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Factors Affecting Colorado Parole Release Decisions

FINAL REPORT

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Executive Summary

For most individuals who receive a prison sentence, the amount of time they will serve in prison is somewhat unpredictable because of officials' discretionary capacity to exercise "back-end" release powers, including parole and good time and earned time credit. These back-end decisions influence how long someone ultimately spends in prison and, over time, can have a substantial impact on prison population size (Gaes and Laskorunsky, 2022). This project examines how back-end powers of prison release discretion operate within the Colorado prison system. Reitz, Griffith, and Rhine (2022) categorize the Colorado prison release system as one of *high indeterminacy*; meaning that for almost all incarcerated individuals, back-end authorities such as the Colorado State Board of Parole and the Department of Corrections (DOC) are given substantially more discretion over total time served than the front-end judicial authorities who issue prison sentences. To determine how these powers of discretion interact to govern prison stay length, we assessed temporal patterns in the release decisions of the Colorado State Board of Parole and the decisions of the DOC in awarding and withholding good-time and earned-time credits.

We used administrative data from the Colorado DOC from 1995 to 2020 to develop our main outcome: the number of days between the initial parole eligibility date (PED) and the actual release date. A higher number of days means that incarcerated individuals are serving a longer portion of their sentence before release. We refer to this outcome as "release-denial discretion." We focus our analysis on two groups: individuals serving general sentences who are eligible for parole at 50% of their judicial maximum sentence (92% of all parole eligible prison admissions), and individuals serving time for violent offenses who are eligible for parole at 75% of their judicial maximum, minus earned time (7% of all prison admissions). Individuals serving time for sex offenses have the most constraints on their parole eligibility; however, they composed only 0.5% of the parole eligible admissions pool – too few to analyze. Our findings are based on analyses that used a rich set of control variables. This bolsters our inferences about the trends and effects we observed, mitigating the likelihood that those effects were due to changes in the risk composition of the parole eligible population, rather than the pattern of decisions made by controlling parole and prison authorities.

- We show that through their use of release-denial discretion the Colorado Board of Parole extended the period from initial parole eligibility to release every year from 1995 to 2006 (pg. 13). Subsequently, from 2006 until 2020, we see a somewhat steady decrease in our main outcome measure, indicating that the parole board began releasing people closer to their parole eligibility date.
- For the general offense class, the average time between the initial parole eligibility date and release was almost a year in 2006, controlling for the makeup of the incarcerated population (pg. 14, Figure 5). In 2020, that number was less than half (150 days). We can point to this decrease as a contributing factor to the corresponding decrease in the prison population size experienced by Colorado during that time (pg. 4, Figure 2).
- Colorado statute requires that individuals convicted of violent offenses serve a longer portion (75%) of their sentence before parole eligibility, and we find that the parole board was more likely to delay release for these individuals once they were eligible for parole. Individuals serving a sentence for a violent offense (7% of the parole eligible admissions), on average, served around twice as many days *after* their PED than the general offense group (pg. 16, Figure 6).

- For both classes of offenses (violent and general), individuals with more serious offenses spent longer time in prison after their parole eligibility date – due to either parole release-denial discretion, or the award or retraction of good time and earned time (pg. 15). On average, an individual in the general offense class serving time for a lower-level offense would spend about one third of the time incarcerated after their PED, as someone serving time for a higher-level offense.
- Individuals in the general offense class served, on average, 60% of their judicial maximum sentence in 2004. This proportion gradually decreased to about 52% of their sentence in 2020. This roughly mirrors the decline in our main outcome variable - the number of days served after PED during that same time period (pg. 17).
- Colorado statute dictates that serious misconduct could result in a loss of good time credit – moving back both the parole eligibility date and the mandatory release date. We do find that, on average, the occurrence of serious misconduct added 44 days to a person’s stay. However, serious misconduct was recorded for less than 3% of incarcerated individuals. Therefore, this discretionary power was not a significant factor in increasing prison stay length or in affecting prisons population size (pg. 18). Recent minor misconduct, another factor considered by the parole board, had no effect on release.
- The relationships outlined above remained in place even when we were able to control for a richer set of factors during the 2012-2020 time period (pg. 18). The inclusion of risk assessment, needs assessment, and prison misconduct information into our models showed that the decrease in our main outcome variables (number of days between PED and release, and proportion of judicial max served) was due to discretionary release decisions and not to a change in makeup of the parole eligible population.
- We show that the occurrence of a major sentinel event - the high-profile murder of Tom Clements by a parolee – did not result in the parole board delaying release for parole eligible individuals, as was predicted (pg. 22). While the parole supervision population decreased during that time, this was likely due to increases in the intensity of monitoring on supervision and, consequently, more punitive revocation procedures.

While we are unable to determine *why* there was an inverse U-shaped trend over time from more cautious to more generous parole release decisions in Colorado, the trend is consistent with increases and decreases in the Colorado prison population. The decline in the period between initial parole eligibility and release since 2006 has contributed to the decline in the Colorado prison population. Scholars and policy makers should pay attention to the fact that parole boards’ discretionary release decisions have a significant impact on determining final prison stay length and that these decisions have the potential to either decrease or increase prison population size.

Introduction

The rise of mass incarceration in the U.S. was driven by a combination of growth in prison admissions and increases in time served (National Research Council, 2014). However, the discretionary choices by controlling authorities who make or influence the timing of prison release and therefore prison stay length have received markedly less attention from both researchers and policy makers. In particular, the effect of “back-end” (i.e., post-sentencing)¹ discretionary powers, such as administrative rules and statutes that govern prison release and decision-makers that operate within these structures, has not received adequate attention (Reitz, 2012;2015).

The purpose of the Degrees of Prison Release Indeterminacy project is to develop an understanding of the discretionary powers that affect prison stay lengths after a judicial sentence is pronounced in court and identify which levers can be targeted to reduce prison populations. Phase 1 of the project cataloged the back-end discretionary powers that can influence time served, as well as measures of each state’s level of prison sentencing indeterminacy (Reitz, Rhine, Lukac, & Griffith, 2022). Phase 2 of this project focuses on how back-end powers of prison release discretion operates in one system: Colorado. We use administrative prison population and parole release data to examine the influence of key back-end decision points on the length of prison stays. We assess patterns in the release decisions of the Colorado State Board of Parole over time, as well as how numerous factors – such as offense severity and misconduct - affect their decision to release. We also look at whether a sentinel event – the murder of the Colorado Department of Corrections Executive Director, Tom Clements, by a high-risk parolee - affected the delay in release.

¹ Our use of back-end discretionary powers should not be confused with Jeremy Travis’ (2005) concept of back-end sentencing. In our lexicon, the term back-end refers to the power of officials other than the sentencing judge to affect the prison stay length within the constraints of the originally imposed sentence. Travis is referring to the power to impose a revocation term once the person has been released to the community.

Background

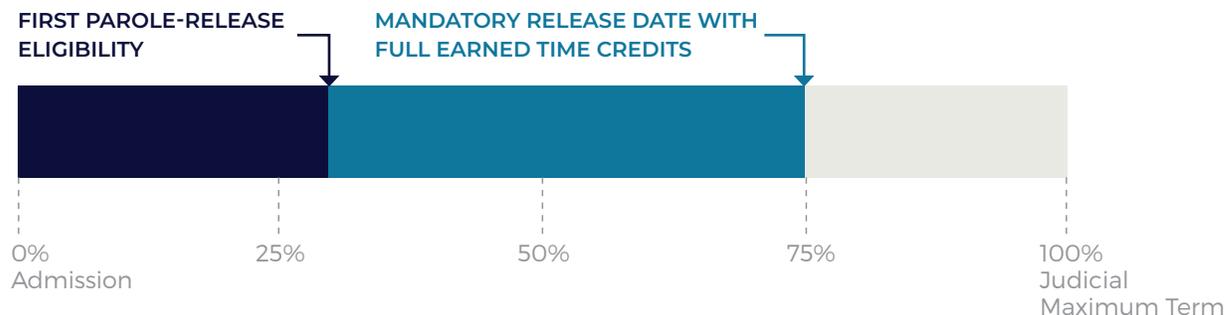
Prison release indeterminacy reflects the degree to which authorities can modify the amount of time a person will serve once a person has received a judicial sentence (Reitz 2012; 2015). About two-thirds of all U.S. states, including Colorado, have retained an indeterminate sentencing system. The judge's sentence sets an initial time served range that extends from the first parole eligibility date (PED) to the mandatory release date (MRD). The Colorado State Board of Parole has the authority to release or defer (i.e., deny until a later date) the release of persons who are eligible for discretionary parole within that range.

Colorado Parole Release Process

The Colorado parole process has been explicated by Reitz, Griffith, and Rhine (2022) and Reitz, Rhine, Watts, Alper, and Klingele (2016). A simplification follows. Most persons who are sentenced to prison in Colorado have a parole eligibility date that is 50% of their maximum judicial sentence. Those serving time for sex offenses and violent offenses have different release thresholds. There is also a small proportion of individuals admitted in any given year who receive life without parole. Our calculations indicate that during the period we analyzed, 92% of all parole eligible prison admissions had a parole eligibility date that was 50% of the judicial sentence without credits for earned time (10 or 12 days per month depending on the statute of conviction). We call this the *general offense class* of persons to distinguish individuals in this class from individuals in the *violent offense class* who have a parole eligibility date at 75% of their judicial sentence. These classes set different boundaries for parole and mandatory release time frames. Throughout this report, we do not evaluate admissions that were revocation returns - people who would qualify for a subsequent release to parole.

A person's parole eligibility date can be recalculated and advanced from their initial parole eligibility date if she/he has earned time by demonstrating consistent progress in prison living skills and programming. Earned time can also advance the mandatory release date. As Reitz and colleagues (2022) have shown, by acquiring earned time a person in the *general offense class* can advance their PED to about 30% of the judicial maximum sentence and their MRD to 75% of the judicial sentence (Figure 1). However, prison administrators have the ability to take away good time credit (but not earned time credit) based on disciplinary infractions, which would result in a recalculation of someone's PED and MRD.

Figure 1: Colorado Prison-Release Timeline for the *General Offense Class*



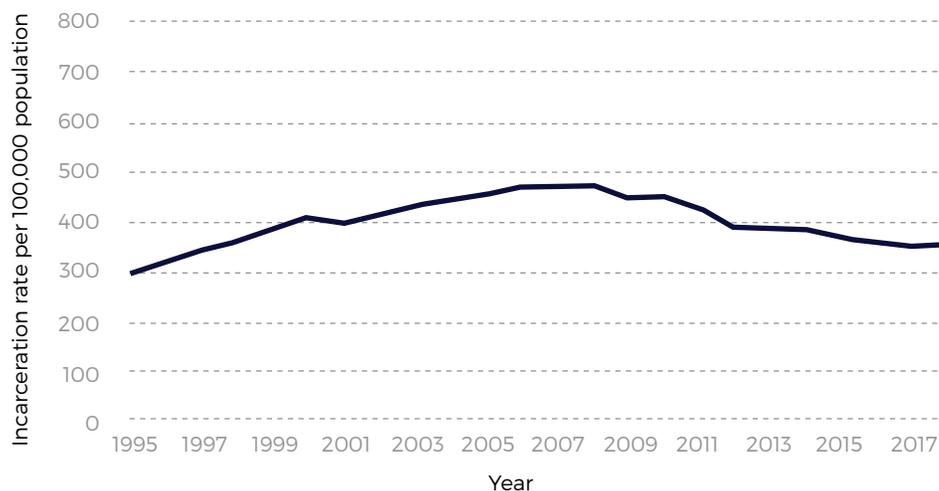
Note: Adapted from *Prison-Release Discretion and Prison Population Size State Report: Colorado* by Reitz, K, Griffith, M., and Rhine, E. (2022) Robina Institute of Criminal Law and Criminal Justice. Adapted with permission.

This range - between first eligibility and mandatory release - can be substantial in Colorado. For example, on a 10-year maximum sentence, the difference between the PED and the MRD would be 5 years for the *general offense class* and 2.5 years for the *violent offense class*, before any earned time credits are applied. Reitz and colleagues (2022) categorize the Colorado prison release system as one of *high indeterminacy*. For the majority of incarcerated persons in Colorado, back-end authorities have a wide arc of discretion over total time served. The judicial sentence sets the outer bounds of time served; however, within that boundary, the board of parole, through release-denial discretion, and the DOC, through the award of good time and earned time credit, control the final amount of time served. In the case of Colorado’s *general offense class*, the range of discretion can be as much as 70% of the total sentence boundaries.

Parole Release Trends Over Time

To provide context for the research questions, Figure 2 shows the Colorado prison incarceration rate from 1995 to 2018, the most recent year data is available (Bureau of Justice Statistics, 2021). From 1995, Colorado had moderate prison rate growth, hitting a peak in 2006. However, its prison rate fell consistently from 2006 to 2018. The pre-2006 increase and post-2006 decrease in the Colorado incarceration rate also mirrors the change in the total number of people incarcerated during that time period (Jones, 2018).

