

Sentencing Enhancements and Incarceration: San Francisco, 2005-2017

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EXECUTIVE SUMMARY

Sentencing enhancements have been an increasingly important part of criminal sentencing in California for the last 40 years. During the “tough on crime” era of the 1980s and 90s, enhancement statutes such as Three Strikes were enacted that imposed what some saw as severe penalties for even relatively minor crimes. In recent years, enhancements have been regarded with increasing skepticism as mass incarceration and its attendant costs—both financial and social—have come under scrutiny. Still, little research has been conducted to help understand how enhancements contribute to time served in jail and prison.

Here we analyze nearly 8,000 felony cases that went to sentencing in San Francisco from 2005 to 2017. In aggregate, we find that enhancements accounted for about 1 out of every 4 years served in jail and prison. Only about 13% of cases were enhanced, but among enhanced cases, the enhancements more than doubled the base term. About half the time served for enhancements was triggered by prior convictions—time that was almost exclusively driven by two enhancements, “Prop. 8 Priors” and Three Strikes. The other half was due to enhancements for an individual’s conduct during the offense, particularly the “10-20-life” gun enhancement. While it is difficult to fully anticipate the effect of policy changes, these results suggest that one could substantially reduce incarceration by focusing on a small number of enhancements.

1 Introduction

Sentencing enhancements are terms of incarceration that increase the total jail or prison term for a crime, based on how a crime was committed or on the identity or background of the offender [23, §2.2]. There are two categories of enhancements: *conduct* enhance-

ments, which pertain to how a crime was committed, and *status* enhancements, which generally address the defendant’s prior criminal history or, less commonly, factors such as gang affiliation [23, §2.3]. Figure 1 gives examples of each type of enhancement.

As an example, consider a robbery committed at gunpoint, where the robber had served time for a felony in the previous 5 years. The offender could be charged not only with the primary offense of second degree robbery (the generic offense for theft committed by means of assault), but also with a conduct enhancement for using a firearm, and with a status enhancement for the prior jail or prison time [23, §2.10]. If convicted of just the primary offense, the individual’s sentence would typically be 3 years in state prison [18, Pen. Code §213(a)(2)].^[1] Conviction on the firearm enhancement would add an additional 4 years [18, Pen. Code §12022.5(a)], and the status enhancement would add yet another year [18, Pen. Code §667.5(b)]. In total, this defendant would face 8 years in prison.

Enhancement statutes first appeared over 40 years ago and proliferated during the “tough on crime” era of the 1980s and 90s. The most controversial law, Three Strikes, authorized a life sentence upon conviction of a third felony, where that third strike could be a relatively minor crime like theft.^[2] Over time, a multitude of less well-known enhancement laws were passed, often in visceral reaction to particular notorious criminal incidents. These laws, sometimes enacted by legislation and sometime by voter initiative, created a complex system capable of producing steep sentences for a wide variety of offenses [38]. In recent years, enhancements have been regarded by many with increasing skepticism in light of the socioeconomic disparities and financial costs associated with mass incarceration. Some reform efforts have decreased the effects of important sentencing laws like Three Strikes. Still, little research has been conducted to help understand how enhancements in general are imposed and how they contribute to time served in jail and prison.

One reason for the dearth of empirical research on this subject is that suitable data are difficult to obtain. In this study we use data provided by the San Fran-

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^[1]Sentencing for primary offenses is discussed more fully below in Section 2.1.

^[2]A challenge to such a sentence as cruel and unusual punishment in violation of the Eighth Amendment was rejected by the Supreme Court in *Ewing v. California*, 538 U.S. 11 (2003).

Conduct	Status
<i>Related to defendant's behaviour during commission of offense</i>	<i>Related to defendant's status as a recidivist</i>
Notable examples	
<ul style="list-style-type: none"> • PC § 12022.5 Personal use of firearm • PC § 12022.7 Infliction of great bodily injury • HS § 11353.6 Sale of drugs near school • PC § 186.10(c) Money laundering in excess of certain amounts 	<ul style="list-style-type: none"> • PC § 667.5(b) Prior prison or jail term • PC § 667(a) Prior serious felony conviction • PC § 667(e) Prior "strikes"

Figure 1: Types of enhancements. *PC* refers to *Cal. Pen. Code*; *HS* refers to *Cal. Health & Saf. Code*.

cisco District Attorney's office. Specifically, we analyze felonies sentenced in San Francisco between 2005 and 2017. We note that the demographic information we received was limited, and therefore race is treated only briefly in our analysis.

Our key conclusion is that enhancements account for about 1 out of every 4 years (26%) served in jail or prison over the period we analyze. This number is explained in part by the fact that while only a relatively small number of cases include enhancements (13%), enhancements more than double the base terms when they are imposed. In particular, among cases that include any enhancement, individuals served an average of 3.9 years for the base charge and an additional 4.5 years due to enhancements.

In attributing jail and prison time to enhancements, we use the time we project that the offender will *serve*—accounting for credits toward early release—and not straight time *sentenced*. While imperfect, this adjustment is important, as enhancements lengthen incarceration time both directly, by adding an additional term to the base term, and indirectly, by limiting the amount of credit an individual can accrue.

About half of the time served for enhancements was triggered by prior convictions (53%). This half was almost entirely driven by just two enhancements: the 5-year “Prop. 8 Prior” (for prior conviction of a serious felony when the current charge is also a serious felony), and Three Strikes sentences. After prior convictions, weapons and firearm enhancements are the second largest category (31%), led by the “10-20-life” gun enhancement. Similarly, the most frequently sentenced enhancements—as opposed to those that led to the most incarceration time—are based on prior convictions (61%). Sentences for Prop. 8 Priors and Three Strikes are frequently imposed, but by far the most common is the 1-year enhancement for prior incarceration on a non-serious felony (27%) [18, see Pen. Code §667.5(b)]. As with time served, enhancements related to weapons and firearms are the second most

frequently imposed category. All other categories of enhancements, including those for drug activity, gang activity, and sex crimes, account for much less time served and are sentenced much less frequently than enhancements for prior convictions and use of a weapon or firearm.^[3]

Our results suggest that a significant portion of the years served by felons in our dataset is attributable to only a small subgroup of the numerous enhancements on the books. Therefore, one could substantially reduce incarceration by focusing on a relatively small number of enhancements: Prop. 8 priors, Three Strikes, and the 10-20-life gun enhancement. It bears emphasis, however, that prosecution and sentencing in San Francisco may not be representative of other counties in the state. Further, it is difficult to fully anticipate how incarceration time would be affected if enhancement statutes were altered, as such a policy shift would likely result in significant changes in the behavior of judges and prosecutors. Nonetheless, our analysis is a first step in understanding the effect of enhancements on incarceration in California, and provides a road map for future such studies.

