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# Evaluation of the Impact of Risk and Needs- Based Sentencing in Connecticut

*Final Report to the Connecticut Sentencing  
Commission*

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## **Executive Summary**

This research report summarizes the results of a preliminary investigation into the potential impact of implementing a risk and needs-based sentencing approach in the state of Connecticut. The Connecticut Sentencing Commission (CSC), in collaboration with the Connecticut Judicial Branch Court Support Services Division (CSSD) and the Department of Correction (DOC), provided data on all criminal offenders convicted in the state of Connecticut in Fiscal Years 2008-2010. This sample was followed for five years after their placement on probation or release from prison. For the subset of offenders with valid risk assessments (conducted at intake, reassessment, or discharge), relationships among risk scores, sentencing outcomes, and re-offending patterns were investigated.

Actuarial risk assessments are designed to apply uniform, objective criteria to evaluate criminogenic needs and risk of recidivism. They are part of evidence-based sentencing reforms aimed at providing judges with additional tools to inform their sentencing decisions. Although risk assessments are not as widely used at sentencing as at other points in the justice system, they have been increasingly applied to judicial evaluations of public safety and re-offending risk and used to identify promising candidates for alternatives to incarceration (Casey et al. 2014; Monahan & Skeem, 2014).

In Connecticut, offenders are administered an assessment tool known as the Level of Service Inventory – Revised (LSI-R). The LSI-R is a 54 item risk/needs assessment that identifies problem areas across ten domains of an offender’s life and provides an overall score reflecting their risk of recidivism. It is the most widely used risk assessment tool and has been shown to be valid and reliable across various correctional populations (Andrews & Bonta, 2000; Casey et al. 2014). The current study investigates the validity of the LSI-R in a sample of convicted offenders in Connecticut and assesses its relationship to current sentencing and recidivism outcomes in the state. Below we preview the key findings from this study.

### ***Key Sentencing Findings***

The first set of analyses examines the relationship between risk assessments and sentencing outcomes to assess correspondence between current sentencing practices and a risk and needs-based sentencing approach. The main findings from these analyses are as follows:

- Risk assessment scores are strongly and positively related to the judicial use of incarceration. Offenders with higher risk scores are more likely to be incarcerated, even after accounting for other relevant sentencing factors. This suggests judges consider factors related to recidivism risk when making incarceration decisions. However, risk scores are only weakly related to sentence lengths.

- Most domain-specific risks are positively related to sentence severity, with the possible exception of the Emotional/Personal and Alcohol/Drug domains. This may indicate that these domains are viewed as indicators of criminogenic needs rather than risk.
- Even though risk assessment scores are predictive of sentencing outcomes, some low-risk offenders still receive incarceration and some high-risk offenders still receive community punishments or probation. This reflects the fact that the LSI-R does not include many relevant sentencing considerations. For example, variables like current offense severity, offense type, supervision status, and application of mandatory minimums all have strong impacts on sentencing but are not captured by the LSI-R. Many offenders also receive shorter/longer sentences than their risk category dictates.

### ***Key Recidivism Findings***

Subsequent analyses in the report focus on factors related to recidivism. Recidivism is measured as a re-arrest or probation revocation that occurs within the 5 year follow-up period. We separately consider arrests for felony or violent crimes. The following summarizes main conclusions from these analyses.

- Overall, more severe sentences are associated with lower re-arrest rates. The predicted probability of re-arrest is about 6% lower for incarcerated offenders compared to probationers. Longer incarceration terms are also associated with slightly lower recidivism rates. Notably, these findings are contrary to existing research from other jurisdictions. When felony or violent re-arrests are examined, the same pattern of findings emerges. Similar results also characterize time to re-offending. The greatest risk of recidivism for all offenders is in the first year of release, with probationers being re-arrested slightly more quickly than incarcerated offenders.
- Risk assessment scores are strong predictors of re-arrest and revocation. Each additional point on the risk instrument increases the odds of re-arrest by 5% and the odds of revocation by 4%. However, the tool is not a perfect predictor of recidivism. Many defendants labeled high-risk do not reoffend, and many defendants labeled low-risk do. A similar relationship exists for felony or violent re-offending. Higher risk offenders also recidivate more quickly. The risk domains most strongly associated with recidivism outcomes are Criminal History and Education/Employment. Other factors that increase risk of re-offending include the current offense (offense type and severity), number of prior convictions, and offender age, gender, and race/ethnicity.
- When risk groups and sentencing outcomes are examined together, relationships between sentencing and recidivism remain consistent across risk categories. Incarceration sentences are associated with lower recidivism rates across all risk categories. The group with the least favorable recidivism outcomes involves the highest risk defendants who receive the most lenient sentences. Similarly, across sentencing categories, LSI-R risk scores consistently predict re-arrest and revocation outcomes.

## ***Key Policy Recommendations***

The primary goal of this report is to provide a better understanding of the potential impact of evidence-based sentencing on sentencing decisions and relevant post-sentencing outcomes in Connecticut. As such, it concludes by offering valuable policy insights as the CSC considers implementing an evidence-based sentencing system. These insights are summarized here:

- Minimal racial, ethnic, and gender differences in overall LSI-R scores suggest that adopting a risk and needs-based sentencing system would not lead directly to large demographic disparities in sentencing in Connecticut. However, differences are apparent among certain risk-specific domains, and composite scores are closely tied to defendant socioeconomic status. The CSC should therefore carefully monitor disparities in risk scores, sentencing, and recidivism if it does decide to provide LSI-R scores to judges.
- The findings suggest that LSI-R scores are a useful indicator of defendants' risk of recidivism, as higher-risk defendants are significantly more likely to recidivate. However, the tool is not a perfect predictor, and it is not designed to specifically predict serious or violent re-offending. The tool does not consider other relevant sentencing goals, such as offender culpability, deservedness of punishment, retribution, or amenability to specific treatment programs. If the CSC decides to provide LSI-R assessments to sentencing judges, assessment scores should be used as only one piece of relevant information to be considered alongside other relevant sentencing factors. Because judges may view some domains more as indicators of need than risk, the CSC may want to consider how the LSI-R can be used to identify appropriate rehabilitative interventions as well.
- Results indicate that current sentencing practices in Connecticut are largely consistent with a risk and needs-based sentencing approach for incarceration decisions but not sentence length decisions. The implementation of a risk assessment tool may therefore have greater impact on sentence lengths than sentence types in the state. If the CSC implements risk and needs-based sentencing, it will need to periodically evaluate the impact of changes on sentencing patterns and correctional populations.

# I. Introduction and Project Overview

## *Review of the Current Study*

In October 2015, the Connecticut Sentencing Commission (CSC) issued a request for proposals to conduct an empirical study of the impact of risk and needs-based sentencing. The goal of the proposed study was to better understand the potential impact of evidence-based sentencing on sentencing decisions and relevant post-sentencing outcomes in Connecticut. Specifically, the CSC wanted to assess the impact of providing judges with risk and needs information from the Level of Service Inventory – Revised (LSI-R), the most commonly used actuarial risk assessment tool. In November 2018 a Preliminary Data Report was issued evaluating the feasibility of the study. The current report updates that work and offers an assessment of the degree to which current sentencing practices are consistent with a risk and needs-based approach, and the degree to which the LSI-R predicts post-release recidivism in Connecticut.

## *Summary of Findings from the 2018 Data Report*

In November 2018, a Preliminary Data Report was issued detailing the ability to link the appropriate data to investigate evidence-based sentencing in Connecticut. The major conclusions from that report were as follows:

- The requisite data are available to conduct analyses of relationships among LSI-R risk assessments, sentencing outcomes, and post-release recidivism outcomes. Information on criminal case history, defendant demographics, criminal statutes, LSI-R risk assessments, and probation and correctional outcomes can be successfully linked across datasets.
- Cases with valid risk assessment information represent a nonrandom subsample of all offenders sentenced in FY 2008-2010. They differ from the full sample of convicted cases in important ways. The subsample involves offenders who committed relatively less serious offenses, had slightly shorter criminal histories, and were more likely to be white and female. Cases included in the analytic sample are less likely to involve incarceration and have shorter average sentence lengths compared to the full sample of all convicted cases.
- Sample differences reflect the fact that risk assessments are typically conducted as part of a presentence investigation, or at intake, reassessment, or discharge, and are more likely to be completed for probation than incarceration cases. A small number of cases are also omitted from the analytic sample because they involved long prison terms that preclude adequate post-release follow-up periods.
- The current data allow for a preliminary assessment of the impact of evidence-based sentencing practices in Connecticut, but findings should be interpreted cautiously because they only apply to the subsample of less serious offenders who have been administered valid risk assessments.



## ***Goals of the Final Report***

The primary aim of this report is to provide information on relationships among risk and needs assessments, sentencing outcomes, and post-release offending behaviors. This information can be used to help inform whether current sentencing practices in Connecticut are consistent with a risk and needs-based model of sentencing, and how the implementation of a risk-needs assessment tool might impact current sentencing patterns.

The Connecticut Sentencing Commission identified the following goals to be addressed in this report:

- To examine differences between current sentences and sentences based on risk/needs assessments, and to consider how they vary across offense levels.
- To investigate the relationship between risk/needs assessments and post-release offending outcomes, including re-arrests and probation revocations.
- To compare rates of probation revocations and new offenses across risk/need scores to determine if they are related to offending patterns for different types of offenses.

This report provides information related to these research objectives. It presents the results of statistical analyses from sentencing data for all defendants who had valid risk assessments, adequate follow-up time, and sentences that occurred during Fiscal Years 2008-2010. It investigates the relationship between risk assessment scores, domain-specific risks, and sentencing outcomes. It identifies risk factors for defendants that deviate from expected sentencing patterns. In addition, it analyzes the relationship between risk assessment scores and post-release outcomes, including re-arrests and probation revocations across offense seriousness categories. Finally, the report identifies other factors related to increased risk of post-release revocation and re-arrest.

The report begins with an overview of evidence-based sentencing. It briefly reviews the procedures used to create the analytic sample of cases and then reports descriptive information on risk assessments and sentencing before assessing punishment outcomes. It next turns to an analysis of post-release data, examining the association between risk/needs assessments and reoffending patterns. The report concludes with preliminary policy recommendations for implementing a risk-needs based approach to sentencing in Connecticut.

## ***Review of Evidence-Based Sentencing***

Evidence-based sentencing relies on risk-needs assessments to help inform sentencing decisions. Actuarial assessment can be defined as the application of “an objective, mechanistic, reproducible combination of predictive factors” applied to quantifiable outcomes (Heilbrun, 2009: 133). Risk assessments in the criminal justice system have been widely used to identify low-risk offenders, good candidates for specific programming, and individuals who are at high risk of future offending (Cullen & Gendreau, 2000). These assessments typically contain a variety of risk, protective, and needs factors, both static and dynamic, that have been shown to influence risk of future recidivism. Risk assessment tools have been primarily applied to criminal justice decisions that fall outside the purview of sentencing decisions (e.g. parole decisions), though select states like Virginia, Pennsylvania, Utah, Kansas, and Missouri have begun to integrate risk assessments into their sentencing systems (Monahan and Skeem, 2014). In Virginia, actuarial risk assessment has been used to divert 25% of the lowest risk incarceration bound offenders to non-custodial alternatives. In both Utah and Kansas judges are currently provided with LSI-R risk assessment scores as part of their pre-sentence investigation reports.

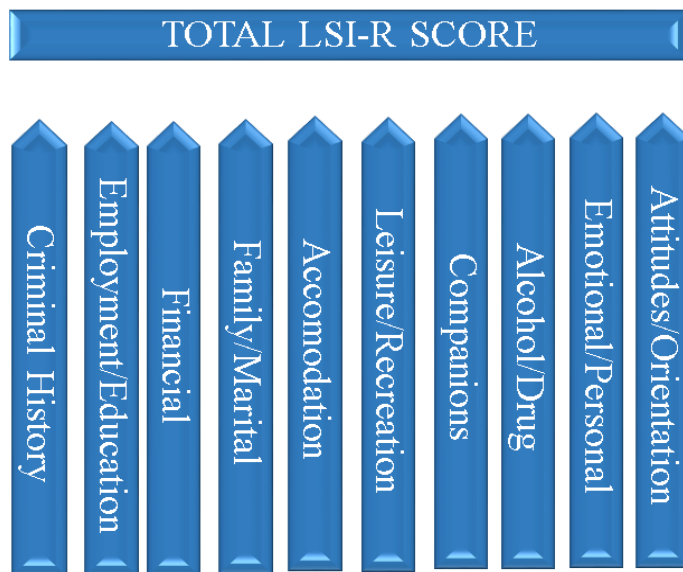
Criminal sentencing involves a broad range of punishment goals that include retribution, deterrence, incapacitation, community protection and offender rehabilitation and restoration (Frase 2005). The primary aim of evidence-based sentencing is to assist judges in delivering the most appropriate sentences to the most suitable offenders as they weigh these various goals (Monahan & Skeem, 2015). Risk assessments can be useful for effectively identifying, a) offenders who are good candidates for non-custodial sentences without sacrificing public safety, and b) offenders who are the highest risk of reoffending (Hyatt, Chanenson, & Bergstrom, 2011). Needs assessments can also be useful for identifying offenders who are well-suited to rehabilitative programming. This is important because the effective use of incarceration, community punishments and alternative sanctions helps to maximize public resources and ensure greater proportionality and equity in the justice system. The use of risk assessments may also appeal to citizens because it fosters transparency, emphasizes objectivity, and can be scientifically validated prior to implementation (Van Nostrand & Lowenkamp, 2013). On the other hand, some critics express concerns about risk assessments, such as their potential to exacerbate social inequalities and contribute to patterns of “statistical discrimination” in sentencing (Cooke & Michie, 2010; Monahan & Skeem, 2014; Starr, 2014).

Much of the available evidence suggests that risk assessments can provide a valuable tool for improving decision-making in the criminal justice system (Andrews, Bonta, & Wormith, 2006; Latessa & Lovins, 2010; Skeem & Monahan, 2011). However, few evaluations of risk and needs assessments have focused on sentencing (Starr, 2014). Identifying high or low risk offenders can be valuable if it helps to better inform sentencing decisions, reduce future offending and improve community safety. However, sentencing decisions include multiple purposes, only some of which are related to recidivism reduction, so applying risk assessments to sentencing decisions is more complex than for correctional supervision. It is therefore important to assess the extent to which risk and needs assessments might assist judges in properly identifying high and low risk offenders. It is also important to consider the unintended consequences of risk-based sentencing, such as its potential to contribute to unwarranted disparities in sentencing.

## ***The Level of Service Inventory – Revised (LSI-R)***

The LSI-R is a standardized actuarial instrument containing 54 items that produce a summary score designed to assess offender risk and needs (Andrews & Bonta, 1995). The LSI-R includes both static factors that cannot be altered, like criminal history and past mental health treatment, and dynamic factors that can, such as drug and alcohol use, antisocial attitudes and negative peer associations. Composite scores can be used to identify risk categories, though different agencies utilize different cutoff values for such categories. In general, higher risk scores reflect an increased propensity to commit future offenses. The LSI-R is typically scored by collecting data from offender self-reports during a structured interview along with other relevant information, such as official court records.

Figure 1.1: LSI-R Domains



The LSI-R is comprised of 10 risk-specific domains: Criminal History, Education/Employment, Financial, Family Relationships, Accommodation, Leisure/Recreation, Companions, Alcohol and Drug Use, Emotional/Personal, and Attitudes/Orientations. The full LSI-R instrument and the specific questions it asks are provided in Appendix A.

Research on risk assessment suggests that types and dosages of rehabilitative programming, and levels of supervision and services, can be usefully informed by an offender’s risk level (Andrews, Bonta, & Hoge, 1990; Lipsey & Wilson, 1998; Lowenkamp, Latessa, & Holsinger, 2006). Offenders who demonstrate a higher risk should receive more supervision and services than lower-risk offenders. Numerous studies provide support for the validity of the LSI-R (Andrews and Bonta, 1995; Gendreau, Little & Goggin, 1996; Gendreau, Goggin & Smith, 2002), though it is important to validate the tool in any new sample to which it is applied. As part of a broader evidence-based approach to effective risk management, several jurisdictions now provide risk assessment data to the court, and preliminary reports suggest that risk and needs assessments can be used effectively to inform public safety considerations at sentencing (Elek, Warren, & Casey, 2015).

## ***Review of Data and Data Linking Procedures***

To study the potential impact of using risk assessments in sentencing, the current analysis relies on data that include information on charging, conviction, and sentencing outcomes in the state of Connecticut. These data include each charge issued against any person convicted of at least one offense during FY 2008-2010. The final data are comprised of information from 11 separate datasets provided to the researchers by the Court Support Services Division (CSSD) and Department of Corrections (DOC). The datasets were generated by CSSD with all personally identifying information removed. They include detailed information on criminal case history, defendant demographics, criminal statutes, LSI-R risk assessments and post-release offending outcomes, including probation revocations and re-arrests.

A total of 106,057 criminal cases were sentenced in the state of Connecticut during FY 2008-2010. This represents the population of criminal convictions. All cases were matched to criminal history records, offender demographic variables, and criminal statute information before merging in information on LSI-R risk assessments. As noted in the 2018 Data Report, approximately 65% of cases (68,602) were matched to a risk assessment within one year of case disposition. The one-year period is consistent with Connecticut's risk assessment expiration policy. If multiple risk assessments were administered, the one closest to the sentencing date was retained.

The subset of matched cases included relatively less serious offenses that were less likely to result in incarceration and more likely to involve a white or female defendant.

Offenders were followed for five years after their probation or release date. For the 46,084 offenders sentenced to probation, their follow-up periods began on the first day of their probation. For the 18,955 offenders sentenced to incarceration, their follow-up periods began on the date they were released from jail or prison. A total of 2,506 cases were excluded because they did not have a prison release date or had an insufficient follow-up period in which to evaluate recidivism. Recidivism analyses are based on revocation and arrest data from the Probation Violation Data and Criminal Case History Data. A revocation is defined as any event officially recorded as a revocation. A new arrest is defined as any event referred to the CSSD for new arrest charges, regardless of whether or not the charges resulted in a conviction.

The final analytic sample includes 66,096 cases convicted during FY 2008-2010 in which a valid LSI-R risk assessment was administered within one year of sentencing and at least five years of post-release follow-up data are available. Additional details on the sample are provided in the 2018 Data Report.

## Details of the Analytic Sample

We begin by providing descriptive information on sentencing outcomes, defendant and case characteristics, and LSI-R risk scores for the final analytic sample. As detailed in the 2018 Data Report, 62% of the original sample of all cases (66,096 out of 106,057 sentenced offenders) had valid risk scores and adequate follow-up data. We summarize key characteristics of this analytic sample below, and provide full descriptive statistics for variables in the analytic sample in Table B1 of Appendix B.

### Sentencing Outcomes

About 30% of offenders in the analytic sample were sentenced to incarceration and 70% were sentenced to non-incarceration, with 54% receiving probation (see Figure 1.2). Among those sentenced to incarceration, roughly 20% received a split sentence that included both probation and incarceration, with 10% receiving only an incarceration sentence. The average length of incarceration was 11.82 months, though sentence lengths ranged from a few days to more than 25 years. Very few sentences exceeded 6 years, so sentence lengths are truncated in Figure 1.3.

Figure 1.2: Sentence Types

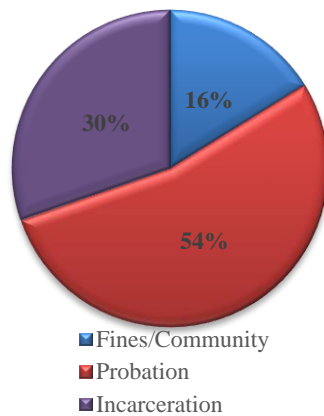


Figure 1.3: Distribution of Sentence Lengths

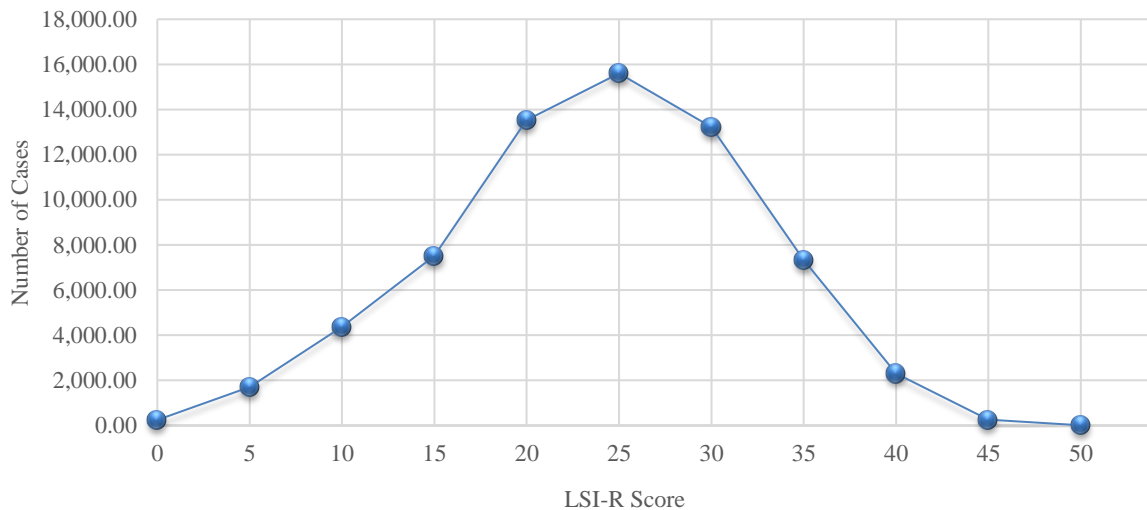


Of the 66,096 sentenced offenders in the sample, 50% were white, 29% black, 20% Hispanic and less than 1% Asian. Eighty-two percent were male, and the average age was 31.9 years old. Public order crimes accounted for 32% of all cases, followed by drug offenses (30%) and property crimes (22%). Violent offenses represented 12% of cases, and sex or weapons offenses accounted for small percentages. The largest proportion of cases involved Class A misdemeanors (34%), followed by Class B (16%) and Class C (10%) misdemeanors. Among felony offenses, the largest proportion of crimes involved Class D felonies (14%), followed by Class C felonies (5%). On average, offenders had 3.5 prior adult convictions, though this ranged from 0 to more than 100 priors. The average number of current conviction charges was 1.72, and 14% of offenders were charged with violating conditions of probation as part of their current offense.

## LSI-R Risk Assessments

Figure 1.4 shows the distribution of scores on the Level of Service Inventory- Revised (LSI-R), the 54-item risk assessment instrument used in Connecticut. Each item in the LSI-R is ultimately scored “yes” or “no” for the presence of a risk factor, and each “yes” adds a point to the overall composite score, with higher scores indicating greater risk for future crime and antisocial behavior. The specific items included in each domain are summarized in Appendix A.

Figure 1.4: Number of Cases by LSI-R Risk Score



LSI-R scores follow a normally distributed bell-shaped curve, with relatively few offenders having very low or very high risk scores. The mean LSI-R score across all offenders was 26, though risk scores ranged from 0 to 51. Table 1.1 reports LSI-R scores by race and ethnicity. White offenders were slightly below average, with a mean risk score of 25.58, while black and Hispanic offenders were slightly above average at 26.64 and 26.22 points respectively. Asian offenders had the lowest risk scores, about 5 points below other groups. There were minimal differences in average risk scores for male and female offenders. Overall, average risk scores are similar across demographic groups, suggesting their use at sentencing would not have dramatic effects on racial or gender disparity, though these descriptive results are far from definitive.

Table 1.1: Composite LSI-R Risk Scores in the Analytic Sample

LSI-R Composite Scores	Mean	SD	Min	Max
All offenders	26.00	8.16	0	51
White offenders	25.58	8.32	0	50
Black offenders	26.64	7.94	1	51
Hispanic offenders	26.22	7.98	1	50
Asian offenders	20.58	7.97	1	41
Male offenders	25.98	8.16	0	51
Female offenders	26.10	8.14	1	49

Table 1.2: LSI-R Domain Scores by Race, Ethnicity and Gender

	White	Black	Hispanic	Asian	Male	Female
LSI-R Composite Score	25.58	26.64	26.22	20.58	25.98	26.10
Criminal History	4.44	5.15	4.68	3.23	4.85	4.00
Education/Employment	4.97	5.91	6.10	4.29	5.48	5.40
Financial	1.18	1.26	1.27	.90	1.17	1.46
Family/Marital	2.02	2.00	2.00	1.47	1.96	2.32
Accommodation	.81	1.16	1.31	.72	.96	1.02
Leisure/Recreation	1.54	1.64	1.67	1.57	1.61	1.54
Companions	2.58	2.94	2.79	2.33	2.74	2.65
Alcohol/Drug	4.70	3.70	3.79	3.36	4.28	4.12
Emotional/Personal	2.00	1.30	1.49	1.41	1.54	2.38
Attitudes/Orientations	1.28	1.53	1.30	1.30	1.39	1.20
N (Sample Size)	33,272	19,468	13,086	270	54,345	11,751

Table 1.2 above reports differences in domain-specific risks across demographic groups. It suggests that, although composite risk scores are similar, important variation exists in risk-need domains. Dark blue numbers represent the highest average risk scores in each domain by race and gender. White defendants score highest on Family/Marital, Drugs/Alcohol and Emotional/Personal domains. Black defendants score highest on Criminal History, Companions, and Attitudes/Orientations. Hispanic defendants score highest on the remaining risk domains. Similar variation characterizes gender. For example, male offenders tend to have higher Criminal History risk scores, whereas female offenders have higher Emotional/Personal risk scores.

To consider differences in risk across socioeconomic groups, Tables 1.3 and 1.4 present domain-specific risk scores by educational attainment and employment status. Both are explicitly incorporated into the LSI-R (see Appendix A) and are positively related to overall risk scores.

Table 1.3 shows that lower educational attainment is not only associated with higher risk scores in the Education/Employment domain, but in other domains as well. Less educated defendants score higher in seven of the ten risk domains. The Emotional/Personal category is the only one where post-graduate education is associated with higher risk scores. Overall, defendants who have less than a 10<sup>th</sup> grade education have average risk scores of 28.8 compared to 17.2 for defendants with a post-graduate education.

Table 1.3: LSI-R Domain Scores by Educational Attainment

	Educational Attainment				
	<10 <sup>th</sup> Grade	10 <sup>th</sup> -11 <sup>th</sup> Grade	High School Diploma	At Least Some College	Post-Graduate Education
LSI-R Composite Score	28.79	27.67	24.53	22.49	17.21
Criminal History	4.84	5.07	4.50	4.11	2.73
Education/Employment	7.28	6.23	4.50	3.85	2.35
Financial	1.32	1.26	1.20	1.10	.75
Family/Marital	2.19	2.15	1.95	1.75	1.41
Accommodation	1.19	1.05	.90	.73	.53
Leisure/Recreation	1.71	1.64	1.59	1.40	1.10
Companions	2.95	2.93	2.62	2.26	1.53
Alcohol/Drug	4.17	4.27	4.28	4.25	3.61
Emotional/Personal	1.71	1.64	1.65	1.82	2.17
Attitudes/Orientations	1.43	1.41	1.33	1.21	1.03
N (Sample Size)	10,283	24,856	19,980	10,581	394

A similar relationship is observed for employment (see Table 1.4 below). Defendants who have part-time or full-time employment receive fewer points on the LSI-R, but employment status is also associated with lower risk scores across all other risk domains. The largest differences emerge for Criminal History and Alcohol/Drugs. Overall, unemployed defendants have a mean risk score of 28.9, compared to 19.9 for full-time employed defendants. These patterns imply that socioeconomic status plays an important role in the calculation of LSI-R risk scores. Educational attainment, employment status, and financial situation are directly scored as risk factors, but defendant socioeconomic status is also associated indirectly with other risk domains.



Table 1.4: LSI-R Domain Scores by Employment Status

	Employment Status		
	Unemployed	Part-Time Employed/Student	Full-Time Employed/Student
LSI-R Composite Score	28.94	25.38	19.88
Criminal History	5.17	4.03	3.92
Education/Employment	6.57	6.51	2.71
Financial	1.45	1.10	.77
Family/Marital	2.16	1.98	1.75
Accommodation	1.14	.86	.66
Leisure/Recreation	1.69	1.59	1.39
Companions	2.90	2.62	2.38
Alcohol/Drug	4.56	3.86	3.71
Emotional/Personal	1.85	1.54	1.40
Attitudes/Orientations	1.44	1.30	1.20
N (Sample Size)	40,563	6,709	18,822

Recidivism Outcomes

Table 1.5 presents descriptive information on recidivism outcomes for offenders with valid risk assessments and adequate follow-up data. About 70% of offenders were rearrested within five years of release, and an average of 14.4 months elapsed before a new arrest occurred. Only 20% of probationers had their probation revoked within five years, with an average time to revocation of roughly 18 months. About 29% of offenders were re-arrested for a felony offense or for a crime of violence. Figures 1.5-1.8 visually summarize these relationships.

