

Sentence Length and Recidivism: A Review of the Research

I. Introduction

There is considerable public interest regarding how length of incarceration affects recidivism rates. The interest is particularly strong in Los Angeles, where District Attorney George Gascón has adopted policies that sharply reduce sentence lengths by omitting allegations that would otherwise increase sentences beyond the base sentence for the crime.¹ His policies require that allegations be omitted from charging documents altogether so that judges can no longer use them to justify longer sentences. He defends his policies with the following statement: “While initial incarceration prevents crime through incapacitation, studies show that each additional sentence year causes a 4 to 7 percent increase in recidivism that eventually outweighs the incapacitation benefit.”² Despite the plural “studies” alluded to, a single unpublished manuscript, authored by Michael Mueller-Smith, is actually cited.³ That manuscript’s findings are inconsistent with other research, and it is concerning that such a drastic policy change is based on a single study, without full consideration of the evidence base.

Mueller-Smith’s findings have not been published in an academic journal, yet his claim that longer periods of incarceration increase the risk of recidivism has attracted prominent support within the academic community. For example, the dean of the UC Berkeley School of Law coauthored a *Los Angeles Times* opinion piece in which he asserted that sentence enhancement “approaches have exacerbated recidivism, creating more victims of crime,”⁴ an assertion attributed solely (by hyperlink) to the same unpublished Mueller-Smith paper. An amicus curiae brief filed in litigation over the policies, by one of the same coauthors, makes a similar assertion, also citing that 2015 paper.⁵

Although DA Gascón’s stated objective is to improve criminal justice policy through empirical research, there is not much in the literature to support Mueller-Smith’s conclusions. In fact, the assertion that longer sentences result in greater likelihood of reoffending contrasts sharply with findings from the most recent thorough review of the literature on the subject,⁶ in which, considering the consistency and strength of findings across numerous studies, Daniel Nagin and colleagues found “little convincing evidence on the dose-response relationship between time spent in confinement and reoffending rate.”⁷ That article is thirteen years old, though.

In 2022, a new review was published by Charles Loeffler and Daniel Nagin⁸ examining the relationship between

incarceration experiences and recidivism. However, they did not focus on the impact of varying sentence lengths, but rather on exposure to incarceration in general, and many of the studies they reviewed compared custodial with non-custodial sentences. While the authors found some recidivism reduction effects associated with incarceration,⁹ their review tells us little about how varying lengths of incarceration affect recidivism.

An updated review of the literature of the past thirteen years, focusing on the “dose-response relationship between time spent in confinement and reoffending rate,” is needed.

II. Difficulties in Measurement

The randomized controlled trial (RCT) is the “gold standard” for assessing an intervention’s effectiveness. In an RCT, participants are randomly assigned to treatment and control groups. The former receives the intervention to be evaluated (e.g., a longer sentence) and the latter receives an alternative intervention (e.g., a shorter sentence). Outcome measures (e.g., recidivism) are then compared between groups to see if treatment exposure affected the results. To determine whether a causal relationship exists between the treatment and the outcome, alternative explanations for the relationship (e.g., older age, violent history) must be eliminated. Random assignment achieves this by randomly distributing and therefore balancing unobservable and observable characteristics between groups. Then, any differences in the outcome can be attributed to the treatment, because it was the only thing that differed between groups.¹⁰

A *nonrandomized* study can only minimize *observable* differences between groups. In contrast to the RCT, the nonrandomized study may include unobservable differences, which can undermine the results’ validity.¹¹ To help mitigate this problem, researchers purposely (where possible) assign subjects to groups in a way that ensures statistical equivalence. One example of this is a “matched-pairs” design: participants differing in outcome are paired on the basis of other shared factors, and one person from each pair is randomly assigned to each group.¹²

In the case of an observational study, researchers have no control over assignment and will simply compare people who received an intervention with those who did not. This results in a greater likelihood that groups will differ from each other. One type of observational study is a “natural experiment”—which, despite its name, is not a true



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experiment because it lacks random assignment. Instead, researchers examine an outside event (e.g., a policy change) and compare people affected by the event with those who were unaffected. To maintain causal validity in observational studies, researchers must “control for” any important differences between groups by using techniques such as propensity score matching (PSM),¹³ instrumental variables, or statistical controls.

The danger of taking action based on nonrandom studies became apparent during the COVID-19 pandemic,¹⁴ when early observational studies raised hopes that a widely available and inexpensive drug, hydroxychloroquine, might be a promising treatment.¹⁵ However, the studies had low causal validity, and multiple RCTs later found different results.¹⁶ Nonetheless, preliminary findings were touted in an unpublished manuscript¹⁷ and circulated widely,¹⁸ leading to a rapid increase in off-label use of the drug.¹⁹ This is one example where policy has outpaced empirical research, only to be met with lackluster results.²⁰

Studies on the relationship between imprisonment and recidivism involve humans, so participants must provide informed consent. Past studies with unwilling or uninformed subjects, such as the infamous Tuskegee experiment,²¹ are regarded with horror today. When it comes to imprisonment, there would be an obvious ethical problem in sentencing people to five or ten years in prison, at random. Further, one must consider how the public, and especially the victims, would react. Thus, the research on this topic is usually quasi-experimental and the “gold standard” cannot be attained.²²

Selection bias is also a major challenge in this area of research.²³ Judges are more likely to give longer sentences to more serious criminals, so those who receive longer sentences will typically differ from those with shorter sentences. At the same time, incarceration length is often directly aligned with other variables such as offense severity, making it difficult to untangle the independent effect of incarceration length. Another major problem is that most studies on incarceration length are skewed toward samples of offenders with shorter sentences, which may not be generalizable to offenders with longer sentences. Recidivism outcome measures are also inconsistent and can be measured in different ways. For example, rearrest rates tend to be higher than reincarceration rates, so studies relying on the former will naturally have higher recidivism outcomes. Follow-up timeframes also vary across studies, and longer follow-up periods tend to be associated with higher recidivism rates.²⁴

A preferred method for comparing offenders with different sentence lengths is to exploit naturally occurring variability in the use of incarceration. Sometimes researchers are able to do this by leveraging jurisdictions where cases are assigned to judges randomly.²⁵ With this method, cases are not randomly assigned to different sentence lengths, but rather to a factor that is correlated with, but one step removed from, sentence length. While not

truly random, this ensures that judges will have statistically similar defendants in their caseloads. Judges who differ in their use of incarceration can then be compared to see if their defendants’ recidivism rates differ. Other times, researchers will exploit the variability in sentence length that comes with preexisting sentencing grids.²⁶ This method compares cases above and below a specified guideline threshold, assuming that offenders on each side of the threshold are statistically similar to each other in most ways except sentence length. However, even with these preferred approaches, results can still be susceptible to unmeasured factors.