Figure 2: Prison Rate Change in Colorado, 1995 - 2018



We also show the trend in the number of releases to parole supervision from 1978 to 2020. There was a surge over time in release to parole supervision. This could be attributable to the changes in the number of people sentenced to prison over time, and therefore eligible for parole, and/or to changes in the Parole Board members’ disposition to release. Figure 3 highlights major events (A-C) that scholars have reasoned may affect parole decisions. These are a combination of statutory, policy, and sentinel events. Pre-1993, everyone who was released to parole supervision would have been a discretionary parole release (i.e., they were released prior to their mandatory release date). Event A signifies the year that the Colorado legislature passed House Bill 93-1302, creating mandatory parole supervision for all persons released from prison who committed an offense on or after July 1, 1993. This caused the number of individuals released to parole supervision to increase because the law made parole supervision mandatory, even for individuals who reached their MRD. Event B occurred in 2012; a risk and needs assessment was introduced to inform the parole release decision. Event C which occurred in 2013 is the year the Executive Director of the Colorado Department of Corrections, Tom Clements, was killed by a parolee.

During the entire period depicted in Figure 3 (1978-2020), there were 153,451 prison releases.² Of these, 7.3% were sentence discharges (people whose sentences had expired), 55.2% were discretionary releases, and 37.5% were mandatory releases. Overall, a little over half of all prison releases were due to a discretionary release by the Colorado State Board of Parole.

² This numbers excludes releases to the youth system, custody-transfer releases, and individuals who died while in custody.

Figure 3: Individuals Released to Parole Supervision in Colorado Over Time

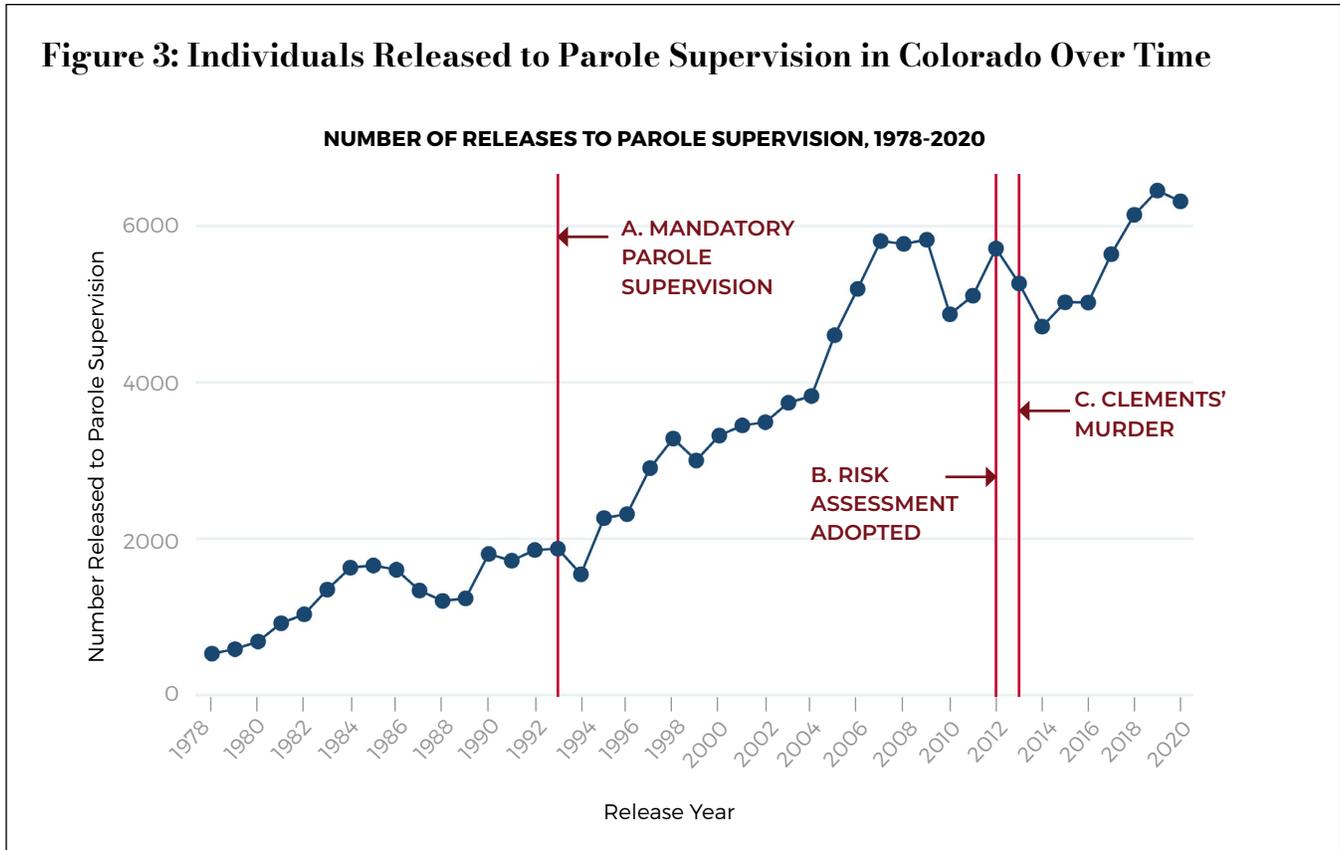


Figure 4 disaggregates the post-1993 time series in releases to parole supervision depicted in Figure 3 into discretionary and mandatory releases. Colorado staff categorize anyone released prior to their MRD as a discretionary release. This generally means that the parole board reviewed their case and granted them early release. Otherwise, the individual is a mandatory release unless they are kept in prison to their sentence discharge date (expiration of sentence).³ The data we were provided allowed us to identify discretionary and mandatory releases based on a set of release codes.

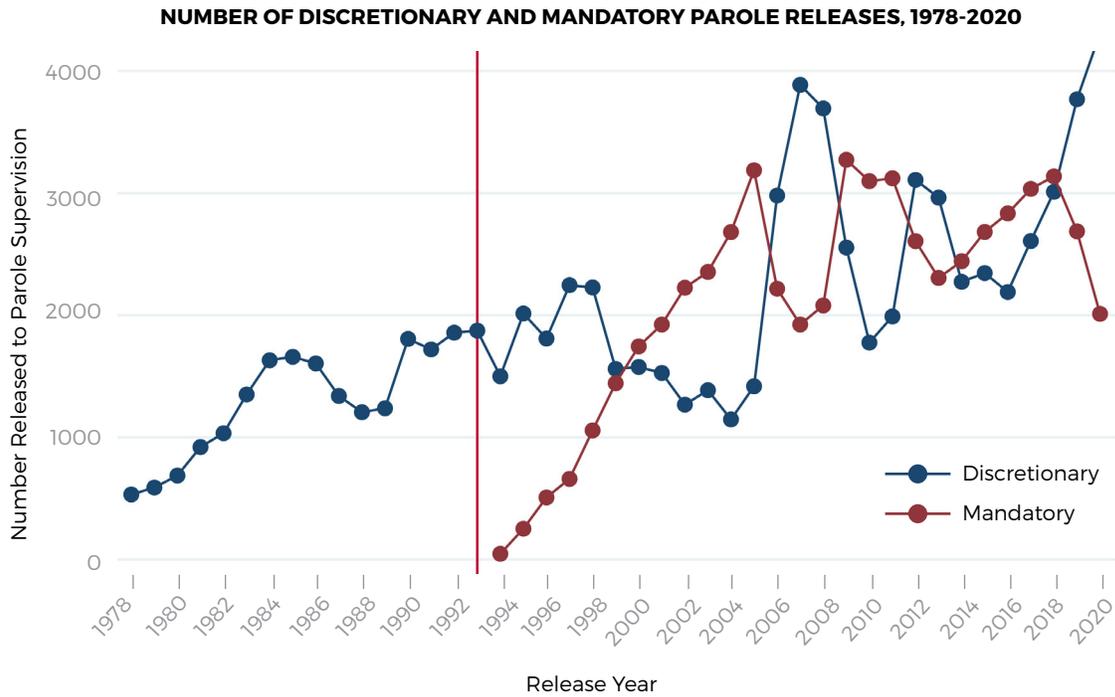
Colorado has an automated parole application process. Persons do not have to take any affirmative action to get scheduled for a hearing before the parole board. A board member or the full board can defer (i.e., deny) the decision to release based on a determination that the person has not met the release requirements. Regardless of how many deferrals the parole board makes, if they grant parole to an individual at some point in the chronology of applications, the parole authorities consider the event a discretionary release.

Figure 4 shows mandatory releases from 1995 to 2020 as they were defined under the new law in 1993. This data convention was not available prior to 1993 which is why we do not show them on the figure. Discretionary releases are shown throughout the 1978 to 2020 period. Beginning in 1993, individuals sentenced to prison receive two terms, a prison and parole term. Once the person is released from prison, the prison term has been satisfied regardless of how much time may be left on the sentence that was being served. The parole term governs the length of community supervision and any time of re-imprisonment if the individual's parole is revoked. The figure shows that the number of individuals released through discretionary release decreased from about 1997 to 2004 and during that same time

³ These automatic releases for individuals sent back on a parole revocation.

period, the number of individuals released through mandatory release increased. However, post-2004 these trends reverse and revert back several times, with mandatory releases sometimes outpacing discretionary releases and vice versa. In the most recent year, 2020, discretionary releases outpaced mandatory releases by a factor of more than 2 to 1.

Figure 4: Discretionary and Mandatory Parole Releases, 1978 to 2020.



Research Plan Overview

Our analysis focused on exploring the combined effects of discretion exercised by the Colorado State Board of Parole and the Colorado Department of Corrections. We evaluated crucial factors that affect prison stay length once someone receives a judicial sentence. To that end, we use administrative data from the Colorado Department of Corrections to answer three main questions:

1. What is the relationship between the sentence pronounced in court and actual prison stay length?
2. Do release patterns vary by sentence subgroup and offense seriousness?
3. Have there been changes to release patterns over time?

To answer most of our research questions, we calculated the difference in days between the initial parole eligibility date and the actual prison release date. The higher the value for this outcome, the more the board's release decision departs from the initial parole eligibility date (PED), demonstrating that an incarcerated individual is waiting longer until release.

We originally wanted to answer question 1 by calculating an outcome variable defined as the proportion of the judicial prison sentence that a person serves. This would depend on knowing the projected prison release date based on the original sentence. Unfortunately, the date of release based on the judicial sentence had a substantial portion of missing data in the administrative data we received. Therefore, we present this analysis of that outcome emphasizing limitations. However, trends in this outcome mirrored other findings we observed. The second question was addressed by examining factors that affected the discretionary powers of the parole and prison authorities. The regression analyses we ran showed that parole authorities took many factors into account in exercising their full range of discretion. In addition to prison misconduct, they used an assessment of the person's risks, and an assessment of their needs. We examine one of these factors in detail by addressing question 2. How important was the seriousness of the conviction offense in determining the release decision? Question 3 was addressed by controlling for the composition of the prison population over our study period so that any trends we observed could be attributed to changes in release discretion rather than the risk composition of the parole eligible people.

Throughout this report, we examine the factors and characteristics of the incarcerated individual that affected release decisions. Our analyses cover an extensive time period, 1995 to 2020. It is quite possible that over the observation window the risk characteristics of the potential parole release population changed and that members of the parole board changed their release decision making in response to the risk levels of the incarcerated people. Our goal was to control for as many recidivism risk variables that the data would accommodate. Then any influence of time or offense seriousness we observed could be attributed to the discretionary power of the parole board rather than changes in the risk composition of the release population. We take two bites at the apple when we add covariates to our analysis. In the first instance, we used time trend, demographic, sentencing, offense seriousness, and criminal history variables to evaluate parole release discretion. These data were available from 1995 to 2020. When we take the second bite, we add risk, needs, and prison misconduct variables that became available in 2012.

We also did an analysis of one event which arguably could have affected the Colorado Parole Board members' disposition to release. This signal event was the murder of Tom Clements, the Colorado Executive Director of Corrections, by a high-risk parolee. We examine the pre- and post-trend difference between the parole eligibility and actual release date to evaluate the impact this event had on parole release decisions.

Data Sources

The Colorado Department of Corrections provided prison and parole admission and release data over the period January 1, 1950, through December 31, 2020. The data were sparse prior to 1978, so we chose that as a starting point for our analysis. The Colorado data were organized by a variable indicating all records associated with a person's sentence, a field indicating the chronological sequence of prison and parole records for a specific sentence, a categorical indicator specifying whether the record was a prison or parole term, and a variable indicating the type of admission or type of release. We used these variables to select the first imprisonment record each time a person was sentenced to prison in Colorado on a new sentence.

To create an analysis file to answer our research questions, the movement file of admissions and releases was limited to first admissions to prison. This eliminated all revocation returns. The movement file contained admission and release types as well as dates of movement (admission and release from prison), the initial parole eligibility date, and the mandatory release date. The latter was often missing. These data were merged with other files that contained information on person demographics, sentences, offense information, and information on the type of offense which would allow us to infer if there were any limitations or constraints on parole release. These latter data included identifiers for people serving sentences for sex crimes, people sentenced for violent crimes that disqualified them from the 75% parole eligibility rule, and people sentenced to life with and life without parole terms. We also used the historical admissions and release data to calculate prior criminal history as the number of prior incarcerations and prior returns to prison due to a revocation.

Our primary dependent variable was the difference in days between actual release date and the initial parole eligibility date. We were able to capitalize on the Colorado data which identified an initial parole eligibility date that was assigned when a person was first admitted to prison. It is important to note that in Colorado a person's initial PED is calculated with the full allotted good time available. In other words, the initial PED is the date a person would be eligible for release having earned all the good time available to them (which sets the PED at 50% or 75% of their judicial maximum sentence, depending on offense class). A person's parole eligibility date can be adjusted throughout the person's stay due to loss of good time credits (i.e., due to serious misconduct), through the accrual of earned time credits, and through other technical changes to parole eligibility. The parole release eligibility date is also updated each time the board defers release. However, throughout this paper, the outcome variable defined as the actual date of release minus the PED date is based on this *initial* parole eligibility date. For some analysis, we also used a secondary, less reliable, outcome: the proportion of the prison sentence that was served.

