefits of incarceration would decrease. Correspondingly, the benefits of programs that reduce recidivism would increase, because these programs prevent victimization both outside and inside of prison. The second approach, which I will adopt in this Part, is to estimate the amount of crime that occurs in prison and derive an average cost per prisoner using the cost of crime estimates from Part I.A.2 above.³⁰⁰ This average can then be added to the costs of incarceration calculated in Part I.B.

When calculating the cost of prison crime, we should try to account for crime that is committed both by and against inmates and staff. We will need to alter our calculations slightly, however, depending on whether the analysis into which we are incorporating our prison crime estimate relies on elasticities. For those analyses that do not rely on elasticities, we will have to control for the levels of victimization that inmates will suffer if they are not incarcerated.³⁰¹ The reason is that these analyses do not otherwise account for all possible crime that could befall an inmate outside of prison.

For analyses that rely on elasticities, by contrast—such as the population-level applications discussed in Part II.A above—we do not need to adjust for an inmate's risk of victimization outside of prison, because any such victimization

298. We would have to answer, for example: How many prison rapes are equal to one civilian rape? How many murders or assaults?

299. See *supra* Part III.A.

300. As discussed in Part III.C.2 above, this assumes that the costs of a crime committed inside prison are the same as the costs of a crime committed outside prison.

301. See Cohen et al., *supra* note 63, at 138-39.

is already included in our elasticity estimates. When we say, for example, that incarcerating the marginal prisoner prevents a certain number of index crimes from occurring, that number includes crimes of which the marginal prisoner would have been the victim. Given that our elasticity estimates do not include any of the crime that occurs behind bars, we “can consider any crime committed within prisons—be it guard-on-prisoner, prisoner-on-guard, or prisoner-on-prisoner—without worrying about being overinclusive.”³⁰²

Of course, in order to avoid being overinclusive, we will have to focus only on *index* crimes that occur in prison. Otherwise we might count crimes (like drug crimes) that are not traditionally captured in empirical studies of crime outside of prison.³⁰³ This focus will at times create complications, as certain index crimes—like motor vehicle theft—simply do not occur in prison,³⁰⁴ while others—such as burglary, robbery, and larceny—may not be comparable to the same crimes committed in the outside world, given the relative material poverty in which prisoners live. To keep the analysis simple, and in the interest of being conservative, this Subpart will attempt to quantify only the costs of murder, rape, and aggravated assault in prison.

Two final points are worth bearing in mind. First, the *average* cost of prison crime is an imperfect estimate of the *marginal* cost of prison crime. For example, the use of averages might overstate the marginal cost of prison crime, because the marginal prisoner might be likely to commit fewer crimes than the average prisoner.³⁰⁵ Conversely, the use of averages might understate the marginal cost of prison crime, because if the marginal prisoner is relatively harmless, he might be more likely than the average prisoner to suffer victimization.³⁰⁶ Second, the costs of prison crime derived in this Subpart are in some sense the “gross” costs of prison crime, as the existence of prison crime may yield an offsetting societal benefit in the form of increased deterrence. Given that any such benefit is already captured by our estimates of crime levels in society, and that the analyses below hold the existence of prison crime constant, we do not need to adjust the numbers calculated in this Subpart.

With these considerations in mind, I will draw on publicly available data and the related literature to derive rough estimates of the frequencies with which murder, rape, and aggravated assault occur in state prisons. I will then

302. Pritikin, *supra* note 40, at 1075-76.

303. *See supra* notes 54-56 and accompanying text.

304. *See* DeLisi, *supra* note 188, at 654 (“[C]rimes such as auto theft or bank robbery are rendered impossible [in prison] by the inaccessibility to certain criminal targets.”).

305. *Cf.* Johnson & Raphael, *supra* note 59, at 299 (assuming that “the most criminally active are incarcerated first” such that the marginal effect on crime by incarcerating an additional inmate is lower than the average effect).

306. *See supra* text accompanying notes 253-54 (discussing the possibility that the least dangerous criminals are the most likely to be victimized).

convert these frequencies into an average cost per prisoner using the cost of crime estimates discussed in Part I.A.2 above. In doing so, I will calculate one set of costs that controls for inmate victimization outside of prison, and one that does not.³⁰⁷

1. Murder

As is the case with murders committed outside prison,³⁰⁸ murders inside prison are reported in a fairly comprehensive fashion. After the passage of the Death in Custody Reporting Act of 2000 (DCRA),³⁰⁹ certain sources of federal funding became conditioned on states' compliance with standardized reporting requirements regarding the deaths of those held in custody.³¹⁰ Since the DCRA was enacted, the BJS has asked jails and state corrections departments to provide detailed data on deaths that occur in custody, including the causes of those deaths, and it has received a response rate of nearly 100%.³¹¹ Although there is no guarantee that the surveyed institutions have correctly identified the cause of death of those in custody, cross-checks conducted by the BJS suggest that homicides are identified with a high degree of accuracy.³¹²

