

Inside the Box: Safety, Health, and Isolation in Prison

Bruce Western

Incarceration is part of the scholarly analysis of crime and inequality, but penal institutions largely remain a black box. Incarceration is often treated as a warehouse that removes people from society, or a diploma mill that confers the negative credential of a prison record. Unlike research on other institutional settings, like schools or hospitals, what happens inside prisons and jails does not figure greatly in the analysis of their effects. This essay will seek to look inside the black box and examine social dynamics inside prisons. What happens inside prisons and jails matters, because of the extreme scale of incarceration and the harsh conditions of penal confinement in the United States.

F1 The term mass incarceration has come to refer to the exceptional scale of the US prison population (Garland 2001). Three empirical markers shown in Figure 1 describe mass incarceration. First, the rate of imprisonment in the United States increased from 93 per 100,000 in 1972 to its peak of 506 in 2007 (Panel A). Despite a decline in the last decade, the US imprisonment rate in 2018 was about four times higher than its general level during the twentieth century. Second, the US incarceration rate is about six times higher than is common in the nations of western Europe (Panel B). Indeed, the United States has the highest incarceration rate in the world (Walmsley 2019). Third, incarceration has become pervasive for Black men with no more than a high school education. Compare the cumulative risk of ever having been to prison up to age 35 for men born in 1945–1949 and three

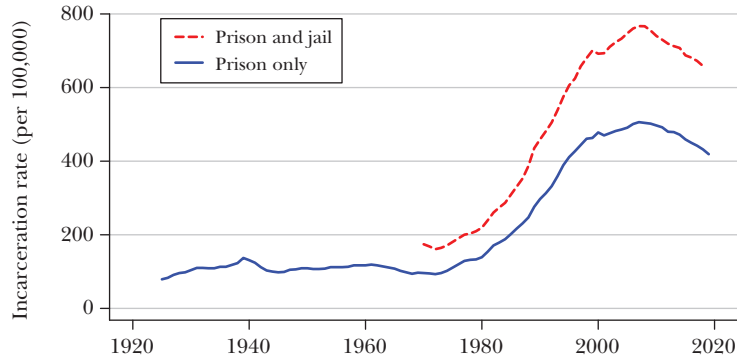
■ *Bruce Western is the Bryce Professor of Sociology and Social Justice and Co-Director of the Justice Lab, both at Columbia University, New York City, New York. His email address is bruce.western@columbia.edu.*

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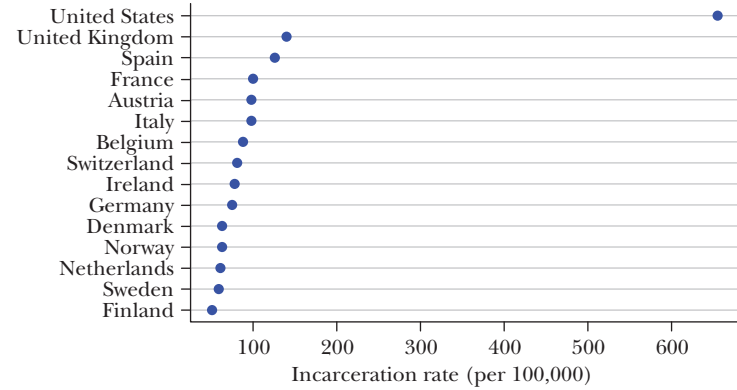
Figure 1

Mass Incarceration in Three Figures

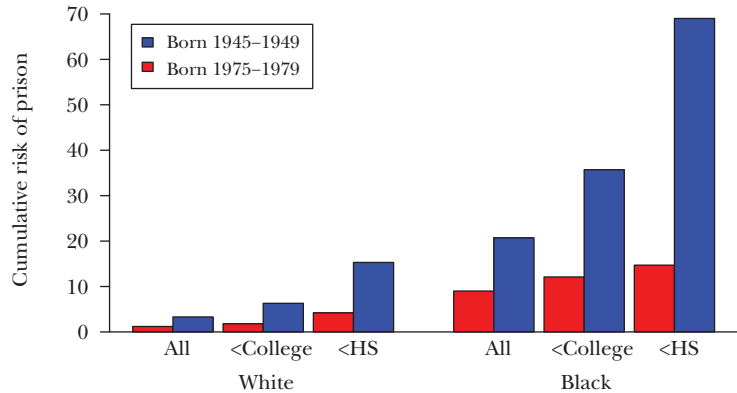
A: US incarceration, 1925–2018



B: Incarceration rates in 15 countries



C: Men's cumulative imprisonment risk, by cohort



Source: See Data Appendix

Note: Panel A shows the US imprisonment rate (1925–2018) and prison and jail incarceration rate (1972–2018); Panel B shows the incarceration rates in the United States and selected nations of western Europe; and Panel C shows the percentage of men who have ever been in prison by 1979 for those born 1945–1949, and by 2009 for those born 1975–1979, by race and education, including all men, those without college education, and those with less than twelve years of completed schooling.

decades later from 1975 to 1979 (Panel C). The prevalence of incarceration is about five to seven times higher for Black men compared to Whites and is concentrated in the non-college fraction of the population. The prevalence of imprisonment also increased from the older generation to the younger: nearly 70 percent of Black men in the younger cohort who had not completed high school had been imprisoned by their mid-30s. The growth in incarceration resulted primarily from policy changes that imposed mandatory and longer prison sentences for a wide variety of offenses (Neal and Rick 2014; Travis, Western, and Redburn 2014; Raphael and Stoll 2013a).

Researchers have tried to understand the significance of mass incarceration by studying its effects. One line of work studied the effect of incarceration on crime: for reviews, useful starting points include Donohue (2009) and Durlauf and Nagin (2011). The crime-reducing effects of incarceration are often thought to operate through two channels: deterrence and incapacitation (for example, Bushway and Paternoster 2009). Incarceration deters those coming out of prison from recidivism, and the threat of prison deters would-be offenders. Incapacitation, on the other hand, removes people from society who would otherwise commit crime. Empirical studies of the effects of incarceration on crime have examined variation across states and micro-data on individual defendants, often exploiting changes in penal policy to isolate exogenous shifts in incarceration (Levitt 1996; Helland and Tabarrok 2007; Lofstrom and Raphael 2016). In the 1970s and 1980s, rising incarceration was associated with reductions in crime, but the crime-reducing effect of incarceration declined with scale. By the 1990s and 2000s, increases in a high level of incarceration had little effect on reducing violent crime. Of the more recent effect that is estimated, much of it appears to be due to incapacitation (Raphael and Stoll 2013a).