We restricted our analyses to people who were a discretionary or mandatory release. Of 123,927 potential releases, this excluded 3.5% of persons who were sentence discharges, 0.6% who died in prison, 2.8% who were released to probation, 1.2% who were youth releases, and 0.2% who were released in other non-routine ways. This resulted in 113,889 parole eligible observations.

Data Audits of the Main Dependent Variable (Time Between Parole Release Eligibility and Prison Release)

We ran several data checks on our main outcome of interest: the difference, in days, between the actual release date and the parole eligibility date. Anomalies were resolved by discussions with the Colorado State Board of Parole research staff. There were instances when the parole eligibility date preceded the prison admission date. These were cases where the person had served time in jail prior to conviction and was given credit for the time spent in jail. Since we had no record of the amount of jail time, we had to delete those cases. There were also large negative and positive differences in the dependent variables. Some of these were attributable to incorrect recording of dates. To exclude outliers that were likely recording errors, we restricted the data by deleting records below the 1st percentile and above the 99th percentile. A third anomaly we observed was that there were a small number of people released with a mandatory release type who had negative values on the dependent variable. This should not be possible, because, by definition, a person with a mandatory release should have been released past their parole eligibility date (i.e., a positive value on the outcome variable). Many of these cases turned out to be ones in which there were modifications to the sentence and parole eligibility dates that were not updated in the data. We eliminated those cases. We also deleted observations for people serving a sentence of life without parole and life with parole (N = 31). There were 940 of the eligible observations for people serving time for sex offenses. These sentences have some of the more onerous time served requirements. However, because there were so few over the 25-year period of the data, we dropped them from the analysis. The sequence of dropped cases is shown in the following table.

Table 1: Sequence of Dropped Cases

Original sample of releases	123,927	
Cases ineligible for analysis	10,038	Sentence discharges, people who died in prison, people released to probation, youth releases, and non-routine releases
Analysis-eligible observations	113,889	
Anomalies and/or dropped cases	Parole eligibility date preceded prison admission date	14,055 – 12.3%
	Incorrect recording of dates	2,278 – 2%
	Mandatory releases with negative values	1,005 – 0.9%
	Life with and without parole	31 – 0.027%
	Serving time for a sex offense	940 – 0.8%
	Total Dropped:	18,309 – 16.1%
Final Analysis Sample	95,580	

The final sample was 95,580 observations, 53.6% were discretionary releases – meaning they were released by the parole board before their mandatory release date, and 46.4% were mandatory releases. We divided the cases into classes of parole eligibility. There were 92.4% in the *general offense class* of parole eligibility whose PED date was 50% or less of their judicial maximum sentence. An additional 7.6% were in the *violent offense class*, whose PED date was 75% or less of their judicial maximum sentence. In some of the analyses, a few observations had to be dropped because of missing data on the predictors. But this was rare.

Data Audits of the Secondary Dependent Variable (Percentage of Judicial Time Served)

We also performed a data audit of a secondary dependent variable: the percentage of judicial sentence that was served. While we originally intended to use this variable as our main outcome measure, a large amount of missing data on this variable prompted us to create a different primary outcome measure (i.e., days between the parole eligibility date and release date). The last class of anomalies had to do with the calculation we made to estimate the date of release based on the judicial sentence. Because the date of release based on the judicial maximum sentence was often missing, we calculated this date by adding the sentence length to the prison admission date. We needed this date to estimate the proportion of sentence served. When we calculated the difference between the estimated judicial maximum date and the actual release date, there were some extremely high values. Furthermore, we found cases in which the potential release date based on the judge's sentence was less than the actual release date. Those observations were excluded in the analysis of proportion of sentence served. After dropping out-of-bound values, there were 66,665 observations where we could calculate the percentage of judicial sentence served based on the judicial maximum sentence. This was 58.5% of the cases we considered parole eligible and could be used to address our research questions.

In summary, of the 113,889 eligible observations for the purposes of our analyses, 83.9% of the cases passed our auditing rules for the dependent variable measuring the amount of time spent in prison after the initial parole eligibility date (*Days Between PED and Release*). However, only 58.5% of eligible cases passes the data audit tests for the dependent variable representing the Proportion of Judicial Sentence Served. Thus, we focus our analysis on the main outcome variable (*Days Between PED and Release*) and present the *Proportion of Judicial Sentence Served* as a supplementary outcome variable with caution.

Analysis

Descriptive Statistics

In this next section, we list descriptions of the dependent and independent variables that we use throughout the remainder of this report. The descriptions appear in Table 2.

Table 2: Dependent and Independent Variables

Dependent Variables	
Days Between PED and Release	The actual release date minus the initial parole eligibility date + 1 day
Proportion of Judicial Sentence Served	The proportion of time served of a maximum judicial sentence
Independent Variables	
Age at Release	Individual's age at release from prison
Prior Incarcerations	Number of prior incarcerations
Prior Parole Returns	Number of prior revocation returns
Release Year (referent - 1995)	Year of parole release – indicator variables 1995 to 2020
Ethnicity/Race: White (referent) Black Hispanic American Indian Asian	Indicator variables for ethnicity/race
Offense Seriousness (Referent - category 1)	Indicator variables for offense seriousness based on logical cut points of the sentence length – Categories 1 (lowest seriousness) to 5 (highest seriousness) Category 1 = sentence < 360 days Category 2 = sentence > 360 days & sentence <= 720 days Category 3 = sentence > 720 days & sentence <= 1,080 days Category 4 = sentence > 1,080 days & sentence <= 1,800 days Category 5 = sent > 1,800 days
Enhancement	Indicator variable signifying whether the person received a sentencing enhancement. Enhancements are most often given for a habitual offender status.
Gender (referent: female)	Indicator variable for females and males
Age at release x prior incarcerations	Interaction between age at release and the prior incarcerations variables. This is included to determine whether the effect of age depends on the number of prior incarcerations.

Table 3 contains descriptive statistics for the dependent and independent variables. The primary dependent variable is *Days Between PED and Release*, which is the difference in days between the parole eligibility date and the actual release date. About 2% of the observations had a negative value for the *Days Between PED and Release* variable. In some cases, this reflects people who had earned time that would qualify them to be released prior to the initial PED. In other cases, this reflects a PED date in the data that should have been, but was not recalculated, either due to a change in the sentence or due to the person acquiring earned time. The other dependent variable, *Proportion of Judicial Sentence Served* is the proportion of time served of a judicial maximum sentence. The standard deviations reported in Table 3 for categorical variables are based on the categorical proportions not percentages.

Table 3: Descriptive Statistics for Analytic Variables

Variable	Mean	Std Dev	Min	Max	N
Outcomes					
Days Between PED and Release	295.21	406.007	-1,038	2,808	95,580
Proportion of Judicial Sentence Served	.55	.24	.0003	1	66,675
Individual Characteristics					
Release Year*	—	—	1995	2020	95,580
Age at Release	35.47	10.10	18	97	95,579
Prior Incarcerations	.41	.78	0	8	95,580
Prior Parole Returns	.32	.88	0	11	95,580
Ethnicity/Race:					
White (referent) (%)	47.46	.0016	—	—	95,580
Black (%)	15.68	.0012	—	—	95,580
Hispanic (%)	32.92	.0015	—	—	95,580
American Indian (%)	3.11	.0006	—	—	95,580
Asian (%)	0.82	.0003	—	—	95,580
Offense Seriousness*:					
Cat. 1 (%)	18.31	.003			95,580
Cat. 2 (%)	30.96	.002			95,580
Cat. 3 (%)	34.42	.002			95,580
Cat. 4 (%)	13.74	.001			95,580
Cat. 5 (%)	2.56	.001			95,580
Sentencing Enhancement (%)	0.71	.003			95,580
Gender: Male (%)	86.4	.001			95,580

*Note: *Release Year* was used as a categorical variable in our analysis. Appendix I provides a breakdown of the number of individuals released each year.

Offense Seriousness: based on offense sentence length, from least to most serious.

Deleted versus Non-Deleted Observations

To evaluate the effect of deletions on the observations that failed the data audits for the dependent variable based on *Days Between PED and Release*, we ran a logistic regression. The outcome was whether a case had been deleted. With such larger sample sizes, we would expect statistically significant differences. This comparison between deleted and non-deleted cases is listed in Appendix II. While there are a few substantive differences in the deleted and non-deleted cases, the majority of the characteristics including the difference in parole eligibility date and the actual release date are substantially the same in both groups. For example, a 100 day increase in the difference between the parole eligibility date and the release date increased the chances of being deleted by 3%. This suggests the higher duration cases are slightly more likely to be deleted. For every 10-year increase in age, there was a 0.6% decrease in the chance of being deleted. Therefore, older inmates were slightly less likely to be deleted.

The non-deleted cases are 83.9% of the entire release cohort of Colorado discretionary and mandatory parole releases and for the most part is representative of the entire release cohort of these cases over the period we evaluated. Most of the deletions we made were outliers. We believe that by limiting the observations to the core group of cases by removing outliers, our results are representative of most Colorado parole releases; however, there is always the possibility that this subsample could misrepresent that larger population.

Factors Affecting Parole Release for the General and Violent Offense Classes

One of the main goals of our study was to examine the factors that might influence discretionary release decisions. As we have mentioned, the main dependent variable *Days Between PED and Release* represents the difference between the initial parole eligibility date (PED) prescribed by law and the actual release date. Since our data contains a time period that preceded the use of actuarial risk and needs tools by the Colorado Parole Board, our first set of analyses is based on factors available in the data excluding the risks and needs assessment information that might have affected the parole board members' assessment. We used these factors in a regression equation to control for potential differences over time in the composition of the Colorado prison population. We used Stata's *margins* command to examine how the time trend and offense seriousness factors individually changed the parole release choices by the board. One major factor we could not account for until we restricted the data to the period beginning in 2012 is whether a person committed a prison infraction. Any serious misconduct could delay a person's eligibility for release.

We ran separate regression analyses on our two offense classes using the independent variables described in Table 2 and the *Days Between PED and Release* as the dependent variable. This allowed us to control for possible compositional effects in the admission and release populations over time. The full regression results are reported in Appendix III. We are primarily interested in the effects of release year and offense seriousness on release decisions. Therefore, we make no attempt to interpret all the regression coefficients in Appendix III but provide them for an interested reader. Inspection of Appendices III - Table A-2 (*general offense class*) shows that almost all the variables in the model influenced the prediction of the number of days between the PED and release date. The *violent offense class* (Table A-3) regression had fewer effects but had a slightly better fit of the data than the *general offense class* model (R^2 -violent class = .10; R^2 -general class = .08). Our focus, however, was on specific marginal results - the trend over time in parole release decisions and the influence of offense seriousness. We used Stata's *margins* and *marginsplot* commands to calculate and graph the margins for year of release and offense seriousness. The margins command saves the analyst time by calculating the predicted value of the outcome variable as if everyone in the data were treated as if they

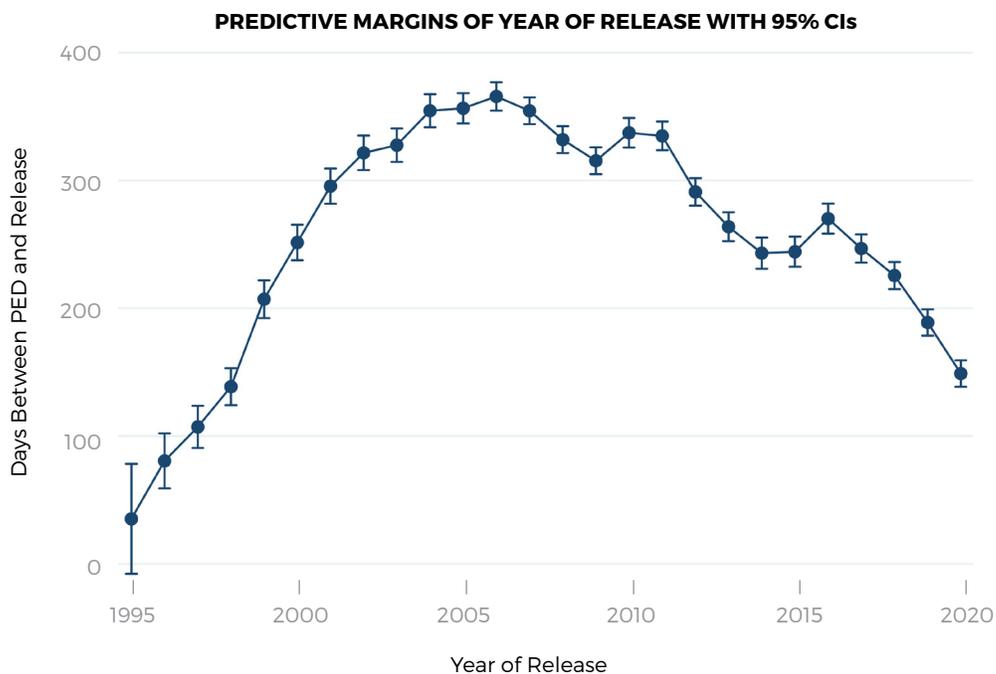
had some specific value on one or more of the independent variables. For example, suppose we wanted the marginal values for gender. We want to know the effect of being male and female on the number of days between initial parole eligibility and release. To simplify this example, we assume we have only two variables: gender and age at release. Gender is assigned a 1 if the person was a male and 0 for a female. The OLS regression would produce a result such as:

$$\text{Days Between PED and Release} = \beta_0 + \beta_1 * \text{Gender} + \beta_2 * \text{Age}$$