Table 1.5: Recidivism Outcomes in the Analytic Sample

Recidivism Outcomes	Mean	SD	Min	Max
New Arrest Within 5 Years	.70	.46	0	1
Months to New Arrest	14.42	14.31	.03	60
Any Probation Violation Occurred	.46	.50	0	1
Probation Revocation Within 5 Years	.20	.40	0	1
Months to Probation Revocation	18.58	14.74	.03	60
Felony or Violent Re-arrest	.29	.46	0	1
Months to Felony or Violent Re-arrest	13.88	14.00	.03	60

Figure 1.5: Percent Re-Arrested

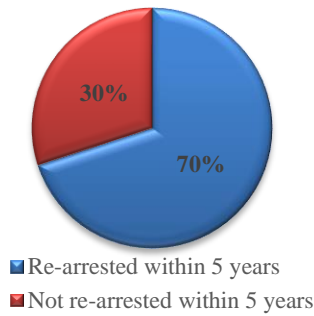


Figure 1.6: Time to Re-arrest

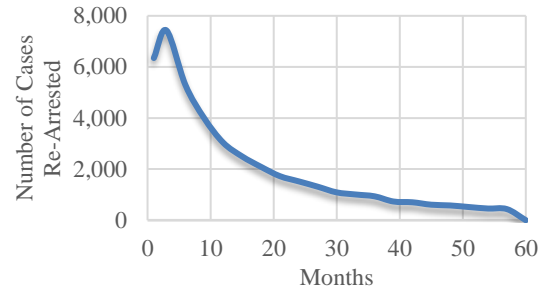


Figure 1.7: Percent Probation Revoked

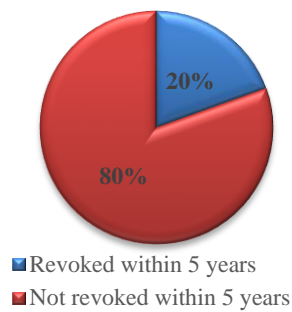
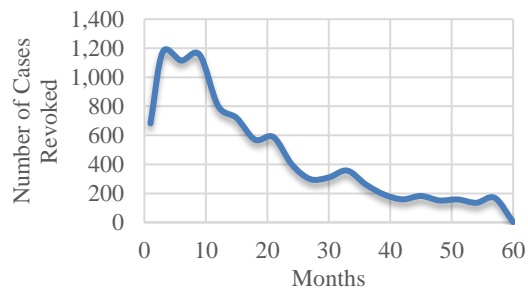


Figure 1.8: Time to Probation Revocation



As shown below, the majority of re-arrests are for non-felony and non-violent offenses. About 28% of re-arrests are felonies and 9% are for violent crimes. Only 5% are violent felonies. For all offenses, the largest numbers of re-arrests and revocations occur in the first year after release and then decline notably thereafter.

Figure 1.9: Type of Re-Arrest

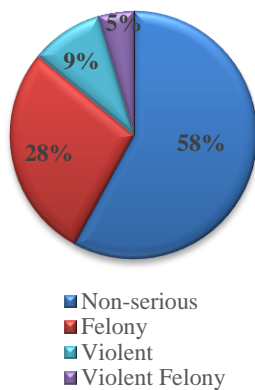
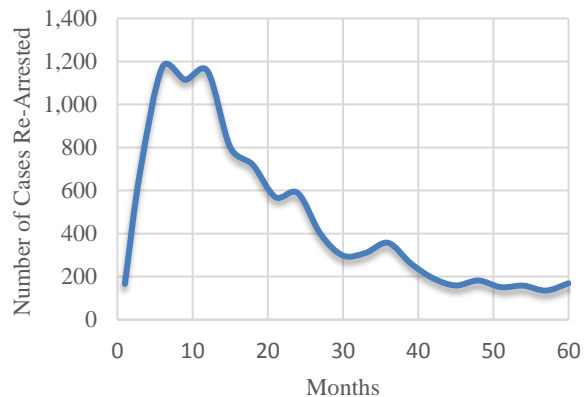


Figure 1.10: Time to Felony/Violent Re-Arrest



Full comparative statistics are provided in Table B2 in Appendix B. Overall, defendants who are re-arrested have very similar characteristics as the general analytic sample. Arrested defendants are slightly less likely to have been incarcerated, slightly more likely to be young, black and male, slightly more likely to have been convicted of public-order offenses, and slightly less likely to have been convicted of drug crimes, but these differences are substantively small. In general, there are few defining characteristics captured in the data that distinguish re-arrested defendants from defendants who are not re-arrested.

## II. Risk Assessments and Sentencing

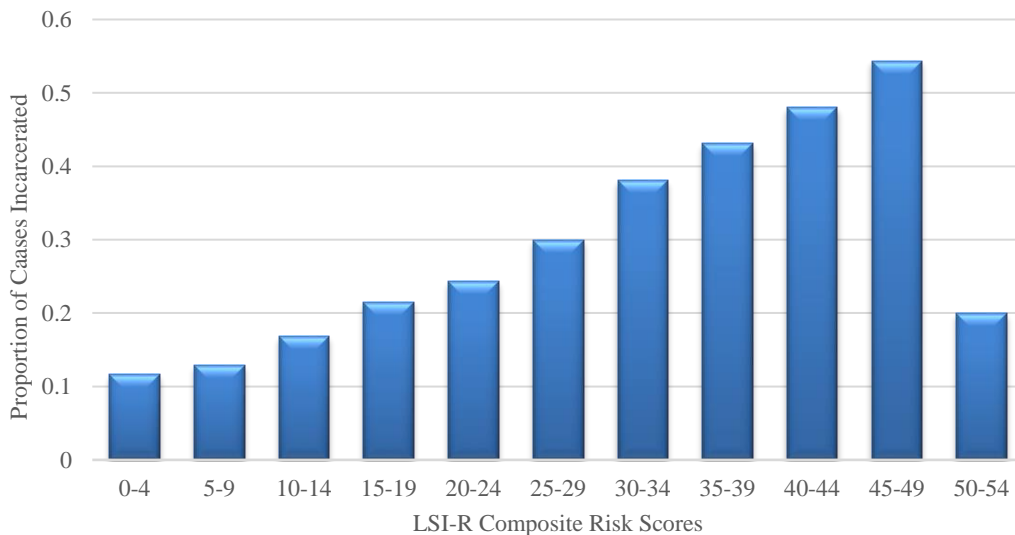
The CSC inquired about whether or not current sentencing practices in the state of Connecticut were consistent with a risk and needs-based approach to sentencing. To investigate this issue, LSI-R risk assessment scores are compared to current sentencing patterns.

### *Composite Risk Scores and Sentencing*

#### Sentence Type

Figure 2.1 summarizes the association between composite risk scores and the probability of an incarceration sentence. There is a monotonic increase in the use of incarceration across LSI-R risk scores. The lone exception is for offenders with scores over 50, but this category includes only ten cases from five repeat low-level offenders. Overall, Figure 2.1 provides evidence that judges are sentencing in ways that are consistent with a risk-based approach to sentencing.

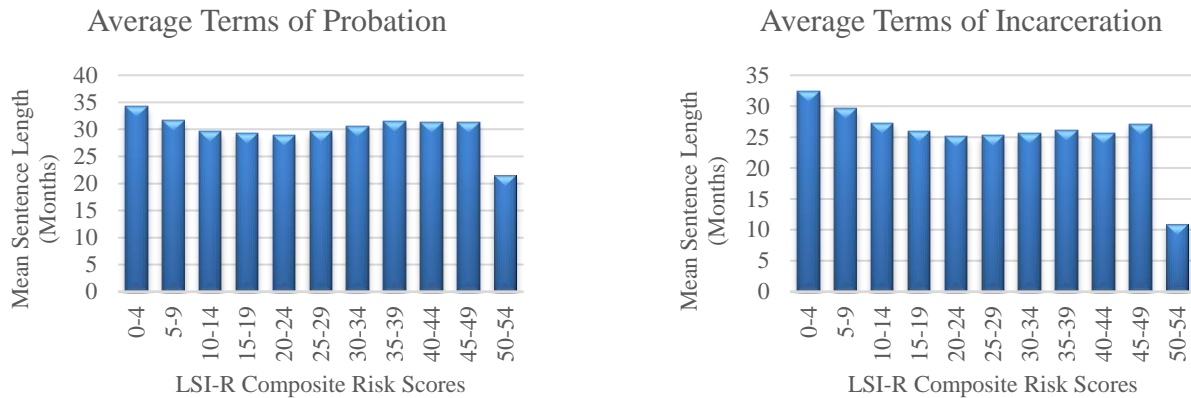
Figure 2.1: LSI-R Scores and Probability of Incarceration



#### Sentence Length

As shown below, there is less evidence for a relationship between LSI-R risk scores and average sentence lengths. Figure 2.2 shows that once the incarceration decision is made, risk scores have little impact on average terms of probation or incarceration. Again, the final bars for risk scores of 50 or greater are based on very few observations and should not be overemphasized. These figures exclude split sentences (probation and incarceration combined), but a similar pattern emerges for both outcomes when split sentences are included.

Figure 2.2: LSI-R Scores and Average Length of Probation or Incarceration



## ***Domain-Specific Risks and Sentencing***

### Sentence Type

On the following page, Figure 2.3 summarizes the relationship between risk and incarceration decisions across the various risk domains in the LSI-R. The number of bars in each graph represent the number of items that comprise each risk domain.

Most domain-specific risk scores are positively related to the probability of incarceration. Criminal History scores exert a strong positive impact on incarceration sentences, as does Employment/Education, particularly for defendants with the highest risk scores. Positive but smaller increases in incarceration are associated with the Financial and Family/Marriage domains, and with Accommodation, Leisure/Recreation, Companion, and Attitude/Orientation domains. A different pattern emerges for the Drug/Alcohol and Emotional/Personal risk domains. The odds of incarceration dip slightly for defendants with moderate drug and alcohol problems, and it decreases notably for defendants who score very high on Emotional/Personal problems. It is possible that judges view these risk domains as indicators of criminogenic needs.

### Sentence Length

Similarly, Figure 2.4 on the following page reports the relationship between domain-specific risks and average lengths of incarceration for offenders who receive incarceration sentences. As with the results for the overall summary LSI-R scores, individual associations between domain-specific risks and mean sentence lengths are not consistently correlated. There is some evidence that defendants with high risk scores in Employment/Education, Family/Marital, Companions, and Attitude/ Orientation domains receive longer average sentences, but several of the risk domains, including Criminal History, Financial, Accommodation, Alcohol/Drugs, and Emotional/Personal demonstrate no clear relationship. These figures are restricted to incarceration-only sentences, though similar patterns emerge if split sentences are included.

Figure 2.3: Probability of Incarceration across Domain-Specific Risk Scores

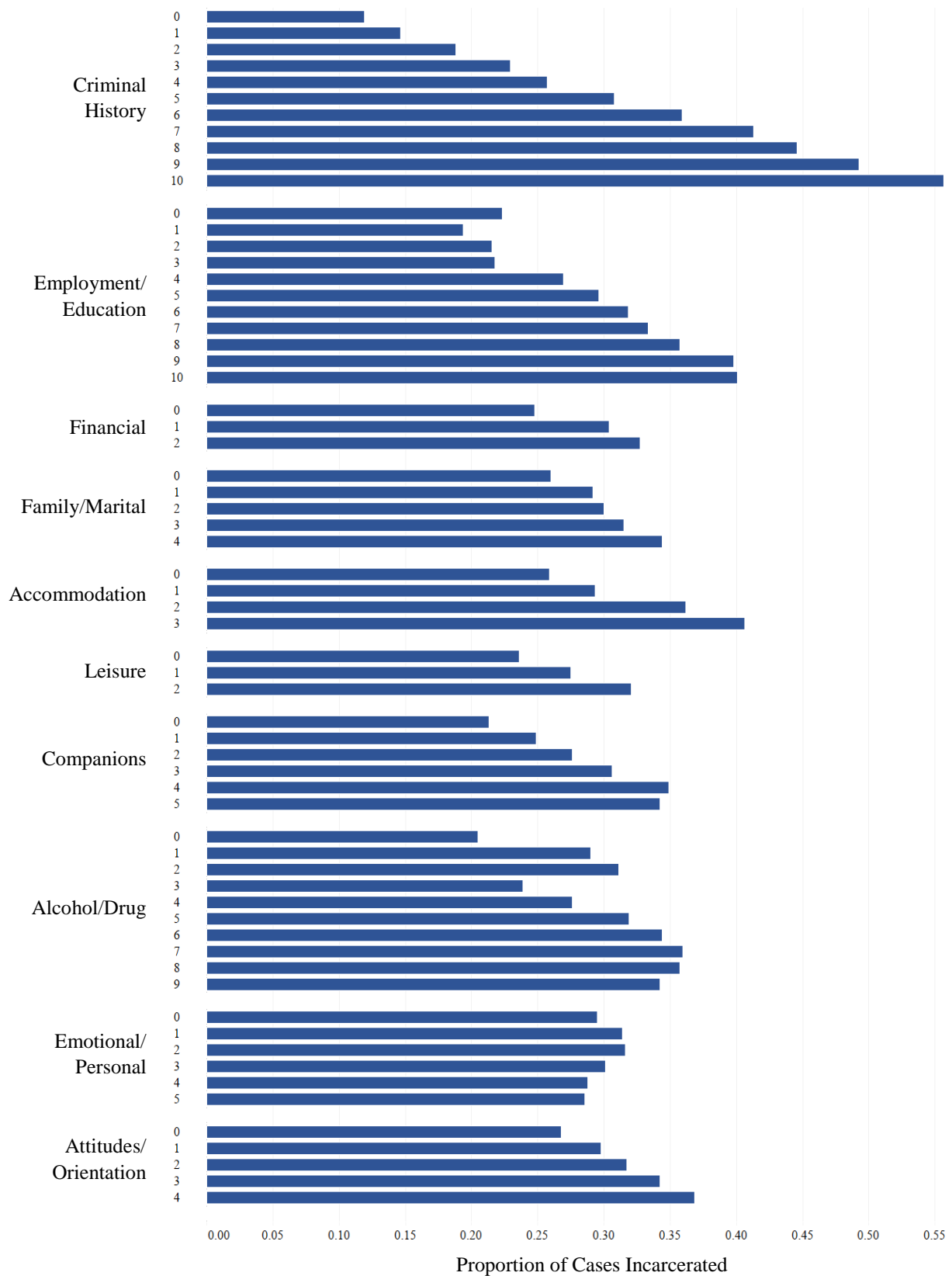
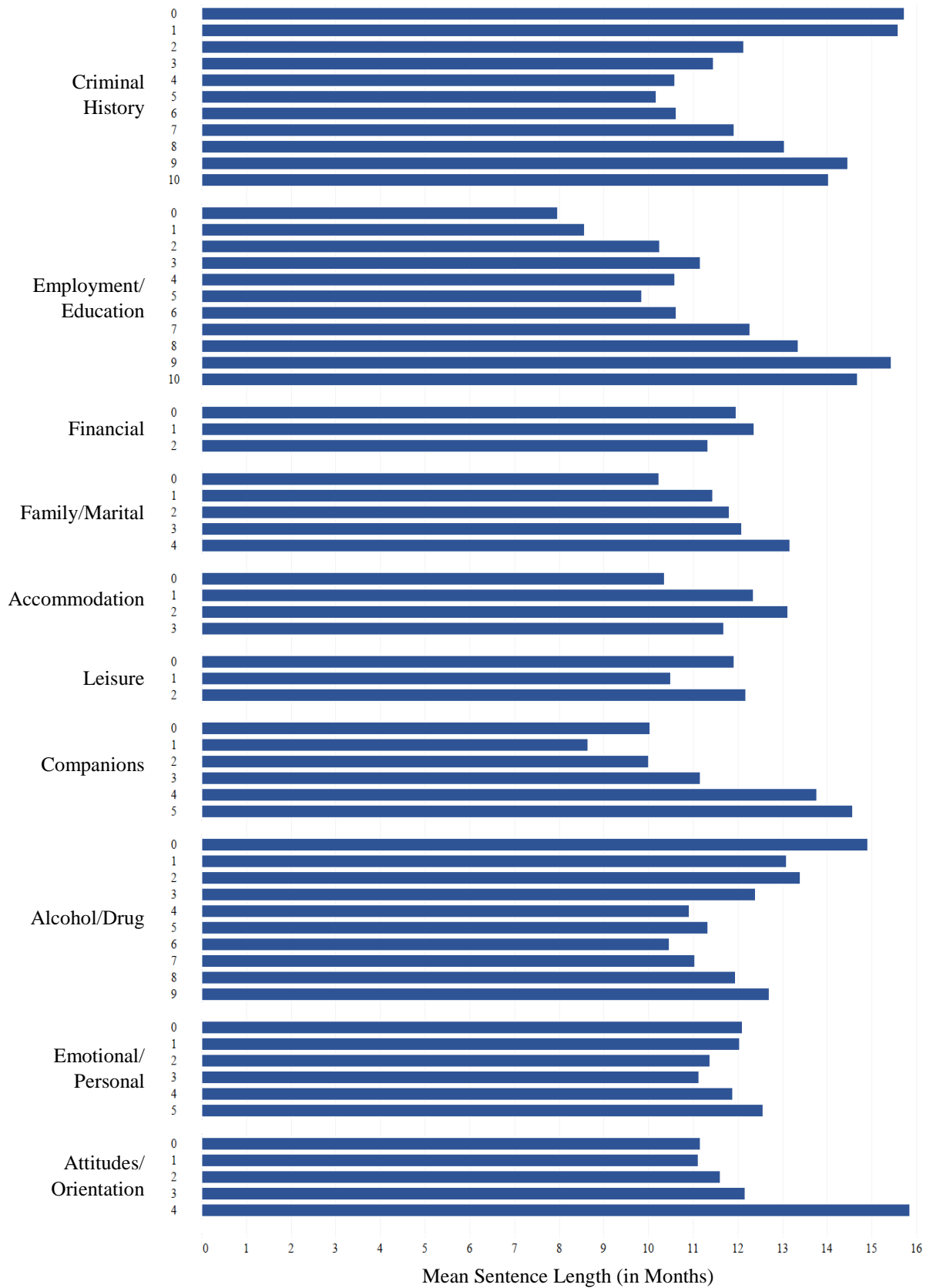


Figure 2.4: Length of Incarceration across Domain-Specific Risk Scores



## Categorical Risk Groups and Sentencing

### Sentence Type

The next analyses investigate sentencing outcomes among risk groups, first using LSI-R tertiles that separate offenders into three roughly equivalent-sized risk groups, then using more detailed categories based on prior research that identifies specific LSI-R cutoffs for different risk categories (Andrews & Bonta, 1995). These analyses focus on defendants who received probation sentences, split sentences, or incarceration terms. They exclude defendants who received only fines or community alternatives.<sup>1</sup>

Using tertiles, Figure 2.5 shows that probation sentences are most common for the lowest risk offenders. There are relatively more incarceration sentences for high risk defendants. Figure 2.6 shows the percentage of risk groups for each sentence type. Among probationers, 45% were low risk and 15% were high risk. Among incarceration sentences, 23% were low risk and 53% were high risk. This indicates a positive correlation between offender risk group and sentence severity. More probationers are lower risk and more incarcerated defendants are higher risk.<sup>2</sup>

Figure 2.5: Total Sentences by Risk Group

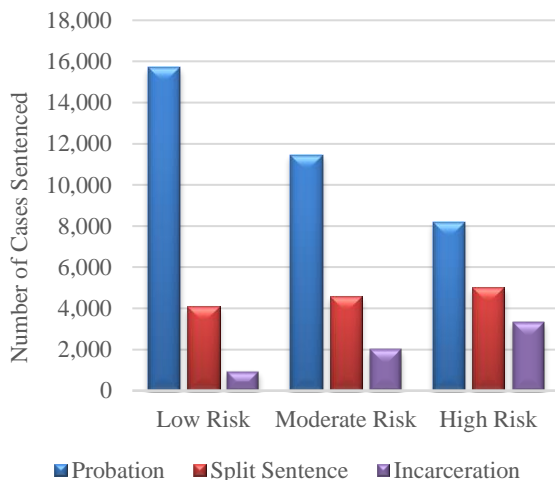
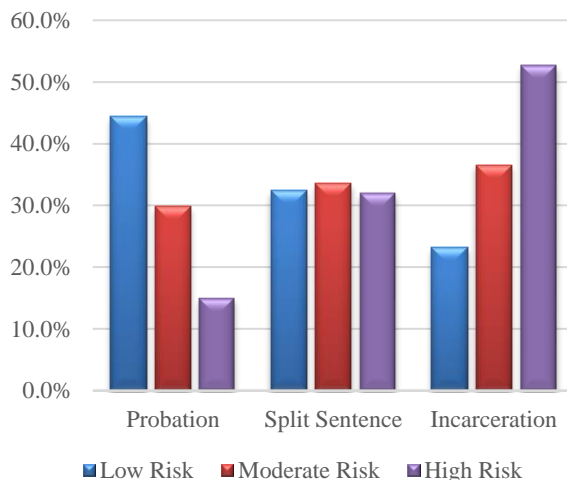


Figure 2.6: Risk Groups by Sentence Type



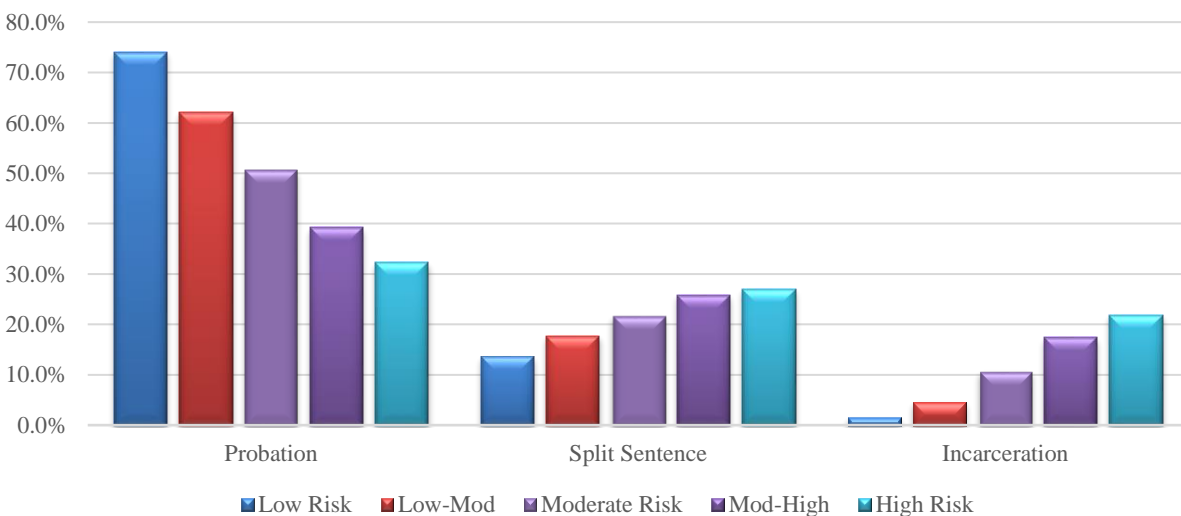
<sup>1</sup> A nontrivial number of cases involve non-custodial, community sentences, which lack detailed sentencing information in the data. This category may include a mix of different cases such as community alternatives, guilty verdicts for defendants recently sentenced for other crimes, conditional or unconditional discharges, or sentences that involve time served for jail credit or fully suspended sentences. The data do not allow these distinctions to be captured, so these cases are grouped into a single category in our outcome measures, and we focus most of our discussion on the larger categories of probation and incarceration sentences.

<sup>2</sup> The gamma statistic can be used to assess the strength of the association between risk group and sentence type and to investigate its statistical significance. The relationship reported in Figure 2.6 has a statistically significant gamma coefficient equal to .18 ( $p < .001$ ), which suggests a weak to moderate relationship, but when split sentence are removed the coefficient increases to .55, indicating a strong significant relationship between sentence types and risk categories.



The next set of results are based on standards recommend by Multi-Health Systems that define five categories of risk based on set LSI-R cutoff values (Andrews & Bonta, 1995).<sup>3</sup> Using these more refined categories confirms there is a significant relationship between risk scores and current sentencing practices in Connecticut. Figure 2.7 shows that among probationers, there are fewer high-risk offenders, while among incarcerated offenders there are higher proportions of high risk defendants. Still, a sizeable proportion of high-risk defendants (32%) receive probation sentences. This may be because some of the highest-risk offenders are high-rate repeat offenders who commit minor offenses. The current analyses do not adjust for severity of the offense or other relevant sentencing factors, which are considered in subsequent sections of the report.

Figure 2.7: Five-Category Risk Groups by Sentence Type



### Sentence Length

The figures below report mean sentence lengths by risk category for all offenders. Figure 2.8 illustrates how average incarceration length increases across risk groups, when non-incarceration sentences are included (scored as 0 months of incarceration). Figure 2.9 shows that average probation terms also decrease across groups when all sentences are examined. Both of these results are consistent with findings above that suggest that the likelihood of incarceration increases with risk. When the sample is restricted to those receiving an incarceration sentence, low-risk defendants receive shorter average incarceration terms (see Figure 2.10), and when cases are restricted to probationers, high-risk defendants receive slightly longer average terms of probation (see Figure 2.11).

<sup>3</sup> The Multi-Health Systems (MHS) cutoff scores, which are commonly used, identify risk categories as follows: 1) Low Risk includes composite risk scores between 0 and 13; 2) Low/Moderate Risk includes scores between 14 and 23; 3) Moderate Risk includes ranges from 24 to 33; 4) Moderate/High Risk includes scores from 34 to 40; and 5) High Risk is defined by scores over 40. We use this scoring system for this portion of the analysis.

Figure 2.8: Incarceration Length by Risk Group

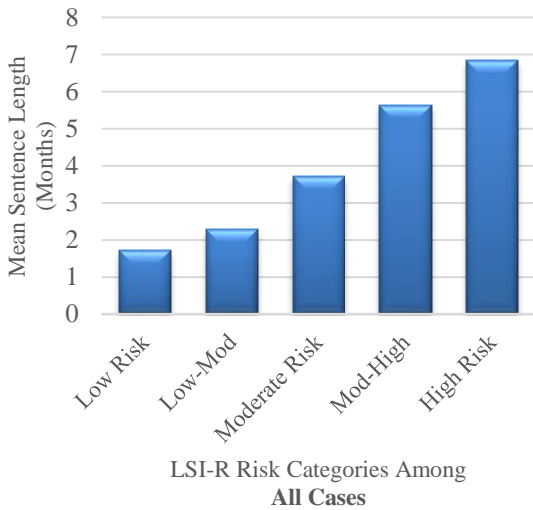


Figure 2.9: Probation Length by Risk Group

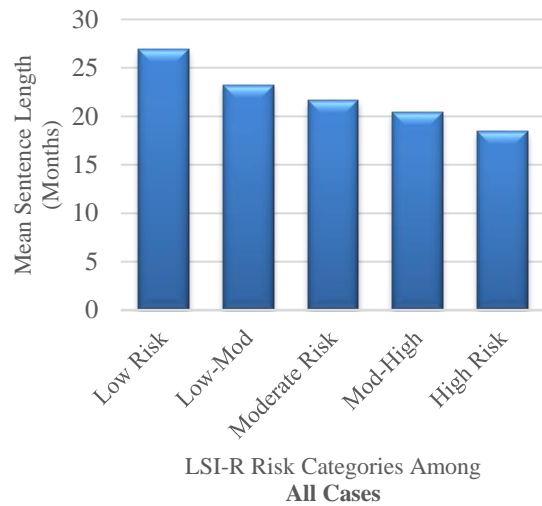


Figure 2.10: Incarceration Length by Risk Group

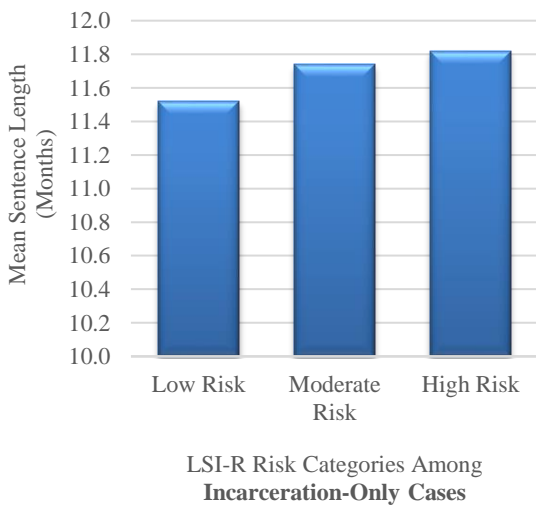
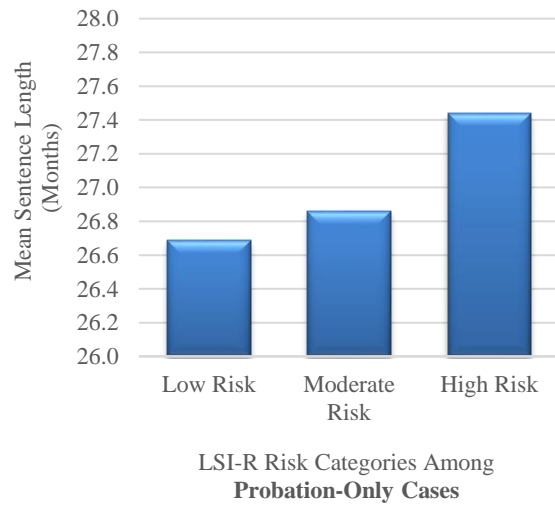


Figure 2.11: Probation Length by Risk Group



It is important to note that the magnitude of overall differences for sentence lengths is quite small, equating to less than a one-month discrepancy across risk groups for both probation and incarceration outcomes. In general, this suggests only a very weak relationship between risk and sentence length when incarceration or probation sentences are examined separately.