According to the BJS's most recent report on the topic, 83 state prisoner deaths were attributable to homicide in 2014,³¹³ for an average homicide rate of 7 per 100,000 inmates.³¹⁴ This number is slightly higher than that of recent history, as homicide rates from 2001 to 2014 averaged only 5 per 100,000

307. In controlling for inmate victimization outside of prison, I assume that inmates suffer the average risk of harm, *see 2015 UCR Crime Rate Statistics, supra* note 55 (reporting the average risks), as adjusted by the reporting rates for each crime, *see supra* note 59. The murder rate is 4.9 per 100,000 (4.9 / 1); the rape rate is 86.5 per 100,000 (28.1 / 0.325); and the aggravated assault rate is 430.0 per 100,000 (237.8 / 0.553). These estimates likely understate the true risks of murder or aggravated assault that inmates experience when they are not incarcerated, but they likely overstate (perhaps radically) the true risk of rape.

308. *See supra* note 59.

309. Pub. L. No. 106-297, 114 Stat. 1045 (codified at 34 U.S.C. § 12104(a) (2017)).

310. *See* Matt Lloyd, Note, *Dormant Data: Why and How to Make Good Use of Deaths in Custody Reporting*, 39 AM. J. CRIM. L. 301, 309-10 (2012).

311. ZHEN ZENG ET AL., BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 249568, ASSESSING INMATE CAUSE OF DEATH: DEATHS IN CUSTODY REPORTING PROGRAM AND NATIONAL DEATH INDEX 1 (2016), <https://perma.cc/P5MB-53BS>.

312. *See id.* at 7 & tbl.5.

313. *See* MARGARET E. NOONAN, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 250150, MORTALITY IN STATE PRISONS, 2001-2014—STATISTICAL TABLES 4 tbl.2 (2016), <https://perma.cc/52ND-DWEG>.

314. *See id.* at 5 tbl.4.

inmates in state prisons.³¹⁵ In addition to inmates, a handful of correctional officers die by homicide each year, but not enough to significantly affect the per-prisoner homicide rate.³¹⁶ When multiplied by the homicide cost estimates from the studies used to establish the range of the costs of crime in Part I.A.2 above,³¹⁷ the 2001 to 2014 homicide rate of 5 per 100,000 inmates yields an average cost per prisoner between \$158 and \$682 per year. After controlling for the homicide rate outside of prison (4.9 per 100,000),³¹⁸ the cost drops roughly to zero.³¹⁹

2. Rape

Although rape in prison is not nearly as well reported as murder, the data we have suggests that it is far more prevalent. That prison rape is common should come as no surprise to those steeped in American popular culture.³²⁰ The potential magnitude of the phenomenon is nevertheless astounding: According to a recent BJS study—which the agency is required to carry out pursuant to the Prison Rape Elimination Act of 2003³²¹—a full 4% of state and federal prisoners surveyed between 2011 and 2012 reported experiencing at least one incident of sexual victimization in the prior year (or, if more recently incarcerated, since admission).³²² This includes substantial amounts of

315. *See id.* at 4 tbl.1; *see also* MARGARET E. NOONAN, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 239911, MORTALITY IN LOCAL JAILS AND STATE PRISONS, 2000-2010—STATISTICAL TABLES 20 tbl.23 (2012), <https://perma.cc/8GU3-3NHF> (finding that the average homicide rate per state prisoner from 2001 to 2010 was 4 per 100,000).

316. *See* Srinivas Konda et al., *U.S. Correctional Officers Killed or Injured on the Job*, CORRECTIONS TODAY, Nov.-Dec. 2013, at 122, 122-23. By dividing the average number of homicides of correctional officers by the average prison and jail population over the period in question, we can derive a rough correctional officer homicide rate of 0.13 per 100,000 inmates. *See id.* at 123 tbl.2 (reporting an average of 2.8 correctional officer fatalities by homicide per year between 1999 and 2008); *Key Statistic: Jail Inmates*, *supra* note 2 (reporting that the average incarcerated population over the same period was 2,113,850).

317. For the methodology of calculating the ranges, see notes 96-97 above. Here the low estimate for homicide is \$3,152,169, and the high estimate is \$13,630,033.

318. *See supra* note 307.

319. The actual range used is \$3 to \$14.

320. *See* Stoker Bruenig, *supra* note 251.

321. *See* Prison Rape Elimination Act of 2003, Pub. L. No. 108-79, § 4, 117 Stat. 972, 975-78 (codified as amended at 34 U.S.C. § 30303 (2017)).