Policy implications from empirical research depend on the quality of the studies, the consistency of the results, and contextual factors across time and place.²⁷ People respond to incarceration in myriad indirect and direct ways, and these effects are difficult to unpack given the inconsistencies in the research.²⁸ When policies such as DA Gascón’s²⁹ are based on selectively cited studies rather than the full body of research as a whole, the practical utility of the research declines rapidly. No single study on its own provides a basis for policy transformation, though a series of consistent findings across studies with sound methodologies may do so.³⁰

III. Effects of Punishment on Crime

Punishment is thought to affect crime in various ways, which are often referred to as purposes of punishment:

- *Deterrence.* One key purpose that underlies many penal policies and crime control efforts is deterrence. Specific deterrence is when the painful experience of being punished convinces an individual to refrain from crime in the future to avoid repeating the experience.³¹ General deterrence is when the knowledge of others’ punishments deters would-be offenders from committing crime, due to fear of receiving a similar punishment.³²
- *Incapacitation.* Incapacitation, another key purpose of punishment, involves removing an individual from society, typically via long-term confinement or death. This physically prevents a person from committing crimes, or at least limits his targets to those inside the prison.³³
- *Rehabilitation.* Rehabilitative efforts include any experiences (e.g., drug treatment programs, vocational training) intended to positively alter an individual’s behavior and facilitate their transformation into someone who will refrain from crime for reasons other than incapacitation or fear of punishment.³⁴ The inverse of rehabilitation is a criminogenic effect, or the notion that prison is a “school of crime.”³⁵ This theory argues that interactions and socialization within prisons can lead to the learning of criminal behavior from fellow inmates.³⁶ However, this effect tends to be more relevant to lower-level offenders who are more similar to offenders sentenced to probation.³⁷

The next section will briefly describe what is known about general deterrence and incapacitation, followed by a review of the literature on the post-release effects specific to the individual.

A. General Deterrence

General deterrence is based on the idea that if the cost of doing something outweighs the reward, fewer people will do it.³⁸ Deterrent effects depend on how severe the punishment is and how likely it is to be imposed.³⁹ Obviously, a punishment would have no significant deterrent effect if it were so mild as to be inconsequential or if it were never imposed. Considering the empirical evidence from a wide range of studies on deterrence theory, research has consistently shown the presence of a deterrent effect of punishment in at least some contexts.⁴⁰ For example, a study by Eric Helland and Alexander Tabarrok⁴¹ found that “three-strikes” legislation prevented crime. The authors compared offenders who were convicted of a strikable offense with similar offenders who were *tried* for their third strikable offense but were instead convicted of a non-strikable offense. The study included data from California and Texas (states with three-strikes laws) as well as New York and Illinois (states without three-strikes laws). Regression models found significant reductions (17%–20%) in three-year felony rearrest rates among criminals with two strikable offenses in California and Texas, but not in Illinois or New York.⁴²

Other studies have explored the effect of sentence enhancements on recidivism. Daniel Kessler and Steven Levitt⁴³ examined California crime rates following the passage of a voter initiative in 1982 that provided enhanced sentences for repeat offenders of certain crimes.⁴⁴ They found that enhancement-eligible crimes in California dropped by 4% in the first year after enactment, compared with the overall national trend.⁴⁵ Similar legislation on sentencing enhancements for gun crimes was studied by David Abrams, who found that gun use enhancements reduced the number of per capita gun-related robberies by 5% within three years after the law’s enactment.⁴⁶

Francesco Drago, Roberto Galbiati, and Pietro Vertova conducted a natural experiment examining an Italian clemency law passed in 2006.⁴⁷ In the study, 25,800 inmates were released from prison early on the condition that if they offended again within five years, the time subtracted from their sentence would be added to a new sentence. People in this cohort had varying lengths of time remaining on their sentences (ranging from one month to three years), so they were subject to sentence enhancements of various lengths, should they reoffend. Drago and colleagues⁴⁸ found that those threatened with longer enhancements were less likely to reoffend within the seven months following release.⁴⁹

The principle of deterrence is so basic that the debatable question is not whether a deterrent effect exists,⁵⁰ but rather the magnitude and conditioning of deterrent

effects.⁵¹ Arguments that punishments always deter or that they never deter are equally and oppositely wrong. Given that sanctions do have some deterrent effects, eliminating them altogether would produce some increase in crime. Policy arguments for eliminating sanctions require justification that any resulting benefits would offset the additional crimes. Policymakers often fail to consider these potential unintended effects of expeditious policy change. For example, mass release of prisoners is one approach to reducing the prison population, though this could negatively impact public safety if done without adequate consideration of recidivism risk.

B. Incapacitation

Incapacitation is the most obvious effect of punishment on crime. In most cases, everyone outside of the prison walls will be safe from a given criminal who has been removed from society.⁵² The existence of an incapacitative effect is not debatable. Estimating the magnitude is not a simple task, though, and it requires estimating the crimes that would be committed by the prisoners if they were either released or never incarcerated for their crimes. Not surprisingly, this is hard to do without error, so it remains a primary factor of dispute in the research. Alex Piquero and Alfred Blumstein⁵³ note that estimates of the incapacitative effect “vary markedly from study to study.”