## Composite Risk Score as a Predictor of Sentencing

### Sentence Type

The previous analyses report descriptive relationships between overall risk and sentencing patterns, but they do not account for other relevant offense, offender or case characteristics. To the extent that risk scores and sentencing outcomes are associated with other salient case factors, these relationships may be confounded. To investigate this, statistical models are estimated that adjust for other sentencing factors to compare only similar types of defendants who have been convicted of similar types of offenses.<sup>4</sup>

Table 2.1: The Impact of LSI-R Composite Risk Scores on Sentencing Outcomes

	Incarceration	Incarceration Length
	<i>Relative Risk Ratio</i>	<i>Percent Change</i>
LSI-R Score	1.05	0.7%
Standardized Score	1.46	6.0%

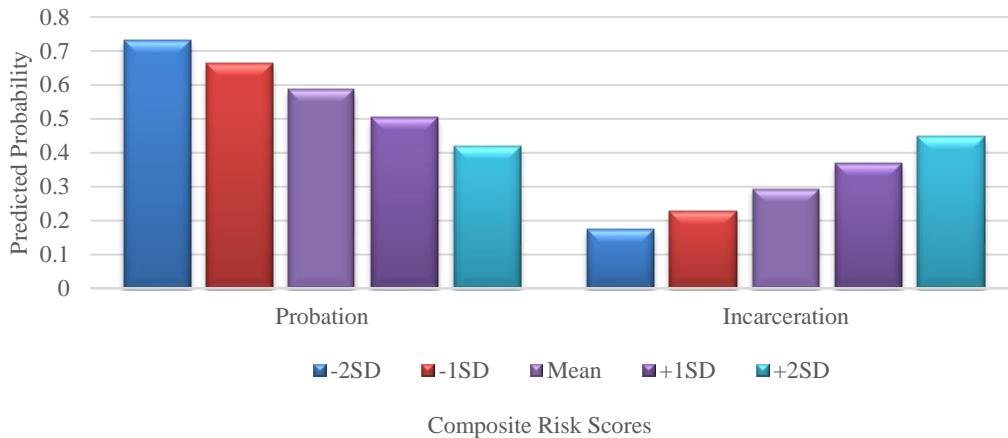
NOTE: The models include variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, and sentence year.

The first column in Table 2.1 summarizes the impact that LSI-R composite risk scores have on the probability of incarceration. Relative risk ratios above 1.0 indicate a positive relationship and values below 1.0 a negative relationship. These findings confirm that composite scores are significantly associated with incarceration in Connecticut. Each additional point on the risk scale increases the odds of incarceration by about 5%. The “standardized score” reflects the impact of a one standard deviation increase in risk scores (about 8 points on the 54 point scale), which translates into a 46% increase in the odds of an incarceration sentence. Even after accounting for other case characteristics, risk scores are significantly related to the judicial use of incarceration.

As shown in Figure 2.12 below, the predicted probability of a probation sentence decreases as risk scores increase, while the probability of incarceration increases, after accounting for other case factors. Overall, the probability of probation decreases from 73% to 42% as risk scores go from 2 standard deviations below the mean to 2 standard deviations above it, while the probability of incarceration increases from 17% to 45%.

<sup>4</sup> For sentence type, a multinomial regression model is used that distinguishes among sentences where the most severe outcome is fines/community sentences, probation, or incarceration. Contrasts for probation vs. incarceration are reported. For sentence lengths, ordinary least squares (OLS) regression models are utilized to examine sentence lengths for incarcerated offenders. The models include controls for offense severity, offense type, criminal history, mandatory minimums, defendant age, gender, race and ethnicity, conviction counts and sentencing year.

Figure 2.12: Probability of Probation and Incarceration by Standardized Risk Score

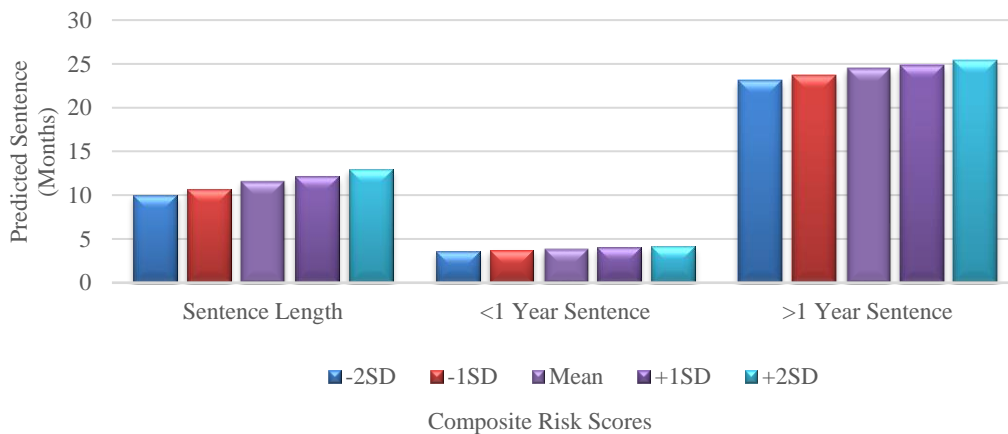


Sentence Length

The second column in Table 2.1 describes the impact of LSI-R composite risk scores on incarceration lengths. Average incarceration terms are modestly associated with risk scores. Among defendants sentenced to incarceration, each additional point on the LSI-R translates into slightly less than a 1% increase in sentence length. A one standard deviation increase on the scale (about 8 points) is associated with average incarceration terms that are about 6% longer, after accounting for other sentencing factors.<sup>5</sup> Overall, the effects are smaller and much less pronounced for incarceration length than they are for the probability of incarceration.

Figure 2.13 below similarly shows that changes in average incarceration lengths are modest and limited primarily to small increases in longer incarceration terms.

Figure 2.13: Predicted Sentence Lengths by Standardized Risk Scores



<sup>5</sup> Among probation cases, defendants with higher risk scores receive slightly shorter average probation terms.

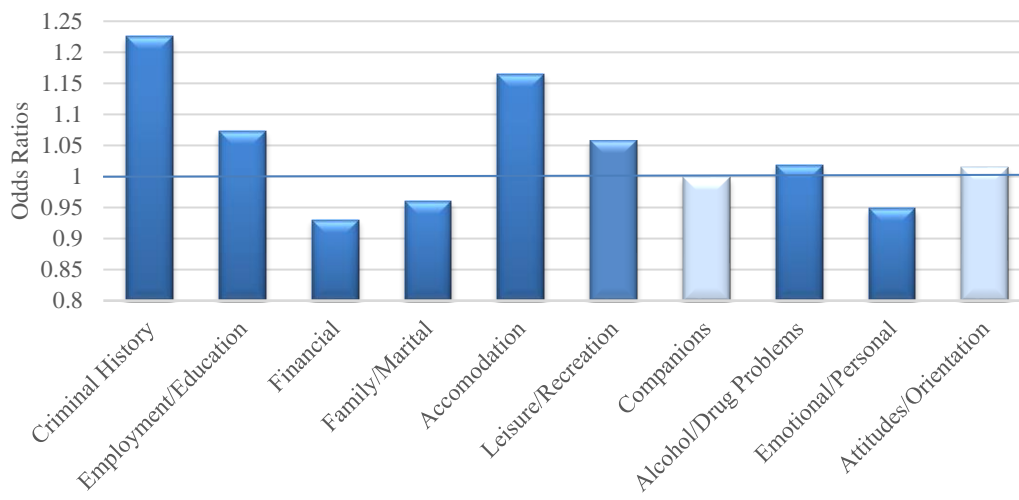
## ***Domain-Specific Risks as Predictors of Sentencing***

The figures below summarize the impact of domain-specific risks on judicial sentencing patterns, after taking into account other offense, offender, and case characteristics. These models include the same predictors as above but substitute the ten separate risk domain scores for the overall composite score. Values greater than one indicate a positive relationship, and values less than one indicate a negative relationship. The dark blue bars identify statistically significant relationships.

### Sentence Type

For incarceration, the most influential risk domain is criminal history. As Figure 2.14 shows, each additional point in the criminal history domain increases the odds of incarceration by 22%. Other domain-specific risks are also significant predictors of incarceration. Higher scores for Employment/ Education, Accommodation, Leisure/Recreation, and Alcohol/Drug Problems increase the odds of incarceration. Three risk domains – Financial, Family/Marital, and Emotional/Personal – are negatively associated with incarceration. Although this is inconsistent with a strict risk-based model of sentencing, it may be consistent with a risk/needs model in which judges view certain domains as indicators of criminogenic need.

Figure 2.14: The Impact of Domain-Specific Risks on the Probability of Incarceration



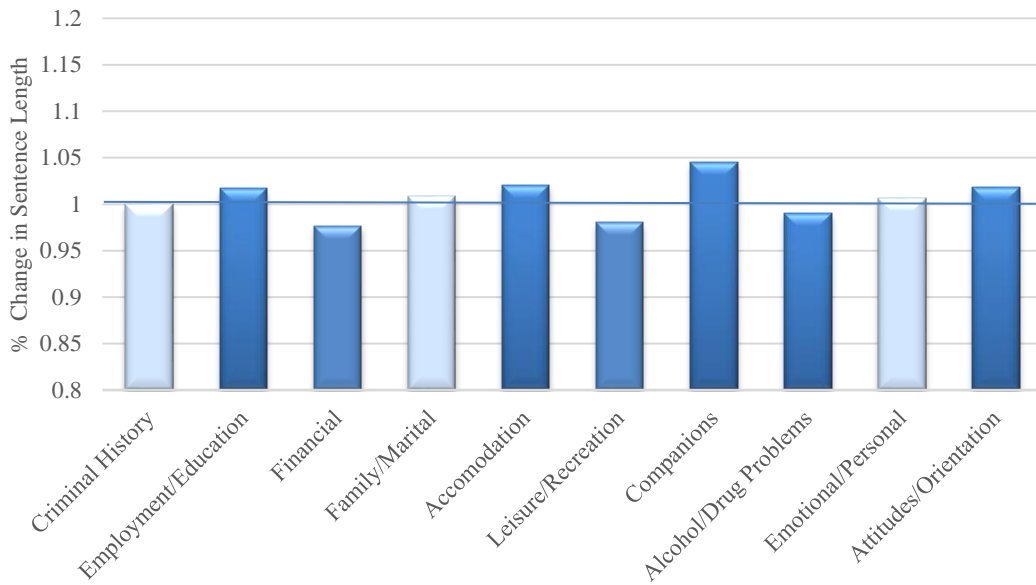
NOTE: Estimates account for the full battery of control variables reported above.

### Sentence Length

Consistent with previous results, Figure 2.15 shows that the relationship between risk and sentence length is not as strong as it is for incarceration. Several of the domain-specific risks have small but statistically significant effects. Specifically, Employment/Education,

Accommodation, Companions, and Attitudes/Orientation domains are positively associated with incarceration terms. However, three domains, Financial, Leisure/Recreation, and Alcohol/Drug Problems are negatively associated with sentence lengths. In general, no strong relationships emerge for sentence length.

Figure 2.15: The Impact of Domain-Specific Risks on Sentence Length



NOTE: Estimates account for the full battery of control variables reported above.

## ***Risk and Sentencing Incongruence***

### Sentence Type

The next sets of analyses investigate factors associated with low-risk defendants who receive incarceration and high-risk defendants who receive probation.<sup>6</sup> Figure 2.16 below shows that 7.6% of all sentences involve low-risk offenders sentenced to incarceration, and 12.4% of all sentences involve high-risk offenders who received probation. In terms of raw numbers, this equates to slightly more than 5,000 low-risk incarcerates and over 8,000 high-risk probationers.

<sup>6</sup> Low and low-moderate risk defendants (LSI-R scores below 24) are examined as “low-risk” and moderate-high and high risk defendants (LSI-R scores over 33) are examined as high-risk. Similar results are obtained when low-risk (LSI-R scores below 14) and high-risk (LSI-R scores over 40) offenders are examined separately.

Figure 2.16. Risk and Sentence Incongruence

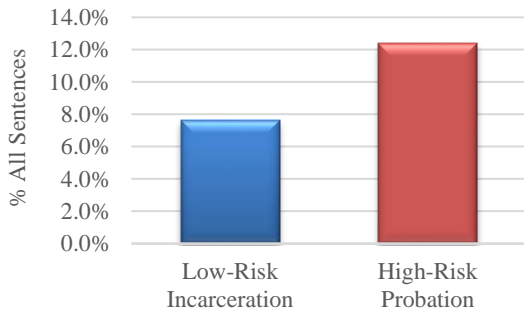
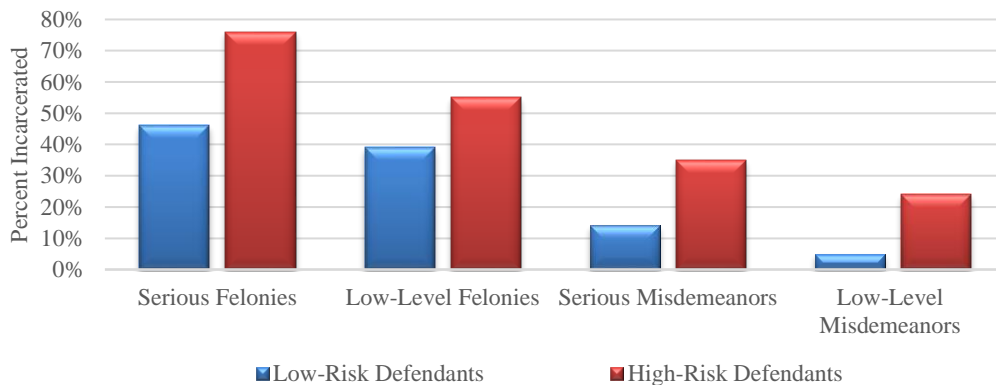


Figure 2.17 demonstrates that risk scores are associated with incarceration sentences for both felonies and misdemeanors. Higher risk defendants are more likely to receive incarceration across severity categories, even though not all high-risk defendants are incarcerated, and not all low-risk defendants receive probation.

Figure 2.17. Low vs. High Risk Incarceration Sentences by Offense Seriousness



NOTE: Serious felonies are defined as Felony A, B, and C offenses. Low-level felonies are defined as Felony D, E, or Unclassified felony offenses. Serious Misdemeanors include Misdemeanor A and B offenses. Low-Level Misdemeanors include Misdemeanor C and D offenses or infractions/traffic offenses

To investigate low-risk incarceration and high-risk probation sentences, multinomial regression models are estimated that predict the most severe sentence type, after controlling for a wide array of relevant sentencing factors. Table 2.2 identifies some of the strongest predictors of these types of sentences. Once again, the “relative risk ratio” can be understood as the impact a case characteristic has on the probability of an incarceration or probation sentence, after taking into account other sentencing factors. Values above one indicate a positive relationship and values below one indicate a negative relationship, with values farther from one indicating stronger relationships.

Table 2.2. Predictors of Low-Risk Incarceration and High-Risk Probation Sentences

	Low-Risk Defendants who Received Incarceration	High-Risk Defendants who Received Probation
<b>Sentencing Predictors</b>	<i>Relative Risk Ratios</i>	
Felony A or B Offense	13.83	.09
Mandatory Minimum	3.86	.31
Under Supervision	3.47	.32
Prior Convictions	1.19	.87
Counts of Conviction	1.40	.91
Drug Offense	1.43	.43
Public Order Offense	.53	1.94
Male Defendant	1.80	.55
N (Sample Size)	23,576	11,960

NOTE: The full statistical model includes variables for defendant age, gender, race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimum, supervision status, counts of conviction, and sentence year. Sample sizes reflect the subset of offenders in the low/moderate and moderate/high groups.

Among low-risk defendants, those who commit very serious offenses are much more likely to receive an incarceration sentence. In addition, mandatory minimums and current supervision status are strong predictors of incarceration for low-risk defendants. More extensive prior records also increase the risk of incarceration: each additional prior conviction increases the relative risk of incarceration by 19%. Compared to weapons offenses (the omitted comparison category), drug defendants are the most likely low-risk offenders to be sentenced to incarceration. Male defendants are also more likely to be incarcerated than similarly-situated female defendants.

For high-risk defendants sentenced to probation, the patterns reverse direction. Committing a very serious offense, having a mandatory minimum, being under supervision, and having a more extensive prior record all *reduce* the odds of a probation sentence. Public order offenses are particularly likely to involve high-risk offenders sentenced to probation, whereas males are less likely than females to receive these sentences.

Table 2.3 reports summary findings from similar analyses disaggregated by felonies and misdemeanors. The results are largely consistent with overall estimates, suggesting these patterns hold across offense severity levels, though some differences emerge by offense type. For felonies, violent and weapons offenses are most likely to involve low-risk offenders sentenced to incarceration and less likely to involve high-risk offenders sentenced to probation. For misdemeanors, drug offenses are especially likely to involve low-risk offenders sentenced to incarceration and they are less likely to involve high-risk offenders sentenced to probation.



Table 2.3. Predictors of Low-Risk Incarceration and High-Risk Probation by Offense Severity

	Felonies		Misdemeanors	
	Low-Risk Incarceration	High-Risk Probation	Low-Risk Incarceration	High-Risk Probation
<b>Sentencing Predictors</b>	<i>Relative Risk Ratios</i>			
Level A or B Offense	2.12	0.38	n.s.	1.77
Mandatory Minimum	3.17	0.31	12.58	0.21
Under Supervision	1.82	0.42	2.84	0.29
Prior Convictions	1.05	0.88	1.23	0.88
Counts of Conviction	1.39	0.91	1.59	0.79
Violent Offense	2.37	0.71	1.33	n.s.
Weapons Offense	2.84	0.48	--	--
Drug Offense	1.85	1.77	4.49	0.59
Male Defendant	1.82	0.53	1.75	0.63
N (Sample Size)	7,315	5,313	16,242	6,647

NOTE: The full statistical model includes variables for defendant age, gender, race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimum, supervision status, counts of conviction, and sentence year. Sample sizes reflect the subset of offenders in the low/moderate and moderate/high groups. The “n.s.” means no statistically significant effect. The “--” symbol indicates variable is omitted from the model.

### Sentence Length

The next analyses investigate variation in sentence lengths among low-risk and high-risk defendants sentenced to incarceration. These analyses are disaggregated by offense severity categories.<sup>7</sup> In each offense class, incarceration lengths are divided into three roughly equivalent-sized groups. Table 2.4 below shows the frequency of “outliers,” or cases in which the defendant’s risk category (low, moderate, high) does *not* align with his/her sentence length category (short, moderate, long).

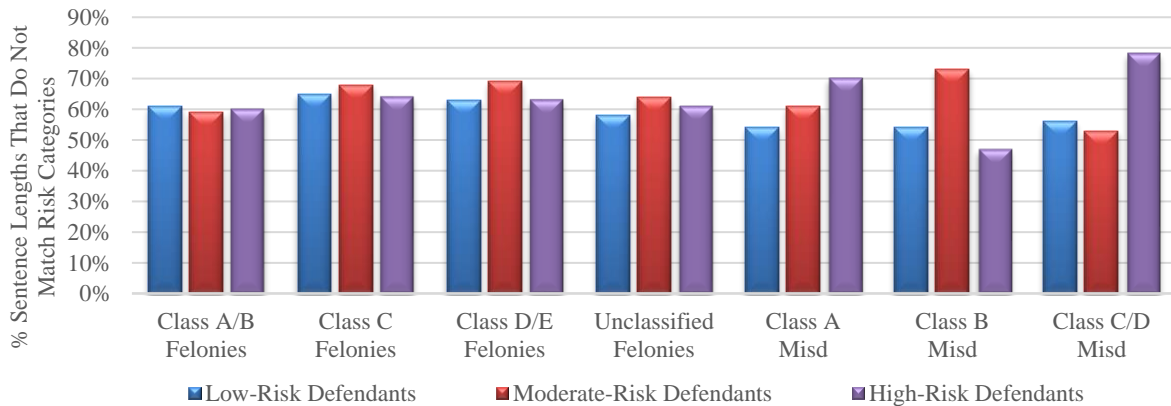
Among low-risk offenders, about one-third received moderately long sentences, and one-fifth to one-third received long sentences, depending on offense severity class. Similar patterns characterize moderate and high-risk defendants. In general, smaller proportions of low-risk defendants receive long sentences, and larger proportions of high-risk defendants receive short sentences when their offenses are less serious. However, as shown in Figure 2.18 below, most offender sentence lengths do not correspond with their relative risk categories.

<sup>7</sup> CSC initially proposed creating “high,” “medium,” and “low” offense severity levels based on the maximum incarceration sentence for each charge. This method yields the following three groups: 1) all felonies, 2) Class A misdemeanors, and 3) Class B-D misdemeanors. Given that the medium severity group is comprised entirely of one offense class, these analyses instead distinguish between as many offense classes as possible. Class A and B felonies are grouped together, as are Class D and E felonies, and Class C and D misdemeanors, due to the rarity of Class A felonies, Class E felonies, and Class D misdemeanors in the data.

Table 2.4. Percentage of Outlier Sentences within Each Offense Class

	Low-Risk Defendants		Moderate-Risk Defendants		High-Risk Defendants	
	<i>Moderate Sentences</i>	<i>Long Sentences</i>	<i>Short Sentences</i>	<i>Long Sentences</i>	<i>Short Sentences</i>	<i>Moderate Sentences</i>
Class A/B Felonies	37%	24%	31%	28%	25%	35%
Class C Felonies	31%	34%	32%	36%	32%	32%
Class D/E Felonies	36%	27%	37%	32%	29%	34%
Unclassified Felonies	33%	25%	34%	30%	24%	37%
Class A Misdemeanors	34%	20%	38%	23%	28%	42%
Class B Misdemeanors	33%	21%	33%	40%	17%	30%
Class C/D Misdemeanors	37%	19%	33%	20%	33%	45%

Figure 2.18: Total Percentage of Outlier Sentences within Each Offense Severity Class



The final sentencing analysis investigates the factors associated with incarceration lengths that do not match their risk categories. Multinomial regression models are estimated that predict whether sentence lengths are lower or higher than the corresponding risk categories, after controlling for relevant sentencing factors. Table 2.5 below identifies some of the strongest predictors for each type of outlier sentence. Again, the relative risk ratio represents the impact a case characteristic has on the probability of a sentence length that is higher or lower than their associated risk category, after taking into account other sentencing factors. Values greater than one indicate a positive relationship and values less than one indicate a negative relationship.

Table 2.5. Predictors of Outlier Sentence Lengths

	Sentence Length Category is Lower Than Risk Category	Sentence Length Category is Higher Than Risk Category
Sentencing Predictor	<i>Relative Risk Ratio</i>	<i>Relative Risk Ratio</i>
Mandatory Minimum	.40	2.10
Public Order Offense	1.89	.72
Drug Offense	1.45	.67
Counts of Conviction	.89	1.09
Prior Convictions	.99	.90
Unclassified Felony	.77	1.53
Class B Misdemeanor	.09	.40
Class C/D Misdemeanor	.29	.38
Black Defendant	.91	1.37
Male Defendant	.75	1.26

NOTE: Estimates account for the full battery of control variables reported above.

The first column in the table shows that cases with mandatory minimums are much less likely to result in sentences that are *lower* than their corresponding risk categories. Low-level misdemeanors are also much less likely to involve low outlier sentence lengths. Each additional conviction count also decreases the relative risk of a lower sentence length. Black and male defendants are less likely to be given sentence lengths that are lower than their corresponding risk categories. In contrast, public order and drug offenses are more likely to be receive lower sentences.

Many of these patterns reverse for sentence lengths that are *higher* than their corresponding risk categories. Mandatory minimum sentences more than double the relative risk of a higher sentence length, while each additional conviction count increases the relative risk of a higher sentence. Unclassified felonies and cases involving black, and male defendants are more likely to involve high sentence lengths. Finally, public order and drug offenses, as well as low-level misdemeanors, are unlikely to be associated with sentence lengths that are longer than expected.

### ***Conclusions—Risk Assessments and Sentencing***

The CSC inquired about whether current sentencing practices in the state of Connecticut were consistent with a risk and needs-based approach to sentencing. This question was addressed by comparing LSI-R risk assessment outcomes—including composite scores, individual risk domain scores, and broad risk categories—to current sentence types and lengths. Results from these analyses are summarized by the following conclusions:

- Risk scores are strongly associated with sentence types but only weakly correlated with sentence lengths. Higher composite scores, higher scores in most risk domains, and higher risk categories are all positively related to the judicial use of incarceration. In some instances higher risk scores are also associated with longer incarceration lengths, but these relationships are less consistent and they are not very strong.
- Most domain-specific risks within the LSI-R are positively associated with sentence severity. Higher domain scores tend to increase the likelihood of incarceration and, to a lesser extent, produce longer incarceration lengths. However, some risk domains, like the Emotional/Personal domain, are negatively related to incarceration, and others like the Drugs/Alcohol domain, are associated with shorter sentence lengths. This may signal that some domains are viewed as indicators of needs rather than risks.
- The relationship between risk scores and sentencing is related to defendant and case characteristics, but net of these factors, risk scores remain significant predictors of sentencing decisions. Even after statistically accounting for offense severity, prior convictions, and various other case characteristics, composite risk scores, domain-specific risk scores, and broad risk categories are significant predictors of sentencing, especially for incarceration decisions. This suggests that judges are considering factors related to risk of recidivism, above and beyond other measured case characteristics.
- Despite the positive relationship between risk and sentence severity, some low-risk defendants are incarcerated while some high-risk defendants are not. Low-risk defendants are most likely to be incarcerated if they commit serious felonies, have longer criminal histories, receive a mandatory minimum, are under current supervision, commit a drug offense, and are male. The opposite pattern characterizes high-risk defendants sentenced to probation, and these relationships remain fairly consistent for both felonies and misdemeanors.
- For incarceration terms, many defendants receive a shorter or longer sentence than their risk category would dictate. These results are consistent across offense severity classes. Several case characteristics impact the likelihood of these “outlier” sentences. Public order and drug offenses increase the likelihood that a sentence category is lower than an offender’s risk category. Mandatory minimums, low-level offenses, prior record, and being male decrease the likelihood of a lower outlier sentence length. In general, the opposite pattern emerges for the likelihood of receiving a sentence that is longer than an offender’s risk category would dictate.

### III. Sentencing and Recidivism

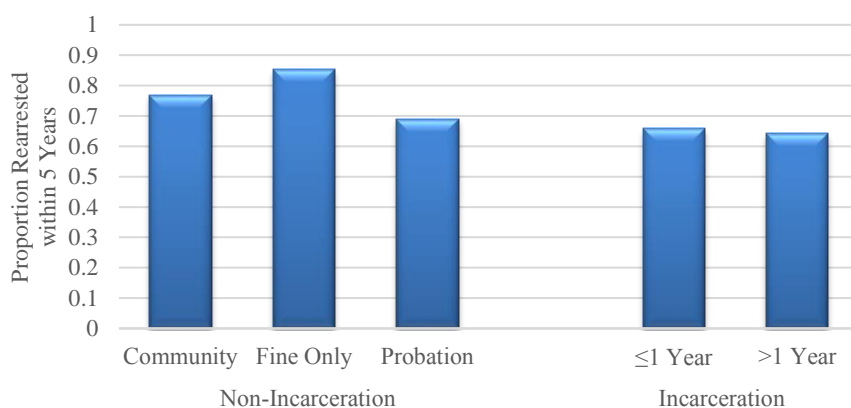
The next set of analyses examines the relationship between sentencing outcomes and post-release re-offending patterns, focusing on the type and length of sentence and their association with new arrests and probation revocations.

#### *Sentence Type and Recidivism*

##### Re-Arrest

Figure 3.1 reports variation in re-arrest rates by sentence type. Sentence type reflects the most severe sentence type recorded in each case, so a defendant sentenced to incarceration with a fine followed by a term of probation supervision is coded as incarcerated. In the graph below we distinguish between short terms of incarceration (less than 1 year) and longer terms (1 year or more) because they are often associated with different types of correctional facilities. We also report differences among types of non-custodial sentences, but because we have limited detail about these cases (see footnote 1 above), our primary focus is on probation and incarceration.

Figure 3.1: Probability of Any Re-Arrest by Sentence Type



On average, more serious sentences are associated with lower recidivism rates. The highest recidivism rate is for cases with fines only, which may reflect the fact that these cases disproportionately involve “failure to appear” and “failure to pay” offenses, which can lead directly to new arrests. A similar pattern emerges when felony and violent re-arrests are considered separately (see Figure 3.2 below), however, probation sentences have lower felony/violent re-arrest rates when compared to prison sentences of 1 year or longer.

Figure 3.2: Probability of Felony/Violent Re-Arrest by Sentence Type

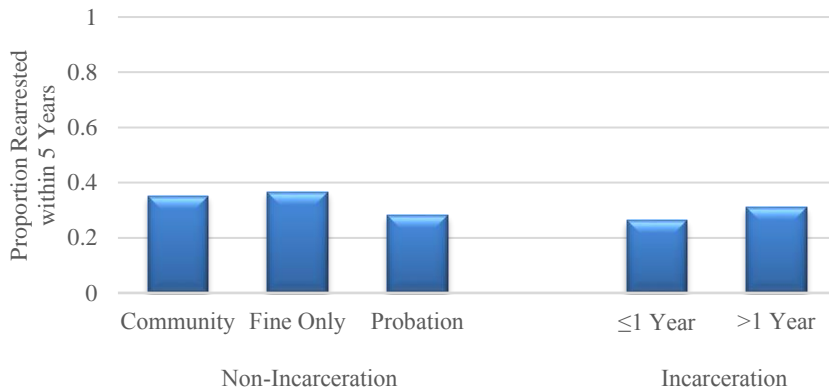


Figure 3.3 shows that re-arrest rates are highest for infractions, many of which involve public disturbance offenses. Recidivism rates are also high for Class C misdemeanors, which include large numbers of larceny and disorderly conduct offenses. Recidivism rates are relatively lower for serious felonies, and they are lowest for sex offenses, which is consistent with prior research (e.g. Durose, Cooper, & Snyder, 2014; Kubrin & Stewart, 2006). Property offenses and public order offenses have the highest recidivism rates (see Figure 3.4).

