Oregon

Tina Kotek, Governor

Oregon Department of Corrections
Headquarters
3723 Fairview Industrial Drive SE 200
Salem, OR 97302

March 13, 2025

To: Joint Committee On Ways and Means Subcommittee On Public Safety

From: Harvey Mathews, Legislative Director

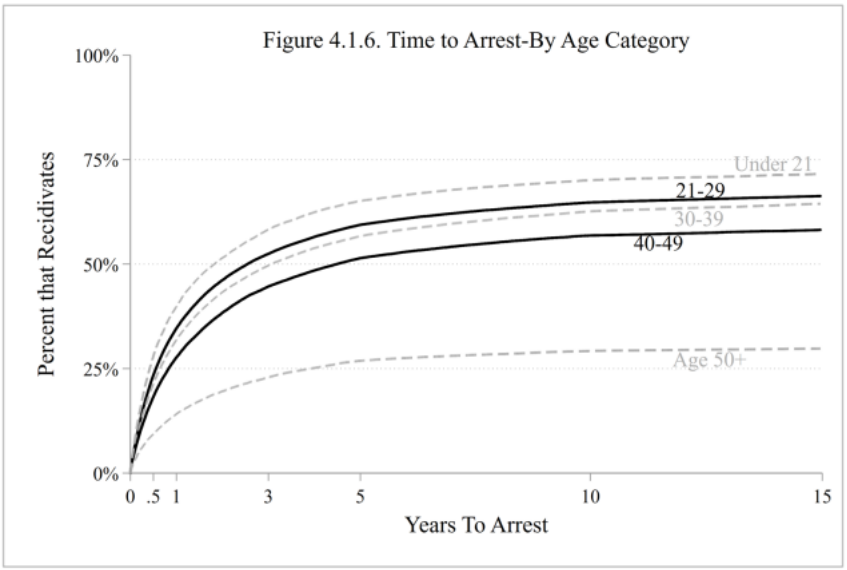
Re: Answers to questions posed during the March 12th informational hearing on HB 5004

Co-Chair Broadman, Co-Chair Evans, and Members of the Committee,

Thank you for giving us the opportunity to respond to the questions posed by the Committee in yesterday's meeting on Department of Corrections' (DOC) budget, HB 5004. Below we have outlined each question and provided our answer.

Recidivism by Age

Representative Chotzen asked if DOC could provide recidivism rates broken down by age: As shown in Figure 4.1.6, younger offenders recidivate at a higher rate than older offenders. Offenders also tend to "age-out" of criminal activity. They may commit a crime when they are in their 20s, but may avoid crime when they are older due to a sense of maturity or deterrence from a past punishment. The graph is taken from "2018 SAC Grant Report: Recidivism with Extended Follow-Up Periods and Hazard Analysis" produced by Oregon Criminal Justice Commission (CJC).



For the full 2018 SAC Grant Report, please visit:
https://www.oregon.gov/cjc/CJC%20Document%20Library/2018SACGrant_RecidivismExtendedFollow-Up_HazardModel.pdf

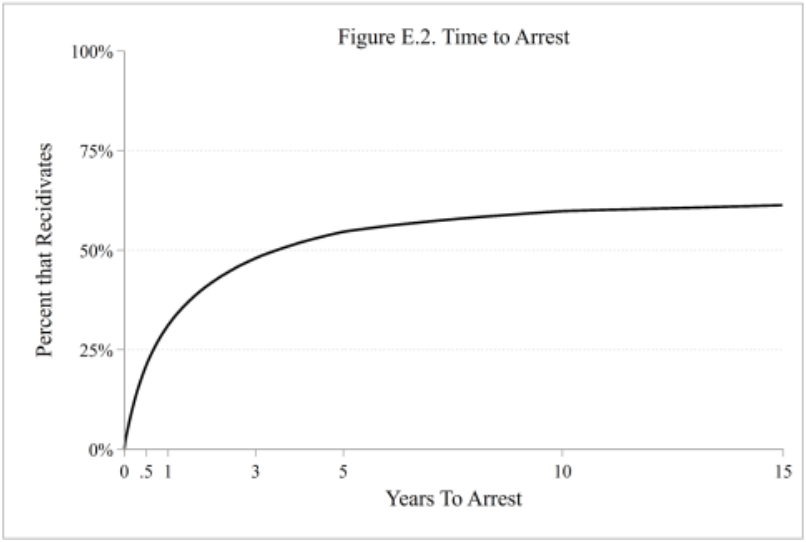
For a more in-depth break down of recidivism rates based on age please see the Excel Spreadsheet titled "Recidivism Rate by Supervision Source and Age Group from November 2024 Report Data".

Please note when reading the data:

1. Age is age at recidivism start date.
2. There are some missing birthdays so CJC couldn't calculate age, but the missing dates make up less than 1% of the entire sample. Those missing on age were omitted from the calculations.
3. The first sheet (*Recid by Type, Supervision, Age*) provides the three-year recidivism rates by cohort, cohort type, supervision type, and age group.
4. The second sheet (*Recid by Supervision, Age*) provides the three-year recidivism rates by cohort, supervision type, and age group.
5. The final three sheets provide tables and a chart for that recidivism data filtered to only show the DOC supervised groups. All the information is the same, just displayed differently.

Reconviction Rates after 10 Years

Co-Chair Evans asked if DOC could provide recidivism rates after 10 Years:
Figure E.2 displays all individuals released from incarceration or sentenced to probation from 1998 through 2012. About sixty percent of offenders are arrested within fifteen years. The curve has a steep positive slope between 0 and 1 years to arrest, and then gradually flattens. The change in slope indicates that the majority of rearrests occur within one year. The probability of not being rearrested by three years is very similar to the probability of not being rearrested by five years, as indicated by the near-zero slope of the curve spanning three to five years. This pattern holds for rearrest and reincarceration as well.



For the full 2018 SAC Grant Report, please visit:
https://www.oregon.gov/cjc/CJC%20Document%20Library/2018SACGrant_RecidivismExtendedFollow-Up_HazardModel.pdf

Recidivism Based on Time Incarcerated

Representative Chotzen asked if DOC could provide recidivism rates based on the length of incarceration:
Please see the attached study "Effect of Prison Length of Stay in Oregon" conducted by Portland State University's Criminal Justice Policy Research Institute. The study's overall conclusion was that there is little to no effect of longer prison stays on the likelihood to recidivate across almost all analyses, regardless of offense and recidivism type.

For the full study please visit:
https://www.oregon.gov/cjc/CJC%20Document%20Library/PSU-CJC-LOSonRecidivismFinalReport.pdf

Vocational Training and Applicability

Co-Chair Evans asked about DOC's vocational training programs and if DOC was training AICs for jobs they would be unable to obtain due to criminal records:
DOC's Education and Training Unit ensures DOC does not offer vocational training programs that people cannot engage in after release due to their crimes.

- Expungements/Removing Barriers

  § Without legislative funding to provide these services, DOC sought and received approval from its federal grantor to include expungement services as part of its wraparound employment services for its grant-funded vocational training programs, such as Big Machines, Big Opportunities. However, it is limited to the students enrolled in the grant-funded program.

  § Due in large part to the success of its federal grant-funded legal services clinics, as part of its GIPA response DOC recently contracted with the PCC CLEAR Clinic to provide monthly legal services clinics at CCCF for those preparing to release. These services are designed to remove barriers to housing and employment and include criminal record expungements, eviction expungements, and reduced court fines and fees.

    - After completing the first 6 monthly clinics, CLEAR Clinic has already provided services to 64 AICs and addressed 440 matters (199 criminal record expungements, 17 eviction expungements, and 224 motions for reduced court fines and fees totaling $194,945.22).

    - DOC has requested funding to continue the CLEAR Clinics through the 2025-27 biennium as part of the GIPA POP, which was included in the GRB.

  § DOC would welcome the opportunity to explore the possibility of providing these services for the people releasing from the remaining 11 primarily male prisons.

2018 SAC Grant Report:

Recidivism with Extended Follow-Up Periods and Hazard Analysis

December 2019

Oregon Criminal Justice Commission

State of Oregon Statistical Analysis Center

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As the Oregon SAC, the CJC is responsible for collecting, analyzing, and reporting public safety and criminal justice related statistics to Federal, State, and local levels of government, as well as facilitating the sharing of state-level information nationally.

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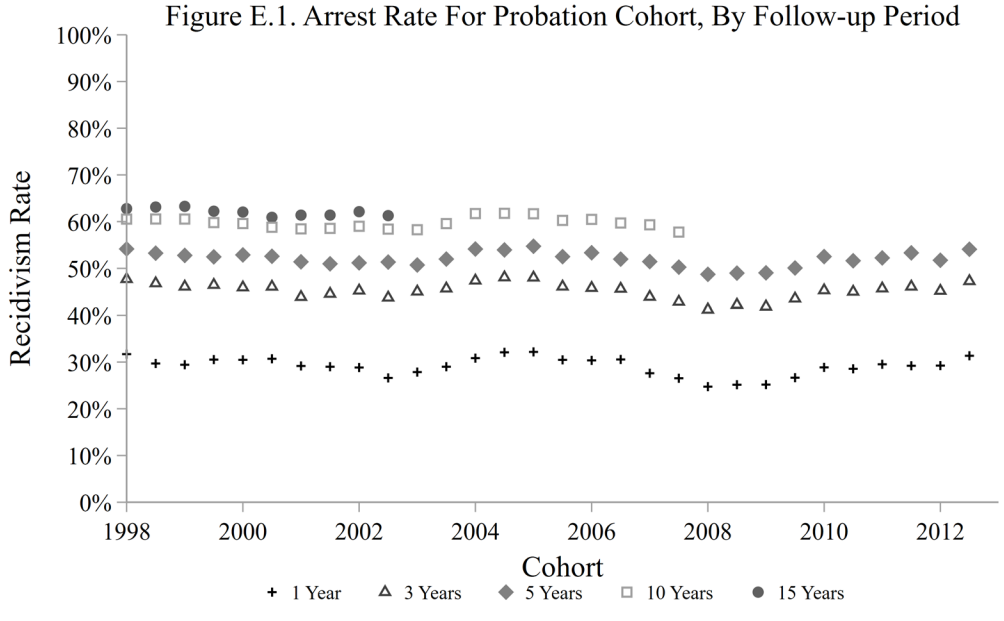
Executive Summary

Thanks to generous assistance from the Bureau of Justice Statistics, this report details a deeper dive into recidivism in Oregon. The definition of recidivism in Oregon requires three years of monitoring for arrests, convictions, and incarcerations for a new crime (ORS 423.557). We at the CJC, publish recidivism reports semiannually which update the public on recidivism in Oregon using the most recent data. These reports, however, include neither information on recidivism beyond three years nor the specific characteristics that are associated with recidivating events.

Research indicates that Oregon's three-year follow-up period after the imposition of probation or release from incarceration may provide an incomplete measure of recidivism and conceal differences between offenders. Prentky et al. (1997) find that while recidivating events for non-sexual, non-violent offenses occur, on average, within 2.75 years of the imposition of probation or release from incarceration, the average time interval to the first recidivating event for non-sexual, violent offenders is 5.58 years and for some sexual offenders is 4.55 years. Harris and Hanson (2004) report for sex offenders in Canada the chances of recidivism increase with time for the entire sample, but there are significant differences in patterns among subgroups.

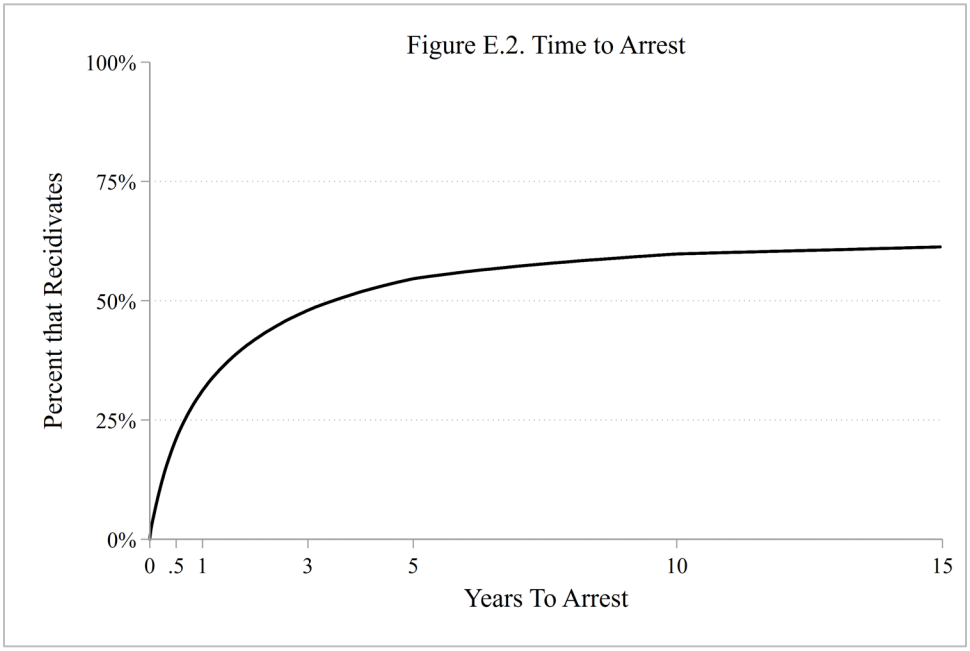
In this report we analyze individuals who were released from incarceration or sentenced to probation from 1998 through 2012 in the State of Oregon. Due to inconsistent findings across subgroups over extended periods in prior research, this report examines recidivism patterns for a wide variety of crimes using the existing 3-year interval, as well as 5-, 10-, and 15-year intervals. This report also expands on previous CJC recidivism reports' methodologies by incorporating hazard analysis which provides measures of how many and what type of ex-offenders recidivate within a specified follow-up period.

Figure E.1. Arrest Rate For Probation Cohort, By Follow-up Period



We find that most Oregon offenders that will recidivate do so quickly. We see the largest increase in recidivism in the first year after release or sentencing, followed by another jump between one and three years (Figure E.1 shows only arrest rates. Conviction and Incarceration patterns are of the same shape as arrest). The increases in recidivism in each of the 5-, 10-, and 15-year follow-up periods are smaller. In the probation cohort, on average, 74 percent of individuals who are *arrested* and 75 percent of individuals who are *convicted* at some point within fifteen years of release recidivate in this way within three years. On average, 52 percent of those who are *incarcerated* within fifteen years are incarcerated within three years. A similar pattern holds for the 10-year to 3-year

comparison. Oregon's standard 3-year follow-up period does not appear to meaningfully underestimate recidivism, at least not in the context of Oregon's overall recidivism rates. In general, Oregon's 3-year recidivism metric provides a good approximation of longer-term recidivism rates, while also satisfying policy-makers' and analysts' need to understand changes in recidivism in the medium term.



We identify the proportion of offenders who recidivate within fifteen years. Figure E.2 displays all individuals released from incarceration or sentenced to probation from 1998 through 2012. About sixty percent of offenders are arrested within fifteen years. The curve has a steep positive slope between 0 and 1 years to arrest, and then gradually flattens. The change in slope indicates that the majority of rearrests occur within one year. The probability of not being rearrested by three years is very similar to the probability of not being rearrested by five years, as indicated by the near-zero slope of the curve spanning three to five years. This pattern holds for rearrest and reincarceration as well.

Recidivism patterns vary by original crime type. For example, for the second probation cohort of 2002, 58.5 percent of drug possession offenders are rearrested within five years. This makes up 90 percent of all drug possession offenders that are rearrested within ten years. Drug possession offenders are the fastest group to reoffend. For sex offenders, the slowest group to reoffend, 79.1 percent of arrests that occur within ten years have already occurred by five years in the example cohort. This has implications for expungement practices in Oregon. The process of expunging a criminal record typically follows a ten year timeline (ORS 137.225). In light of our analysis, ten years may be cautious. This analysis shows that any offender who does not recidivate within as few as five years is not likely to recidivate at all. Having a criminal record can harm a former offender's job and employment prospects, and these data show that lengthy expungement times may mostly affect individuals who are unlikely to reoffend. Policymakers with dual goals of maintaining public safety and fostering former offenders' opportunities may, thus, consider reducing expungement times to five years for all offenders or even three years for drug and property offenders.

The cox proportional hazard model more precisely estimates the patterns we observe when considering individual demographics and other characteristics. Taking the results of the model together, young, Black males with a longer criminal history who have committed a property or drug possession crime and have already recidivated have a greater risk of recidivating than others, controlling for many factors. This report details the most advanced examination of factors influencing recidivism risk that we have undertaken thus far.

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1. Background

In 2013, House Bill 3194, Section 45 created a new, standardized definition of recidivism in Oregon. This definition was then modified by Senate Bill 366 in 2015, which defined recidivism as an arrest, conviction, or incarceration for a new crime within three years of release from incarceration or imposition of felony probation. In response to HB 3194 and SB 366, we developed tracking and reporting methodologies to comply with the standardized definitions of recidivism. This system requires merging data across multiple criminal justice data systems and is used to create semi-annual recidivism reports available on our website.[1]

As of December 2019, we have written ten semiannual recidivism reports. Seven of these reports are long form reports that analyze recidivism differences among individuals. The three most recent reports provide an update on overall recidivism rates using the most recent data available, without examining offender characteristics. This simplified approach allows us to devote time to conduct more detailed analyses while fulfilling our legislative responsibilities.

Research indicates that Oregon's 3-year time interval following the imposition of probation or release from incarceration may provide an incomplete measure of recidivism. Prentky et al. (1997), for instance, find that while recidivating events for non-sexual, non-violent offenses occur, on average, within 2.75 years of the imposition of probation or release from incarceration, the average time interval to the first recidivating event for non-sexual, violent offenders is 5.58 years and for some sexual offenders is 4.55 years. This means that while the definition of recidivism in Oregon captures the average non-sexual, non-violent offender and thus could provide a relatively accurate picture of the recidivism rate in the state for this class of offenses, when it comes to other offenses, current rates may be underestimating recidivism.

Research also indicates that recidivism patterns, particularly when analyzed over periods longer than three years, may not conform to commonly held beliefs about the relationship between time and recidivism risk. Harris and Hanson (2004), for example, report in a study of sex offenders in Canada that the chances of recidivism increase with time for the entire sample, but there are significant differences in patterns among subgroups. For instance, offenders who are offense free during earlier follow-up periods see a decrease in the chances of recidivism at the next five year check in. Thus, while the overall rate of re-offense rose from 14, to 20, to 24 percent at the 5-, 10-, and 15-year follow-ups, respectively, this pattern obscures the fact that certain subclasses of offenders display other, often opposing patterns. The authors also find differences in the risk of re-offense between first-time offenders and offenders with prior convictions. Longer follow-up windows offer opportunities to examine long-term trends while also providing a chance to examine subclasses of offenders as they recidivate over time.

Thanks to assistance from the Bureau of Justice Statistics, we are able to more thoroughly examine recidivism rates in Oregon. This report details the findings of our investigation into several alternative recidivism metrics, focusing particularly on the use of longer follow-up periods. Specifically, this project examines recidivism patterns for a wide variety of crimes, ranging from property and drug crimes to violent crime and sex offenses, using the existing 3-year follow-up period, as well as 5-, 10-, and 15-year observation periods.

This report also incorporates hazard analysis, also known as survival analysis, previously unused in analyzing recidivism in Oregon. Hazard analysis provides measures of how many ex-offenders reoffend along with precise measurements of the time between an individual's entry into the risk period and the re-offense event. An individual is said to "survive" if they do not recidivate within a specified follow-up

[1] https://www.oregon.gov/cjc/SAC/Pages/Publications.aspx

period. Hazard analysis allows us to include all subjects in the study and to include other time varying and time invariant characteristics in the model. This inclusion permits us to look at differences across offense types, offender characteristics, and the like. These analyses produce the cumulative proportion of ex-offenders who have had a recidivating event by the end of the specific interval.