However, the overall estimate is largely irrelevant to questions of sentence enhancement policy because individual rates of crime commission vary widely. Research shows that a small percentage of habitual offenders are likely responsible for a large portion of crime,⁵⁴ and their offending trajectories differ from those of nonhabitual offenders.⁵⁵ This effect may be pronounced for violent offenders and those using firearms, who have been found to be rearrested at higher rates and for more serious crimes than nonviolent offenders.⁵⁶ One direction for future research would be to learn how to better identify these high-rate chronic offenders. In theory, incarcerating a small number of prolific offenders (i.e., “selective incapacitation”) would lead to substantial crime reductions. In practice, though, identifying chronic offenders is not a precise exercise.⁵⁷

Despite these issues, there is no doubt that incapacitation plays an important role in public safety, as even the foremost opponents of “mass incarceration” agree. According to Blumstein, “Incapacitation through imprisonment is probably the only effective means of restraining the violent crimes committed by some individuals otherwise out of social control.”⁵⁸ The key question, then, is whether the incapacitative benefit for “individuals otherwise out of social control” is outweighed by a criminogenic effect.

In the next section, we review the research on incarceration length and recidivism to determine whether the studies are rigorous enough to answer this question. For the purposes of this discussion, we reviewed all relevant empirical studies published in scholarly journals prior to

March 2022, in addition to a major study released by the U.S. Sentencing Commission in June 2022.⁵⁹

IV. Incarceration and Post-release Recidivism

Aggregate recidivism rates for state prisoners are calculated regularly by the Bureau of Justice Statistics. One of their recent reports estimated that 80.5% of state prisoners released in 2010 were rearrested for a new crime (i.e., not a parole violation) within ten years post-release, and 40% were rearrested for a violent crime.⁶⁰ Aggregate recidivism rates for federal prisoners are calculated regularly by the Sentencing Commission,⁶¹ one of whose recent reports estimated that nearly half of federal offenders released in 2010 were rearrested within eight years post-release.⁶² The same report found that violent offenders were more likely to recidivate, with an eight-year rearrest rate of 63.8%, compared to a rate of 38.4% for nonviolent offenders.⁶³

A. Incarceration Length and Recidivism: Nagin, Cullen, and Jonson's 2009 Review

For research before 2009, we already have the benefit of a thorough review conducted by Daniel Nagin, Francis Cullen, and Cheryl Jonson.⁶⁴ Considering the ethical issues of assigning people to different sentences at random, it is not surprising that the authors found only three actual experiments that did so, mostly using old data. They found the evidence from this group of studies weak due to the data and sampling constraints, coupled with the fact that many of the findings were not statistically significant.⁶⁵ Additionally, in many of the studies reviewed by Nagin, Cullen, and Jonson, variation in incarceration length was not reported and was crudely based on offense type or criminal history.⁶⁶ Their review highlighted a key distinction between two sentencing decisions: (1) whether to sentence the defendant to prison or jail at all, rather than to a non-custodial sentence such as a fine or probation; and (2) for those sentenced to incarceration, how long the sentence will be.⁶⁷ The two decisions are not the same, and studies of their effects should be considered separately. Only the latter decision is relevant to the present discussion.

The first topic of inquiry involves offenders who are on the policy “margin between prison and probation sentences.”⁶⁸ These offenders tend to have less serious current convictions and fewer, if any, prior convictions. Going to jail for any time at all disrupts family, social, and employment relationships, all of which is more likely to interfere with resumption of lawful employment for a first-time or less serious offender than it is for a repeat violent offender.⁶⁹ In comparison, there are more serious offenders who do not fit within this “policy margin,” for whom probation is clearly not an appropriate sentence. Offenders who are not candidates for probation typically have committed especially grave crimes or are already repeat offenders.⁷⁰

Sentence enhancements that increase penalties for certain crimes are typically used for felony repeat offenders or for those who are particularly culpable.⁷¹ For example,

a robbery with a gun presents a greater threat to safety than a robbery committed without one, increasing an offender's culpability and thus justifying a harsher punishment.⁷² Relatedly, prior felony convictions increase recidivism risk,⁷³ which can justify an enhanced sentence. In California, one who commits a crime on the state's “serious felony” list after one or more previous convictions for crimes on the same list may be eligible to receive an enhanced sentence.⁷⁴

For our present purposes, the studies discussing “the effect of custodial versus noncustodial sanctions”⁷⁵ are pertinent only to the extent that they have other implications. The studies examining “the effect of sentence length on reoffending” are more directly relevant, though there are fewer of them.⁷⁶ Among the studies reviewed by Nagin, Cullen, and Jonson that specifically examined the impact of sentence length on recidivism, there were a total of three experimental designs across two articles⁷⁷ (one of which combined two experiments into one paper),⁷⁸ though the results of these studies varied.⁷⁹ One of these studies showed increases in recidivism among inmates randomly selected for shorter sentences, though the effects were not statistically significant.⁸⁰ In the two experiments combined into one paper, one found deterrent effects of longer sentences while the other found null effects;⁸¹ however, both were rife with methodological issues⁸² and do not add value to the present discussion. In the next section, we briefly discuss the results of Nagin, Cullen, and Jonson's 2009 review.

B. Experiments Reviewed by Nagin, Cullen, and Jonson

John Berecochea and Dorothy Jaman⁸³ examined recidivism rates among inmates convicted of various violent and nonviolent offenses, all of whom had received a set parole date but still had six months or more remaining on their sentence. The jurisdiction used a random number table to allocate inmates to two groups; one would have their parole dates advanced, reducing their length of stay by six months.⁸⁴ Average time served was about thirty-five months, with a difference of 6.6 months between groups (reflective of treatment group status).⁸⁵ They found that the early release group was about 6% to 7% more likely to return to prison than the control group (34% vs. 28% at the one-year follow-up, and 47% vs. 40% at the two-year follow-up).⁸⁶ These effects showed a slight deterrent effect of longer sentences on recidivism, but it was not statistically significant.