Figure 3.3: Re-Arrest by Offense Severity

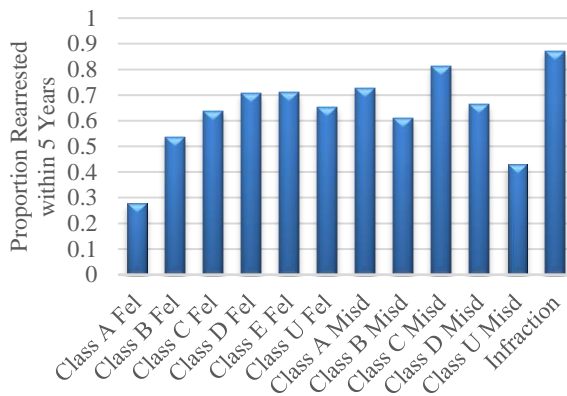
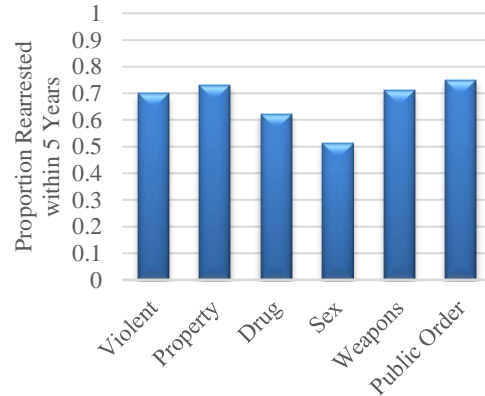


Figure 3.4: Re-Arrest by Offense Type



### Revocation

In general, a similar pattern of findings emerges for probation revocations. As shown in Figure 3.5 below, the highest revocation rates occur for infractions and the lowest occur for serious felonies. Figure 3.6 shows that the highest revocation rates occur for property offenses and the lowest occur for sex offenses. The sample is restricted to probation cases, so we do not examine differences in probation revocation by sentence type.

Figure 3.5: Revocations by Offense Severity

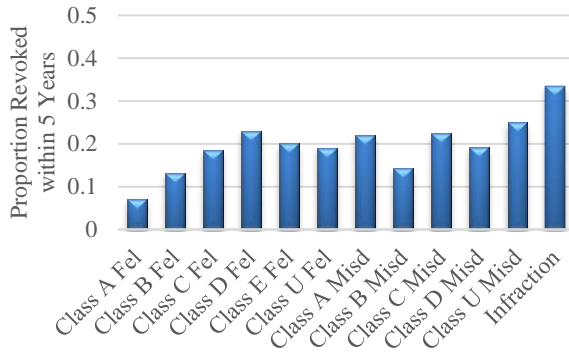
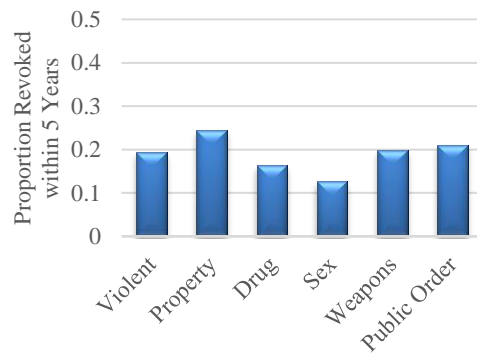


Figure 3.6: Revocations by Offense Type



Time to Failure

Figures 3.7 and 3.8 report hazard rates representing the risk of re-arrest over time for offenders sentenced to different types of punishment. Higher values indicate higher risk of re-arrest. For all offenders, the highest risk of recidivism is in the first year. The risk of re-arrest is especially high for defendants sentenced to fines only, particularly in the first several months. Risk of recidivism is also somewhat higher for community-based sentences relative to probation and incarceration, which have similar overall re-arrest patterns after the first few months post-sentencing. Figure 3.8 reports similar results for felony or violent re-arrests. Parallel analyses are not conducted for revocations because they only apply to probation sentences.

Figure 3.7: Hazard Rates for Re-Arrest by Type of Sentence

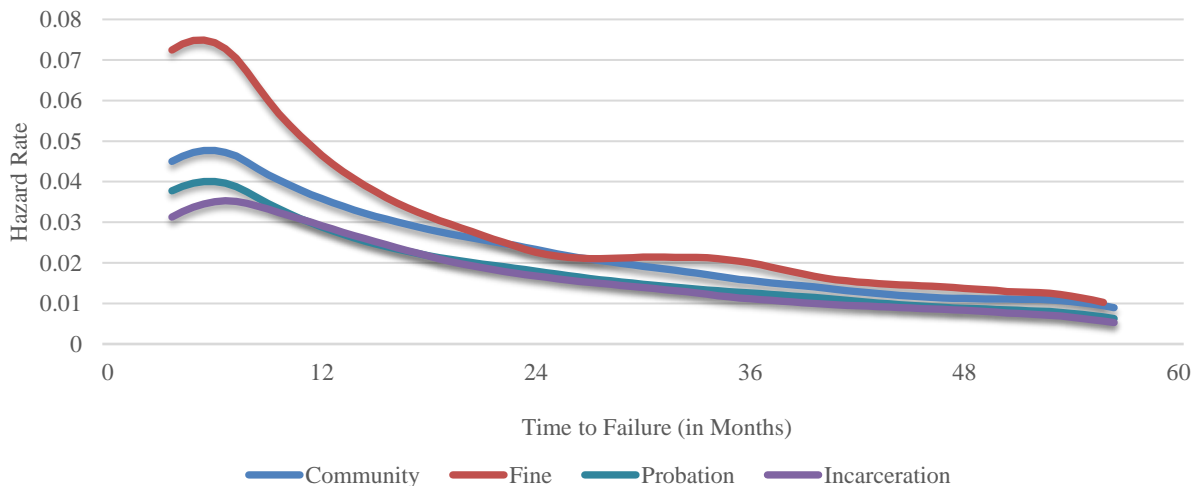
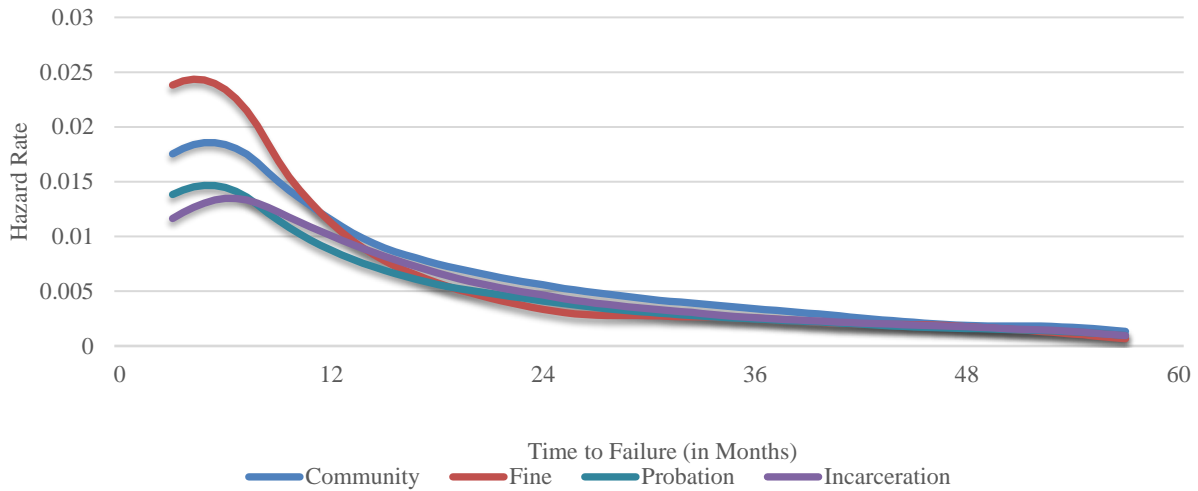


Figure 3.8: Hazard Rates for Felony/Violent Re-Arrest by Type of Sentence



### Sentence Length and Recidivism

#### Re-Arrest

Figures 3.9 and 3.10 report variation in re-arrest rates by sentence length for shorter and longer incarceration sentences. There is little distinct pattern in re-arrests for incarceration sentences less than 1 year. For sentences greater than 1 year, longer sentences appear to be associated with lower re-arrest rates. A similar pattern emerges for felony/violent re-arrests (see Figures 3.11 and 3.12 below). These trends do not account for other relevant factors, such as offense severity or age at release, which are examined in the next section.

Figure 3.9: Re-Arrest by Days Incarcerated

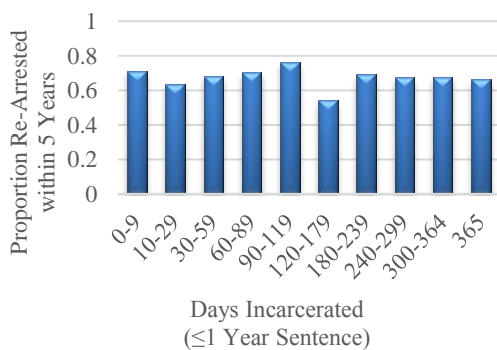


Figure 3.10: Re-Arrest by Years Incarcerated

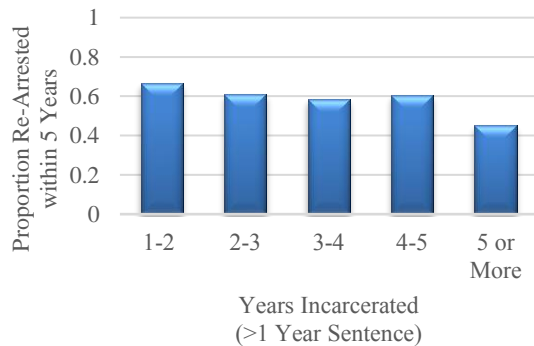




Figure 3.11: Felony/Violent Re-Arrest (Days)

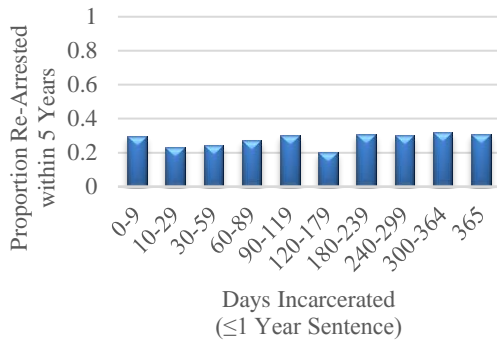
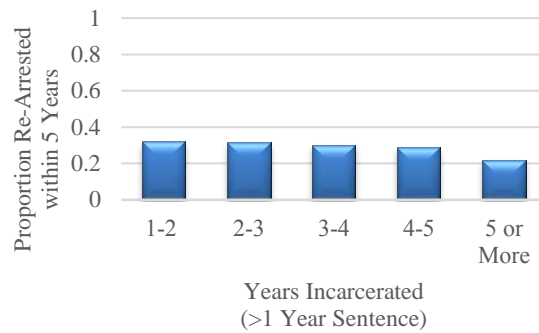


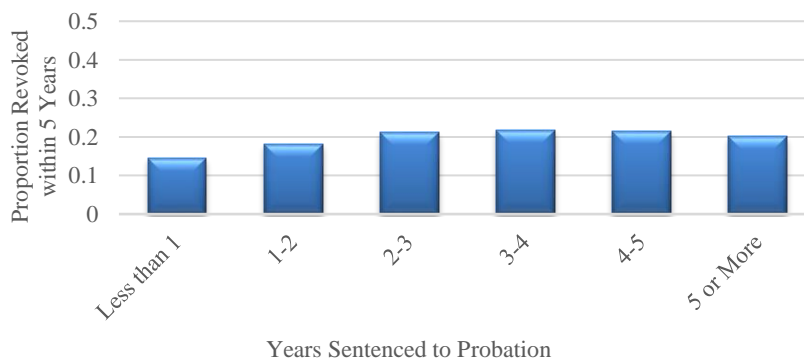
Figure 3.12: Felony/Violent Re-Arrest (Years)



Revocation

Figure 3.13 reports revocation rates for probation-only sentences. Revocation rates hover around 20%, with the lowest revocation rates for terms of probation less than one year.

Figure 3.13: Revocations by Probation Length



Time to Failure

The hazard ratios below (see Figures 3.14 and 3.15) show the relative risk of re-arrest and revocation over time. For re-arrest, shorter incarceration terms (less than 1 year) have greater risk of re-arrest immediately after release, but over time their relative risk decreases and falls below longer incarceration terms. For revocation, shorter probation terms are more likely to result in revocation in the first year after release, but thereafter their relative risk falls below longer probation terms. For a two-year probation term, the revocation hazard declines sharply and approaches 0 after 24 months. For both outcomes, the longer an offender goes without an arrest or revocation, the lower the relative risk of experiencing a subsequent failure becomes.

Figure 3.14: Hazard Rates for Re-Arrest by Length of Incarceration Sentence

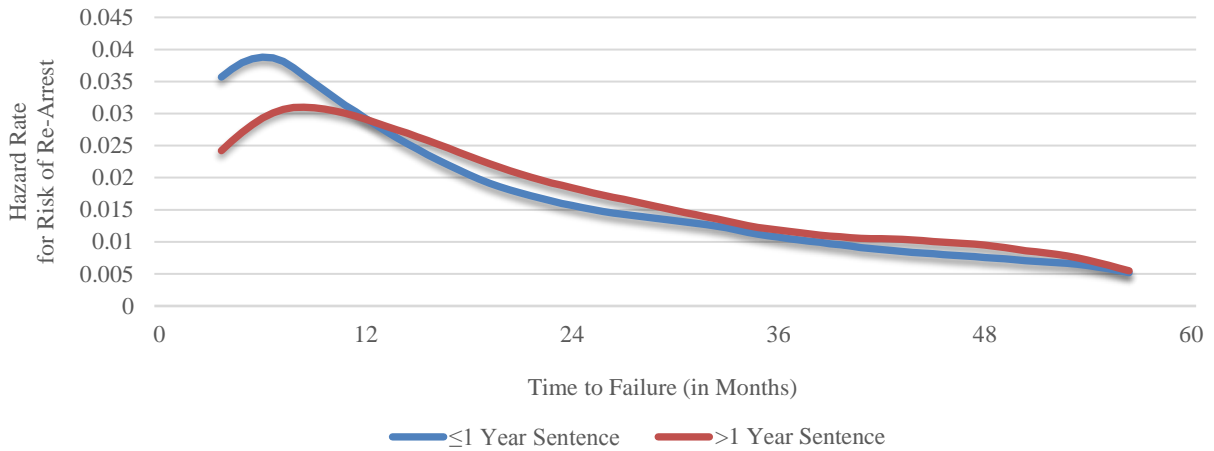
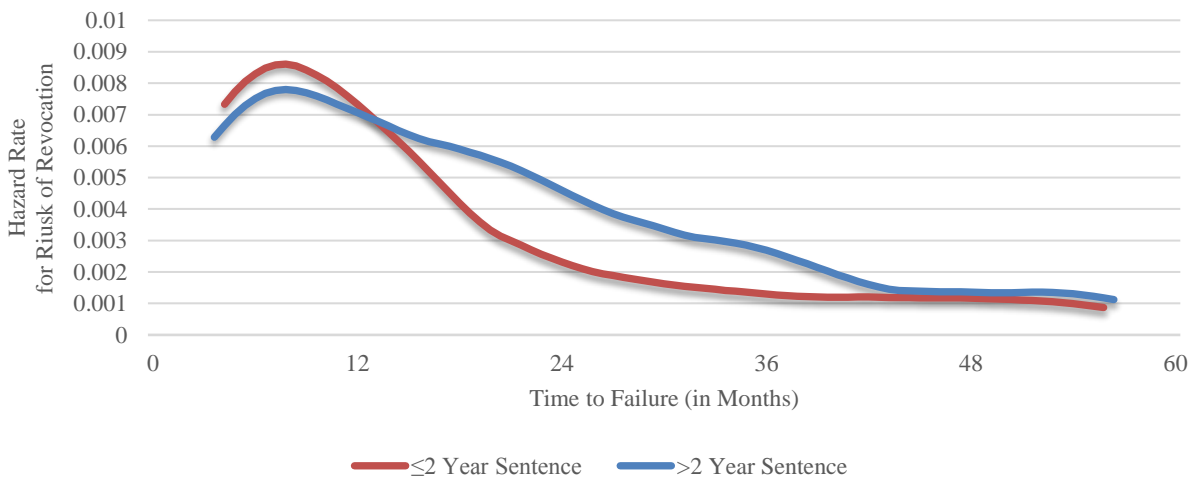


Figure 3.15: Hazard Rates for Revocation by Length of Probation Sentence



### ***Sentence Type as a Predictor of Recidivism***

The previous analyses report overall relationships between sentencing and recidivism, but they do not consider other offense, offender and case characteristics. To account for these, we estimate statistical models that control for other factors related to reoffending. This allows us to compare similar types of defendants and similar types of offenses.<sup>8</sup> Below we examine sentence type as a predictor of both the likelihood and timing of re-arrest. Parallel analyses are not conducted for revocations, which apply only to sentences that involve probation.

<sup>8</sup> For re-arrest and revocation outcomes, logistic regression models are used to examine the likelihood of recidivism (Menard, 2002). To investigate time to re-arrest or revocation, Cox proportional hazard models are estimated (see Allison, 1984). All statistical models include variables that adjust for other relevant recidivism factors.

## Re-Arrest

Table 3.1 summarizes the impact of type of sentence on the probability of re-arrest, after adjusting for other case factors. Re-arrests are most likely for fines-only sentences—again, the high re-arrest rate for fines may be tied to “failure to appear” offenses—and least likely for defendants sentenced to incarceration. Over 70% of offenders on community punishment are re-arrested within 5 years, compared to about two out of three prisoners. The overall difference in the probability of re-arrest is roughly 6 percentage points between probation and incarceration. Figures 3.16 and 3.17 provide a visualization of these effects for all re-arrests and separately for felony/violent re-arrests.

Table 3.1: The Impact of Sentence Type on Likelihood of Re-arrest

	Re-Arrest
	<i>Predicted Probability</i>
Community	0.70
Fine Only	0.81
Probation Only	0.73
Incarceration	0.67

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence length and year.

Figure 3.16: Probability of Any Re-Arrest by Sentence Type

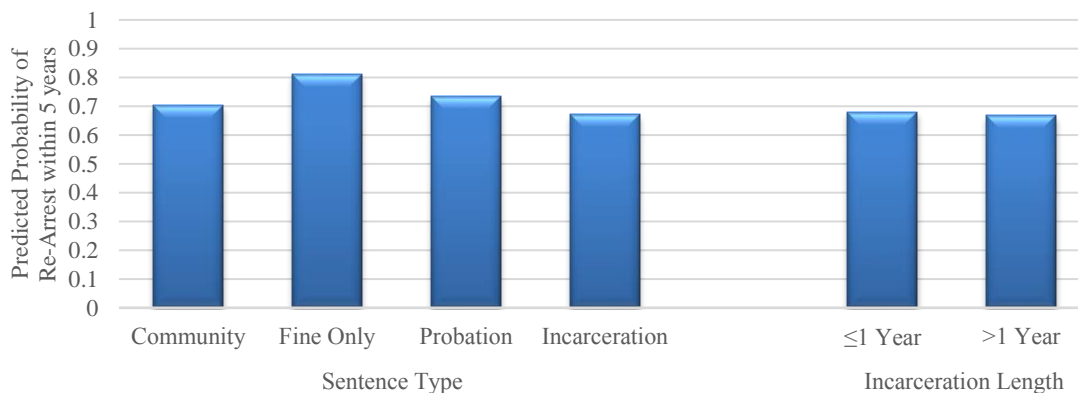
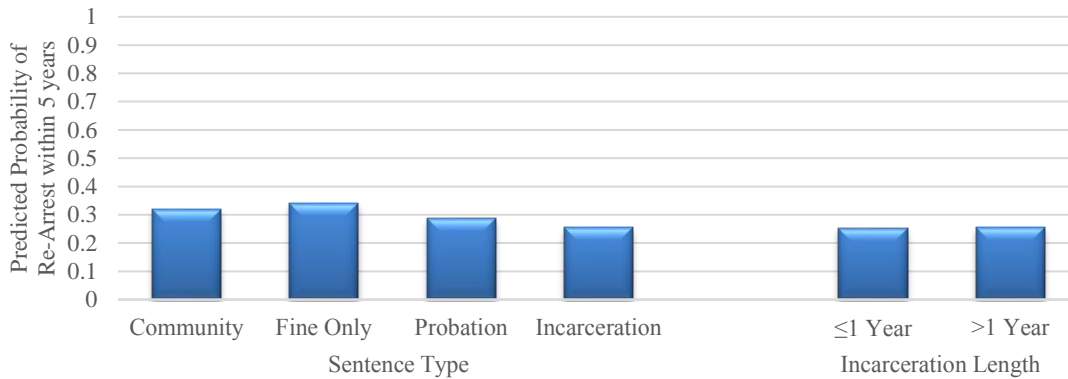


Figure 3.17: Probability of Felony/Violent Re-Arrest by Sentence Type



It is worth noting that lower recidivism rates for incarceration sentences contrast with much of the existing research evidence (e.g. Spohn and Holleran, 2002). These differences may reflect the limited usage of long incarceration sentences in Connecticut relative to other jurisdictions, or they may be indicative of variation in quality of penal institutions or availability of prison programming. They could also reflect sample selection in our data, which is limited to less serious incarcerated offenders (see 2018 Data Report). Without additional data, we cannot speak directly to these or other potential explanations.

### Time to Failure

Similar patterns emerge for *time* to re-arrest. The hazard ratios in Table 3.2 represent the relative risk of failure (i.e. experiencing a re-arrest) for an individual who has survived without a re-arrest up until that time point. Values greater than 1 indicate higher recidivism risk and values below 1 indicate lower recidivism risk. The further values fall from 1, the stronger the effect.<sup>9</sup> For example, the re-arrest hazard ratio of 1.29 for fines suggests the rate of re-arrest is 29% greater than the rate of re-arrest for probation (the comparison group). Community and incarceration sentences are associated with slightly slower rates of re-arrest.

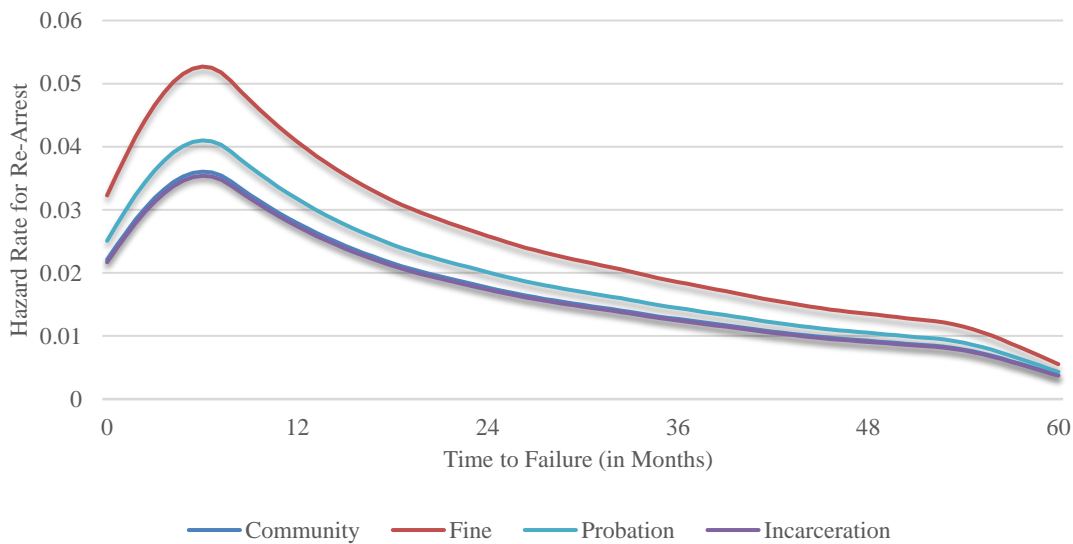
<sup>9</sup> The “hazard” is the instantaneous event rate, or the probability that an individual experiences an event (e.g. re-arrest) at a given time, assuming they have survived up until that time point in the data. The hazard ratio is just the ratio of the event rates for two groups (e.g. offenders sentenced to probation versus incarceration). Positive ratios (values above 1) represent higher relative risks of experiencing the event, and negative ratios (values below 1) indicate lower relative risks of an event.

Table 3.2: The Impact of Sentence Type on Time to Re-arrest

	Time to Re-Arrest
	<i>Hazard Ratio</i>
Community	0.88
Fine Only	1.29
Probation	1.00
Incarceration	0.86
≤1 Year	0.87
>1 Year	0.81

To visualize these differences, hazard rates for re-arrest are graphed in Figure 3.18 below. Overall, this figure indicates that the probability of re-arrest peaks between six and nine months and then fall steadily after. Re-arrest is a common occurrence regardless of sentence type, though re-arrests occur most quickly for fine-only sentences. Probationers have re-arrest rates slightly higher than community and incarceration sentences.

Figure 3.18: Hazard Rates for Re-Arrest by Sentence Type



## Sentence Length as a Predictor of Recidivism

### Re-Arrest

The first column of Table 3.3 summarizes the impact of sentence lengths on re-arrest for total sentence time, months of probation, and months of incarceration, after adjusting for other case factors.<sup>10</sup> The key finding is that longer sentences are associated with slightly lower odds of re-arrest. On average, a 1 standard deviation increase in total sentence length (about 2 additional years of time) lowers the odds of re-arrest by 14%. Overall, large increases in sentence lengths produce relatively small reductions in re-arrest.

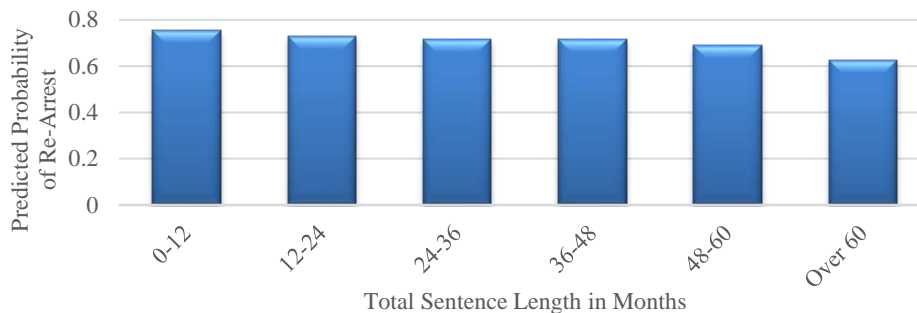
Table 3.3: The Impact of Sentence Length on the Probability of Re-arrest and Revocation

	Re-Arrest	Probation Revocation
	<i>Odds Ratio</i>	
Total Sentence Length	0.86	0.91
Probation Length	0.90	0.95
Incarceration Length	0.89	0.89

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type and year.

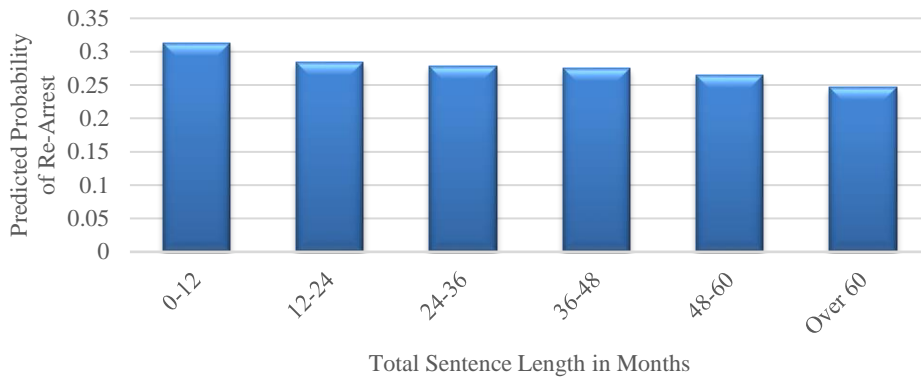
Figure 3.19 visualizes the impact of total sentence lengths on re-arrest. Generally, as sentence lengths increase, the likelihood of re-arrest decreases. Sentences of less than one year have a 75% probability of re-arrest, compared to 62% for sentences of five years or more. Once again, as shown in Figure 3.20, the results for felony/violent re-arrests mirror those for total re-arrests.

Figure 3.19: Predicted Probability of Re-arrest by Sentence Length



<sup>10</sup> Odds ratios over 1 represent positive relationships and odds ratios below 1 represent negative relationship. Sentence lengths are standardized so that coefficients represent a 1 standard deviation change (equal to 26 months for total sentence, 23 months for probation terms, and 10 months for incarceration).

Figure 3.20: Predicted Probability of Serious/Violent Re-Arrest by Sentence Length

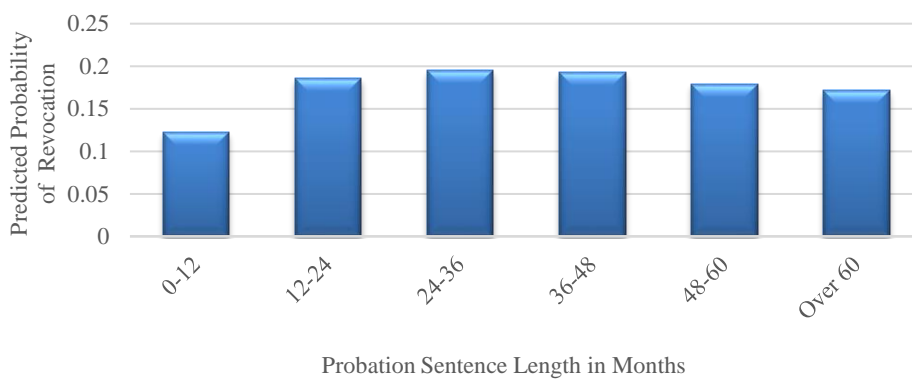


### Revocation

The second column of Table 3.3 above summarizes the impact of probation lengths on revocation, again after adjusting for other case factors. Longer sentences result in lengthier time to revocation, though these differences are substantively quite small.

Figure 3.20 below demonstrates these differences visually. Here, there is a distinct nonlinear effect. The shortest terms of probation are least likely to result in revocations, though the longest sentences also have lower odds of revocation. Offenders sentenced to one year or less of probation have a 12% probability of revocation compared to 20% for sentences between two and four years, and 17% for sentences over five years.

Figure 3.20: Predicted Probability of Revocation by Sentence Length



## Time to Failure

A similar pattern emerges for the impact of sentence lengths on *time* to re-arrest and revocation. The hazard ratios in Table 3.4 are consistently below one, indicating that sentence lengths are negatively related to the timing of recidivism – longer sentences are associated with slightly longer periods of time before a re-arrest or probation revocation occurs.