2 Historical Context

2.1 Determinate sentencing and the rise of enhancements

Sentencing in California today is a complicated but fairly formulaic matter. Under the post-1977 regime of “determinate sentencing,” California law prescribes specific term lengths for almost all crimes. For most felonies, the law sets out three possible base terms of incarceration (lower, middle, and upper). The middle term presumptively applies, though a judge may impose the lower or upper term based on mitigating or aggravating factors. For example, second-degree robbery carries a presumptive term of 3 years, which a judge may lower to 2 years or raise to 5 years [18, Pen. Code §213(a)(2)].

Enhancements are comparable to so-called aggravating factors in that both are mechanisms that increase the total years sentenced for a crime.^[4] However, aggravating factors are part of the triad structure and are applied to determine if the upper term of a base sentence should be imposed. Enhancements, on the other

^[3]Drug, gang, and sex enhancements can fall into overlapping categories, as with, for example, an enhancement for a prior conviction of a sex crime. We have categorized enhancements by their dominant characteristic. Thus, an enhancement of a drug offense where the defendant has a prior conviction of a drug offense (Health & Saf. Code §11370.2(c)) is classified as a status enhancement with other priors, while an enhancement of a drug offense where the drug quantity exceeded certain thresholds (Health & Saf. Code §11370.4) is grouped with other conduct offenses as a drug enhancement.

^[4]Enhancements may also be compared to certain alternative sentencing schemes which provide longer base terms of incarceration [23, §2.6]. Three Strikes, which we treat as an enhancement here, could also be characterized as one such scheme. Unlike a proper enhancement, an alternative sentencing scheme does not impose an additional term of incarceration; rather, it changes the base term itself. For example, on a second “strike,” the Three Strikes law doubles the base term; it does not add an additional term *per se*. Here and elsewhere, we follow others and treat alternative sentencing schemes as enhancements [25, 30].

hand, add an additional term to the base. Notably, enhancements may be applied on top of the upper term of a base. Further, aggravating factors need not be pleaded and proven, unlike enhancements, for which the facts must be found beyond a reasonable doubt by a jury [23, §2.5]. Despite these structural differences, there is considerable overlap of the criteria for these two mechanisms. “Circumstances in aggravation” include causing great bodily harm, using a weapon, and having a prior conviction—all of which are also covered by enhancements [16]. Although the same facts used to prove an enhancement may not be used to justify selecting the upper term [18, Pen. Code §1170(b)], different facts of the same nature can be used to justify both types of sentence. For example, one prior conviction can be used to impose an upper term while another is used for an enhancement [10, p. 251 n. 5].

This determinate sentencing scheme is a relatively recent innovation. Before 1977, California used an indeterminate sentencing system, in which laws only specified minimum and maximum sentences. [5] Often these limits provided for a broad range of sentences: burglary and robbery carried maximum terms of life in prison, and even lesser offenses like forgery carried maximums as high as 14 years [34]. A panel appointed by the governor—known as the California Adult Authority—determined when prisoners were fit for release [36]. This system faced criticism for its perceived subjectivity, lack of transparency, and overrepresentation of law enforcement interests [34]. The Uniform Determinate Sentencing Act of 1976 was California’s answer to this criticism. The Act fundamentally restructured California’s criminal law, with the goal of bringing “uniformity in the sentences of offenders committing the same offense under similar circumstances” [4, §273].

Enhancements were intended to help achieve this uniformity of sentencing [23, §2.2]. Their actual effect on uniformity is more subtle than the the triad structure of determinate sentencing, which has a similar aim of treating like criminal acts alike. Enhancements based on prior convictions might cause “like criminals” to be treated alike, but undermine uniformity for “like crimes.” Similarly, conduct-based enhancements might increase uniformity for certain acts, such as using a gun while committing a crime, but they upset uniformity with regards to the base crime; sentences for the same base crime will vary widely because of the enhancement. Enhancements also allow a prosecutor to

[5] While we use the term “determinate” here to respect convention, it is actually somewhat ambiguous. It would be more precise to use the vocabulary suggested by Steven Chanenson: “[un-]structured” and “[in-]determinate” [27]. The first distinction relates to the trial judge’s choice of sentence. That is, a sentencing regime is *unstructured* if the judge has broad discretion within a stated range; it is *structured* if the judge must impose a mandatory number of years or follow a formula based on the crime. The sentence, once issued, is *indeterminate* if an administrative authority such as a parole board can later shorten it by an exercise of discretion; the sentence is *determinate* if it can only be shortened by a good-conduct formula. Thus, we have a four-part matrix of possible regimes. Using that vocabulary, we can say that before 1977, sentencing in California was mostly unstructured and indeterminate, and that after 1977, the regime for the bulk of felonies became mostly structured (except within the triads) and determinate (except for life sentences).

threaten or ensure a high specific term of years, and thus limit a judge’s discretionary power over the final sentence.

In the early years of determinate sentencing, enhancements were relatively limited in number and focused on prior convictions, the use of deadly weapons or firearms, and infliction of great bodily injury. Enhancements were likewise limited in severity. Those for prior convictions topped out at three years; for firearms, the maximum was two. Judges were granted discretion to strike any of these [4, §§268, 304-06].

During the 1980s and 90s, enhancements became more numerous and severe. Dozens of new enhancement laws were passed in a way that critics alleged was haphazard—in “reaction to the ‘crime of the month’” [38, p. 921]. Among the most critical changes, the “Prop. 8 Prior” was added in 1982, creating a 5-year enhancement for prior serious felony convictions [3, §5]. Unlike other enhancements for priors, judges could not strike this enhancement, as the Legislature made clear in 1986 [5, §2]. The STEP Act of 1988 added enhancements for crimes committed “for the benefit of . . . street gang[s]” [6, §1]. During this phase, the Three Strikes Law was also added, which mandated longer base sentences for defendants with prior convictions for serious or violent felonies [7, pp. 32-7]. Notably, the law did not replace existing enhancements for prior convictions and expressly permitted a single prior to be used as the basis for both a strike and an enhancement [23, §15.38]. In 1997, a new set of conduct enhancements for the use of firearms was enacted, dubbed “10-20-life.” The law was significantly more stringent than the already existing firearm enhancements, providing for additional terms starting at 10 years and going up to 25-to-life [9, §3]; cf. [8, §9, p. 1950]. Throughout this time, the number of predicate felonies that could trigger eligibility for major enhancements steadily increased.^[6]

2.2 Growing skepticism

Skepticism about the efficacy of enhancements has grown in the past two decades, as has more general concern about how California’s penal code gave rise to a constitutional crisis of overcrowding in the state prisons. Empirical skepticism focused on Three Strikes: by 2005, despite early declarations of its success, there was little evidence that Three Strikes had any effect on lowering crime rates [38]. But Three Strikes likely did contribute to an increase in the prison population. One study found that in 2004, over 25% of the prison population was serving time for strike allegations [25].