A second line of research examined the effects of incarceration on social and economic inequality, focusing on labor markets, health, and families and children (Neal and Rick 2014; Wakefield and Wildeman 2013; Western 2006; Pager 2003). In the labor market, incarceration is thought to reduce future employment and earnings by reducing work experience and creating the stigma of a prison record. Analysis of survey data on labor market effects often finds negative effects of incarceration (Grogger 1995; Apel and Sweeten 2010); however, null effects are often reported from natural experiments that exploit the random assignment of judges who vary in the severity of their sentences (Kling 2006; Harding et al. 2018). Despite mixed results, labor market research consistently finds that employers are reluctant to hire job seekers with criminal records, and levels of earnings after incarceration are extremely low (Pager 2003; Kling 2006; Dobbie, Goldin, and Yang 2018). Health studies report high risks of mortality immediately after release, related to drug overdose, as well as elevated levels of depression and other mood disorders (Binswanger et al. 2013; Schnittker, Massoglia, and Uggen 2012). Studies of families and children find that couples are more likely to divorce or separate during incarceration (Lopoo and Western 2005). Children whose fathers were incarcerated are at high risk of school suspension, health problems, homelessness, and perhaps criminal involvement (Turney and Goodsell 2018; Dobbie et al. 2019; cf. Norris, Pecenco, and Weaver 2021). Although causal inference is elusive in observational studies,

incarceration has clearly become prevalent in low-income communities of color and is closely associated with poor adult health and life adversity among children.

This paper thinks about the significance of mass incarceration in a third way that focuses on the exceptionalism of US penal institutions. The sociologist, Erving Goffman (1961, p. xiii) called the prison a “total institution,” “a place of residence and work where a large number of like-situated individuals, cut off from the wider society . . . lead an enclosed, formally administered round of life.” Prisons in this sense are like boarding schools, orphanages, or mental hospitals. However, prisons are for punishment, which provides few incentives to maintain or improve the welfare of incarcerated people. Incarcerated people also have few avenues within prisons or through the courts for self-protection against harmful conditions that go beyond the deprivation of liberty for which the law provides.

I examine four topics that shed light on the experience of imprisonment and help to illustrate the larger significance of mass incarceration. I first describe how increased incarceration accompanied prison overcrowding and reductions in rehabilitative programming. Next, I consider research on violence in prison and the safety of prisons compared to communities. I then discuss the health problems of incarcerated people and the risks of mortality and infectious disease in prisons. Finally, I examine the extreme isolation of solitary confinement.

Focusing on what happens inside prisons influences how we understand its effects, its costs, and its moral status. Violent victimization, impaired health, and the trauma of solitary confinement illuminate mechanisms by which incarceration may impair adjustment to community life. By examining the welfare of incarcerated people, we obtain a more complete accounting of costs and benefits, including the violent victimization of people in prison that is usually ignored in assessments of incarceration’s effect on crime. Studying the harms that are suffered in incarceration raises the question of whether prisons are meeting a moral standard of dignified treatment and human respect.

The Retreat from Rehabilitation

US prisons of the early nineteenth century were conceived as being on the cutting edge of social reform, with the stated purpose being for the correction of people convicted of crimes (Rothman 2002a). Facing a post-colonial society undergoing rapid social change, social reformers of the Jacksonian period traced crime to the crumbling authority of the family and the church and an escalating depravity in social life. The prison sought to answer the moral decline that nourished crime with “doctrines of separation, obedience, and labor [that] became the trinity around which officials organized the penitentiary” (Rothman 2002a, p. 105). Work and strict discipline, often under conditions of silence and isolation, formed the routine of the original penitentiaries in New York and Pennsylvania of the 1820s. Conditions were harsh by modern standards, but the goal of rehabilitation was novel and more humane than the colonial penal code that prescribed whipping, stocks, or the gallows

for a wide range of offenses. By the Progressive period of the early twentieth century, newly designed prisons resembled factories and schools, reflecting the central importance of employment and education to prison reformers (Rothman 2002b).

Rehabilitative effort was concentrated in the prisons of the Northeast and the Midwest, and the philosophy gained less influence in the South. There, the social organization of slavery was imprinted upon penal practice. The emergence of convict leasing and plantation-style prisons in the South following post-Civil War Reconstruction continued the earlier historic forms of forced labor and economic exploitation (Oshinsky 1997; Perkinson 2010; Muller 2018).

Work and education programs came to be widely used in American prisons, but the project of rehabilitation was caught in a struggle between what Rothman (2002b) called “conscience and convenience.” Reformers hoped that rehabilitation would improve living standards and the quality of civic life. In practice, prison administrators had neither the policy knowledge nor the resources to help incarcerated people chart new life paths. By the post-World War II period, evaluations of rehabilitation programs often showed little success in reducing recidivism and improving welfare.

By the 1970s, a skepticism of rehabilitation converged with calls from the left to limit discretion in criminal justice decision-making (American Friends Service Committee 1971), and calls from the right to get tough on crime (Flamm 2005; Weaver 2007). In 1976, Robert Martinson and his co-authors published a comprehensive review of correctional programming that concluded that no particular kind of treatment consistently reduced recidivism (Lipton, Martinson, and Wilks 1975). Martinson went further in a *60 Minutes* interview a year later, saying that rehabilitation programs “simply have no fundamental effect on the recidivism rate of people who go through . . . the system” (as quoted in Cullen 2013, p. 327). Doubts about the effectiveness of rehabilitation were later echoed in a report by the National Research Council (Martin, Sechrest, and Redner 1981).

Statements of skepticism were soon answered with a defense of rehabilitation (Cullen 2004) and opinion among researchers began to shift once again during the 1990s. A modern theory of rehabilitation emerged that emphasized changing opportunities, behavior, and social bonds. Education and work programs, which had been staples of prison programming for a century, obtained support from a “life course” theory of crime in which stable employment provided structure and routine in daily life, and diverted workers from peers, who themselves may be involved in crime (Sampson and Laub 1990; Sampson and Laub 1993; Uggen 2000). Canadian researchers and practitioners developed a theory of rehabilitation that emphasized principles of risks, needs, and responsivity (Andrews, Bonta, and Hoge 1990; MacKenzie 2006, chapter 4). The risk principle argued that treatment should be proportional to the risk of recidivism; those who are most like to re-offend should receive the most intensive interventions. The needs principle says that programs should target known predictors of offending, including economic need and impulsive behavior. Finally, responsivity means targeting deficits that are susceptible to change. Age and gender, for example, are major risk factors for crime but they

cannot be changed by rehabilitation. Researchers have found that anti-social attitudes and criminally involved peers are predictive of crime, and these have emerged as targets for case management and behavioral health programs.

How strong is the evidence for rehabilitation programs? Gaes and his colleagues (2000, p. 361) summarized opinion among researchers: “Most correctional treatments for adult prisoners probably have modest positive effects.” Stronger effects, they say, are observed for adolescents rather than adults, and community programs yield larger effects than programs in prison. Work and education programs are often found to be associated with reduced recidivism (Bozick et al. 2018; Gaes et al. 2000). For example, the Washington State Institute for Public Policy, which regularly surveys evaluations of correctional programs, reports that basic education, post-secondary education, and correctional industries all pass a cost-benefit test, and the effects are especially large for post-secondary education (Bitney et al. 2017).

Although research opinion rallied behind rehabilitation, the field offers few well-powered randomized trials. One of the few randomized experiments that includes educational programming in prison, the Milwaukee Safe Street Prisoner Release Initiative, provided a package of services that also included cognitive behavioral therapy, drug and alcohol treatment, case management, and post-incarceration support. One year after prison release, re-arrest rates for the 106 men in the treatment group were lower (63 versus 72 percent) than for the 130 men in the control group, but employment outcomes were similar for treatment and control subjects (Cook et al. 2015). Behavioral interventions, such as cognitive behavioral therapy or motivational interviewing, are also often found to be associated with reduced recidivism. The CrimeSolutions website of the US Department of Justice, for example, classifies both kinds of interventions as “Promising,” meaning they are supported by “moderate quality evidence with statistically significant average effect sizes” (Office of Justice Programs 2021).