Table 3.4: The Impact of Sentence Length on Time to Re-arrest and Revocation

	Time to Re-Arrest	Time to Revocation
	<i>Hazard Ratio</i>	
Total Sentence Length	0.89	0.89
Probation Length	0.93	0.90
Incarceration Length	0.91	0.92

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type and year.

To visualize these effects, Figures 3.21 and 3.22 below reports hazard ratios (represented by the dotted lines) showing the relative risk of all re-arrests and felony/violent arrests. The graphs separate shorter (1 year or less) and longer (more than 1 year) incarceration sentences. For short stays, there is a small but significant decline in re-arrest ratios associated with sentences of 120 days or more. For longer prison terms (over 1 year), lengthier sentences are associated with lower re-arrest ratios. Similar but less pronounced patterns emerge for felony/violent re-arrests.

Figure 3.21: The Impact of Incarceration Lengths on Time to Re-Arrest

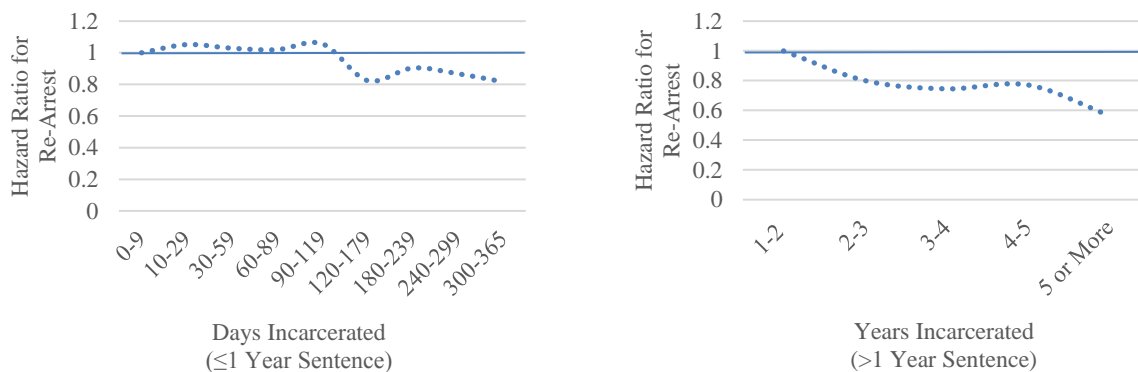




Figure 3.22: The Impact of Incarceration Lengths on Time to Felony/Violent Re-Arrest

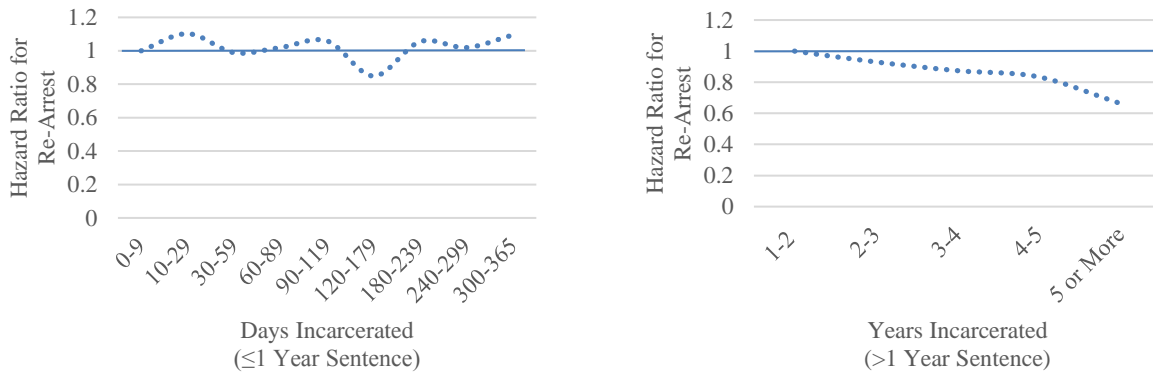
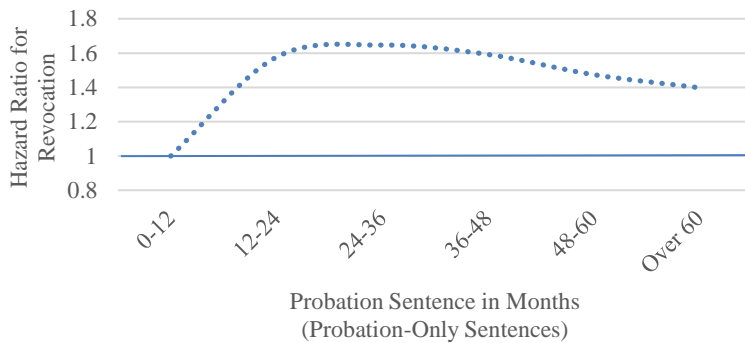


Figure 3.23 shows the hazard ratios for probation sentences (excluding split sentences). It demonstrates that the risk of revocation increases for probation terms greater than one year, though they decline slowly thereafter.

Figure 3.23: The Impact of Probation Lengths on Time to Revocation



### ***Conclusions—Sentencing and Recidivism***

The CSC inquired about the relationship between sentencing outcomes and post-release patterns of recidivism. This question was addressed by investigating associations between sentence types and lengths and the subsequent likelihood and timing of re-arrests and probation revocations.

Key results from these analyses are summarized below:

- On average, more severe sentences are associated with lower re-arrest rates. Specifically, the probability of re-arrest is highest for fine-only sentences, which may reflect the prevalence of failure to appear and failure to pay offenses in this category. The probability of re-arrest is about 6% lower for defendants sentenced to incarceration compared to probation, even after accounting for other relevant case characteristics. This

result is contrary to some prior research from other jurisdictions that finds higher recidivism rates for jail and prison sentences (e.g. Spohn and Holleran, 2002).

- In general, similar recidivism patterns characterize re-arrests for any offense and re-arrests for felony or violent crimes. Re-arrest rates are substantially lower for serious and violent crimes, but they are similarly related to sentencing outcomes. Felony/violent re-arrests are slightly less common among incarcerated offenders, especially for longer sentence lengths.
- Analyses of time to recidivism follow a similar pattern to the overall likelihood of re-arrest and revocation. The greatest risk of re-arrest and revocation is within the first year of release. Offenders sentenced to fines are re-arrested most quickly. Defendants on probation are re-arrested more quickly than incarcerated offenders, though these differences are not large in magnitude.
- In general, longer sentences are associated with lower odds of recidivism and longer periods of time before re-arrest and revocation. However, there are some notable exceptions. For example, the lowest revocation rates occur for probation sentences of less than 1 year, and the relative risk of revocation increases appreciably for probation terms that exceed 1 year. There is no relationship between sentence length and recidivism for short stints of incarceration, but for longer jail and prison sentences there is a negative association between sentence length and risk of re-arrest.

## IV. Risk Assessments and Recidivism

The Commission also inquired about the relationship between risk assessments and reoffending patterns. The following analyses examine associations between LSI-R risk scores – both composite and domain-specific – and the likelihood and timing of re-arrests and revocations. We consider measures of overall re-offending and felony/violent re-offending separately.

### *Composite Risk Scores and Recidivism*

#### Re-Arrest

Figure 4.1 summarizes the association between composite risk scores and the probability of re-arrest. There is a stark increase in re-arrest across LSI-R risk scores. About one-third of the lowest-risk defendants are re-arrested compared to virtually all of the highest-risk defendants. This figure provides strong evidence for the validity of the LSI-R as a predictor of re-arrest. Very similar patterns are observed for felony/violent re-arrests in Figure 4.2.

Figure 4.1. Probability of Re-Arrest by LSI-R Risk Scores

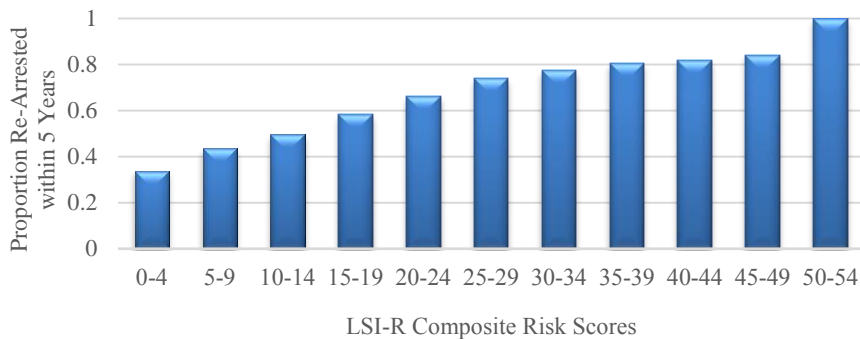
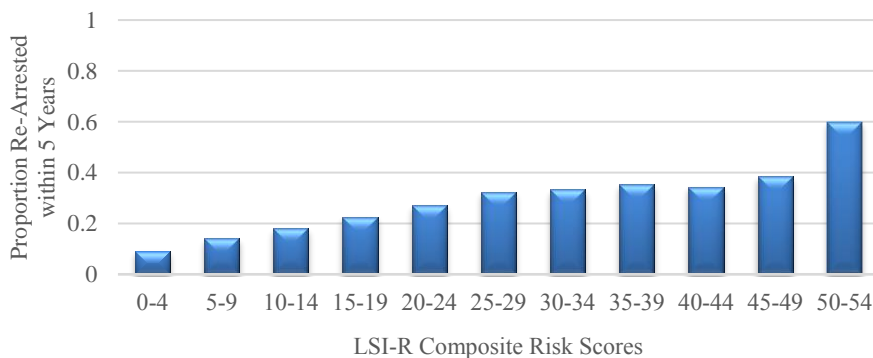


Figure 4.2. Probability of Felony/Violent Re-Arrest by LSI-R Risk Scores



Similar patterns also emerge across categorical risk groups. Figure 4.3 reports rearrests for tertiles that separate defendants into three similarly-sized risk groups, and Figure 4.4 shows more detailed categories based on established risk cutoffs (Andrews & Bonta, 1995). Consistent with Figure 4.1, these figures both suggest that higher risk categories have higher probabilities of re-arrest, offering further evidence for the positive relationship between LSI-R risk scores and recidivism. However, risk scores are not perfect predictors of recidivism. Even in the more detailed five-category risk classification, nearly 20% of high-risk defendants were not re-arrested, and 46% of low-risk defendants were re-arrested.

Figure 4.3: Re-Arrests for 3 Risk Groups

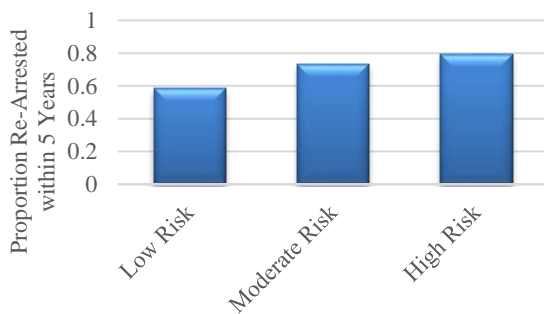
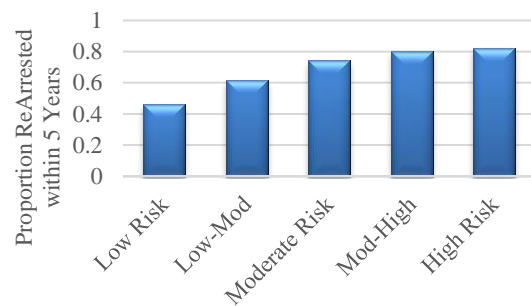


Figure 4.4: Re-Arrests for 5 Risk Groups



### Revocation

Figure 4.5 reports the association between risk and revocation. The LSI-R is also positively associated with probation revocations. The bars are not as tall as they are for re-arrest due to the lower probability of experiencing a revocation, but revocations are more likely for higher risk defendants. Less than 10% of the lowest-risk defendants were revoked, compared to 40% of the highest-risk probationers. Similar findings emerge for felony/violent re-arrests and when the three- and five-category risk groups are considered, as displayed in Figures 4.6 and 4.7.

Figure 4.5. Probability of Probation Revocation by LSI-R Risk Scores

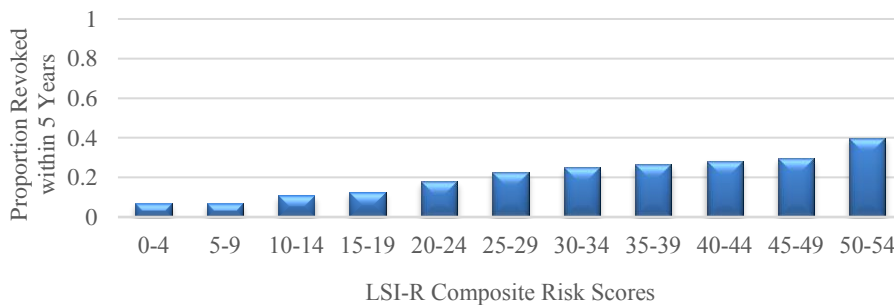


Figure 4.6: Revocations for 3 Risk Groups

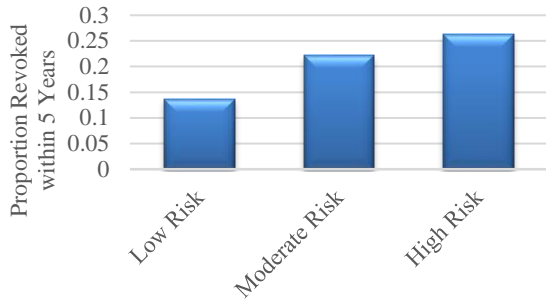
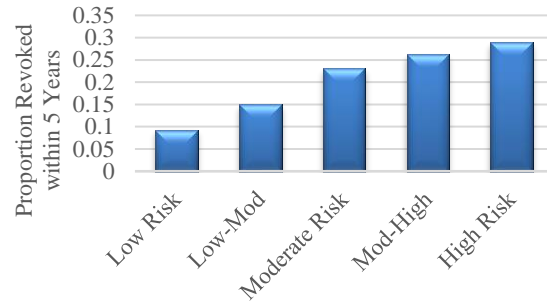


Figure 4.7: Revocations for 5 Risk Groups



Time to Failure

Figures 4.8 and 4.9 summarize the relationships between LSI-R risk scores and the timing of re-arrest for all offenses and for felony or violent crimes. As Figure 4.8 shows, higher LSI-R scores are associated with earlier recidivism. Offenders with the lowest LSI-R scores have a mean time to re-arrest of about 24 months, whereas offenders with scores of 40 and above average under 12 months. Figure 4.9 shows that a similar pattern emerges for time to felony or violent re-arrests.

Figure 4.8: Time to Re-Arrest by LSI-R Risk Scores

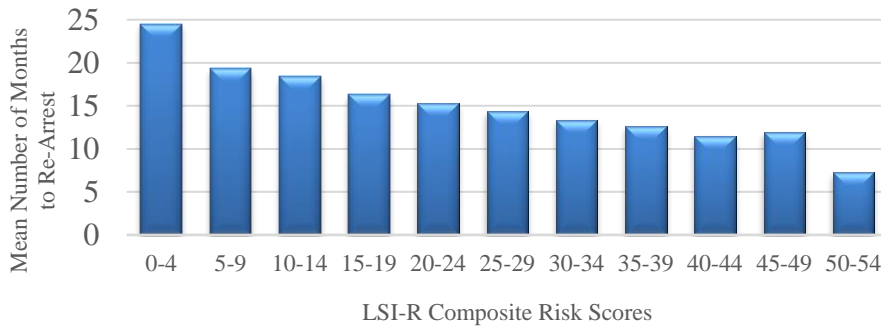


Figure 4.9: Time to Felony/Violent Re-Arrest by LSI-R Risk Scores

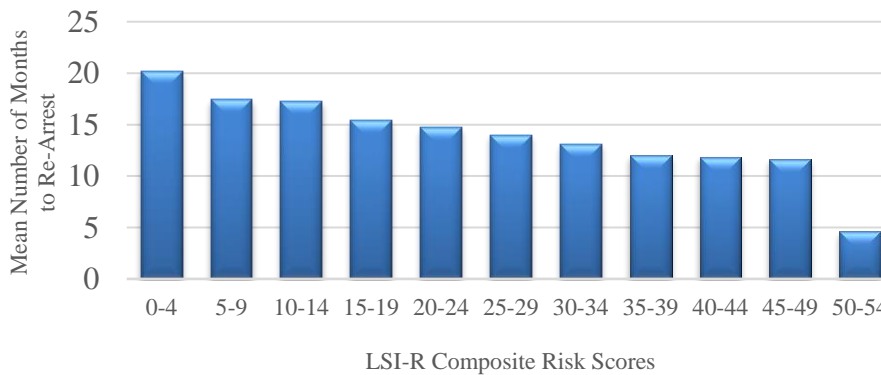
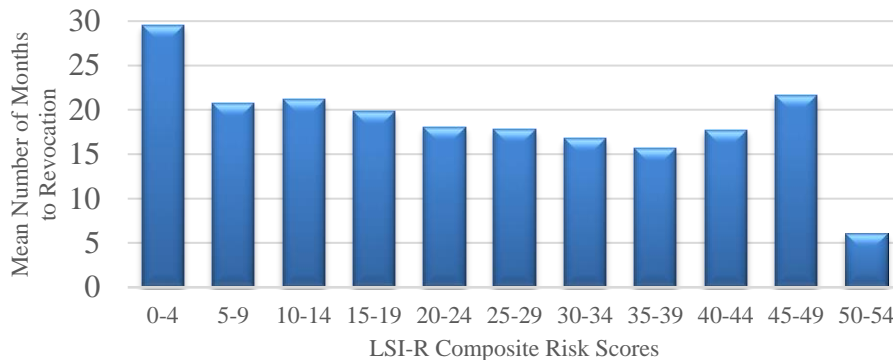


Figure 4.10 displays a slightly different pattern for revocations. In general, higher risk defendants experience shorter time to revocation. For example, offenders who score 10-14 have a mean time to revocation of 21.2 months compared to 15.7 months for offenders with scores of 35-39. For offenders with risk scores in the 40s, however, time to revocation increases as risk scores increase. Only 10 defendants with probation-only sentences had risk scores of 50 or more, making it difficult to draw conclusions about time to revocation for the highest-risk defendants.

Figure 4.10: Time to Probation Revocation by LSI-R Risk Scores



## ***Domain-Specific Risks and Recidivism***

### Re-Arrest

On the following page, Figure 4.11 summarizes the relationship between risk scores and re-arrest across specific risk domains of the LSI-R. The number of bars in each graph represent the number of items that comprise each risk domain. Most domain-specific risk scores are positively related to the likelihood of re-arrest. Not surprisingly, Criminal History scores exert a strong positive impact on re-arrests, as do Employment/Education scores. Positive associations are also found for each of the other domain-specific risks, with the exception of the Emotional/Personal Domain, where there is no clear relationship. It is interesting to note that this risk domain was also negatively related to the judicial use of incarceration (see Figure 2.3 above). Although not reported in the interest of space, similar domain-specific relationships also characterize felony/violent re-arrests.

### Revocation

Figure 4.12 summarizes the relationship between risk and probation revocations across the various risk domains in the LSI-R. As with re-arrest, most domain-specific risk scores are positively related to probation revocations. The probability of revocation nearly triples as both Criminal History and Employment/Education scores increase. It is also positively related to each of the other risk domains with the notable exception of the Emotional/Personal domain. As with re-arrest, Emotional/Personal is the only risk domain that does not appear to be related to probation revocation.

Figure 4.11: Probability of Re-Arrest across Domain-Specific Risk Scores

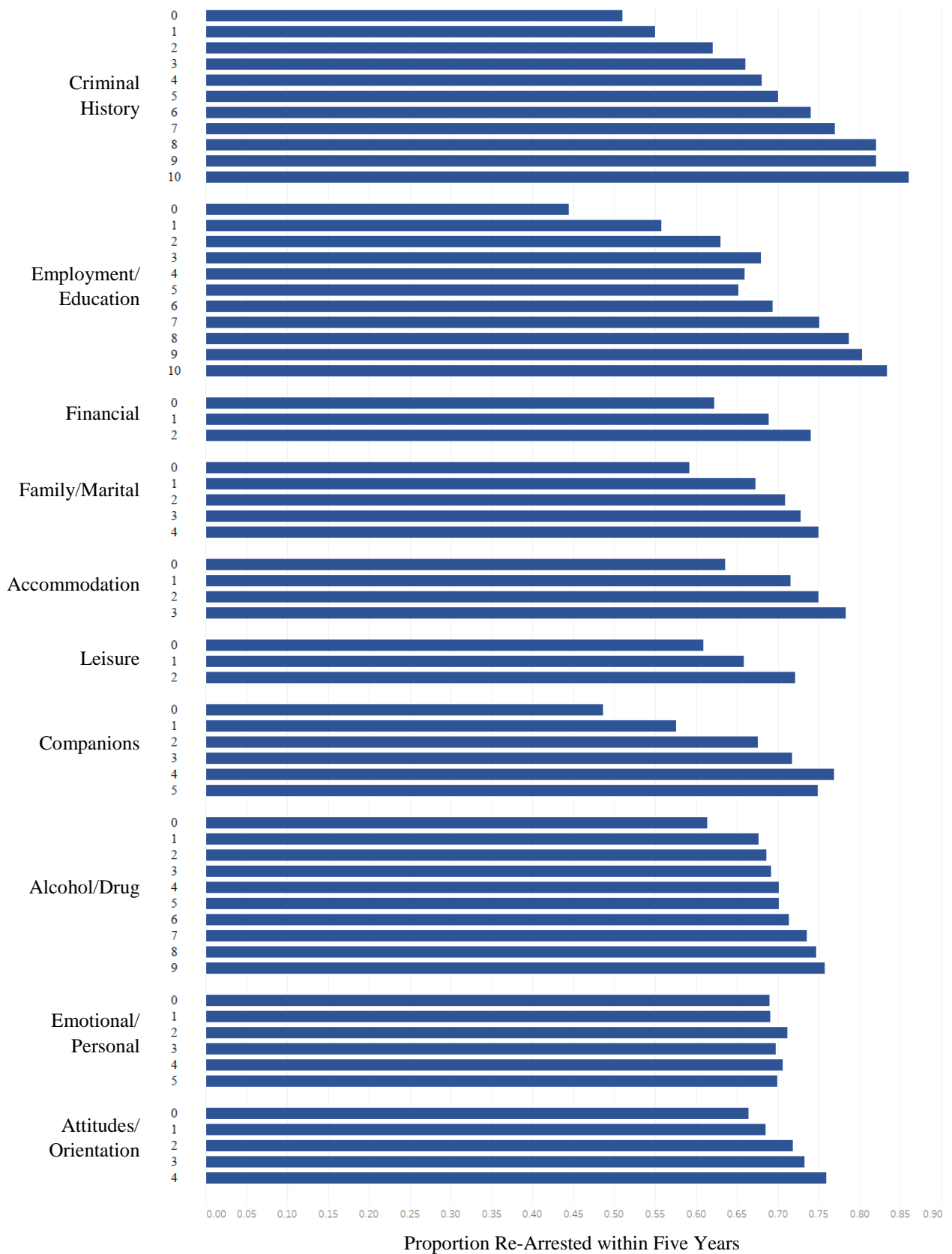
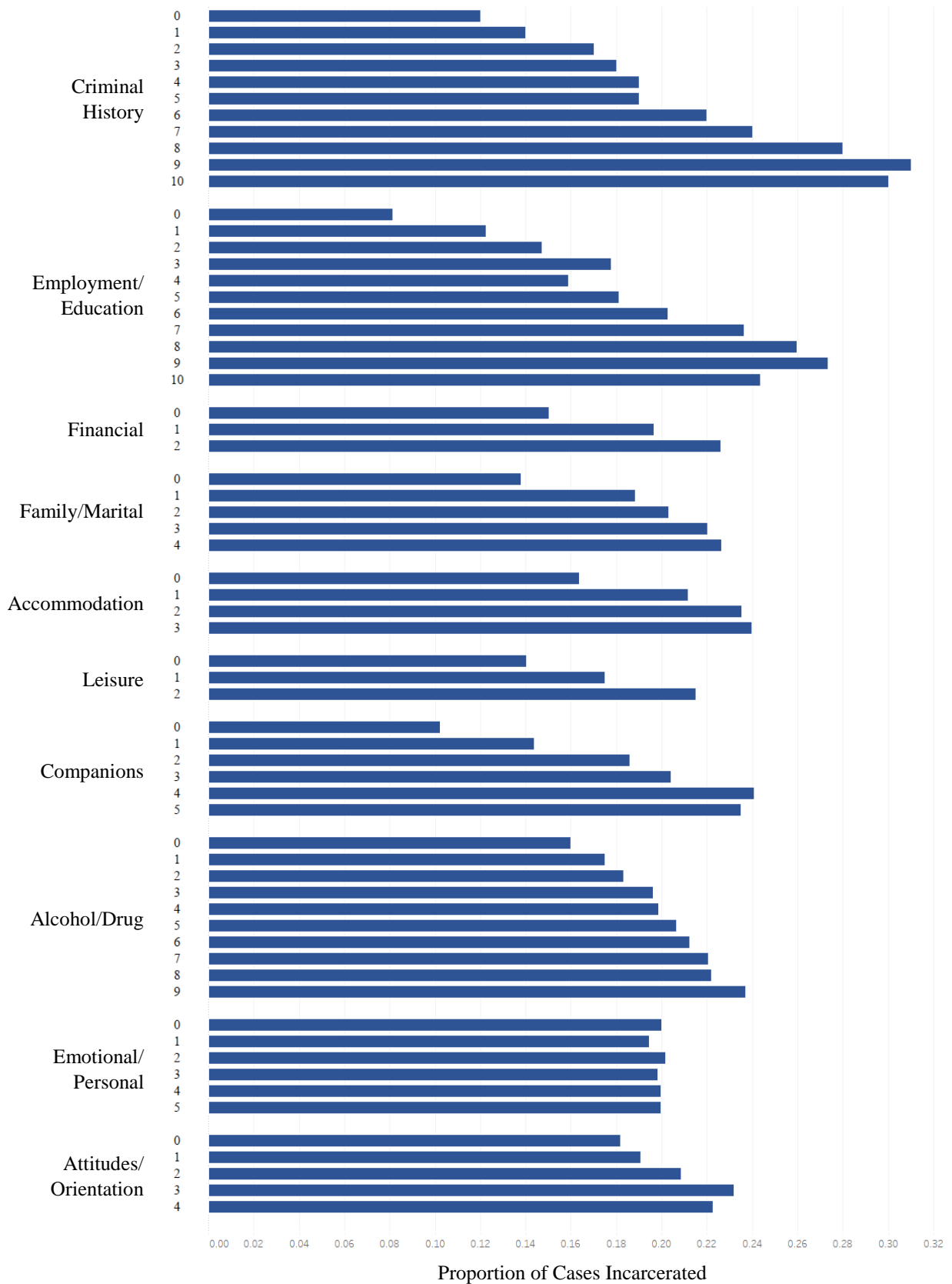


Figure 4.12: Probability of Revocation across Domain-Specific Risk Scores





## Time to Failure

Similar patterns emerge for the impact of domain-specific risk scores on *time* to re-arrest and revocation. On the following page, Figure 4.13 summarizes the relationship between risk and time to re-arrest across the various risk domains in the LSI-R. In every domain except Emotional/Personal, higher scores are associated with a shorter time to re-arrest. The strongest effect can be observed for the Education/Employment domain, where the average time to re-arrest for the highest-risk offenders is nearly six months longer than the average time for the lowest-risk offenders. Large differences are also noticeable in other domains, such as Criminal History and Companions.

Figure 4.14 on the next page summarizes the relationship between risk and time to revocation for each LSI-R risk domain. The longer axis and longer bars in this figure indicate that probation revocations occur more slowly than re-arrests. Though the effects for time to revocation are less distinct than for time to re-arrest, the same general trend develops: higher scores in individual risk domains tend to be associated with a shorter time to recidivism.