The right side of the equation shows the intercept (β_0) and the two coefficients (β_1, β_2) for our two predictor variables. To produce a marginal result for men, we would calculate the predicted values assuming everyone was male and had a value of 1 for the variable *Gender*. To find the predicted values for women, we would use the prediction equation and change the value of the *Gender* variable to 0. We average across the predicted values to get the marginal results for men and women. Stata does this work for us.⁴

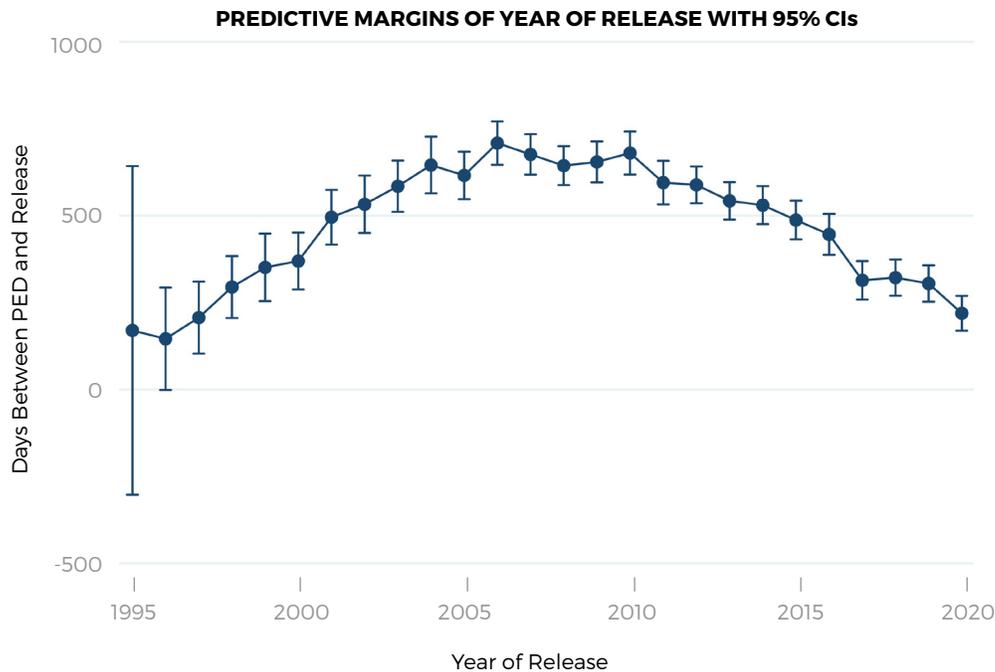
First, we show the marginal relationship between year of release and the number of days from the PED to the release date for the *general* (Figure 5) and *violent* (Figure 6) offense classes. Rather than fit a linear or some other polynomial trend to year of release, the release year variable was coded as an indicator variable with 1995 as the referent year. This provides the greatest flexibility in observing time trends. The bars above and below the points on the figures are the 95% confidence intervals.

Figure 5: Marginal Effects of Year of Release on Days Between PED and Release for the General Offense Class



⁴ Stata will calculate marginal effect at the means (MEM), average marginal effects (AME), and marginal effects at representative values (MER). These are equivalent for linear models such as the one we used.

Figure 6: Marginal Effects of Year of Release on *Days Between PED and Release* for the *Violent Offense Class*



Both trends peak around 2006. Both show a general rise in the number of days between the PED and release date up to about 2006, and then a general decline through 2020. The average difference between the PED and prison release is larger for the *violent offense class* than it is for the *general class*. This trend suggests that there have been major changes in parole release decisions over time - mainly that the parole board released people further from their parole eligibility date up until 2006, and then closer to their PED from 2006 to 2020. We cannot completely rule out that the trends are due to unobserved variables, but that alternative explanation becomes less tenable when we introduce an even richer set of covariates that began to be collected in 2012.

In supplementary analysis (Appendix IV), we graph the trend in the average number of days from the PED to the actual release date over time for both classes. These are unadjusted trends since they do not account for compositional differences in covariates. However, both sets of plots (Figures 5 and 6 and Figures A-1 and A-2) are remarkably similar to each other, demonstrating that even after controlling for factors related to the outcome variable, the trends over time for adjusted and unadjusted estimates are remarkably similar.

Offense Seriousness

As we outlined in our proposal, we also wanted to evaluate whether type of conviction offense affected the decision to release. We constructed a variable *offense seriousness* based on the judicial maximum sentence pronounced in court. In prior research, we have found this variable to be a reliable measure of offense seriousness and one that is commensurate over different jurisdictions even though the types of offenses themselves may not appear in the same level of the offense seriousness category (Gaes and

Laskorunsky, 2022). For example, some jurisdictions treat the punishment for drug crimes more severely than others. Specific types of drug crimes might be considered a level 4 offense in one jurisdiction and a level 3 offense seriousness level in another. Calculating offense seriousness as categories of sentence length circumvents this problem. The margins results are show in Tables 4 (*general class*) and 5 (*violent class*).

Table 4: Marginal Effect of Offense Seriousness Category on Days Between PED and Release for the General Offense Class

Offense seriousness	Margin	Delta-Method Std Err	t	P> t	95% Confidence Interval		N
1 (Lowest)	169.2	2.8	60.8	0.000	163.7	174.6	17,184
2	268.8	2.2	124.6	0.000	264.6	273.0	28,103
3	323.1	2.1	153.8	0.000	319.0	327.2	29,735
4	271.3	3.5	78.7	0.000	264.5	278.1	11,111
5 (Highest)	554.3	9.3	59.9	0.000	536.2	572.4	1,566

Table 5: Marginal Effect of Offense Seriousness Category on Days Between PED and Release for the Violent Offense Class

Offense seriousness	Margin	Delta Method Std Err	t	P> t	95% Confidence Interval		N
1 (Lowest)	376.9	31.6	11.9	0.000	314.9	438.9	299
2	440.8	15.0	29.4	0.000	411.4	470.2	1,326
3	526.1	9.8	54.0	0.000	507.0	545.2	3,073
4	479.2	12.8	37.5	0.000	453.1	504.2	1,866
5 (Highest)	550.2	30.3	18.1	0.000	490.8	609.7	346

For the *general offense class*, as the offense seriousness level increases, the difference between the PED and release date increases from 169 days to 554 days, although there is a dip in offense seriousness level 4. For the *violent offense class*, there is less of a difference in the marginal effects among the offense seriousness levels. For the *violent offense class* only 4.3% have the lowest offense seriousness rank which is why the confidence intervals are so wide. Nevertheless, as offense seriousness category increases, the difference between the parole eligibility date and the actual release date increases from 377 days to 550 days.

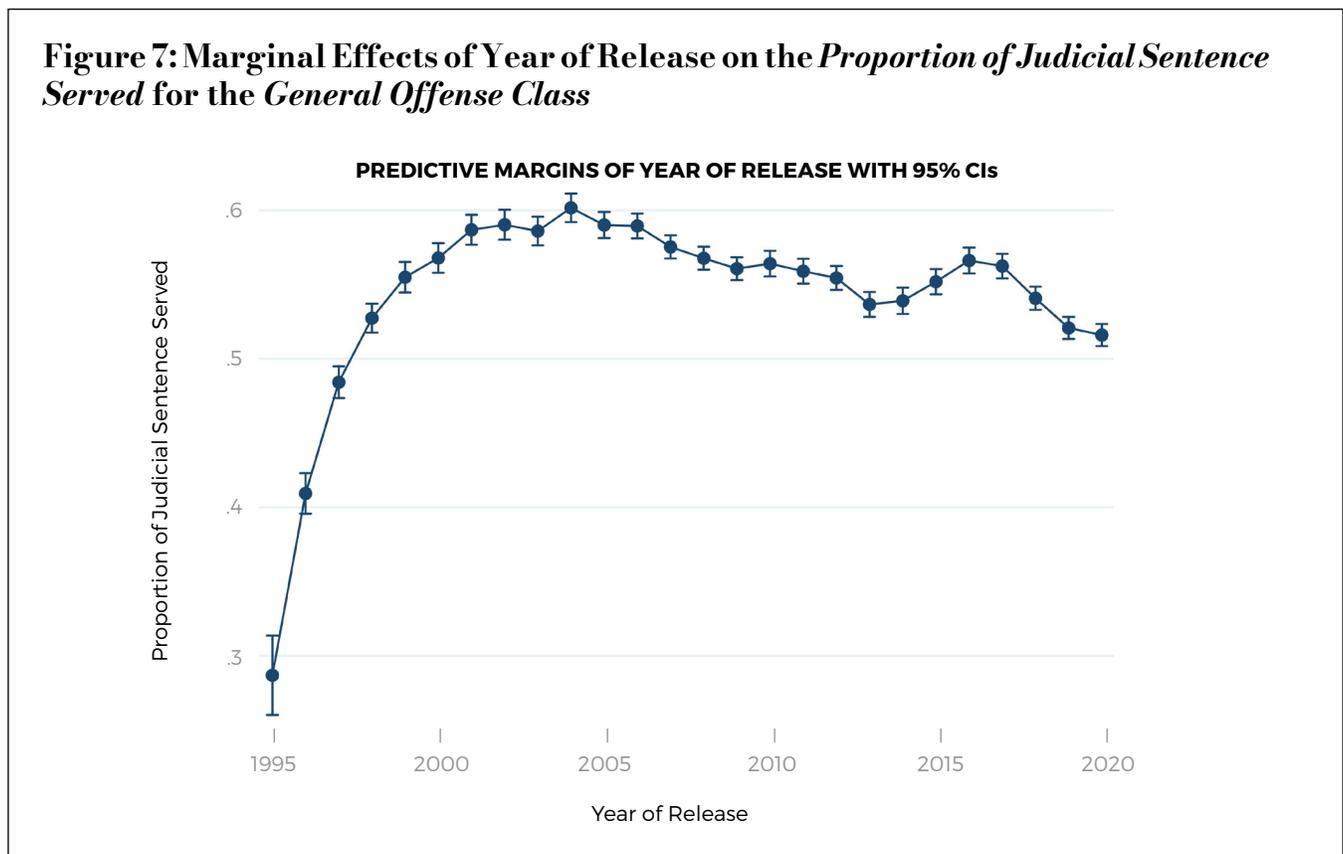
Overall, this means that the parole board is prolonging the period from initial parole eligibility to release for individuals who were convicted of more serious offenses, as evidenced by the larger gap between the

PED and the release date at the higher ends of offense seriousness. This is true for both the general and violent offense class. However, the effect of offense seriousness on the release decision is less pronounced in the *violent offense class*, with the number of days between PED and the release date climbing up at a slower pace as offense seriousness goes up. This is likely due to the fact that this offense class starts with a large gap (377 days) between the PED and release at the lowest offense seriousness level.

Percentage of Sentence Served Prior To Release

For the 66,665 persons for whom we could calculate the proportion of the judicial maximum sentence that was served prior to release, the overall average of the sentence served was 55.3%. The sample of the *violent offense class* was relatively small: 2,483, so we focus these analyses on the general class where the sample size was 63,401.

Figure 7 is a margins plot. It shows the adjusted trend of time's effect on the proportion of sentence served based on the OLS regression of the outcome as a function of the set of covariates described in Table 2.



This change in trend is not as dramatic as the one we observed for the difference in the number of days from PED to release (Figure 5). The proportion served peaked in 2004 at 60% and declined to 51.6% by 2020. This shows that individuals from the *general offense class*, on average, serve about 52% - 60% of their judicial maximum sentence before either being released. The regression output itself appears in Appendix V and has an R^2 of .09, meaning that the factors outlined in Table 2 can explain about 9% of the differences in the proportion of sentence served. Overall, we find these data much less trustworthy because of the significant percentage of missing data on the outcome variable.

Factors Affecting Parole Release for the General and Violent Offense Classes from 2012 to 2020

We capitalized on the richer set of covariates available from 2012 forward, the year the Colorado Parole Board began using risk and needs tools to inform their release decisions (Reitz, et al., 2016). We restricted the data to releases from 2012 to 2020 and merged the data we used in the prior analysis of factors affecting parole release with the additional covariates from the parole board hearing file. There were 39,497 observations that could be matched and 1,313 that could not – a 96.8% match rate. The parole board hearing file we were given did not contain revocation or rescission decisions. The file included a chronological listing of data associated with each hearing date. This meant that there were multiple parole board hearing records for each imprisonment in our movement file. For example, an individual who had five parole hearings over the course of their imprisonment may have been given a risk assessment prior to each hearing; and thus had five risk assessment scores. To merge the parole board hearing data, we created a cross section of this data by recording the first and last values for variables that changed over time. However, there was not a great deal of change in the scores from the first to the last record for each person's parole hearing data. Therefore, we restrict our analysis to the last score for all the hearing variables used in our analysis. Because there were relatively few cases from the *violent offense class*, we also restricted the analyses to the *general offense class*.

In addition to parole eligibility and hearing dates, the file contained data we used to derive the following measures. Table 6 contains descriptive statistics for these measures.

