CJI
CRIME AND JUSTICE INSTITUTE
A Division of Community Resources for Justice

The Crime and Justice Institute

Validation Study of the Youth Level of Service/Case Management Inventory

Created for the Kansas Juvenile Justice Oversight Committee

8-11-2020

Executive Summary

Validation, a study on the local population to test the predictive accuracy of a tool, is necessary for any state or department using a predictive tool. The tool only predicts accurately if the sample with the lowest scores on the tool have the lowest recidivism rates and the sample with the highest scores on the tool have the highest recidivism rates. During this validation study, risk assessment data from the Youth Level of Service/Case Management Inventory were compared to the recidivism rates of the youth assessed. The results will be used as quality assurance to ensure people use the tool the way it was intended and that the results are accurate. It will also inform what regular maintenance might need to be improved or updated.

For the current validation, three questions were considered:

1.   Is the YLS/CMI a valid instrument for predicting recidivism?
2.   Do the YLS/CMI risk levels predict recidivism?
3.   Does the YLS/CMI predict recidivism across various subgroups?

Validation results

After analyzing the data provided by Kansas, CJI found:

1. **The YLS/CMI score predicts recidivism**

   YLS/CMI risk score is a *fair* to *good* predictor of a delinquency adjudication or adult conviction in Kansas. As risk scores increase, so do rates of delinquency adjudication or adult conviction.

2. **The YLS/CMI risk levels predict recidivism**
   Risk level is a fair predictor of delinquency adjudication or adult conviction in Kansas. Higher risk levels have higher rates of delinquency adjudication or adult conviction in Kansas.

3. **The YLS/CMI risk score and levels predict for all groups but at differing strengths**
   The YLS/CMI risk scores, levels, and domains are generally more significantly predictive for the white and female subgroups. The significance of the relationships between risk scores and levels, as well as the significance of relationships between certain domains, are diminished for the male and Black subgroups.

4. **Inter-rater reliability was low.**
   Interrater reliability, which measures the consistency of scoring the YLS/CMI across staff using example cases, was low. Across a nine interrater reliability exercises accurate scoring ranged 35% to 70%, with a median of 57%.

Recommendations

Based on the information garnered during this validation study, CJI has six recommendations for increased quality in the use of the YLS/CMI.

1. Improve Data Collection

One of the limitations of the current study was the way in which data was collected and stored. To improve future quality assurance and validations, CJI recommends increased and improved data collection. Making this change would allow better matching across data points, as well as more in-depth, complex, and cogent data analysis. In short, improved data collection would yield more precise and telling results in all facets of data analysis regarding youth supervised by Court Services.

2. Use Consistent Case Numbers Across All Agencies

For the purposes of improved data matching and analysis, CJI recommends using one number across all agencies to track youth across various points in the court and corrections system. This would allow thorough analysis and understanding of how youth travel through the system.

3. Increase Interrater Reliability

In order to increase the size of the dataset, and therefore allow for more rigorous analyses, efforts should be made to improve interrater reliability. There are numerous ways in which this could occur, including additional training, targeted coaching, and periodic file reviews.

4. Conduct a Validation for Underrepresented Hispanic Population

Due to the size and makeup of the sample dataset, this validation was unable to determine how well the YLS/CMI works for Hispanic youth in Kansas. CJI recommends conducting a specific validation focusing on the Hispanic population. Completing this type of validation depends on having large amounts of high quality data; therefore, this recommendation should be followed after improving data collection.

5. Explore the Causes Underlying Disparate Findings across Racial Groups

The results of the analyses concerning the accuracy of the YLS/CMI for Black youth show that the risk score is a *fair* to *good* predictor of recidivism for Black youth; but that recidivism rates are higher for Black youth. The drivers of the discrepancies between White youth and Black youth are outside the scope of the current study, but further investigation is both warranted and appropriate. CJI strongly recommends conducting a system assessment to explore the drivers of the disparate findings across race.

6. Adopt New Risk Level Cutoffs

One of the findings of the current study was that current risk levels only had a *fair* ability to predict recidivism. CJI investigated the impact of shifting the cutoff levels to more accurately predict recidivism. CJI recommends adopting new risk level cutoffs to create new risk categories. This includes the adoption of an additional risk level: minimal.

Contents

LIST OF FIGURES, GRAPHS, AND TABLES

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Introduction

In 2016, Kansas passed Senate Bill 367 to improve the juvenile justice process across the state. One requirement of this legislation was to complete a validation study on the risk and needs assessment used for adjudicated youth by June 30, 2020. In alignment with this requirement, Kansas wanted to determine if its Youth Level of Service/Case Management Inventory (YLS/CMI) accurately predicts recidivism for youth who are under the supervision of Court Services, Community Corrections, and the Department of Corrections. The Crime and Justice Institute (CJI) partnered with Kansas' Office of Judicial Administration (OJA) and the Kansas Department of Corrections (KDOC) to conduct the required YLS/CMI validation.

Court Services and Community Corrections both use the YLS/CMI in Kansas. Court Services began using the tool in 2016 and has since received annual trainings from the University of Cincinnati's Corrections Institute. Community Corrections has been using the YLS/CMI since 2006 and has received annual trainings from Kansas Department of Corrections trainers, who were initially trained by the University of Cincinnati's Corrections Institute. Each department records the YLS/CMI a bit differently; Court Services uses paper forms and had CJI convert their documents into electronic records, and Community Corrections records electronically and are then shared with CJI in an electronic spreadsheet.

Validation, a study on the local population to test the predictive accuracy of a tool, is necessary for any state or department using a predictive tool. The tool only predicts accurately if the sample with the lowest scores on the tool have the lowest recidivism rates and the sample with the highest scores on the tool have the highest recidivism rates. During this validation study, risk assessment data were compared to the recidivism rates of the youth assessed. The results will be used as quality assurance to ensure people use the tool the way it was intended and that the results are accurate. It will also inform what regular maintenance might need to be improved or updated.

To help make the validation study as successful as possible, Kansas started working with CJI in 2017 to prepare. Preparation has included defining recidivism, devising and implementing data

collection plan, participating in interrater reliability exercises (exercises to determine if staff are using the tool consistently), and collating and supplying data. All steps taken in advance of the validation study helped the state prepare for both the study and the necessary actions needed longer term.

Research Questions

Kansas defined recidivism as, "a delinquency adjudication or adult conviction in Kansas while under court supervision or in DOC custody, or within 24 months of discharge from supervision or custody." This definition was approved by the Juvenile Justice Oversight Committee, and was created to capture recidivism events that occur both while under supervision and after. The Committee opted to use adjudication and conviction as the measure to capture only those determined to have committed an offense by the court. CJI's validation study aimed to answer three research questions designed to test the predictive accuracy of the assessment:

1.   Is the YLS/CMI a valid instrument for predicting recidivism?
2.   Do the YLS/CMI risk levels predict recidivism?
3.   Does the YLS/CMI predict recidivism across various subgroups?

Limitations

Every validation must consider the potential limitations in the data used to conduct the analyses. No dataset is 100 percent accurate and unintentional errors can be introduced during the process. However, understanding these limitations and examining their possible impact on the results can minimize errors and provide a more precise conclusion. To reduce possible analysis errors, CJI has a robust internal quality assurance process.

Throughout the validation of the YLS/CMI, there were three specific areas in which issues in the data might have affected the results of the analyses. These areas of concern were the interrater reliability of staff, the use of paper assessments, and the lack of consistent identifiers across agencies. Despite these limitations, CJI is confident that given the available data, the validation was accurate. Below is an articulation of the limitations and the reasons CJI remains confident in its analysis.

Interrater Reliability

In preparation for the validation study, quality assurance efforts began in 2017 to create the best data set possible. Quality assurance was conducted through interrater reliability exercises; scenarios scored by master scorers were disseminated to all certified YLS users across Court Services, Community Corrections, and the Kansas Department of Corrections. The scores of those staff were then

compared against the results of the master scorers. If staff had fewer than five scoring errors and had a score within two of the correct score, this was considered a proficient score. This definition of a proficient score reflects the definition used by MultiHealth Systems, the maker of the YLS. Nine interrater reliability exercises were conducted between 2017 and 2019. During this time, across all participants completing the exercises, accurate scoring ranged 35% to 70%, with a median of 57%. When validating a tool with dynamic factors that rely on accurate scoring by a trained assessor, these low levels of interrater reliability make it difficult, if not impossible, to distinguish between inaccuracies due to mistakes by the assessor and inaccuracies inherent to the tool itself.

To overcome the generally low interrater reliability (e.g., less than 80%), a cohort of YLS users was chosen. Each staff member who is part of this cohort had valid assessments on at least seven of the nine exercises. Using a cohort rather than the entire population ensures the data that is used is of a highest possible caliber.

Paper Assessments

Currently, the YLS/CMI assessments conducted by Court Services are recorded on paper forms. These assessments were then coded and entered into an electronic spreadsheet by CJI. Any time data is coded manually, there is an increased likelihood of typing errors. Safeguards were put in place to limit errors: scores were added within the spreadsheet then checked against the final score recorded on paper; sections were coded separately to avoid confusion across sections, and periodic quality control checks were conducted by a second coder. In general, any manual data entry will introduce errors. In addition, no safeguards put in place by CJI would be able to correct miss-entered or missing data from paper records. As will be discussed in the recommendations section, digitally entering records at the time of assessment would introduce new methods for reducing the likelihood of these errors and omissions.

Lack of consistent identifiers

Due to the lack of a consistent identifier across both adult and juvenile data sets provided by the court system, and the adult court system and KDOC, records were merged based on a combination of name and birthdate in order to identify recidivism events that occurred after a minor had reached the age of majority. This is an imperfect method, and therefore recidivism rates presented in this study should be understood as estimates and not official rates. However, these estimates will not bias the current study, as there is not a correlation between the error introduced by the recidivism estimation method and risk score. Someone with a high risk score is not more or less likely to be misidentified using this method than someone with a low risk score.

Descriptive Analysis

The first step in the validation was to select a sample of eligible assessments to use in the analysis. The analysis included assessments that met all of the following criteria:

1. The assessment was conducted by a staff member who consistently achieved over 80% reliability during prior quality assurance efforts.
2. The assessed youth's supervision period began between January 2007 (when the tool was first implemented) and December 2017.

CJI generated a dataset of 18,483 assessments with complete data. 15,646 of these assessments occurred between January 2007 and December 2017. Of these assessments, 2,709 were performed by assessors who met the IRR eligibility criteria, and CJI included all such records in the validation analysis. The majority of the cases in the validation sample were male (74 percent) and most of the sample was white (72 percent). The average age at the time of assessment was 16 years old.

The average score on the YLS/CMI was 14 (moderate risk). Figure 1, below, shows the number of assessments within each risk level, as well as the percent of each risk level of the total dataset, and Figure 2 shows the number of assessments for each risk score. Twenty-two percent of the sample was low risk, 68 percent of the sample was moderate risk, and 11 percent of the sample were assessed as high risk. Two of the individuals in the sample were assessed as very high risk, a pattern that was reflected in the full dataset, where only eight assessments were very high risk.

Figure 1 Number and percent of assessments within the sample dataset by risk levels.