Figure 4.13: Time to Re-Arrest across Domain-Specific Risk Scores

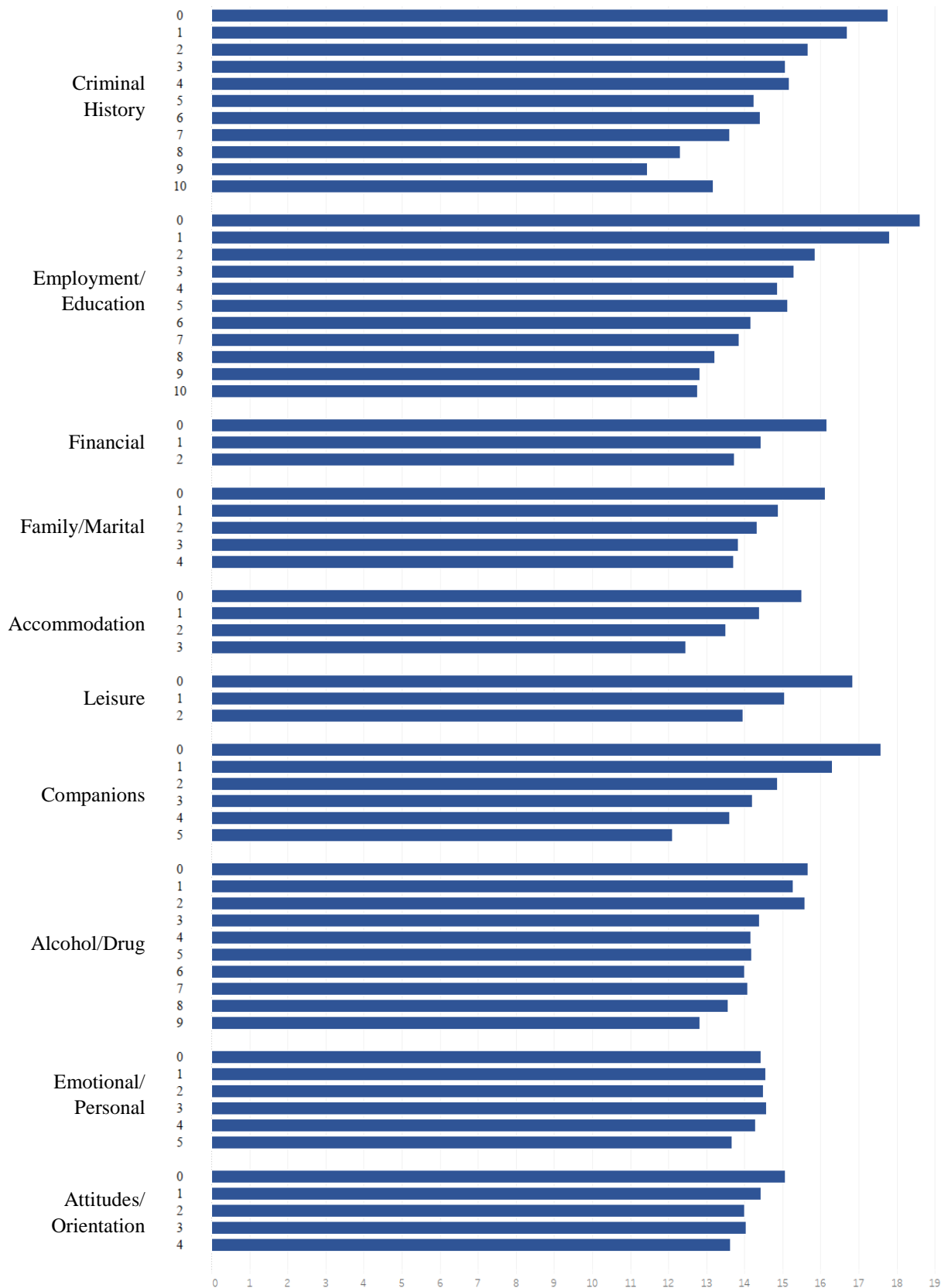
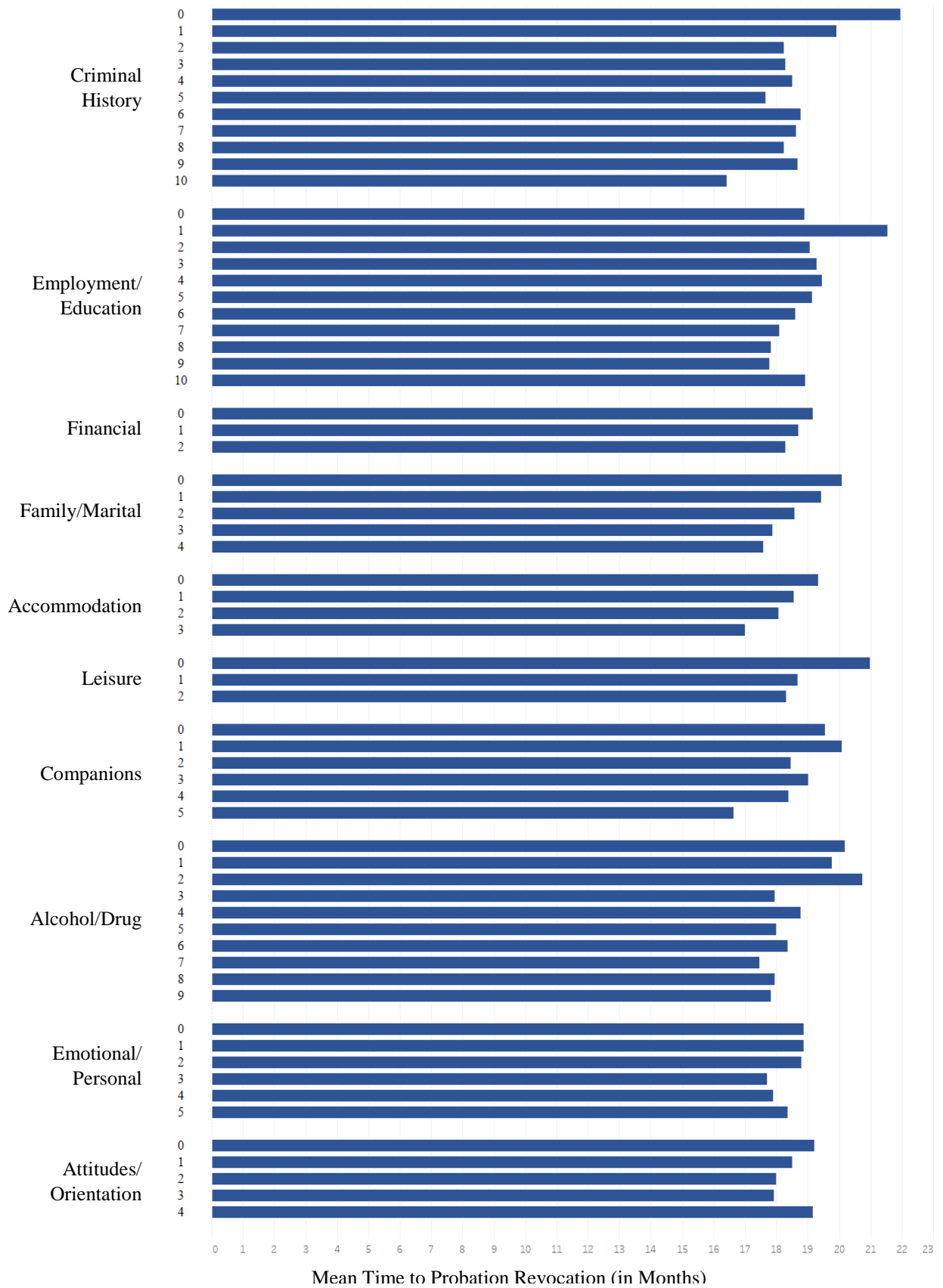


Figure 4.14: Time to Revocation across Domain-Specific Risk Scores



## *Composite Risk Score as a Predictor of Recidivism*

The previous analyses report summary relationships between risk scores and recidivism, but they do not adjust for other offense, offender and case characteristics. To account for these factors, we estimate statistical models that control for other factors related to both sentencing and recidivism. This allows us to compare similar types of defendants and similar types of offenses.<sup>11</sup> Below we examine the impact of composite risk scores on the likelihood and timing of re-arrest and revocation.

### Re-Arrest

The first column of Table 4.1 reports coefficients that capture the overall impact of LSI-R risk scores on the likelihood of re-arrest. Recall that odds ratios over 1 indicate positive relationships. Each one-point increase in composite scores is associated with a 5% increase in the odds of re-arrest. A one-standard deviation increase in the risk score (about 8 points) translates into a 49% increase in the individual odds of re-arrest.

Table 4.1: The Impact of Composite Risk Scores on the Probability of Re-Arrest and Revocation

	Re-Arrest	Probation Revocation
	<i>Odds Ratio</i>	
LSI-R Score	1.05	1.04
Standardized Score	1.49	1.36

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

To illustrate these effects, Figure 4.15 graphs the predicted probabilities of re-arrest for defendants across risk scores. The figure shows that the predicted probability of re-arrest increases sharply as risk scores increase. Importantly, this represents the independent effect of the risk score above and beyond other factors related to recidivism. Overall, the probability of re-arrest increases from 54% to 85% as risk scores go from two standard deviations below the mean to two standard deviations above it. Figure 4.16 demonstrates that a similar pattern exists for felony/violent re-arrests.

<sup>11</sup> For re-arrest and revocation outcomes, logistic regression models are used to examine the likelihood of recidivism (Menard, 2002). To investigate time to re-arrest or revocation, Cox proportional hazard models are employed (see Allison, 1984). All statistical models include variables that adjust for other relevant recidivism factors.

Figure 4.15: Predicted Probability of Re-Arrest by Risk Score

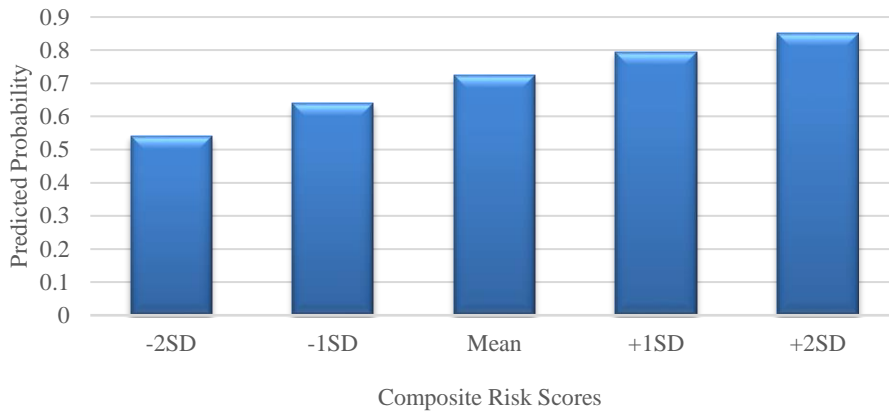
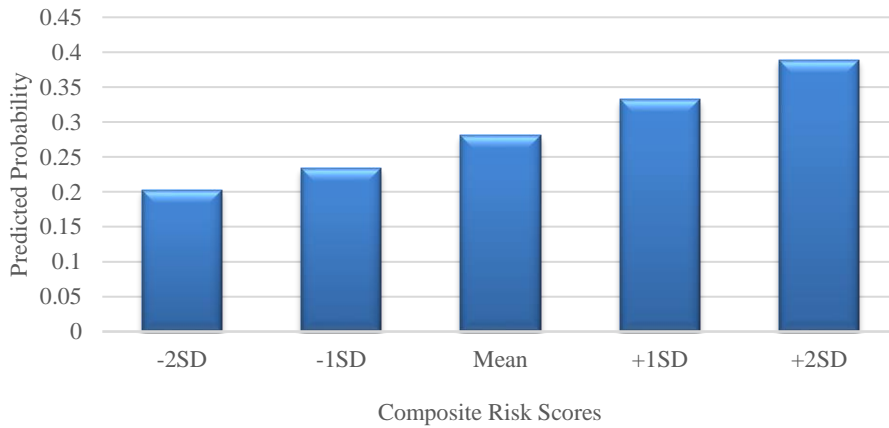


Figure 4.16: Predicted Probability of Felony/Violent Re-Arrest

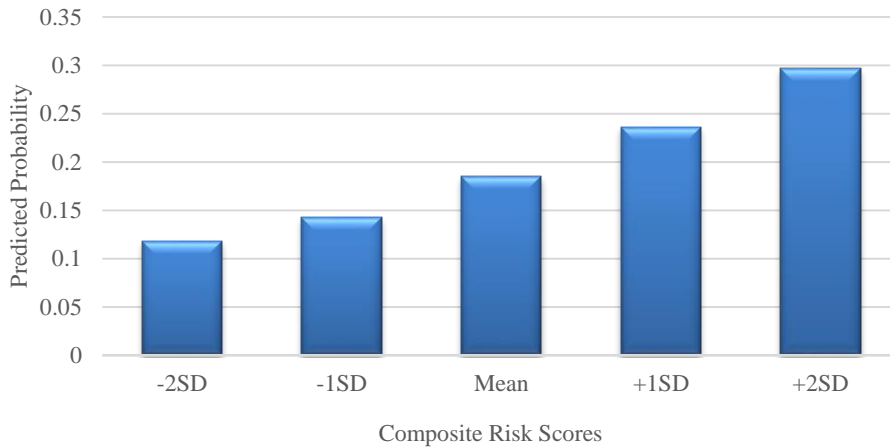


### Revocation

The second column of Table 4.1 reports coefficients that capture the effect of LSI-R risk scores on the likelihood of revocation. Each one-point increase in composite scores is associated with a 4% increase in the odds of a revocation. A 1 standard deviation increase in the risk score (about 8 points) translates into a 36% increase in the odds of revocation.

Figure 4.17 below graphically depicts the predicted probabilities of revocation for defendants across risk scores. As is the case for re-arrest, the predicted probability of revocation increases noticeably as risk scores increase, after accounting for other factors related to recidivism. The probability of experiencing a probation revocation increases from 12% to 30% as risk scores go from two standard deviations below the mean to two standard deviations above it.

Figure 4.17: Predicted Probability of Probation Revocation by Risk Score



Time to Failure

Similar patterns emerge for the impact of risk scores on *time* to re-arrest and revocation. The hazard ratios in Table 4.2 are consistently greater than one, indicating a positive relationship between risk scores and the timing of recidivism. Higher risk individuals are re-arrested and revoked more quickly than lower risk offenders, even after controlling for other relevant offender and case characteristics.

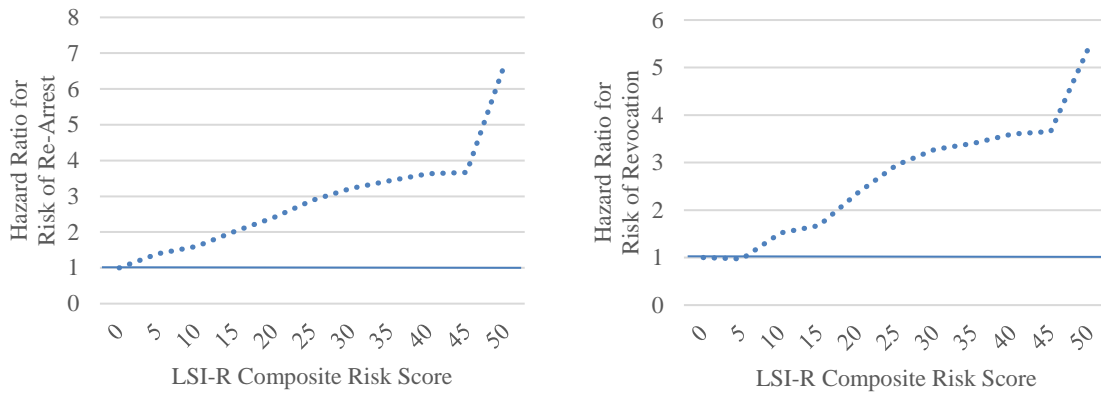
Table 4.2: The Impact of LSI-R Composite Risk Scores on Time to Re-Arrest and Revocation

	Time to Re-Arrest	Time to Probation Revocation
	<i>Hazard Ratio</i>	
LSI-R Score	1.03	1.03
Standardized Score	1.27	1.32

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

To visualize these effects, Figure 4.18 reports hazard ratios (represented by the dotted lines) for the relative risk of re-arrest and revocation across risk scores, controlling for other factors related to offending. The graphs show that high-risk individuals have higher hazard rates and recidivate more quickly, on average. The relative risk of recidivism at any given time point in the data is greatest for the highest-risk individuals, especially those with risk scores greater than 45. Similar results (not reported in tabular form) are found when felony/violent arrests are examined separately.

Figure 4.18: The Impact of Composite Risk Scores on Time to Re-Arrest and Revocation



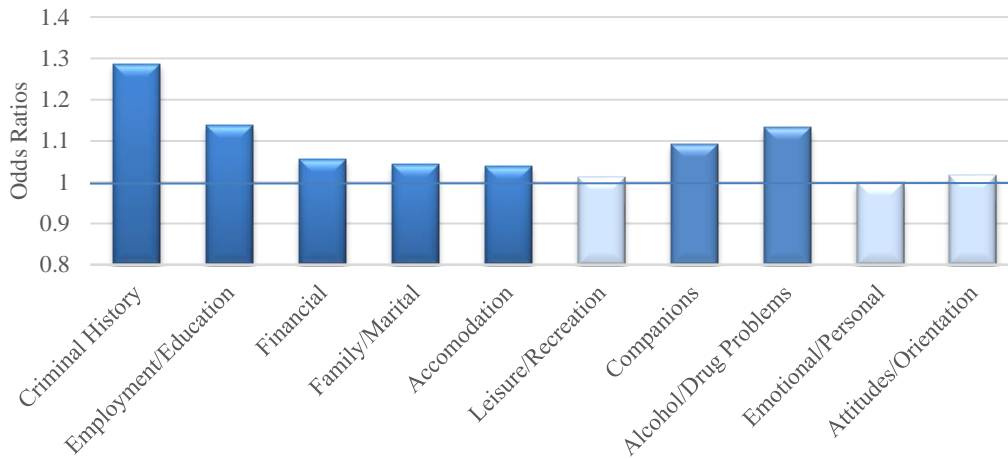
### ***Domain-Specific Risks as Predictors of Recidivism***

#### **Re-Arrest**

The next set of analyses examines the impact that different domain-specific risks exert on the likelihood and timing of recidivism, net of other offense, offender, and case characteristics. These models include the same predictors listed in the previous section but substitute standardized measures of the ten separate risk domains for the overall composite score.

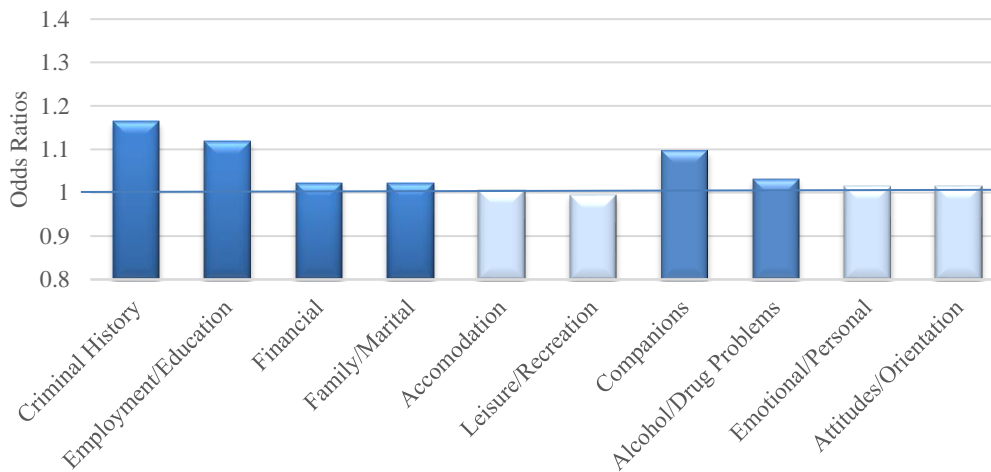
Figure 4.19 summarizes these effects for the probability of re-arrest. Again, values above one indicate a positive relationship, and values below one indicate a negative relationship. Dark blue bars identify statistically significant relationships. Standardized coefficients are reported to allow for comparisons across domains. The strongest risk domain is Criminal History, followed by Education/Employment and Alcohol/Drug Problems. A one-standard deviation increase in criminal history increases the odds of re-arrest by 28%. Each standard deviation increase in the Employment and Alcohol domains increases the odds of re-arrest by about 13%. The other domain-specific risks are also significant predictors of recidivism, with the exceptions of Leisure/Recreation, Emotional/Personal, and Attitudes/Orientations, which have small but statistically non-significant effects. Figure 4.20 again shows very similar results when felony/violent re-arrests are examined separately.

Figure 4.19: The Impact of Domain-Specific Risks on the Probability of Re-Arrest



NOTE: Estimates account for the full battery of control variables reported above.

Figure 4.20: The Impact of Domain-Specific Risks on Felony/Violent Re-Arrests



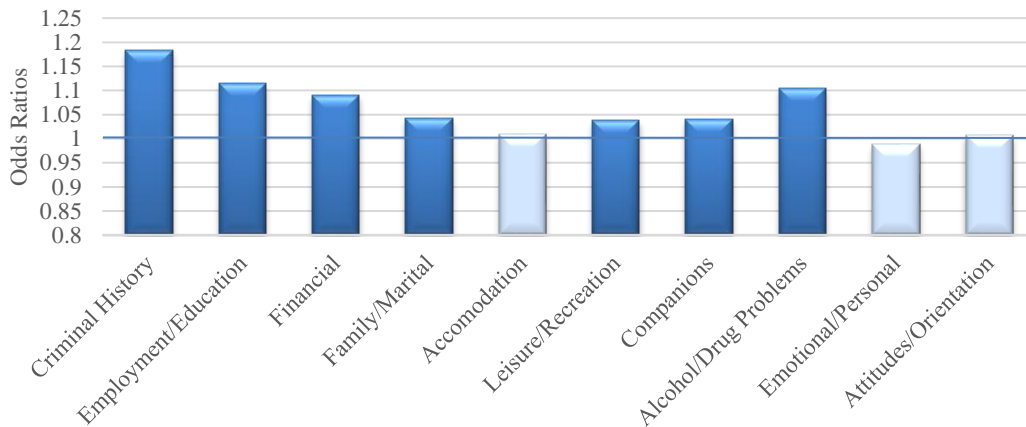
NOTE: Estimates account for the full battery of control variables reported above.

Revocation

Figure 4.21 shows a nearly identical pattern of findings for probation revocations. The strongest predictors of revocation are again Criminal History, Employment/Education and Alcohol/Drug Problems. The only difference is the Accommodation domain, which does not have a statistically significant effect, and the Leisure/Recreation domain, which does have a meaningful impact. Overall, though, differences between re-arrest and revocation analyses are substantively small.



Figure 4.21: The Impact of Domain-Specific Risks on the Probability of Probation Revocation



NOTE: Estimates account for the full battery of control variables reported above.

### Time to Failure

Findings for analyses of the timing of re-arrest and revocation are nearly identical to the previous analyses for the probability of recidivism. The same factors that predict the likelihood of re-arrest and revocation are also associated with the timing of these outcomes.

For re-arrest (Figure 4.22), all domain-specific risks are positively related to the timing of a failure except for the Emotional/Personal and Attitudes/Orientations domains. For revocation (Figure 4.24), the same findings emerge except for the Accommodation domain, which is not a statistically significant predictor. As Figure 4.23 shows, slightly different domains are related to felony/violent re-arrests – the Accommodations and Leisure/Recreation domains are not significant predictors whereas the Emotional/Personal domain is, though its effect is still relatively small.

Figure 4.22: The Impact of Domain-Specific Risks on the Timing of Re-Arrest

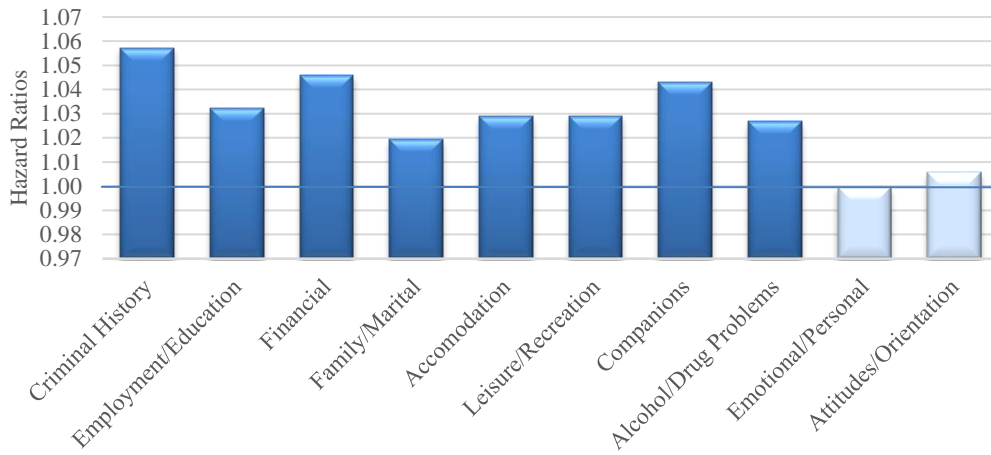


Figure 4.23: Domain-Specific Risks on the Timing of Felony/Violent Re-Arrest

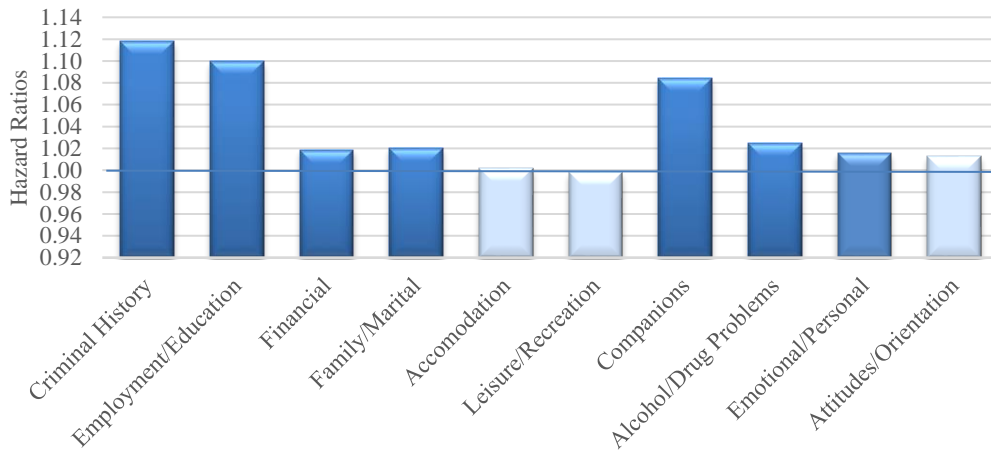
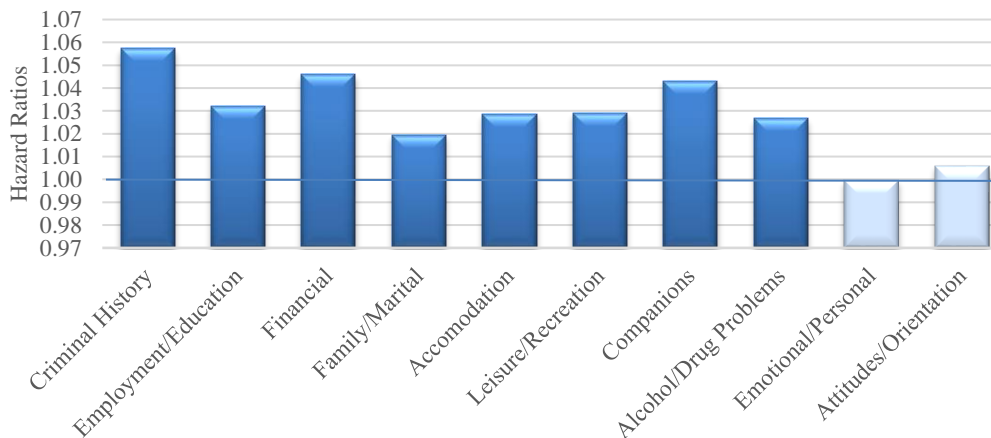


Figure 4.24: The Impact of Domain-Specific Risks on the Timing of Revocation



NOTE: All estimates in the above graphs account for the full battery of control variables reported above.

## Additional Predictors of Recidivism

### Legal/Demographic Factors

The above analyses focus on the relationship between risk assessment and recidivism, but several legally relevant factors are also significantly associated with the likelihood and timing of re-arrest and probation revocation. Select predictors are reported in the Table 4.3 below. Recall that values below 1 indicate negative relationships and values above 1 positive relationships.

Overall, serious felonies are negatively related to recidivism outcomes. Compared to Class A Misdemeanors (the omitted reference group), serious felonies are less likely to result in re-arrests and revocations. Among offense types, property and public order crimes are positively related to recidivism outcomes, whereas drug crimes are negatively related to re-arrest. Not surprisingly, criminal counts and prior convictions are positively related to all recidivism outcomes.

Table 4.3: Legal and Case Predictors of Recidivism Outcomes

	Re-Arrest	Probation Revocation	Time to Re-Arrest	Time to Revocation
	<i>Odds Ratio</i>		<i>Hazard Ratio</i>	
Class B Felony	0.77	0.56	0.79	0.67
Class C Felony	0.71	0.70	0.81	0.75
Class D Felony	0.85	0.88	0.90	0.89
Property Offense	n.s.	1.45	1.06	1.35
Drug Offense	0.79	n.s.	0.83	n.s.
Public Order Offense	1.10	1.18	1.05	1.13
Number of Counts	1.10	1.15	1.07	1.13
Prior Convictions	1.11	1.05	1.08	1.04

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, LSI-R composite risk score, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year. The “n.s.” means no statistically significant effect.

Several defendant characteristics are also significantly associated with re-arrest and probation revocation. Even after adjusting for sentence type, LSI-R risk scores and other factors such as the severity and type of offense, young, male, and minority defendants are more likely to experience re-arrest and revocation.

Table 4.4 reports the odds ratios and hazard ratios for defendant gender, race and age. Consistent with prior research (Spohn and Holleran, 2002; Kubrin and Stewart, 2003), the odds of re-arrest are 26% greater, and the odds of revocation are 38% greater, for males compared to females. Black and Hispanic offenders are also more likely to recidivate. Blacks have odds of re-arrest

that are 41% greater, and Hispanics 14% greater, compared to similarly-situated white defendants. These processes also occur more quickly for male and minority defendants. In addition, younger offenders (under the age of 25) have greater odds of recidivism relative to older offenders.

Table 4.4: Gender, Race/Ethnicity and Age Differences in Recidivism Outcomes

	Re-Arrest	Probation Revocation	Time to Re-Arrest	Time to Revocation
	<i>Odds Ratio</i>		<i>Hazard Ratio</i>	
Male	1.26	1.38	1.19	1.34
Black	1.41	1.39	1.22	1.36
Hispanic	1.14	1.16	1.09	1.15
Under Age 25	1.79	1.57	1.38	1.50

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, LSI-R composite risk score, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

### Felony/Violent Recidivism

Table 4.5 below reports parallel analyses after limiting the recidivism measures to felony and violent re-arrest. Overall, a similar pattern of results emerges. Relative to Class A misdemeanors, Unclassified felonies (primarily consisting of narcotics offenses) are more likely to result in a felony or violent re-arrest. Other misdemeanors are less likely to involve a felony/violent re-arrest. Drug offenses have lower odds of re-arrest and weapons offenses have higher odds. Number of counts and prior convictions are again positively related to felony or violent recidivism, with very similar results for time to felony/violent re-arrest.

Table 4.6 below reports findings for demographic factors. Again the overall pattern of findings is similar when the data are limited to felony or violent re-arrests. Male, black, Hispanic and younger defendants all have higher odds of felony or violent recidivism and tend to be re-arrested more quickly. The magnitude of these effects tends to be slightly larger than for the overall recidivism measures.