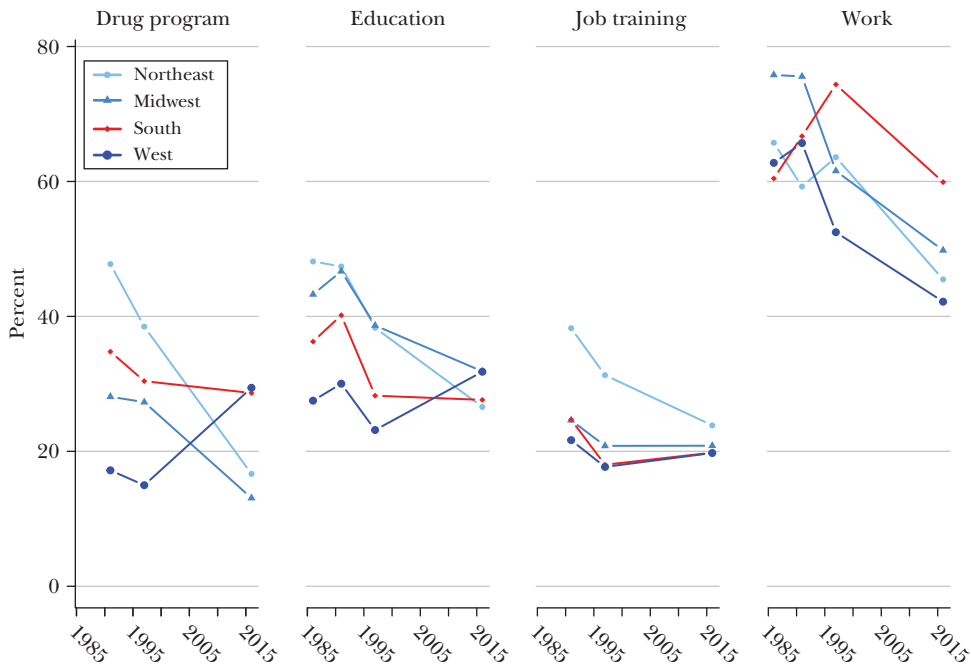
In an area of evaluation that often struggles with program fidelity and research design, the case for rehabilitation has been buttressed by meta-analysis that pools together large numbers of (often imperfectly designed) studies. Meta-analysis consistently finds that deterrence is less effective than rehabilitation at reducing recidivism: “Interventions that are punitive—that emphasize deterrence, discipline, or surveillance—have weak . . . effects on recidivism” (Cullen 2017, p. 248).

Despite the shifting weight of the evidence, policymakers of the 1980s and 1990s largely rejected rehabilitation and adopted incapacitation and deterrence as the main goals of penal policy. The Survey of Inmates of State Correctional Facilities (renamed the Survey of Prison Inmates in 2016) periodically interviews respondents in state prison. Figure 2 shows participation rates in drug programs, education, job training, and work assignments reported in the survey from 1986 to 2016 across regions of the country. Program participation tends to be highest in the Northeast and lower in the South and the West. The figure shows broad reductions in program participation in US prisons across the country and across program areas. Participation in drug treatment programs in the Northeast and the Midwest fell from highs of 30 to 50 percent in the 1980s to below 20 percent by

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Figure 2

Enrollment in Drug, Education, Job Training Programs, and Work Assignment, State Prisoners, by Region



AQ1 Source: Authors calculations from the Survey of Inmates of States Correctional Facilities (1986, 1991, 1997, 2004) and the Survey of Prison Inmates (2016)

2016. Educational programming was also reduced in all regions except the west. Job training became less common. Participation in work assignments also fell across the country. Although participation could be explained by the availability of programs or enrollment given availability, the trends are consistent with other evidence of reduced opportunities for academic education and work release employment in American prisons (Phelps 2011; Jung 2014, p. 385).

Declines in program participation and the turn away from rehabilitation had implications for life inside prisons. Rehabilitation has a symbolic component, signaling society's commitment to compassion and an individual's capacity for change. Rehabilitation announces that we are "a civilized nation . . . we are capable of turning our collective cheek in hopes of effecting redemption" (Cullen 2013, p. 308). If we do not help incarcerated people reform their lives, what would our prisons look like then?

The retreat from rehabilitation was accompanied by other changes in the internal dynamics of penal institutions. As the goals of imprisonment shifted to incapacitation and deterrence, prison populations grew rapidly in the 1980s and

1990s and overcrowding added to the harshness of prison conditions. Overcrowding has been a longstanding focal point of litigation for US prisons (Levitt 1996; Simon 2014; Guetzkow and Schoon 2015). A series of lawsuits in California revealed the effects of overcrowding on the delivery of health care and prison safety. At its peak in 2007, California accounted for 13 percent of all state-level prisoners nationwide and the system had regularly operated at 150 percent or more of its designed capacity at least since the 1980s. California prisons were so overcrowded in the early 2000s that gymnasiums were converted into housing units and triple-bunking was used in some facilities. To describe the conditions of incarceration, Simon (2014, p. 117) quoted from a federal court opinion following Governor Arnold Schwarzenegger's State of Emergency proclamation on prison overcrowding in 2006:

The risks enumerated by the Governor in his Proclamation include “increased, substantial risk for transmission of infectious illness”; security risks caused by line-of-sight problems for correctional officers, particularly in areas where inmates are triple-bunked and in “tight quarters”; and “thousands of gallons of sewage spills and environmental contamination” from overloading the prisons’ sewage and wastewater systems . . . Governor Schwarzenegger also declared that the suicide rate in the 29 severely overcrowded prisons “[was] approaching an average of one per week.”

Health care failures due to overcrowding ultimately caused a panel of federal judges to rule that the entire California state prison system of more than 150,000 incarcerated people was unconstitutional, in violation of the Eighth Amendment prohibition against cruel and unusual punishment.

Prison releases in the context of overcrowding litigation have been used by researchers as sources of exogenous variation that can identify incarceration's effect on crime (Levitt 1996; Lofstrom and Raphael 2016; Sundt, Salisbury, and Harmon 2016). Our current focus on prison conditions raises the question of whether overcrowding may have harmed the people who were released. Because health care, programming, and safety are all diminished by overcrowding, the effect of releases linked to overcrowding lawsuits may be different from, say, the effects of changes in incarceration produced by sentencing reform. The harm suffered by men and women in overcrowded California prisons may impair adjustment after incarceration and perhaps ultimately threaten public safety. The empirical evidence shows that crime did not increase greatly following court-ordered releases in California (Lofstrom and Raphael 2016), suggesting that the while the post-rehabilitative prison may be seriously harmful, it is not necessarily criminogenic.