This connection between enhancements and the prison population has become particularly relevant. Overcrowding of the prisons, and the allied deficiencies in medical and mental health care, led federal courts to impose injunctive control over the whole prison system for violating the Eighth Amendment.

[6] Compare, e.g., Initiative Measure (Prop. 8, §7, approved June 8, 1982) (enumerating 25 felonies deemed serious for purposes of Pen. Code § 667(a)), with 1999 Cal. Stat. ch. 298, §1 (bringing the list up to 35 such felonies). The list had reached 42 felonies as of 2019 [18, Pen. Code §1192.7(c)].

Ultimately, a special three-judge court, approved by the Supreme Court in *Brown v. Plata* in 2011, forced a drastic reduction in the prison population, from nearly 200% of the system’s design capacity to 137.5% [11]. California’s major mechanism for doing so was the 2011 realignment law which mandated that offenders convicted of designated low-level felonies serve their time in county jails instead of state prisons [1]. The consequences of these events are complex and uncertain. Many of the prisons’ problems may end up being reprised in the jails, some of which are under their own court-ordered caps [24, 32]. And even though the prison population has gone down, the three-judge court has resisted ending the injunction, indicating that it may first want to see structural reform in California sentencing law.

In the 2010s, legal reforms started to roll back the punishments imposed by certain enhancements. Three Strikes was amended in 2012 so that the third strike had to be a serious or violent felony in order to trigger a life sentence [12]. In 2014, Prop. 47 recategorized certain felonies as misdemeanors [13]. As a result, some defendants were no longer eligible for enhancements based on prior convictions, either because their past offenses were recategorized as misdemeanors, or because the new charges were no longer felonies. In 2017, a 3-year enhancement on drug sentences for prior drug convictions was largely eliminated by the Legislature [15], and judges were granted discretion to strike certain firearm enhancements, including “10-20-life.” The following year, the Legislature tackled further changes to enhancement law. A proposal to bring back the restriction capping a sentence for incarceration at twice the length of the base term failed [2], but legislation granting judges discretion to strike “Prop. 8 Priors” was enacted [20, §2]. Other reforms have sought to minimize the effect of enhancements, not by taking them off the books, but by limiting their effect on actual time served. Effective 2017, Prop 57 made many felons eligible for release on parole once they completed their base terms, without having to serve their enhancement terms [21].^[7]

Throughout the history of enhancement legislation, only Three Strikes has received significant attention from researchers. The effect that the scores of other enhancements in California law have had on mass incarceration has been left almost entirely unmeasured.

3 Data and methodology

3.1 Source data

This study draws primarily on two datasets provided by the San Francisco District Attorney’s (SFDA) office: (1) a listing of criminal charges filed in each case; and (2) sentencing hearing text records. We transformed and combined these datasets to analyze crimes sentenced in San Francisco from 2005 through 2017.^[8]

^[7]Note that the full base term must be served; it cannot be reduced with credits, which are discussed more fully below in Section 3.5.

^[8]The SFDA provided us with data as far back as 1976, but the older data were only available in a loosely structured format that made analysis difficult.

In this section, we briefly describe how we processed these datasets.

The first dataset contains 258,630 criminal charges filed in 77,671 cases that went to sentencing between 2005 and 2017 in San Francisco. A charge record comprises a unique court case identifier (henceforth, “case number”), filing date, code section referencing the relevant California law, charge degree and class (misdemeanor or felony), disposition code indicating the outcome of the charge, and, where applicable, details pertaining to the sentence.^[9] The details of the sentence may include the term to be served in a jail or prison facility or on probation, and additional qualifications such as whether the sentence was stayed. The charges recorded in this dataset are exclusively base charges; enhancements are not captured here.

Starting in January, 2011, we were able to determine the race and ethnicity of the individuals involved in these cases. White and black race categories are explicitly included in the data. The “white” category, however, includes both Hispanic and non-Hispanic individuals. We disambiguated these groups based on surname. To carry out this imputation, we used a dataset from the U.S. Census Bureau that estimates the racial and ethnic distribution of people with a given surname, for surnames occurring at least 100 times. Following previous studies [40], we defined a name as “typically” Hispanic if at least 75% of people with that name identified as Hispanic, and we note that 90% of those with typically Hispanic names identified as Hispanic in the 2010 Census.

The second dataset contains 104,528 text records of sentencing hearings for the cases described above.^[10] A hearing text record contains a case number, court date, and structured text memorializing the judge’s orders at the sentencing hearing. The hearing texts include sentencing information for each conviction, including base charges and enhancements. The sentencing information typically indicates probationary and/or carceral terms as well as additional qualifications such as stays, fines, and credit awarded for time served prior to sentencing. The relevant code sections are recorded in the text for enhancements; however, for base offenses they are not. When a case involves multiple charges, the text indicates which base charge an enhancement modifies by way of ad hoc enumeration. As a result, we can identify *which* of the numbered base charges is enhanced, but we do not know specifically *what* offense is connected to that base charge.^[11] Figure 3 shows an example of the sentencing hearing text format.^[12]

^[9]Records in this dataset include all filed charges, regardless of disposition.

^[10]A single case might have multiple sentencing hearings for various reasons, but most commonly due to resentencing (e.g., a probation violation that caused a stayed sentence to be imposed). We consider the most recent hearing in which a sentence is issued.

^[11]See Section 3.4 below for a detailed discussion of reconciling base charges and enhancements in the datasets.

^[12]SFDA data on individual cases are private and confidential. We have constructed this example for the purpose of illustration and have not provided any literal samples from our data.

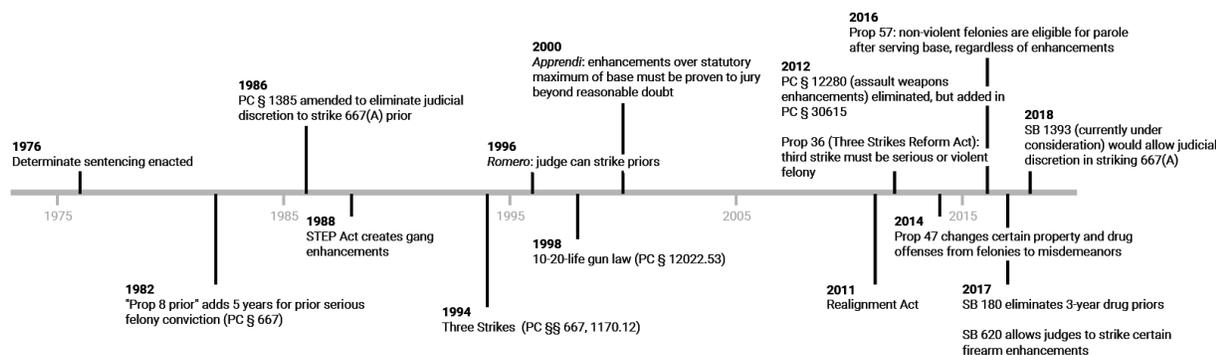


Figure 2: Timeline of key changes in sentencing law.