Table 4.5: Legal and Case Predictors of Felony/Violent Recidivism Outcomes

	Felony/Violent Re-Arrest	Time to Felony/Violent Re-Arrest
	<i>Odds Ratio</i>	<i>Hazard Ratio</i>
Unclassified Felony	1.38	1.29
Class B Misdemeanor	0.84	0.86
Class C Misdemeanor	0.94	0.95
Class D Misdemeanor	0.78	0.81
Drug Offense	0.74	0.78
Weapon Offense	1.16	1.13
Number of Counts	1.02	1.02
Prior Convictions	1.02	1.02

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, LSI-R composite risk score, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

Table 4.6: Gender, Race/Ethnicity and Age Differences in Felony/Violent Re-Arrest

	Felony/Violent Re-Arrest	Time to Felony/Violent Re-Arrest
	<i>Odds Ratio</i>	<i>Hazard Ratio</i>
Male	1.59	1.49
Black	1.42	1.34
Hispanic	1.23	1.19
Under Age 25	1.33	1.28

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, LSI-R composite risk score, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

### Predictive Validity of the LSI-R across Demographic Groups

Given substantial variation in recidivism outcomes by gender, race and age, it is fair to inquire whether risk assessments are equally valid in predicting re-offending patterns for different demographic groups. To provide an initial investigation into this issue, we examine recidivism rates by risk categories for different demographic groups. Figures 4.25-4.27 report data on re-arrest and revocation rates. In general, recidivism patterns are similar across gender and racial/ethnic groups. Higher risk scores are associated with greater risk of recidivism regardless of defendant characteristics. Similar findings characterize probation revocations. The one exception is for high-risk Asian probationers, but there are fewer than two dozen cases in this category so it should be interpreted cautiously.

Figure 4.25: Re-Arrest and Revocation Rates by Gender and Risk Category

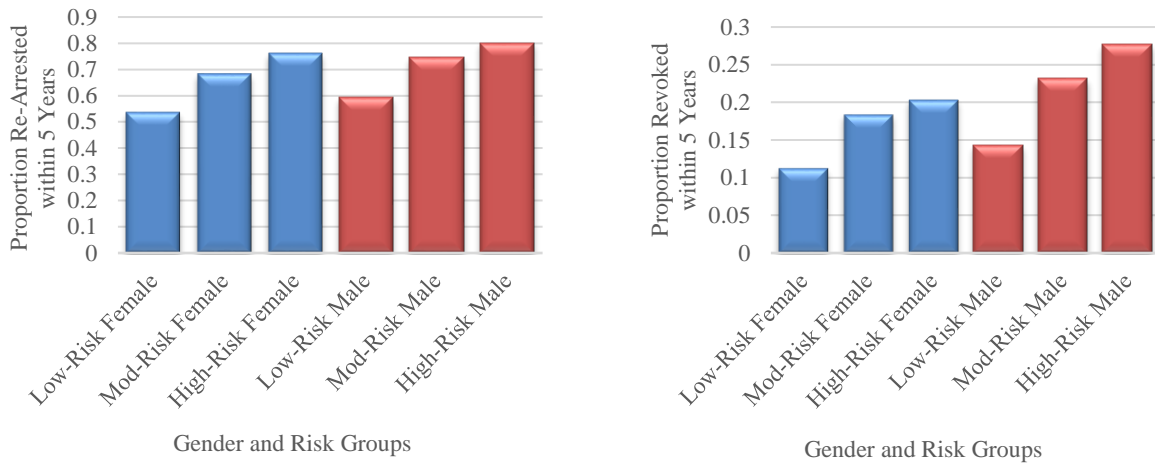


Figure 4.26: Re-Arrest Rates by Race, Ethnicity and Risk Category

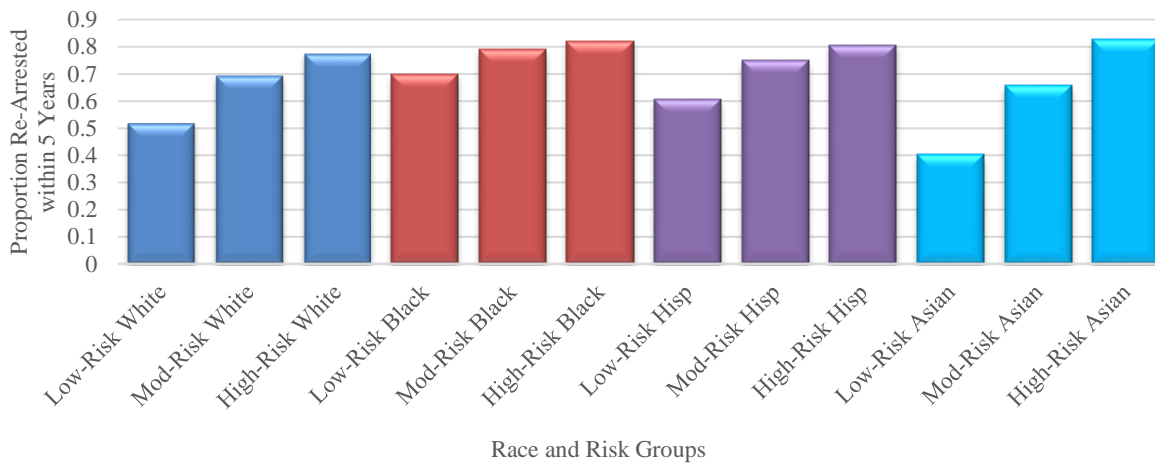


Figure 4.27: Revocation Rates by Race, Ethnicity and Risk Category

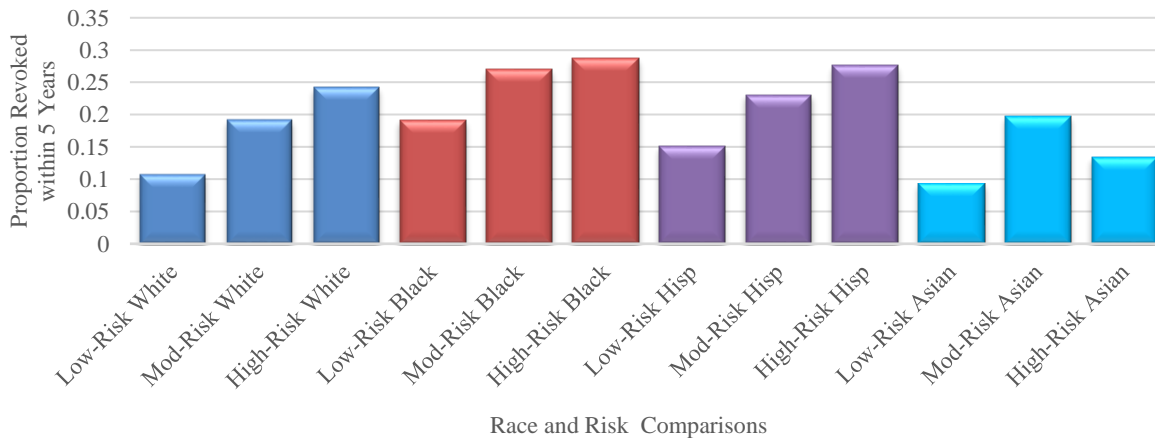


Table 4.7 reports prediction errors by race/ethnicity and gender. Some prior research suggests minority defendants may be disadvantaged by systematic prediction errors (Angwin, Larson, Mattu, & Kirchner, 2016). We find little evidence of this in Connecticut. Among high risk defendants, whites are most likely to be labeled high-risk but not reoffend (i.e. false positives). Among those labelled low-risk defendants, blacks are more likely to reoffend (i.e. false negatives). Similar patterns emerge for rearrests and probation revocations. Although there is some variation by race-ethnicity in aggregate prediction errors, they do not appear to systematically disadvantage underrepresented minority groups. For gender, women are less likely to recidivate regardless of their risk categorization, though these differences are only a few percentage points.

Table 4.7: Prediction Errors by Race, Ethnicity and Gender

	White	Black	Hispanic	Male	Female
Labeled High Risk, No Re-Arrest	23%	18%	19%	20%	24%
Labeled High Risk, No Revocation	76%	71%	72%	72%	80%
Labeled Low Risk, Re-Arrest	52%	69%	61%	59%	54%
Labeled Low Risk, Revocation	11%	19%	15%	14%	11%

NOTE: Asian American defendants omitted due to relatively small numbers in some cells.

Another way to investigate the predictive validity of the LSI-R is to examine “interactions” that test for equality of coefficients across groups in multivariate statistical models. Unlike the simple comparisons presented above, this has the advantage of adjusting for differences in case characteristics across demographic groups.

Table 4.8 displays the results of this analysis. Significant coefficients for interaction terms (e.g. Risk\*Male) would indicate that the predictive validity of LSI-R composite risk scores differs across demographic groups (e.g. males versus females). For both the probability and timing of re-arrest and revocation, the only effects that are different from 1.00 are for black offenders, who have slightly lower odds ratios. This suggests that risk scores may be slightly less predictive of the probability and timing of recidivism for black offenders compared to white offenders, though the size of these differences is quite small. Overall, these results provide some evidence that LSI-R composite risk scores have similar predictive validity across gender, race and age groups in Connecticut.

Table 4.8: Interactions for Differences in the Impact of Risk Scores by Demographic Group

	Re-Arrest	Probation Revocation	Time to Re-Arrest	Time to Revocation
	<i>Odds Ratio</i>	<i>Odds Ratio</i>	<i>Hazard Ratio</i>	<i>Hazard Ratio</i>
Risk*Male	1.00	1.00	1.00	1.00
Risk*Black	0.98	0.99	0.99	0.99
Risk*Hispanic	1.00	1.00	1.00	1.00
Risk*Under Age 25	1.00	1.00	1.00	1.00

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, LSI-R composite risk score, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

### ***Conclusions—Risk Assessments and Recidivism***

The CSC was interested in the relationship between risk assessments and recidivism. This issue was addressed by investigating associations between LSI-R risk scores, both composite and domain-specific, and the likelihood and timing of re-arrests and probation revocations. Key results from these analyses are summarized below:

- Higher scores on the LSI-R are associated with a higher likelihood of re-arrest. The odds of re-arrest increase by about 5% for each additional point on the LSI-R, and the predicted probability of re-arrest increases from 54% to 85% as risk scores transition from the 5<sup>th</sup> percentile of risk scores to the 95<sup>th</sup> percentile, even after accounting for other offense, offender, and case processing characteristics.
- Overall patterns of recidivism are similar for all re-arrests and for felony/violent rearrests. Risk assessments are significantly related to overall recidivism patterns and to felony/violent re-arrests.
- Higher scores on the LSI-R are also associated with a higher likelihood of probation revocations. The odds of revocation increase by 4% for each additional point on the LSI-R, and the predicted probability of revocation increases from 12% to 30% as risk scores transition from the 5<sup>th</sup> percentile to the 95<sup>th</sup> percentile, even after accounting for other offense, offender, and case processing characteristics.
- Time analyses indicate that risk scores have a similar impact on time to re-arrest and revocation. High-risk offenders are re-arrested more quickly than low-risk offenders; at any given time, the risk of re-arrest is greatest for the highest-risk offenders. Risk of revocation is also greater for higher risk offenders, though it decreases slightly for offenders with risk scores greater than 40.



- Higher scores on domain-specific risks are generally associated with a higher likelihood of re-arrest and revocation, as well as with a shorter time to recidivism. The consistent exception is the Emotional/Personal domain, which does not have a clear relationship with the likelihood or timing of re-arrest and revocation. Criminal History and Education/Employment have the strongest associations with recidivism outcomes.
- The likelihood and timing of recidivism are significantly associated with other offense, offender, and case processing characteristics as well. Serious felonies and drug crimes are associated with less recidivism when compared to misdemeanors and property or public order crimes. Measures of criminal history are consistently related to recidivism. Defendants who are young, male, and black or Hispanic are also more likely to experience re-arrest and revocation and tend to recidivate more quickly.

## V. Risk, Sentencing, and Recidivism

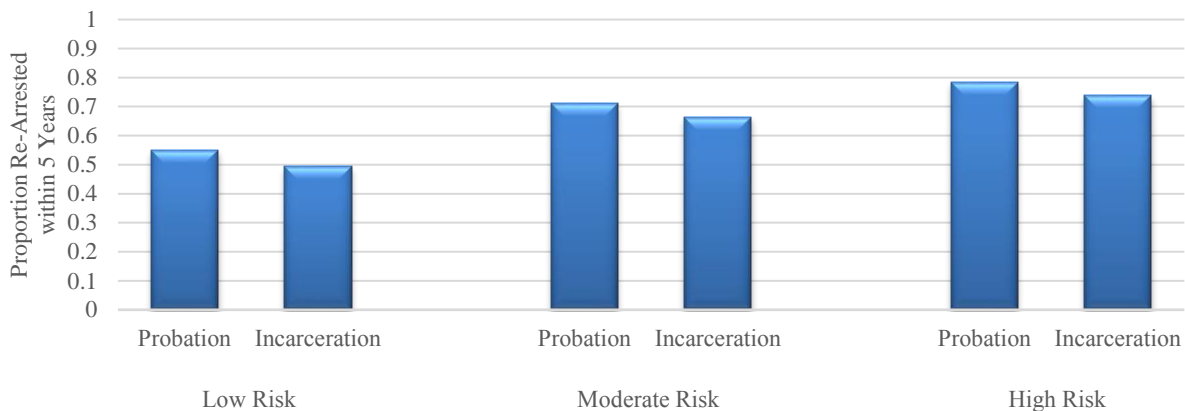
The final section of this report examines the joint relationship between risk, sentencing, and recidivism in Connecticut. It considers how risk and sentencing combinations impact the likelihood and timing of re-arrest and revocation, and it further investigates defendants who received sentences that were incongruent with their LSI-R risk scores.

### *Risk, Sentence Type, and Recidivism*

#### Re-Arrest

Figure 5.1 displays the likelihood of re-arrest across combinations of risk and sentence type. Across all risk groups, incarceration sentences are associated with slightly lower probabilities of re-arrest than probation sentences. Overall, risk scores have a greater impact on re-arrest than sentence type, as moderate-risk defendants have a higher likelihood of re-arrest than low-risk defendants, and high-risk defendants have a higher likelihood of re-arrest than moderate-risk defendants, regardless of their sentence. Parallel analyses are not conducted for revocations, because they apply only to probation sentences.

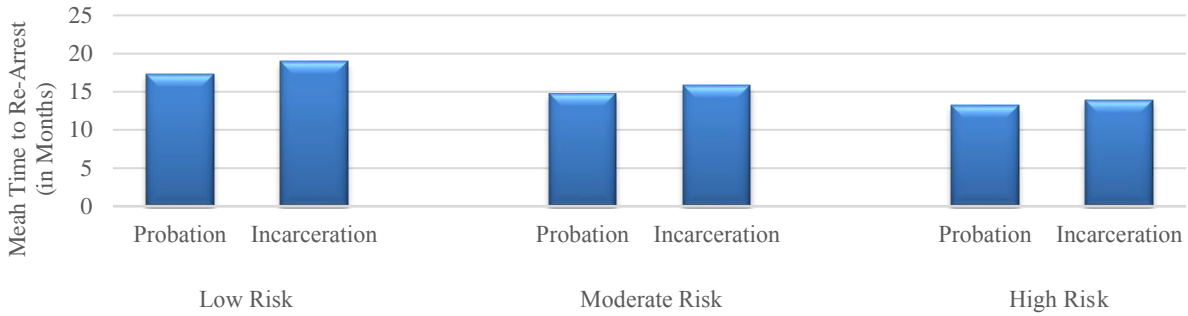
Figure 5.1: Re-Arrest by Risk Group and Sentence Type



#### Time to Failure

Figures 5.2 below displays the average time to re-arrest across risk groups and sentence types. Across all risk categories, experiencing incarceration is associated with longer times to re-arrest and revocation. The effect is largest among low-risk defendants and smallest among high-risk defendants, though differences are again relatively small. Risk and recidivism patterns are also consistent across sentence types.

Figure 5.2: Time to Re-Arrest by Risk Group and Sentence Type

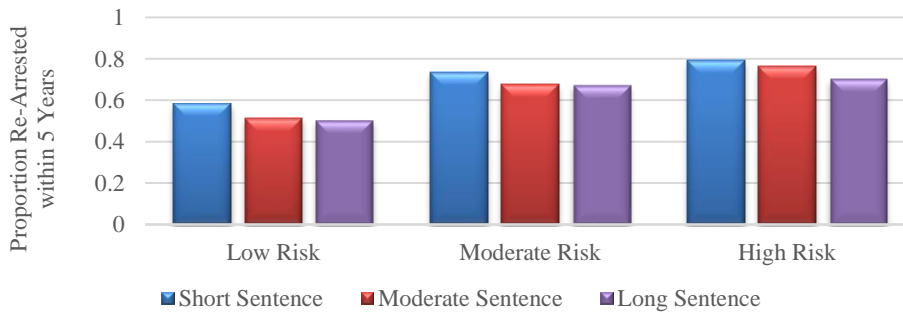


### ***Risk, Sentence Length, and Recidivism***

#### Re-Arrest

For incarcerated defendants, Figure 5.3 shows the likelihood of re-arrest by risk group and sentence length combinations. Within each risk group, there is a negative relationship between sentence length and the probability of re-arrest—defendants who receive longer sentences are less likely to experience re-arrest.

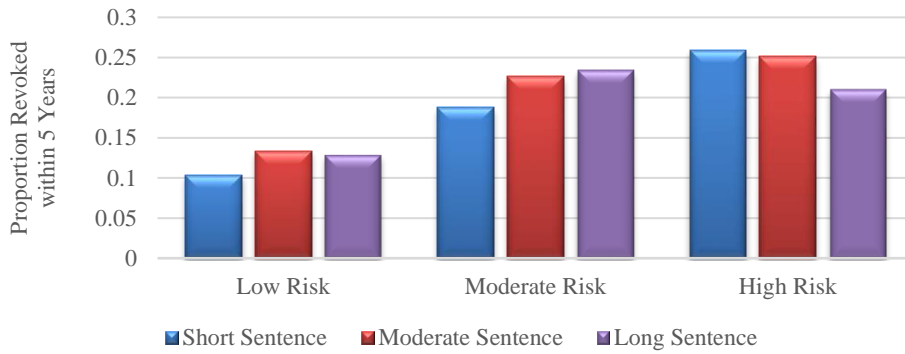
Figure 5.3: Re-Arrests by Risk Group and Sentence Length Category



#### Revocation

Figure 5.4 shows that the trends are quite different for probation revocations. Within each risk group, a unique pattern emerges. Among low-risk defendants, the likelihood of revocation is lowest for short sentences. Among moderate-risk defendants, increasing sentence lengths are associated with greater likelihoods of revocation. And finally, among high-risk defendants, increasing sentence lengths are associated with lower likelihoods of revocation. This pattern suggests that the longest probation terms should be reserved for the highest-risk offenders.

Figure 5.4: Revocations by Risk Group and Sentence Length Category



### Time to Failure

Complementary effects are observed when considering *time* to re-arrest and revocation for incarcerated defendants. Figures 5.5 and 5.6 shows the average time to re-arrest and revocation across risk and sentence length combinations. Within each risk group, defendants who receive longer sentences take more time to experience re-arrest. This effect is most pronounced among low-risk defendants, where short sentences are associated with an average time to re-arrest of 16 months and long sentences are associated with an average time of 21 months. The same is true for revocations, where short sentences are associated with an average time to revocation of 19 months and long sentences are associated with an average time of 26 months.

Figure 5.5: Time to Re-Arrest by Risk Group and Sentence Length Category

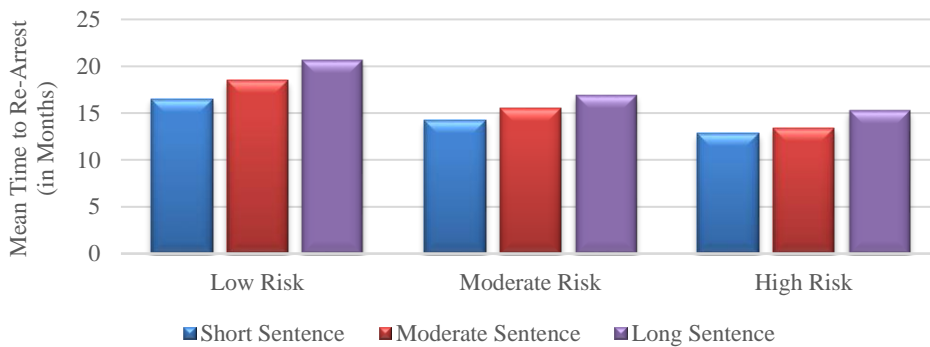
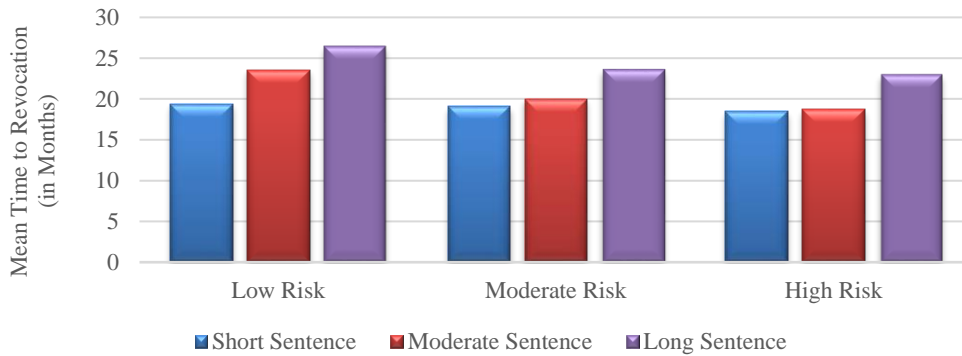


Figure 5.6: Time to Revocation by Risk Group and Sentence Length Category



### ***Risk and Sentence Type as Joint Predictors of Recidivism***

The previous analyses report summary relationships between risk scores, sentences and recidivism, but they do not adjust for other offense, offender and case characteristics. Below, we estimate statistical models that control for other factors related to both sentence type and re-arrest to compare similar types of defendants and offenses.<sup>12</sup> Table 5.1 reports the odds ratios and hazard ratios for interactions between risk groups and sentence types. For these interactions, odds ratios above one indicate a more positive relationship with re-arrest, and odds ratios below one indicate a more negative relationship. Hazard ratios above one likewise indicate higher relative rates (and shorter times) to re-arrest, while hazard ratios below one reflect the opposite. Parallel analyses are not conducted for revocations, which apply only to sentences that involve probation.

Table 5.1: Interactions for Differences in Risk Groups and Sentence Types on Re-Arrest

	Re-Arrest	Time to Re-Arrest
	<i>Odds Ratio</i>	<i>Hazard Ratio</i>
Mod. Risk*Incarceration	0.88	n.s.
High Risk*Incarceration	0.75	0.94

NOTE: The models include variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence length, and sentencing year.

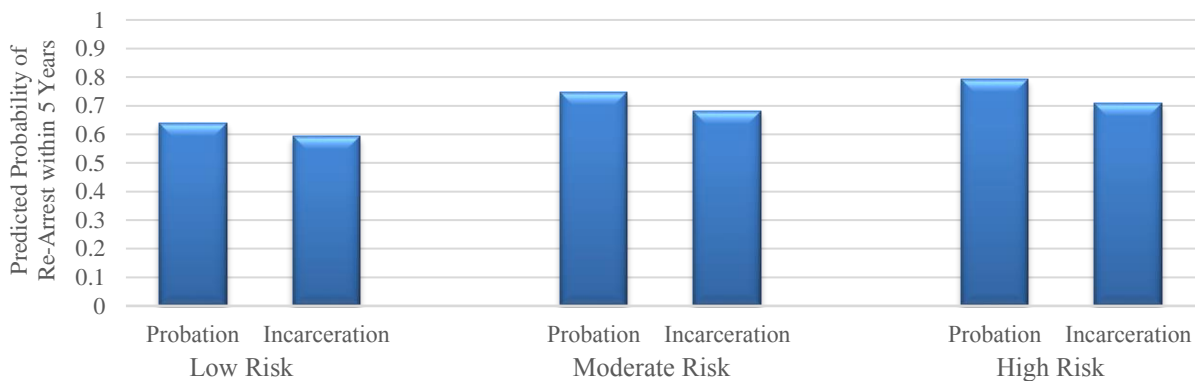
<sup>12</sup> For re-arrest, a logistic regression model is used to examine the likelihood of recidivism (Menard, 2002). To investigate time to re-arrest, a Cox proportional hazard model is employed (see Allison, 1984). All statistical models include variables that adjust for other relevant recidivism factors.

## Re-Arrest

Table 5.1 indicates that the gap in recidivism rates between prisoners and probationers is greater among moderate and high-risk offenders (relative to low-risk offenders). This means that incarceration has a stronger negative impact on re-arrest for higher-risk offenders.

To illustrate, Figure 5.7 reports the predicted probability of re-arrest for all risk group and sentence type combinations. Across risk groups, defendants sentenced to incarceration are less likely to experience re-arrest, but the difference in predicted probabilities is greatest among high-risk defendants, where incarceration lowers the probability of re-arrest by roughly 10%.

Figure 5.7: Predicted Probability of Re-Arrest by Risk Group and Sentence Type



## Time to Failure

Table 5.1 above also shows that there is less of a difference across risk groups when looking at time to re-arrest. The only significant effect is for high-risk defendants, for whom incarceration is more strongly associated with longer times to re-arrest than it is for low-risk defendants. These trends are illustrated in Figure 5.8, which reports hazard ratios for each risk group/sentence type combination. Relative to probation (represented by a hazard ratio of 1), the effect of incarceration on time to re-arrest is greatest for high risk defendants.

Figure 5.8: Hazard Ratios for Time to Re-Arrest by Risk Group and Sentence Type



## Risk and Sentence Length as Joint Predictors of Recidivism

### Re-Arrest

The next analyses provide information about relationships between risk scores, sentence lengths and recidivism after accounting for other offense, offender and case characteristics. Table 5.2 below presents odds ratios and hazard ratios for interactions between risk groups and sentence lengths for defendants who were incarcerated. For the likelihood of re-arrest, interaction terms suggest that the negative effect of sentence length becomes stronger for moderate-risk and high-risk defendants. However, these differences are quite small and do not translate into meaningful substantive impacts on recidivism outcomes.

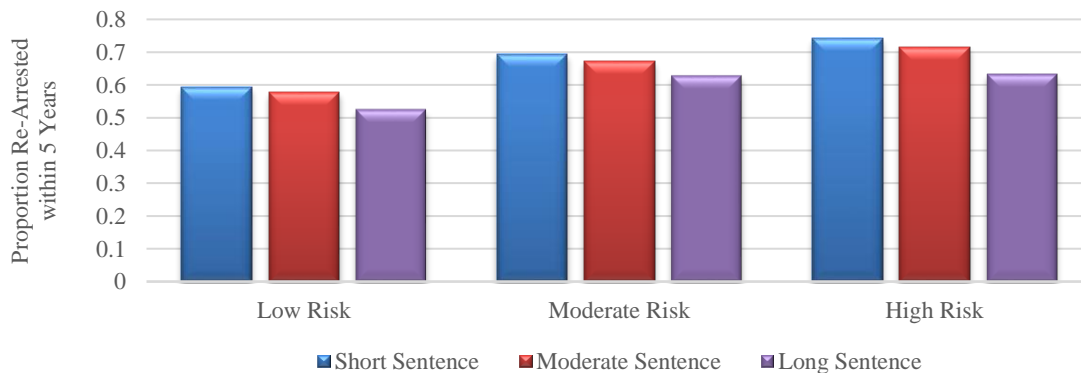
Table 5.2: Interactions for Differences in Risk Groups and Sentence Lengths on Recidivism

	Re-Arrest	Probation Revocation	Time to Re-Arrest	Time to Revocation
	<i>Odds Ratio</i>		<i>Hazard Ratio</i>	
Mod Risk*Incarceration Length	.99	n.s.	n.s.	n.s.
High Risk*Incarceration Length	.99	.99	.99	.99

NOTE: The model includes variables for defendant age, defendant gender, defendant race/ethnicity, LSI-R composite risk score, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, sentence type, sentence length, and sentencing year.

Figure 5.9 provides a graphical depiction of these effects, classifying incarceration sentences into the same short, moderate, and long categories as in previous analyses. Similar patterns in recidivism emerge within each risk group—longer incarceration sentences are associated with slightly lower probabilities of re-arrest. In line with the findings from Table 5.2, this effect is only slightly more pronounced for high-risk offenders.

Figure 5.9: Predicted Probability of Re-Arrest by Risk Group and Incarceration Length

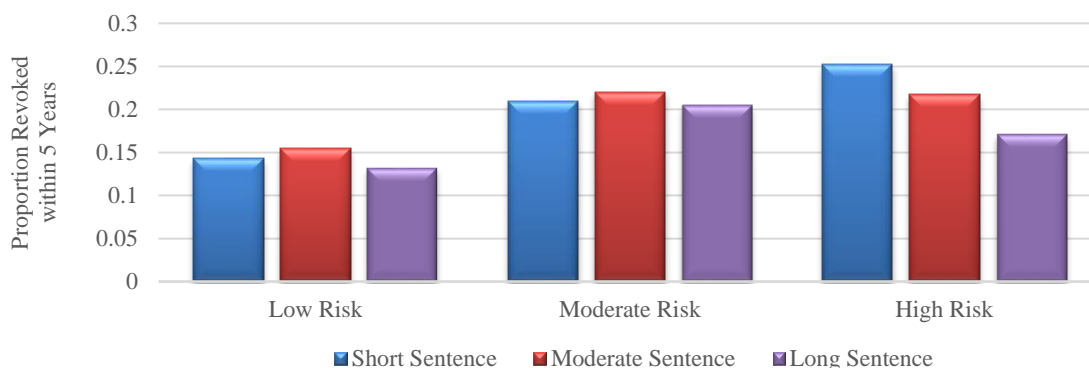


## Revocation

The second column of Table 5.2 shows this effect for the likelihood of revocation among defendants who were also sentenced to a period of probation. The association between incarceration lengths and revocation is similar for moderate-risk defendants compared to low-risk defendants (the reference group) but is slightly stronger (more negative) for high-risk defendants.