Safety and Victimization

In the period of rapid growth in incarceration when overcrowding became persistent for many states, researchers often described prisons as warehouses,

operating chiefly as storage units for prime-age men of color from poor communities (Lynch 2009; Phelps 2011). The loss of programs and ensuing idleness, overcrowding, and the influx of new and younger prisoners have all been associated with violence in prison. How violent are prisons, and have they become more violent as the incarceration rate has grown?

Violence and the fear of violence casts a broad shadow over prison life. Violent victimization in prison includes threats, assaults, rapes and other sexual assaults, and homicide (Bowker 1980). The classic prison field study, *The Society of Captives* by Gresham Sykes (1958), described the loss of security as one of five “pains of imprisonment.”¹ The penologist Hans Toch (1977) found safety of the prison environment to be among the most important concerns of incarcerated people. Many studies using a wide variety of data consistently find higher levels of violence in prison than in the general population (Bottoms 1999). As a form of violent self-harm, suicide rates are also higher in incarceration than in the general population. Alison Liebling (1999, p. 341) writes that “fear, anxiety, loneliness, trauma, depression, injustice, powerlessness, violence, rejection, and uncertainty are part of the experience of prison” in which “suicide is perhaps its most dramatic outcome.” Violent victimization and a fear of violence can lead to social withdrawal, hypervigilance, a tough exterior, and flat affect as incarcerated people try to avoid conflict (Haney 2006, pp. 172–73). Victimization during incarceration is also associated with later drug use, emotional distress, depression, and criminal offending (Wooldredge 1999; Zweig et al. 2015; Hochstetler, Murphy, and Simons 2004).

Violence in prison has been measured both by official statistics and by surveys of self-reported offending and victimization. Prison rules prohibit assaults, fighting, violent threats, and the possession of weapons. Prison staff can bring charges and write tickets for misconduct, similar to police in community settings. Like community arrest records, prison records on misconduct underestimate violence. Violence often goes undetected by staff, incarcerated people are reluctant to report violence to authorities, and staff have wide discretion in responding to the violence they do encounter. Self-report data in prison indicate that violent victimization and patterns of repeated victimization are more common than official infractions (Cooley 1993; Bottoms 1999, p. 222). Still, self-reports in prison may also underestimate victimization. In my own fieldwork, formerly incarcerated survey respondents spoke more readily about violence in prison after they were released than while incarcerated. Where victimization elicits shame or embarrassment, as it may in the congressionally mandated surveys of prison rape and other sexual violence, underreporting is also likely.

One indication of the scale of violence in US prisons is provided by data on homicide victimization. Similar to community trends, the prison homicide rate has declined significantly from the 1980s to the late 2010s. In 1980, the homicide rate in state prison was 54 per 100,000 compared to 10.2 per 100,000 in the US population.

¹The four others were the loss of liberty, desirable goods and services, heterosexual relationships, and autonomy.

The prison homicide rate fell steadily to a rate of 3 per 100,000 in 2001 but has since increased to 8 per 100,000 in 2016 (Mumola 2005; Carson and Cowhig 2020).

Because offending and victimization varies by age, race, and gender, the relative risk can be obtained by comparing men's age-specific homicide rates in prison to general-population homicide rates calculated from Vital Statistics, adjusting for racial composition. The adjustment takes an average of race-specific homicide rates weighted in proportion to the racial composition of the prison population.² Adjusting for racial composition accounts for the over-representation of Black and Latino men in prison whose victimization rates in the general population are relatively high. As shown in Table 1, men under 35 years old face significantly lower rates of homicide victimization in prison than in the general population (Table 1). Unusually compared to community patterns, the prison victimization risk increases with age over age 45 (about one-third of the prison population). For older prisoners over age 55, the homicide victimization rate is equal to the rate in free society.

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There is less lethal violence in incarceration than in the general population in part because of the absence of firearms in prison. Correctional officers working their usual shifts in housing units, dining halls, and recreation areas do not carry guns and gun deaths in prison are rare. In the community, on the other hand, guns account for nearly 90 percent of all homicides. We can adjust for the lethality of firearms by re-calculating population homicide rates, counting only non-firearm deaths. The homicide rate in prison is two to three times higher than the non-firearm homicide rate in the general population, reflecting the high level of manual violence in prison. The total age-race-adjusted rate for non-firearm homicides in the community is about half the prison homicide rate (as shown in Table 1, 3.5 in the population compared to 6.6 per 100,000 in prison).

The last two columns of Table 1 examine non-lethal violence in prisons by comparing prison infractions to self-reported victimization in the community. Data on prison infractions are taken from the Survey of Prison Inmates (2016), in which respondents were asked if they were written up for assaulting an officer or another inmate in the last 12 months. Figures on violent victimization in the community were calculated from the National Crime Victimization Survey (2016) that asked respondents whether they had been attacked or threatened in the last 12 months. Similar to the homicide analysis, the community victimization rates are weighted by the racial composition of the prison population. Prison infractions and victimization rates measure different things, but both indicate levels of violence. The infraction rate certainly underestimates the level of violent offending. The victimization rate is a more direct measure of harm and includes incidents that are unreported to the authorities. The infraction rate and the victimization rate are both age-graded.

AQ2

²For age groups $a = 18-24, 25-34, \dots, 55-85$ and race groups $r = B, W, L$ (for Blacks, Whites, and Latinos), we have prison population shares p_a and p_r , and race-age-specific homicide rates in prison, h_{ra}^P , and in the general community, h_{ra}^C . At age a , the prison race-adjusted homicide rate is given by $h_a^P = \sum_r p_r h_{ra}^P$ and the community race-adjusted homicide rate is $h_a^C = \sum_r p_r h_{ra}^C$, reflecting the race distribution of the prison population. The total age-adjusted homicide rate in the community is given by $h_a^C = \sum_p p_a h_a^C$, reflecting the age distribution in prison.

Table 1
Violence and Victimization in Prison

<i>Age group</i>	<i>Homicide victimization rate</i>				
	<i>Deaths in prison</i>	<i>All deaths in the population</i>	<i>Non-firearm deaths in the population</i>	<i>Assault infractions in prison</i>	<i>Violent victimization in the population</i>
Total	6.6	26.4	3.5	56.4	9.9
18–24	6.1	35.7	2.6	128.6	13.9
25–34	5.5	37.5	3.5	74.9	10.6
35–44	6.9	24.9	4.2	45.2	8.5
45–54	6.9	12.6	3.1	29.5	8.7
55 or older	8.7	8.5	3.8	20.4	6.2

AQ3

Source: Author's calculations. Prison homicide rates are estimated from BJS (2020) and population homicide rates are calculated from CDC vital statistics. Infraction rates for assault in prison are estimated from the Survey of Prison Inmates (2016). Violent victimization rates are estimated with the National Crime Victimization Survey (2016).

Note: Men's rates of homicide victimization are expressed per 100,000. Enforcement actions for violence in prison and violent victimization in the general population are expressed per 1,000. Prison homicide victimization rates are for 2012–2016 and population homicide rates are for 2016. Population rates are adjusted by weighting age-race-specific rates by the age and racial composition of the prison population. See text for details.

Whether in prison or not, young men are most likely to be involved in violence, either as offenders or victims. The prison infraction rate is three to eight times higher than self-reported victimization in the community crime survey. The overall age-adjusted rate for violent infractions in prison is more than five times higher than the community-based rate of violent victimization. The data indicate that assaults and fighting are significantly more common in prison than in free society, accounting for the age and racial composition of the prison population.