2. Data

The data used in the CJC's previous recidivism reports are expanded into a form that allows measurement of long-term recidivism rates and implementation of hazard analysis. The data consist of 218,147 observations and include offender demographic data (gender, age, and race) along with criminal history. We include individuals who were released from incarceration or sentenced to probation from 1998 through 2012.

The expanded data set allows for 3-, 5-, 10-, and 15-year follow-up periods. This data set includes data from multiple criminal justice data systems to compile the rates of arrest, conviction, or incarceration for a new crime within each time interval following release from prison or imposition of probation. The cohort definition is the same as in previous reports, and includes Parole-PPS (Post-Prison Supervision) cohorts and Probation cohorts. Parole-PPS cohorts include individuals released from prison or a felony jail sentence. Probation cohorts include individuals starting felony probation who are supervised by a county community corrections department. New arrests are captured in the Law Enforcement Data System (LEDS), which is a record of all arrests for a new crime where the person was fingerprinted. New convictions are captured in the court case data system, which includes misdemeanor and felony convictions. New incarceration events are captured in the Department of Corrections (DOC) data system, which includes incarceration sentences (i.e. a prison or a felony jail sentence) for a new crime.

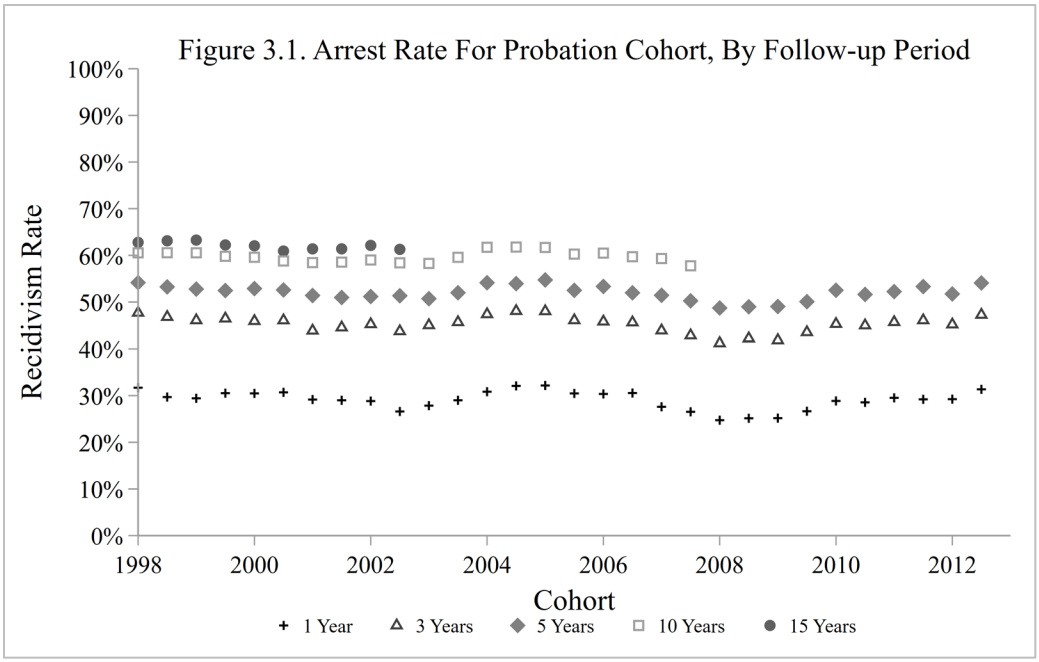
In some years and cohorts our inmate counts are relatively small. Table 5.1.1 in the Methodology section details the cohort sizes. For hazard analysis, we include all individuals released from incarceration or sentenced to probation from 1998 through 2012. This is different from our usual recidivism analysis, which examines Parole-PPS and Probation separately, and also reports recidivism individually for each six-month cohort. By including all eligible individuals in our sample, we have more statistical power to identify differences in time to re-offense across offense types and offender characteristics.

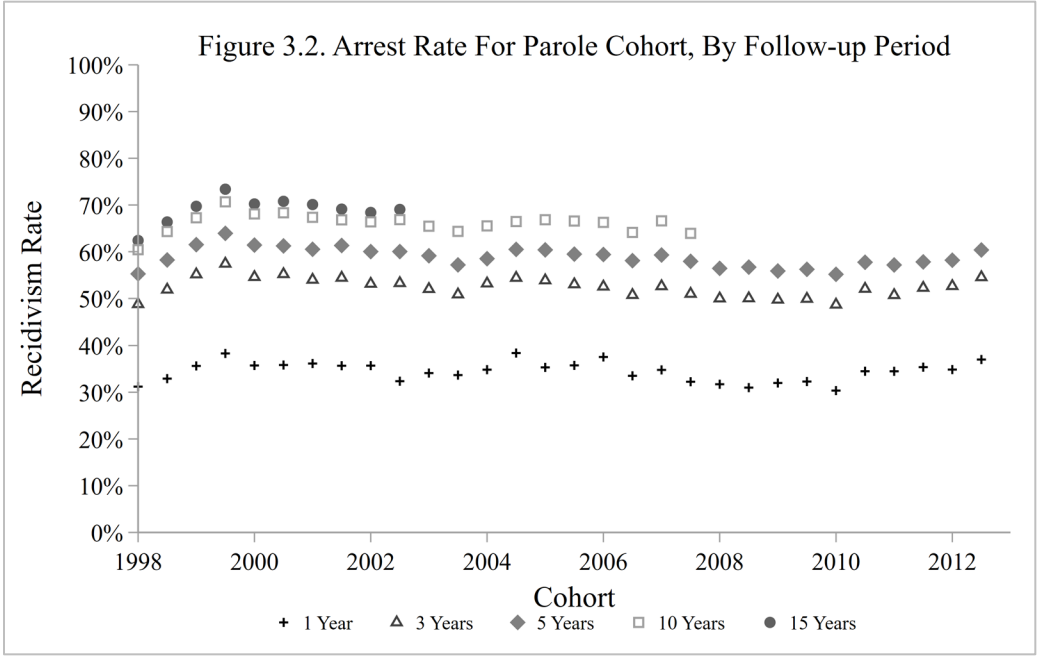
3. Extended Follow-Up Period

We calculate recidivism in the form of arrest, conviction, and incarceration rates for six-month cohorts spanning from 1998 through 2012. We calculate 1-, 3-, and 5-year rates for all cohorts. We have sufficient data to compute 10-year recidivism rates for cohorts from 1998 to 2007. For the 15-year follow-up period, we analyze Parole-PPS and Probation cohorts from 1998 to 2002.

The arrest rates by follow-up period are displayed in Figures 3.1 and 3.2. The conviction and incarceration rates follow a similar pattern, and can be found in the Appendix (Figures A.1, A.2, A.3, and A.4). We see the largest increase in recidivism in the first year, followed by another jump between one and three years. The increases in recidivism in each of the 5-, 10-, and 15-year follow-up periods are smaller, as shown by the negligible differences between the 10- and 15-year periods. Detailed tables of the recidivism rates are in the Appendix (Tables A.1 and A.2).

Most of the offenders that will recidivate do so quickly. In the probation cohort, on average, 74 percent of individuals who are *arrested* and 75 percent of individuals who are *convicted* at some point within fifteen years of release recidivate in this way within three years. On average 52 percent of those who are *incarcerated* within fifteen years are incarcerated within three years. This also approximately holds when we compare the percent of people who recidivate within ten years to those who recidivate within three.





Oregon's standard 3-year follow-up period does not appear to meaningfully underestimate recidivism, at least not in the context of Oregon's overall recidivism rates. In general, Oregon's 3-year recidivism metric provides a good approximation of longer-term recidivism rates, while also satisfying policy-makers' and analysts' need to understand changes in recidivism in the medium term.

We also examine recidivism patterns by the original type of crime the offender committed. Tables 3.1 and 3.2 display the recidivism rates for the second cohort of 2002, the most recent cohort that has completed the 15-year follow-up period. Drug possession offenders recidivate faster and more often than all other types of offenders. Drug possession is often tied to drug addiction, so we would expect that these

offenders would continue to recidivate while they are still addicted to drugs. Property offenders also recidivate quickly. We know that drug possession charges often coincide with property charges and may be similarly tied to drug addiction. Sex offenders recidivate the slowest and the least, across all measures. These recidivism patterns are consistent across cohorts. The recidivism rates varying by follow-up period for two other cohorts appear in the Appendix (Tables A.3, A.4, A.5, and A.6).

Table 3.1. Recidivism Rate for Probation Cohort (2002, Second Six Months)

	Follow-up Period				
Crime Type	1 Year	3 Years	5 Years	10 Years	15 Years
			Arrest Rate		
Drug Possession	32.9%	51.0%	58.5%	65.0%	68.1%
Drug Sale/Transport	28.8%	45.7%	53.1%	60.1%	63.1%
Person	22.6%	40.3%	48.6%	58.1%	61.7%
Property	29.7%	47.8%	56.2%	61.5%	63.5%
Sex	16.1%	34.3%	41.6%	52.6%	59.1%
Other	25.7%	44.3%	51.9%	60.6%	63.8%
			Conviction Rate		
Drug Possession	32.3%	50.0%	58.1%	65.1%	67.5%
Drug Sale/Transport	28.6%	44.8%	52.3%	59.6%	62.0%
Person	22.8%	36.4%	44.2%	54.2%	58.8%
Property	29.8%	45.5%	52.6%	58.4%	61.0%
Sex	35.8%	46.7%	52.6%	59.1%	64.2%
Other	23.4%	37.8%	46.0%	53.7%	57.3%
			Incarceration Rate		
Drug Possession	4.7%	13.8%	18.3%	21.4%	23.6%
Drug Sale/Transport	4.2%	12.1%	16.3%	19.4%	21.4%
Person	4.6%	10.8%	13.6%	18.7%	21.2%
Property	5.4%	14.1%	18.3%	23.4%	25.5%
Sex	6.6%	13.1%	16.1%	19.7%	21.9%
Other	2.4%	8.2%	12.1%	17.1%	19.5%

Table 3.2. Recidivism Rate for Parole Cohort (2002, Second Six Months)

Crime Type	*Follow-up Period* 1 Year	3 Years	5 Years	10 Years	15 Years
			Arrest Rate		
Drug Possession	39.8%	62.2%	68.5%	75.3%	76.3%
Drug Sale/Transport	33.1%	54.7%	60.8%	67.3%	69.6%
Person	30.3%	51.1%	58.3%	66.4%	68.2%
Property	42.5%	63.3%	70.9%	77.5%	79.8%
Sex	19.4%	37.2%	45.9%	54.1%	56.6%
Other	31.2%	56.4%	62.9%	69.5%	71.9%
			Conviction Rate		
Drug Possession	24.9%	49.6%	61.0%	68.3%	70.7%
Drug Sale/Transport	20.0%	42.1%	53.0%	60.4%	63.7%
Person	12.2%	36.0%	47.0%	56.4%	60.9%
Property	22.7%	52.4%	63.5%	74.2%	76.4%
Sex	8.3%	21.1%	28.5%	43.0%	45.9%
Other	20.0%	43.1%	53.8%	63.3%	67.1%
			Incarceration Rate		
Drug Possession	7.9%	20.1%	28.6%	34.9%	37.6%
Drug Sale/Transport	5.7%	15.9%	23.0%	28.9%	32.3%
Person	2.6%	14.1%	20.6%	27.1%	30.5%
Property	9.6%	27.9%	35.6%	43.9%	47.4%
Sex	3.3%	8.7%	12.4%	19.8%	23.6%
Other	5.0%	17.4%	21.7%	30.0%	33.6%

Long-term recidivism patterns have implications for expungement practices in Oregon. The process of expunging a criminal record typically follows a ten year timeline (ORS 137.225). This means that an offender who is sentenced to probation and is revoked may not apply for expungement until ten years following the date of revocation. In light of our analysis, ten years may be overly cautious. This analysis shows that if any offender does not recidivate within as few as five years, that offender is not likely to recidivate at all. For example, for the second probation cohort of 2002[2], 58.5 percent of drug possession offenders are rearrested within five years. This accounts for 90 percent of all drug possession offenders that are rearrested within ten years (Table 3.3). Drug possession offenders are the fastest group to reoffend. For sex offenders, the slowest group to reoffend, for the second probation cohort of 2002, 79.1 percent of arrests that occur within ten years have already occurred within five years. For offenders that recidivate quickly—drug and property—over 76 percent of their ten-year rearrests occur within three years in the example cohort. Having a criminal record can harm a former offender's job and employment prospects, but these data show that lengthy expungement times may mostly affect individuals who are unlikely to reoffend. Policymakers with dual goals of maintaining public safety and fostering former offenders' opportunities may, thus, consider reducing expungement times to five years for all offenders or even three years for drug and property offenders.

[2] Other cohorts follow a similar pattern to the pattern presented for the second probation cohort of 2002.

Table 3.3: Probation Cohort Speed of Arrest (2002, Second Six Months)

	Arrest Rate by Follow-Up Period			*Percent of 10-Year Rearrestees that Recidivate by:*	
Crime Type	3-Year	5-Year	10-Year	3 Years†	5 Years††
Drug Possession	51.0%	58.5%	65.0%	78.5%	90.0%
Drug Sale/Transport	45.7%	53.1%	60.1%	76.0%	88.4%
Person	40.3%	48.6%	58.1%	69.4%	83.6%
Property	47.8%	56.2%	61.5%	77.7%	91.4%
Sex	34.3%	41.6%	52.6%	65.2%	79.1%
Other	44.3%	51.9%	60.6%	73.1%	85.6%

†This column is equal to the "3-Year" column percentages divided by the "10-Year" column percentages. Example: Drug possession 51.0/65.0=78.5%

††This column is equal to the "5-Year" column percentages divided by the "10-Year" column percentages. Example: Drug Possession 58.5/65=90%

4. Hazard Analysis

We utilize hazard analysis to quantify the correlation between offender characteristics and their hazard, or risk, to recidivate. As a first step, Kaplan-Meier curves identify the proportion of offenders of a certain type that have reoffended within a specific time period. The Kaplan-Meier approach, however, cannot control simultaneously for multiple offender characteristics that affect recidivism risk. The Cox Proportional hazard model allows us to identify which offender characteristics are associated with higher risk to recidivate by taking advantage of a fuller sample of both Parole-PPS and Probation offenders. Not all offenders appear in the sample for the complete 15-year follow-up period. As offenders recidivate they drop out of the sample. Also, we can only track the complete 15-year follow-up period for offenders released from prison or sentenced to probation from 1998 through 2002. All other offenders will drop out of the model at the end of the potential follow-up period. More details on the statistical explanation of why offenders drop out can be found in the Methodology section.

4.1. Kaplan-Meier Curves

We begin our hazard analysis by considering Kaplan-Meier curves stratified across several offender characteristics. Kaplan-Meier modeling allows us to determine the proportion of offenders in our sample who recidivate. We process the data so that any rearrested offender, regardless of follow-up period, is counted as recidivating in the form of an arrest. We do the same for conviction and incarceration.

In this report we do not present the Kaplan-Meier curves for conviction and incarceration. These curves are available upon request. The shape of the conviction and incarceration Kaplan-Meier curves are the same as the comparable curves for arrest. However, since convictions and incarceration take longer to process than arrests, a lower proportion of offenders are convicted or incarcerated.

Figure 4.1.1[3] displays the time to arrest of all individuals released from incarceration or sentenced to a probation sentence from 1998 through 2012. We can observe that about 60 percent of offenders are arrested within a 15-year follow-up period. The curve has a steep positive slope between 0 and 1 years to arrest, and then gradually flattens. The change in slope indicates that the majority of rearrests occur within 1 year.

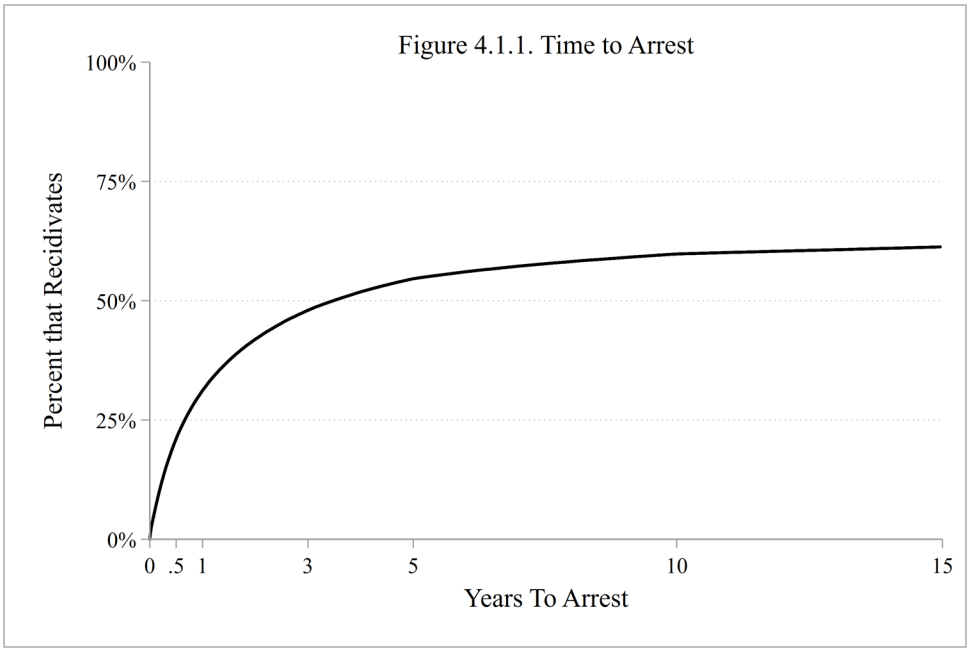
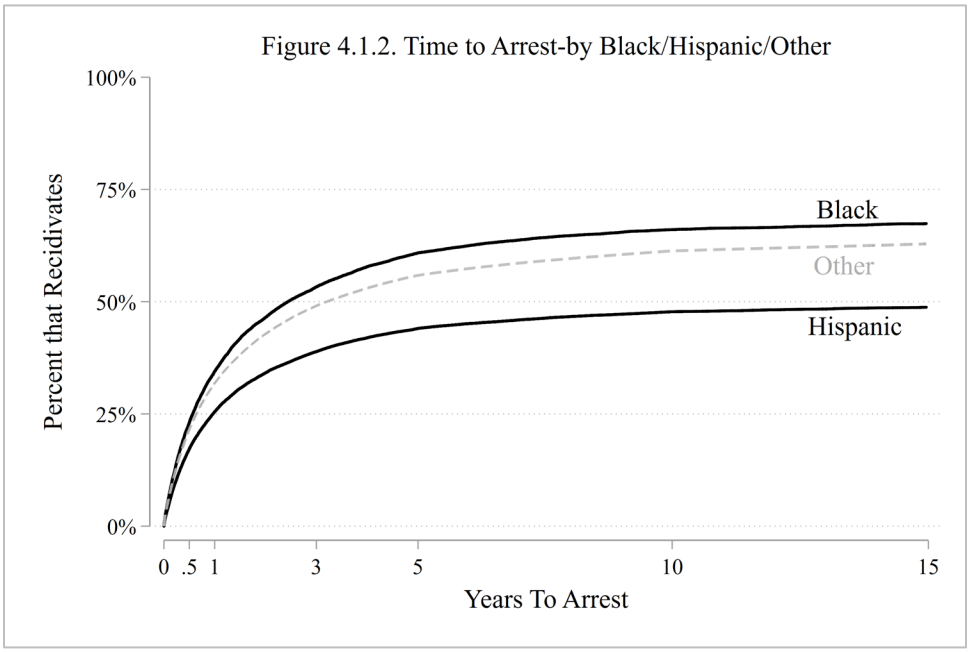


Figure 4.1.2 shows the difference in time to arrest between Black, Hispanic, and offenders of other races. We stratify race/ethnicity into only three categories due to several methodological challenges with the detailed race/ethnicity variable, described in depth in the Methodology section under Challenges with Race/Ethnicity Variables. A higher proportion of Black offenders recidivate compared with all other offenders. This could be due to the way we are aggregating up the race/ethnicity variable. According to Figure 5.2.1 in the Methodology section,

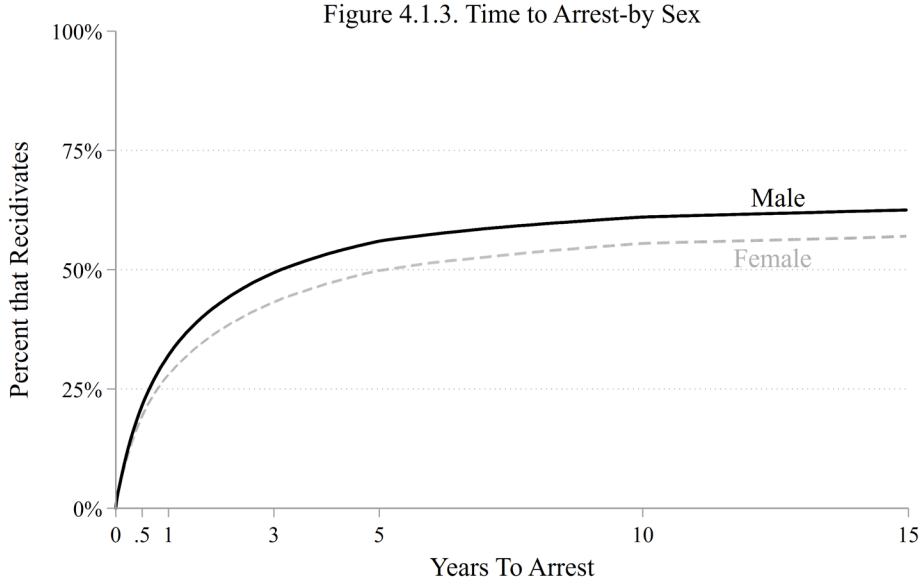


[3] Please note that Figures 4.1.1-4.1.6 do not include confidence bands. We decided to be consistent across all the Kaplan-Meier curves and not include 95% confidence bands because they complicate the graph, especially in Figure 4.1.4. An important assumption of the survival model requires that Kaplan-Meier curves do not cross for Figures 4.1.2-4.1.6. The confidence bands around the survival curve also must not overlap. When we include confidence bands in Figures 4.1.2-4.1.6, none of the confidence bands around the curves overlap. All the included Kaplan-Meier curves with confidence intervals are available upon request.

the Kaplan-Meier curve for Black offenders has one of the highest proportion of offenders who recidivate[4].