322. BECK, *supra* note 16, at 3; *see also* ALLEN J. BECK & JESSICA STROOP, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 250752, PREA DATA COLLECTION ACTIVITIES, 2017, at 2 (2017), <https://perma.cc/BAB7-QPWC>; ALLEN J. BECK ET AL., BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 241399, SEXUAL VICTIMIZATION IN PRISONS AND JAILS REPORTED BY INMATES, 2011-12, at 6 (2013), <https://perma.cc/V3P3-EFVZ>.

victimization at the hands of other inmates *and* of staff members.³²³ If applied to the average state prison population between 2011 and 2012,³²⁴ this reported percentage implies at least 54,704 incidents of victimization annually. Furthermore, the actual number is likely higher than this, given the fact that many inmates experienced multiple incidents of sexual victimization during the period studied, while others had not been in prison for a full year at the time they were surveyed.³²⁵ Indeed, the Department of Justice (DOJ) concluded in a recent rule that “more than 209,400 persons were victims of sexual abuse in prisons, jails, and juvenile facilities” in 2008.³²⁶

In the same rule, the DOJ made specific findings with respect to rape—as distinguished from sexual victimization in general—and concluded that in 2008, “at least 78,500 prison and jail inmates . . . were victims of the most serious forms of sexual abuse, including forcible rape and other nonconsensual sexual acts involving injury, force, or high incidence.”³²⁷ Dividing this number by the total prison and jail population in 2008³²⁸ yields an annual rape rate of 3.40%, which is similar to the 4% rate reported by the BJS. If we assume that these rates are constant across different types of correctional institutions and multiply the more conservative DOJ rate by the rape cost estimates from the studies used to establish the range of the costs of crime in Part I.A.2 above,³²⁹ we can derive a per-inmate rape cost of between \$3,654 and \$11,887 per year. Note that the DOJ’s maximum estimate of the annual cost of rape and sexual abuse in prisons and jails is even higher than these: \$49.1 billion,³³⁰ or \$21,254 per inmate. Also note that rape of prison staff does not appear to be prevalent, and accordingly is not included in these estimates.

323. See BECK, *supra* note 16, at 1.

324. The BJS has reported this average to be 1,367,600. See *Key Statistic: Jail Inmates*, *supra* note 2.

325. See BECK, *supra* note 16, at 3; Voorhees, *supra* note 205.

326. National Standards to Prevent, Detect, and Respond to Prison Rape, 77 Fed. Reg. 37,106, 37,111 (June 20, 2012).

327. *Id.* To put this number in context, the UCR reported 90,750 rapes in 2008, see *State-by-State and National Crime Estimates by Year(s)*, *supra* note 25, meaning that the absolute number of rapes that occurred inside of prison that year was on the same order of magnitude as the absolute number of rapes that occurred outside of prison (although, as discussed above, the UCR numbers are likely underreported to a significant extent, see *supra* note 59). Commentators have speculated, accordingly, that rape in the United States may actually be more common against men than it is against women. See, e.g., Filipovic, *supra* note 19.

328. The BJS has reported this number to be 2,310,300. See *Key Statistic: Jail Inmates*, *supra* note 2.

329. For the methodology of calculating the ranges, see notes 96-97 above. Here the low estimate for rape is \$107,545, and the high estimate is \$349,843.

330. See National Standards to Prevent, Detect, and Respond to Prison Rape, 77 Fed. Reg. at 37,111 (adjusted to 2015 dollars).

After controlling for the rape rate outside of prison (86.5 per 100,000),³³¹ the average per-prisoner cost of prison rape is between \$3,561 and \$11,585 per year.

3. Aggravated assault

Even for those who are spared the horrors of sexual abuse, prison is a violent place. A 2004 survey conducted by the BJS found that 32.6% of state prisoners reported being injured since admission, with 15.9% reporting that they were hurt in a fight.³³² More recent studies have suggested an even harsher reality, with some scholars finding that as many as one-third of prison inmates reported being physically assaulted in a six-month period.³³³ Prison staff bear significant risks as well, with American correctional officers sustaining an average of over 12,500 nonfatal injuries per year, “one of the highest rates of nonfatal, work-related injuries” among all American workers.³³⁴

These numbers are striking, but they do not by themselves allow us to estimate the average rate of aggravated assault in prison. This is because aggravated assault is defined by the UCR to include only a subset of assaults and attempted assaults that (generally) involve the use of a weapon and whose purpose is to inflict severe harm.³³⁵ Unfortunately, the limited data we have on prison crime is not particularly granular, and it does not align conveniently with UCR definitions.