In a context of rising imprisonment rates through the 1980s and 1990s, advocacy organizations became more concerned about violence in prison. “Overcrowded and understaffed, filled with too many idle prisoners facing long terms of incarceration, many U.S. penal facilities are rife with extortion, violence, and other abuses,” wrote Human Rights Watch in 2001 (Mariner 2001). Their report called out the casual acceptance of rape in men's prisons on the part of correctional administrators. In 2003, Congress passed the Prison Rape Elimination Act, which started a regular data collection on the prevalence of sexual violence and initiated new anti-violence protocols for American prisons. The Bureau of Justice Statistics now fields annual surveys, but the true prevalence of sexual violence in prison is difficult to estimate. Prevalence estimates vary widely from about 1 to 20 percent depending on the reference period and the survey methods. For example, a self-administered questionnaire sent to seven prisons in the Midwest in the mid-1990s yielded a rate of coerced sexual activity during the current incarceration of 210 per 1,000 (Struckman-Johnson and Struckman-Johnson 2000). In the early 2000s, survey estimates of the six-month prevalence of nonconsensual sex acts ranged

from around 15 to 30 per 1,000 (Wolff et al. 2006). Illustrating the difficulties of measuring sexual violence in prison, self-reported victimizations in a prison survey jumped from 10,000 in 2012 to nearly 25,000 in 2015 after protocols were introduced for investigating allegations of sexual violence (Rantala 2018). Despite the great variability, even the low-prevalence estimates in prison exceed the community estimates of rape or sexual assault where the 12-month prevalence is 1 to 2 per 1,000 (Morgan and Truman 2020).

Research on violence in prison has implications for how we understand the crime-reducing effects of incarceration. Studies of incapacitation and deterrence rely on community-based measures of crime that take no account of violent victimization in prisons. Incapacitation studies treat prisons as crime-free, but the levels of assault and sexual violence in prison are significantly higher than in the community. High rates of violence inside prisons, where punishment is certainly more swift if not more certain than in the community, also appears to be inconsistent with the idea that people will be deterred from misconduct if faced with immediate disciplinary action.

Health and Health Care

As prisons grappled with escalating populations and new legislative scrutiny on problems of violence, the costs of health care in prison were climbing. California, the leader on correctional health expenditures, spent an average of \$21,847 on medical expenses per person incarcerated in state prison in 2015, compared to \$7,807 in 2001 (in 2021 dollars) (Schiff et al. 2014; Huh et al. 2017). The growth in health care costs is related to the rising real cost of health care in the economy as a whole, and also to the aging of the prison population that accompanied the increasing length of prison sentences.

Even without population aging, incarcerated people are generally in poor health and have high needs for health care. Epidemiological data indicate three areas in which incarcerated people are in worse health than the general population: chronic conditions, infectious disease, and mental illness. People in prison suffer from poor physical and mental health that is often related to persistent poverty over the life course and risky health behaviors such as needle use, heavy alcohol use, and smoking (Fazel and Baillargeon 2011). Rates of chronic conditions like hypertension, asthma, and arthritis are about 50 percent higher in prison than in the community (Binswanger, Krueger, and Steiner 2009; Fazel and Baillargeon 2011). The prevalence of serious mental illness such as bipolar disorder and psychotic conditions like schizophrenia are around five times higher in prison than in the general population (Raphael and Stoll 2013b).

Despite the relatively high burden of disease, mortality rates in prison are not uniformly high. Standardized mortality ratios for White men have been estimated at around 1.2, indicating an age-standardized mortality risk in prison about 20 percent higher than in the general population (Rosen, Wohl, and Schoenbach 2011; Patterson 2010). Conversely, standardized mortality ratios estimated for Black

incarcerated men have been estimated at around 0.5, indicating the death rate for Black men in prison that is about half the death rate for those in the general population (see also Wildeman et al. 2016). Patterson (2010) examined the contribution of violence to prison and community mortality rates and found that the low prison homicide rate of Black men could not explain the mortality gap between prison and community. Analysis of cause-specific mortality data for men incarcerated in North Carolina found that the excess risk was associated with cardiovascular disease, cancer, and infectious disease (Rosen, Wohl, and Schoenbach 2011). While few studies directly examine the causes of low mortality among incarcerated Black men, researchers speculate that correctional health care improves the everyday treatment of chronic conditions compared to the quality of health care in free society (Rosen, Wohl, and Schoenbach 2011; Patterson 2010). Other characteristics of prison life such as regular meals and consistent housing may also help the management of chronic conditions.

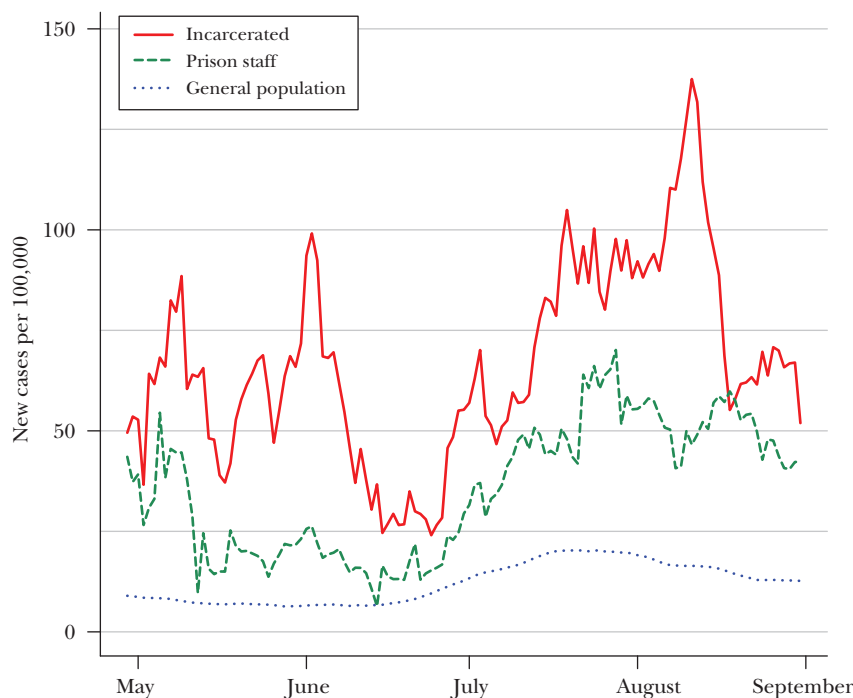
Although correctional healthcare may reduce mortality for Black men with chronic conditions, prison clearly impairs health along other dimensions by elevating the transmission of infectious disease. High rates of HIV and Hepatitis B and C have been widely documented in US prisons. Recent estimates indicate that HIV prevalence in prison exceeds community rates by a factor of 3 to 5, and the prevalence of Hepatitis B and C exceeds community rates by 5 to 10 times (Bick 2007; Gough et al. 2010). Screening at prison intake suggests around 80 to 90 percent of cases were present before incarceration, with the remainder transmitted in prison, mostly through sexual activity and needle use. A related line of research studies outbreaks of infectious disease, focusing on tuberculosis, influenza, and chickenpox (Beaudry et al. 2020). Each of these infections are airborne and spread through aerosol transmission (droplets) and contact with surfaces. The living areas, dining halls, and recreation areas that make up the physical plant of prisons facilitate the spread of airborne pathogens, particularly in overcrowded conditions.