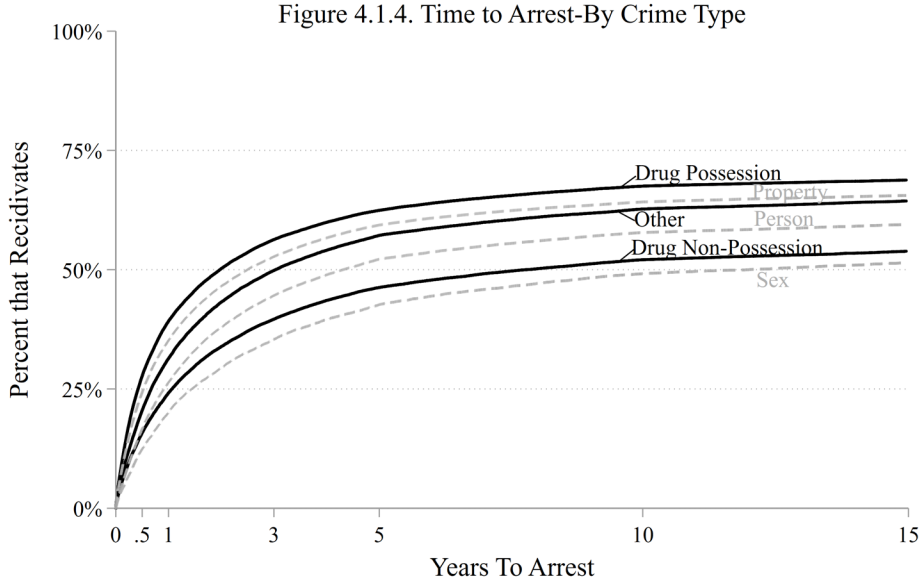
We also look at Kaplan Meier curves by sex (Figure 4.1.3). A similar proportion of men and women recidivate within our sample period, however a slightly higher percentage of men recidivate.

Figure 4.1.3. Time to Arrest-by Sex



Tables 3.1 and 3.2 imply that the original crime the offender commits may be an important indicator of whether or not they recidivate. Figure 4.1.4 displays the proportion of offenders who recidivate within fifteen years, by crime type. The steepness of the curves indicates how quickly each type of offender is rearrested. The Kaplan-Meier curves echo the findings of Tables 3.1 and 3.2. About 70 percent of drug possession offenders are rearrested. This is a relatively high percentage when compared to the less than 50 percent of sex crime offenders who are rearrested.

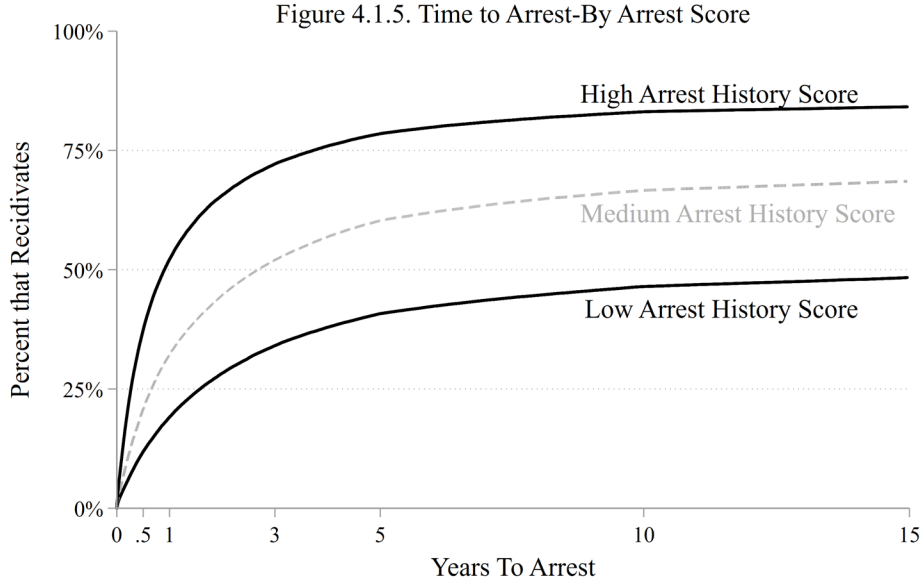
Figure 4.1.4. Time to Arrest-By Crime Type



[4] The only race category with a higher proportion of offenders who recidivate is Native American. Less than 2 percent of our sample is Native American. By pooling together White, Asian, Native American, and Unknown races we are losing the influence of the Native American population that pulls the proportion of offenders that recidivate up above the proportion of Black offenders. However, losing this variation may not be statistically important because there are so few Native American offenders in our sample.

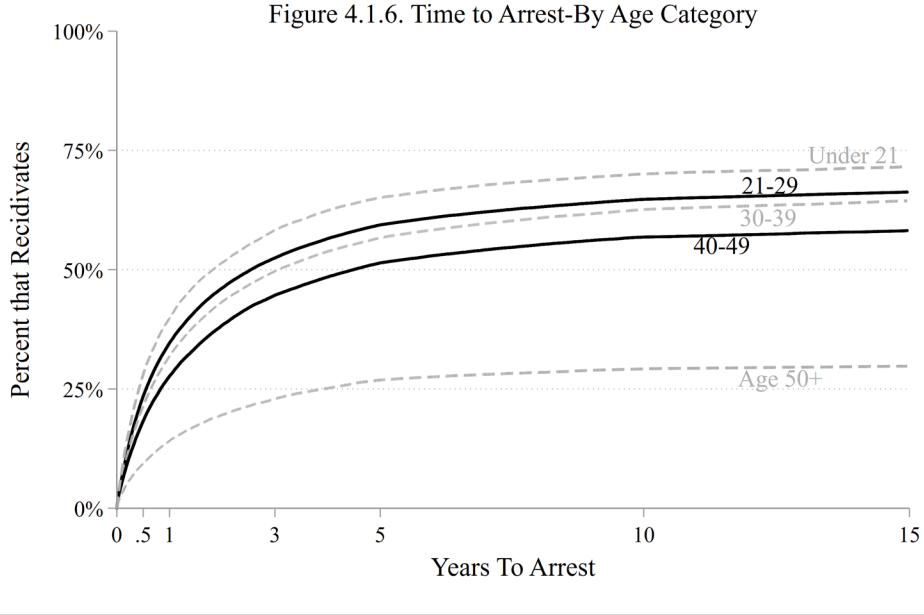
We also calculate Kaplan-Meier curves by criminal history. We use arrest history score, a new measure of criminal history. Arrest history score is a weighted sum of the number of times the offender was arrested within five years before they exit incarceration or are sentenced to probation. Arrests one year before an offender enters our sample are weighted four times more than arrests five years before the offender enters our sample. A more detailed description of arrest history score is in the Methodology section. To draw the Kaplan-Meier curves, we stratify arrest history scores into three categories: low, medium, and high. We split the offenders into three quantiles of equal probability. Many—more than 75 percent of—individuals who have high arrest history scores recidivate (Figure 4.1.5). This implies that recent criminal history is correlated with future criminal activity.

Figure 4.1.5. Time to Arrest-By Arrest Score



We also consider Kaplan-Meier curves contingent on age. As shown in Figure 4.1.6 younger offenders recidivate at a higher rate than older offenders. Offenders also tend to "age-out" of criminal activity. They may commit a crime when they are in their 20s, but may avoid crime when they are older due to a sense of maturity or deterrence from a past punishment.

Figure 4.1.6. Time to Arrest-By Age Category



4.2. Cox Proportional Hazard Model

For our hazard analysis, we utilize a cox proportional hazard model. In the model we control for offender characteristics that we believe influence the risk of recidivating. We control for whether the offender is Black or not, Hispanic or not, male or not, their original crime, criminal history, age, and whether or not the offender is repeated in the sample. We also control for latent county demographics and characteristics with county random effects[5]. We allow for the effect of age on recidivism to peak if the offender is in their 20s, and dampen as they get older, by including both age and age squared. We see some individuals multiple times in the data. If we see an individual more than once that means that they first appear in our data when they are released from incarceration or sentenced to probation at some point from 1998 through 2012. Then, they recidivate at a later date such that they serve an incarceration sentence and are released before the end of 2012, or are sentenced to a probation term that starts before the end of 2012. A repeated individual may have a higher risk to recidivate since they have already recidivated. We create an indicator for individuals that appear more than once and include that in the hazard model.

Table 4.2.1 illustrates the race/ethnicity and criminal history makeup of the individuals we analyze. 77 percent of these individuals are White, 7 percent are Black, and 14 percent are Hispanic. 78 percent of these individuals are male and the average age is just over 33 years old. About 28 percent of individuals in the data appear more than once. We can identify the most serious type of crime that the offender committed that caused them to enter the data. 24 percent of individuals committed a drug possession crime and 25 percent committed a property crime. A smaller proportion of individuals committed other types of crimes. There is a wide range in arrest history scores. Most individuals have a moderate number of arrests in the five years leading up to when they enter the sample, as indicated by the mean score of 7.98. Few have scores exceeding 15, but scores range up to 124.[6] The individuals who have scores over 15 were arrested frequently and proximately to when they enter our data.

[5] Please note that even though we observe differences between Parole-PPS and Probation cohort recidivism in tables 3.1 and 3.2, we do not include an indicator for whether or not someone is part of one of these two groups. Including this indicator would violate the proportional hazards assumption. Subset analysis with Parole-PPS and Probation do not yield coefficients differentially greater than or less than one.

[6] This range in arrest history scores is a statistical challenge. Few individuals have scores in the high end of the range meaning the distribution of arrest history scores is skewed. To reduce the effect of outliers in our survival analysis we take a natural log transformation of the arrest history score and include that in our preferred model.

Table 4.2.1. Summary Statistics

Variable	Mean/Proportion	Standard Deviation	Min	Max
White	77%		0.0	1.0
Black	7%		0.0	1.0
Hispanic	14%		0.0	1.0
Asian	1%		0.0	1.0
Native American	2%		0.0	1.0
Unknown Race/Ethnicity	<1%		0.0	1.0
Male	78%		0.0	1.0
Age	33.15	10.78	13.89	92.47
Repeated Individual	28%		0.0	1.0
Drug Non-Possession	13%		0.0	1.0
Drug Possession	24%		0.0	1.0
Person Crime	14%		0.0	1.0
Property Crime	25%		0.0	1.0
Sex Crime	5%		0.0	1.0
Other Crime	16%		0.0	1.0
Arrest History Score	7.98	6.99	0.10	124.00

Table 4.2.2 displays the results of our cox proportional hazard model[7]. All variables (listed in the far left column of Table 4.2.2) that equal either zero or one have a question mark "?" next to their variable name. For example, the variable "Black?" takes the value of zero if the individual is not Black, and the value one if the individual is Black. Age and arrest history score are the only continuous variables included in the analysis. If the coefficient reported in Table 4.2.2 is less than one then the variable is associated with lower recidivism risk, holding all other included variables constant. Holding all other included variables constant means that only the variable of interest changes (for example, whether the individual is Black or not) and all other variables remain constant (their sex, original crime type, criminal history, age, and repeated). If the coefficient is greater than one, then the variable is associated with increased risk, holding all other included variables constant.[8]

[7] We use the Stata package stcox. The reported coefficients are hazard ratios. Also, please note that we experiment with two methods of determining ties: Brenslow and Efron, the two most efficient options. We do not get fundamentally different results. In Table 4.2.2 we report the results of the Brenslow method. We also did extensive sensitivity analysis to covariate inclusion, which is available upon request. We test all relevant assumptions for the cox proportional hazard model, including the proportionality assumption that is expressed visually in the Kaplan-Meier curves. The proportionality assumption means that ratio of the hazards for any two individuals is constant over time. The cox model also assumes that each variables makes a linear contribution to the model and that no one observation is more influential than others. We tested the two other assumptions and they are not violated.

[8] A good online resource with an explanation of hazard ratios is LaMorte's found at: http://sphweb.bumc.bu.edu/otlt/MPH-Modules/BS/BS704_Survival/BS704_Survival6.html

Table 4.2.2. Cox Proportional Hazard Model

	Time to Arrest	Time to Conviction	Time to Incarceration
Black?	1.212***	1.188***	1.255***
	(0.0136)	(0.0139)	(0.0227)
Hispanic?	0.606***	0.612***	0.676***
	(0.00569)	(0.00612)	(0.0105)
Male?	1.261***	1.215***	1.665***
	(0.00885)	(0.00895)	(0.0214)
Drug Non-Possession Crime?	0.818***	0.821***	0.839***
	(0.00888)	(0.00945)	(0.0157)
Drug Possession Crime?	1.194***	1.197***	1.062***
	(0.0104)	(0.0110)	(0.0157)
Person Crime?	0.977*	0.948***	1.022
	(0.0101)	(0.0105)	(0.0179)
Property Crime?	1.043***	1.059***	1.240***
	(0.00917)	(0.00978)	(0.0178)
Sex Crime?	0.921***	0.899***	1.050
	(0.0141)	(0.0151)	(0.0276)
Log Arrest History Score†	1.380***	1.514***	1.533***
	(0.00482)	(0.00583)	(0.00937)
Age	0.988***	0.993***	0.993*
	(0.00167)	(0.00181)	(0.00307)
Age^2	1.000***	1.000***	1.000***
	(0.0000232)	(0.0000251)	(0.0000439)
Repeated?	1.323***	1.088***	1.379***
	(0.00812)	(0.00706)	(0.0136)
N	198,671	198,671	198,671
County Random Effects?	Yes	Yes	Yes

Notes: Exponentiated coefficients; Standard errors in parentheses. Omitted crime type is "Other".
† For a full explanation of why we take the natural log of this variable, please refer to footnote 5.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The cox proportional model largely confirms what we observe in the Kaplan-Meier graphs. All but two included variables are statistically significant in determining recidivism risk of all three types. The coefficient for Black is greater than one for all types of recidivism: arrest, conviction, and incarceration. This means that if an offender is Black, holding all other included variables constant, they have a higher risk of recidivism than an offender who is not Black. We cannot identify the exact reason why a Black

offender has a higher risk than a non-Black offender, and there are several variables, like cultural appropriateness of treatment, that we cannot control for that may help explain this difference. A Hispanic offender has a lower risk of recidivism than a non-Hispanic offender in this data, holding constant all other variables included in Table 4.2.2. A male offender has a higher risk of recidivism than a female offender with the same race/ethnicity, original crime, arrest history, age, and "repeated?" indicator. Offenders who are originally incarcerated or sentenced to probation for a drug possession charge or property charge have a higher risk of recidivism than similar offenders who committed a drug non-possession crime. Offenders who originally commit a person or sex crime have a lower risk of being rearrested or reconvicted than comparable offenders, but, likely due to statistical power[9], we cannot be sure of the effect on reincarceration. A higher arrest history score is also associated with increased recidivism risk. The coefficient for age is less than one across all types of recidivism, which means that as age increases, risk to recidivate decreases. If the coefficients for age squared were greater than one or less than one that would indicate that perhaps young offenders had a low recidivism risk, middle aged offenders have a high recidivism risk, and then very old offenders have low recidivism risk again. Recidivism risk does not change direction as age increases, as indicated by the coefficient for age squared equaling one. If an offender has already recidivated during the time period we study (indicated by the "repeated?" variable), they have a higher risk of recidivating again than a comparable offender who has not recidivated before, as indicated by the coefficients for "repeated?" being greater than one across all recidivism outcomes.

The Kaplan-Meier graphs and cox proportional hazard model corroborate each other, but the cox proportional hazard model is more able to simultaneously control for differing individual characteristics. Taking the results in Table 4.2.2 together, young, Black males with a longer criminal history who have committed a property or drug possession crime and have already recidivated have a greater risk of recidivating (in any way) than others, holding all else constant. By examining statistics like those in Tables 3.1 and 3.2, or any of the Kaplan-Meier graphs, we can only compare recidivism outcomes on one offender characteristic. We can say that male offenders seem more likely to recidivate than female offenders, but that could be driven by some other underlying factor. If male offenders are also more likely to have committed a drug possession offense, that charge can complicate exactly what is driving the higher recidivism for males: Is the higher recidivism risk because males are more likely to commit drug possession crimes? Or, is the higher risk because they are male? With survival analysis we can begin to disentangle which offender characteristics are associated with increased or decreased recidivism. Further analysis[10] is needed to exactly predict outcomes for each subgroup of offender.

Due to data limitations, we can only include offender characteristics at the time they entered the sample in our model. That means that we are not evaluating any changing polices that may affect the individual's risk to recidivate. In future research we may augment our analysis by considering enforcement

[9] "Person?" and "Sex?" are both statistically insignificant in their effect on time to incarceration. We think this is likely due to sample size issues. A smaller proportion of individuals are reincarcerated than are rearrested or reconvicted (a comparison of Figures 3.1, 3.2, A.1, A.2, A.3, and A.4 supports this). Less than 20 percent of the individuals analyzed are counted as committing either a person or sex crime. So, the intersection of people who have both been reincarcerated and originally committed a person or sex crime is small (8,216 cases of the total 218,147; less than 4 percent).

[10] Perhaps future research will examine the effect of interaction terms between the variables already included in Table 4.2.2. For example to exactly identify if differences between male and female offenders are driven by underlying crime types, we could interact male with each individual crime category.

mechanisms and bill changes, however this report details the most advanced examination of factors that influence recidivism risk we have undertaken thus far.