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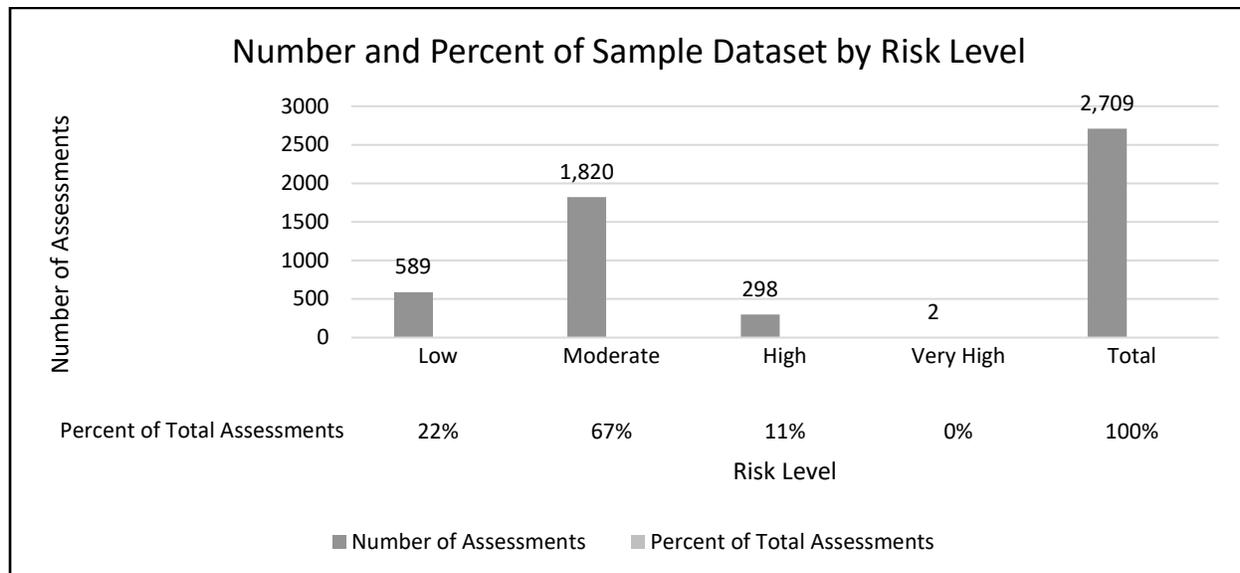
Figure 2 Number of assessments in the sample dataset by risk score.
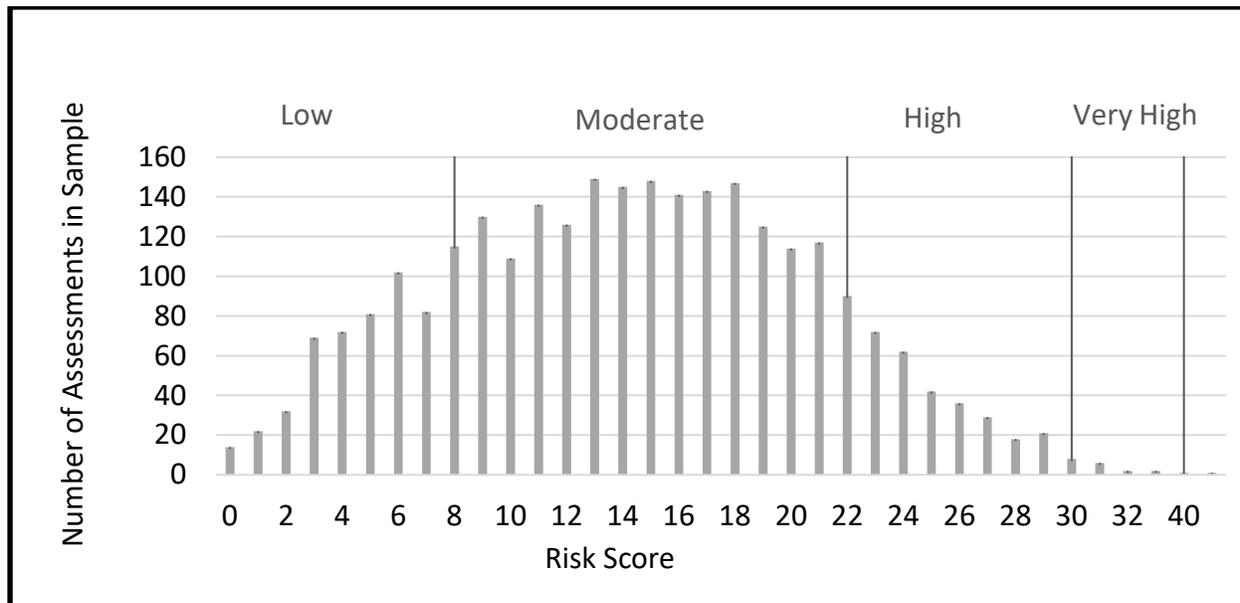
Demographically, the full dataset and the sample dataset are largely comparable. There are a few noteworthy differences. The tables below compare the demographics of the total pool of assessments with those in the validation sample. Table 1 shows the racial[1] make-up of both the full dataset and the sample; the percentages of White, Black, and other youth in both datasets are very similar.

Table 1 Number and percent of racial groups in the full dataset and sample.

Race	Number in Full Dataset[2]	Percent in Full Dataset	Number in Sample	Percent in Sample
White	11,272	72.0%	1,948	71.9%
Black	3,600	23.0%	642	23.7%
Other	774	4.9%	119	4.4%
Total	15,646	100.0%	2,709	100.0%

Table 2 shows the breakdown of gender[3] within the full dataset and sample. Females make up a slightly larger percentage of the sample than the full dataset, and males a slightly smaller percentage of

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[1] In the data supplied, race information was entered manually, leading to a wide array of racial groups. However, only the Black and White racial categories were large enough for meaningful statistical evaluation. We acknowledge that this excludes many other racial groups present in Kansas.

[2] "Full Dataset" in this and all following tables refers to the 15,774 assessments that occurred between January 2007 and December 2017.

[3] In the data supplied, gender was broken into only three categories: male, female, and unknown. As with race, we acknowledge that this excludes other genders present in Kansas.

the sample than the full dataset. Whether the tests in a validation are accurate for the whole population is a function of the raw size of the sample and whether that sample was drawn evenly from the full population. The increase in the proportion of females in the sample will not change the results of a test, though as noted in the limitations section, the exclusion of several jurisdictions where there were not any usably assessments might.

Table 2 Number and percent of gender groups in the full dataset and sample.

Gender	Number in Full Dataset	Percent in Full Dataset	Number in Sample	Percent in Sample
Male	12,177	77.8%	2,014	74.3%
Female	2,995	19.1%	633	23.4%
Unknown	474	3.0%	62	2.3%
Total	15,646	100.0%	2,709	100.0%

Table 3 shows the number of Non-Hispanic and Hispanic youth in the full dataset and sample. As there were only 277 Hispanic youth in the sample, the number was too small to analyze in a meaningful way. For this reason, ethnicity was not examined as a subgroup as part of this analysis.

Table 3 Number and percent of ethnic groups in the full dataset and sample.

Ethnicity	Number in Full Dataset	Percent in Full Dataset	Number in Sample	Percent in Sample
Non-Hispanic	12,574	80.4%	2,396	88.4%
Hispanic	2,756	17.6%	277	10.2%
Total	15,646	100.0%	2,709	100.0%

Figure 3 shows the percent of the full dataset and sample that comes from each year. Here there is a notable difference – the sample dataset has a much higher proportion of newer cases. This is likely due to the selection criteria that required assessors to have participated in the interrater reliability process in 2018 and 2019. Corrections has a high turnover rate, so it is likely that many of the assessors from 2007-2012 are either no longer with the agencies, or have advanced in their career and are no longer conducting YLS/CMI assessments. Populations can change over time, so a validation sample drawn from a more recent sample is generally preferable to one drawing from an older sample.

Figure 3 Percent of dataset and sample by assessment year.
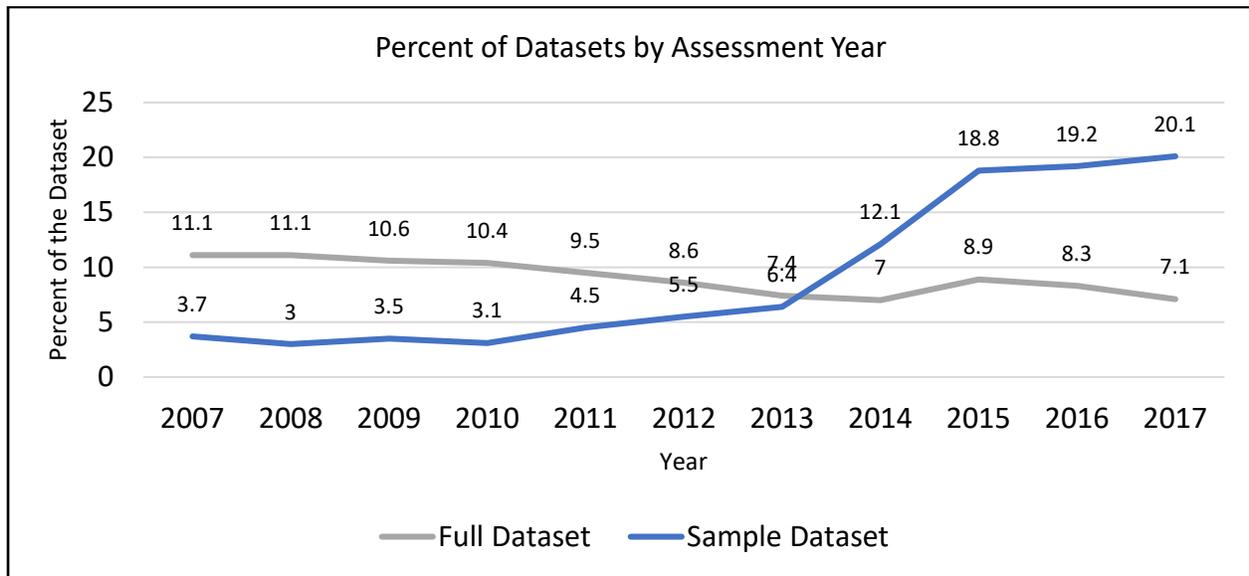
Figure 4 shows the breakdown of both the full dataset and sample by judicial district. There are some notable differences between the full dataset and the sample, particularly the 10th, 28th, and 29th districts. The 10th district had very high quality data, which allowed a higher proportion of matches to be made. This, in turn, allowed more youth to be part of the sample dataset. To ensure that the 10th judicial district was not unduly influencing the validation study, analyses were conducted both including and excluding the district. The results, unless specifically noted otherwise, were unaffected by the 10th district. The 28th and 29th districts had few staff members who met the criteria to be included in the sample dataset. It was not within the scope of this project to diagnose variation in data quality by district.

Figure 4 Percent of the full dataset and sample per judicial district.