The significance of correctional facilities for the transmission of infectious disease were strikingly illustrated by the novel coronavirus pandemic. Prisons and jails were consistently among the leading hotspots for COVID-19 outbreaks throughout 2020 (Wang et al. 2020). Facilities such as Rikers Island jail in New York City, Cook County Jail in Chicago, and Marion Correctional Institution in Ohio suffered ferocious outbreaks that resulted in dozens of fatalities among staff and incarcerated people.

Measuring the true prevalence of COVID-19 has been challenging because testing varies greatly across the population and across prison systems. Moreover, infection dynamics are highly nonlinear, so prevalence estimates are sensitive to time and space. One of the best case studies of COVID-19 dynamics estimated the reproduction number, called R_t in epidemiological models, in an unnamed county jail (Puglisi et al. 2021). The reproduction number quantifies the new infections associated with a single infected case. An $R_t > 1.0$ indicates an outbreak where the prevalence of infection increases nonlinearly. Testing for the novel coronavirus in the study jail included daily measures for 83 days in 2020. At the onset of

Figure 3

Seven-Day Moving Average of New Daily COVID-19 Cases per 100,000 among Those in Prison, Prison Staff, and in the General Population: May to September 2020



Source: Author's calculations from the Covid Prison Project file

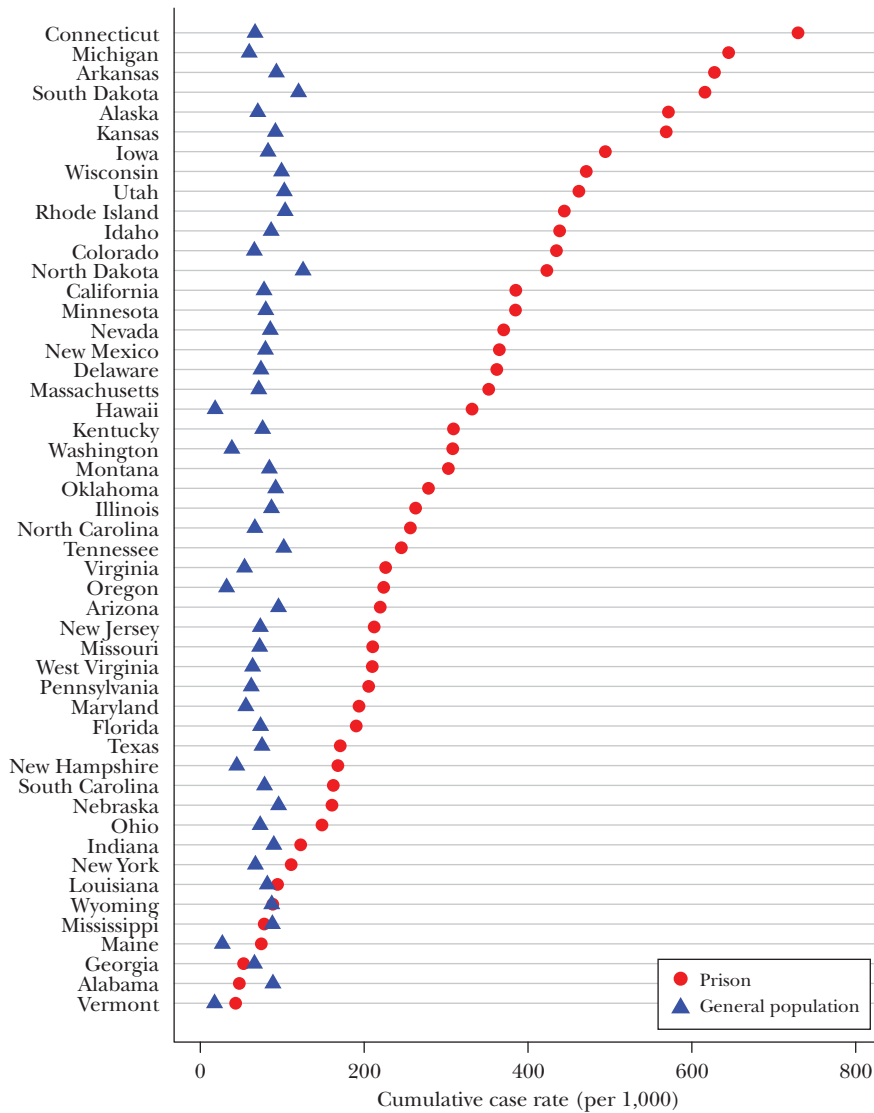
the outbreak in the jail, R_0 was estimated at 8.23, meaning that a single person with the novel coronavirus infected eight others. At this reproduction rate, the spread of infection in the jail population was explosive (Puglisi et al. 2021). Overcrowding accelerated the spread of infection. When the jail depopulated, R_t dropped below 1.0.

F3 Obtaining a national picture of the scale of COVID-19 in American prisons has been more difficult than in the jail study. National data on case rates points to the high level of infection in incarceration. Figure 3 shows the daily incidence (seven-day moving average) of new COVID-19 cases expressed as a rate per 100,000 of the population, from May to September 2020. In the general US population, the daily incidence of new COVID-19 cases increased from 9 per 100,000 in May to a peak of 20 per 100,000 in late July. Among prison staff, the daily incidence of new cases averaged 36 per 100,000. Among incarcerated people, the daily incidence rate averaged 67 per 100,000 and peaked at 138 per 100,000 by August 2020. COVID-19 case rates in prison varied greatly across states, partly because of the pattern of outbreaks and partly as a function of measurement that depends on the level of testing. Still the measured COVID-19 case rate in prison exceeded the case rate in the general population in nearly all states, as shown in Figure 4.

F4

Figure 4

Cumulative COVID-19 Case Rates among Those in Prison and General Population, by State: March 2020 to January 2021



Source: Author's calculations from the Covid Prison Project file

Research on health and incarceration underscores the vulnerability of people in prison. The high rate of chronic conditions indicates health vulnerability. Evidence that prison protects against mortality for Black men reflects the health risks and inadequacy of care in their home communities. While prison is a venue that brings together large numbers in poor health, the physical organization of prison and the

routine of daily life creates an environment that accelerates the transmission of infection.

Solitary Confinement

Poor health marks vulnerability to harsh prison conditions, and solitary confinement is a vivid marker of harsh conditions. In its official purposes, solitary confinement is used to punish misconduct, to control conflicts such as gang rivalries, and for the protective custody of those who are unsafe in the general prison population because of, say, youth or gender identity (Kapoor and Trestman 2016, p. 200). The uses of solitary confinement are reflected in vernacular that distinguishes “disciplinary segregation” for misconduct from “administrative segregation” for managing safety. In practice, the conditions of confinement often do not vary much between the punitive and administrative functions. Incarcerated people are generally locked in their cells for 22 or 23 hours each day with an hour out for recreation or showers. Usually people incarcerated in solitary confinement are restricted from having visits, phone calls, or participating in programs. Cloud and his co-authors (2015, p. 19) describe the physical space of a solitary confinement unit:

The typical cell is 60 to 80 square feet, with a cot, a toilet, a sink, a narrow slit for a window, and sometimes a small molded desk bolted to the wall. In many facilities, cells have a steel door with a small slot for delivering meals . . . Some solitary confinement units are nearly silent except for sudden outbursts; others subject prisoners to incessant cacophony of clanking metal doors, jingling keys, booted footsteps, and distressed voices reverberating off thick walls.