3.2 Selecting cases for analysis

We selected 7,827 cases for analysis out of the total 77,671. Most of the cases we discarded involved sentences solely for misdemeanors or infractions. Since enhancements, for all intents and purposes, do not apply to these classes of crimes, the sentences in these cases presumably are not affected by changes in enhancement law.^[13] The rest of the cases we discarded involve stayed sentences, in which either a sentence is imposed but its execution is stayed, or the sentencing itself is stayed. In such cases, defendants are typically placed on probation and will not serve time in jail or prison unless they violate their probation or some other event triggers the stay to be lifted.^[14]

3.3 Extracting Data from Text Records

We extracted sentences from hearing text records by splitting the text into charge clauses and then applying a set of *regular expressions*^[15] to identify key features of the sentence by context. As Figure 3 shows, charge clauses are delimited by forward slashes (“/”), so dividing the text into clauses is straightforward.

The patterns we designed to match information are more complex. For example, the pattern we use to extract term length first matches the abbreviations SP

^[13]In rare cases, enhancements can apply to misdemeanors. See Veh. Code § 14601.3(e)(3) (setting out a sentence of 180 days in jail if a defendant is a habitual traffic offender, in addition and consecutive to a sentence for Veh. Code § 14601.2, driving on a suspended license); Veh. Code § 40000.11 (defining §14601.2 as a misdemeanor). We find only 8 cases in our data where enhancements apply to non-felony charges: two appear to be mistakenly labeled as misdemeanors (they specify prison sentences of multiple years), while the other six were disposed under special circumstances, such as insanity.

^[14]It is common in our data for a judge to sentence a defendant to a relatively short term in jail as a condition of probation. In such cases, individuals will serve anywhere from a few days to a few months in jail before being released on probation. This type of jail term is not eligible for enhancement and so, like misdemeanor sentences, we assume these terms would remain constant with any changes to enhancements law, and therefore exclude these cases from our analysis.

^[15]Regular expressions are text search patterns defined in a formal language. They can be used to locate patterns of text within arbitrarily complex contexts. For example, the simple pattern `/hay(needle)stack/` extracts the term `needle` from the text `hayneedlestack`.

for “state prison” and CJ for “county jail” followed by a number, followed by a time unit Y for “years” or M for “months.” Thus, our pattern will match a segment such as SP4Y which we can interpret as “four years in state prison.” Using a set of such patterns, we are able to extract information from each charge and enter it into a row of a table, as in Figure 3.

In 2005, the courts adopted a system called ACES that standardized the way these records are formatted. Before this time, records used a multitude of different syntax structures and variations of abbreviations. Given the difficulty of writing patterns and logic to account for all the variations in the data, we restricted our analysis to the ACES-formatted texts from 2005 onward.

3.4 Joining datasets

Since the dataset that includes enhancements does not include the code sections for the base charges, we had to join the two datasets in order to look at the relationship between enhancements and base crimes. Joining the datasets is a challenge because the only way to relate a base charge from the hearing text record to the charge record is by the charge’s term length, which may be ambiguous: a single case may have multiple charges with the same term. To simplify the join, we considered only the single longest (or “principal”) sentenced charge and its enhancements in each case.

In the vast majority of cases (93%) there is either only one charge sentenced, and therefore the join is straightforward, or there are multiple charges sentenced but the longest term has a unique length, so the join is unambiguous. When the principal charge is ambiguous based on term length, we choose one of the matching base charges randomly. Overall, we expect around 96% of charges to be correctly mapped between datasets. This does add some uncertainty to our analysis of the relationship between types of enhancements and types of base crimes, but we do not expect that would qualitatively affect our results.

In most cases, ignoring the non-principal charges does not affect our calculation of total time served. This is because sentences are typically served concurrently [18, Pen. Code §669(b)]. While judges may

DATA GAPS IN CALIFORNIA'S CRIMINAL JUSTICE SYSTEM

In 2015, the Hon. Tani Cantil-Sakauye, Chief Justice of the California Supreme Court, asked the Stanford Criminal Justice Center (SCJC) to undertake a study of the sentencing enhancements in the state's criminal codes. Like many state officials, the Chief Justice was concerned that, even after the 2011 realignment law, California had to consider a variety of possible reforms to persuade the three-judge court to terminate the population-reduction injunction affirmed in *Brown v. Plata*. While the Chief Justice took no position on the policy wisdom or fairness of any particular criminal statutes, she sought information about the degree to which enhancements, and different combinations of base crimes and enhancements, were contributing to crowding pressure in the state's prisons.

SCJC sought empirical information about the frequency with which felons received particular enhancement sentences. In theory these data should have been easy to compile. Whenever a person is sentenced for a felony, the trial court produces an Abstract of Judgment summarizing the crime, the enhancements, and the resulting sentences. The data SCJC sought would be the sum of those documents. (And where the documents identify the defendant by demographic factors, at least the correlation between those factors and the sentences could also be measured.) SCJC reached out to leaders of the California Department of Justice and the Department of Corrections and Rehabilitation on the assumption that these departments receive these abstracts or summaries of them. In both cases, SCJC was told that the available data were either not reliable enough or not digitized in a sufficiently useful form, nor were there any immediate plans to resolve these issues. Next, at the Chief Justice's suggestion, SCJC approached particular Superior Courts, hoping that at least some of them could supply the data or give SCJC access to compile it. This effort was also unsuccessful. Presiding judges told SCJC that their data were unreliable in form, that they lacked the resources to organize the data, that they did not want to open their files to researchers, or a combination of all three.

Finally, since the relevant documentation was also, by definition, in the hands of district attorneys, SCJC approached the elected DAs in several counties. Only one responded favorably: George Gascón of San Francisco. The SFDA was thus the only source of data for this research. For more in-depth discussion of these issues, see Mikaela Rabinowitz et al., *The California Criminal Justice Data Gap*, Stanford Criminal Justice Center (2019).

impose consecutive sentences under certain conditions [17, 31], the sequential charges (both base and enhancement) are normally reduced to one third of their full length, so they have a smaller effect on total time served [18, Pen. Code §1170.1]. Since we are ignoring consecutive sentences, we are slightly undercounting the aggregate years sentenced from base crimes.

3.5 Estimating time served

Time sentenced is only a coarse proxy for time actually served in jail or prison. Inmates in California may earn credits for their conduct which reduce their sentences [29] [23, §1.29]. Although it is impossible to know the true amount of time served from our data—conduct credits are conditional on inmate behavior which we have no record of—we approximate this number by assuming inmates receive all of the “good conduct” credits for which they are eligible (i.e., credit that they earn for not incurring any disciplinary infractions). On the other hand, we do not account for any credits that inmates might earn above and beyond good conduct credits, for example, by participating in programs for “milestone completion” credits.^[16]

Most inmates in 2019 will receive one day of credit for each day they serve in jail or prison, effectively reducing their sentences by 50% [18, Pen. Code §2933]. Inmates might not be eligible for all of this credit depending on the charge for which they have been sentenced. For example, inmates sentenced for murder are not eligible for any conduct credits at all [18, Pen. Code §2933.2]. Determining the correct formula for historical data poses an additional challenge, as the law governing conduct credits has changed over time [14, 19].