Elizabeth Deschenes, Susan Turner, and Joan Petersilia⁸⁷ evaluated the effectiveness of two intensive supervision programs in Minnesota: intensive community supervision (ICS) and intensive supervised release (ISR). Both programs diverted people to community supervision in lieu of prison time; the former completely diverted people from incarceration *prior to* their prison sentence, while the latter diverted people to the community during the last six months of their sentence (by releasing them early).⁸⁸ All

of the offenders were facing prison time of twenty-seven months or less, and the majority of offenders were arrested for theft, burglary, or probation violations.⁸⁹ The authors compared both (1) ICS (the true diversion program) vs. ICS control; and (2) ISR (the early release program) vs. ISR control. Recidivism was quantified by proportions of people arrested or reincarcerated for a new arrest or technical violation within twelve months (for the ISR group) and within twenty-four months (for the ICS group).⁹⁰

Offenders in the ICS group spent about 112 fewer days (approximately four months) in jail than those in the control group (108 vs. 220 days).⁹¹ Both groups spent time in jail prior to being assigned to groups, though the control group was not diverted—hence the greater number of days spent incarcerated. There was a significant deterrent effect of longer sentences at all follow-ups, mostly because people in the jail control group had fewer technical violations.⁹² However, this is likely a byproduct of custodial sentences vs. noncustodial sentences, given that people cannot receive technical violations while in jail. When looking at reincarceration rates and rearrests for *new* crimes (i.e., not for technical violations), there were no significant differences between groups at the two-year follow-up.⁹³ Given these considerations, this study technically evaluated the ICS diversion program rather than evaluating the impact of differing sentence lengths. Thus, it does not add value to the present discussion.

In the ISR evaluation, individuals who had six months or less remaining on their jail sentence were randomly assigned to either finish their sentence or be released early. The researchers found no statistically significant differences regarding technical violations, rearrest rates, or the likelihood of reincarceration after one year.⁹⁴ Interestingly, though, there were no differences in time served between groups, as both served an average of forty-four days in confinement.⁹⁵ Thus, there was no way to even compare different incarceration lengths to each other, and the study appears to be more focused on comparing community supervision vs. confinement. This study does not add value to understanding the relationship between length of stay and recidivism.

C. Quasi-experiments Reviewed by Nagin, Cullen, and Jonson

Dorothy Jaman, Robert Dickover, and Lawrence Bennett⁹⁶ conducted a quasi-experiment using a sample of 390 parolees from California prisons. All participants had been incarcerated for first-degree robbery or second-degree burglary and were matched on a number of factors related to parole outcome.⁹⁷ For each pair, one person served more than the median time of forty-five months (i.e., “high-dose”), while the other person served less than the median (“low-dose”).⁹⁸ Recidivism was measured as a binary indicator of whether an individual had an “unfavorable parole outcome” (resulting in reincarceration).⁹⁹

Among the first-degree robbery offenders, the low-dose group served an average of thirty-six months and the high-

dose group served an average of sixty-five months.¹⁰⁰ The authors found statistically significant criminogenic effects at both one- and two-year follow-ups for those in the high-dose group. After one year, reincarceration rates were 9.4% lower for the low-dose group (6.7% vs. 16.1%); after two years, rates were 19.4% lower (37.4% vs. 18%).¹⁰¹ Among the second-degree burglary offenders, the low-dose group served an average of sixteen months and the high-dose group served an average of thirty-six months.¹⁰² The authors again found criminogenic effects associated with longer prison terms, though this was statistically significant only at the two-year follow-up. After two years, reincarceration rates were 4.7% lower for the low-dose group (42% vs. 46.7%).¹⁰³

In sum, this study suggested a criminogenic effect of longer sentences. However, the sample was limited to robbery and burglary offenders with an average time served of twenty-seven months, so it is hard to know whether these results would extend to more serious criminals serving longer sentences. Additionally, this study examined a time and place where parole board discretion would have heavily impacted release decisions. Parole boards’ release decisions are based on a deliberate effort to predict whether someone is likely to reoffend, and myriad factors examined by the parole board are not controlled for in this study. This increases the risk that the results could have been impacted by unobserved factors related to parole board discretion.

Jody Kraus¹⁰⁴ conducted a quasi-experimental matched-pairs study using a sample of 446 juvenile offenders. Most were convicted of theft or burglary and were serving sentences of two years or less.¹⁰⁵ This study primarily compared probationers with non-probationers, and the number of prior committals to detention was included as part of the analysis, though the exact length of stay was not considered.¹⁰⁶ Findings suggested that juveniles convicted of stealing and burglarizing might experience criminogenic effects after committal to an institution, though there were no differences in recidivism rates for juveniles convicted of more serious offenses such as motor vehicle theft, assault, and sexual offenses.¹⁰⁷ However, this measure for “length of stay” was inadequate, so the study does not add value to the present discussion.

A longitudinal quasi-experiment by Thomas Loughran and colleagues¹⁰⁸ examined rearrest rates and self-reported reoffending among 921 juvenile offenders from two large cities. Most of them had been convicted of a felony, though they all had short sentences of less than fifteen months.¹⁰⁹ The main analyses compared probationers with non-probationers, but a portion of the analysis examined the marginal benefits from different lengths of stay. The authors divided length of stay into dosage categories, which were compared to each other.¹¹⁰ They found lower rearrest rates among those serving thirteen months or more and among those serving three months or less (for the in-between categories, rates appeared more similar).¹¹¹ However, the samples within each category were so small that the statistical power was very low. In addition, twenty-eight

out of sixty-six important covariates were statistically different between dosage categories,¹¹² hampering the validity of these comparisons. Given these methodological constraints, the study did not show strong support for either a deterrent effect or a criminogenic effect resulting from longer periods of confinement.

Nagin, Cullen, and Jonson's review includes little evidence of criminogenic effects related to longer periods of incarceration.¹¹³ Many of the studies they reviewed compare confinement vs. non-confinement and include length of stay as only a minor point; these studies are also rife with methodological issues, such that only three of them are actually helpful for the present discussion. The bottom line is that, as of 2009, "there [was] little convincing evidence on the dose-response relationship between time spent in confinement and reoffending rate."¹¹⁴ That is, the studies did not clearly demonstrate that longer prison sentences increased recidivism.