Nearly all US prisons have housing units for disciplinary and administrative segregation. A census of prison facilities shows that the population incarcerated in solitary confinement increased from 3.0 percent of the total prison population in 1979 to 5.7 percent in 2005. The use of solitary confinement also expanded with proliferation of super-maximum-security prisons in the 1980s and 1990s (Reiter 2016). Supermax prisons house their entire populations under conditions of 23-hour lockdown, which is characteristic of solitary confinement. In the most recent data from 2016, 4.4 percent of a national sample of the US prison population was held in solitary confinement (Beck 2015). There are no detailed national statistics on the length of stay, but a survey of state correctional leaders found that 11 out of 24 jurisdictions held most incarcerated people in solitary confinement for 90 days or less (Liman Program and ASCA 2015).

Psychologists find clear evidence of mental distress in solitary confinement (Kapoor and Trestman 2016; Arrigo and Bullock 2008). A clinical psychologist, Stuart Grassian (1983), coined the term “SHU syndrome,” named for the Special Housing Units of Massachusetts prison system. Clinical assessments of people housed in solitary confinement revealed evidence of being in a mental fog, obsessive thoughts,

perceptual distortions, hallucinations, and other forms of distress. Evidence for the negative effects of solitary confinement on mental health is especially strong for those who are in strict isolation for long periods and for those with a history of mental illness (Arrigo and Bullock 2008).

Mental illness and harsh conditions of penal confinement are intimately connected. Prisons bring together men and women with significant physical, mental, and behavioral health problems in a physical space that is often overcrowded, subject to a rule-governed climate, and managed by staff with broad discretion. People with mental illness may fail to respond to orders or have difficulty following prison rules. In some cases, they may act violently. Prison officials then respond to prisoners with mental illness “as they do to other prisoners who break the rules. When lesser sanctions do not curb the behavior, they isolate the prisoners in the segregation units, despite the likely mental health impact” (Metzner and Fellner 2013, p. 317).

We can look in greater detail at the population dynamics of solitary confinement and the overrepresentation of people with mental illness by analyzing an administrative data file from Pennsylvania that includes all prison admissions and discharges from 2008 to 2017. Pennsylvania’s incarceration rate is approximately equal to the national level and the state’s prison population is demographically similar to the national prison population as a whole. Like a number of states, the Pennsylvania prison system faced the threat of federal oversight for placing people with serious mental illness in solitary confinement. The state introduced a screening assessment that classifies all new admissions into one of four categories: 1) no mental health problems, 2) prior diagnosis of mental illness, 3) current diagnosis of a non-serious mental health problem, and 4) serious mental illness that includes psychotic conditions such as schizophrenia.

T2

Table 2 reports figures describing the use of solitary confinement including disciplinary and administrative segregation in Pennsylvania, in the period 2008–2017. The median length of stay in prison for completed prison terms is about 18 months for men and 13 months for women. (This calculation underestimates length of stay in the whole prison population because long sentences are censored.) Solitary confinement is used more often for men than women. Although the national solitary confinement rate has been estimated at about 4 percent, around 40 percent of men and 25 percent of women in Pennsylvania are incarcerated in solitary confinement at some point during their imprisonment. Men are also more likely to be held repeatedly in solitary confinement. The data also indicate large differences in solitary confinement by mental health status. Among men with serious mental illness, 51 percent are in solitary confinement at some point during their prison sentence, compared to 32 percent for men with no mental illness. Those with serious mental illness are also repeatedly incarcerated in solitary confinement. Men with no history of mental illness who are ever sent to solitary confinement spend 37 days on average in isolation; in contrast, men with serious mental illness accumulate a total of 55 days on average in solitary confinement.

Mental health disparities are illustrated in greater detail by density plots of the total days in solitary confinement for those who have been held in isolation for

Table 2

Imprisonment and Solitary Confinement in Pennsylvania State Prisons, by Mental Health Status and Gender: 2008–2017

	<i>All</i>	<i>No mental illness</i>	<i>Prior diagnosis</i>	<i>Current diagnosis</i>	<i>Serious mental illness</i>
<i>Men</i>					
Median years of imprisonment	1.52	1.45	1.63	1.58	1.54
Proportion ever in solitary	0.39	0.32	0.42	0.49	0.51
Times in solitary (mean)	2.01	1.60	1.95	2.67	2.51
Median solitary spell (days)	28.50	24.00	27.00	27.00	22.00
Sample size (N)	162,763	82,542	42,854	33,782	3,675
<i>Women</i>					
Median years of imprisonment	1.09	1.02	1.21	1.11	0.98
Proportion ever in solitary	0.25	0.16	0.22	0.28	0.33
Times in solitary (mean)	1.80	1.22	1.41	1.94	2.16
Median solitary spell (days)	27.00	27.00	28.50	27.00	29.00
Sample size (N)	15,793	2,848	2,967	8,133	1,845

Source: Author's calculations with data provided by the Pennsylvania Department of Corrections.

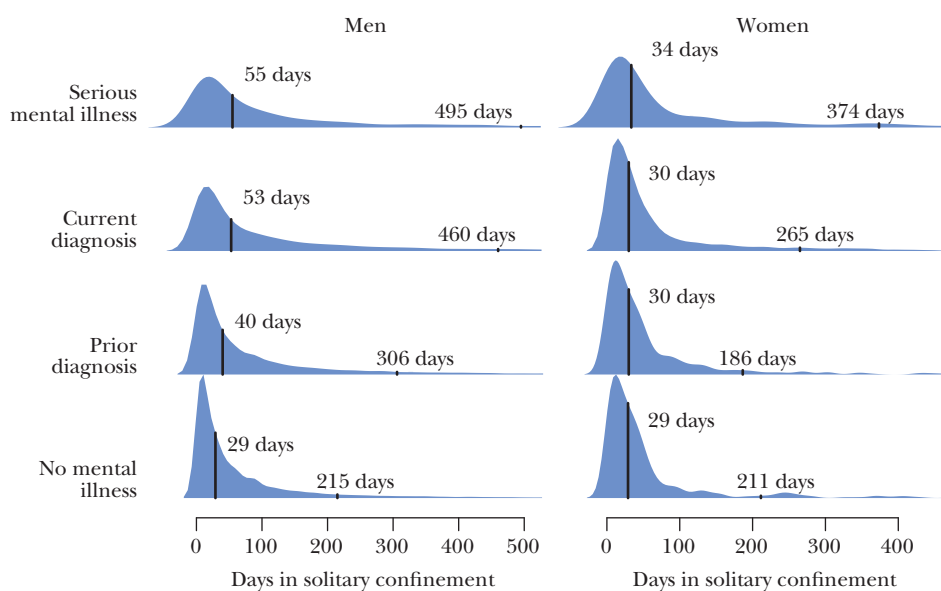
F5

at least one day. The total duration of solitary confinement for this Pennsylvania data is reported by mental health status in Figure 5. The median total duration for those who have ever been in solitary confinement is 29 days for men with no mental illness, compared to 55 days for those with serious mental illness. A small number of incarcerated people spend very long periods in extreme isolation. Among men with no reported mental illness, 10 percent have spent at least 215 days in solitary confinement. The mental health gap in the total time spent in solitary confinement at the 90th percentile is about nine months. This means that 10 percent of those men classified with serious mental illness spend 280 days longer in isolation than the top 10 percent of men with no mental illness. Women show a similar pattern, but they spend less time in solitary confinement and mental health disparities are smaller.