As an example, consider again the case of second-degree robbery at gunpoint discussed in Section 1, assuming this time that the offender has no prior convictions. The offender is eligible only for a 15% sentence reduction because robbery is considered violent [18, Pen. Code §§667.5(c), 2933.1(a)]. If the defendant is sentenced to 7 years for this crime, we estimate actual time served to be 5.95 years.

Figure 4 shows the credit formulas we use to convert time sentenced to time served. These formulas represent the most relevant credit calculations for our data. The set of formulas we apply is a simplified version of the actual rules governing credit, but it still gives a more realistic measure of time served than the sentence alone.

In aggregating total time served, we consider both jail and prison sentences. While traditionally felony sentences were always served in state prison, realignment shifted many less serious offenses to county jail. Felony county jail sentences may be enhanced in the same way as prison sentences.

^[16]We have heard anecdotally that it is reasonable to assume inmates will get nearly all of the good conduct credit for which they are eligible, but see Appendix I for how our calculations change under different assumptions about conduct credits. To some extent, overcounting good conduct credits while not counting other forms of credit, like milestone completion, offset each other.

/CH4:SP4Y:M/ENH:CH4:TYPEPC 12022(A)(2):TI3Y:CS/X:TOTAL 7 YEARS STATE PRISON/CH2:SP4Y:M/

Type	Number	Statute	Term	Facility	Level
Base	2	-	4 years	Prison	Middle
Base	4	-	4 years	Prison	Middle
Enhancement	4	12022(a)(2)	3 years	-	-

Figure 3: Sample sentencing hearing text record. As summarized in the table, the text describes two base charges (charge #4 and charge #2) which are each sentenced to their middle term of 4 years in state prison. Charge #4 is enhanced with Pen. Code § 12022(a)(2), commission of a felony while armed with an assault weapon, which adds a term of 3 years consecutive to the base. The two base charges will be served concurrently (since sentences are presumptively concurrent unless stated otherwise [18, Pen. Code §669(b)], which was not done here) so the aggregate sentence is 7 years in state prison.

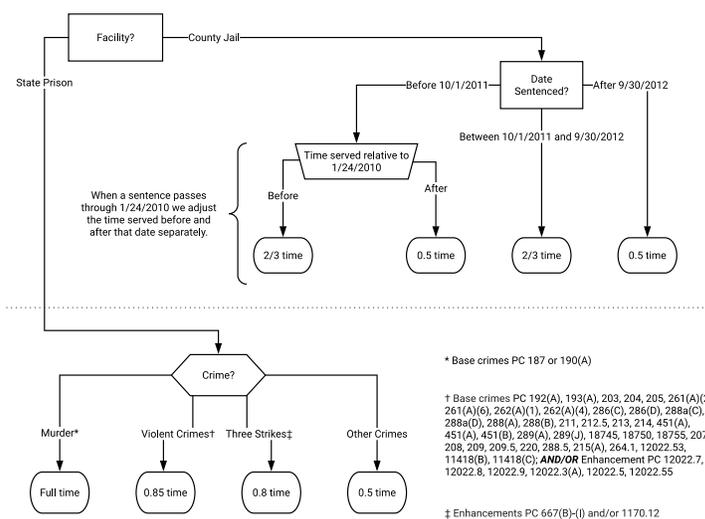


Figure 4: Simplified calculation of conduct credits. This chart indicates calculation of the expected length of incarceration for an inmate, and has been applied to all the analyses of sentence length. Changes introduced by Prop. 57 are not included here, as our data only run through 2017. Sentencing date is used as a proxy for the date of the offense.

3.6 Indeterminate and alternative sentencing

A small number of offenses in California still carry indeterminate sentences—that is, sentences to life in prison, or death. Often these sentences specify a minimum term that must be served before the offender becomes eligible for parole, such as 15 years for second-degree murder [18, Pen. Code §190(a)]. Three Strikes and the 10-20-life gun law can both trigger life sentences with 25-year minimums. While we can't know *a priori* how much time will be served for a life sentence, ignoring these sentences entirely would fail to account for the most severe terms enhancements impose.

For the purposes of our calculations, we quantify life sentences as the term an inmate must serve before becoming eligible for parole. This is a low estimate in many cases: for murder, parole is rarely granted [39]; in rare cases, parole is not even a possibility. We find that the proportion of time served attributable to en-

hancements increases by about 1 percentage point for every 20 years added to the estimated average length of all life terms. See Appendix II for details.

Life sentences from Three Strikes are not recorded in a consistent manner in our data. In the charges dataset, when Three Strikes triggers a life sentence, the base offense is typically marked as a life sentence, even if that offense on its own is not punishable by life. In the hearing text records, when Three Strikes triggers a life sentence, it is sometimes marked as an enhancement with a 25-year term (reflecting the 25-year minimum for parole), but other times it is not recorded directly as an enhancement and is only mentioned in passing.^[17] Where a Three Strikes allegation is missing from the hearing text record, we can still infer its existence where we see a life sentence for a base

^[17]For example, with a comment indicating that a motion to “strike a strike” was denied and a life sentence ordered.

charge that normally has a determinate sentence; we add the allegations to our data where they are missing.

To calculate time added for third strikes, we treat the Three Strikes enhancement as if it were an ordinary enhancement. We set the base sentence to the middle term specified by statute (such as 3 years for second-degree robbery [18, Pen. Code §213(a)(2)], and then add a 25-year enhancement sentence for the Three Strikes allegation. We then apply conduct credits in the normal way.

In all, indeterminate sentencing presents both technical and logical issues in our analysis. We leave more formal treatment to future work, ideally with data that record time served directly.

3.7 Attributing time to enhancements

Enhancements add incarceration time in two ways: directly, by specifying how much extra time must be served on top of the base offense; and indirectly, by limiting the amount of conduct credit an offender can accrue.

Consider a person convicted of possessing cocaine with intent to sell. The offender will presumptively receive a 3-year sentence [22, Health & Saf. Code §11351], and since the crime was a non-violent offense, will be eligible for the 50% conduct credit formula. The person would therefore ordinarily serve 1.5 years. If this person had a prior strike, not only would the Three Strikes law double the base sentence to 6 years, it would also limit conduct credit to 20%. As a result, the offender would serve 4.8 years. In this way, Three Strikes is responsible for 3.3 additional years served, not just 1.5 years if the credit formula were not altered. In other words, Three Strikes added 1.5 years directly by imposing an additional term, and an additional 1.8 years indirectly by limiting conduct credits.