5. Methodology

5.1. Data Processing

Table 5.1.1. Cohort Size

Cohort	Parole-PPS	Probation	Total
1998/1ST	1,974	4,788	6,762
1998/2ND	2,251	4,808	7,059
1999/1ST	2,279	4,811	7,090
1999/2ND	2,446	4,634	7,080
2000/1ST	2,429	4,917	7,346
2000/2ND	2,400	4,376	6,776
2001/1ST	2,559	4,823	7,382
2001/2ND	2,607	4,420	7,027
2002/1ST	2,437	4,772	7,209
2002/2ND	2,753	4,536	7,289
2003/1ST	2,580	4,131	6,711
2003/2ND	2,548	4,199	6,747
2004/1ST	2,753	4,620	7,373
2004/2ND	3,071	4,469	7,540
2005/1ST	2,851	4,944	7,795
2005/2ND	3,004	4,971	7,975
2006/1ST	2,996	5,407	8,403
2006/2ND	3,031	4,793	7,824
2007/1ST	2,944	4,990	7,934
2007/2ND	3,020	4,352	7,372
2008/1ST	2,904	4,526	7,430
2008/2ND	2,820	4,067	6,887
2009/1ST	2,770	4,309	7,079
2009/2ND	3,279	3,882	7,161
2010/1ST	2,882	4,084	6,966
2010/2ND	2,954	4,236	7,190
2011/1ST	2,914	4,206	7,120
2011/2ND	3,028	4,190	7,218
2012/1ST	2,961	4,537	7,498
2012/2ND	2,981	3,923	6,904
Total	82,426	135,721	218,147

We analyze a sample of 218,147 distinct events spanning from 1998 through 2012 (Table 5.1.1). An event is defined as a release from incarceration or an imposition of a probation sentence. We count the number of days until that person recidivates in the form of an arrest, conviction, or incarceration for a new crime. We call the number of days until recidivism the survival time. The survival time is the number of days that the individual "survives"—does not recidivate. If an individual does not recidivate within the follow-up period, they are censored. We cannot assume that the censored individual will never recidivate; we can only assume that they may recidivate at some later, censored, time.

For all individuals who are censored, their survival time is defined as the maximum number of days they are observed. We define this survival time to be one day after the last possible day they could have recidivated given the potential follow-up period and data availability. So, for the 2002 cohort, if an individual is censored, their time to event is fifteen years and one day. For 2007 and earlier cohorts, time to event for censored individuals is one day beyond the longest time to event of any individual who is not censored within their cohort. In cases of censoring, the true time to event is underestimated because the time to event is (by default) the time to the end of the sample period.

In our data, we see some individuals multiple times. That means that they have recidivated at least once, and been released from incarceration or completed a probation sentence an additional time. About 28 percent of people in the sample appear more than once. We conduct analyses with the whole sample, and then on the subset of the sample that excludes repeated individuals, and find similar results. However, if an individual is repeated this may increase their risk to recidivate (since they have a record of recidivating). To accommodate for this risk adjustment, we create an indicator for whether an individual appears more than once in the sample, and include that in our preferred hazard model.

Some individuals in the sample die before they can recidivate. These individuals are censored. We can identify some of the individuals who have died; their release reason is "DIED" in our data. We are missing release reason for 4.47 percent of observations. Of those who have a release reason, 1,422 individuals' release reason is "DIED". This is less than one percent of individuals who have a release reason. To test robustness, we drop the individuals who have died from our sample, and compare the results to estimates with the whole sample. The results are not significantly different.

Even though we observe differences between Parole-PPS and Probation cohort recidivism in Tables 3.1 and 3.2, we do not include an indicator for whether or not someone is part of one of these two groups in our cox proportional hazard model. Including this indicator would violate the proportional hazards assumption. Kaplan-Meier curves for Parole-PPS and Probation cross early in the follow-up period for all recidivism types. The curves are available upon request. Additionally, including an indicator for whether an individual is a member of Parole-PPS or Probation would directly compare individuals in these cohorts, which we have not done in past CJC analyses. We conduct two subset hazard analyses with only individuals in the Parole-PPS cohort and only individuals in the Probation cohort. The coefficients found for each set of analyses are not differentially greater than or less than one.

This analysis includes a new measure of arrest history that has not appeared in past CJC analyses: arrest history score. The arrest history score is a weighted history of an offender's arrests calculated at a given date. In our sample, that date is the day on which an offender is released from confinement or sentenced to probation. The exact calculation is: arrest history score = (4 * number of arrests between the date and 1 year before the date) + (2 * number of arrests between 1 year before the date and 2 years before the date) + (2 * number of arrests between 2 years before the date and 3 years before the date) + (2 * number of arrests between 3 years before the date and 4 years before the date) + (number of arrests between 4 years before the date and 5 years before the date). Any arrests that occur five years or more before the date are not counted. A maximum of one arrest per day is counted.

For all analyses described in this report, we use a corrected race/ethnicity variable. Several data sets we rely on have known discrepancies between third-party reported race/ethnicity values and self-reported race/ethnicity values. In particular, third-party reported race/ethnicity variables include a higher proportion of White observations and lower proportions of Hispanic, Native American, and Asian observations when compared to self-reported information. The full technical documentation for the race/ethnicity correction methodology is on the CJC website.[11]

Table 5.1.2. Variables with Missing Values

Variable	Number Missing	Percent Missing
Sex	16	0.01%
Age	5,829	2.67%
Arrest History Score	14,595	6.69%
Race/Ethnicity	86	0.04%
Crime Category	5,827	2.67%

Despite the richness of the data the CJC has access to, there are some limitations. We cannot identify the exact date that someone was released from confinement or sentenced to probation for less than 3 percent of the data. For these individuals we cannot calculate the time to recidivism and they are therefore censored. Our hazard model can accommodate for censoring without adjustment. Also, for some observations, we are missing offender characteristics (Table 5.1.2). These gaps in the data do not affect how we calculate recidivism rates, however for our hazard analyses, we must restrict the sample to include only individuals who we have complete data for. So for example, if we include sex as a variable of interest that may affect the time to recidivate, our model will drop 16 observations which do not have a recorded sex. We run a

[11] https://www.oregon.gov/cjc/CJC%20Document%20Library/RaceCorrectionTechDocFinal-8-6-18.pdf

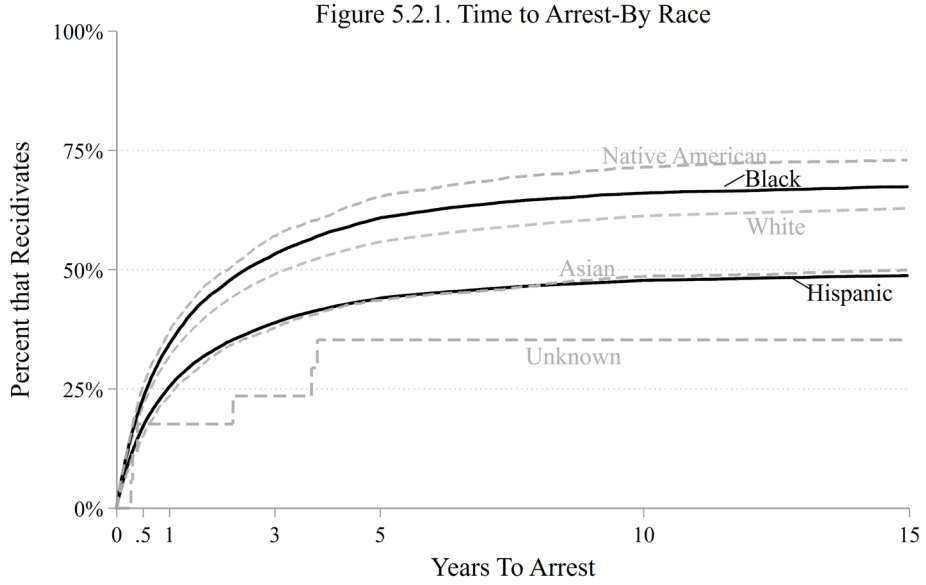
simplified survival analysis including only race/ethnicity, sex, and the "repeated?" indicator. We believe that the occasionally incomplete covariates are important in explaining recidivism risk for those individuals we have data on. So, we include all covariates listed in Table 5.1.2 in our preferred model even though we lose up to 14,595 people out of the sample.

5.2. Challenges with Race/Ethnicity Variable

In our preferred model we use Black, Hispanic, and Other as our race/ethnicity categories as they are the most detailed race/ethnicity variables that we can use while avoiding some of the problems laid out in this section.

Figure 5.2.1 displays the Kaplan-Meier curves for our detailed race/ethnicity variable. A high percentage of Asian and Hispanic offenders are never rearrested, compared to Black and Native American offenders. There are very few Native American offenders in the sample, so this effect could be driven by few people.

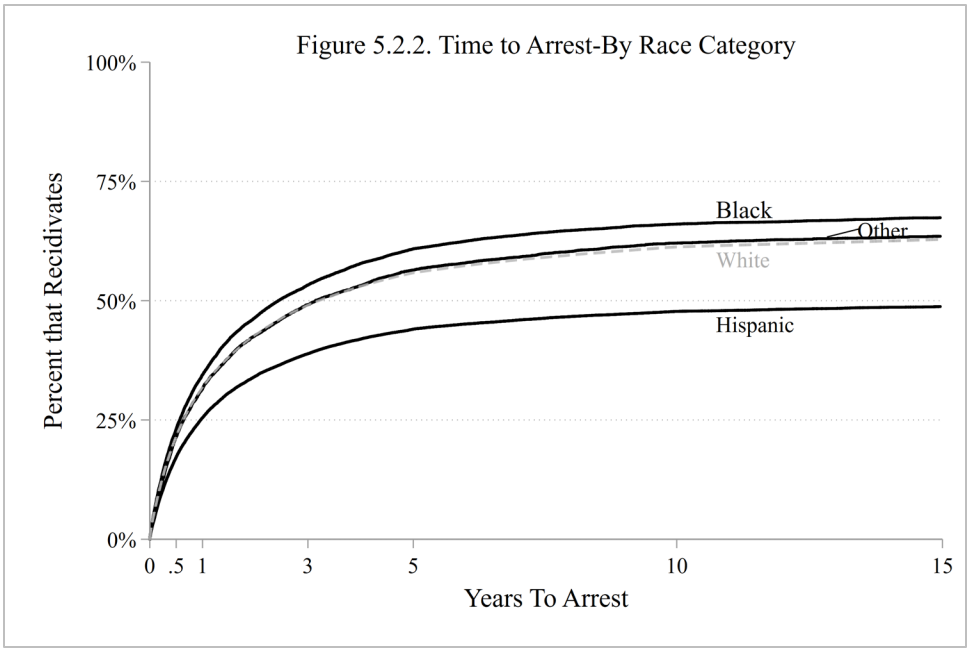
Figure 5.2.1. Time to Arrest-By Race



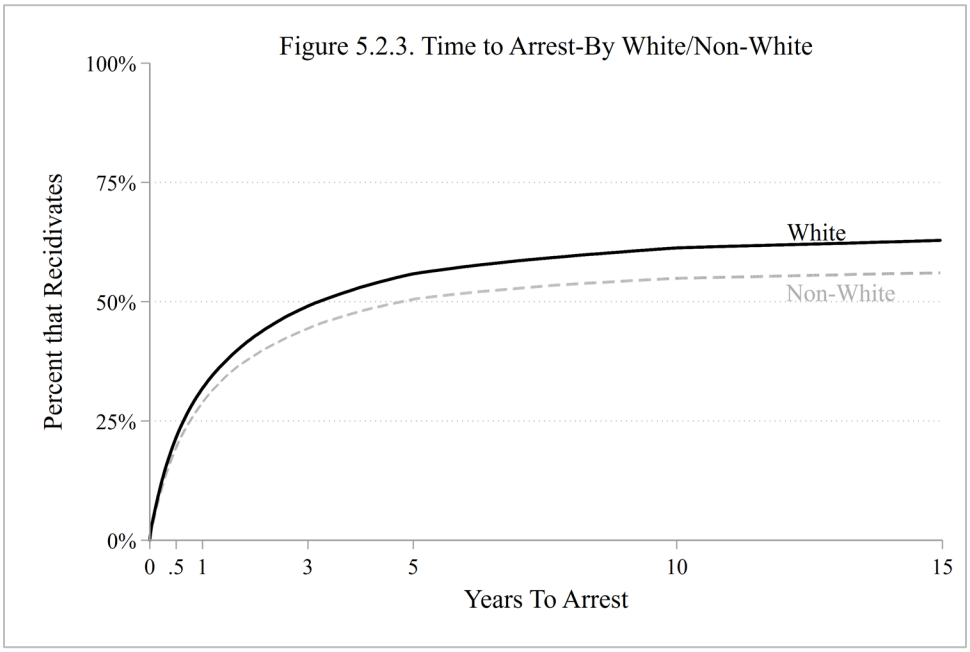
However, Figure 5.2.1 exposes two problems with including this detailed race/ethnicity variable in our survival model. The unknown curve is not smooth. .01 percent of the sample is of unknown race/ethnicity. That means we do not have sufficient power to identify any differences between unknown race/ethnicity and any other race/ethnicity. It is also a problem that the Asian and Hispanic Kaplan-Meier curves cross. Kaplan-Meier curves serve as a way to test an important assumption for the cox proportional hazard model. If any of the Kaplan-Meier curves cross, that violates the proportionality assumption, and we cannot include that variable in our analysis while maintaining validity of the model. So, as seen in Figure 5.2.1, we cannot define race/ethnicity as falling into six categories: White, Black, Hispanic, Asian, Native American, and Unknown.

To circumvent the statistical challenge of small sample sizes we consider aggregating up the race/ethnicity variables into the categories: White, Black, Hispanic, and Other. However, the Kaplan-

Meier curves for White and Other cross (Figure 5.2.2). That means we cannot use this race/ethnicity classification either, as the proportional hazards assumption of the cox proportional hazard model will be violated.



We consider using another race/ethnicity aggregation: White, non-White. For these classifications, the Kaplan-Meier curves do not cross (Figure 5.2.3). When we aggregate up race/ethnicity into just White and non-White, the proportion of White offenders that recidivate is higher than the proportion of non-White offenders that recidivate. This is a problem because a higher proportion of both Black and Native American offenders recidivate when compared to White offenders. By aggregating up our race/ethnicity variables into just White and non-White, the low proportion of Hispanic and Asian offenders that recidivate washes out any effect of Black and Native American offenders.



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7. Appendix

7.1. Tables

Table A.1. Statewide Recidivism Rates for Probation Cohort

	Arrest Rate					Conviction Rate					Incarceration Rate				
Cohort	1-Year	3-Year	5-Year	10-Year	15-Year	1-Year	3-Year	5-Year	10-Year	15-Year	1-Year	3-Year	5-Year	10-Year	15-Year
1998/1ST	32%	48%	54%	61%	63%	38%	51%	56%	63%	64%	5%	12%	15%	20%	22%
1998/2ND	30%	47%	53%	61%	63%	36%	49%	55%	62%	64%	5%	11%	14%	19%	21%
1999/1ST	29%	46%	53%	61%	63%	34%	47%	53%	60%	63%	5%	11%	15%	20%	22%
1999/2ND	31%	46%	52%	60%	62%	34%	47%	53%	61%	63%	5%	11%	14%	19%	21%
2000/1ST	30%	46%	53%	60%	62%	31%	45%	51%	59%	61%	4%	11%	15%	20%	22%
2000/2ND	31%	46%	53%	59%	61%	32%	46%	52%	59%	61%	5%	11%	14%	19%	21%
2001/1ST	29%	44%	51%	58%	61%	31%	44%	51%	58%	60%	5%	11%	15%	20%	22%
2001/2ND	29%	45%	51%	59%	61%	32%	46%	52%	58%	61%	5%	12%	15%	20%	22%
2002/1ST	29%	45%	51%	59%	62%	31%	45%	51%	58%	61%	6%	13%	16%	21%	23%
2002/2ND	27%	44%	51%	58%	61%	27%	42%	49%	56%	59%	4%	12%	15%	19%	22%
2003/1ST	28%	45%	51%	58%		25%	41%	47%	55%		5%	11%	15%	19%	
2003/2ND	29%	46%	52%	60%		28%	43%	50%	57%		6%	13%	16%	20%	
2004/1ST	31%	47%	54%	62%		28%	44%	50%	59%		6%	13%	17%	21%	
2004/2ND	32%	48%	54%	62%		27%	43%	49%	57%		6%	13%	16%	20%	
2005/1ST	32%	48%	55%	62%		28%	44%	50%	57%		7%	13%	17%	21%	
2005/2ND	30%	46%	53%	60%		27%	43%	49%	56%		6%	12%	15%	20%	
2006/1ST	30%	46%	53%	60%		26%	41%	49%	56%		5%	12%	15%	20%	
2006/2ND	31%	46%	52%	60%		26%	40%	47%	54%		6%	11%	14%	19%	
2007/1ST	28%	44%	51%	59%		23%	38%	45%	54%		5%	10%	14%	19%	
2007/2ND	27%	43%	50%	58%		23%	38%	45%	52%		4%	10%	13%	18%	
2008/1ST	25%	41%	49%			21%	36%	43%			4%	10%	13%		
2008/2ND	25%	42%	49%			22%	37%	43%			4%	10%	13%		
2009/1ST	25%	42%	49%			21%	36%	42%			4%	9%	13%		
2009/2ND	27%	44%	50%			22%	37%	44%			5%	10%	13%		
2010/1ST	29%	45%	53%			23%	38%	45%			5%	11%	15%		
2010/2ND	29%	45%	52%			24%	38%	45%			4%	11%	14%		
2011/1ST	30%	46%	52%			25%	39%	46%			6%	12%	16%		
2011/2ND	29%	46%	53%			25%	40%	47%			6%	13%	17%		

2012/1ST	29%	45%	52%	24%	39%	46%	5%	12%	16%
2012/2ND	31%	47%	54%	25%	41%	48%	6%	13%	17%

Table A.2. Statewide Recidivism Rates for Parole Cohort

	Arrest Rate					Conviction Rate					Incarceration Rate				
Cohort	1-Year	3-Year	5-Year	10-Year	15-Year	1-Year	3-Year	5-Year	10-Year	15-Year	1-Year	3-Year	5-Year	10-Year	15-Year
1998/1ST	31%	49%	55%	60%	62%	18%	37%	45%	53%	56%	4%	13%	19%	26%	28%
1998/2ND	33%	52%	58%	64%	66%	20%	39%	48%	58%	61%	5%	15%	21%	28%	31%
1999/1ST	36%	55%	62%	67%	70%	23%	44%	53%	61%	64%	6%	16%	22%	29%	33%
1999/2ND	38%	57%	64%	71%	73%	23%	45%	54%	63%	66%	6%	18%	24%	31%	35%
2000/1ST	36%	55%	61%	68%	70%	20%	44%	53%	62%	65%	6%	16%	22%	30%	32%
2000/2ND	36%	55%	61%	68%	71%	23%	44%	53%	62%	65%	6%	17%	24%	31%	34%
2001/1ST	36%	54%	61%	67%	70%	22%	42%	52%	61%	65%	7%	17%	23%	30%	33%
2001/2ND	36%	54%	61%	67%	69%	21%	43%	53%	61%	64%	5%	17%	24%	31%	35%
2002/1ST	36%	53%	60%	66%	68%	21%	42%	51%	60%	62%	6%	16%	23%	30%	33%
2002/2ND	32%	53%	60%	67%	69%	18%	41%	51%	60%	63%	6%	18%	24%	31%	34%
2003/1ST	34%	52%	59%	65%		20%	41%	50%	59%		7%	18%	24%	32%	
2003/2ND	34%	51%	57%	64%		20%	40%	49%	58%		6%	18%	23%	29%	
2004/1ST	35%	53%	59%	66%		21%	43%	51%	59%		6%	19%	24%	30%	
2004/2ND	38%	54%	61%	66%		22%	44%	52%	60%		7%	18%	23%	29%	
2005/1ST	35%	54%	60%	67%		21%	42%	51%	59%		7%	17%	22%	30%	
2005/2ND	36%	53%	59%	67%		21%	42%	50%	59%		6%	16%	22%	29%	
2006/1ST	38%	53%	59%	66%		20%	40%	49%	58%		6%	16%	21%	28%	
2006/2ND	34%	51%	58%	64%		20%	39%	48%	57%		6%	15%	20%	27%	
2007/1ST	35%	53%	59%	67%		19%	40%	49%	58%		6%	15%	21%	28%	
2007/2ND	32%	51%	58%	64%		19%	39%	48%	56%		6%	16%	21%	28%	
2008/1ST	32%	50%	56%			19%	40%	47%			5%	15%	21%		
2008/2ND	31%	50%	57%			18%	38%	47%			5%	15%	20%		
2009/1ST	32%	50%	56%			16%	36%	45%			5%	14%	20%		
2009/2ND	32%	50%	56%			19%	38%	46%			5%	14%	20%		
2010/1ST	30%	49%	55%			19%	37%	46%			5%	14%	21%		
2010/2ND	34%	52%	58%			20%	39%	48%			5%	16%	22%		
2011/1ST	34%	51%	57%			20%	38%	46%			5%	15%	21%		
2011/2ND	35%	52%	58%			21%	40%	47%			7%	17%	22%		
2012/1ST	35%	53%	58%			20%	40%	47%			5%	16%	23%		
2012/2ND	37%	55%	60%			21%	41%	49%			6%	17%	23%		