- Colorado Actuarial Risk Assessment Scale (CARAS); a measure of the likelihood someone will recidivate when released from prison. A higher score implies a higher risk of failure.
- Binary (yes/no) misconduct status for serious prison misbehavior in the previous 12 months. This is defined as a Class I misconduct by the Colorado Department of Corrections.
- Binary (yes/no) misconduct status for less serious prison misbehavior in the preceding 3 months. This is defined as a Class II misconduct by the Colorado Department of Corrections.
- Generalized risk assessment score we created based on the combination of the Colorado risk tool (CARAS) and the following additive factors – victim risk level, serious misconduct, less serious misconduct, escape risk, plus a reduction if the person was over 60 years at the time of the decision. These are all factors which the Colorado Parole Board members use to inform their release decisions. A higher score implies a higher risk of failure.
- Readiness for Release Score; an assessment of readiness for release based on prison programming, treatment needs, parole plan, and an LSI-R assessment. The needs/readiness scale is oriented so that higher values imply higher needs and less readiness for release. The LSI-R (Andrews, 1982; Andrews and Bonta, 1995; Bonta and Andrews 1993) is one of the most common tools used to assess needs and risks. Colorado uses it as a needs assessment tool. In the Colorado parole release decision process, the LSI-R is a key component to the readiness to release dimension. However, parole board members weigh the program needs, treatment needs and parole plans during their deliberations. The readiness scoring is described comprehensively in a report by Ford (2020). The LSI total score is categorized into point levels 0, 1, 2, and 3. The LSI rater boxes can increase or decrease the score by 1 point. This is also true for the parole board's assessment of program participation, treatment participation and parole plan. The final score is considered low readiness if it is less than 2. It is medium readiness if it is between 2 and 3, and high readiness if the score is above 3.

Table 6: Descriptive Statistics for the *General Offense Class* for the Additional Measures Used in Discretionary Release Decision Analyses for the Period 2012 to 2020

Variable	Mean	Std Dev	Min	Max	N
Hearing Characteristics					
CARAS Score	3.08	1.27	1	5	28,905
Serious Misconduct in Past Year (%)	2.47	.157	0	1	35,734
Recent Less Serious Misconduct (%)	5.79	.234	0	1	35,734
Generalized Risk Score	3.47	1.54	1	8	28,905
Readiness for Release Score	2.35	.716	1	4	29,276

One of the noteworthy findings in Table 6 is how few persons had either a serious (2.5%) or less serious (5.8%) instance of misconduct that would impact their parole release. We ran two OLS regressions to determine the effect of these factors on our main outcome of interest: number of days between PED and release. In the first, we used the CARAS risk score as one of our covariates. In the second, we substituted the combination risk score composed of the CARAS risk score, and other relevant risk factors (see bullet point on pg. 25). The latter model had a larger R-squared (.117 versus .105) and lower root mean square error (384.0 versus 386.7), meaning it explained a larger percentage of the variation in the outcome measure. We used the latter OLS regression for the margins analyses. The OLS regression output for this model is shown in Table 7. The year of release and offense seriousness variables were once again treated as categorical indicator variables. Ethnicity and race were also categorical, and the excluded indicator was white. The enhancement and two misconduct variables were binary dummy variables. Gender was also binary with female as the referent and male as the indicator. Age at release, prior incarcerations, number of parole revocations, risk score and readiness score were all treated as continuous covariates.

Although we provide all the coefficients in Table 7 for each variable, our focus once again is on the time trend in parole decisions and the impact of offense seriousness.

Table 7: OLS Regression of *Days Between PED and Release* for the *General Offense Class*

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Release Year						
2013	-58.17213	12.15827	-4.78	0.000	-82.0029	-34.34136
2014	-77.11272	12.42566	-6.21	0.000	-101.4676	-52.75784
2015	-69.19337	12.26257	-5.64	0.000	-93.22857	-45.15817
2016	-48.00653	12.27646	-3.91	0.000	-72.06896	-23.9441
2017	-61.09549	12.0229	-5.08	0.000	-84.66092	-37.53005
2018	-80.58546	12.00209	-6.71	0.000	-104.1101	-57.06082
2019	-112.5595	11.93954	-9.43	0.000	-135.9615	-89.15745
2020	-139.9763	11.87171	-11.79	0.000	-163.2454	-116.7072
Age at release	2.413599	.2749357	8.78	0.000	1.874712	2.952486
Prior incarcerations	-68.20478	13.00973	-5.24	0.000	-93.70446	-42.7051
Age at release x prior incarcerations	.854182	.2731964	3.13	0.002	.3187045	1.38966
Race and Ethnicity						
Black	46.24506	7.105702	6.51	0.000	32.31755	60.17256
Hispanic	16.31797	5.153483	3.17	0.002	6.216906	26.41903
Am. Indian	26.95476	12.70181	2.12	0.034	2.058613	51.8509
Asian	-9.749094	23.43677	-0.42	0.677	-55.68624	36.18805
Offense Seriousness						
2	60.2868	6.424269	9.38	0.000	47.69493	72.87866
3	100.4283	6.515245	15.41	0.000	87.65815	113.1985
4	69.90645	8.183161	8.54	0.000	53.86708	85.94582
5	231.5001	17.05807	13.57	0.000	198.0655	264.9347
Parole Returns	-12.60504	2.932844	-4.30	0.000	-18.35355	-6.856534
Sentencing Enhancement	170.6719	40.37565	4.23	0.000	91.5337	249.81
Serious Misconduct	43.8127	13.73651	3.19	0.001	16.88851	70.73689
Less Serious Misconduct	3.718369	9.274138	0.40	0.688	-14.45937	21.89611
Risk Assessment Score	74.01491	1.792629	41.29	0.000	70.50127	77.52854
Release Readiness Score	63.12817	3.392202	18.61	0.000	56.47929	69.77704
Gender	42.77377	6.030148	7.09	0.000	30.95441	54.59314
Constant	-293.1758	19.58824	-14.97	0.000	-331.5696	-254.7819

The margins output for the year of release are shown in Table 8. The number in parentheses in Table 8 indicate the comparable marginal effect when the period of study was from 1995 to 2020.

Table 8: Margins Results of Release Year for *General Offense Class*, Compared to Results from the Period 1995-2020 (In Parentheses)

Release Year	Margin	Delta-Method Std Err	t	P> t	95% Confidence Interval	
2012	293(291)	10.15329	28.88	0.000	273.2925	313.0944
2013	235(264)	6.740337	34.87	0.000	221.8099	248.2327
2014	216(243)	7.189439	30.06	0.000	201.9891	230.1723
2015	224(244)	6.891154	32.51	0.000	210.4931	237.507
2016	245(270)	6.921248	35.43	0.000	231.6209	258.7529
2017	232(247)	6.416999	36.17	0.000	219.5203	244.6756
2018	212(226)	6.391666	33.26	0.000	200.08	225.1359
2019	180(189)	6.219503	29.04	0.000	168.4434	192.8245
2020	153(149)	6.076754	25.21	0.000	141.3064	165.1278

Table 9 shows the margins output for offense seriousness. The number in parentheses in Table 9 indicate the comparable marginal effect when the period of study was from 1995 to 2020. Plotted predictive margins can be found for both Table 8 and 9 in Appendix VI.

Table 9: Margin Results for the Offense Seriousness Variable, Compared to Results from Table 4 Based on 1995 – 2020 (In Parentheses)

Offense Seriousness Category	Margin	Delta-Method Std Err	t	P> t	95% Confidence Interval	
1	149 (169)	5.028343	29.63	0.000	139.1251	158.8367
2	209 (269)	4.064938	51.48	0.000	201.3002	217.2351
3	249 (323)	4.025297	61.96	0.000	241.5194	257.299
4	219 (271)	6.287545	34.81	0.000	206.5635	231.2112
5	380 (554)	16.25111	23.41	0.000	348.6281	412.3339

The release year margins for the *general class* of incarcerated individuals with the added parole board predictors follow the same trend from 2012 through 2020 during the same period in which we evaluated parole release decisions in a wider window – 1995 through 2020 (see Figure 5). The offense seriousness margins for the 2012 to 2020 period also follow the same trend. However, the marginal impacts of offense seriousness are greater in the analysis of the wider observation window 1995 – 2020 than the more recent period 2012 – 2020.

The analysis of the period 2012 to 2020 has important risk and release readiness factors that parole board members used to inform their decision. Controlling for these factors helps to explain some of the variation in the outcome variable previously explained by offense seriousness. This means that board members are less likely to let out individuals who are serving time for more serious offenses, as well as individuals who are higher risk to re-offend. As we mentioned, these risk and readiness variables were not available during the period from 1995 to 2011. The 2012 to 2020 analysis confirms the effects of the time trends and offense seriousness effects on the parole board members decision to release. The period between initial parole eligibility and release decreased over time although there was a temporary upward swing of prolonged releases from 2014 to 2016. Colorado Parole Board members were more likely to defer release among people with more serious offenses. The added set of parole board risk and needs predictors bolsters our argument that the marginal effects we observed were more likely to be related to discretion exercised by parole board members than by a change in the risk composition of the parole eligible persons.

Did the Murder of the Colorado Department of Corrections Executive Director by a Parolee Affect Parole Board Decisions?

Jeffrey Lin (2019) has argued that the tragic death of Tom Clements, the Executive Director of the Colorado Department of Corrections, at the hands of a high-risk parolee led to a series of community supervision reforms and a more conservative⁵ posture by parole board members in their release decisions. Lin examined the trends in the total number of people on parole in Colorado from 2006 to 2018 (2019, pg.4). Tom Clements was murdered in early 2013 and Lin's parole population trends show that there was a decline in the total number of people on parole supervision from 2013 to 2015. Lin argues that this was at least partially due to the parole board becoming more conservative in its release decisions. To quote Lin:

Formally, it hired more parole officers, created a Fugitive Apprehension Unit, and imposed a two-hour deadline for responding to electronic monitor tampers. Informally, the agency cracked down on parole violations and the parole board became more conservative in its release and revocation decisions. (Lin, 2019, pg.6.)

However, it is also possible that this decline in the parole population was due to intensified monitoring on supervision and decreases in the threshold for revocations. Our intention is neither to support nor to challenge Lin's argument. Rather we use the data to perform a specific test of the effect of the Executive Director's murder on March 19, 2013, on the pre- and post-trend in our measure of parole release discretion. This allows us to isolate the effects of this event on the board's decision making.

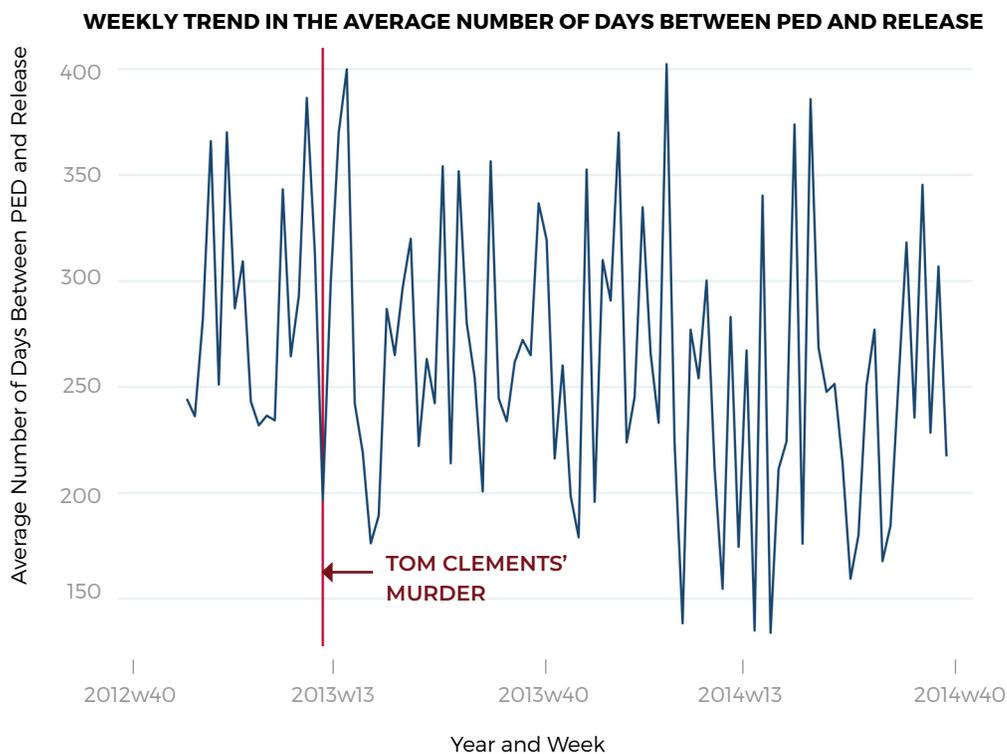
In Figure 5, we showed that in the years following the Director's murder, there was a decline in 2014, and an increase in 2015 and 2016 in our primary dependent variable (for the *general offense class*). This yearly trend might be described as proof that the parole board was less likely to grant parole in 2015 and 2016 due to the event. However, there could well be other contemporary factors affecting the release decisions. We chose a smaller time horizon to examine possible changes in the parole board release decisions using our main outcome variable of *Days Between PED and Release* and a more granular time series based on weekly rather than yearly changes as one way to zero in on the effects of the Director's murder. We confine the data to these shortened timeframes to eliminate the possibility of other

⁵ Throughout this report we have used language such as increasing or decreasing the period between initial parole eligibility and release rather than terminology such as conservative or liberal. We wanted to avoid any language that might suggest political affiliation. Because Lin (2019) used the terminology conservative and liberal in his paper, we adopted it for the section of the report that covered a discussion of the impact of Tom Clemens' death on parole outcomes.

contemporaneous events that may have affected the trajectory of parole release decision making. We used the data from the 16 weeks prior to the murder and 78 weeks after the murder to explore potential changes in the release decision trends. That provides us with a short window prior to the murder and about a year and a half, in weeks, after the event.