Percent of Datasets per Judicial District

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Percent of Full Dataset	3	2	6	2	2	2	2	2	2	14	2	1	3	2	2	3	22	3	3	1	1	0	0	3	3	3	5	7	2	1
Percent of Sample Dataset	1	0	6	0	4	3	2	1	1	38	5	0	1	2	2	3	19	2	1	0	0	0	1	2	0	3	0	2	0	2
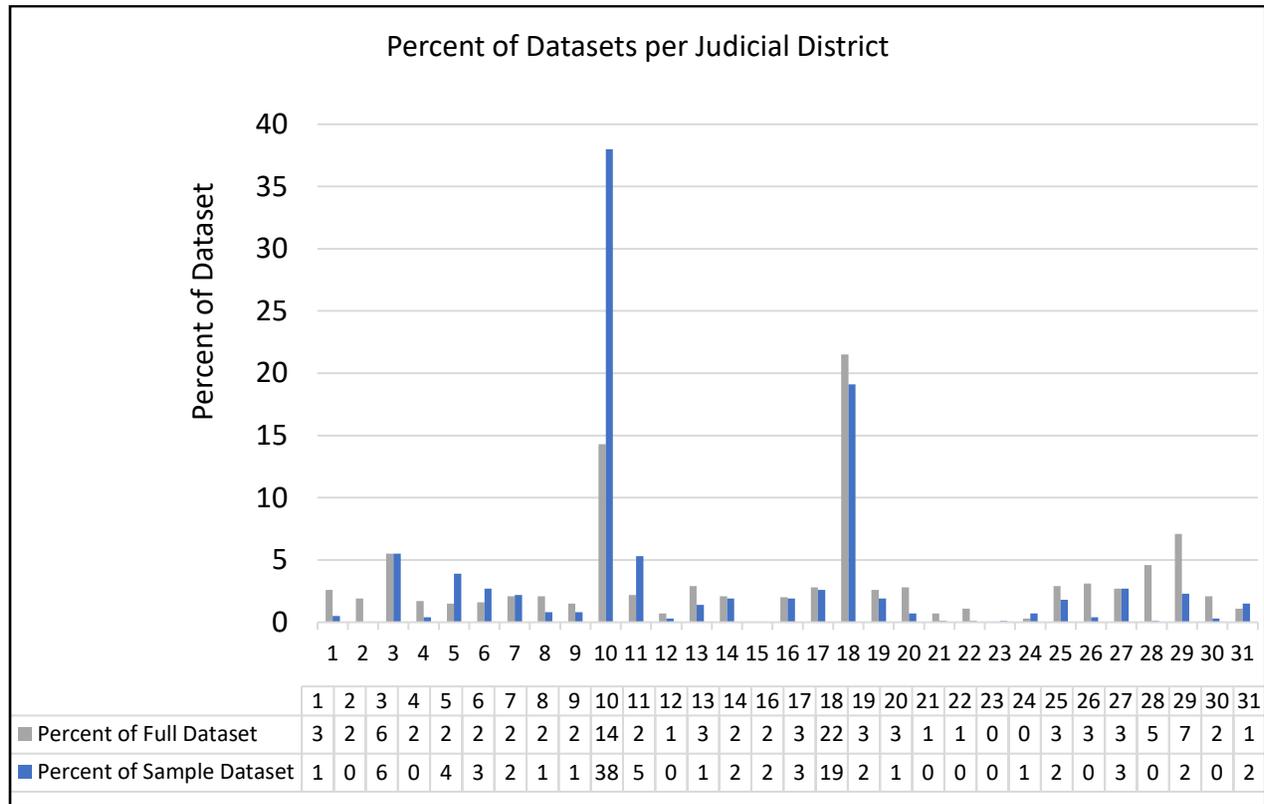
While some differences exist between the full dataset and the sample dataset, the sample is similar enough to provide an initial indication of the accuracy of the tool for Kansas' juvenile population.

Validation

A validation study examines the predictiveness of a risk assessment using multiple forms of analysis to answer multiple questions. For this study, CJI aimed to answer three research questions designed to test the predictive accuracy of the assessment. Analysis for each of the following research questions is presented in subsequent sections of this report.

1. Is YLS/CMI score a valid indicator of recidivism, as defined as a delinquency adjudication or adult conviction in Kansas while under court supervision or in DOC custody, or within 24 months of discharge from supervision or custody?
2. Do YLS/CMI risk levels correspond to meaningful differences in recidivism risk, as defined above?
3. Are YLS/CMI scores and levels consistently accurate across various subgroups?

The statutory definition of recidivism for Kansas juvenile justice is: a delinquency adjudication or adult conviction in Kansas while under court supervision or in DOC custody, or within 24 months of discharge from supervision or custody. Court Services data, however, did not contain the date or discharge from supervision[4]. For this reason, a proxy measure was needed to simulate the date of discharge. Three options were investigated: date of disposition, date of most recent assessment, and simulated supervision period.

1. Date of disposition: the first option was to look at two years past the date of disposition. While this would be the simplest way to calculate recidivism, this measure almost certainly undercounts recidivism as it discounts the time spent on supervision or in custody.

2. Date of most recent assessment: the second option was to use a time period of two years past the date of the most recent YLS/CMI. This would create a more balanced approach, as it would take into account at least some of the supervision time, but it still undercounts the amount of time within the window for recidivism. The YLS/CMI is given every six months; that means for some youth, the YLS/CMI may be given at the very end of their supervision period, making this a strong measure of recidivism. For others, however, the most recent YLS/CMI may have been several months before the end of their supervision, or, if one was not completed on time, may have been just after disposition.

3. Simulated supervision period: Senate Bill 367 (2016) brought about supervision length limits, meaning low-risk youth would receive six months of probation, moderate-risk youth would receive nine months of probation, and high-risk youth would receive twelve months of probation (with both the possibility to be extended for programming or shortened through the Earned Discharge Credit). Using the risk levels, it was possible to then estimate the discharge date, then add two years from that date as the end of the recidivism date. This method still has inaccuracies, as the Office of Judicial Administration does not track supervision end dates, therefore it is not known how many youth had their supervision period shortened or lengthened. Ultimately, however, it is the closest estimate possible given the data that were supplied.

Ultimately, it was decided to use option three, the simulated supervision period. To ensure accuracy, recidivism rates were calculated for youth supervised under Court Services using each of the three options, shown below in Figure 5. To ensure the most accurate measure was selected, all three recidivism measures were calculated to compare against recidivism rates for Community Corrections. Whichever option most closely mirrored Community Corrections is the measure selected for inclusion in the validation The figure shows that the disposition date (option 1 above) and most recent assessment

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[4] Community Correction data had enough information to accurately calculate recidivism in accordance with Kansas' definition.

date (option 2 above) both yield the lowest recidivism rates, as anticipated. The simulated supervision date yielded a recidivism rate (36%) that is closest to the recidivism rate calculated for the youth supervised by Community Corrections (37%).

The accuracy of these figures must still be regarded as estimates, and not seen as equivalent to official recidivism rates. While these figures will be closely correlated with underlying recidivism rates, they will not capture every event due to inherent limitations of the methods used to match adult and juvenile records. This will be discussed further in the limitations section.

Figure 5 Recidivism rates by different discharge date proxy measurements.

Recidivism Rate by Discharge Date Proxy Measurements
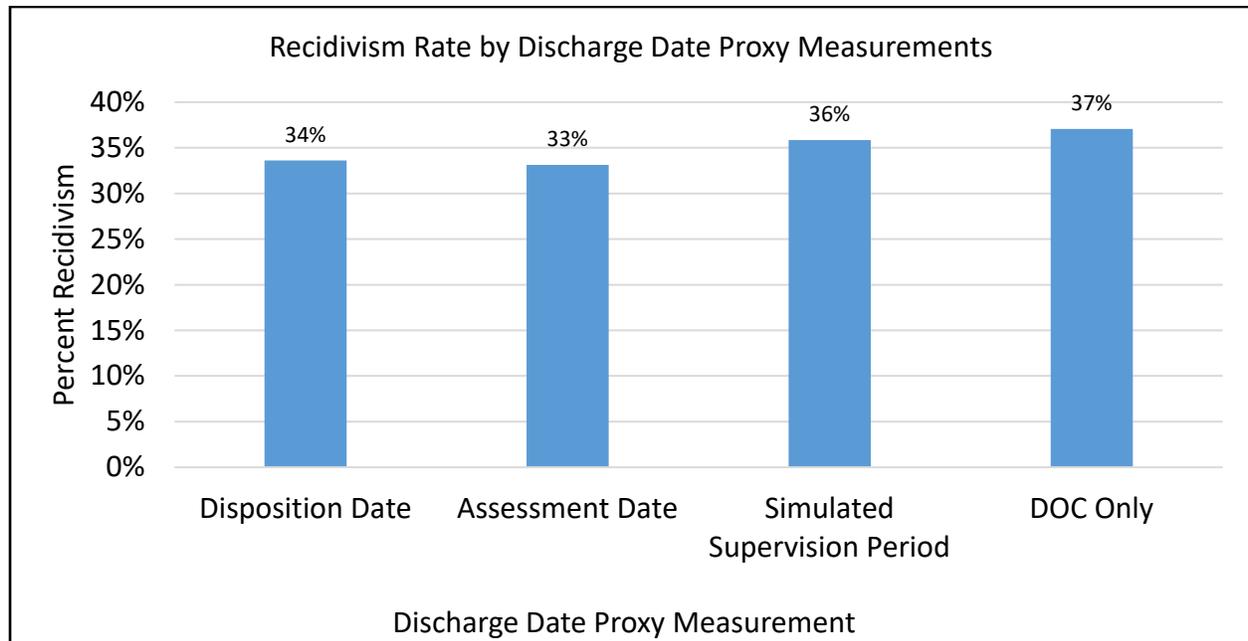
Research Question 1

Is YLS/CMI score a valid indicator of recidivism, as defined as a delinquency adjudication or adult conviction in Kansas while under court supervision or in DOC custody, or within 24 months of discharge from supervision or custody?

To assess whether the YLS/CMI accurately predicts risk, CJI examined the relationship between the YLS/CMI risk score and the recidivism rate. CJI also conducted a similar analysis on each of the eight domains to determine if each one was predictive of recidivism. As assessed risk score and total domain scores increase, recidivism rates should also increase.

As seen in the figures below, the rates of recidivism generally increased as the YLS/CMI score increased. Figure 6 shows the estimated recidivism rates for each risk score, and Figure 7 shows the estimated recidivism rates for each risk score using the three proxy measures of discharge date and the matched Community Corrections sample. The rate of recidivism fluctuated slightly as it increased, but the YLS/CMI appeared to predict recidivism well.

Figure 6 Recidivism rate by risk score using the simulated supervision period proxy.
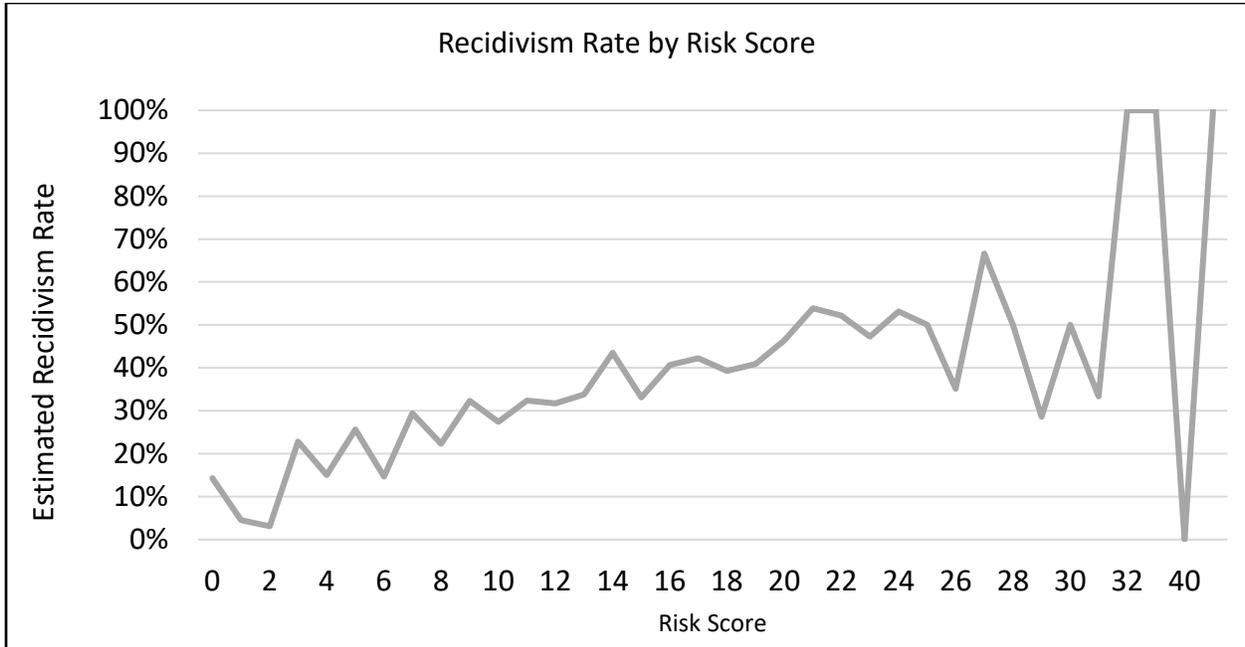
Figure 7 Recidivism rate by risk score using the three different proxy measures for discharge date as well as the KDOC data.
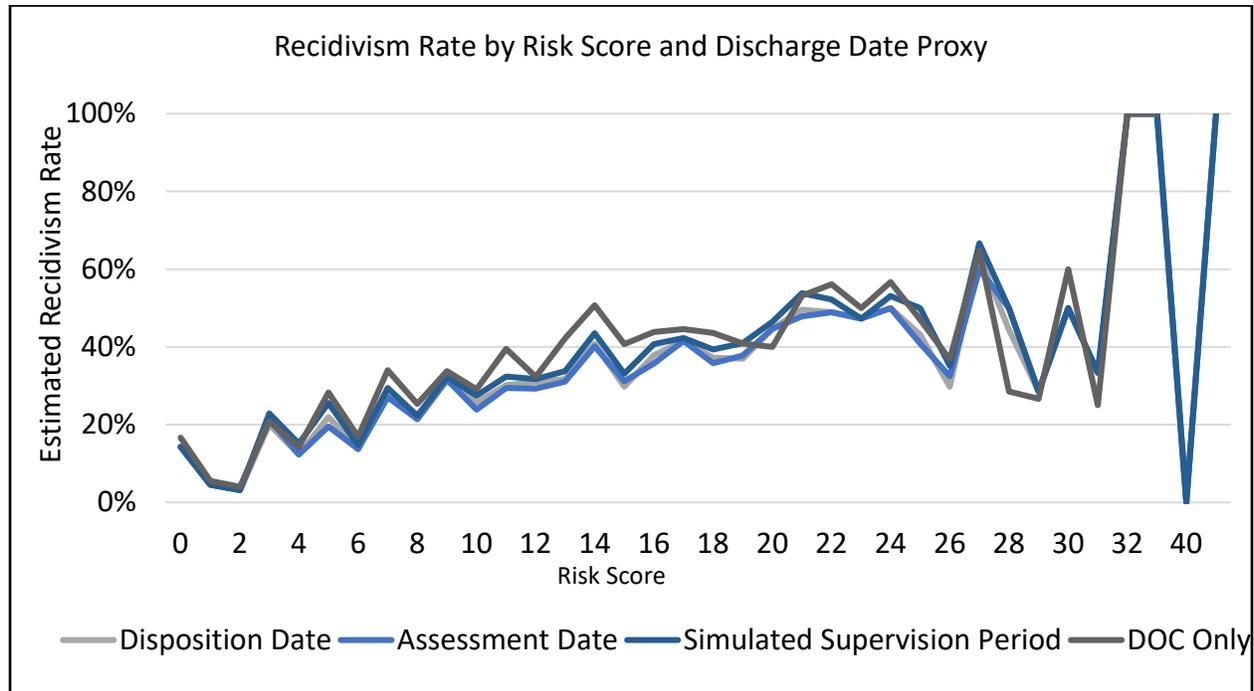
To be considered a valid instrument for predicting recidivism, analytical tests should be statistically significant, confirming that any observed differences between groups are not due to chance. A validation utilizes four statistical tests:

1. Chi-square,
2. Correlation,
3. Area under the curve – receiver operating characteristic (AUC-ROC), and
4. Logistic regression.

The **chi-square** test examines how the recidivism rate is distributed across the range of total risk scores. If the risk assessment predicts recidivism outcomes well, it is expected that the chi-square test will be significant, indicating that the distribution of recidivism across risk scores is not due to chance. We use a minimum significance threshold of .05, meaning that there is a 5% chance or less that the "null hypothesis" is true. When looking at the chi-square test for a total risk score, the "null hypothesis" is that there is no underlying relationship between risk score and risk level, and any apparent relationship is due to random variation. While .05 is a minimum, it is, of course, better to have a greater degree of confidence that the results represent an underlying relationship rather than random variation. In the present study, the chi-square test showed that, overall, recidivism rates increased as the YLS/CMI risk

score increased and the relationship was significant. This was an indicator that recidivism rates varied significantly across YLS/CMI score.

A **correlation** analysis measures the *strength* and *direction* of the relationship between variables. The strength of the correlation (r-value) is reported as a number between -1 and 1, with an r-value of less than 0 indicating a negative relationship and an r-value of more than 0 indicating a positive relationship.[5] The r-value for a risk assessment that works well is at least 0.100 or -0.100, depending on the direction of the effect, indicating a fair correlation between the risk score and outcomes.[6] R-values for recidivism were 0.22, indicating a fair correlation between the YLS/CMI score and recidivism. This finding means that as risk scores increase, so do rates of recidivism.

AUC-ROC analysis can be interpreted as an indicator of how well a risk scale predicts a binary outcome. Specifically it is a measure of how well a scale such as a risk assessment tool distinguishes between likely failures (e.g., recidivists) and likely successes (e.g., those who do not recidivate). AUC-ROC values can vary from 0 to 1, with scores above 0.5 indicating some ability to distinguish between likely successes and failures (the higher the score, the better the prediction). For example, an AUC-ROC value of 0.7 is indicative of a 70% chance the scale will be able to distinguish which of two individuals recidivated. No risk assessment will predict human behavior 100% of the time. The minimum acceptable AUC-ROC for a functioning risk tool is 0.55. AUC-ROC analysis for this validation indicates that the YLS/CMI was a fair predictor of recidivism, with an area value of 0.63.

Bivariate logistic regression examines the relationship between an individual risk factor and recidivism, resulting in a measure of the probability that recidivism will occur given the presence or absence of each risk factor. This analysis found that most individual risk factors in the tool were significantly correlated with recidivism.[7] These models provide additional evidence that as the YLS/CMI risk score increased, so do recidivism rates.

Multivariate logistic regression tests the likelihood of recidivism, controlling for risk score as well as general demographic information (gender, race, and the individual's age). If the risk assessment is valid, the risk score will be a strong indicator of the likelihood of recidivism. The odds ratio from these models offers insight into the odds of recidivism associated with a one-point increase in risk score. The regression model found that the YLS/CMI risk score was a significant predictor of recidivism, even when controlling for other factors. The increase in odds for every one-point increase in the risk score is 1.07 and statistically

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[5] A negative value indicates a negative correlation (i.e. as one variable increases, the other decreases), a value of 0 indicates that there is no relationship between the two variables, and a positive value indicates a positive correlation (i.e. as one variable increases, the other increases). With this assessment, a positive correlation is expected because as the risk score increases, the recidivism rate should increase.

[6] Please see the table in Appendix B for more information on how to classify correlation and AUC-ROC results.

[7] For details on individual risk factors see Appendix A

significant. An individual's age, gender, and race were also significant. Older individuals, women, and white youth have lower odds of re-adjudication. The implications of these findings regarding race and gender are discussed in the recommendations section.

YLS/CMI Domains

As part of the analysis, CJI examined each of the eight domains within the YLS/CMI to see if the domains predicted recidivism. As shown below in Table 4, six of the eight domains within the YLS/CMI were consistently predictive of recidivism across the chi-square, correlation, and AUC-ROC analyses. Specifically, the offense and substance abuse domains were not consistently predictive while the family, education/employment, peer relations, leisure/recreation, personality, and attitude/orientation domains were predictive across all tests.

Table 4 Validation Analysis results for individual domain scores. Detailed results in Appendix C

Domain	Chi-Square	Correlation	AUC-ROC
Offense	Not significant	Poor	Poor
Family	Significant	Fair	Fair
Education/Employment	Significant	Fair	Fair
Peer Relations	Significant	Fair	Fair
Substance Abuse	Significant	Poor	Poor
Leisure/Recreation	Significant	Fair	Fair
Personality	Significant	Fair	Fair
Attitude/Orientation	Significant	Fair	Fair

Chi square analysis indicates that for most domains, there were statistically significant differences in recidivism rates across scores. Six of the eight domains were significant at the $p<.001$ level,[8] with correlations at or above a 0.10 and AUC-ROCs that met the minimal threshold for accuracy of 0.55. The Offense History domain was not a significant predictor of recidivism ($p=.07$) and Substance Abuse was significant only at the $p<.05$ level. Overall, each domain was less predictive than the total score across all domains, indicating that the tool's combination of risk factors provides benefits over a more limited set of questions. These results were confirmed in logistic regression analysis (see Appendix C).

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[8] This means that there is a less than 0.1% chance that the observed distribution of recidivism across the domain is due to random variation, rather than an underlying relationship.

Research Question 1 Summary

Statistical analyses indicate that the YLS/CMI reliably predicts recidivism among the sample of Kansas youth. Rates of recidivism consistently increase as the YLS/CMI score increases, and these observations are supported by chi-square, correlation, AUC-ROC, and logistic regression analysis. Most individual domains predict recidivism, and the overall score is more predictive than any individual domain indicating that the tool is functioning as intended.

Research Question 2

Do YLS/CMI risk levels correspond to meaningful differences in recidivism risk?

A risk assessment that properly classifies individuals based on risk should have a statistically significant difference in recidivism rates between all risk levels. For the YLS/CMI, there are currently four levels: low (0-8), moderate (9-22), high (23-34) and very high (35-42). Figure 2, above, shows the distribution of risk scores for youth in the sample dataset. The current risk levels are relatively evenly distributed with regards to risk scores, but are not even in terms of frequency, as seen in Figure 2. The frequency of risk scores generally follows a bell curve, but the curve skews right, which means there are very few assessments with high and very high scores.

For the YLS/CMI to properly assess risk in Kansas, rates of recidivism for those who are very high risk should be significantly higher than those who are high risk, rates of recidivism for those who are assessed as high risk should be higher than those assessed as moderate risk, and rates of recidivism for those assessed as moderate risk should be higher than those assessed as low risk. Figure 10 below shows the rates of recidivism for each risk level. As can be seen in Figure 9, recidivism rates do increase as each risk level increases. The increase from low to moderate is 20 percent, from moderate to high is 10 percent, and from high to very high is 1.5 percent. Given the small sample size of assessments scored as very high (n=2) extreme caution should be applied when considering the implications of analyses concerning the very high group.

Figure 8 Recidivism rate by current risk level.
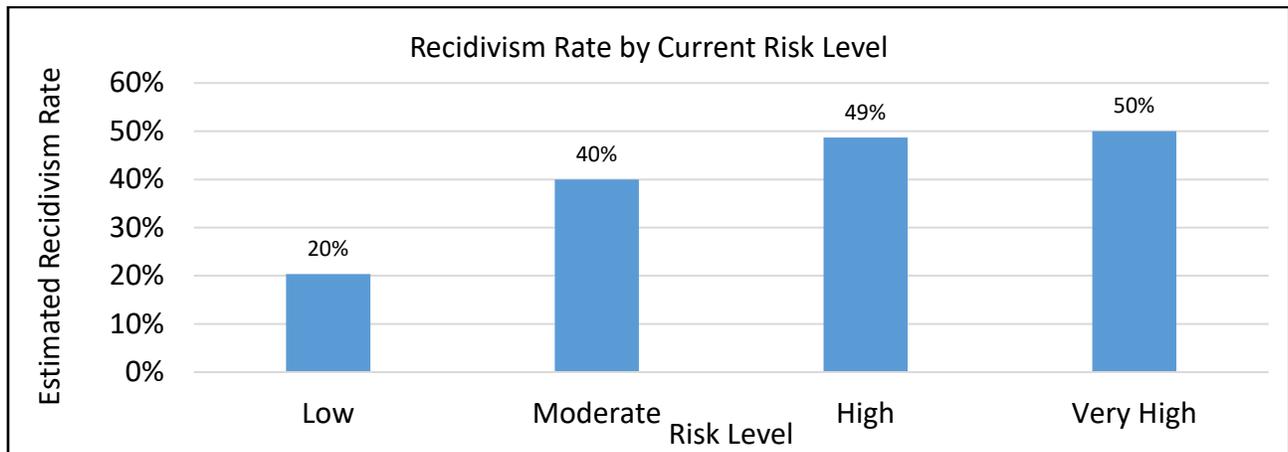
CJI conducted chi-square tests to determine how well the four risk levels predicted the risk of recidivism. If the risk levels predict recidivism well, the chi-square test should be significant, indicating that the rates of recidivism were statistically different between risk levels.