Table A.3. Recidivism Rate for Probation Cohort (2007, Second Six Months)

Crime Type	*Follow-up Period* 1 Year	3 Years	5 Years	10 Years
		Arrest Rate		
Drug Possession	29.9%	46.4%	54.2%	61.0%
Drug Sale/Transport	28.1%	44.3%	51.3%	58.4%
Person	23.2%	38.4%	46.8%	54.2%
Property	29.8%	48.3%	55.9%	63.0%
Sex	19.7%	30.6%	40.1%	49.7%
Other	24.4%	41.1%	48.4%	58.1%
		Conviction Rate		
Drug Possession	26.9%	42.2%	48.8%	55.2%
Drug Sale/Transport	24.1%	39.3%	45.7%	52.1%
Person	19.8%	31.3%	40.5%	47.9%
Property	25.7%	43.9%	50.8%	58.5%
Sex	20.4%	27.9%	32.7%	40.1%
Other	19.5%	35.4%	42.9%	50.7%
		Incarceration Rate		
Drug Possession	3.7%	9.5%	13.5%	18.1%
Drug Sale/Transport	3.4%	9.1%	12.8%	17.1%
Person	3.6%	8.4%	11.4%	18.3%
Property	6.2%	13.8%	17.5%	23.2%
Sex	2.7%	6.8%	7.5%	12.9%
Other	3.7%	8.4%	11.2%	16.4%

Table A.4. Recidivism Rate for Parole Cohort (2007, Second Six Months)

Crime Type	*Follow-up Period* 1 Year	3 Years	5 Years	10 Years
		Arrest Rate		
Drug Possession	43.4%	60.4%	67.3%	75.0%
Drug Sale/Transport	38.1%	56.4%	63.4%	70.4%
Person	29.7%	49.9%	57.7%	64.5%
Property	35.6%	57.0%	63.7%	68.8%
Sex	19.2%	35.3%	43.5%	48.6%
Other	35.9%	57.6%	65.6%	72.5%
		Conviction Rate		
Drug Possession	27.8%	49.8%	58.1%	66.8%
Drug Sale/Transport	24.0%	45.4%	53.5%	62.2%
Person	16.1%	36.3%	47.0%	56.3%
Property	22.7%	47.5%	55.5%	63.7%
Sex	8.2%	19.6%	29.0%	36.9%
Other	20.3%	40.4%	52.5%	62.3%
		Incarceration Rate		
Drug Possession	7.2%	16.5%	21.6%	27.5%
Drug Sale/Transport	6.0%	16.0%	20.7%	26.8%
Person	5.8%	15.0%	19.6%	27.4%
Property	7.7%	20.0%	27.2%	34.9%
Sex	2.4%	6.7%	10.6%	18.4%
Other	8.3%	19.2%	24.6%	33.9%

Table A.5. Recidivism Rate for Probation Cohort (2012, Second Six Months)

	Follow-up Period		
Crime Type	1 Year	3 Years	5 Years
	Arrest Rate		
Drug Possession	41.2%	57.2%	63.2%
Drug Sale/Transport	36.2%	51.0%	57.5%
Person	25.1%	42.7%	49.5%
Property	33.6%	49.1%	56.9%
Sex	11.9%	28.8%	34.7%
Other	27.9%	46.2%	53.1%
	Conviction Rate		
Drug Possession	34.1%	51.2%	57.3%
Drug Sale/Transport	29.5%	45.5%	51.1%
Person	18.5%	33.5%	40.7%
Property	28.6%	44.7%	51.3%
Sex	12.7%	26.3%	33.1%
Other	20.5%	37.1%	45.9%
	Incarceration Rate		
Drug Possession	7.3%	16.1%	20.1%
Drug Sale/Transport	6.6%	14.1%	17.8%
Person	4.1%	10.7%	14.6%
Property	7.2%	14.3%	19.6%
Sex	5.1%	8.5%	12.7%
Other	5.2%	11.1%	16.2%

Table A.6. Recidivism Rate for Parole Cohort (2012, Second Six Months)

	Follow-up Period		
Crime Type	1 Year	3 Years	5 Years
	Arrest Rate		
Drug Possession	54.8%	71.0%	75.8%
Drug Sale/Transport	45.4%	61.7%	66.3%
Person	30.0%	49.0%	56.1%
Property	41.3%	60.8%	67.4%
Sex	22.0%	38.1%	42.9%
Other	37.3%	56.9%	64.3%
	Conviction Rate		
Drug Possession	34.8%	53.5%	61.8%
Drug Sale/Transport	27.9%	46.8%	54.6%
Person	15.4%	33.3%	43.5%
Property	24.4%	49.0%	58.9%
Sex	8.6%	22.0%	28.4%
Other	21.2%	43.1%	51.3%
	Incarceration Rate		
Drug Possession	10.2%	21.2%	27.3%
Drug Sale/Transport	7.8%	17.7%	23.9%
Person	4.6%	14.4%	21.5%
Property	8.1%	21.3%	29.2%
Sex	2.2%	7.1%	10.1%
Other	7.2%	19.6%	24.9%

7.2. Figures

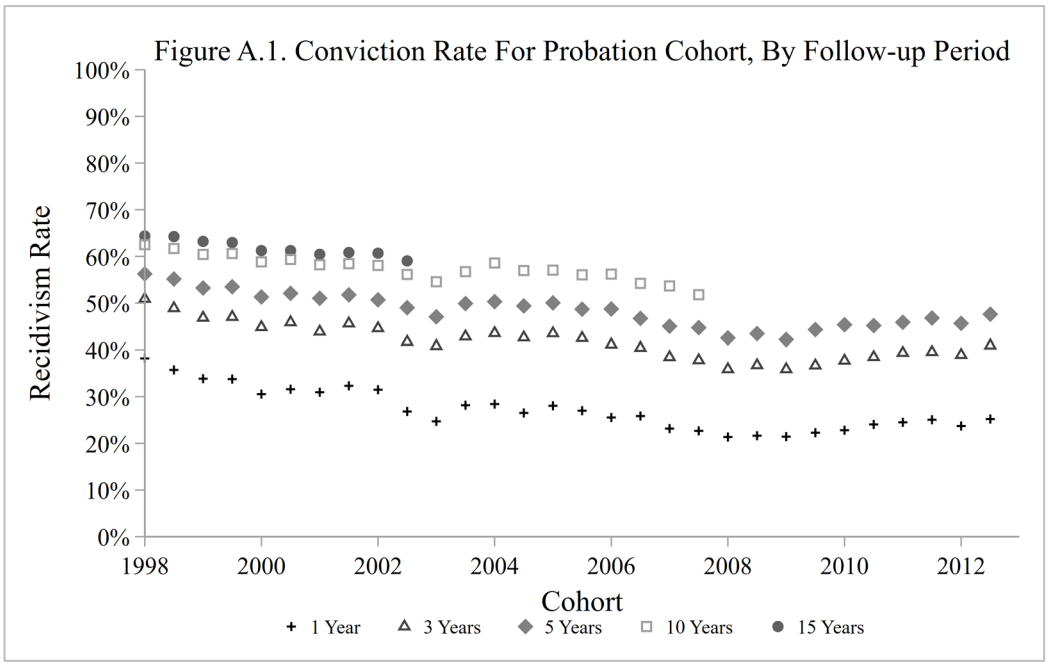
Figure A.1. Conviction Rate For Probation Cohort, By Follow-up Period
Recidivism Rate
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1998
2000
2002
2004
2006
2008
2010
2012
Cohort
1 Year
3 Years
5 Years
10 Years
15 Years

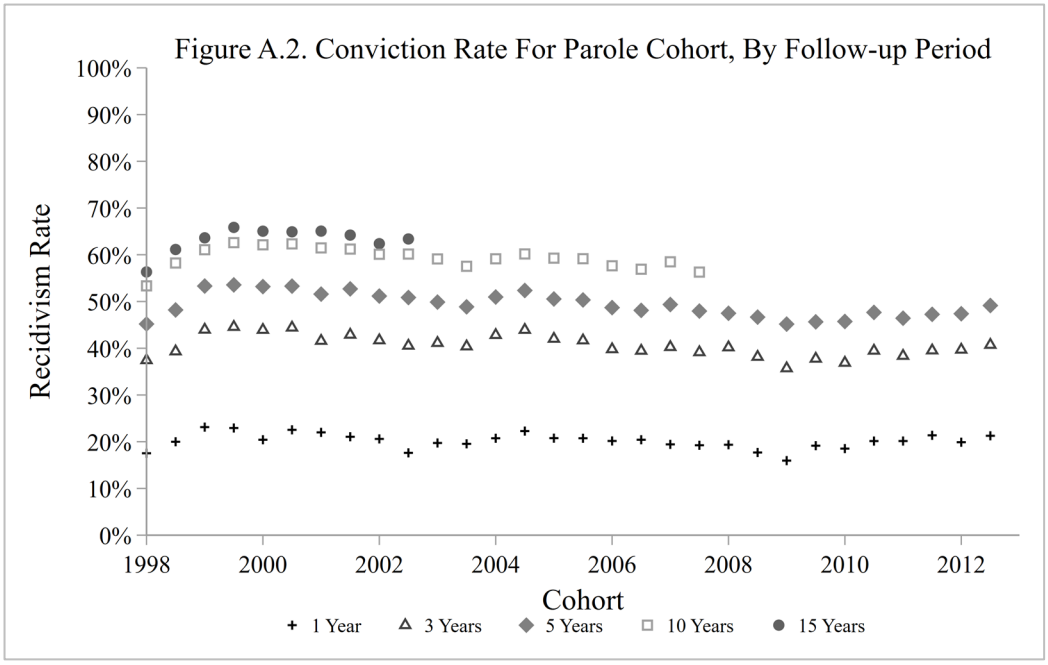
Figure A.2. Conviction Rate For Parole Cohort, By Follow-up Period
Recidivism Rate
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1998
2000
2002
2004
2006
2008
2010
2012
Cohort
1 Year
3 Years
5 Years
10 Years
15 Years

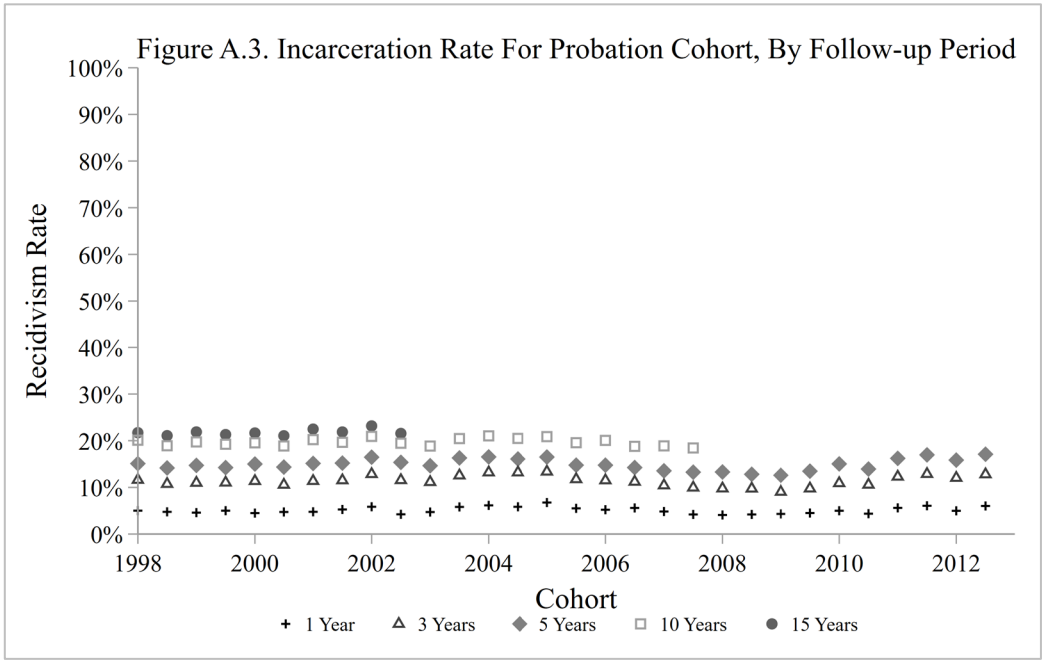
Figure A.3. Incarceration Rate For Probation Cohort, By Follow-up Period
Recidivism Rate
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1998
2000
2002
2004
2006
2008
2010
2012
Cohort
1 Year
3 Years
5 Years
10 Years
15 Years

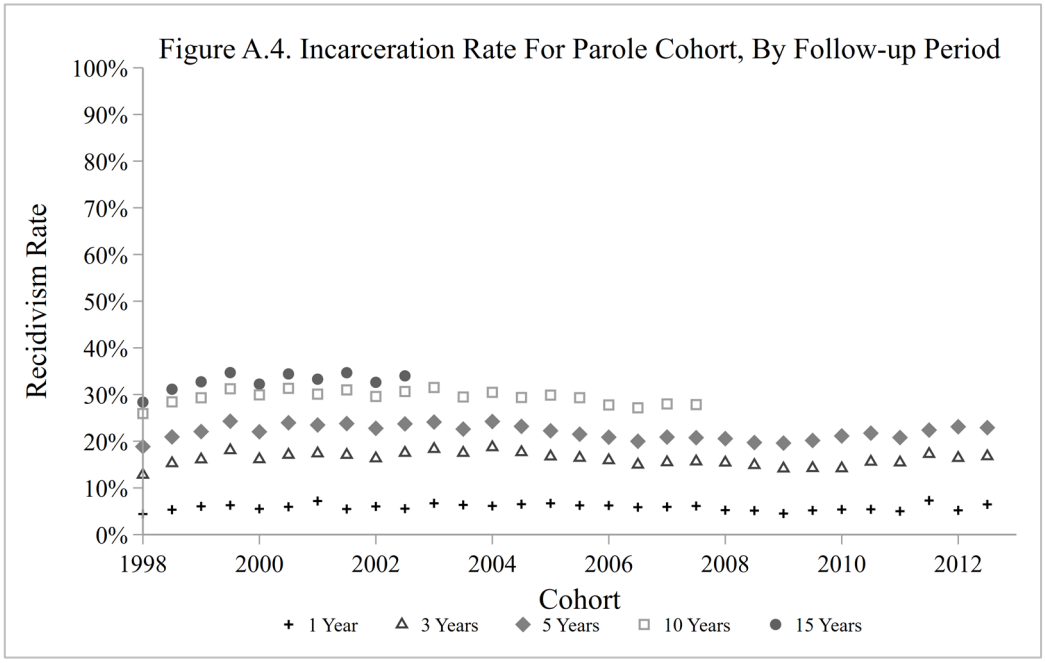
Figure A.4. Incarceration Rate For Parole Cohort, By Follow-up Period
Recidivism Rate
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1998
2000
2002
2004
2006
2008
2010
2012
Cohort
1 Year
3 Years
5 Years
10 Years
15 Years

Project Title:
Effect of Prison Length of Stay in Oregon

Submitted to:
Oregon Criminal Justice Commission

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Award Number: PSU-19-10

Project/Grant Period: 02/01/2018 - 9/30/2019

Reporting Period End Date: 05/28/2019

Table of Content

Do Longer Prison Sentences Improve Public Safety?

Our Research:

Oregon's Justice Reinvestment Initiative (JRI), "is an approach to spending resources more effectively with the goals of reducing recidivism, decreasing prison use, protecting the public and holding offenders accountable (Oregon Criminal Justice Commission, 2019)." To maximize the effectiveness of Justice Reinvestment programs, policy makers need to understand the relationship between imprisonment, particularly length of stay (LOS), and recidivism. Subsequently, the Oregon Criminal Justice Commission (CJC) sought to conduct a LOS study in Oregon similar to a study completed by Snodgrass et al (2011). The goal of Portland State University's (PSU) analysis is to provide useful information for Oregon's JRI effort on the effectiveness and efficiency of incarceration. Specifically, PSU was charged with assessing the impact of length of prison stay on Oregon's three official measures of recidivism - rearrest, reconviction, and reincarceration.

Analyzing police, courts, and corrections records, PSU examined the influence of LOS in prison on recidivism outcomes on data from more than 12,000 Oregon inmates. It is important to note that all of the inmates were convicted of a JRI-eligible offense (e.g., property, driving, and drug offenses). Thus, we are not talking about inmates convicted of serious violent offenses (e.g., homicide, rape, robbery).

Our Research Questions and How We Answered Each:

1. What's the impact of LOS of Recidivism?

- *Quasi-RCT* – Through a statistical procedure we identified groups of offenders that were statistically similar except for their LOS. In essence the analysis creates a series of comparable groups made-up of individuals that have statistical twins in the other groups. By doing this we could see how LOS influences recidivism beyond other factors like age, crime type, and criminal history.
- *LOS Groups* – Since the groups were similar in every other way, we were able to separate out the LOS effects by monthly categories compared to other influences of recidivism.
- *Likelihood to Recidivate* – We estimated the likelihood of recidivating for each group and presented them as a percent.

2. Does LOS's impact on recidivism vary by JRI offense types?

- *Crime Subtype Analysis* – The measures of recidivism were assessed on LOS for:
  - *Driving Offenses*
  - *Drug Possession*
  - *Drug Distribution/Manufacturing*
  - *Property Crimes*

3. What is the sentence length that maximizes public safety?

- *Inflection Points* – Across all of the models, we looked for times when there were meaningful (statistically significant) increases or decreases in the likelihood of recidivism. Such points demonstrate how much prison is enough to reduce (or not increase) the likelihood to recidivate

Background

From 1994 to 2015, imprisonment rates increased 122% in Oregon while crime rates have decreased. In 2013, the growth in imprisonment was recognized to be no longer financially and logistically sustainable, so lawmakers passed HB 3194. This bill, known as the Justice Reinvestment Initiative, targeted nonviolent crimes and established the specific goals of reducing prison use, reducing recidivism, maintaining public safety, and increasing offender accountability. The Oregon Criminal Justice Commission (CJC) is a state agency whose mission is to increase the effectiveness, efficiency, and legitimacy of the criminal justice system and was tasked with implementing JRI.

As part of JRI, the CJC is interested in exploring the impact length of stay has on recidivism in Oregon. After examining prior studies, it was apparent that there have been few rigorous research studies on this topic. Additionally, the few completed studies in other jurisdictions have produced varying and conflicting results. In 2011, Snodgrass et al. published a study examining data from the Netherlands on how length of prison stay impacted recidivism, accounting for criminal history, criminal trajectory, severity of current crime, and relevant demographics. They found no consistent and significant relationship between LOS and re-offending.