Figure 5.10 depicts this graphically. The effect of sentence length on revocations is small and similar among low-risk and moderate-risk defendants. For high-risk defendants, there is a more pronounced negative relationship, with longer sentences associated with fewer revocations.

Figure 5.10: Predicted Probability of Revocation by Risk Group and Incarceration Length



## Time to Failure

Table 5.2 also describes the effects of risk and sentence length interactions on time to re-arrest and revocation. Overall, the negative impact of incarceration lengths on time to re-arrest is slightly stronger for high-risk defendants, with a similar trend emerging for revocations.

Figures 5.11 and 5.12 demonstrate these effects graphically, showing how hazard ratios change as incarceration lengths increase across risk groups. Within each risk group, short sentences are the reference group (represented by a hazard ratio of 1). In both figures, longer sentences are associated with lower hazard rates (and therefore slower recidivism) within each risk group. The magnitude of the effects is similar between low-risk and moderate-risk defendants but it is more pronounced for high-risk defendants, suggesting longer sentence lengths are more impactful for high-risk defendants.



Figure 5.11: Hazard Ratios for Re-Arrest by Risk Group and Incarceration Length

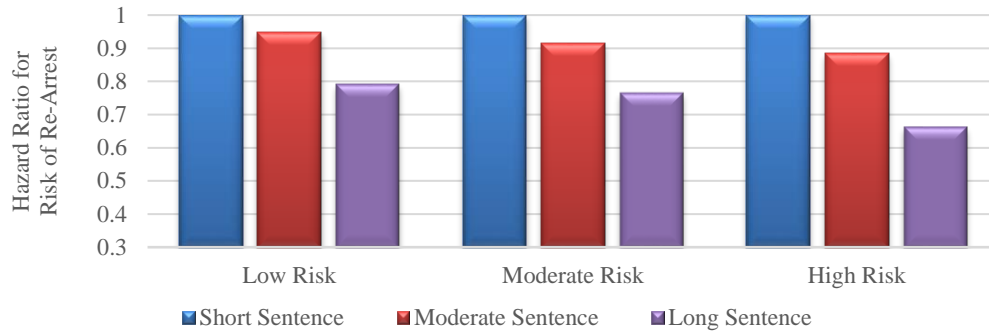
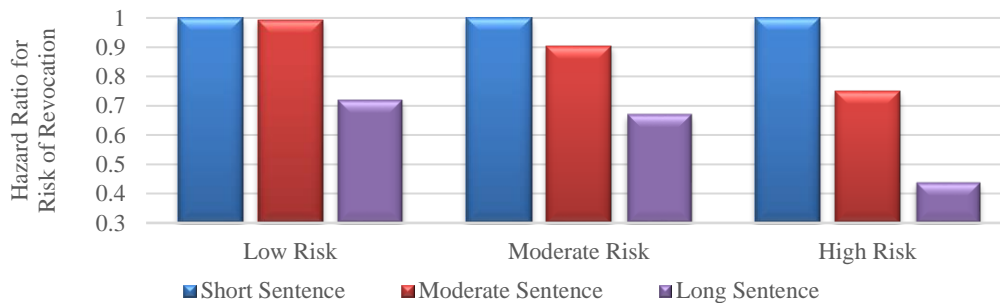


Figure 5.12: Hazard Ratios for Revocation by Risk Group and Incarceration Length



### ***Sentence Length Incongruence as a Predictor of Recidivism***

Another way to think about how risk and sentencing jointly affect recidivism is by considering the effects of outlier incarceration sentences, where defendants’ sentence length category does not align with their risk group. The last set of analyses in this report consider the impact of low and high outlier sentences on the likelihood and timing of re-arrest, after accounting for other offense, offender, and case characteristics. Table 5.3 below displays both odds ratios and hazard ratios representing the impact of outlier sentence lengths for defendants who were incarcerated.

Table 5.3: Impact of Outlier Incarceration Lengths on Re-Arrest

	Re-Arrest	Time to Re-Arrest
	<i>Odds Ratio</i>	<i>Hazard Ratio</i>
Too Low Sentence	1.15	1.11
Too High Sentence	n.s.	n.s.

NOTE: The models include variables for defendant age, defendant gender, defendant race/ethnicity, offense severity, offense type, prior charges, prior convictions, mandatory minimums, supervision status at time of offense, counts of conviction, risk group, sentence length, and sentencing year. The “n.s.” means no statistically significant effect.

## Re-Arrest

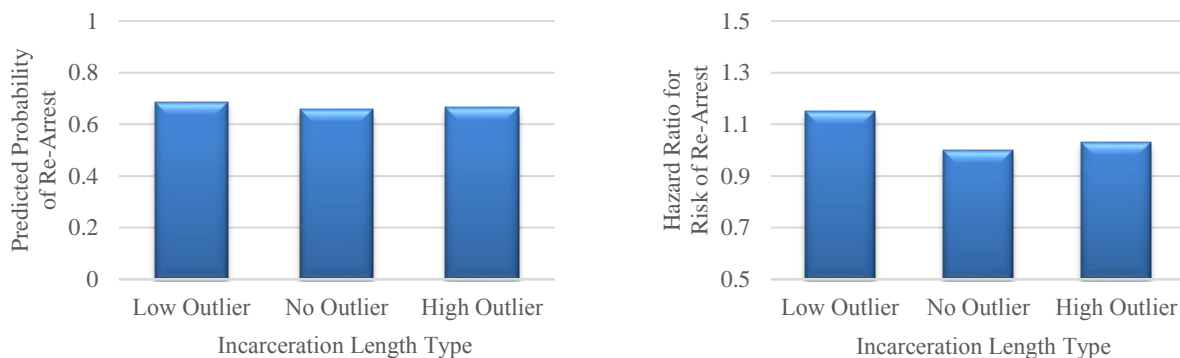
The first column of Table 5.3 details the effects of high and low outlier sentences on the likelihood of re-arrest. Even after LSI-R risk groups and other relevant factors including sentence length have been accounted for, sentences that are shorter than their risk category are associated with an increased probability of re-arrest. There is no statistically significant impact of sentences that are longer than their associated risk categories.

Figure 5.13 below illustrates this pattern. The predicted probability of re-arrest is about 3 percentage points higher for low outlier sentences compared to sentences that are at or above their associated risk level.

## Time to Failure

Table 5.3 above also describes the effects of outlier sentence lengths on time to re-arrest. The findings indicate that the highest hazard rate is for low outlier sentences, or sentences that are lower than their corresponding risk group. Figure 5.13 below also illustrates this pattern. Low outlier sentences are associated with the highest hazard rates, or fastest times to re-arrest.

Figure 5.13: Probability and Hazard Ratio for Re-Arrest by Outlier Sentence Length Type



## ***Conclusions—Risk, Sentencing, and Recidivism***

The CSC was interested in relationships among risk assessments, sentencing and recidivism, particularly in the context of “outlier” sentences that do not align with their corresponding risk scores. This question was addressed by examining associations between recidivism and various combinations of risk group and sentence type and length. Key results from these analyses are summarized below:

- The association between sentence type and recidivism outcomes is strikingly similar across risk groups. Incarceration sentences are associated with lower probabilities of re-arrest, as well as longer times to re-arrest for low-risk, moderate-risk, and high-risk defendants alike. These patterns hold even after accounting for relevant offense, offender and case characteristics.

- The association between incarceration length and recidivism outcomes is also similar across risk groups, with longer sentences tending to accompany less recidivism and longer time to recidivism. Analyses examining the likelihood of revocation reveal an important exception to this trend—shorter sentences are associated with greater risk of revocation only among high-risk defendants.
- Where there are differences in the effects of sentencing outcomes on recidivism across risk groups, the differences tend to involve high-risk defendants. These differences are most noticeable after accounting for other relevant factors. The effects of incarceration and incarceration length on the probability of re-arrest and the timing of re-arrest are all greatest among high-risk defendants in the multivariate analyses.
- Patterns of recidivism for high and low outlier sentence lengths provide further evidence that longer sentences are associated with less recidivism. The longer the sentence length group was in comparison to the risk group, the lower the likelihood of re-arrest and revocation and the lower the hazard rates for time to re-offending. Sentences that are shorter than expected based on risk categories have the highest likelihood and fastest time to recidivism, while sentences that are longer than expected are associated with a lower likelihood and less time to recidivism.

## VI. Conclusions

The Connecticut Sentencing Commission sought an empirical study of the impact of risk and needs-based sentencing. The goal of the proposed study was to better understand the potential impact of evidence-based sentencing on sentencing decisions and relevant post-sentencing outcomes in Connecticut. This report offers an assessment of the degree to which current sentencing practices are consistent with a risk and needs-based approach, and the degree to which the LSI-R predicts post-release recidivism in Connecticut for defendants sentenced during Fiscal Years 2008-2010. Results from the assessment yield several policy-relevant research conclusions.

### *Summary of Findings*

- *LSI-R risk scores are associated with incarceration but not sentence length decisions.*

The probability of incarceration increases as overall risk scores increase, but there is little relationship with sentence lengths. This suggests judges consider risk more for incarceration than sentence length decisions. Many offenders receive sentence lengths that do not align with their risk categories. These patterns are largely consistent across domain-specific risk categories with two exceptions. The Emotional/Personal domain has little relationship to sentencing and the Drug/Alcohol domain is negatively related to sentence lengths. This may indicate judges view these areas more as indicators of criminogenic needs than risk of recidivism.

Overall, the findings suggest Connecticut judges are sentencing in ways that are consistent with a risk/needs approach to sentencing, at least for the incarceration decision, though there is less evidence of consistency with a risk/needs approach for sentence length decisions.

- *LSI-R risk scores are positively related to recidivism outcomes.*

There is a strong association between LSI-R risk scores and recidivism outcomes. Higher-risk defendants are more likely to experience re-arrests and probation revocations, and they recidivate more quickly, on average. These findings hold regardless of sentence type. This suggests that the LSI-R has predictive validity in the Connecticut sample.

At the same time, risk is not a perfect predictor of recidivism. Nearly 20% of the highest-risk defendants were *not* re-arrested within five years, whereas 46% of the lowest-risk defendants *were* re-arrested. Risk scores along with other offense, offender, and case characteristics are imperfect determinants of re-offending, so there is substantial uncertainty in predictions of which defendants will recidivate.

- *More severe sentences are negatively associated with recidivism outcomes.*

In contrast to previous research (e.g. Spohn and Holleran, 2002), the current analyses find that harsher punishment is associated with less recidivism. Longer incarceration sentences are associated with lower re-arrest rates and longer times to re-arrest. These findings persist when only serious (violent or felony) re-arrests are considered, and they are consistent across the spectrum of risk scores.

Several dynamics could explain these unexpected results. They may reflect differences in the study population; Connecticut tends to use shorter incarceration sentences than other jurisdictions, which impacts the make-up of the incarcerated population. They could also reflect the study's unique analytic sample, which excludes longer incarceration sentences (see 2018 Data Report). Finally, the relationship could be indicative of an efficacious correctional system in Connecticut, which successfully deters, incapacitates, or rehabilitates offenders with prison programming. With the available data, we are unable to adjudicate which, if any, of these explanations might explain these findings.

- *Composite risk scores and predictive validity are similar across race and gender.*

We find little evidence of racial, ethnic or gender disparity in average LSI-R risk scores. The only exception is for Asian defendants, who score about five points lower than other groups. However, there is meaningful variation in some domain-specific risks. Blacks score highest on Criminal History, Whites score highest on Drugs/Alcohol, and Hispanics score highest on Education/Employment. Similarly, males score higher on Criminal History while females score higher on Emotional/Personal problems.

The predictive validity of the LSI-R is similar across demographic groups. Prediction errors are comparable, and errors do not systematically disadvantage minority defendants. However, composite risk scores are related to other factors like education and employment status. Unemployed and less educated defendants have higher risk scores across nearly all domains, which translate into substantial differences in average risk scores by socioeconomic status.

## ***Policy Considerations***

The current findings offer several potential policy insights for the CSC to consider as it decides whether or not to implement an evidence-based sentencing system.

- *LSI-R risk scores are not directly related to demographic factors but may still contribute indirectly to unwarranted disparities.*

First, we find that racial and ethnic differences in overall LSI-R scores and their association with recidivism are small. This provides evidence that adopting a risk and

needs-based sentencing system would not lead directly to large racial or ethnic differences in punishment.

However, differences in domain-specific risk scores are more pronounced, which may contribute indirectly to unwarranted disparities (Starr, 2014). Black defendants, for example, have higher Criminal History scores, which are one of the strongest predictors of both sentencing and recidivism outcomes. In contrast, White defendants have higher Drugs/Alcohol scores, which are *negatively* related to sentence lengths. It is possible these differences could translate indirectly into unwarranted disparities, so it will be important for the CSC to continue to monitor racial and ethnic disparities in risk, sentencing, and recidivism outcomes if it decides to provide LSI-R scores to judges.

Moreover, composite LSI-R scores are closely related to defendant socioeconomic status. Some domains (Education/Employment and Financial) are explicitly grounded in the financial resources of a defendant, and the remaining domains correlate with them, so overall risk scores may systematically disadvantage offenders from lower socioeconomic groups. The CSC may wish to further examine the extent to which socioeconomic status impacts risk evaluations and punishment outcomes. Such a discussion might lead to greater emphasis on the use of treatment programs that target the specific needs of socioeconomically disadvantaged defendants while ensuring the effective representation of indigent defendants with high risk scores.

- *Although the LSI-R can provide useful information to judges at sentencing, it was not designed specifically to be a sentencing tool.*

Second, the individual items in the LSI-R (see Appendix A) include a variety of background questions that have not been scrutinized or validated in the context of sentencing. The LSI-R was designed to inform correctional decisions (Andrews & Bonta, 1995), and little consideration has been devoted to whether the questions are equally relevant for punishment decisions.

Many factors related to sentencing are not included in the LSI-R. The instrument is designed to assess risk of recidivism but does not consider other essential sentencing goals, such as offender culpability, deservedness of punishment, retribution, or amenability to treatment programs. We encourage the CSC to consider these broader philosophical issues as it considers adoption of a risk-assessment tool at sentencing.

- *LSI-R risk scores are correlated with recidivism outcomes but predict them imperfectly.*

Third, findings suggest that LSI-R scores are a useful indicator of defendants' risk of recidivism, as higher-risk defendants are significantly more likely to recidivate, but the tool is not a perfect predictor of recidivism. Many defendants labeled high-risk do not reoffend, and many defendants labeled low-risk do.

Although high-risk offenders are more likely than low-risk offenders to experience re-arrest for felony or violent offenses, the LSI-R is not designed specifically to predict serious or violent re-offending. The vast majority of re-arrests in our data occur for low-level offenses, often minor property or public order crimes. While the LSI-R is useful for identifying overall recidivism risk, then, it is not designed to selectively identify offenders who are the most serious risks to public safety.

It is important that judges retain discretion to consider LSI-R risk scores alongside other salient factors when determining appropriate punishments. If the CSC decides to provide LSI-R assessments to sentencing judges, they should be used as only one piece of relevant information to be considered alongside other factors, and it may be beneficial for the CSC to provide judicial trainings on how to weigh risk scores relative to other relevant sentencing considerations.

- *Risk scores are closely related to incarceration but not sentence length decisions.*

Fourth, our results indicate that current sentencing practices in Connecticut are largely consistent with a risk and needs-based sentencing approach when it comes to incarceration decisions, but not sentence length decisions. This suggests that the implementation of a risk assessment tool may have greater impact on sentence lengths than sentence types in the state of Connecticut. If the CSC decides to implement risk and needs-based sentencing, we recommend the development of a long-term plan for monitoring the impact of changes on sentencing patterns and correctional populations.

- *The LSI-R does not distinguish factors related to recidivism risk versus offender needs.*

Fifth, the LSI-R relies on the identification of both risks and needs to guide decision-making. It is intended to assist practitioners in *reducing* risk rather than just managing it (Andrews, Bonta, & Hoge, 1990). Given that judges are likely to view some domains more as indicators of criminogenic need than risk, the CSC may want to consider how the LSI-R can also be used to identify appropriate rehabilitative interventions. Specifically, it may wish to detail which elements in the LSI-R should be used as indicators of risk and which identify potential areas for treatment.

## ***Study Limitations***

It is important to acknowledge that the current study is not without limitations. Data and measurement issues need to be considered when assessing our results. Below we identify several limitations and consider how they may impact our conclusions.

- *Data limitations.* As detailed in the 2018 Data Report, LSI-R risk assessments are only available for a non-random subset of less serious offenders. The consequence is that our

conclusions must be restricted to the population of less serious offenders in Connecticut. We are unable to speak to the relationships between risk, sentencing and recidivism for the most serious offenders in the state. It is possible that this may also impact our assessment of the relationship between sentencing and recidivism in the state because we cannot analyze recidivism patterns for the most serious offenders.

- *Variable limitations.* Although the data used in the current analyses are high-quality, some factors that may impact sentencing and recidivism that are unavailable. Most importantly, we do not account for pretrial detention processes. Prior work shows that pretrial detention impacts sentencing (e.g. Spohn, 2009), so this may represent an important omitted variable. We also have no data on attorney, judge or probation officer backgrounds, which may also impact case outcomes. Limited information is available on court contexts, as well, so we cannot account for local sentencing or supervision norms, or differences in police enforcement behavior across jurisdictions.
- *Measurement limitations.* There are several potential measurement issues that could impact our results. Most importantly, we have limited detail on noncustodial sentences and on the services provided to offenders on probation or in prison. Analyses of “community” punishments may involve heterogeneous offenders, and we cannot account for differences in quantity or quality of serviced provided to offenders in penal institutions. The analyses are also restricted to recidivism measures related to re-arrest and probation revocations. We do not examine alternative indicators of recidivism, such as self-reported offending, re-convictions or re-incarcerations. Prior research suggests multiple violations often occur before revocation of probation (e.g. Kerbs et al. 2009), and we have limited information on violations that do not result in revocation or re-arrest.
- *Analytic limitations.* The analyses that are conducted are consistent with the state of the art in contemporary sentencing and recidivism research. However, we cannot rule out the possibility that our results are impacted by our chosen analytic approach. In general, the results from full multivariate analyses are consistent with the bivariate relationships we observe, which suggests our conclusions reflect true relationships in the data, but more complex analytical approaches, such as multilevel models, decision trees or random forest classifications might also be investigated in future, follow-up work.

### ***Concluding Remarks***

The CSC identified several research questions to assist in deciding whether to implement a risk-needs based approach to sentencing. Below we conclude the report with brief responses to the questions that motivated the current study.



1) *Are current sentences consistent with a risk and needs-based sentencing system?*

The answer is a qualified yes. Judges clearly consider risk-related factors when making incarceration decisions. Even though risk scores strongly predict the type of sentence, about 7.6% of all sentences involve low-risk offenders sentenced to incarceration, and 12.4% of all sentences involve high-risk offenders who received probation. These may reflect judicial consideration of other relevant sentencing factors. However, there is little apparent relationship between risk scores and sentence lengths in the data.

2) *For which types of offenses and offenders do inconsistencies occur?*

Incarceration sentences for low-risk offenders are most common in cases involving serious felonies, mandatory minimums, and offenders under current supervision, with more prior convictions and more current conviction counts, who are male and/or facing drug charges.

In general, the same set of factors is negatively related to the likelihood of high-risk offenders receiving probation sentences, with the latter being most common for low-level public order crimes.

There is only a weak correspondence between risk and sentence lengths. Sentences that are shorter than expected based on risk tend to involve offenders with fewer counts of conviction who commit public order or drug offenses and are white or female. Sentences that are longer than expected based on risk tend to involve mandatory minimums, more counts of conviction, and black or male defendants.

3) *Are recidivism patterns associated with risk and needs scores?*

Yes. LSI-R risk scores are strongly and consistently related to recidivism outcomes. Composite risk scores are positively related to the probability of re-arrest, felony or violent re-arrest, and probation revocations. They are also positively related to the timing of recidivism outcomes such that higher risk offenders recidivate more quickly. Most of the domain-specific risks in the LSI-R are also positively related to recidivism outcomes.

4) *Do risk scores predict recidivism differently for different demographic groups?*

We find little evidence that LSI-R scores predict recidivism differently across demographic groups. Regardless of gender, race or ethnicity, higher risk scores are associated with greater risk of recidivism. Moreover, prediction errors do not appear to systematically disadvantage female or minority defendants, and statistical models examining the intersection of risk scores and offender characteristics reveal few meaningful differences. Based on these analyses, it appears that LSI-R composite risk scores have similar predictive validity across gender, race and age groups in Connecticut.

5) *Should the CSC adopt a risk and needs-based approach to sentencing?*

Based on prior research and the results of the current analysis, we conclude there are both advantages and potential concerns associated with the adoption of the LSI-R risk-assessment tool at sentencing. From a public safety perspective, the LSI-R is clearly valuable in identifying risk of recidivism. Providing judges with risk assessments can assist them in effectively identifying high-risk offenders, detecting low-risk defendants who are candidates for non-custodial sanctions, and pinpointing underlying criminogenic needs that might be targeted for rehabilitative programming. Proponents of risk assessments in sentencing note that judges already make risk determinations and argue that actuarial tools improve the uniformity, reliability and validity of these assessments. Risk tools may also help to maximize correctional resources and increase fiscal responsibility by reserving incarceration for high-risk, serious offenders.

At the same time, sentencing is a complex process that requires judges to consider multiple, often conflicting goals of punishment that extend well beyond recidivism risk. Ultimately, we agree with Hyatt and colleagues (2011: 267) that “actuarial risk assessments cannot—and should not—supplant the discretion of the judge.” Some commentators express concern that providing risk scores to judges may trump other relevant sentencing considerations (Harcourt, 2015) and may lead judges to overemphasize risk of recidivism. Notably, the LSI-R does not distinguish factors related to risk versus criminogenic needs. Although we find little evidence of systematic bias in the LSI-R instrument, critics also maintain the potential for risk assessments to exacerbate unwarranted disparities (Starr, 2014). Factors like criminal history and socioeconomic variables that are related to offender characteristics have the potential to indirectly foster inequalities. Ultimately, if the CSC decides to provide judges with LSI-R risk assessments to inform their sentencing decisions, they should take appropriate steps to ensure that there are not unintended and unforeseen consequences introduced by the shift to a risk and needs-based approach to sentencing in Connecticut.

## VII. Appendices

### Appendix A: Risk Domains and Individual Items in the LSI-R

All items on the LSI-R are measured either in a “yes-no” format or on the “0-3” scale below:

*3: A satisfactory situation with no need for improvement.*

*2: A relatively satisfactory situation, with some room for improvement evident.*

*1: A relatively unsatisfactory situation with a need for improvement.*

*0: A very unsatisfactory situation with a very clear and strong need for improvement.*

*We denote 0-3 items with an \*.*

#### I. Criminal History Component

1. Any prior adult convictions?
2. Two or more prior adult convictions?
3. Three or more prior adult convictions?
4. Three or more present offenses?
5. Arrested under age 16?
6. Ever incarcerated upon conviction?
7. Escape history from a correctional facility?
8. Ever punished for institutional misconduct?
9. Charge laid or probation/parole suspended during prior community service?
10. Official record of assault/violence?

#### II. Education/Employment Component

*When in labor market:*

11. Currently unemployed?
12. Frequently unemployed?
13. Never employed for a full year?
14. Ever fired?

*School or when in school:*

15. Less than regular grade 10?
16. Less than regular grade 12?
17. Suspended or expelled at least once?

*Offender completes #18 only if a homemaker or pensioner.*

*Offender completes #18-20 if in school or working.*

*Offender rates 0 for #18-20 if unemployed.*

18. Participation/performance?\*
19. Peer interactions?\*
20. Authority interactions?\*

#### III. Financial

21. Problems?\*
22. Reliance upon social assistance?

**IV. Family/Marital**

- 23. Dissatisfaction with marital or equivalent situation?\*
- 24. Non-rewarding parental situation?\*
- 25. Non-rewarding situation with other relatives?\*
- 26. Criminal family/spouse?

**V. Accommodation**

- 27. Unsatisfactory?
- 28. 3 or more address changes last year?\*
- 29. High crime neighborhood?\*

**VI. Leisure/Recreation**

- 30. Absence of recent participation in an organized activity?
- 31. Could make better use of time?\*

**VII. Companions**

- 32. A social isolate?
- 33. Some criminal acquaintances?
- 34. Some criminal friends?
- 35. Few anti-criminal acquaintances?
- 36. Few anti-criminal friends?

**VIII. Alcohol/Drug Problem**

- 37. Alcohol problem, ever?
- 38. Drug problem, ever?
- 39. Alcohol problem, currently?\*
- 40. Drug problem, currently?\*
- 41. Law violations?
- 42. Marital/Family alcohol/drug problem?
- 43. Interference with school/work?
- 44. Receiving medical treatment?
- 45. Other indicators of alcohol/drug problem?

**IX. Emotional/Personal**

- 46. Moderate interference?
- 47. Severe interference (active psychosis)?
- 48. Mental health treatment, past?
- 49. Mental health treatment, present?
- 50. Psychological assessment indicated?

**X. Attitudes/Orientations**

- 51. Supportive of crime?\*
- 52. Unfavorable toward convention?\*
- 53. Poor, toward sentence?
- 54. Poor, toward supervision?

## Appendix B: Supplemental Tables

**Table B1: Descriptive Statistics for the Analytic Sample (N=66,096)**

	Mean	SD	Min	Max
<b>Sentencing Outcomes</b>				
Incarceration	.30	.46	0	1
Incarceration Length in Months	11.82	14.90	.1	304
<b>Offender Demographics</b>				
White	.50	.46	0	1
Black	.29	.46	0	1
Hispanic	.20	.40	0	1
Asian	.004	.06	0	1
Female	.18	.38	0	1
Age	31.85	11.53	14	92
<b>Legal and Case Factors</b>				
Offense Type				
Violent	.14	.34	0	1
Property	.22	.41	0	1
Drug	.30	.46	0	1
Sex	.01	.11	0	1
Weapons	.02	.13	0	1
Public Order	.32	.46	0	1
Offense Severity Class				
Class A Felony	.000	.02	0	1
Class B Felony	.02	.14	0	1
Class C Felony	.05	.22	0	1
Class D Felony	.14	.34	0	1
Class E Felony	.005	.07	0	1
Unclassified Felony	.15	.36	0	1
Class A Misdemeanor	.34	.47	0	1
Class B Misdemeanor	.16	.37	0	1
Class C Misdemeanor	.10	.30	0	1
Class D Misdemeanor	.005	.07	0	1
Unclassified Misdemeanor	.000	.01	0	1
Infraction	.02	.15	0	1
Traffic Violation	.002	.04	0	1
Criminal Case History				
Prior Adult Convictions	3.51	5.01	0	161
Current Conviction Charges	1.72	1.22	1	27
Under Probation Supervision	0.14	0.35	0	1

**Table B1: Descriptive Statistics for the Analytic Sample (N=66,096) (continued)**

	Mean	SD	Min	Max
Conviction Year				
FY 2008	.33	.47	0	1
FY 2009	.35	.48	0	1
FY 2010	.32	.47	0	1
<b>Recidivism Outcomes</b>				
New Arrest w/in 5 Years	.70	.46	0	1
Time to Arrest in Months	14.42	14.31	1	60
Probation Revocation w/in 5 Years	.18	.39	0	1
Time to Revocation in Months	19.96	15.43	.03	60
<b>LSI-R Scores</b>				
Composite Score	26.00	8.16	0	51
Criminal History Domain Score	4.70	2.44	0	10
Education/Employment Domain Score	5.47	2.66	0	10
Financial Domain Score	1.22	.75	0	2
Family/Marital Domain Score	2.03	1.18	0	4
Accommodation Domain Score	.97	.94	0	3
Leisure/Recreation Domain Score	1.60	.66	0	2
Companions Domain Score	2.72	1.29	0	5
Alcohol/Drug Domain Score	4.25	2.55	0	9
Emotional/Personal Domain Score	1.69	1.55	0	5
Attitudes/Orientations Domain Score	1.36	1.28	0	4

**Table B2: Comparison of Full, Analytic, and Re-Arrested Samples**

	<b>Full Sample (N=106,057)</b>	<b>Analytic Sample (N=66,096)</b>	<b>Re-Arrest Sample (N=46,072)</b>
<b>Sentencing Outcomes</b>	Mean	Mean	Mean
Incarceration	.37	.30	.28
Months of Incarceration	20.27	11.82	10.59
<b>Offender Demographics</b>			
White	.46	.50	.50
Black	.32	.29	.32
Hispanic	.21	.20	.20
Asian	.004	.004	.00
Female	.16	.18	.17
Age	32.42	31.85	30.46
<b>Legal and Case Factors</b>			
Offense Type			
Violent	.13	.14	.14
Property	.22	.22	.23
Drug	.28	.30	.27
Sex	.01	.01	.01
Weapons	.02	.02	.02
Public Order	.33	.32	.34
Offense Severity Class			
Class A Felony	.002	.000	.0001
Class B Felony	.03	.02	.02
Class C Felony	.06	.05	.05
Class D Felony	.13	.14	.14
Class E Felony	.004	.005	.005
Unclassified Felony	.15	.15	.14
Class A Misdemeanor	.33	.34	.36
Class B Misdemeanor	.15	.16	.14
Class C Misdemeanor	.12	.10	.12
Class D Misdemeanor	.005	.005	.004
Unclassified Misdemeanor	.000	.000	.000
Infraction	.03	.02	.02
Traffic Violation	.002	.002	.002

## Appendix C: Works Cited

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