The weekly trend for this period is shown in Figure 8. A red vertical reference line identifies the fourth week in March 2013, the week Tom Clements was killed. This is the 12th week in the calendar year. This was one of the events identified on the yearly graph depicted in Figure 3. This was a period of relatively stable prison populations in Colorado. The prison population in 2013 was 20,135 and 20,522 in 2014 (Harrison, 2021).

Figure 8: Weekly Time Series of Days Between PED and Release Over the Interrupted Time Series Period



The week-to-week jumps represent the changes in our main outcome variable measuring the amount of time someone spends in prison between their parole eligibility date and release. These jumps are extreme in some instances, changing up to 200 days between weeks. It is difficult to deduce visually from Figure 8 whether this signal event occurring in the twelfth week of 2013 affected the parole release trend. To evaluate this event statistically, we conducted an interrupted time series analysis of the series shown in Figure 8. We used a Stata user-supplied algorithm, *itsa*, by Ariel Linden (2015). The routine tests whether a trend in the time series after the intervention (i.e., Tom Clements' murder) is different than the trend prior to the intervention. Linden's routine compares the slope of the trend in the time series prior to the intervention to the slope in the trend after the intervention. The output produces four estimates if an analyst is looking only at a single time series: the intercept for the beginning trend; the slope for the

beginning trend; the change in level immediately following the intervention (change in intercept), and a coefficient representing the difference between the pre- and post-intervention trajectory. In a single group interrupted time series analysis, the pre-trend slope is the counterfactual for the post-trend slope. If the Clements murder did have a powerful impact on parole release choices that made the board less likely to release, we would expect to see a change in trends and levels from the pre- to post-intervention event period, unless there were contemporaneous events that also affected the parole release process in the opposite direction. Linden's routine capitalizes on Stata's OLS regression models designed for time series data, including Newey-West standard errors that account for autocorrelation and possible heteroskedasticity. The results of the itsa analysis on the predicted number of days between PED and release are shown in Table 10.

Table 10: Interrupted Time Series Analysis of the Colorado's Executive Director's Murder on the Trend in Pre- and Post-Number of Days Between PED and Release

Regression with Newey-West standard errors						
Number of observations = 96						
Maximum lag = 0 F(3, 92) = 2.48						
Prob > F = 0.0660						
Variable	Coefficient	Newey-West Std Err	t	P> t	95% Confidence Interval	
Trend prior to event	2.32	2.3	1.01	0.315	-2.24	6.89
Immediate post trajectory change	-31.83	28.02	-1.14	0.259	-87.50	23.83
Diff. in pre- and post-trajectory	-2.80	2.32	-1.21	0.230	-7.41	1.80
Starting level (Constant)	269.23	22.02	12.23	0.000	225.49	312.97

The coefficient for starting level (*_constant*) is the starting level of the number of days between PED and release. In this case, it was 269 days. The *trend prior to event* coefficient indicates the trend prior to Clements' murder. The coefficient indicates that prior to Clements' death, the number of days between PED and release was increasing every week by an average of 2.3 days. However, the coefficient was not significant, meaning we cannot be sure – using conventional measures of statistical significance – that this trend was not just due to chance. In the first week after Clements' death, the number of days between PED and release decreased by 31.8 days (coefficient: *immediate post trajectory change*). This was also not significant. Finally, the *difference in pre- and post-trajectory change* coefficient shows that the weekly trend following the signal event had a slope that was 2.8 days per week lower than the slope in the pre-intervention period. This was also not significant. If anything, the change in intercepts and slope coefficients imply that parole release decisions were less conservative (i.e., parole was being granted sooner) after Tom Clements' death; however, none of the coefficients reached statistical significance by conventional standards. We ran a test for autocorrelation to see if we had to include lagged values of the data, but Stata's test did not indicate significant autocorrelation. This means that we are not able to determine with a conventional level of certainty whether the event affected the board's release-denial

decisions. Instead, these changes could be due to the normal variation that occurs in discretionary decisions over time.

There are other possible changes the parole board and the Colorado Department of Corrections could have made that reduced the number of people on parole release, as they did during this time period. They could have tightened up on community supervision by increasing monitoring and/or they could have changed the threshold for a revocation making it more likely a person on parole could be revoked. However, in the spirit of our report, we wanted to see if the difference between the PED and the release date changed as a result of the Executive Director's death, and we could not find statistical evidence that it did.

Discussion and Recommendations

Summary of Findings

The Colorado Department of Corrections provided us with data on the movement of incarcerated people from the 1970's to 2020. Because of available data, we conducted our analysis over two periods, 1995 – 2020 and 2012 – 2020. Risk and needs data used by the parole board members to make release decisions were available for the latter period, but unavailable from 1995 – 2011. In this study, we wanted to evaluate if there were trends in parole release decisions. Our primary dependent variable was the number of days between a person's parole eligibility date and the person's actual date of release. We also used an alternative measure calculated as the percentage of the judicial maximum sentence that was served, but this had a large amount of missing data.

We focused on the *general offense class* of parole releases which account for 92% of Colorado's parole-eligible prison releases. This group has a presumptive parole release date that is 50% of their judicial sentence. However, that date can be recalculated and moved up if a person is awarded earned time. We also analyzed parole release decisions for individuals serving terms for violent offenses. They typically have a PED of 75% of their sentence, unless there were sentence enhancements based on other aggravating factors.

We used the number of days between PED and release in a series of analyses. We chose the 1995-2020 period because it occurred after a major change to sentencing structure. Anyone sentenced in Colorado who committed a crime on or after July 1, 1993, received a prison sentence and a mandatory parole supervision sentence. Based on the cooperation of Colorado's Department of Corrections and very willing staff, we were able to create covariates that we could use to estimate the influence of factors associated with parole decision making. This set of covariates was enhanced beginning in 2012 when Colorado began using risk and readiness (needs) assessment tools to inform their parole release decisions. Our primary focus was to evaluate whether there had been changes in the parole board's discretionary release decisions over time and whether this was influenced by offense seriousness. We conducted regression analyses in the two timeframes and used margins commands to evaluate the effect of these two factors. We found that whether the class of parole eligible persons was in the general or violent class, the time between the PED and release increased from 1995 to 2006 and decreased thereafter. In other words, in 1995 to 2006 we saw a steady increase in the number of days an individual spent in prison after their parole eligibility date, and a steady decrease in this number after 2006. Even after adding key variables in the 2012 to 2020 period, we observed a declining trend in the number of days between PED and release. Offense seriousness was an important dimension in both time frames. The higher the offense seriousness, the longer the time between the parole eligibility date and the actual release date.

We also conducted a specific test of a hypothesis that parole decision making is influenced by signal events or political pressure. Scholars argue that parole board members tend to be risk-averse, delaying or denying a release despite the low probability that the parolee will commit an egregious crime (Rhine, Petersilia, and Reitz, 2017). It is difficult to assess a political milieu and its effect on parole decision making. However, a signal event that could affect decisions is easy to locate in time and provides an opportunity

to assess its impact. We evaluated whether the number of days between PED and release increased after the murder of the Executive Director of the Colorado Department of Corrections by a high-risk parolee. There was no evidence that this happened. And there was a great deal of noise (oscillation) in the signal to detect a trend. As we noted, Lin (2019) claims that Colorado responded to this event by becoming more conservative in their rate of parole release (i.e., denying release more often), but we only tested the hypothesis using our primary dependent variable of time spent in prison after the PED.

Because loss of good time and the acquisition of earned time can also affect the prison release date, correctional authorities also have a role in discretionary release. The regression results did show, that when serious misconduct occurred it added, on average, 43.8 days to the release date. This may be due to the loss of good time, at the prison officials' discretion, or because the parole board is more likely to defer release for individuals who have a serious misconduct. However, very few people (less than 3%) had a recorded serious misconduct. When less serious misconduct was recorded, it added only 3.7 days to release; however, this factor did not reach statistical significance. Even in the relatively few cases where the person committed an infraction worthy of delaying release, the parole board members could waive that risk predictor if other factors disposed them to release.

Research Implications

These findings underscore the power that parole boards wield in indeterminate sentencing systems. Particularly in a highly indeterminate system such as Colorado (Reitz, et al., 2022), the initial judicial sentence merely sets up a wide range in which someone can be released. The decision of when a person will actually be released is governed more by the parole board's discretionary release decisions, and to a lesser extent, prison officials who wield power over withholding good time credits. However, what our findings show in Colorado is that because prison officials rarely withhold good time, it is really the parole board that has the greatest effect on actual time served.

From a practical standpoint, jurisdiction-specific sentencing indeterminacy should be taken into account when making policy decisions. Policies aimed at the front-end of the sentencing system, such as mandatory minimum sentences or sentence caps, will play out differently depending on the level of prison release indeterminacy present. As an example, there has been a recent push to cap all prison sentences at 20 years based on the notion that two decades in prison is enough to achieve any sort of retributive or rehabilitate goals (see, e.g., Lopez, 2019; Mauer and Nellis, 2018). In a highly indeterminate system like Colorado, a 20-year sentence cap would mean individuals convicted of the most serious offense could serve as little as 6 years - making such a proposal politically untenable. However, a policy that allows for administrative parole at the 20-year mark (with limited exceptions), would achieve the same goal and with more precision. Similarly, mandatory minimum sentencing policies are generally adopted in order to increase sentencing uniformity and predictability. However, in highly indeterminate systems, mandatory minimum sentences set the outer bounds of how long someone could possibly serve, leaving the actual time to be served as somewhat unpredictable.

In fact, what our study shows is that the parole board had a major effect on time served independent of any sentencing-related policy changes. In 2006, release eligible individuals were serving an average of one year past their PED. In 2020, that number was closer to 5 months. This change was a direct reflection of the changes in the board's parole release patterns. What remains an open question is why there was a trend from delaying the parole release from 1995 to 2006, to decreasing the time between initial parole eligibility and release from 2006 to 2020? We do not have sufficient information to explain these changes in release trajectories. There may have been many statutory and policy decisions that

constrained the parole board members' ability to postpone the release decision. There may have been political influences or prison population pressures that could subtly affect parole release decisions. And finally, there may have been more parole board members willing to take more of a risk in releasing persons. This explanation, in particular, makes sense in light of the parole board's adoption of a risk and needs assessment instrument in 2012. Actuarial instruments can sometimes provide cover to practitioners making risk-based assessments, allowing them to be less cautious in their decisions. Since this would be some combination of formal and informal mechanisms, it is difficult to analyze the factors affecting these trajectories. The one conspicuous event that we could analyze that occurred at a specific point in time was the murder of the Colorado Department of Corrections Executive Director. We could not definitively show that this had an impact on parole release decisions.

What we do show is that the Colorado parole board not only has a significant amount of power over determining the length of time someone serves in prison, but that it also wields that power. This is exemplified by the case and individual characteristics that affect parole decisions (e.g., offense seriousness, misconduct) and in the way parole release patterns change over our study period. A basic question one might ask is – is this level of release-denial discretion a good thing? Criminological scholarship tends to focus on the problematic aspects of individual actor discretion in the criminal justice system (Thomas III, 2004). In particular, parole board decision making has been criticized for reproducing racial and ethnic disparities (see e.g., Young and Pearlman, 2021), for lacking transparency and accountability (see e.g., Schwartzapfel, 2015) and for being arbitrary and capricious (see e.g., Bell, 2019). Scholars have generally been supportive of recent efforts that limit parole release discretion, such as the expansion of administrative parole release (see e.g., Rhine et al., 2017). Perhaps the more difficult task is figuring out how to encourage the use of discretion in cases where it can achieve specific goals – such as reducing prison populations. Identifying what parole board members need to feel more confident in their decision to release is a crucial, but understudied, piece of the puzzle. Perhaps board members need more confidence in the actuarial tools that measure risk of recidivism, or greater availability of the types of community resources they think are necessary for successful re-entry. The political fallout that can end one's tenure on the board as a result of a “wrong” decision no doubt adds to the risk aversion many parole board members exhibit (Ruhland, 2020).

These parole release decisions can have dramatic consequences – particularly in highly indeterminate systems (Reitz, et al., 2022). In a separate paper (Gaes and Laskorunsky, 2022), we have shown how parole release discretion can have a sizeable impact on the level of the prison population. Using a separate source of data, we found that Colorado's prison population in 2016 could have been decreased by 33% if persons were released at the earliest parole eligibility date (PED) and increased by 36% if persons were released at their maximum judicial sentence.⁶ This would have moved Colorado's 2016 prison population of 20,623 to a possible low of 13,817 if individuals were released as soon as they became eligible, or a high of 28,047 if everyone eligible for discretionary release served out their maximum sentence. Although there are manifest prison costs to releasing a person beyond their initial parole eligibility date, parole board members are implicitly weighing the cost of a parolee committing a serious crime. Regardless of whether an increase in the period from initial parole eligibility to release during the 1995-to-2006-year period was deliberate or unintentional, policy-based or informal, the trend in earlier discretionary releases since 2006 has contributed to the decline in the Colorado prison population. This research underscores the immense potential that parole release discretion has in making a sizeable impact on the length of prison terms, and thus the size of incarceration in the US.

⁶ The analysis was based on data Colorado submits to the Bureau of Justice Statistics National Corrections Reporting program.