It is possible longer prison sentences can reduce recidivism through different modes, such as rehabilitation, incapacitation, or deterrence. It is equally possible that longer prison sentences can increase recidivism, via promoting antisocial bonding between criminals, creating reintegration barriers, and degrading pro-social ties (e.g., family). Furthermore, it is possible that length of prison stay has no relationship to recidivism at all. Given these mixed potential findings, it is clear that exploring the impact of length of stay on recidivism will help provide a foundation for JRI related approaches to be more effective at improving public safety and reducing cost for Oregon counties.

PSU was tasked with conducting a quasi-experimental study examining the connection between length of prison stay and recidivism in the State of Oregon. The analysis had the following **project goals**:

- Provide insight about the relationship between prison and public safety in the Oregon criminal justice system context.
- Incorporate public safety officials as project develops to utilize their practical insights to facilitate practical impacts on policy.
- Produce high-quality research that broadcasts the advanced policy research done in Oregon, enhancing our reputation as national leaders in criminal justice

Our analysis includes an assessment of the influence of LOS for all JRI offenders as well as the four major JRI offender categories list on the right in Table 1. The table reports the count and percent of the total offenses for each of the five crime types. as well as totals for all JRI offenses.

Table 1: Distribution of Offenses

Offense Type	Count	Percent
Drug Possession	403	3.2%
Driving Offenses	931	7.5%
Drug Manu./Dist.	3,192	25.5%
Property Offenses	7,965	63.7%
All JRI Offenses	12,497	100%

As requested, PSU's models incorporate three primary measures of recidivism consistent with the official recidivism measures as defined by Oregon state statute. The analysis also includes

additional rearrest types for specific offenses. In all, between the five crime types, the all JRI offenses, and the 8 recidivism types we assess 45 total crime by recidivism combinations. The breakdown of the recidivism types is listed below

- Rearrest within 3 years
  - Any Offense
  - Any JRI Offense
  - Violent Crimes
  - Property Crimes
  - Driving Offenses
  - Drug Manufacturing and Distribution
  - Drug Possession
- Reconviction within 3 years
- Reincarceration within 3 years

Analysis Approach

Ideally, to measure the influence of length of stay (LOS) on recidivism we would conduct a Randomized Controlled Trial (RCT). However, an RCT in this context is infeasible and unethical in many ways. Instead, we use a quasi-experimental design through a process called propensity score modeling (PSM). The PSM approach simulates an RCT by creating "statistical twins" or in this case a series of LOS groups where we are able to isolate differences in recidivism due to LOS.

The RCT-like comparable LOS groups were created by (1) "matching" on offender characteristics that influence sentencing and (2) accounting for characteristics that influence recidivism.

The sentencing factors we match on:

- Criminal history (within the past five years)
- Age at first arrest
- Race
- JRI crime severity (a retrospective DOC measure)
- The number of offenses for:
  - Driving
  - Drug possession
  - Drug manufacturing and distribution
  - Property
- Prior revocations of community supervision
- LS/CMI domain scores for:
  - Criminal associations/friends
  - Drug/alcohol problem history
  - Education/employment history
  - Family/marital history
  - Recreation/leisure activities
  - Pro-criminal attitude
  - Antisocial patterns in behavior

Why Use LOS Groups?

- Allows us to estimate the impact of LOS the likelihood of recidivism.
- Identifies "statistical twins" who received different sentence lengths and makes them comparable.
- Controls for factors that are used in determining sentence length (e.g., offense type and criminal history).
- Used in multiple studies assessing the impact of LOS in other jurisdictions (e.g., Loughran, Wilson, Nagin, & Piquero, 2015).

The influences on likelihood of recidivism that we account for include:

- Most serious JRI offense committed
- Age at release
- Sex
- Race
- Risk to reoffend - Public Safety Checklist
- Number/count of minor and major infractions committed while in prison
- Post-release LS/CMI domain scores

After controlling for demographics, criminal history, and behavioral characteristics of offenders *and* accounting for factors that influence recidivism, we are able to provide direct comparisons across LOS and to conclude if different LOS can impact recidivism outcomes.

We assess the impact of LOS on different measure of recidivism two ways:

- We assess for differences the occurrence of recidivism within 3-years. The results of this analysis are presented in the various figures below. Table 2 outlines where in the report these specific analyses are located.

- We also conducted an analysis to see if there were any differences in how long it took for someone to recidivate within 3-years between the LOS groups. The results of these analyses are discussed throughout this report, but for details of these findings are not included in the report. A selection of the results is presented in Appendix B.

- More details on data construction and methods employed can be found in Appendix C, which is available upon request.

Table 2: PSM Analyses Included in Report

<table>
<tr><th colspan="2" rowspan="2">Recidivism Type</th><th colspan="5">Offense Type</th></tr>
<tr><th>All JRI Offenses</th><th>Driving Offenses</th><th>Drug Possession</th><th>Drug Manu/Dist</th><th>Property Offenses</th></tr>
<tr><td colspan="2">Reincarceration</td><td colspan="5" rowspan="2">Appears in Main Report</td></tr>
<tr><td colspan="2">Reconviction</td></tr>
<tr><td rowspan="7">Rearrest</td><td>Any Offense</td><td colspan="5"></td></tr>
<tr><td>JRI Offense</td><td colspan="5" rowspan="6">Appears in Appendix A
(Available Upon Request)</td></tr>
<tr><td>Violent</td></tr>
<tr><td>Property</td></tr>
<tr><td>Driving</td></tr>
<tr><td>Drug Manu.</td></tr>
<tr><td>Possession</td></tr>
</table>

Study Findings

In all, we conduct 90 separate analyses. This includes the ALL JRI offense analyses and the four crime-type analyses on each of the three main measures of recidivism (rearrest, reconviction, and reincarceration) and a series of analyses breaking rearrest down into a series of crime-specific types. Half the models assess the impact of LOS on any recidivism within 3-years regardless of

when it occurred. The other half assess the same 45 analyses listed in Table 2 on the impact of LOS on the time to recidivate, meaning how long someone was in the community before they recidivated. Some of the results appear in the main document of this report and some appear in Appendix A and Appendix B.

The two tables below outline the 90 models. The top table summarizes the findings of the 45 any recidivism analysis, while the bottom outlines the findings from the 45 time in the community before recidivism analysis.

Table 3a: Did LOS Influence Recidivism at Any Time with Three Years?

Crime Type (of inmate incarceration)		All JRI Offenses	Driving Offenses	Drug Possession	Drug Manu/Dist	Property Offenses
Reincarceration		X	Mixed	X	X	X
Reconviction		X	X	X	Decrease	X
Rearrest	Any Offense	Mixed	X	X	X	X
	JRI Offense	X	X	X	X	X
	Violent	X	X	X	X	X
	Property	X	X	X	X	X
	Driving	X	X	X	X	X
	Drug Manu	X	X	X	X	Mixed
	Possession	Decrease	X	X	X	X

Table 3b: Did LOS Influence the When Someone Recidivates?

Crime Type (of inmate incarceration)		All JRI Offenses	Driving Offenses	Drug Possession	Drug Manu/Dist	Property Offenses
Reincarceration		X	X	X	X	X
Reconviction		X	X	X	X	X
Rearrest	Any Offense	Increase	X	X	X	X
	JRI Offense	X	X	X	X	X
	Violent	X	X	X	X	X
	Property	X	X	X	X	X
	Driving	X	X	X	X	X
	Drug Manu	X	X	X	X	X
	Possession	X	X	X	X	X

X	No Impact on Recidivism	Decrease	Some Points of Decreased Recidivism	Increase	Some Points of Increased Recidivism	Mixed	Points of Increased & Decreased

Table 3 above summarize the results of the 90 analyses. Each box represents whether there was a significant increase or decrease in recidivism between at least two LOS timeframes, or whether there was not impact. We measure both the influence of LOS on both recidivism within 3 years (3a) and whether LOS impacts the time it takes to recidivate (3b). One analysis indicates a mixed finding with both increases and decreases in LOS over time.

Do longer prison stays impact recidivism?

In summary, there is **little to no effect** of longer prison stays on the likelihood to recidivate across almost all analyses, regardless of offense and recidivism type. In 84 out of the 90 analyses (93% of the analyses) we found no statistically significant effect of LOS. In only three analyses are there significant trends (difference between significant trends and significant differences discussed below in *How to understand the results?)*. In other words, the likelihood of recidivating remains stable and flat regardless of LOS in almost all cases. For more exhaustive results see the detailed analyses below.

Overall, effect of prison LOS on likelihood of…

Rearrest

- *Higher and Lower Differences* – in recidivism between some LOS grouping
- *No Impact* – on how long released people are in the community without rearrest.

Reincarceration

- *No General Differences* – between LOS grouping
- *No Impact*– on how long released people are in the community without being reincarcerated.

Reconviction

- *No General Differences* – between LOS grouping
- *Minimal decrease* – for the 37 month+ compared to less the 36 month.
- *No Impact* – on how long released people are in the community without being reconvicted.

There are some LOS groups with lower recidivism and some with higher recidivism. However, these are rarely scientifically significant, and in almost all cases no discernable trend is present. Thus, it seems apparent that there is no ideal LOS for a specific offense that maximizes public safety. In other words, regardless of LOS, the likelihood of recidivating remains basically the same. In the detailed analysis below we display the results as a series of graphs. The lack of a trend can be seen in most models in the relatively flat results below. Given the results across all analyses, in most cases, LOS longer than 24 months does not appreciably impact rearrest, reconviction, or reincarceration and suggests that a general shortening of sentence length is not likely to decrease public safety.

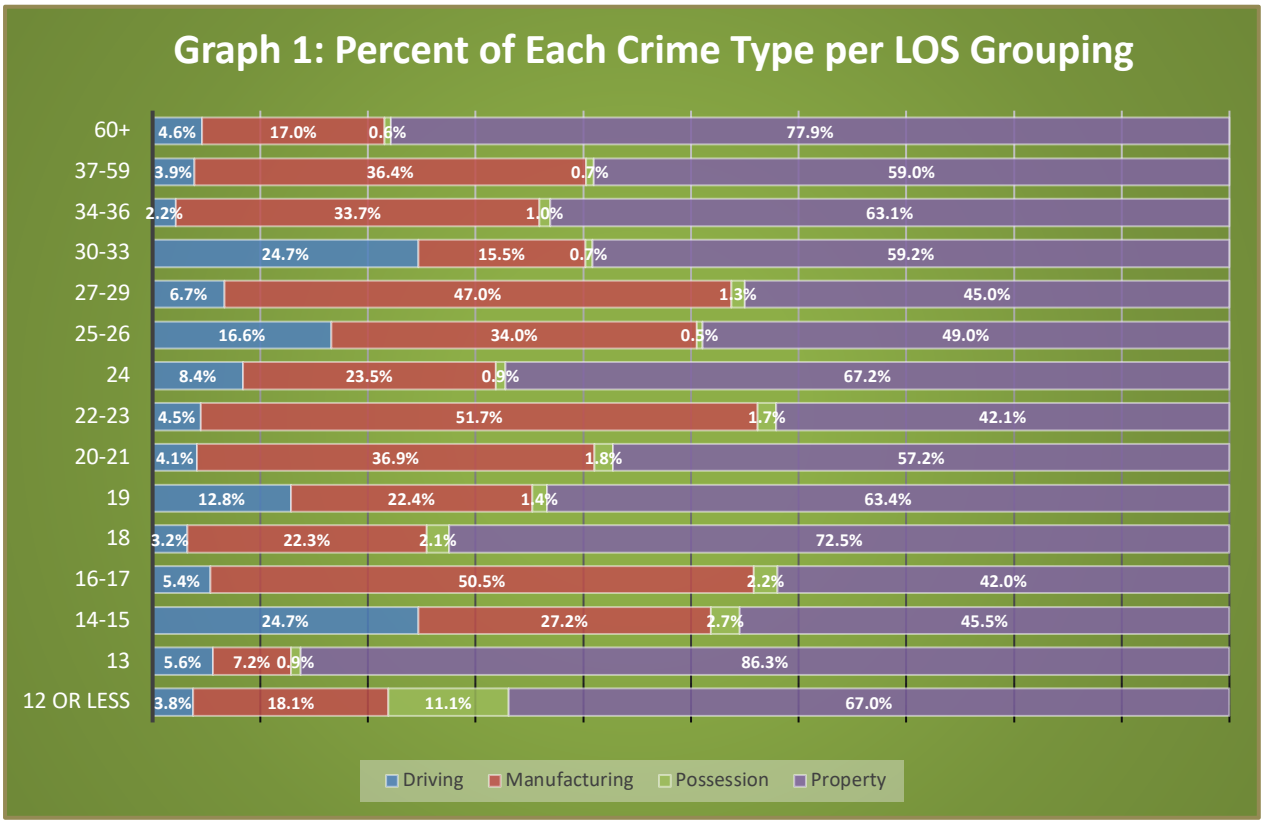
It should be noted that being sentenced to prison impacts some people more than others. In some cases, longer LOS will likely reduce recidivism for a specific individual and increase it for others. Because our analysis focuses on average impacts of LOS across different LOS groups, it is difficult to say specifically for whom LOS changes behavior more without further analyses. That being said, the results clearly indicate that LOS, on average, has little impact on recidivism.

How to understand the results?

To assess the impact of LOS on recidivism, we created a series of statistical similar individuals that differed by their length of prion stay. We then placed these individuals into groups of similar LOS. The composition and the number of the groups depends on the analysis. For example, there are 15 LOS groups in the all JRI offenses analysis. The first group includes individuals with a LOS of 12 months or less in prison (see Graph 1). Because more individuals with a JRI offense have shorter than longer LOS, the groups consist of one or two months up through month 26.

After the 25-26 group, the number of months in each group increases. The final group is made-up of individuals with a LOS of 60 months or more. The differing number of months was done to balance the number of individuals in each group, which makes the analysis more statistically sound.

There are a few important observations regarding the distribution of the individuals within the 15



LOS groups for the all JRI offenses analysis presented in Graph 1. First, drug possession offenses make-up the smallest portion of every group except 12 months or less. This indicates that drug possession offenders generally get relatively short sentences and are not likely to be significant contributors to the recidivism to LOS longer than 12 months. Second, driving offenses make-up less than 10% in each group, but more than 10% for the 14-15, 9, 25-26, and 30-33 groups. This indicates that driving offenders are clustering into certain LOS groups and not distributed uniformly. Third, property crimes make-up the largest percent of every grouping except 22-23. In the 22-23 group drug manufacturing and distribution is over 50% of the group. This is the only group with drug manufacturing and distribution makes up the largest portion of offenders in the group. Finally, the group with the highest percent of property crimes is the 60 months or more grouping. These observations are important considerations when interpreting the results.

For each of the 90 models, we use the predicted recidivism rate for the first LOS group as a baseline to compare all subsequent groups. In most cases this is a group consisting of individuals with a LOS of 12 months or less. The figures below indicate the baseline LOS for each of the analyses. We then compare each subsequent group to the baseline to determine if there are any statistically different rates of recidivism across LOS. If significant differences are present, we

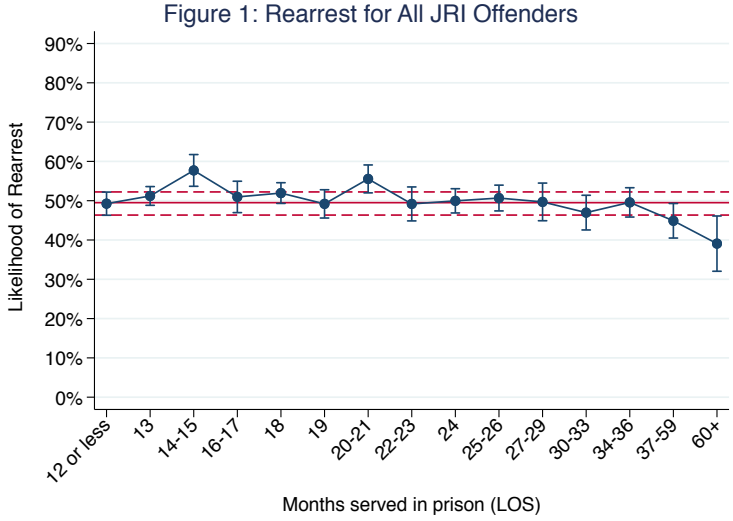
then assess if there are any trends in the results. That is, was there a trend up or a trend down in the recidivism rates. We begin our analysis with the all JRI offenses analysis.

All JRI Offenses Analysis

How to Understand the Graphs:

- The blue dots are the **average** recidivism for each of the LOS groups.
- The blue "T" shows the **primary range** for that LOS group.
- The solid red line is the **average** for the first LOS grouping (i.e. the baseline).
- The red dotted line shows the **primary range** for the first LOS grouping (i.e. the baseline) for easy reference.

Figure 1: Rearrest for All JRI Offenders



The analyses of the impact of LOS for all JRI offenses (Figures 1, 2, and 3) indicate that there is little change in any of the three measures of recidivism (rearrest, reconviction, and reincarceration) when comparing to those who serve 12 months or less to all other LOS groups. The overall likelihood to recidivate in the first three years after release generally hovers between a 40% and 60% chance of being rearrested, 20-25% chance of being reincarcerated, and a 40-50% chance of being reconvicted, regardless of the number of months served.

We begin our analysis with an assessment of recidivism for all JRI offenders. In following sections, we assess sub-crime analysis of driving, property, drug possession, and drug manufacturing and distribution offenders separately.

Rearrest.

There are *both higher and lower* LOS groups with significant differences in the likelihood of rearrest.[1] Figure 1 shows that the likelihood of rearrested after serving 12 months or less is about 50%. From this point there are three groups where there are meaningful changes in the likelihood to recidivate. There is an 8% statistically significant increase for those sentenced from 14-15 months. After leveling back out at 50% between 16-19 months, there is another 5% rise at 20-21 months (not statistically significant), only to flatten out again through 36 months. Finally, after 36 months in prison, the average likelihood decreases from the baseline by a statistically significant 11% at a LOS of 60 or more months.

[1] The likelihood to recidivate is very different from recidivism rates.

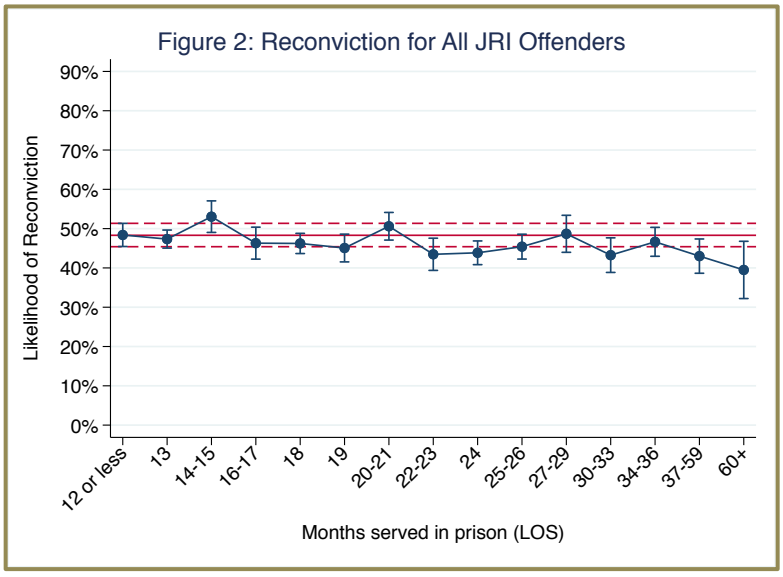
While there are some points of statistically different results, *in general the likelihood of rearrest stayed relatively flat.* While there are places of significant change, there is both increases and decreases. This suggests that there is no clear trend in the impact of LOS on all JRI offenses.