Youth with YLS/CMI scores identifying them as low-risk were significantly less likely to recidivate than those who were identified as moderate risk, and those who were assessed as moderate risk were in turn less likely to recidivate than those who were high risk. Almost no youth in the full dataset (n = 8) and only two youth in the sample were assessed as very high risk, so they were not compared to other categories.

Logistic regression models were also used to consider the four risk levels, along with gender, race, and supervising agency. In all models, the odds of recidivating were 2.6 times higher for moderate risk youth compared to low risk youth. The odds of recidivism were 1.4 times higher for those assessed as high risk compared to those assessed as moderate risk. Males had higher odds of recidivism than females and Black individuals had higher odds of re-adjudication than White individuals. Youth who were youngest had the highest rates of recidivism. Youth supervised by Community Corrections had higher rates of recidivism than youth supervised by Court Services, though this difference may be due to using the proxy recidivism measure because of the lack of certain necessary data points in OJAs data system.

Research Question 2 Summary

Statistical analyses indicate that the YLS/CMI risk levels reliably predicts recidivism among the sample of Kansas youth, though the risk levels are less predictive than the risk score. Rates of recidivism consistently increase as the YLS/CMI level increases, and these observations are supported by chi-square, correlation, AUC-ROC, and logistic regression analysis.

Are YLS/CMI scores and levels consistently accurate across various subgroups?

CJI examined whether the YLS/CMI evaluated youth consistently regardless of their demographic subgroup. CJI conducted three main analyses – chi-square, correlation, and AUC-ROC – for each subgroup (i.e., by gender and race).

Gender

An additional examination, t-test analysis, was used to compare YLS/CMI scores and recidivism rates between males and females. The analysis found that both genders had similar YLS/CMI scores and recidivism rates, as shown in Figure 10.

When considering YLS/CMI score, chi-square analysis was significant for both genders with regard to recidivism. The YLS/CMI predicted recidivism slightly better for females than for males, which is an unusual finding, as most general risk and needs assessments are designed using primarily male populations in the sample. Chi-square tests indicated that there were statistically significant differences in recidivism rates for both males and females. Correlation analysis found that the YLS/CMI risk score and recidivism to be of fair strength for males and good strength for females. Similarly, the AUC-ROC analysis that the YLS/CMI was a fair predictor of recidivism for males and a good predictor for females. Figure 10 below shows the recidivism rates for each YLS/CMI score by gender.

Figure 9 Estimated recidivism rate for males and females by risk score.
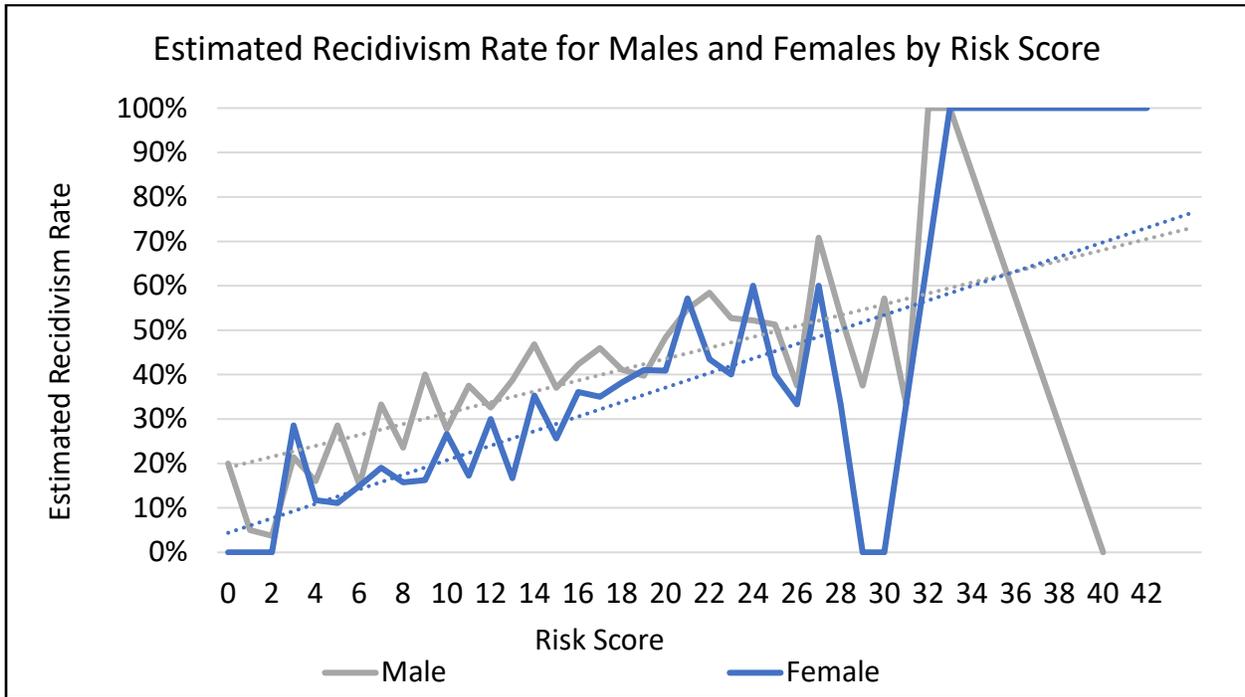
When examining the YLS/CMI domains, there were some differences between the genders. Table 4, shows the estimated recidivism rates for males and females across each domain. The Education/Employment, Attitude/Orientation, and Offense History domains predicted slightly better for females than for males. The Substance Abuse domain was not predictive for either males or females.

Table 4 Chi-Square, Correlation, and AUC-ROC by gender for each domain.

Domain	Chi-Square		Correlation		AUC-ROC	
	Females	Males	Females	Males	Females	Males
Offense	5.1	7.8	-0.02	0.05	0.49	0.53
Family	14.5*	60.1***	0.13*	0.15*	0.58*	0.59*
Education/Employment	61.4***	56.8***	0.28**	0.16*	0.68**	0.60*
Peer Relations	21.4***	56.0***	0.12*	0.17*	0.58*	0.59*
Substance Abuse	1.2	18.8**	0.01	0.06	0.51	0.54
Leisure/Recreation	10.7*	32.7***	0.13*	0.12*	0.57	0.57*
Personality	49.0***	83.1***	0.27**	0.20*	0.67**	0.62*
Attitude/Orientation	29.5***	41.6***	0.19*	0.13*	0.58*	0.58*
Total Risk Score	59.8***	145***	0.25**	0.22*	0.66**	0.63**
Risk Level	22.4***	82.9***	0.19*	0.19*	0.59*	0.60*

In the chi-square column of this table, * indicates a p-value of < 0.05, ** indicates a p-value of <.01, and *** indicates a p-value of <.001. In the correlation (r-value) and AUC-ROC columns, * indicates a "fair" fit, ** indicate a "good" fit and *** indicates and "excellent" fit. No stars indicate a "poor" fit.

Regarding YLS/CMI risk levels, chi-square tests determined that the risk levels significantly differentiated rates of recidivism between low, moderate, high, and very high risk youth for both genders.

While some differences existed across domains for males and females, the YLS/CMI is predictive across both genders reported within the dataset.

Race

When considering YLS/CMI risk score, chi-square analysis was significant for both White and Black youth when examining recidivism. Correlation analysis found significant associations between the YLS/CMI risk score and recidivism to be of fair strength for Black youth and good strength for White youth. Similarly, AUC-ROC analysis by race indicated that the YLS/CMI risk score was a fair predictor of recidivism for Black youth and a good predictor for White youth. Figure 11, below, shows the recidivism rates for each YLS/CMI score by race. Notably, while the correlations for both White and Black youth are similar, the rate of recidivism for Black youth is higher than for White youth. Determining the cause of this discrepancy is outside the scope of this project, but it warrants further investigation.

Figure 10 Recidivism rate by risk score and race.
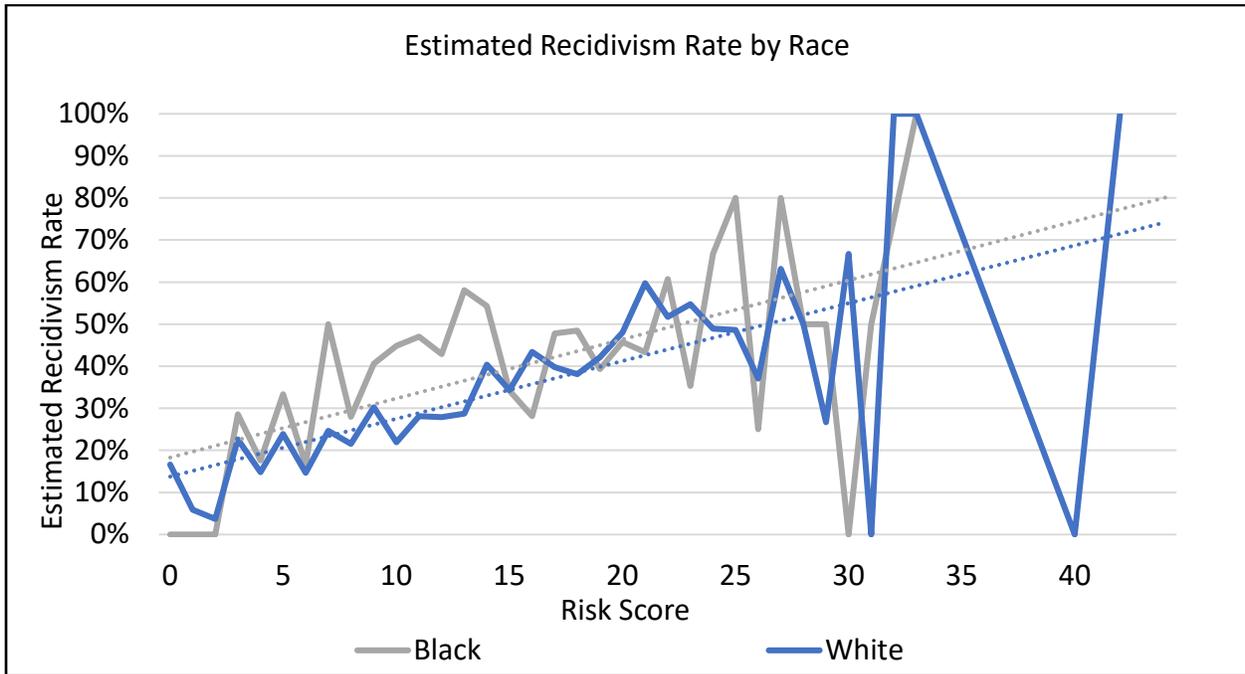
When examining the YLS/CMI domains by race, results were mixed. The Family and Peer domains were more predictive for Black youth, while Offense History, Education/Employment, Leisure/Recreation, Personality, and Attitudes/Orientation were more predictive for White youth. Notably, both the Substance Abuse and Education/Employment domains have negative correlations for Black youth, meaning that the higher the score on that section, the less likely Black youth were to recidivate. As above, the cause of that finding is outside the scope of this study, but these findings should be investigated further.

Table 5 Chi-Square, Correlation, and AUC-ROC by race for each domain[9].

Domain	Chi-Square		Correlation		AUC-ROC	
	Black	White	Black	White	Black	White
Offense	1.4	9.8	0.00	0.05	0.50	0.53
Family	10.1	63.9***	0.08	0.15*	0.54	0.60*
Education/Employment	9.5	89.5***	0.10	0.21*	0.55*	0.62*
Peer Relations	22.0***	47.0***	0.15*	0.15*	0.58*	0.59*
Substance Abuse	13.2*	13.7*	0.02	0.07	0.53	0.54
Leisure/Recreation	4.7	34.1***	0.08	0.13*	0.54	0.58*
Personality	20.6**	107***	0.15*	0.23**	0.59*	0.64*
Attitude/Orientation	7.2	54.7***	0.08	0.16*	0.55	0.59*
Total Risk Score	48.1*	163***	0.15*	0.24**	0.58*	0.65**
Risk Level	17.3***	74.6***	0.15*	0.19*	0.57*	0.60*

In the chi-square column of this table, * indicates a p-value of < 0.05, ** indicates a p-value of <.01, and *** indicates a p-value of <.001. In the correlation (r-value) and AUC-ROC columns, * indicates a "fair" fit, ** indicate a "good" fit and *** indicates and "excellent" fit. No stars indicate a "poor" fit.