In order to overcome this deficit, this Subpart attempts to infer prison aggravated assault rates from estimates of total prison assault rates and from the relative frequencies of simple and aggravated assault outside of prison. While the relative frequencies of simple and aggravated assault outside prison may differ from those inside prison, they should at least give us a rough sense of the order of magnitude on which prison aggravated assault occurs. To check these inferred estimates, this Subpart concludes by comparing them to the limited data that does attempt to break prison assaults into more granular categories.

Beginning with total prison assault rates, the three relevant categories are inmate-on-inmate, staff-on-inmate, and inmate-on-staff assaults. The first of

331. See *supra* note 307.

332. See *Medical Problems of Prisoners*, BUREAU JUST. STAT., <https://perma.cc/SM55-LP2W> (archived Oct. 18, 2018).

333. See Nancy Wolff & Jing Shi, *Contextualization of Physical and Sexual Assault in Male Prisons: Incidents and Their Aftermath*, 15 J. CORRECTIONAL HEALTH CARE 58, 64 (2009).

334. See Konda et al., *supra* note 316, at 122 & tbl.1.

335. See *Crime in the United States, 2010: Aggravated Assault*, FBI: UCR, <https://perma.cc/HA3X-BJ77> (archived Oct. 18, 2018).

these categories appears to be the best studied, and while estimates are inherently uncertain due to “underreporting and subjectivity in staff documentation,”³³⁶ it is likely that the annual rate of inmate-on-inmate assault is at least 20%, meaning that 200 inmate-on-inmate assaults occur for every 1,000 inmates.³³⁷ The second category, staff-on-inmate assault, is less well documented than the first, but it nevertheless appears to occur at the same rate.³³⁸ Assuming that assaults in each category constitute separate incidents, this data thus implies that about 532,120 assaults against inmates occurred in state prisons in 2015.³³⁹ Finally, for inmate-on-staff assaults, little recent data is available, but a 2000 BJS report found that 15 staff assaults occurred for every 1,000 inmates.³⁴⁰ Adding this rate to the estimated rates in the first two categories yields a total prison assault rate of 41.5%.

With this rough estimate of the total level of assault that occurs within prisons, we can infer an aggravated assault rate by using the relative frequencies of simple and aggravated assault outside of prison. The NCVS has published annual data on assault rates from 1993 to 2016,³⁴¹ and during that

336. Allison M. Schenk & William J. Fremouw, *Individual Characteristics Related to Prison Violence: A Critical Review of the Literature*, 17 *AGGRESSION & VIOLENT BEHAV.* 430, 431 (2012).

337. We can estimate that at least 300,000 assaults occurred in 2000, see James M. Byrne & Don Hummer, *Myths and Realities of Prison Violence: A Review of the Evidence*, 2 *VICTIMS & OFFENDERS* 77, 79-80 (2007), when the inmate population was 1,305,253, see JAMES J. STEPHAN & JENNIFER C. KARBERG, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, NCJ 198272, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2000, at v (2003), <https://perma.cc/54JA-VE7G>. See also Nancy Wolff et al., *Physical Violence Inside Prisons: Rates of Victimization*, 34 *CRIM. JUST. & BEHAV.* 588, 593 tbl.1 (2007) (finding that 20.5% of male inmates and 20.6% of female inmates reported being physically assaulted by other inmates in the last six months). Others have estimated a lower victimization rate of 11%, see Wooldredge & Steiner, *supra* note 277, at 537 tbl.1, but this rate counts only assaults that occurred “without physical provocation,” see *id.*, and—like the rates reported in the Wolff studies—it is confined to a six-month window, see *id.* at 534.

338. See Wolff & Shi, *supra* note 333, at 65 tbl.2 (finding that 21.1% of inmates reported being physically assaulted by staff in the last six months); Wolff et al., *supra* note 337, at 593 tbl.1 (finding that 24.6% of male inmates and 8.3% of female inmates reported being physically assaulted by staff in the last six months). As with the studies cited in note 337 above, these numbers likely provide conservative annual estimates since they are confined to six-month periods. On the other hand, it is possible that we should not include all reported instances of staff-on-inmate victimization in our prison assault rate, as we do not always classify law enforcement victimization of nonprisoners as assault (for example, in cases of forceful arrest).

339. This number is derived by multiplying 40% by the 1,330,300 state prison population reported by the BJS. See *Key Statistic: Jail Inmates*, *supra* note 2.