It is important to note that the results in this section represents rearrest for any offense regardless if it is a JRI offense or not. Appendix A presents results of rearrest for specific crime subtypes that included drug manufacturing and distribution, drug possession, driving offenses, property crime offenses, and violent crime offenses. In these rearrest subtypes, LOS continued to have a largely flat impact, indicating no real meaningful impact of LOS on the likelihood of rearrest for specific crime subtypes. In only the analysis of rearrest for drug possession was there a significant effect. In this one analysis, the 60 or more LOS group rearrest rate is significantly lower than the 12 month or less baseline, dropping to 16.4% from 24.6%. In all other cases, while there is some variation up or down across the groups, the differences are not significant.

In our analysis of how long people can remain in the community before they are rearrested indicates that LOS had minimal bearing on rearrest for all JRI offenders for any offense or crime-specific rearrest. This was assessed using a survival analysis with the results appearing in appendix B. Among the 11,980 cases, 28.9% were rearrested in the first 12 months, 44.1% in the first two years, and by the end of the third-year post-release, over half of the sample (51.2%) were rearrested. After controlling for other factors that might influence the likelihood to recidivate, prison LOS had no appreciable impact on individual's ability to stay in the community with one small exception with 14-15 months group being slightly more likely to recidivate than the 12 months or less group. Taken as a whole across all analyses of the impact of LOS on time in the community before recidivism, LOS is not a substantial influence.

Reconviction.

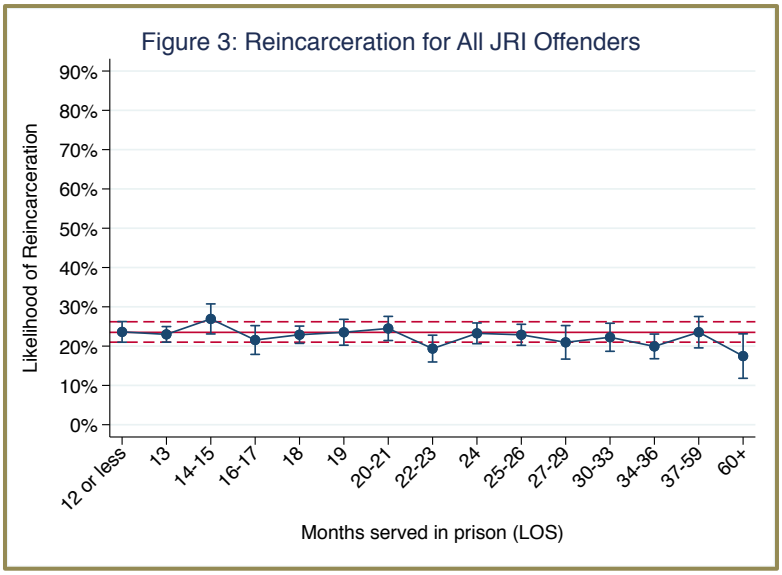
LOS is *not association* with the likelihood of being reconvicted upon release. Those people held for 12 months or less are 48.4% likely to be reconvicted for a new crime upon release. Similar to reincarceration and rearrest, there are a couple of places where there are some distinct changes, most noticeable in the 14-15-month group and the 34-36-month group, but these are not significant. The largest difference is between 14-15-months (51.2%) and 60 months or more (39.4%). The difference is about 9% for the 60 months or more group from the baseline. Additionally, there was an 8% reduction between 36 and 60-months, but again these are within the bounds of the baseline (red dotted lines in Figure 2) and not significant.



LOS has *no impact* on how long people can remain in the community before they are reconvicted. Reconviction was 22.8% in the first 12 months, 38.7% in the first two years, and by the end of the third-year post-release 47.6% were reconvicted, but these rates are consistent across the LOS groups.

Reincarceration.

LOS has *no effect* on the likelihood to be reincarcerated. The findings for reincarceration for all JRI offenders were similar to the findings for rearrest. On average, people serving 12 months or less in prison possess a 23.6% likelihood to be reincarcerated. From here, there is no meaningful change in this likelihood of reincarceration as it hovers between 18% and 26%.



The assessment of the influence of LOS on the month-to-month stay in the community before recidivism found ***no effect*** **on how long people can remain before they are reincarcerated.** The reincarceration rate is 8% in the first 12 months, 17.5% in 24 months, and 23.6% by the end of the third-year post-release.

How does LOS impact recidivism for different crime types?

Next, we look more closely at the impact of LOS for each of the four JRI crime categories: property, driving, drug manufacturing and distribution, and drug possession. These "offense types" are for the most serious and most recent offense for which they were sentenced to prison.

Property Crime Offenses[2]

- **There is *no general influence* of LOS on the likelihood to recidivate for *property offenders* across all recidivism types.**
- **There is *no effect* on how long property offenders can remain in the community before they recidivate.**

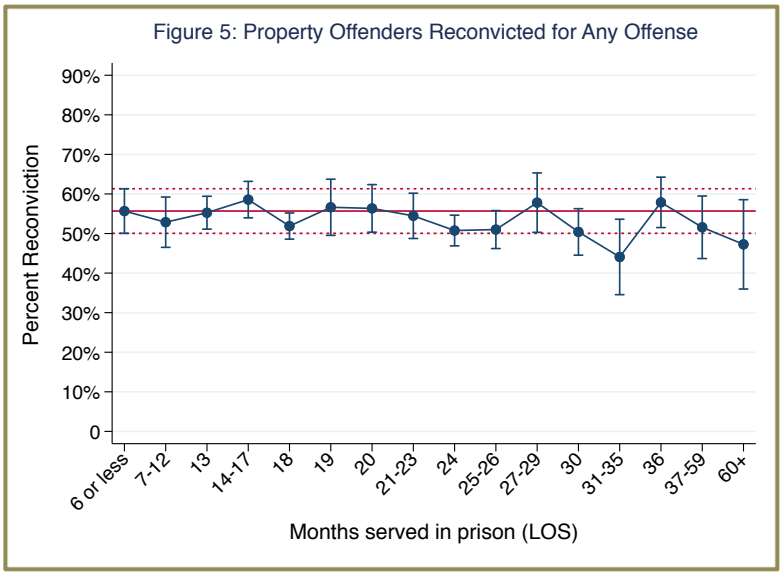
Rearrest.

LOS had no general influence on the likelihood of rearrest for property offenders. The likelihood of a convicted person to be rearrested after serving six months or less (baseline for this analysis) is about 57.7%. From this point there is one notable deviation from the norm and that is for those serving 31-35 months. During this time, the average likelihood of rearrest drops by 12% to 44.3% from 56.2% for the 25-26 months group, only to abruptly increases to 62.4% for the 35 months

[2] Those sentenced to prison for property crimes as their most serious offense consisted of 7,710 individuals (after trimming the data for common statistical support).

group. While neither of these changes are significantly different from serving six months or less, the 18.1% increase from 31-35 months and 36 months is statistically significant and represents a notable and abrupt deviation from the relatively flat trend present.

Like the analysis for any new offense, LOS had no effect on the arrests for subsequent violent crimes, driving crimes, drug possession, property crimes, or JRI specific offenses (see Appendix A). Conversely, there was some fluctuation in the likelihood to be rearrested for drug manufacturing and distribution. The baseline for rearrest was 7.3% for six months or less, while those spending 19 months in prison possessed only a 3.3% chance of being rearrested. This 4% difference is significantly lower and lower than any other LOS grouping. After 19 months, the likelihood of rearrest increases back to about 10% until 31-35 months, when it increases to 15.7%. In all, the likelihood of a property crime offender being rearrested for drug manufacturing fluctuated significantly. This is one of the small handful of the 90 total analyses that a significant trend is observed.



As with all remaining analysis, length of time in the community before someone recidivates is not associated with LOS for property offenders.

Reconviction.

Property offenders are neither associated with a change in the likelihood of being reconvicted upon release, nor any change time in the community before conviction. The only notable fluctuation in reconviction is for the 31-35 months served grouping who had a rate of 44.1%, which is 11% lower than the baseline. Though this difference is not significant.

Effect of LOS by most serious JRI conviction

Property Offenses

- *No effect* – on the likelihood to reoffend.
- *No Impact* – on how long released people are in the community without being reconvicted.

Driving Offenses

- *No effect* – on the likelihood to reoffend.
- *No Impact* – on how long released people are in the community without being reconvicted.

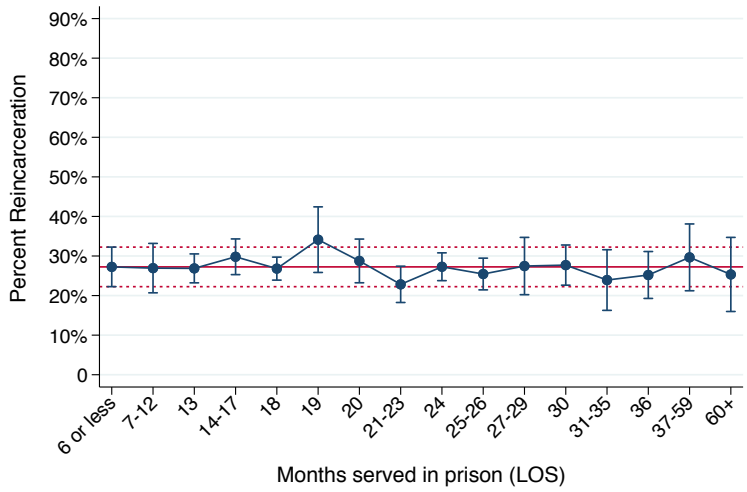
Drug Manufacturing / Dist

- *Marginal decrease* – long prison stays are associated with a decrease in the likelihood to reoffend for some LOS groups.
- *No Impact* – on how long released people are in the community without being reconvicted.

Drug Possession

- *No effect* – on the likelihood to reoffend.
- *No Impact* – on how long released people are in the community without being reconvicted.

Figure 6: Property Offenders Reincarcerated for Any Offense



Reincarceration.

Longer prison sentences have no effect on the likelihood of property offenders to be reincarcerated within three years of release. The findings for reincarceration are similar to the rearrest findings. On average, people serving six months or less in prison possess a likelihood to be reincarcerated of 27.3%. From here, every additional month of incarceration beyond adds little to no additional increase or decrease in the likelihood of reincarceration. The likelihood fluctuates between 22.8% and 34.1%. Like the results for rearrest, the length of time served also had no impact on how long property offenders can remain in the community before they are reincarcerated.

Driving Offenses[3]

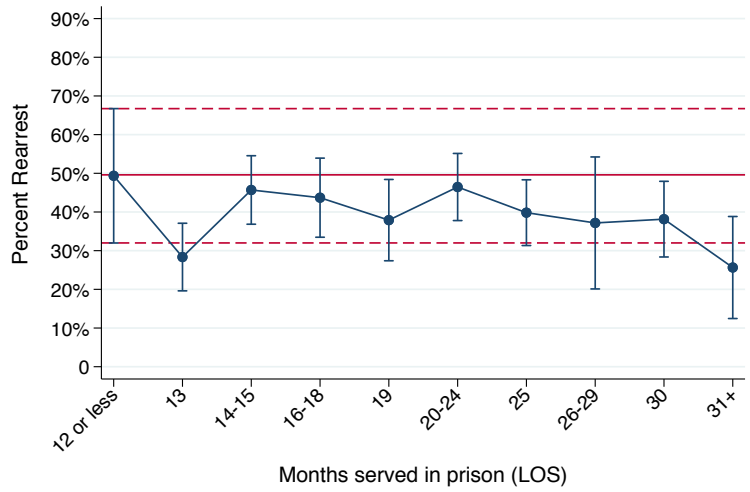
- **For driving offenders, the duration of time served in prison has *no general influence* on the likelihood to recidivate.**
- **Longer prison sentences have *no effect* on how long driving offenders remain in the community before recidivating.**

[3]Driving Offenses consisted of 867 individuals. LOS groups for driving offenders is broken into 10 groups, ranging from 12 months or less to 31 months or more. The groups reflect the clustering of offenders with a relatively even proportion across each grouping

Rearrest.

Results indicate that the 12 or less group's rate of recidivism is 49.4%. There is considerable variation in this analysis with our projected band of recidivism being rather large and ranging between 32% and 67% for the baseline. While those serving 13 months had a distinctly lower 28.4% likelihood of rearrest, due to the high level of variability in rearrest within the groups this large difference for diving offenses was not significant. No effects were detected for specific rearrest types presented in Appendix A.

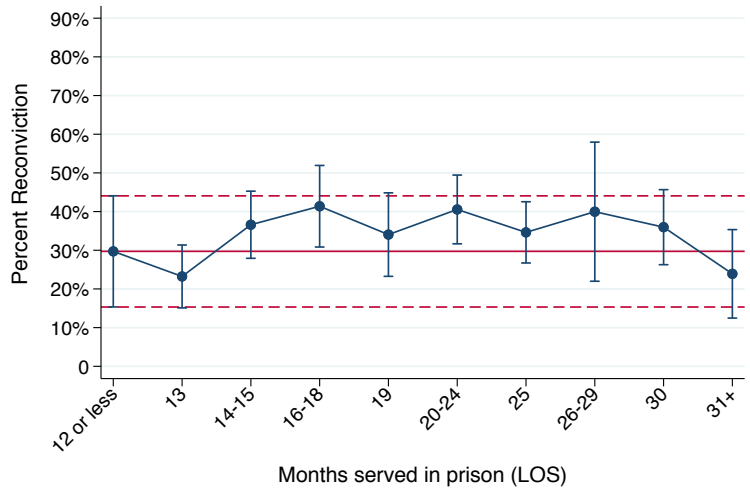
Figure 7: Driving Offenders Rearrested for Any Offense



Reconviction.

The analyses reveal that holding all else constant, longer prison sentences have no effect on the likelihood of driving offenders being reconvicted in the first three years after release. Comparing between LOS categories, however, the results suggest that there is a sizable increase between 13 months and 16-18 months served. While those who serve 13 months in prison have approximately a 23% chance of being reconvicted, this likelihood increases to 36.6% for 14-15 months and then rises to a high of 41.4% for 16-18 months. While these changes were not significant due to high levels of variation, they represent relatively large changes.

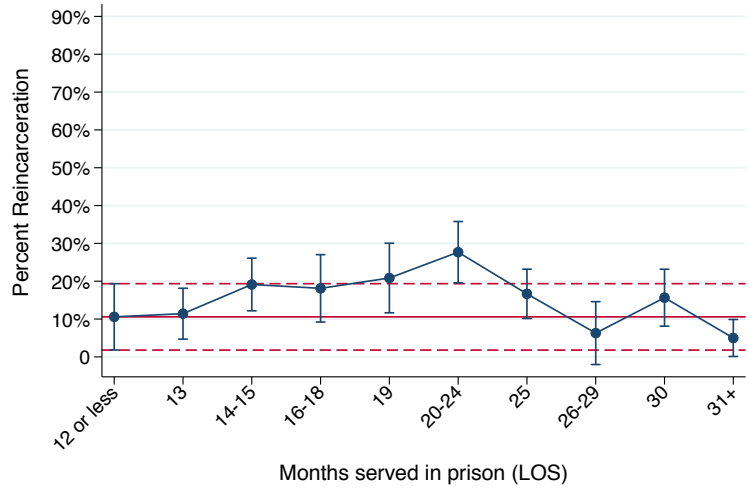
Figure 8: Driving Offenders Reconvicted for Any Offense



Reincarceration.

Our findings reveal that LOS for driving offenses increases significantly between the 12 months and less group and the 20-24 group. The baseline likelihood of reincarceration for driving

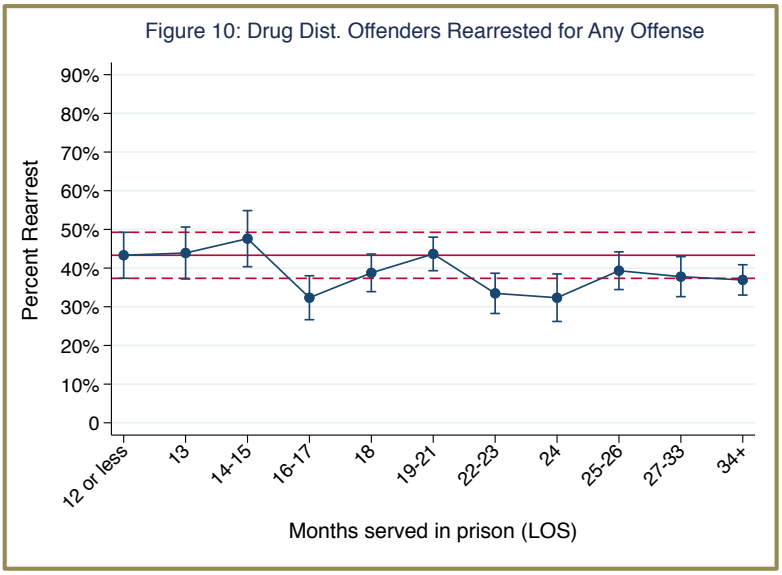
Figure 9: Driving Offenders Reincarcerated for Any Offense



offenders at 12 months or less is 10.6%. There is a steady rise in the likelihood of reincarceration that increases gradually over time with a final significant increase to 27.7% at 20-24 months. After two years in prison, the likelihood decreases back to around 10%. This in one of the few analyses with a clear trend. In this case it first trends up and then trends back down.

Drug Manufacturing and Distribution Offenses[4]

- **For drug manufacturing and distribution, the duration of time served in prison is associated with a *small decrease* in the likelihood of reconviction, but not arrest (including any subtype) or reincarceration.**
- **Longer prison sentences have *no effect* on how long drug manufacturing and distribution offenders remain in the community before recidivating.**

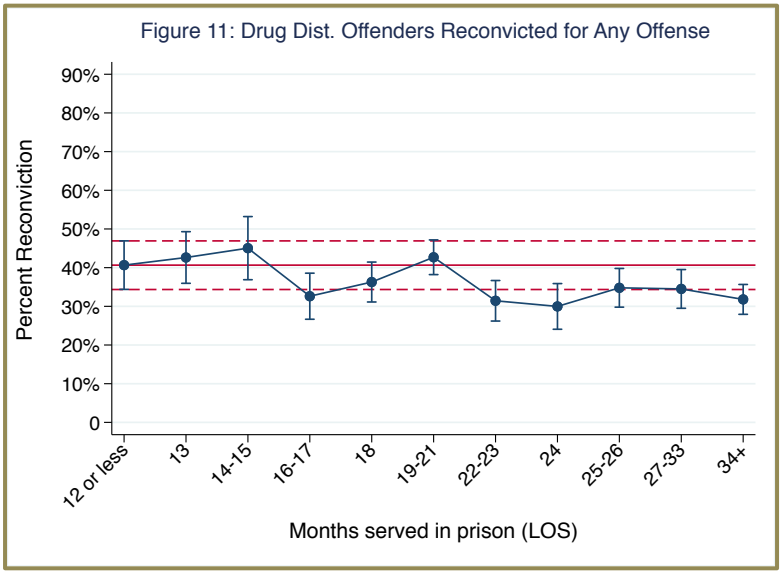


Rearrest.

Among the 3,036 individuals who were sentenced to prison for drug manufacturing and distribution offense, the average rearrested rate within three years was 39.1%. Results indicated that longer prison sentences were associated with a *small downward trend* in the likelihood of rearrest, though this effect was not significant. This small trend occurs between 14-15 months and 34 or more months. The likelihood of rearrest for any offense among drug manufacturing and distribution offenders at 12 months or less is 43.3%. This likelihood increases slightly to 47.6% at 14-15 months served, then drops to an average of 32.3% at 16-17 months where it hovers between 44% (19-21 months) and 32% (24 months) over the rest of the LOS groups. While no subsequent group is significantly different than the baseline, the small decrease between 14-15 months and 34 or more months groups is significant, though considerable fluctuation in the intervening groups.