Thus, to calculate the effect of enhancements, we apply conduct credit adjustments once on our full dataset, then a second time on the dataset with enhancements removed. The difference between the sums of the credit-adjusted terms in these two datasets is the total amount of time served we attribute to enhancements.

4 Results

4.1 Added time served for enhancements, generally

Enhanced sentences may seem relatively uncommon, appearing in just 13% of cases. Nevertheless, they account for about 26% of the time served in jail or prison in the cases we analyzed (4,469 out of the 17,164 years)

Figure 5 shows the breakdown of time served for base sentences and for enhancements since 2005. Notably, time served for base offenses has declined sharply since realignment, but enhancement time has not decreased at the same rate. In 2010, a total of 1,230 years were served for base sentences, while enhancements added 307 years. By 2017, time served for base sentences had declined by 46% to 663 years, while enhancement time had fallen by only 33%, to 205 years.

We cannot completely predict how sentencing would change without enhancements, as it would likely result

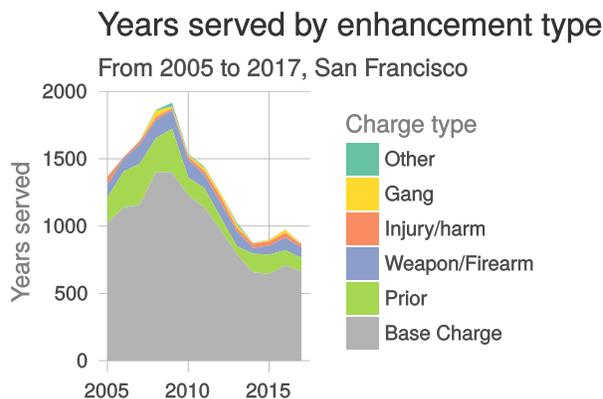


Figure 5: Years served over time for base charges and the most common enhancements categories. This plot shows approximate time served attributable to each category.

in significant changes in judges' and prosecutors' behavior. For example, in the absence of enhancements, prosecutors might charge more or different offenses, potentially leading to comparable total incarceration time. Conversely, without the threat of enhancements, defendants may gain bargaining power and, as a result, incarceration time could drop even more than our estimates suggest. Changing any one variable, such as the availability of enhancements, in the complex process from charging to sentencing, will likely have ripple effects across the entire system.

As one benchmark, we consider what would happen if the upper term of base charges were applied in lieu of the enhancements. We find that total time served in this alternate scenario would still not reach the levels of the current reality. Specifically, whereas total time served in the counterfactual would be 13,742 years, it is 17,164 years in the real-world scenario, 25% higher. Thus, it appears that enhancement legislation has exerted an effect on incarceration time beyond what is possible to achieve through aggravating factors as provided by the Determinate Sentencing Law.

4.2 Added time served, by enhancement

Enhancements for prior convictions are responsible for the greatest amount of time served: 53% of enhancement time served is due to these status enhancements. Weapons and firearm enhancements are the second largest category, making up 31% of enhancement time served. All other categories account for dramatically less time. Gang enhancements, for example, represent just 4% of enhancement time—perhaps because they are often alleged along with more serious firearm enhancements, which in certain cases supersede them [18, Pen. Code §12022.53(e)(2)]. Figure 5 shows the breakdown of time served by enhancement category over the years since 2005.

Over 60% of enhancement time served is attributable to just three enhancements: Three Strikes, the Prop. 8 Prior, and the 10-20-life gun law. Figure 6 shows

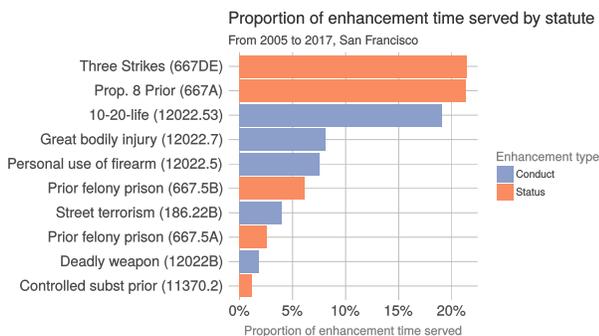


Figure 6: Enhancements contributing the highest proportion of time served. The proportion is of all time contributed by enhancements.

which enhancements account for the most time served. It is perhaps surprising that the five-year Prop. 8 Prior ranks as highly as Three Strikes and 10-20-life. One potential explanation is that the Three Strikes law has been amended in response to public criticism before and during the period of our analysis.^[18] The Prop. 8 Prior, in contrast, largely escaped this level of scrutiny; throughout the period of our analysis, the law imposed the same 5-year sentence which judges did not have the power to strike.^[19] It is, however, also possible we underestimate the effect of Three Strikes and 10-20-life due to the problems of quantifying indeterminate sentencing and alternative sentencing schemes in our data.^[20]

4.3 Most frequently sentenced enhancements

The most frequently sentenced enhancements are, likewise, those based on prior convictions, which account for 61% of sentenced enhancements in our data. As Figure 7 shows, the Prop. 8 Prior and Three Strikes enhancements are frequently imposed (16% and 11%, respectively), but by far the most common is the 1-year enhancement for prior incarceration for a non-serious felony, at 27% [18, see Pen. Code §667.5(b)].

Weapons and firearm enhancements are the second most frequently imposed, at 21% of enhancement sentences. While 10-20-life constitutes 4% of total enhancements imposed, the shorter enhancement for personal use of a firearm in the commission of lesser felonies [18, Pen. Code §12022.5] accounts for more, at 6%. The more general 1-year enhancement for personal use of a deadly or dangerous weapon in a felony [18, Pen. Code §12022(b)] accounts for an additional 6%. Other categories of enhancements, including those for drug activity, gang activity, and sex crimes, are sentenced much less frequently.

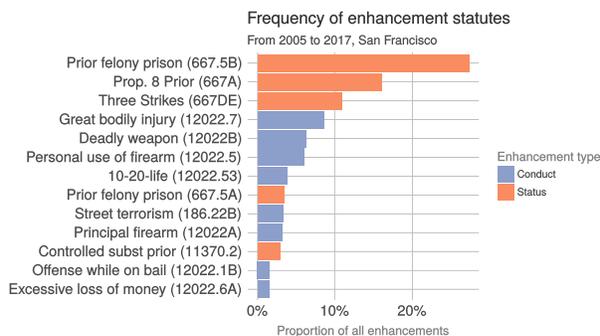


Figure 7: Most frequently sentenced enhancements.

4.4 Relationship between enhancements and base offenses

When enhancements are imposed, the average offender serves more time attributable to enhancements than to the base charge. In cases that have any enhancement sentence, offenders serve an average of 3.9 years for the base charge and 4.5 years for enhancements on that base. For comparison, in the 87% of cases in which there is no enhancement sentence, offenders serve an average of 1.3 years.