While risk score on the YLS/CMI correlates with higher recidivism for both Black and White youth, some differences in domain correlations warrant further study.

Research Question 3 Summary

Statistical analyses indicate that the YLS/CMI reliably predicts recidivism across both gender and race among the sample of Kansas youth. For gender, the YLS/CMI predicts marginally better for females than for males. For race, the YLS/CMI also predicts marginally better for White youth than Black youth. Several factors could drive this result. First, this could be driven by differences in law enforcement across racial groups. Within the population used in this analysis, the recidivism rate for Black youth (43.6%) was significantly higher than for White youth (35.3%). This result was not consistent across all judicial districts. If, all other things being equal, Black youth in certain judicial districts are more likely to be targeted for re-arrest and reconviction by law enforcement than White youth, then the tool will be less accurate for Black youth. The second factor driving this result could be risk tool design. If youth in a certain racial group are more likely to have a given risk factor present regardless of underlying criminological risk, then the risk factor will be less predictive of future criminality for that racial group. The third factor is, as always, random error. This study was comprised of a limited sample and broader

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[9] In the chi-square column of this table, * indicates a p-value of < 0.05, ** indicates a p-value of <.01, and *** indicates a p-value of <.001. In the correlation (r-value) and AUC-ROC columns, * indicates a "fair" fit, ** indicate a "good" fit and *** indicates and "excellent" fit. No stars indicate a "poor" fit.

analysis is required to determine how widespread and consistent this issue is. This finding warrants additional study.

Additional Analysis

Does the YLS/CMI predict recidivism equally well for both Court Services and Community Corrections?

In Kansas, two distinct groups conduct the YLS/CMI and supervise youth in the community – Court Services and Community Corrections. This validation study is testing the predictability of the YLS/CMI across both groups, together and separate. In order to best serve youth, the tool must predict for all supervising groups. To determine if the YLS/CMI is predicting well for each group, the analyses from both research question 1 and research question 2 will be presented here for both Court Services and Community Corrections.

Risk Level and Score

In the current study, the chi-square analysis for YLS/CMI risk level was significant for both Court Services and Community Corrections. As can be seen in Figure 12, the correlation between risk score and recidivism is stronger for Court Services than for Community Corrections.

Figure 11 Recidivism rate by risk score for Court Services and Community Corrections.

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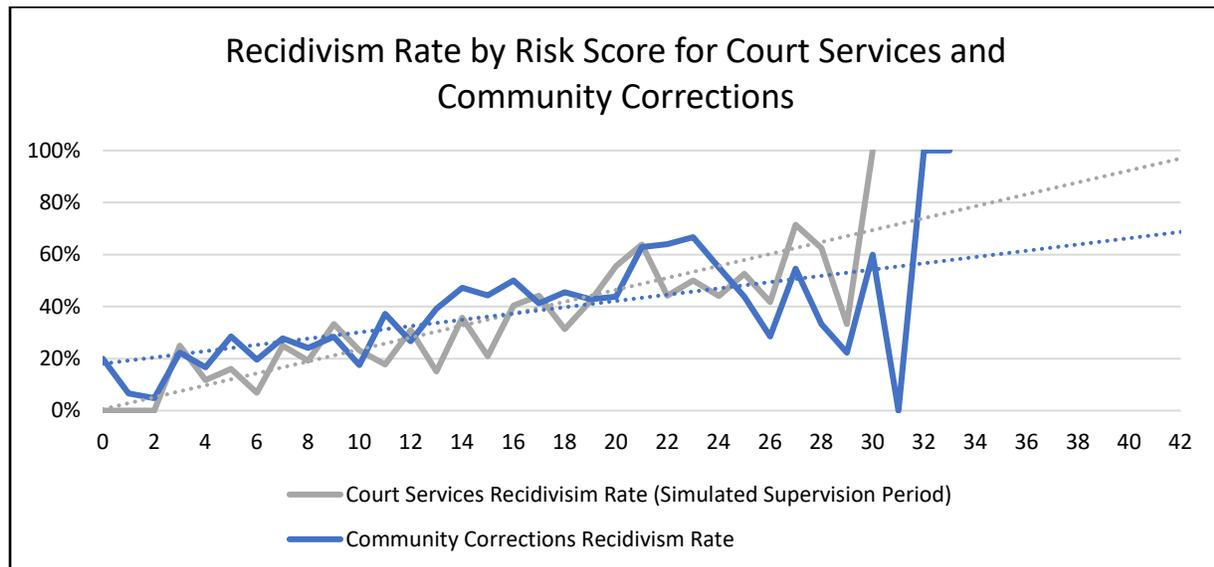
YLS/CMI Domains

Results for the YLS/CMI across agencies were similar. While all domains with the exception of Substance Abuse were at least fair predictors across both agencies, the domains were marginally more accurate for the Court Services population than the Community Corrections population. This result carries through to the total risk score, which is slightly more predictive for the Court Services population. The risk level is slightly more accurate for the Community Corrections population. This suggests that the tool is performing similarly across agencies.

Table 6 Chi-Square, Correlation, and AUC-ROC by agency for each domain.

Domain	Chi-Square		Correlation		AUC-ROC	
	CC	CS	CC	CS	CC	CS
Offense	8.9	11.3*	0.07	0.01	0.51	0.53
Family	35.0***	44.4***	0.15*	0.13*	0.58*	0.59*
Education/Employment	45.9***	67.3***	0.23**	0.14*	0.59*	0.63*
Peer Relations	53.3***	14.7**	0.10*	0.18*	0.61*	0.56*
Substance Abuse	12.5*	5.4	0.03	0.07	0.55*	0.52
Leisure/Recreation	30.4***	12.8**	0.10*	0.13*	0.58*	0.56*
Personality	54.1***	69.0***	0.23**	0.19*	0.61*	0.64**
Attitude/Orientation	23.7***	49.4***	0.18*	0.10*	0.57*	0.60*
Total Risk Score	99.4***	104***	0.24**	0.20*	0.62*	0.65**
Risk Level	57.8***	39.0***	0.17*	0.18*	0.60*	0.58*

In the chi-square column of this table, * indicates a p-value of < 0.05, ** indicates a p-value of <.01, and *** indicates a p-value of <.001. In the correlation (r-value) and AUC-ROC columns, * indicates a "fair" fit, ** indicate a "good" fit and *** indicates and "excellent" fit. No stars indicate a "poor" fit.

# Recommendations

Based on the information garnered during this validation study, CJI has six recommendations for increased quality in the use of the YLS/CMI.

1. Improve Data Collection

2. Use Consistent Case Numbers Across all Agencies

3. Increase Interrater Reliability

4. Specific Validation for Underrepresented Hispanic Population

5. System Assessment Exploring Drivers of Disparate Findings across Racial Groups

6. Adopt New Risk Level Cutoffs

Improve Data Collection

One of the limitations of the current study was the way in which data was collected and stored. To improve future quality assurance and validations, CJI recommends increased and improved data collection.

Improved data collection would involve a centralized location in which to upload and store information concerning the youth, the YLS/CMI results, and the adjudication and disposition information. Making this change would allow better matching across data points, as well as more in-depth, complex, and cogent data analysis. In short, improved data collection would yield more precise and telling results in all facets of data analysis regarding youth supervised by Court Services.

Use Consistent Case Numbers Across All Agencies

As Kansas youth are supervised by Court Services – within the judicial branch – and Community Corrections – within the executive branch – and can move from one type of supervision to another, it is difficult to track youth over time and across agencies. Currently, there is no universal case number between the Office of Judicial Administration and the Kansas Department of Corrections. For the purposes of improved data matching and analysis, CJI recommends using one number across all agencies to track youth across various points in the court and corrections system. This would allow thorough analysis and understanding of how youth travel through the system.

Increase Interrater Reliability

The dataset for this validation study was limited to the cohort of staff who did well with interrater reliability. This was done in order to ensure that the data used for the study was accurate and valid. However, this sharply limited the number of YLS/CMI assessments that were able to be used for the study. In order to increase the size of the dataset, and therefore allow for more rigorous analyses, efforts should be made to improve interrater reliability.

There are numerous ways in which this could occur, including additional training, targeted coaching, and periodic file reviews. Staff should be informed of the purpose and seriousness of the interrater reliability exercises and given the time and means to put in their best efforts during training.

Specific Validation for Underrepresented Hispanic Population

Due to the size and makeup of the sample dataset, this validation was unable to determine how well the YLS/CMI works for Hispanic youth in Kansas. According to the United States Census, Kansas is 12.2% Hispanic[10]. This is a sizeable portion of the population, and not being able to determine if the YLS/CMI predicts for Hispanic youth is an unfortunate limitation of this study.

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[10] https://www.census.gov/quickfacts/KS

To overcome this limitation, CJI recommends conducting a specific validation focusing on the Hispanic population. Completing this type of validation depends on having large amounts of high quality data; therefore, this recommendation should be followed after improving data collection.

System Assessment Exploring Drivers of Disparate Findings across Racial Groups

The results of the analyses concerning the accuracy of the YLS/CMI for Black youth show that the risk score is a fair to good predictor of recidivism for Black youth; but that recidivism rates are higher for Black youth. The drivers of the discrepancies between White youth and Black youth are outside the scope of the current study, but further investigation is both warranted and appropriate. CJI strongly recommends conducting a system assessment to explore the drivers of the disparate findings across race.

Adopt New Risk Level Cutoffs

One of the findings of the current study was that risk score more accurately reflects recidivism than risk level. This implies that it is possible to change the risk levels and potentially increase the accuracy of the tool. CJI recommends adopting new risk level cutoffs to create new risk categories. This includes the adoption of an additional risk level: minimal. There is a small, but important, group of youth who have very low risk scores and, in support of the risk principle that says that very low risk youth need very little or no intervention, these youth would benefit from differential treatment.

The proposed new risk levels are presented below in Table 7. The AUC-ROC of the current risk levels is 0.59; and the proposed new levels increase the AUC-ROC to 0.61. While this is a modest increase, the new risk levels move the YLS/CMI from *fair* to *good* AUC-ROC scores.

Table 7 Proposed new risk levels and associated YLS/CMI scores

Proposed Risk Level Name	Proposed YLS/CMI Scores
Minimal	0-2
Low	3-7
Moderate-Low	8-14
Moderate-High	15-24
High	25-35
Very High	36-42

Figure 13 below shows the recidivism rates for the current risk level cutoffs and the proposed new cutoffs.