D. Subsequent Research on Incarceration Length and Recidivism

As discussed above, estimating the causal relationship between length of incarceration and recidivism is difficult for a variety of reasons, and only a handful of methodologically rigorous studies have done so since Nagin, Cullen, and Jonson's 2009 review. The findings are still mixed, providing little conclusive evidence for or against the specific deterrent effects of imprisonment. Among the studies published since, three employed pseudo-randomization strategies for judge assignment,¹¹⁵ eight relied on preexisting data and included statistical controls for important factors,¹¹⁶ and one reexamined data from two of the prior studies but with different analytical strategies.¹¹⁷

Sarah Walker and Jerald Herting¹¹⁸ examined 22,276 matched pairs of juveniles from a northwestern state who had cases filed between 2002 and 2015. Recidivism was measured by two binary indicators: (1) whether the youth had a court filing for a misdemeanor within twelve months and (2) whether they had a court filing for a felony within twelve months.¹¹⁹ The main analysis compared those who were detained pretrial with those who were not, while controlling for factors such as prior record, offense severity, and demographics. When number of days in jail was included as a predictor variable, the authors found a small, statistically significant criminogenic effect in the odds of felony recidivism, which increased by about 1% per day of incarceration.¹²⁰ However, differences in length of stay were attributable to the pretrial detainment,¹²¹ so the effects of days in jail cannot be untangled from the effects of pretrial detainment itself. In addition, the number of days spent in jail was heavily skewed, with a range of 0.03 to 362 days, a mean of eight days, and a mode of two days,¹²² which prohibits any valid comparisons across varying sentence lengths. Thus, the results do not add value to the present discussion.

Randi Hjalmarsson and Matthew Lindquist¹²³ examined the impact of two Swedish early-release reforms in 1993

and 1999. The reforms held prison sentences constant but increased the share of time that inmates were required to serve from one-half to two-thirds. This generated natural variation in days served, which allowed the authors to compare similar individuals who differed in time served.¹²⁴ The sample comprised 46,800 individuals who began their sentences between 1992 and 2001 and whose original sentence lengths ranged from four to forty-eight months, with an average of 11.7 months.¹²⁵ Those exposed to the reform served forty-six more days in incarceration than those not exposed to the reform.¹²⁶ A regression model was used to examine the impacts of time served and other factors (e.g., offense type) on reincarceration and reconviction rates.¹²⁷ People who were incarcerated longer had significantly lower rates of recidivism, suggesting a deterrent effect of longer sentences. Reform exposure significantly decreased the risk of reconviction when measured at twelve months (though this was not statistically significant at twenty-four or thirty-six months).¹²⁸ Exposure also significantly decreased the risk of reincarceration when measured at twelve months and twenty-four months (but not at thirty-six months).¹²⁹ Overall, the authors found small but statistically significant deterrent effects associated with the reform, though they seemed to fade over time.

William Rhodes and colleagues¹³⁰ examined the dose-response relationship of incarceration and recidivism among a large sample of federal offenders who were convicted of various violent or nonviolent felonies or misdemeanors. All offenders were sentenced under the Federal Sentencing Guidelines, which use a grid system of predetermined sentence ranges based on offense seriousness and criminal history.¹³¹ The authors leveraged the sentencing grid recommendations as a proxy for criminal history and offense seriousness, which served as an instrumental variable to balance groups on important baseline factors.¹³² Average time served ranged from two weeks to 18.6 years. When measured at the three-year follow-up, the odds of reincarceration decreased by about 1% for every additional 7.5 months served.¹³³ Regression results with and without instrumental variable specification were consistent. Overall, the findings showed small but significant deterrent benefits associated with longer sentences.

Ilyana Kuziemko¹³⁴ examined the relationship between time served and reincarceration rates among state parolees released in Georgia. Her quasi-experiment exploited state parole guidelines that released prisoners according to a "recidivism risk" calculation determined by the state's sentencing grid.¹³⁵ The recidivism risk calculation was a proxy to roughly account for time served, and different sentence lengths (recommended per the grid system) were examined. Kuziemko compared similar nonviolent convicts on either side of the calculated "high-risk" cutoff.¹³⁶ Recidivism was measured by three-year reincarceration rates, and the relationship with time served was estimated using regression models with and without control variables.¹³⁷

Kuziemko examined a cohort of 17,000 offenders released between 1981 and 2007, whose time served ranged from 7 to 120 months, with an average of 24.8 months.¹³⁸ The results from the three-year follow-up showed a non-significant deterrent effect of longer sentences amounting to a 1.3% decrease in reincarceration rates (for a new crime) per additional month served.¹³⁹ When adding control variables to the model, the interpretations were similar but less robust. Kuziemko also examined a subgroup of 519 nonviolent offenders who were released about five months early as a result of 1981 changes to state statutes and had served an average of thirteen months in confinement (ranging from one month to six years).¹⁴⁰ By the three-year follow-up, 36% had returned to prison for a new crime.¹⁴¹ Using regression models (with and without control variables), the author found that longer sentences were associated with a significant decrease in reincarceration rates, a reduction of approximately 3.2% per additional month served.¹⁴²

In a 2017 study, David Roodman¹⁴³ reexamined Kuziemko's data, but with alternative model specifications and two measures of recidivism: (1) reincarceration for a new crime (not a parole violation); and (2) reconviction rates for new, serious crimes (also excluding parole violations). He also introduced an important predictor variable—the sentence *commute* time (i.e., the recommended sentence minus the actual sentence served). The reanalysis of the full sample found a deterrent effect related to longer sentences, but the results were less robust. Specifically, every additional month served was associated with an average decrease of 1.3% in reincarceration rates (for a new crime), though this effect was not statistically significant.¹⁴⁴ For the subgroup of 519 offenders who received early release, Roodman used regressions to compare the five years before the policy change with the four years after the policy change.¹⁴⁵ For this section, he also introduced a third measure of recidivism (i.e., total recidivism, measured by felony reconviction *or* reincarceration). Results showed both deterrent and criminogenic effects, which varied depending on the outcome measure used. Every additional month served significantly decreased reincarceration rates by a small margin (0.0031%), but this changed to a criminogenic effect when considering *total* recidivism rates (i.e., reincarceration and reconviction rates combined).¹⁴⁶ It isn't surprising that total recidivism rates were higher than reincarceration rates, though, given the higher burden of proof required for incarceration. Importantly, the effect sizes in this particular study were small. Nonetheless, it shows how different measures of recidivism might change results.