There are two critical areas of research that were not pursued in this project but deserve more attention. The first is whether the change in release discretion has had any impact on the likelihood a person would recidivate. Is there a public safety benefit – in terms of a reduction in recidivism – from keeping individuals incarcerated past their parole eligibility date? Future studies should examine if serving a greater portion of a sentence has any discernable impact on recidivism, particularly beyond what is achieved through the effect of incapacitation alone. A second is whether changes in parole release discretion were related to racial inequity. Our analysis showed that relative to White parole eligible people, the regression of the time from PED to release was higher for Black people by 46 days, Hispanics by 16 days, and American Indians by 27 days. Race and ethnicity were included as control variables in our regressions. We do not interpret these findings as implying racial inequity in release decisions because there may be important omitted variables that must be incorporated in our regression analyses. In most statistical models, race and ethnicity serve as a stand in for a wide number of other factors that are difficult to control for (such as criminal history or socio-economic status) and these factors likely have an effect on parole release decision making.

To do a proper analysis of racial equity, and a proper analysis of parole release discretion on recidivism requires a comprehensive counterfactual analysis. This requires a quasi-experimental design that ensures the counterfactuals are balanced on all important covariates or a design such as instrumental variables (IV) or regression discontinuity where some additional variable can serve as an instrument (IV analysis) or a running variable (regression discontinuity). This type of analysis was beyond the goals of the current report. We make no causal assertions about the regression results we reported – meaning that we cannot claim that any specific factor or set of factors caused the changes in parole release discretion. We can claim, however, that the elapsed time and offense seriousness factors are useful predictors of the parole release decision outcomes we measured (Berk, 2004).

This study's focus on how back end discretionary actors affect sentence length and stands in contrast to the front-end focus that has dominated sentencing research in criminology. Indeed, in the last few decades scholars have made great strides in identifying social characteristics that affect sentencing outcomes (e.g., Spohn, 2000; Zatz, 2000), how judges make sentencing decisions (e.g., Kramer and Ulmer, 2009), and how policies – such as mandatory minimums – interact with the local courtroom context to produce sentencing outcomes (e.g., Jenness & Grattet, 2005). We know comparatively less about how these sentencing outcomes translate to actual time served, how back-end actors, such as parole boards make decisions, and how policies focused on the back-end – such as good time policies – affect time served. Reitz and colleague's research on prison release indeterminacy is the first to catalogue the different prison release systems across the US and identify some of the major questions in this area – some of which this study has tried to answer (Reitz, Rhine, Lukac, and Griffith, 2022). We are hopeful that this study serves as an example of the type of jurisdiction-specific research possible in this area.

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Appendices

Appendix I. Release Year Descriptive Statistics

Table A-1: Release Year Frequencies, Percentages, and Cumulative Percentages

Release Year	Freq.	Percent	Cum.
1995	276	0.29	0.29
1996	1,147	1.20	1.49
1997	1,989	2.08	3.57
1998	2,594	2.71	6.28
1999	2,469	2.58	8.87
2000	2,828	2.96	11.83
2001	2,880	3.01	14.84
2002	2,935	3.07	17.91
2003	3,183	3.33	21.24
2004	3,196	3.34	24.58
2005	3,832	4.01	28.59
2006	4,359	4.56	33.15
2007	4,917	5.14	38.30
2008	4,924	5.15	43.45
2009	4,918	5.15	48.59
2010	4,033	4.22	52.81
2011	4,290	4.49	57.30
2012	4,799	5.02	62.32
2013	4,336	4.54	66.86
2014	3,782	3.96	70.82
2015	4,033	4.22	75.04
2016	3,995	4.18	79.22
2017	4,519	4.73	83.94
2018	4,945	5.17	89.12
2019	5,205	5.45	94.56
2020	5,196	5.44	100.00
Total	95,580	100.00	

Appendix II. Comparison of Deleted and Non-Deleted Observations

To evaluate the effect of deletions on the observations that failed the data audits for the dependent variable based on the number of days between PED and release, we ran a logistic regression. This is presented in Table A-1. The outcome was whether a case had been deleted. The set of predictors was the set of covariates described in Table 2. We also used the dependent variable, the number of days between PED and release as another predictor. The referent year for the categorical release year indicators was 1995. Stata allows the user to easily create a set of indicator variables from a categorical variable with the *i.* operator. We applied the *i.* operator to all the categorical variables listed in Table 3. With 113,447 observations, we would expect statistically significant differences between the deleted and non-deleted observations; however, we also interpreted the results of this logit analysis in terms of substantively meaningful differences. Earlier years of data were associated with a lower likelihood of deletion. Beginning about 2012 the year of release had no impact on case deletion. The age of release had no substantive effect on case deletion. The interaction between the prior incarcerations and age also had no substantive effect on case deletion. Black people had a ratio indicating that they were six percent more likely to be included than White people, and the ratio for Hispanics indicated a 12 percent lower likelihood to be included than White people. Compared to the lowest offense seriousness level, the higher offense seriousness levels were less likely to be deleted. Mandatory releases to parole were more likely to be deleted than discretionary releases. The number of days from the actual to the parole eligibility date had no substantive effect on the odds of deletion. For every 1,000 days someone served past their PED the ratio of deletion increased by 0.3%. Men were less likely to be deleted than women; incarcerated individuals with enhancements to their sentence were more likely to be deleted. There was no impact on the number of prior parole revocations (returns) on the odds of deletion.

While there are a few substantive differences in the deleted and non-deleted cases, the majority of the characteristics including the difference in parole eligibility date and the actual release date are substantially the same in both groups. The non-deleted cases are 83.1% of the entire release cohort of Colorado discretionary and mandatory parole releases and for the most part is representative of the entire release cohort of these cases over the period we evaluated. We believe that by limiting the observations to the core group of cases by removing outliers, our results are representative of most Colorado parole releases.

We did not do a similar analysis for the other dependent variable - proportion of judicial sentence served. This had such a substantial proportion of missing observations, that we considered this variable untrustworthy. We do report on an analysis of this secondary dependent variable; however, we are not willing to draw any conclusions due to the sizable proportion of missing data.

Table A-2: OLS Regression of Deleted and Non-Deleted Observations

Logistic regression

Number of obs=113,447

LR chi2(41)=8066.90

Prob > chi2=0.0000

Log likelihood = -45366.285

Pseudo R2=0.0816

Variable	Odds Ratio	Std Err	z	P> z	95% Confidence Interval	
Release Year						
1996	.5292529	.094379	-3.57	0.000	.3731409	.750678
1997	.4362547	.0745671	-4.85	0.000	.3120671	.609863
1998	.3727765	.062412	-5.89	0.000	.268495	.5175601
1999	.4563648	.0749175	-4.78	0.000	.3308092	.6295737
2000	.4057214	.0663094	-5.52	0.000	.2945175	.5589136
2001	.4753287	.0768502	-4.60	0.000	.346237	.6525511
2002	.4886012	.0784476	-4.46	0.000	.3566888	.6692981
2003	.4759211	.0762614	-4.63	0.000	.3476472	.6515252
2004	.5532637	.0879863	-3.72	0.000	.405102	.7556138
2005	.5635457	.088914	-3.63	0.000	.4136471	.7677651
2006	.6738718	.1059563	-2.51	0.012	.495152	.9170985
2007	.7215042	.1131134	-2.08	0.037	.5306305	.9810372
2008	.6538264	.1026577	-2.71	0.007	.4806343	.8894266
2009	.5753769	.0902362	-3.52	0.000	.4231153	.7824312
2010	.6322363	.0994248	-2.92	0.004	.4645371	.8604755
2011	.6036965	.0949675	-3.21	0.001	.4435229	.8217151
2012	.6842981	.1073306	-2.42	0.016	.503195	.9305813
2013	.7874147	.1235172	-1.52	0.128	.5790025	1.070845
2014	.8329043	.1307581	-1.16	0.244	.6123003	1.132989
2015	.8104286	.1269853	-1.34	0.180	.5961297	1.101764
2016	.8088742	.1266731	-1.35	0.176	.5950854	1.099468
2017	.7912176	.1236102	-1.50	0.134	.5825251	1.074675
2018	.8058326	.1256306	-1.38	0.166	.5936645	1.093827
2019	.9019278	.1403549	-0.66	0.507	.6648302	1.223581
2020	.9401626	.1465938	-0.40	0.692	.6925965	1.27622

Variable	Odds Ratio	Std Err	z	P> z	95% Confidence Interval	
Days between PED and release	1.000329	.0000165	19.92	0.000	1.000297	1.000362
Age at release	.9943523	.0009579	-5.88	0.000	.9924766	.9962316
Prior incarcerations	.5431277	.0301991	-10.98	0.000	.4870496	.6056624
Age at release x prior incarcerations	1.008488	.0012227	6.97	0.000	1.006094	1.010887
Race/Ethnicity						
Black	1.06221	.0263505	2.43	0.015	1.0118	1.115133
Hispanic	.8855813	.0173136	-6.22	0.000	.8522891	.9201739
Am. Indian	.8739263	.0422528	-2.79	0.005	.794915	.9607911
Asian	1.146057	.1034374	1.51	0.131	.9602423	1.367827
Offense Seriousness						
2	.5767352	.0123747	-25.65	0.000	.5529843	.6015063
3	.3480975	.0084818	-43.31	0.000	.3318641	.3651249
4	.4166476	.0140373	-25.99	0.000	.3900237	.445089
5	.5698836	.0345786	-9.27	0.000	.5059855	.6418509
Returns on Parole						
Returns on Parole	.9785338	.0137478	-1.54	0.122	.9519562	1.005853
Sentencing Enhancement						
Sentencing Enhancement	2.461918	.2153789	10.30	0.000	2.073991	2.922404
Release Type						
Mandatory Rel. to Parole	2.819684	.0557252	52.45	0.000	2.712553	2.931047
Gender						
Male	.8517219	.0208219	-6.57	0.000	.811874	.8935256
Constant	.3808057	.0600242	-6.13	0.000	.2795976	.5186489

Note: Constant estimates baseline odds.

Note: 0 failures and 3 successes completely determined.

Appendix III. OLS Regression of Number of Days Between PED and Release 1995-2020

Table A-3: OLS Regression of Days Between PED and Release for the *General Offense Class*

Source	SS	df	MS	Number of obs=87,698
-----F(39, 87658)=182.81				
Model	927030822	39	23770021.1	Prob > F=0.0000
Residual	1.1398e+10	87,658	130023.203	R-squared=0.0752
-----Adj R-squared=0.0748				
Total	1.2325e+10	87,697	140536.218	Root MSE=360.59

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Release Year						
1996	45.36601	24.52827	1.85	0.064	-2.709175	93.4412
1997	71.95187	23.4943	3.06	0.002	25.90326	118.0005
1998	103.4461	23.15232	4.47	0.000	58.06773	148.8244
1999	171.9022	23.20855	7.41	0.000	126.4136	217.3907
2000	216.2686	23.0698	9.37	0.000	171.052	261.4852
2001	260.3771	23.04757	11.30	0.000	215.2041	305.5501
2002	286.3971	23.00506	12.45	0.000	241.3074	331.4868
2003	292.4264	22.94196	12.75	0.000	247.4603	337.3924
2004	319.3864	22.92477	13.93	0.000	274.4541	364.3188
2005	321.2961	22.77395	14.11	0.000	276.6593	365.9328
2006	330.5478	22.67735	14.58	0.000	286.1004	374.9952
2007	319.3337	22.59983	14.13	0.000	275.0382	363.6291
2008	296.7666	22.60171	13.13	0.000	252.4674	341.0657
2009	280.2491	22.59977	12.40	0.000	235.9538	324.5445
2010	302.1127	22.74217	13.28	0.000	257.5382	346.6871
2011	299.6803	22.69546	13.20	0.000	255.1974	344.1632
2012	255.8566	22.64174	11.30	0.000	211.479	300.2342
2013	228.6008	22.71288	10.06	0.000	184.0838	273.1179
2014	207.9283	22.83148	9.11	0.000	163.1789	252.6778
2015	209.0509	22.76854	9.18	0.000	164.4248	253.677
2016	234.9644	22.77033	10.32	0.000	190.3347	279.594
2017	211.5442	22.68034	9.33	0.000	167.0909	255.9975
2018	190.4058	22.621	8.42	0.000	146.0688	234.7427
2019	153.6918	22.58224	6.81	0.000	109.4308	197.9528
2020	113.7199	22.59277	5.03	0.000	69.4383	158.0016

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Age at release	.308904	.1404987	2.20	0.028	.0335277	.5842802
Prior incarcerations	29.55176	7.369171	4.01	0.000	15.10825	43.99527
Age at release x prior incarcerations	-.429031	.1632183	-2.63	0.009	-.7489374	-.1091247
Race/Ethnicity						
Black	52.63421	3.620383	14.54	0.000	45.53829	59.73013
Hispanic	-4.106734	2.784569	-1.47	0.140	-9.564463	1.350996
Am. Indian	37.35254	7.189739	5.20	0.000	23.26072	51.44437
Asian	-29.18624	13.85898	-2.11	0.035	-56.34972	-2.022773
Offense Seriousness						
2	99.60906	3.520779	28.29	0.000	92.70837	106.5098
3	153.91	3.506064	43.90	0.000	147.0381	160.7818
4	102.1134	4.451663	22.94	0.000	93.38823	110.8387
5	385.0827	9.654836	39.88	0.000	366.1593	404.0061
Returns on Parole	7.235934	1.884386	3.84	0.000	3.542555	10.92931
Sentencing Enhancement	19.75609	23.84528	0.83	0.407	-26.98044	66.49262
Gender	38.85231	3.515014	11.05	0.000	31.96292	45.74171
Constant	-127.8577	22.84852	-5.60	0.000	-172.6406	-83.07478