340. See STEPHAN & KARBERG, *supra* note 337, at v.

341. *NCVS Victimization Analysis Tool*, *supra* note 59 (to access data, click “View the live page”; then select “Quick Tables”; then download files labeled “1993-2016” under the header “Select trend period” in the row titled “Rape/sexual assault, robbery, aggravated assault, and simple assault”).

time the relative frequencies of aggravated and simple assault have been fairly constant, with aggravated assaults making up 17% to 25% of total assaults (and simple assaults constituting the remainder).³⁴² Applying the average frequency of aggravated assault over the period (22.2%)³⁴³ to our estimate of total prison assaults above yields an aggravated prison assault rate of 9.2%. Multiplying by the aggravated assault cost estimates from the studies used to establish the range of the costs of crime in Part I.A.2 above³⁴⁴ yields an average cost per inmate of \$2,328 to \$9,941 per year. After controlling for the aggravated assault rate outside of prison (430 per 100,000),³⁴⁵ the average cost of aggravated assault in prison is between \$2,219 and \$9,477 per year.

As a check on our estimated aggravated assault rate, we can look to the scarce data that attempts to offer a more granular picture of physical assault in prison. One promising source comes from recent studies by Nancy Wolff, who has surveyed thousands of state prison inmates in order to gain detailed information on physical and sexual assault.³⁴⁶ In breaking down victimizations by type, Wolff asked inmates to report “the most bothersome incidents of physical and sexual victimizations” that they had suffered in the past six months.³⁴⁷ Of the 6,964 respondents, roughly 12.6% reported that their most bothersome incident involved being threatened or harmed with a knife or shank by either another inmate or a staff member.³⁴⁸ This description seems at least to approximate the UCR’s definition of aggravated assault, although it is hard to say whether each incident reported would in fact be classified as such. Furthermore, Wolff’s studies are limited to prisons within a single state,³⁴⁹ so their results may not be generalizable. Wolff’s work nevertheless suggests that the estimate of 9.2% derived above is within the right order of magnitude (and may even be too conservative).

342. *See id.*

343. *See id.*

344. For the methodology of calculating the ranges, see notes 96-97 above. Here the low estimate for aggravated assault is \$25,277, and the high estimate is \$107,947.

345. *See supra* note 307.

346. *See* Wolff & Shi, *supra* note 333, at 59.

347. *Id.* at 64.

348. *See id.* at 65 tbl.2.

349. *Id.* at 59; *see also* Wolff et al., *supra* note 337, at 590; Nancy Wolff & Jing Shi, *Type, Source, and Patterns of Physical Victimization: A Comparison of Male and Female Inmates*, 89 PRISON J. 172, 174 (2009).

B. Measuring the Impact

Armed with the estimates above, we can assess the impact that prison crime has on analyses of the economics of incarceration. By summing the low and high cost estimates for murder, rape, and aggravated assault, we arrive at an average annual cost of prison crime between \$6,140 and \$22,510 (or between \$5,783 and \$21,075 when controlling for victimization outside of prison). The magnitude of this range is significant, as the inclusion of prison crime increases our estimates of the total costs of incarceration by as much as 40%.³⁵⁰ The costs of prison crime are also on par with per-inmate government prison expenditures in multiple states.³⁵¹ It is, furthermore, only a partial measure of the costs of prison crime, as it excludes robbery, burglary, and larceny, all of which occur with significant frequency behind bars.³⁵²

To illustrate more clearly the impact that prison crime has on our economic analyses, we can rerun several of the applications discussed in Part II above. Beginning with the population-level analyses from Part II.A, Table 3 below repeats the net benefit calculations from Table 1, but with the low and high estimates of prison crime costs added to the costs of incarceration. Table 4 then measures the impact that prison crime has on our net benefit calculations by comparing the results in Table 3 to the results in Table 1. As Table 4 demonstrates, even adding our low estimate for the average cost of prison crime (\$6,140) causes the net annual benefit of increasing the incarceration rate to drop by between \$400 million and \$1.3 billion, depending on the magnitude of the increase. And adding our high estimate of the average cost of prison crime (\$22,510) causes the net annual benefit to drop by between \$1.5 and \$4.5 billion.

350. See *supra* Part I.B.2 (finding that the total cost of incarcerating the marginal prisoner falls somewhere between \$54,000 and \$98,000 per year).

351. Examples include Alabama (\$14,780), Arkansas (\$20,915), Florida (\$19,069), Georgia (\$19,977), Idaho (\$22,182), Indiana (\$18,065), Kentucky (\$16,681), Louisiana (\$16,251), Missouri (\$22,187), Nevada (\$17,851), Oklahoma (\$16,497), South Carolina (\$20,053), South Dakota (\$20,748), Texas (\$22,012), Utah (\$22,119), and Virginia (\$21,299). See MAI & SUBRAMANIAN, *supra* note 102, at 8 tbl.1.

352. See Karen F. Lahm, *Physical and Property Victimization Behind Bars: A Multilevel Examination*, 53 INT'L J. OFFENDER THERAPY & COMP. CRIMINOLOGY 348, 354 tbl.1 (2009) (finding higher rates of property victimization in prison than physical victimization); Wolff & Shi, *supra* note 349, at 183 (finding that theft was "the most common type of physical victimization for both male and female inmates"); John D. Wooldredge, *Inmate Lifestyles and Opportunities for Victimization*, 35 J. RES. CRIME & DELINQ. 480, 488-89 (1998) (finding that theft occurred more frequently in prison than assault).