Matthew Snodgrass and colleagues¹⁴⁷ studied 4,683 prisoners in the Netherlands using a quasi-experimental study. All prisoners had been convicted of felony violent, property, or drug offenses. The average length of incarceration was relatively short at 6.7 months, with 86% of sentences being less than one year.¹⁴⁸ The authors used interquartile ranges of sentence length to create incarceration dosage categories that ranged from one to twelve

months.¹⁴⁹ Offenders were classified as “low-dose” if their sentence was on the lower end of the interquartile range and as “high-dose” if their sentence was on the higher end of the range. Dosage categories were balanced on important factors using propensity scores, and regression models with statistical controls examined the impact of time served on three-year felony reconviction rates.¹⁵⁰ A deterrent effect emerged, with high-dose offenders facing 0.033 fewer felony convictions per year than their low-dose counterparts (0.384 vs. 0.416), though it was not statistically significant.¹⁵¹ Based on these results, incarceration length seemed to have no real deterrent or criminogenic effect. However, this sample was limited to people with short sentence lengths, and results may not generalize to people with longer sentences.

E. Judge-Randomization Strategies

Three studies published between 2009 and 2022 employed judge-randomization strategies, whereby defendants were assigned to judges by a random drawing.¹⁵² In these studies, defendants assigned to one judge are considered a group. Some judges are more lenient in their sentencing than others, which creates variability in sentences among similar offenders. Thus, the defendants are similar enough to make comparisons, while differing in sentence length depending on which judge they are randomly assigned to, and so defendants assigned to a more lenient judge can be compared with defendants assigned to a more punitive one.

Michael Roach and Max Schanzenbach¹⁵³ employed a judge-randomization strategy with a cohort of nearly 8,000 lower-level felony offenders and twenty-five judges in Seattle. All offenders in the sample pled guilty under one judge and then were randomly assigned to a new judge for sentencing. Under Washington's sentencing guidelines, judges have a fair amount of discretion to depart from recommended sentencing ranges for crimes of low severity and for first-time offenders.¹⁵⁴ Many of the offenders in the sample were considered low-level, with an average offense seriousness of 2 out of a possible 16. Thus, judges had ample opportunity to depart from recommended sentencing ranges if desired, and the authors contended that this resulted in “random” variation in prison sentences. Sentences were relatively short, though; the average sentence was nine months, and 74% of sentences were less than twelve months. When controlling for differences between groups, the authors found a statistically significant deterrent effect of longer sentences.¹⁵⁵ The odds of being resentenced for a new felony were reduced by one percentage point per each additional month of incarceration. Deterrent benefits were evident at one-, two-, and three-year follow-ups, though the majority of effects occurred within the first year.¹⁵⁶

Manudeep Bhuller and colleagues¹⁵⁷ examined 23,373 defendants who were randomly assigned to 500 judges in Norway. Judges differed in their stringency when sentencing defendants, generating natural variation in sentence length. Judge incarceration stringency was defined as the judge's average incarceration rate and reflected the judge's

overall propensity toward custodial sentences. Judge sentence length severity was defined as the average sentence length across a judge's caseload.¹⁵⁸ The average sentence length was short, at an average of six months, and over 90% of people served less than one year.¹⁵⁹ The authors used judge incarceration stringency as an instrumental variable and included statistical controls for demographics and type of crime. The models revealed statistically significant deterrent effects at the two- and five-year follow-ups, with imprisonment exposure significantly decreasing the chances that someone would receive new charges (an average reduction of eleven charges per person).¹⁶⁰ When sentence length stringency was included in the model, results showed a small but statistically significant criminogenic effect. Specifically, they found that increasing a sentence by 250 days increased the chances of future charges at two- and five-year follow-ups, but these effects were small (average future charges increased by a maximum of 0.05%).¹⁶¹ Further analysis revealed large correlations between judges' incarceration stringency and their sentence length stringency, which could explain why the latter only minimally impacted results.¹⁶²

Donald Green and Daniel Winik¹⁶³ used a judge-randomization strategy with 1,000 offenders and nine judges from the District of Columbia superior courts. All of the offenders were convicted of drug-related felonies, and most had prior offenses.¹⁶⁴ The average sentence length was one year, and the maximum was four years.¹⁶⁵ The researchers examined whether defendants assigned to punitive judges were more likely to be rearrested than those assigned to lenient judges. The nine judges varied in sentencing tendencies as expected. Some judges were more lenient than others, and the length of administered sentences ranged from five to twelve months across judges. The groups were statistically similar at the outset, and an instrumental variable was used to control for important factors.¹⁶⁶ The authors initially found a criminogenic effect of longer sentences when measured at the four-year follow-up. This suggested that, on average, each additional month of incarceration increased the chances of rearrest by 0.009%.¹⁶⁷ This effect was not statistically significant, though, and it changed to a statistically significant (albeit small) deterrent effect when the instrumental variable was added to the model. The latter suggested that each additional month of incarceration lowered the probability of recidivism by 0.006%.¹⁶⁸

In his 2017 study, Roodman¹⁶⁹ also reanalyzed Green and Winik's data using a slightly different design, as he questioned whether the two groups in the original study were fully comparable. He used the same judge assignment as the prior study, but his regression models included additional specifications, measures of recidivism, and multiple follow-up periods (ranging from two days to four years). Recidivism measures were felony conviction rates and combined felony/misdemeanor rearrest rates.¹⁷⁰ The results were less robust than those of the original study and varied depending on recidivism measure. Roodman found

criminogenic effects on four-year felony/misdemeanor rearrest rates (each additional month of incarceration increased the probability of rearrest by 1.32%) but found deterrent effects on felony conviction rates (each additional month of incarceration decreased the probability of felony conviction by 0.04%).¹⁷¹ It is not entirely surprising that the results varied by outcome measure. Arrests require a lower burden of proof than convictions, so rearrest rates are often higher than conviction rates.