Figure 12 Estimated recidivism rates of current and proposed risk levels.
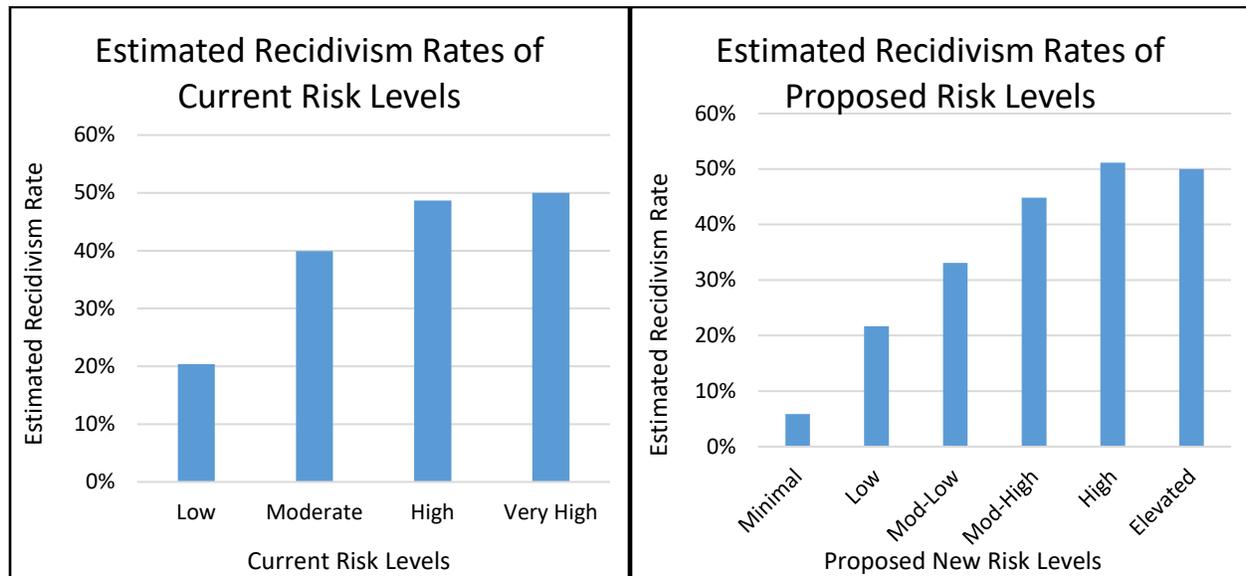
Conclusion

Overall, the Youth Level of Service/Case Management Inventory is a valid tool for youth in Kansas. The current validation study examined three questions:

1. Is the YLS/CMI a valid instrument for predicting recidivism?
2. Do the YLS/CMI risk levels predict recidivism, as defined above?
3. Does the YLS/CMI predict recidivism across various subgroups?

Using bivariate and multivariate analyses, CJI determined that the answers to all three questions above, is yes. Further analysis demonstrated that risk score is a better correlate of recidivism than risk level; this implies that the risk levels could be adjusted for better results. CJI's analysis also revealed that Black youth have differences in domain correlates rates than White youth; this finding warrants further study.

CJI recommends making several changes to improve the use of the YLS/CMI, and finds that overall the tool is working as expected.

Appendix A: Validation Analysis

Correlations and AUC-ROC of Risk Factors and Total Score with Recidivism, as defined as within two years of supervision discharge for DOC supervisees and within two years of assessment for OJA supervisees.

Table 8 Correlations for individual YLS/CMI items.

Recidivism (OJA Assessment Date Definition)		
YLS Question	**Correlation (r-value)**	**AUC-ROC**
1a. Three or more prior convictions	0.02	
1b. Two or more failures to comply	0.03	
1c. Prior probation	0.02	
1d. Prior custody	0.07***	
1e. Three or more current convictions	0.01	
2a. Inadequate Supervision	0.06*	
2b. Difficulty in Controlling Behavior	0.16***	
2c. Inappropriate Discipline	0.03	
2d. Inconsistent Parenting	0.07***	
2e. Poor relations/father-youth	0.03	
2f. Poor relations/mother-youth	0.05*	
3a. Disruptive classroom behavior	0.15***	
3b. Disruptive behavior on school property	0.06**	
3c. Low achievement	0.11***	
3d. Problems with peer	0.12***	
3e. Problems with teachers	0.06***	
3f. Truancy	0.08***	
3g. Unemployed/not seeking employment	-0.01	
4a. Some delinquent acquaintances	0.09***	
4b. Some delinquent friends	0.11***	
4c. No/few positive acquaintances	0.12***	
4d. No/few positive friends	0.12***	
5a. Occasional drug use	0.09***	
5b. Chronic drug use	0.04*	
5c. Chronic alcohol use	0.02	
5d. Substance abuse interferes with life	0.04*	
5e. Substance use linked to offense(s)	-0.03	
6a. Limited organized activities	0.06***	
6b. Could make better use of time	0.13***	

6c. No personal interests	0.09***	
7a. Inflated self-esteem	0.06***	
7b. Physically aggressive	0.18***	
7c. Tantrums	0.15***	
7d. Short attention span	0.05*	
7e. Poor frustration tolerance	0.08***	
7f. Inadequate guilt feelings	0.06***	
7g. Verbally aggressive, impudent	0.17***	
8a. Antisocial/procriminal attitudes	0.10***	
8b. Not seeking help	0.03	
8c. Actively rejecting help	0.05*	
8d. Defies authority	0.14***	
8e. Callous, little concern for others	0.02	
Total Score	**0.21***	**0.63**

* significant at p < .05
** significant at p < .01
*** significant at p < .001

Table 9 Correlations for YLS/CMI Domains.

Recidivism (OJA Assessment Date Definition)		
Domain Score	**Correlation (r-value)**	**AUC-ROC**
Offenses Domain Score	0.05**	0.53
Family Domain Score	0.12***	0.58*
Education/Employment Domain Score	0.16***	0.60*
Peer Domain Score	0.15***	0.58*
Substance Abuse Domain Score	0.05*	0.53*
Leisure/Recreation Domain Score	0.13***	0.57*
Personality/Behavior Domain Score	0.19***	0.62*
Attitudes/Orientation Domain Score	0.14***	0.58*
Total Score	**0.24***	**0.63**

* indicates a "fair" fit
** indicate a "good" fit and
*** indicates and "excellent" fit.
No stars indicate a "poor" fit.

Appendix B: Validation data description and processing

Data for the YLS-CMI validation was provided in three sections, each containing multiple datasets.

1. Court case and offense information for both youth and adults from FY 2006 to FY 2019.

2. All court case, offense information, supervision information and YLS-CMI assessment data associated with all YLS-CMI assessments of youth performed by the Kansas Department of Corrections (DOC).

3. All available assessments conducted by individuals who scored 80 or better on 2019 IRR evaluations at the Office of Justice Administration (OJA) YLS-CMI.

The merging and cleaning process for each dataset follows:

Court

OJA provided juvenile and adult case data in the form of comma-separated value (CSV) files broken up by fiscal year CJI created two appended files, one for adult case data and one for juvenile case data. Each observation represented a single offense recorded in a court case. There was no unique ID nor combination of variables that could generate one as each case could potentially include multiple offenses under the same statute at the same date. The juvenile dataset contained 245,958 records. The adult dataset contained 1,241,510 cases.

In Kansas, recidivism is defined as "a delinquency adjudication or adult conviction in Kansas while under court supervision or in DOC custody, or within 24 months of discharge from supervision or custody." In keeping with this definition, CJI dropped all offenses that did not end in conviction. In the juvenile dataset this eliminated 137,841 observations, leaving 108,117. In the adult dataset this eliminated 761,493 observations, leaving 480,017. Quality filters eliminated an additional 5,072 observations missing a disposition description, defendant name, or defendant date of birth.

CJI then applied series of standardization techniques to separate middle initials and suffixes from first and last name in each dataset. After applying these standardizations, the first name, last name, and date of birth were combined to create a unique person identifier. In the adult dataset, these unique identities were used to construct an individual case history. Because only the first adult conviction could trigger a recidivism event for a youth, only the earliest adult conviction associated with each individual was preserved, eliminating a further 298,233 observations and leaving 176,712 unique individuals. Note that this preserved all offenses associated with the earliest disposed case, not the earliest offense.

This dataset of first adult convictions were appended onto the juvenile dataset, creating a dataset with 284,829 cases representing 200,833 unique individuals. At this point several more quality filters were

applied to reduce the chance that an individual may have been misidentified across the datasets. These filters eliminated 117 cases where multiple individuals were associated with the same number and 140 cases where there were multiple findings associated with the same case number.

Next, a series of changes were made to make the dataset unique by case rather than by offense. The individual's names, dates of birth and case numbers were all combined to generate a unique ID for each set of individuals and cases. For each unique case number, CJI calculated the first potential recidivism trigger as the earlier of the disposition date and sentencing date. CJI also calculated the number of offenses associated with case and statute number, allowing 36,097 records to be eliminated without a change in data quality. Following these operations, the dataset was reshaped to be unique by each individual person-case combination, rather than by offense. Each of the 236,930 rows in the dataset represented an individual case, with offense characteristics representing columns.

To ease the combination with other datasets, CJI performed several more operations to make the dataset unique by individual, rather than case. Demographic variables (race, gender, and ethnicity) were standardized across all cases associated with a given individual. In cases where an individual was identified as a given race, ethnicity, or gender in one or more cases, but for whom this data was missing in other cases, the identified race, ethnicity, or gender taken as authoritative across all cases involving that individual. In cases where the race, ethnicity, or gender of an individual was identified differently across different cases (for example, Hispanic in one case and Non-Hispanic in another case), the variable in question was changed to unknown. No cases were dropped in these procedures.

The resulting dataset, used in later merges, included 200,774 observations, each representing an individual case history, with each column representing either individual characteristics or an ordered set of information about each case in their case history, including key dates, offense severity, and offense statutes.

DOC

The DOC provided five files primary, each with different unique IDs. This dataset contained all information involving individual youth who received the YLS-CMI assessment from the time the assessment was piloted through the end 2019. The first assessments occurred in January, 2007 and the last assessments occurred on December 31, 2019.

1. Individual demographic information associated with each DOC supervision case, with the supervision case IDs. This dataset included 18,444 supervision cases, representing 16,904 individuals.

2. Detailed offense data, unique by offense ID with individual, supervision case, and court case IDs. This dataset included 40,954 offenses representing 34,052 unique court cases, 18,437 unique supervision cases, and 16,904 unique individuals.

3. Detailed court case data, unique by court case number, with individual and supervision case IDs. This dataset contained 34,055 unique court cases, 18,437 unique supervision cases, and 16,904 unique individuals.

4. Detailed supervision case plan data, unique by supervision case plan ID (different from supervision case ID). This dataset contained 32,192 unique case plans, 18,437 unique supervision cases and 16,904 individuals.

5. Detailed YLS data, unique by YLS assessment ID, with individual and supervision case IDs. This dataset contained 36,211 unique YLS validations, 18,444 unique supervision cases, and 16,911 unique individuals.

Supplemental information on individual race and name were also provided at a later date, unique by individual ID. CJI cleaned, merged, and reshaped the files to create a single dataset unique by supervision case ID including all relevant YLS, supervision, demographic, court, and offense information. This cleaning and reshaping process is detailed below:

Offense Data

Offense data was collapsed to preserve the most relevant information within each court case. Generally, the severity and type of lower offenses is more variable and less relevant to analysis than the severity and type of more serious offenses. To this end, within each case the maximum severity of the case was determined and only offenses that were of the highest severity level were preserved. This eliminated 5,445 observations of less serious offenses. Next, the offense data was reshaped so that each observation represented a single case, with indicators for whether any offense within the case was a person crime, the maximum severity of all offenses, and the offense description of the most severe offense. The resulting dataset contained 34,046 unique cases. Within each case, if there were multiple offenses associated at the highest severity levels, the descriptions of all offenses were preserved as separate columns.

Court Case Data

First, offense data from the offense dataset was merged with court case data using the unique court case ID. Matching offense data was found for 34,055 court cases and was not found for nine court cases.

CJI applied several quality filters to matched court case data. First, non-juvenile cases were eliminated because the data pull was intended to pull juvenile records. This eliminated 21 observations. Next, CJI applied a filter to eliminate cases where there were multiple DOC supervision cases associated with the same court case. This overlap would make it difficult to interpret the distance between supervision dates and court dates. This filter eliminated 315 observations.

Supervision Data

First, court case and offense data was merged with supervision data using the unique supervision case ID. 31,462 supervision cases plans had matching court case data and 730 did not.

As with the court data, a series of quality filters were applied after the merge. First, there were filters applied based on the relationship between key dates. Eight observations were dropped because the supervision start date was after the supervision end date. Four observations were dropped because the case plan begin date was after the case plan end date. 33 observations were dropped because the supervision start date was prior to the first court date. Four observations were dropped because the overall case supervision start date or end date differed across case plans within the same supervision case.

Next, the data was collapsed to preserve key information while making the dataset unique by supervision case rather than by case plan. First, case plans identified as taking place while a youth was incarcerated were identified. Custody periods were defined using these case plans, and 7,907 observations that occurred within a given custody period were dropped. Finally, 515 cases that did not have matching court data were dropped.