Solitary confinement has been scrutinized for its harmful effects and its ethical standing. Perhaps resulting from the injuries to physical and mental health, solitary confinement is associated with subsequent unemployment, recidivism, and mortality after prison release (Mears and Bales 2009; Brinkley-Rubinstein et al. 2019; Wildeman and Andersen 2020), although nonrandom selection of those with preexisting mental illness may also explain poor outcomes after prison release. Beyond measurable harm, solitary confinement has also raised questions of ethical treatment. Federal courts have examined solitary confinement in relation to the Eighth Amendment prohibition against cruel and unusual punishment and held that conditions must be compatible with “civilized standards, humanity, and decency” (*Madrid v. Gomez*, 889 F. Supp. 1146, 1260 [1995]). US health organizations have argued for limiting or abolishing solitary confinement because of

Figure 5

Density Plots of the Total Time Spent in Solitary Confinement by Mental Health Status and Gender, Pennsylvania State Prisons: 2008–2017



Source: Author's calculations from data provided by the Pennsylvania Department of Corrections

Note: Lines on the density plot indicate the median and 90th percentile.

its harm to physical and mental health (American Psychiatric Association 2012; National Commission on Correctional Health Care 2016). The so-called “Mandela Rules” established by the United Nations regards prolonged solitary confinement as a type of torture (United Nations General Assembly 2015). Under the inherently coercive circumstances of incarceration, the pains suffered in extreme isolation take on a moral significance.

Discussion

Human needs are often directly met through the intimate relations of households (the “oikos” in Greek, from which the word economics is derived). People eat, sleep, and shelter in dwellings with others to whom they are intimately tied through the connections of kin and clan (Weber 1978, pp. 356–381; Polanyi 1957, pp. 53–55; Goffman 1961, p. 12). Households woven together by personal relationships are good at meeting the variety of individual needs. But in total institutions, the satisfaction of basic needs is organized bureaucratically and uniformity is imposed on daily life. In prisons, uniformity is implemented through the power relations that

divide staff from incarcerated people. Even in well-run prisons, the environment risks severe treatment and physical harm. With over half a million people entering prison each year, and a similar number returning to their communities, the footprint of institutional harm extends beyond the 1.4 million that comprise the annual prison population.

Evidence of harsh prison conditions is connected to the emergence of mass incarceration and a distinctively American way of doing incarceration. The severity of US prison conditions contrasts with incarceration in Western Europe. One window into European prison conditions is provided by visits taken over the last ten years by US prison administrators to Germany, the Netherlands, and Scandinavia. European prisons were found to be organized around principles of “normalization” and “re-socialization” that aimed to close the gap between institutional conditions and conditions of life in free society (Subramanian and Shames 2013; Delaney et al. 2018). In Europe, terms of incarceration are significantly shorter and incarcerated people often obtain furloughs to visit family and work in the open labor market. High levels of security, solitary confinement, and prison uniforms that are characteristic of US incarceration are less common in Europe. Just as European prisons may be more humane, they may also be more positive in their effects. For example, research from Norway and Sweden points to the positive effects of incarceration on employment, earnings, and health after release (Bhuller et al. 2020; Hjarlmarsson and Lindquist 2020).

Harms suffered in US prisons suggest channels through which incarceration may diminish life chances. In the course of a prison term, our best evidence indicates that one in five incarcerated people may be physically or sexually assaulted, two in five may go to solitary confinement, and one in ten may acquire tuberculosis, hepatitis, or other infectious disease. Such harms transform incarceration from an expected cost of offending into an active influence on well-being after release. They may contribute to relapse to addiction, unemployment, or family estrangement that has been well-documented by researchers. Harmful experiences of incarceration may also help explain the criminogenic effects that result in offending after imprisonment (Chen and Shapiro 2007; Aizer and Doyle 2015; Nagin, Cullen, and Jonson 2009).

A focus on prison conditions should also expand our assessment of costs and benefits of mass incarceration. Research on the effects of incarceration on crime has underestimated the costs of incarceration by overlooking the risks of violent victimization in penal institutions. The neglect of fear and victimization inside prison is a flaw in studies of incapacitation and black-box estimates of the total effects of incarceration on crime.

While this paper has presented evidence of the harms suffered during incarceration, it does not answer the causal question of whether prisons are harmful. Compared to what? One counterfactual focuses on the conditions of life in the communities from which the prison population is drawn. For example, mortality risk is lower in prison for Black men, but higher for Whites. The risk of infectious disease, however, often appears to be higher in prison, and correctional facilities were

hotspots for COVID-19. There are indications that violence—assaults and fighting, but not homicide—is more prevalent in prisons than community. The extreme isolation of solitary confinement seems deeply incomparable to community life. On some dimensions, it seems, prison may be no worse than the counterfactual conditions of community life, but on other dimensions, prison life is unusually painful.

The comparison of prison to community answers one question but leaves others open. The comparison communities have themselves been shaped by a public policy that answered many of the social problems of racism and poverty—untreated mental illness, enduring joblessness, school failure—with incarceration (Garland 2020; Beckett and Western 2001). Failures of health, employment, or education policy in poor communities have been seen as rooted in a policy outlook that was punitive and viewed residents of poor communities as undeserving (Soss, Fording, and Schram 2011; Katz 2013). From this perspective, prison and community have both been shaped by a policy orientation that is suspicious of the moral worth of poor people, and poor people of color in particular. The short distance between prison and community along the dimensions of victimization, mortality, untreated mental illness, and infectious disease may not reflect the beneficence of prison, but the malignance of a public policy that takes a punitive approach both to crime and alleviating poverty.

Finally, prison conditions—participation in rehabilitation programs, institutional violence, infectious disease, and extreme isolation—can be understood as measures of what Liebling (2004) calls “moral performance” that indicate the dignity of incarcerated people and decent treatment by authorities. Researchers may hesitate to weigh the moral status of prisons in their analysis, leaving that job to policymakers and philosophers. But setting aside the moral question does not eliminate it; any evidence-based recommendation on penal policy also includes a moral stance on the prison. The warehousing, institutional violence, disease, and isolation that are common in American prisons are experienced overwhelmingly by Black and Brown men from low-income communities. In this context, mass incarceration doesn’t just influence crime and life chances, but forms part of a moral landscape in which the struggle for dignity follows the contours of poverty and racial inequality.

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