Considering all variations of analyses of Green and Winik's data, some of the findings showed a deterrent effect of longer incarceration time, though effect sizes were minimal in both Green and Winik's initial study¹⁷² and Roodman's replication study.¹⁷³ Unfortunately, though, the sentences for all offenders were short, at approximately one year, so the study results may not extend to people with longer sentences.¹⁷⁴

F. Studies Finding Curvilinear Relationships

Benjamin Meade and colleagues¹⁷⁵ examined one-year felony rearrest rates using a sample of nearly 2,000 parolees in Ohio. Offenders were all released at the same time following statewide changes in parole statutes but were differentiated in terms of time served. Time served was measured using five ordinal dosage categories (<1 year, 1–2 years, 2–3 years, 3–5 years, and >5 years), and propensity scores were used to balance groups on important factors.¹⁷⁶ Overall, the results suggested a deterrent effect of longer sentences.¹⁷⁷ With the exception of those serving less than one year, the odds of rearrest decreased as time served increased. The odds of felony rearrest were highest for those serving between one and two years; after the two-year mark, the odds of felony recidivism decreased as time served increased.¹⁷⁸ However, the decreased recidivism risk was statistically significant for only one dosage category—those serving more than five years.¹⁷⁹

Importantly, the observation of initial deterrent effects (for those serving less than one year), followed by criminogenic effects (for those serving one to two years), followed again by deterrent effects (for those serving more than two years) suggests that the relationship may be curvilinear rather than linear.¹⁸⁰ This has important implications for research, particularly for studies that rely on samples with short sentences. If a curvilinear relationship between time served and recidivism exists, it would not be fully captured among samples of offenders with overall short sentences. If longer sentences increase criminogenic effects initially (up until two years of time served), this means that studies examining offenders serving two years or less will be prone to finding criminogenic effects. Another important consideration is that offenders with short sentences are typically less serious offenders and are qualitatively different from those with longer sentences.

Daniel Mears and colleagues¹⁸¹ studied the recidivism patterns of more than 90,000 violent and nonviolent inmates released from Florida prisons who spent an average of two years incarcerated. The quasi-experiment

examined the impact of time served on three-year felony reconviction rates.¹⁸² Groups were naturally occurring and were not similar to each other at the outset, though the authors sought to remedy this by using propensity scores to balance groups on variables related to time served.¹⁸³ The authors were also interested in exploring how linear models and curvilinear models might yield different results. The authors estimated several time series models that hypothesized various positive, negative, and curvilinear relationships.¹⁸⁴ Each model had different specifications regarding the direction of the hypothesized relationship and included various covariates in the model to control for preincarceration differences.¹⁸⁵

The authors found mostly consistent results across the three iterations, but with some interesting caveats. For people serving less than a year, criminogenic effects emerged, showing statistically significant increases in felony reconviction rates at the one-year follow-up (however, this was not significant in subsequent follow-ups). For people serving one to two years, this flipped to a deterrent effect, with statistically significant reductions in felony reconviction rates at one- and two-year follow-ups (but not at the three-year follow-up). Deterrent benefits started to taper off after two years, and there were no criminogenic or deterrent effects associated with terms ranging from two to six years. For terms exceeding six years, though, deterrent effects reemerged, and the probability of recidivism slowly declined as time served increased beyond this point.¹⁸⁶ Mears and colleagues¹⁸⁷ agreed that the relationship between time served and recidivism was curvilinear, describing it as an “inverse U-shape.” In other words, increases in time served actually *increased* recidivism rates, but once time served exceeded a year, longer sentences were associated with *decreased* recidivism rates.

We would be remiss to exclude the recent findings (not yet peer reviewed) on incarceration length and recidivism from a longitudinal study by the Sentencing Commission.¹⁸⁸ Based on their regular collection of federal recidivism statistics, this study is ongoing and its results are published periodically. One such report, published in 2020,¹⁸⁹ estimated the impact of different sentence lengths on eight-year rearrest rates for 25,400 offenders released from federal prison in 2005. The author, Ryan Cotter, used matching and weighting techniques to generate comparable groups of offenders who served different lengths of time in prison (i.e., 2–3 years, 3–4 years, 4–5 years, 5–10 years, or >10 years).¹⁹⁰ A series of logistic regression models were used to study the impact on technical violations and rearrests for new crimes while statistically controlling for important variables (e.g., age at release, criminal history, weapons offense).¹⁹¹

The models showed that offenders who were incarcerated for more than five years had significantly lower odds of recidivism.¹⁹² When compared with people serving shorter sentences, people serving between five and ten years were 17% less likely to recidivate, and people serving ten years or more were 30–45% less likely to do so (estimates varied

depending on the model). In comparison, those serving between one and five years experienced no significant criminogenic or deterrent effects (though there was a small, nonsignificant criminogenic effect for those who served between two and three years).¹⁹³

Updated findings from the Sentencing Commission study were released in 2022 and showed nearly identical results.¹⁹⁴ The earlier analysis had examined about 25,400 federal offenders released in 2005, whereas the newer analysis examined 22,900 federal offenders released in 2010. Matching techniques (without weighting) were used to generate groups that were statistically equivalent across incarceration dosage categories.¹⁹⁵ The same incarceration dosage categories described above for the 2020 report were compared in terms of recidivism risk at eight years post-release.¹⁹⁶ A small criminogenic effect was detected among those who served between two and three years, but it was not statistically significant.¹⁹⁷ For terms lasting three to five years, there were null effects on recidivism.¹⁹⁸ Statistically significant deterrent effects emerged, however, once incarceration terms exceeded five years. Specifically, the odds of rearrest were 18% lower for people serving five to ten years and 29% lower for those serving ten years or more, when compared with similar offenders who served shorter sentences.¹⁹⁹ Overall, these results showed statistically significant deterrent effects among offenders serving five years or more, whereas those sentenced to less than five years experienced no statistically significant criminogenic or deterrent effects.²⁰⁰

Overall, the results from both of the Sentencing Commission reports showed evidence of deterrent effects for longer sentences, though they also were suggestive of a curvilinear relationship between time served and recidivism. There were nonsignificant criminogenic effects among people serving two to three years, followed by null effects among people serving three to five years, and then significant deterrent effects for people serving five years or more.²⁰¹ The pattern of initial criminogenic effects (albeit nonsignificant) followed by deterrent effects as sentence length increases reflects an “inverse U-shape,” again indicating a curvilinear relationship between time served and recidivism.