As the difference in time served for base charges suggests, there is a significant divide between categories of offenses that tend to carry enhancements and those that do not. Offenses that get enhanced are, more often than not, violent crimes like robbery, homicide, and assault. In contrast, cases that are not enhanced skew towards non-violent crimes, notably those involving drugs. Figure 8 shows this pattern in more detail.

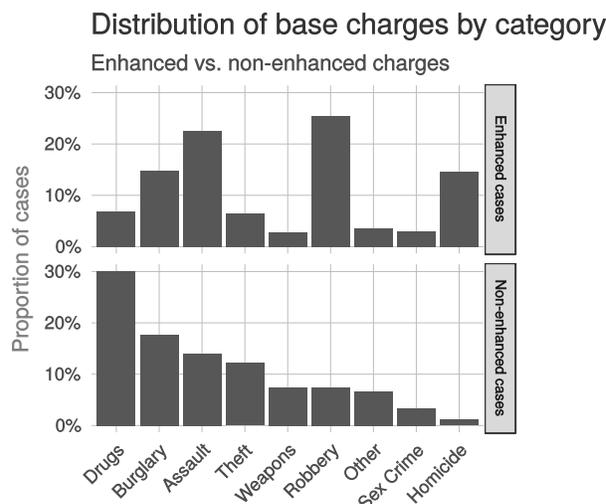


Figure 8: Comparing the types of base charges that tend to have enhancements versus those that tend not to be enhanced.

^[18] See section 2.2.

^[19] SB 1393 (2018) granted judges this power [20].

^[20] See section 3.6.

To better illustrate the relationship between enhancements and specific base crimes, Figure 9 shows the frequency at which different categories of crimes are enhanced. By far the most frequently enhanced crimes are homicides, at 66%. This is perhaps unsurprising given the broad applicability of weapons statutes in these cases. The second most frequently enhanced crime is robbery, with one-third of sentences carrying enhancements. While one might assume weapons would account for most of these enhancements, in fact status enhancements are the most common, appearing in 59% of enhanced robbery cases; only 40% of these cases have weapons enhancements. Compare this to enhanced homicide cases, of which 76% have weapons enhancements, while only 25% have status enhancements. In general, robberies are more likely to carry an enhancement for a prior conviction than any other type of offense: 20% of all robberies are enhanced due to a prior conviction, compared to 17% of homicides and 10% of burglaries.

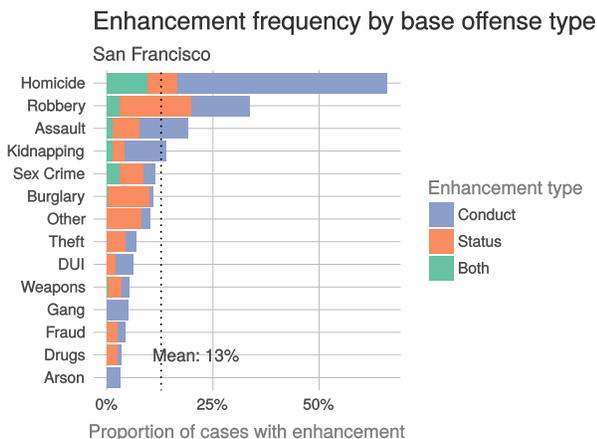


Figure 9: Proportion of base crimes that are enhanced, by type. The dotted line shows the overall proportion of base charges that carry enhancements.

4.5 Racial disparities

For the period 2011–2017, we were able to investigate enhancement terms by race and ethnicity. We find that the amount of enhancement time served by white, black, and Hispanic individuals is approximately proportional to the amount of base time served. For example, black individuals account for about 65% of total base time served and about 80% of total enhancement time served. Similarly, Hispanic individuals account for about 17% of total base time served and about 11% of total enhancement time served. In neither case are the differences statistically significant.

We note, however, that the black community makes up just 6% of San Francisco’s residential population. From this perspective, the total time served—both from base terms and from enhancements—is disproportionately large for black individuals. Accordingly, while we do not find evidence of racial discrimination

in the application of enhancements, they do act to pronounce the already large disparities in sentencing.

4.6 Impact on public safety

We conclude our analysis by estimating the impact of enhancements on public safety. To do so, we used a propensity score model to match individuals who received enhancement sentences with similar individuals who did not. More specifically, we matched individuals on age, gender, race, year sentenced, base crime type, and criminal history.^[21] We then counted the number of new offenses committed (and which were eventually convicted) by a person who served time only for a base sentence during the time period in which the matched individual was serving time for an enhancement. This strategy assumes that counting the new offenses committed by the former is a reasonable proxy for offenses the latter would have committed, had they been released without serving an enhancement term.

We estimate that the increased detention due to enhancements prevents approximately 1 felony for every 2 years of enhancement time served, where most of these prevented felonies are for burglary, theft, and drugs. Restricting to violent felonies, we estimate the effect is much smaller, with 1 violent felony prevented for every 8 years of enhancement time served. Around 90% of these violent felonies are either robbery or burglary.

While we believe our method is a reasonable one to estimate the impact of enhancements on public safety, it has some important statistical limitations. First, we can only imperfectly match individuals who received an enhancement with those who did not. In particular, it is possible that individuals who received an enhancement sentence are indeed riskier than those who did not, in which case we would be underestimating the public safety benefit of enhancements. Second—and operating in the opposite direction as the first point—longer stays in jail or prison could be criminogenic [26, 28, 37], in which case we might overestimate the public safety benefit of enhancement: once released, the person serving time for an enhancement might have an increased likelihood of recidivism, thereby countering the effect of incapacitation.

We also note that we can only measure *local* recidivism; that is, new offenses that happen within the city of San Francisco. Relatedly, we measure recidivism in terms of convictions, which likely underestimates the true crime rate. Lastly, we do not attempt to measure any potential deterrent effect of having enhancement sentences available to the prosecutor.

Despite these methodological limitations, we believe our estimates provide a baseline that can be used to assess the costs and benefits of enhancements. These results allow policymakers to start considering whether other interventions may have a more significant impact on public safety and come at a lower cost—such as, for example, diversion or re-entry programs, or changes in policing practices.

^[21]See Appendix III for more information about the propensity score model.

5 Conclusion

When enhancements are sentenced, they more than double the time served over the base sentence. In aggregate, enhancements account for about 1 out of every 4 years served behind bars for crimes in San Francisco. Status enhancements punishing recidivism account for over half of this time; in particular, Three Strikes and the Prop. 8 Prior have added the most time. Altogether, Three Strikes, the Prop. 8 Prior, and the 10-20-life conduct enhancement for firearms account for over 60% of time served due to all enhancements.