Table A-4: OLS Regression of Days Between PED and Release for the *Violent Offense Class*

Source	SS	df	MS	Number of obs=6,910
Model	212641803	39	5452353.92	F(39, 6870)=18.82
Residual	1.9904e+09	6,870	289720.36	Prob > F=0.0000
				R-squared=0.0965
				Adj R-squared=0.0914
Total	2.2030e+09	6,909	318862.452	Root MSE=538.26

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Release Year						
1996	-23.9692	252.2042	-0.10	0.924	-518.3675	470.4291
1997	36.90185	246.5645	0.15	0.881	-446.4409	520.2446
1998	124.8468	245.169	0.51	0.611	-355.7603	605.4538
1999	181.4243	245.9382	0.74	0.461	-300.6906	663.5392
2000	199.6484	244.4938	0.82	0.414	-279.635	678.9317
2001	325.7489	244.3045	1.33	0.182	-153.1634	804.6613
2002	362.9069	244.6954	1.48	0.138	-116.7718	842.5857
2003	414.8757	243.9297	1.70	0.089	-63.30198	893.0533
2004	475.8265	244.6101	1.95	0.052	-3.684953	955.3379
2005	446.0091	243.5243	1.83	0.067	-31.37395	923.3922
2006	538.953	243.1289	2.22	0.027	62.34514	1015.561
2007	506.4754	242.9161	2.08	0.037	30.28465	982.6661
2008	474.0934	242.7505	1.95	0.051	-1.772741	949.9595
2009	484.7904	242.9707	2.00	0.046	8.49276	961.0881
2010	510.3498	243.1573	2.10	0.036	33.68632	987.0132
2011	425.3451	243.1655	1.75	0.080	-51.33453	902.0248
2012	418.7752	242.6529	1.73	0.084	-56.8995	894.4499
2013	372.7666	242.7147	1.54	0.125	-103.0292	848.5625
2014	360.5393	242.7697	1.49	0.138	-115.3645	836.443
2015	317.5819	242.8049	1.31	0.191	-158.3908	793.5546
2016	276.2174	243.0147	1.14	0.256	-200.1667	752.6015
2017	144.2193	242.8115	0.59	0.553	-331.7664	620.205
2018	152.013	242.6521	0.63	0.531	-323.6601	627.6861
2019	135.0116	242.6765	0.56	0.578	-340.7094	610.7327
2020	49.46037	242.5488	0.20	0.838	-426.0103	524.931

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Age at release	.291723	.7538701	11.00	0.000	6.813905	9.769542
Prior incarcerations	26.02031	42.59689	0.61	0.541	-57.48277	109.5234
Age at release x prior incarcerations	-.9051287	.9296126	-0.97	0.330	-2.727457	.9171996
Race/Ethnicity						
Black	27.67514	17.70447	1.56	0.118	-7.031093	62.38138
Hispanic	38.38209	15.30874	2.51	0.012	8.372219	68.39197
Am. Indian	5.011169	34.6477	0.14	0.885	-62.90905	72.93139
Asian	37.74856	59.26369	0.64	0.524	-78.4266	153.9237
Offense Seriousness						
2	63.89877	34.73446	1.84	0.066	-4.191521	131.9891
3	149.1874	33.08586	4.51	0.000	84.32889	214.0459
4	102.2694	34.49394	2.96	0.003	34.65056	169.8881
5	173.3362	43.83028	3.95	0.000	87.41534	259.2572
Other Variables						
Returns on Parole	-19.07638	11.14882	-1.71	0.087	-40.93152	2.778754
Sentencing Enhancement	-75.6248	80.94793	-0.93	0.350	-234.3078	83.05818
Demographics						
Gender	64.6053	26.12109	2.47	0.013	13.39988	115.8107
Constant	-303.6331	244.1413	-1.24	0.214	-782.2256	174.9593

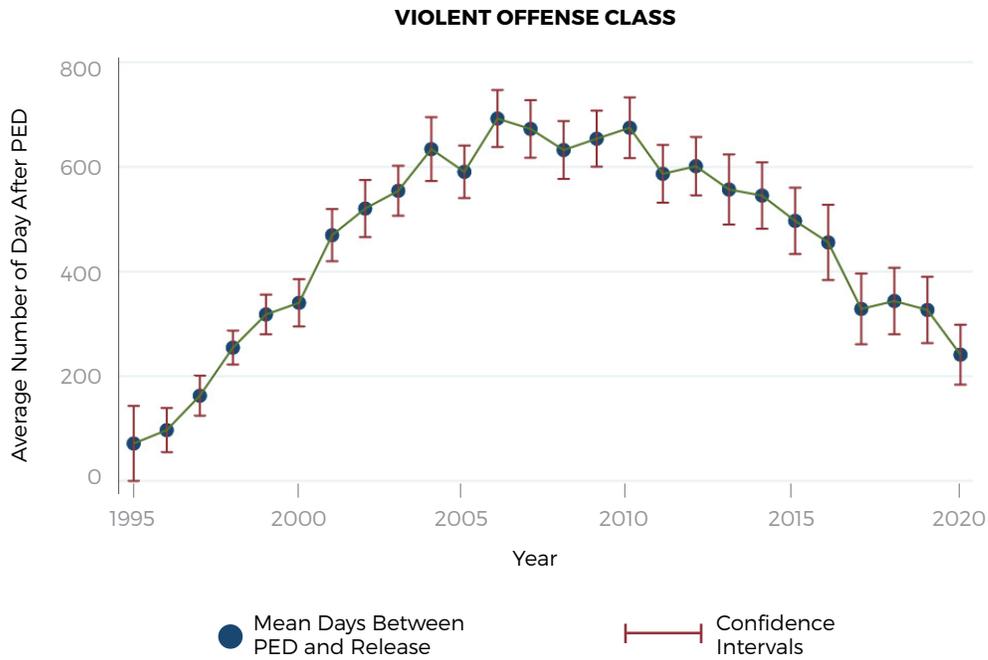
Appendix IV. Unadjusted Release Trends for the General and Violent Offense Class

Figures A-1 and A-2 show the trend in the average number of days from the PED to the actual release date over time. Figure A-1 represents the general offense class and Figure A-2 represents the violent offense class. These are unadjusted trends since they do not account for compositional differences in covariates. Both figures show that unadjusted trends in the difference between initial eligibility and release, on average, increased from 1995 to about 2005/2006. From 2006 to 2020, the number of days between the PED and release substantially declined for both classes of persons. The average delay in release relative to the parole eligibility date increased then decreased. The highest average difference in the outcome for the general offense class was 362 days in 2006. It was 692 days for violent offense class in 2006. This means that when the parole board chose to release someone in 2006, they waited about a year past a person’s first eligibility date for the majority of persons; and almost twice as long for those convicted of violent crimes.

Figure A-1: Yearly Trend in Unadjusted Number of Days from PED to Release Date for the General Offense Class



Figure A-2: Yearly Trend in Unadjusted Number of Days from PED to Release Fate for the *Violent Offense Class*



Appendix V. Proportion of Sentence Served 1995-2020

Table A-5: OLS Regression of Days Between PED and Release for the *Violent Offense Class*

Source	SS	df	MS	Number of obs=63,400
-----F(39, 63360)=156.57				
Model	305.941749	39	7.84466022	Prob > F=0.0000
Residual	3174.54882	63,360	.050103359	R-squared=0.0879
-----Adj R-squared=0.0873				
Total	3480.49056	63,399	.054898193	Root MSE=.22384

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Release Year						
1996	.1224884	.0152942	8.01	0.000	.0925116	.1524651
1997	.1973911	.014674	13.45	0.000	.16863	.2261521
1998	.2405478	.0145027	16.59	0.000	.2121225	.268973
1999	.2681213	.0146113	18.35	0.000	.239483	.2967595
2000	.2810828	.0145497	19.32	0.000	.2525653	.3096002
2001	.3000567	.0145683	20.60	0.000	.2715029	.3286105
2002	.3034675	.0145617	20.84	0.000	.2749264	.3320085
2003	.2992169	.0144943	20.64	0.000	.2708082	.3276257
2004	.3148682	.0144901	21.73	0.000	.2864675	.3432688
2005	.3032898	.0143584	21.12	0.000	.2751473	.3314323
2006	.3026455	.0142844	21.19	0.000	.274648	.330643
2007	.2885288	.0142077	20.31	0.000	.2606817	.3163759
2008	.2808895	.0141933	19.79	0.000	.2530707	.3087084
2009	.2738944	.0141876	19.31	0.000	.2460867	.3017021
2010	.277282	.0143283	19.35	0.000	.2491984	.3053655
2011	.2721649	.0142923	19.04	0.000	.2441519	.3001778
2012	.2676381	.0142422	18.79	0.000	.2397233	.2955529
2013	.2498015	.0142964	17.47	0.000	.2217805	.2778225
2014	.2522351	.0143704	17.55	0.000	.224069	.2804012
2015	.2651052	.0143155	18.52	0.000	.2370467	.2931636
2016	.2793763	.0143455	19.47	0.000	.2512591	.3074936
2017	.275607	.0142756	19.31	0.000	.2476268	.3035872
2018	.2539656	.0142124	17.87	0.000	.2261094	.2818219
2019	.2339491	.0141584	16.52	0.000	.2061986	.2616997
2020	.2291738	.0141615	16.18	0.000	.2014172	.2569303

Variable	Coefficient	Std Err	t	P> t	95% Confidence Interval	
Age at release	.0011559	.0001014	11.40	0.000	.0009572	.0013547
Prior incarcerations	.0593913	.0055284	10.74	0.000	.0485557	.0702268
Age at release x prior incarcerations	-.0009682	.0001228	-7.89	0.000	-.0012088	-.0007276
Race/Ethnicity						
Black	.0082516	.0026785	3.08	0.002	.0030017	.0135016
Hispanic	-.0079187	.0020276	-3.91	0.000	-.0118927	-.0039447
Am. Indian	-.0031531	.0052644	-0.60	0.549	-.0134712	.0071651
Asian	-.000785	.0103041	-0.08	0.939	-.020981	.019411
Offense Seriousness						
2	-.0500256	.0026214	-19.08	0.000	-.0551635	-.0448877
3	-.0471375	.0026169	-18.01	0.000	-.0522666	-.0420084
4	-.0842378	.0032574	-25.86	0.000	-.0906223	-.0778532
5	-.371286	.0062223	-59.67	0.000	-.3834818	-.3590902
Returns on Parole	-.0005389	.001409	-0.38	0.702	-.0033005	.0022227
Sentencing Enhancement	.1765669	.022111	7.99	0.000	.1332293	.2199045
Gender	.0193606	.002497	7.75	0.000	.0144664	.0242548
Constant	.2759889	.0143894	19.18	0.000	.2477856	.3041922

Appendix VI. Marginal Effects of Year of Release and Offense Seriousness for 2012-2020

Figure A-3: Margins Results of Release Year for *General Offense Class*

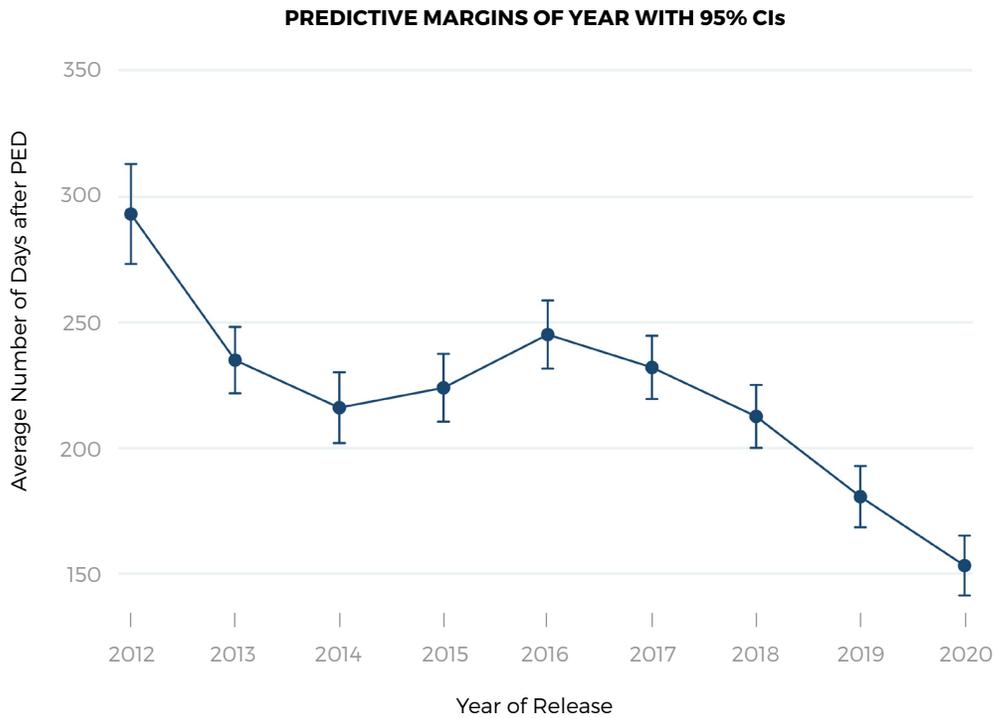


Figure A-4: Margin Results for the Offense Seriousness Variable for the *General Offense Class*