The finding of curvilinear relationships in some of the research has important implications and may explain a lot of the mixed findings. Length of stay appears to be associated with increases in recidivism up until a certain threshold. Once length of stay reaches a certain threshold, it decreases recidivism. Thus, studies with samples that are skewed toward shorter sentence lengths would be prone to finding criminogenic effects because they would not capture the curvilinear relationship, nor would they capture deterrent benefits associated with longer periods of incarceration.²⁰² Unfortunately, many of the studies reviewed for this paper examined cases with relatively short sentences (approximately one year). While more research is certainly warranted, longer sentences may be justified in some circumstances to achieve retributive goals or a stronger deterrent benefit.

As stated above, randomization is ideal for the purpose of generating comparable groups. If this is not possible, the next best option is to strategically create statistically comparable groups (e.g., by using a matched-pairs design or deliberate assignment). When the groups are not statistically similar, authors must remedy this problem as best they can by controlling for factors that differ between groups as well as for variables that are theoretically related to the primary outcome. This is typically done through use of statistical adjustments (e.g., propensity score matching, instrumental variable identification, or regression-based statistical adjustments). Failure to do this, or to do it adequately, significantly decreases the causal validity of the study design. Therefore, we have discussed here only studies that meet the above criteria. The results are summarized in a table available on the Criminal Justice Legal Foundation's website²⁰³ (space does not permit its publication here).

V. Conclusion

A total of twenty studies were included in the present review, though four did not add value to our conclusions, due to methodological limitations.²⁰⁴ Among the sixteen applicable studies were one experimental design²⁰⁵ and fifteen quasi-experimental designs.²⁰⁶ Four of the quasi-experimental designs used pseudo-randomization strategies for judge assignment.²⁰⁷ All of the designs either met the criteria for statistical equivalence between groups or applied statistical controls to account for differences between groups.²⁰⁸ Eight studies suggested an aggregate deterrent effect in their results,²⁰⁹ five of which were statistically significant,²¹⁰ but effect sizes were small. Two studies suggested a significant aggregate criminogenic effect,²¹¹ but one of these studies suffered from a confound that rendered its results meaningless.²¹² Six studies had mixed results, suggesting both criminogenic and deterrent effects of longer sentences,²¹³ with some²¹⁴ finding mixed effects based on the recidivism measure used.

Of the six studies with mixed findings, four found potential curvilinear relationships between time served and recidivism.²¹⁵ These studies showed initial criminogenic effects for those serving shorter-than-average sentences (generally, less than two years). After a certain threshold of time served, deterrent effects emerged. This suggests that the relationship between time served and recidivism may follow an "inverse U-shape" pattern rather than a linear one. The suggestion of a curvilinear pattern of recidivism has important implications for both research and policy. Many studies rely on linear models and samples of offenders with short sentence lengths (typically less than two years) and thus are unable to capture the additional deterrent benefits that may occur once incarceration length exceeds a certain threshold. The potential existence of a curvilinear relationship also might explain the many mixed findings regarding the impact of time served on recidivism.

In summary, research has not fully unpacked the complex relationship between length of incarceration and

recidivism. The studies that have found a deterrent effect of longer sentences, though numerous, have small effect sizes and results that are often not statistically significant. Other studies have suggested that deterrent effects may follow an "inverse U-shape" pattern, as described above. At present there is no substantial evidence that a criminogenic effect exists in the aggregate. Indeed, in the peer-reviewed literature, there is somewhat more evidence of a deterrent effect from longer sentences. Importantly, however, at least two considerations remain unclear: whether shorter prison sentences would result in the same sense of retribution for the victim as well as society, and whether shorter prison sentences would counterbalance public safety gains achieved from incapacitation or deterrence.

The literature on the impact of incarceration on recidivism is admittedly limited by important methodological considerations and inconsistencies across studies. The methodologies vary in terms of their approaches and limitations, use inconsistent measures of recidivism, and span different geographical jurisdictions. Perhaps the most important implication of this research is best summarized by Mears, Cochran, and Cullen:²¹⁶

We argue that a better understanding of the heterogeneity of incarceration—including the types and sequences of sanctions and experiences that occur before, during, and after imprisonment—and of incarceration effects among different groups is important for two reasons. First, it can assist with assessing the salience of prior research on the effects of incarceration on recidivism. Second, it serves to identify conceptual and methodological challenges that must be addressed to provide credible assessments of incarceration effects. . . . [I]ncarceration likely exerts a variable effect depending on the nature of the prison experience. . . . including prior sanction history, and the specific populations subject to imprisonment.

Considering the research on incarceration and recidivism, there is evidence suggesting that certain punishments may effectively deter crime, though a lot of the research showed mixed findings. Importantly, there were no studies finding a large aggregate-level criminogenic effect associated with longer sentences. This review demonstrates why true evidence-based practice should involve a critical examination of the breadth and depth of the existing empirical research rather than cherry-picking results from a study or two. The policy relevance of studies varies widely on the basis of context, and policymakers would benefit from considering the totality of findings across studies and the various contexts to which they apply before enacting rapid policy change.

Notes

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- ⁸⁴ *Id.* at 9.
- ⁸⁵ *Id.* at 15.
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149 *Id.* at 1158.

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