Our results suggest that reform efforts targeted at a small number of enhancements, such as those named in the previous paragraph, could substantially reduce incarceration. On the other hand, changes to the multitude of enhancements dealing with drug, gang, and sex crimes are unlikely to have a significant effect on the gross number of prison and jail years. Furthermore, any efforts aimed at ameliorating the effect of enhancements on prison population should focus on the ways in which enhancements add not only to time sentenced, but also, by limiting eligibility for good-time credits, time served.

Finding ways to reduce overcrowding is not only a concern for the prison system, which continues to house a population well above its intended capacity and just under the cap set in *Plata*.^[22] Longer sentences pose their own set of problems for county jail facilities, some of which have been overcrowded for years and which, in general, were not designed for long-term incarceration or attending the needs of an aging inmate population.

Crime, arrest, and sentencing patterns can vary widely by jurisdiction, and San Francisco is likely not representative of California as a whole. Indeed, in 2010, San Francisco recorded the lowest rate of strike sentencing per felony arrests among all counties in California with 1,000 or more adult felony arrests—over 20 times lower than Kings County, which had the highest rate [33]. This suggests enhancements may have an even more pronounced effect on incarceration elsewhere in the state. Future work should examine this problem in other counties in California and at the state level.

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[22] The system is operating at 131.3% of design capacity as of September, 2019 [35]. Note that the population cap is enforced at a system-wide level, and 13 out of 35 individual facilities currently operate at above 137.5% of their own design capacity.

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Appendix I Conduct credit assumptions

This table shows how the calculation of the proportion of time-served due to enhancements changes under different assumptions about how much conduct credit inmates earn. The most conservative estimate is that inmates on average receive none of the credit they could possibly get (this is equivalent to saying time sentenced equals time served); the most generous estimate is that every inmate receives all of the credit they are eligible to earn. In practice we believe the true value is closer to the the 100% estimate, but we do not have empirical support for this.

% of Credit Earned	Enhancement years served	Total years served	% attributable to enhancements
0%	5,334	26,371	20%
25%	5,118	24,069	21%
50%	4,901	21,768	23%
75%	4,685	19,466	24%
100%	4,469	17,164	26%

Appendix II Indeterminate sentencing assumptions

This table shows how the proportion of time served attributable to enhancements changes under different assumptions of the average term served against life sentences. For example, when we take the average “life” term to be equivalent to a 15-year determinate sentence, we find that 25% of total years served are attributable to enhancements; if we instead assume “life” is more comparable to a 75-year determinate sentence, enhancements are responsible for 27% of total time served.

Average “life” term (years)	Enhancement years served	Total years served	% attributable to enhancements
15	4,046	16,502	25%
25	4,469	17,831	25%
35	4,891	19,161	26%
45	5,314	20,490	26%
55	5,736	21,820	26%
65	6,159	23,149	27%
75	6,581	24,479	27%

For every 20 years we add to the effective life term, we see an increase of just under 1 percentage point increase in the amount of time served attributable to enhancements.

Appendix III Propensity score model for recidivism

To perform propensity score matching, we fit a model that includes the following variables: sex, race, age at sentencing (both bucketed and continuous), type of base crime, year of sentencing, and a criminal history for the 2 years prior to sentencing consisting of felony convictions, violent felony convictions, and the total number of court cases. We matched up to 10 cases without enhancements to every one case with an enhancement using a caliper of 0.1 standard deviation units. We visually inspect the covariate balance (10) to validate that the two populations created through matching are reasonably comparable. We also note that two cases with enhancements could not be matched using these parameters.

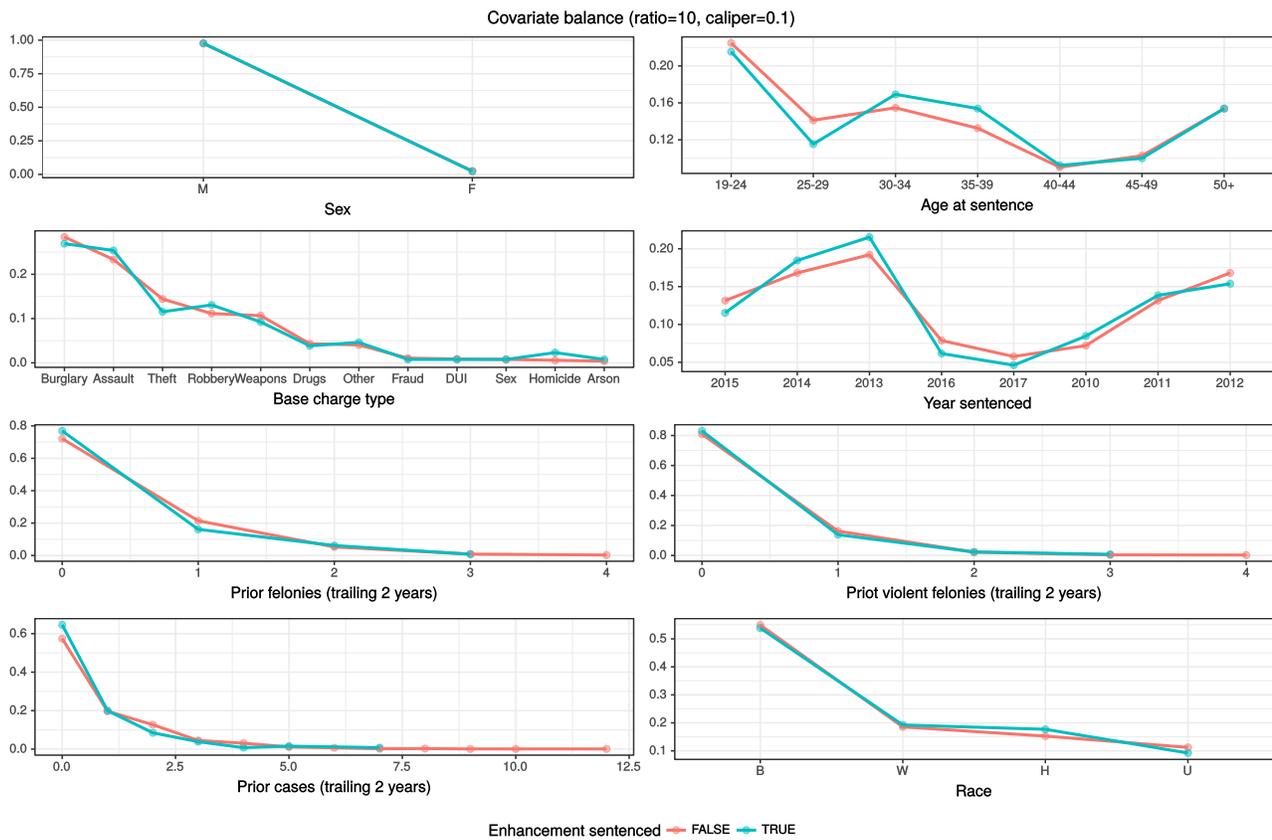


Figure 10: Comparative distributions of matched cases for each covariate in the propensity score model.