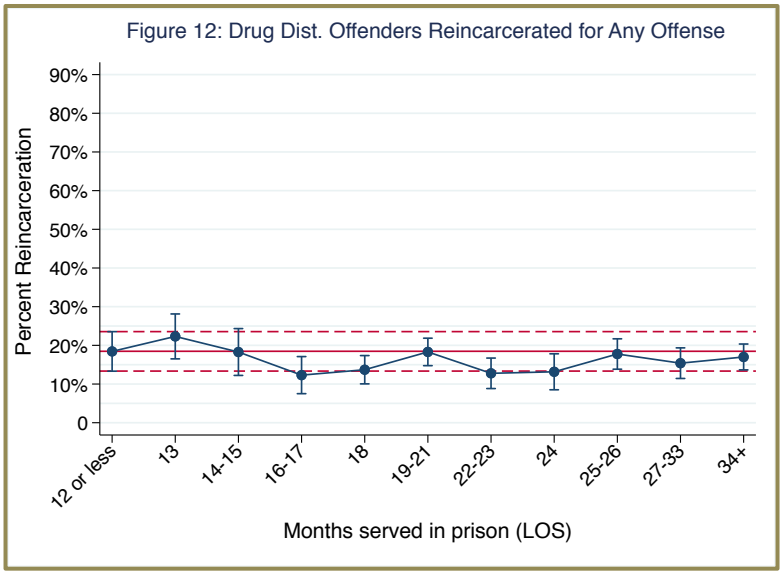
While there is no significant effect across arrest types presented in Appendix A, there were two exceptions worth noting. First, the likelihood of drug manufacturing and distribution offenders committing another drug manufacturing and distribution related crime is rather minimal, averaging only 14%. The chance increases to 21% at 19-21 months but returns to the 14% thereafter. Second, and in contrast, the average likelihood of being rearrested for any JRI offense is approximately 36% for most LOS prior to 22 months. At two years served, this likelihood decreases to 25.5% before returning to around 30% and above thereafter.

[4] Those sentenced to prison for drug manufacturing and distribution related crimes as their most serious offense consisted of 3,036 individuals (after trimming the data for common statistical support). LOS for drug manufacturing and distribution offenders is broken into 11 groups, ranging from 12 months or less to 34 months or more. The groups reflect the clustering of individuals with relatively even proportion across the groups.



Reconviction.

By the end of the first three years after release, 42.6% of drug manufacturing and distribution offenders were reconvicted. Results indicated that the chance of reconviction had a small downward trend beginning in the 14-15 LOS grouping that was quite similar to the results for rearrest. While those who serve 14-15 months possessed the highest likelihood of reconvicted at 45%, the likelihood fluctuated, but generally trended downward to near 30% at 22-24 months served. From there the chance of reconviction remained relatively flat. This downward trend was not significant and did not significantly deviate from the baseline. Additionally, there was no impact on a time someone was in the community before being reconvicted.



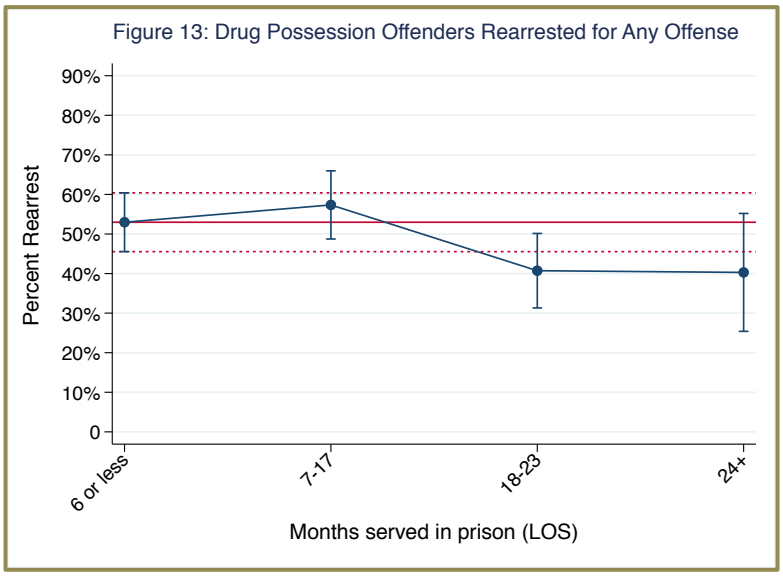
Reincarceration.

Our findings reveal that longer prison sentences have no effect on whether drug manufacturing and distribution offenders are reincarcerated. The likelihood of reincarceration at 12 months or less is 18.4%, and over the remaining LOS groups the likelihood hovers between 22.3% (13 months) and 12.3% (16-17 months), with no significant differences from 12 months or less baseline.

Drug Possession Offenses[5]

- **For offenders sentenced for possession, the duration of time served in prison has *no effect* on the likelihood to recidivate, generally.**
- **Longer prison sentences have *no effect* on how long drug possession offenders remain in the community before recidivating.**

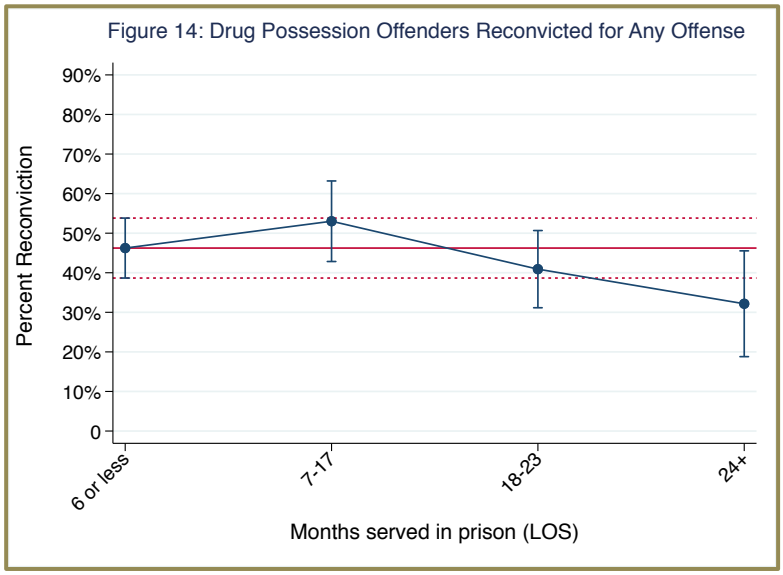
[5] Those sentenced to prison for drug possession as their most serious JRI offense consisted of 377 individuals (after trimming the data for common statistical support). Possession offenders is broken into four groups due to the limited range in LOS, ranging from six months or less to 24 months or more. Again, categories reflect the clustering of people under certain LOS and disperses a relatively even proportion across each category.



Rearrest.

Among the 377 individuals who were sentenced to prison for possession, 57.9% were rearrested within three years. The results indicated that LOS had no effect on overall likelihood or time in the community before rearrest. The baseline likelihood of rearrest for six months or less is 53%. It increases slightly to 57.3% at 7-17 months served, then drops to an average of 40% for sentences of 18 months or more. Both the rise and drop of likelihood is not significantly different from those serving six months or less, but the 17.3% drop between 7-17 and 18-23 months is rather large.

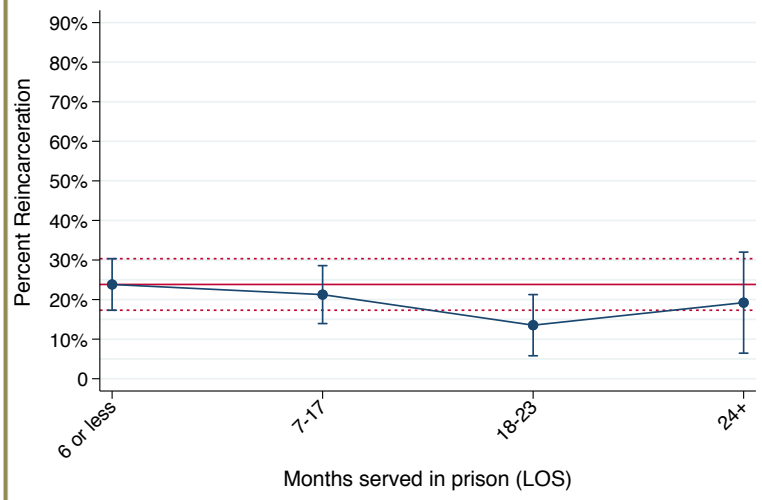
While there is no significant effect of LOS detected across the rearrest subtypes (see Appendix A), there were a few fluctuations worth noting. Lengths of stay of 7-17 months yielded an increase in the likelihood (26.6% chance) for rearrest on a property crime compared to those serving six months or less (15.7%). Similarly, serving 7-17 months increased the likelihood of rearrest for a new possession charge, from 25.6% (serving six months or less) to 38.4%. In contrast, those serving 24 months or more appears to decrease the likelihood of a possession rearrest by 11.5% and rearrest for any JRI crime by 16.5%, compared to six months or less. In all, analysis of rearrest indicates that there are rather mixed findings with both increases and decreases across LOS, but none of these are significant and no clear trends appear.



Reconviction.

By the end of the first three years after release, 54%% of possession offenders were reconvicted, though LOS has no significant impact on the general likelihood of reconviction. LOS also has no impact on how long someone can stay in the community before being reconvicted. The chance of reconviction does at first increases and then it trends down from a high of 53% (7-17 months) to a low 32% (24 months or more). While none of these are significantly different from serving six months or less or from each other, the 21% reduction is large. The non-significant results are likely the result of the fact that there is a lot of variation within the LOS groups (wide "Ts").

Figure 15: Drug Possession Offenders Reincarcerated for Any Offense



Reincarceration.

The rate of reincarceration is 25.5% within the first three years of release. Our findings reveal that longer prison sentences for those serving time for possession have no effect on the likelihood of reincarceration within three years. The average likelihood of reincarceration for those serving six months or less is 23.8%, and over the time served, the likelihood does not fluctuate significantly, remaining near 20%.

What is the sentence length that maximizes public safety and cost-effectiveness?

Balancing public safety, behavior change, and cost must consider…

- Prison stays longer than 12 months do not generally influence the likelihood of recidivism.
- At *best*, longer stays can *slightly* reduce the likelihood of some types of recidivism in select cases.
- Rarely, if ever, is there a benefit to imprisoning an offender for more than 24 months.
- 24 months appears to be a general point of diminishing returns for LOS.
- Cost effectiveness beyond 24 months is yet to be determined, although it is unlikely to achieve better outcomes than using probation or post-prison supervision focusing on effective reintegration programs.

Our analyses provide insight into areas where the state may focus sentencing practices to (1) maximize public safety, (2) maximize the impact of the punishment to change offender behavior, and (3) minimize the cost to state taxpayers.

Each of our analyses examines the impact of LOS in relation to the shortest LOS observed. In other words, the impact of LOS on recidivism is gauged by how the likelihood fluctuates compared to imprisonment in most cases of a year or less (some analyses used even shorter stays as the baseline). If the results show no differences from the shortest LOS, it suggests that the likelihood of recidivism would not change if the person were sentenced to longer stays. LOS groups that are significantly higher or lower can be compared between time-served intervals (e.g., 14-17 months compared to 18 months) to help identify points of good practice in sentencing. In some cases, we see some significant results between groups other than from the baseline, but these cases are the exception to the rule as LOS generally did not significantly vary enough over time to generate differences large enough to make statistical conclusions.

Ultimately, **regardless of the focus (overall analysis or breakdown by JRI crime type), on average, prison stays longer than 12 months do not influence the likelihood of recidivism across almost all measures of recidivism.** At best, LOS can *marginally* reduce the likelihood of some types of recidivism, typically a small reduction that is limited in length after a specific LOS for small number of crime types. The critical points to highlight for state officials are where the likelihood of recidivism deviates from the baseline (shortest stay) enough to warrant a recommendation. This section discusses the notable deviations worthy of consideration and are highlighted below:

- Points of shifting recidivism appear to occur within shorter stays than in longer stays. The commonly observed increases included 14-15 months, 24-25 months, and 35-36 months as opposed to changing occurring between 36 to 60 months.

- Shifts in the likelihood to recidivate tend to range between 8% and 15%, and often follow a slight to moderate decrease back close to original recidivism rates.

- Most fluctuations up or down are not significant, suggesting that they are not fluctuations we should put heavy consideration into.

- Although the fluctuations were typically rather small and not statistically significant, the overall size of the effect is important to consider. For instance, property offenders who served 31-35 months in prison possessed the lowest likelihood to recidivate at 44.3%. However, this is immediately followed by an increase to 62.4% for 36 months. Although, 62.4% is not statistically higher, the fact that the likelihood increased by 18% makes this a noteworthy point, particularly if the goal is to maintain public safety. In this case, the increase suggests a longer stay is detrimental. With more data, the model would be more powerful resulting in a likely decrease in the variation, and possibly a better estimate of the likelihood of recidivism. Thus, a more power model could and quite likely make this 18% difference significant.

- There were three LOS groups in which the likelihood to recidivate commonly *decreased* the most in our analyses. These are at 16-17 months, 22-23 months, and at 36 months. It is worth repeating that these decreases were most often small and not significant and not consistently present from analysis to analysis.

- Decreases in the likelihood to recidivate typically held one of two trends. It either followed a "spike effect" where the rate change sharply in a LOS group, but then returned to a percentage close to the baseline. The second observed outcome were "trend effects", where recidivism trended either up or down for a few groups to then flatten. For instance, in the overall analysis, the likelihood to be rearrested for any offense increased from approximately 50% (12 months or less) to 58% (14-15 months), only to drop again to 50% between 16-19 months. This pattern was repeated near the 22-23-month point. After remaining centered on the 12 month or less average for several months, nearing the 37-month point the likelihood begins to dip again below the average and trended down slightly for the remainder of the LOS groups. This represents one of the few models were both a "spike effect" and "trend effect" is present.

- Recidivism among driving offenses tends to reduce after 24 months. These drops were not significant, but for both rearrest and reincarceration the drop was rather large in both cases, at 22% and 18% respectively. The non-significant change was likely the result of large variation in the chance of recidivism within the LOS groups. Again, a more powerful model with more data would likely indicate significant results.

- Recidivism among drug possession also trended down for rearrest and reconviction, at 17% and 21% respectively, but not reincarceration. In both cases the trend is not significant. This was the crime group with the least number of individuals, and this may have contributed to the non-significant results.

Some Limitations of the Analysis

With all studies there are limitations and caveats that are important to recognize and consider. Below we outline a few of the most important limitations. While these limitations certainly place the analysis within a specific context and place some constraints on how impactful the conclusions can be, we believe the results are sound and have substantial policy impacts regardless of these limitations.

- One of the most important limitation is that the analysis focuses on individuals released from prison having been convicted of *only* (i.e. highest offenses is a JRI offense) JRI offenses. These are predominately non-violent and non-sex crimes. The findings in the report should not be generalized to offenders convicted of a non-JRI offense.

- The analysis *only* assesses individuals who had served time in an ODOC facility. We are not able to assess recidivism for JRI offenders who are diverted from ODOC altogether. For example, JRI programs like MCJRP in Multnomah County aims to divert individuals from custody altogether. These individuals would then not be part of our sample.

- Our analysis was limited to recidivism with a 3-year follow-up. Recidivism rates are likely to be different if the results were extended beyond three years.

- While the propensity score system allows us to simulate an RCT when we would otherwise be unable to conduct a true RCT, it is not a perfect analogy. We utilize data over an extended period. Important changes in programing and laws may impact individual recidivism. While are models are matching individuals at a high rate between 75% to 85% across the different models, there is some level of imperfection that creates a small amount of uncertainty in the models. It is our opinion that this uncertainty is well within the acceptable levels common in social science research and does not undermine the analysis.

Implications of the Analysis

Considerations from Overall Findings.

Findings from our analysis show that the length of time in prison for JRI offenses, accounting for several other influences, has little to no effect on the likelihood to recidivate across most models. Specifically, in 84 of the 90 models we could find no significantly discernable impact. These

findings are consistent with that found in the literature on sentencing and the effectiveness of prison to control crime (Austin & Fabelo, 2004; Loughran et al., 2009; Meade et al., 2013; Rydberg & Clark, 2016; Stenius, 2005; Zimring & Hawkins, 1997). Below we will discuss some impacts and considerations of our findings on public policy. While considering these policies, it is impotent to view all recommendations within the following two considerations.

- First, being sentenced to prison impacts some people more than others, both positively and negatively. Due to the fact that these analyses incorporate everyone in the data (e.g., overall) or only focuses on the most recent and serious offense for which the person was sentenced (i.e., property versus drug offenders), it is difficult to say for whom it changes behavior more, without further analyses.

- Second, all increased deviations are points of caution for which prison can increase the likelihood for someone to reoffend. Similarly, any points of decreased likelihood are a sign of possible promise in reducing recidivism. These patterns of deviation often returned to the average indicating a lack of a true identifiable trend in most cases. Any change to the current LOS should be further analyzed to test if the changes do indeed have little impact on public safety as theorized in this report.

For the state to balance public safety, offender reintegration, and cost within the Justice Reinvestment Initiative, policymakers should consider six points supported by our results.

1) Rarely, if ever, is there benefit to imprisoning an JRI offenders for more than 24 months.

2) The returns on LOS increasingly diminish after two years (24 months).

3) Although there is some decrease in the likelihood to reoffend for longer LOS, especially among driving and possession offenders, there is no evidence to suggest this is a better outcome than would be achieved using probation or post-prison supervision, especially considering the cost of incarceration.

4) The current sentencing system is producing largely flat recidivism. This does suggest that Oregon's LOS for JRI offenses is not increasing recidivism or producing negative outcomes and thus appreciably reducing public safety.

5) On the other hand, the system is largely not reducing recidivism or the time in the community before additional contact with the system. In this case, Oregon's system is not producing positive reductions for longer LOS.

6) Overall the analysis suggests that shortening length of stay either through shorter initial sentences or some form of early release would not likely result in higher recidivism.

Policy Implications.

The PSU team was tasked with assessing the impacts of LOS on recidivism with the analysis that would help *maximizes public safety and cost-effectiveness,* which are core tenants of JRI. With that in mind, we have included a few policy recommendations that the research team sees as evident from the results.

- It appears that a reduction in time-served, either through shorter sentences, earned time, early release, or other means would not appreciably increase recidivism and would likely benefit the State of Oregon, particularly financially, while maintaining public safety at close to current levels.

- While most JRI programs focus on diverting individuals from prison altogether or by providing some transitional services, the results indicate that shorter prison stays would likely maximize public safety while still reducing costs if it is coupled with targeted, evidence-based expansion in JRI programs.

- Cost savings from the reduction in the use of prisons could be substantial and the state should look to redirect those savings into community corrections. Community corrections efforts should focus on the Principles of Effective Intervention, which states that individuals with the highest risk to recidivate are supplied with the greatest degree of evidence-based services (e.g., cognitive behavioral treatment) and supervision (e.g., random drug tests when applicable, and frequent check-ins).

- Research consistently shows that the reentry process is fraught with barriers. Offender services (e.g., job/vocational training, childcare, continued programming targeting criminogenic attitudes, drug relapse prevention, and mentorship, to name a few) should be available for those who opt-in (e.g., the transition center in Clackamas County), and for those who are mandated.

- Redirect resources and cost savings to reduce the crime rates in general, beyond just reducing recidivism. This is foundational point of justice reinvestment across the nation. A focus on reinvesting savings from reduced incarceration into protective or preventive factors in the community, such as strengthening public education, increasing the number (and pay) of low-skilled jobs available, and/or addressing the causes and consequences of homelessness, drug addiction, severe mental health problems, and dual diagnoses could reduce the need for prisons.

Recommended Future Research.

- The analysis reveals that more than 50% offenders will be rearrested within three years of release. Extending the analysis beyond three years indicates that recidivism increases even more with substantial points of drop-off. We recommend looking into longer assessments of recidivism.

- An analysis that also includes those diverted to prison and assessment of the impact of post-release services or other resources that decrease contact with the justice system would maximize the ability to identify the best possible evidence-based practices.

- We further recommend that this analysis be extended to identify a series of offender typologies connected to differential recidivism within similar LOS. It is likely length of stay varies across different types of offenders. Effectively and consistently identifying the types can help JRI programs create targeted solutions that can maximize public safety.

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