Table 3
Net Annual Benefit of Changing the Incarceration Rate³⁵³

Prison Crime Costs	Marginal Costs	CPC	Change in Incarceration Rate		
			5%	10%	15%
Low	High	Low	(\$6,164,447,729)	(\$12,328,895,458)	(\$18,493,343,187)
	Low	Low	(\$3,237,787,729)	(\$6,475,575,458)	(\$9,713,363,187)
	High	High	\$13,154,215,358	\$26,308,430,716	\$39,462,646,074
	Low	High	\$16,080,875,358	\$32,161,750,716	\$48,242,626,074
High	High	Low	(\$7,253,293,323)	(\$14,506,586,645)	(\$21,759,879,968)
	Low	Low	(\$4,326,633,323)	(\$8,653,266,645)	(\$12,979,899,968)
	High	High	\$12,065,369,764	\$24,130,739,529	\$36,196,109,293
	Low	High	\$14,992,029,764	\$29,984,059,529	\$44,976,089,293

Table 4
Net Annual Benefit of Changing the Incarceration Rate—Change from Table 1

Prison Crime Costs	Marginal Costs	CPC	Change in Incarceration Rate		
			5%	10%	15%
Low	High	Low	(\$408,376,054)	(\$816,752,108)	(\$1,225,128,162)
	Low	Low	(\$408,376,054)	(\$816,752,108)	(\$1,225,128,162)
	High	High	(\$408,376,054)	(\$816,752,108)	(\$1,225,128,162)
	Low	High	(\$408,376,054)	(\$816,752,108)	(\$1,225,128,162)
High	High	Low	(\$1,497,221,647)	(\$2,994,443,295)	(\$4,491,664,942)
	Low	Low	(\$1,497,221,647)	(\$2,994,443,295)	(\$4,491,664,942)
	High	High	(\$1,497,221,647)	(\$2,994,443,295)	(\$4,491,664,942)
	Low	High	(\$1,497,221,647)	(\$2,994,443,295)	(\$4,491,664,942)

Similarly, Table 5 below repeats the optimal incarceration rate calculations from Table 2 above, with the same low and high estimates of prison crime costs added to the costs of incarceration. Table 6 measures the impact that prison crime has on these calculations by comparing the results in Table 5 to the results in Table 2. For example, adding our low estimate for the average

353. Net costs in Tables 3 and 4 are represented by dollar amounts in parentheses.

cost of prison crime (\$6,140) causes the optimal incarceration rate to drop by roughly 10,000 when the elasticity is -0.10 , the marginal costs of incarceration are high (\$98,000), and the cost of a single prevented crime is low (\$5,432). By contrast, adding our high estimate for the average cost of prison crime (\$22,510) causes the optimal incarceration rate to drop by roughly 500,000 when the elasticity is -0.30 , the marginal costs of incarceration are low (\$54,000), and the cost of a prevented crime is high (\$28,613).

Table 5
The “Optimal” Incarceration Rate

Prison Crime Costs	Marginal Costs	CPC	Elasticity		
			-0.10	-0.30	-0.50
Low	High	Low	159,307	519,565	861,177
	Low	Low	273,681	844,038	1,287,911
	High	High	801,947	1,976,656	2,361,635
	Low	High	1,335,143	2,736,363	2,853,897
High	High	Low	137,871	454,553	766,668
	Low	Low	215,989	684,904	1,087,435
	High	High	698,209	1,791,598	2,219,221
	Low	High	1,070,373	2,394,037	2,648,507

Table 6
The “Optimal” Incarceration Rate—Change from Table 2

Prison Crime Costs	Marginal Costs	CPC	Elasticity		
			-0.10	-0.30	-0.50
Low	High	Low	-9,865	-29,450	-41,746
	Low	Low	-30,470	-80,572	-95,666
	High	High	-47,325	-79,662	-58,242
	Low	High	-136,534	-155,066	-85,493
High	High	Low	-31,301	-94,462	-136,255
	Low	Low	-88,162	-239,706	-296,142
	High	High	-151,064	-264,720	-200,656
	Low	High	-401,305	-497,392	-290,882

As these calculations make clear, the inclusion of prison crime has an enormous effect on our population-level analyses. In the case of Tables 3 and 4, accounting for prison crime causes the net benefits of incarceration to decrease by hundreds of millions or billions of dollars annually. And in the case of Tables 5 and 6, the inclusion of prison crime causes the optimal incarceration rate to drop by tens of thousands or hundreds of thousands of inmates. These results hold true regardless of the assumptions we make about the cost of prison crime, the costs and benefits of incarceration, and the elasticity of crime with respect to incarceration.

The importance of accounting for prison crime becomes even starker when we look to the other population-level analyses discussed in Part II.A above. The report published by the CEA, for example, found that increasing the incarceration rate by 265,000 inmates would yield a net annual benefit between $-\$8$ and $\$1$ billion, which suggested that such a policy “fail[s] a cost-benefit test,” but left open the possibility that the benefits would exceed the costs.³⁵⁴ Accounting for prison crime forecloses that possibility by adding another $\$1.6$ to $\$6.0$ billion in annual costs.³⁵⁵

Similarly, for the Oregon CJC’s analysis of increasing the incarceration rate, the inclusion of prison crime causes the benefit-to-cost ratio to switch from positive to negative. As discussed in Part II.A above, the CJC found as of 2005 that investing a dollar in increased incarceration yielded $\$1.03$ in benefits of avoided crime.³⁵⁶ This finding meant that such an investment was slightly cost effective, but nevertheless prompted the CJC to call for additional “research . . . to compare the cost effectiveness of different policies to reduce crime.”³⁵⁷ Adding the costs of prison crime causes the return on a dollar to drop from $\$1.03$ to between $\$0.78$ and $\$0.95$,³⁵⁸ thereby rendering any such investment cost ineffective. For the WSIPP analysis as well,³⁵⁹ although

354. See *supra* text accompanying notes 142-46.

355. The low and high cost estimates of the costs of prison crime are $\$6,140$ and $\$22,510$, respectively. As the CEA’s estimates are already calculated in 2015 dollars, see COUNCIL OF ECON. ADVISORS, *supra* note 142, at 10 n.5, there is no need to adjust for inflation.

356. See *supra* text accompanying notes 150-51.

357. CRIMINAL JUSTICE COMM’N, *supra* note 149, at 12.

358. These numbers are calculated by adding the low and high estimates of the costs of prison crime to the costs of incarceration described by the CJC, see *id.* at 43, which in turn are adjusted for inflation, see *supra* note 96.

359. WASH. STATE INST. FOR PUB. POLICY, *supra* note 149, at 8 tbl.3.

accounting for prison crime does not have a sign-changing effect, it does cause the benefit-to-cost ratio of incarceration to fall, with decreases between 7% and 21%.³⁶⁰

Accounting for prison crime also has a substantial effect on the policy-level applications discussed in Part II.B above. While it is not possible to rerun all the analyses discussed due to limited data availability, some are easily replicable. In the case of North Carolina's proposal to increase the age of juvenile jurisdiction, for example,³⁶¹ accounting for prison crime causes the program's net benefits to increase from \$52 million³⁶² to between \$58 and \$76 million.³⁶³ Similarly, the economics of Washington's earned release program³⁶⁴ improve significantly, with net benefits per participant increasing from \$7,179 (with a benefit-to-cost ratio of 1.88)³⁶⁵ to between \$8,324 and \$11,353 (with a benefit-to-cost ratio between 2.02 and 2.39).³⁶⁶ And most notably, for the comprehensive reform legislation evaluated by the Illinois SPAC,³⁶⁷ the net three-year benefits of decreasing the prison population by 7,900 inmates annually jump from a range of \$362 to \$405 million³⁶⁸ to a range of \$491 to \$876 million.³⁶⁹

360. These numbers are calculated by adding the low and high estimates of the costs of prison crime to the costs of incarceration described by the WSIPP, *see id.* at 8 tbl.3, which in turn are adjusted for inflation, *see supra* note 96.

361. *See supra* text accompanying notes 157-58.

362. *See* HENRICHSON & LEVSHIN, *supra* note 157, at iii (not adjusted for inflation).

363. This calculation assumes low and high costs of prison crime of \$5,783 and \$21,075, respectively, which are the estimates when controlling for victimization outside of prison. These estimates are deflated and converted into daily costs, which in turn are used to adjust the daily costs of prison and jail that are avoided by redirecting youths to the juvenile system and by reducing recidivism. *See id.* at 11, 17-19. Victimization rates are assumed to be the same in prisons and jails.

364. *See supra* text accompanying notes 159-61.

365. DRAKE ET AL., *supra* note 159, at 9.

366. This calculation assumes low and high costs of prison crime of \$5,783 and \$21,075, respectively, which are the estimates when controlling for victimization outside of prison. These estimates are deflated and converted into daily costs, which in turn are used to adjust the daily prison costs found by the WSIPP. *See id.* at 8 n.30. All "[p]rison costs saved from reduced length of stay" are adjusted to account for prison crime, as are half of the "[f]uture taxpayer costs avoided." *See id.* at 8-9, 9 exhibit 3; *see also* WASH. STATE INST. FOR PUB. POLICY, *supra* note 149, at 4 fig.3 (illustrating that roughly half of taxpayer costs are spent on state and local sanctions).

367. *See supra* text accompanying notes 162-65.

368. ILL. SENTENCING POLICY ADVISORY COUNCIL, *supra* note 163, at 1 (not adjusted for inflation).

369. This calculation assumes low and high costs of prison crime of \$5,783 and \$21,075, respectively, which are the estimates when controlling for victimization outside of prison. The net three-year benefits are converted to present value using a 3% discount rate.

These examples only begin to illustrate the effect that prison crime has on our economic analyses. For policy applications at all levels—whether they are evaluating changes to the incarceration rate or assessing recidivism-reduction strategies—it is essential to account for the costs of victimization suffered behind bars. Failing to do so will lead to significantly distorted results, and it may even make the difference between a determination that a proposed law or program is cost effective and a determination that it is not.

Conclusion

Mass incarceration is one of the defining social phenomena of our generation. Whether viewed from the perspective of racial inequality, human rights, or public health, the United States's unparalleled reliance on prisons and jails has had significant ramifications that will continue to be felt for generations.³⁷⁰ The economic perspective is no different in this regard, as the recent spike in the nation's correctional population has produced myriad quantifiable benefits and costs.³⁷¹ While these values can give us only a partial understanding of the merits and demerits of our carceral policy, economic analyses of incarceration nevertheless provide important information for lawmakers and reformers.³⁷²

In order for these analyses to be useful, however, they must include all relevant costs and benefits. The empirical literature on incarceration, and the policy applications that rely on this literature, both fail in this regard, as they almost universally overlook crime that occurs inside prisons and jails. As this Article has demonstrated, the exclusion of prison crime is unjustified, and its impact is significant, as it substantially distorts our assessment of proposed reforms. It is imperative that future research and policy efforts account for prison crime when evaluating the economics of incarceration.

370. See Angela Carter & Bill McCarthy, *Reducing the Effects of Incarceration on Children and Families*, CTR. FOR POVERTY RES., <https://perma.cc/E94F-6Z5B> (archived Nov. 22, 2018); Jeremy Travis, President, John Jay Coll. of Criminal Justice, City Univ. of N.Y., Lecture at the Ctr. for the Study of Race Relations, Levin Coll. of Law, Univ. of Fla., *What About the Children?: Assessing the Ripple Effects of Mass Incarceration* (Mar. 25, 2015), <https://perma.cc/WGQ8-Z7RD>.

371. See *supra* Part I.

372. See *supra* notes 13-14 and accompanying text.

Appendix

The optimal level of incarceration is defined as the level at which the marginal benefits of incarceration (MB) are equal to the marginal costs (MC). The marginal benefits of incarceration are, in turn, a function of the prison population (P), the elasticity of crime with respect to incarceration (E), the level of crime (C), and the costs of a single prevented crime (CPC). Formulaically, the benefits of incarcerating the marginal prisoner can be described as follows:

$$MB = (1 / P) * E * C * CPC. \quad (1)$$

At current levels of incarceration and crime (P_{curr} and C_{curr} , respectively), the marginal benefits of incarceration (MB_{curr}) are:

$$MB_{curr} = (1 / P_{curr}) * E * C_{curr} * CPC. \quad (2)$$

And at optimal levels of incarceration and crime (P_{opt} and C_{opt} , respectively), the marginal benefits of incarceration (MB_{opt}) are:

$$MB_{opt} = (1 / P_{opt}) * E * C_{opt} * CPC. \quad (3)$$

Since marginal costs (MC_{opt}) are equal to marginal benefits when the level of incarceration is optimal, we can substitute MC_{opt} for MB_{opt} :

$$MC_{opt} = (1 / P_{opt}) * E * C_{opt} * CPC. \quad (4)$$

Furthermore, given that the optimal level of crime is just a function of the current level of crime, the current level of incarceration, the optimal level of incarceration, and the elasticity of crime with respect to incarceration, we can recalculate C_{opt} in terms of C_{curr} , P_{curr} , P_{opt} , and E , such that:

$$C_{opt} = C_{curr} * (1 + ((P_{opt} / P_{curr}) - 1) * E). \quad (5)$$

Plugging in the right-hand side of equation (5) for C_{opt} in equation (4), and solving for the optimal level of incarceration, gives us the following³⁷³:

$$P_{opt} = (CPC * C_{curr} * (E - E^2)) / (MC_{opt} - E^2 * CPC * (C_{curr} / P_{curr})). \quad (6)$$

373. The approach here is inspired by John Donohue, *see* Donohue, *supra* note 22, at 304-05, but all derivations and calculations are the original work of the author.