After these filters were applied, the supervision data was reshaped such that each observation represented an individual supervision case, with a separate column for each key case plan.

Individual Data

No observations were dropped from the dataset of individual demographic data due to quality filters. Basic date formatting and name standardization procedures were applied. All remaining supervision data had a matching record in the individual demographics dataset. One observation was missing name information in the supplemental dataset containing youth names.

Assessment Data

Each assessment was matched with individual supervision, court case, offense, and demographic data from the previously merged dataset. Of the 36,211 assessments, 631 did not have matching records in the cleaned and filtered merged data. 697 did not have matching records in the supplemental juvenile race dataset. If multiple assessments were performed before an individual as released, only the final assessment prior to release was maintained. "Release date" was defined as the supervision end date associated with a supervision period ending with discharge or success. 111 observations were dropped due to occurring within the same supervision period. Additionally, four observations were dropped because their supervision period began prior to the year 2000 indicating stale data.

The final cleaned DOC dataset contained 36,096 individual assessments, representing 18,404 individual supervision cases and 16,548 unique combinations of name and birth date. These unique name, birth date combinations will be used to merge this information with the full court case dataset.

OJA

OJA assessment data was provided differently for different districts. One district (JD10) provided a unified excel document. Another (JD18) provided a series of excel and word documents, one for each assessment. All others provided scanned versions of paper copies. An overview of each process follows:

Scanned paper records (all districts except JD10 and JD18)

CJI staff manually entered 623 assessment records covering most judicial districts.

JD 10

JD10 provided a single excel sheet representing 2,514 assessments conducted between August 2008 and November 2019. These assessments represented 2,381 individual cases. Unfortunately, JD10 uses a different court case number system than the statewide case data we were provided, so this case number could not be used for merges. In 133 cases, there were multiple assessments associated with the same case number. In these cases, only the final assessment was preserved. Unfortunately, this dataset did not contain birth date, so matching with court data was done based only on name. This meant that in the 165 cases where two individuals had the same name there was not a secondary identifier to confirm that they were the same individual. These cases were dropped.

1,202 assessments in the JD10 dataset could not be matched to any court records and were dropped, leaving 1,014 merged records.

JD 18

JD 18 provided a series of Word and Excel documents. Each represented either a single assessment or a set of assessments performed by the same assessor. 304 records were provided as Word documents. 401 were provided as excel documents. Unfortunately none of these records contained date of birth information, requiring a match to be performed using only first and last name. Of the 652 unique first and last name combinations in the compiled dataset, 600 had matching records in the court dataset. In order to reduce the chance of an erroneous match, 82 cases where the first disposition date in an individual's case history occurred prior to their assessment date were dropped.

Merging Assessment and Case Data

CJI merged OJA and DOC data court case data separately and then appended the resulting datasets. The process for each dataset follows:

DOC-Court Case Data Merge

Of the 36,096 DOC assessments, 6,777 did not have a matching name/date of birth record in the court case dataset. There are three primary reasons this may have occurred: 1) Differences in name spelling across DOC and Court case records 2) Inconsistent date of birth information across DOC and Court case records and 3) Different date periods. 636 of the unmatched variables were for individuals whose supervision began prior to 2007, so the majority of the merge issues are due to inconsistent name and date of birth data across the records. Overall, the match rate was 81.2%. However, unmatched data was kept in the dataset as there were supporting court records in the DOC dataset indicating course information. The lack of a match was taken as indication that a recidivism event was not captured in the court dataset.

After the merge a series of filters were applied to isolate the final assessments prior to either discharge or a recidivism event. 7,504 assessments were eliminated because they took place after an individual's first recidivism date. After applying this filter, CJI isolated only the final assessment to take place either before their first recidivism date or their discharge date. This eliminated 11,954 assessments, leaving 16,612 assessments.

OJA-Court Case Data Merge

Of the 623 records in the manually compiled OJA data, 186 (27%) could not be matched to court records using first name, last name, and date of birth.

This dataset was merged with the information from JD10 and JD18, creating a dataset containing 2,305 assessments. A series of quality filters was applied to the merged dataset. These filters were applied liberally in order to reduce the chance that a court case record and assessment record were incorrectly matched. 196 records missing both a disposition date and a sentencing date from the court data were dropped. 407 observations were dropped because the assessment date was more than one year from the original disposition date. 17 observations were dropped because (after standardizing and applying filters) they were not the final assessment prior to discharge or recidivism.

Finalizing the Validation Sample

Merged DOC and OJA files were combined to create a full dataset of 18,493 validations with complete court case histories across both agencies.

As was mentioned in the report section on IRR, the only assessments used in this validation were performed by individuals with an average IRR score of 80 or above across several IRR exercises. OJA assessments were only provided for individuals in this cohort, but DOC data included all assessments. Of the 16,612 DOC assessments, 2,150 were performed by these individuals. All validation calculations

were performed on this smaller set of individuals. There were 4,031 assessments performed by individuals in the cohort across the OJA and DOC datasets.

However, not all datasets could be utilized. The statutory recidivism definition in Kansas encompasses two years between discharge and an event. This means that if the assessment date was fewer than two years prior to the final court data, the assessment could not be utilized. An additional 1,308 assessments were eliminated because there were fewer than two years of court case data in order to determine recidivism.

The final validation sample included 2,723 validations, 1,479 performed by the DOC and 1,244 performed by the OJA.

Appendix C

Sample Comparison

Table A-1 Race across Datasets

	Full Dataset		Validation Dataset		DOC Dataset		OJA Dataset	
	No.	%	No.	%	No.	%	No.	%
White	11,272	72.0	1,948	71.9	1,067	72.1	881	71.7
Black	3,600	23.0	642	23.7	338	22.8	304	24.7
Other	774	4.9	119	4.4	75	5.1	44	3.6
Total	15,646	100.0	2,709	100.0	1,480	100.0	1,229	100.0

Table A-2 Gender across Datasets

	Full Dataset		Validation Dataset		DOC Dataset		OJA Dataset	
	No.	%	No.	%	No.	%	No.	%
Men	12,177	77.8	2,014	74.3	1,147	77.5	867	70.5
Women	2,995	19.1	633	23.4	277	18.7	356	29.0
Unknown	474	3.0	62	2.3	56	3.8	6	0.5
Total	15,646	100.0	2,709	100.0	1,480	100.0	1,229	100.0

Table A-3 Ethnicity across Datasets

	Full Dataset		Validation Dataset		DOC Dataset		OJA Dataset	
	No.	%	No.	%	No.	%	No.	%
Non-Hispanic	12,574	80.4	2,396	88.4	1,167	78.9	1,229	100.0
Hispanic	2,756	17.6	277	10.2	277	18.7	0	0
Unknown	316	2.0	36	1.3	36	2.4	0	0
Total	15,646	100.0	2,709	100.0	1,480	100.0	1,229	100

Cross-Tabulations – Risk Level

Table A-4 Risk Level Crosstabs – Full Validation Sample

Risk Level	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
Low	79.6	469	20.4	120	589
Moderate	60.1	1,093	39.9	727	1,820
High	51.3	153	48.7	145	298
Very High	50.0	1	50.0	1	2
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(3)= 94.372
   P-value= 0.000

Table A-5 Risk Level Crosstabs – Black Youth Only

Risk Level	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
Low	73.5	83	26.5	30	113
Moderate	53.5	249	46.5	216	465
High	46.9	30	53.1	34	64
Total	56.4	362	43.6	280	642

Pearson chi2(2)= 17.258
P-value= 0.000

Table A-6 Risk Level Crosstabs – White Youth Only

Risk Level	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
Low	80.8	361	19.2	86	447
Moderate	61.4	788	38.6	495	1,283
High	50.9	110	49.1	106	216
Very High	50.0	1	50.0	1	2
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(3)= 74.647
P-value= 0.000

Table A-7 Risk Level Crosstabs – Female Youth Only

| Risk Level | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
Low	84.0	100	16.0	19	119
Moderate	67.0	307	33.0	151	458
High	52.7	29	47.3	26	55
Very High	0.0	0	100.0	1	1
Total	68.9	436	31.1	197	633

Pearson chi2(3)= 22.386
P-value= 0.000

Table A-8 Risk Level Crosstabs – Male Youth Only

| Risk Level | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
Low	78.5	361	21.5	99	460
Moderate	57.0	753	43.0	569	1,322
High	48.9	113	51.1	118	231
Very High	100.0	1	0.0	0	1
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(3)= 82.936
P-value= 0.000

Table A-9 Risk Level Crosstabs –Youth Supervised by OJA Only

| Risk Level | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
Low	80.4	172	19.6	42	214
Moderate	61.8	536	38.2	331	867
High	50.0	73	50.0	73	146
Very High	50.0	1	50.0	1	2
Total	63.6	782	36.4	447	1,229

Pearson chi2(3)= 39.029
P-value= 0.000

Table A-10 Risk Level Crosstabs –Youth Supervised by DOC Only

| Risk Level | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
Low	79.2	297	20.8	78	375
Moderate	58.4	557	41.6	396	953
High	52.6	80	47.4	72	152
Total	63.1	934	36.9	546	1,480

Pearson chi2(2)= 57.768
P-value= 0.000

Cross-Tabulations – Risk Score

Table A-11 Risk Score Crosstabs – Full Validation Sample

| Risk Score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	85.7	12	14.3	2	14
1	95.5	21	4.5	1	22
2	96.9	31	3.1	1	32
3	76.8	53	23.2	16	69
4	84.7	61	15.3	11	72
5	74.1	60	25.9	21	81
6	85.3	87	14.7	15	102
7	69.5	57	30.5	25	82
8	75.7	87	24.3	28	115
9	66.9	87	33.1	43	130
10	74.3	81	25.7	28	109
11	67.6	92	32.4	44	136
12	66.7	84	33.3	42	126
13	65.1	97	34.9	52	149
14	55.9	81	44.1	64	145
15	66.2	98	33.8	50	148
16	58.2	82	41.8	59	141
17	55.2	79	44.8	64	143
18	59.9	88	40.1	59	147

19	58.4	73	41.6	52	125
20	50.9	58	49.1	56	114
21	42.7	50	57.3	67	117
22	47.8	43	52.2	47	90
23	51.4	37	48.6	35	72
24	46.8	29	53.2	33	62
25	50.0	21	50.0	21	42
26	66.7	24	33.3	12	36
27	34.5	10	65.5	19	29
28	50.0	9	50.0	9	18
29	71.4	15	28.6	6	21
30	50.0	4	50.0	4	8
31	66.7	4	33.3	2	6
32	0.0	0	100.0	2	2
33	0.0	0	100.0	2	2
40	100.0	1	0.0	0	1
42	0.0	0	100.0	1	1
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(35)= 177.713
P-value= 0.000

Table A-12 Risk Score Crosstabs – Black Youth Only

	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
Risk Score	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	100.0	1	0.0	0	1
1	100.0	2	0.0	0	2
2	100.0	5	0.0	0	5
3	71.4	10	28.6	4	14
4	82.4	14	17.6	3	17
5	63.6	7	36.4	4	11
6	83.3	20	16.7	4	24
7	50.0	6	50.0	6	12
8	66.7	18	33.3	9	27
9	58.1	18	41.9	13	31
10	57.1	16	42.9	12	28
11	52.9	18	47.1	16	34
12	54.1	20	45.9	17	37
13	41.9	13	58.1	18	31
14	45.5	15	54.5	18	33

	%	No.	%	No.	No.
15	61.9	26	38.1	16	42
16	71.9	23	28.1	9	32
17	50.0	23	50.0	23	46
18	50.0	17	50.0	17	34
19	59.3	16	40.7	11	27
20	51.4	18	48.6	17	35
21	53.3	16	46.7	14	30
22	40.0	10	60.0	15	25
23	64.7	11	35.3	6	17
24	33.3	4	66.7	8	12
25	20.0	1	80.0	4	5
26	75.0	6	25.0	2	8
27	20.0	2	80.0	8	10
28	50.0	2	50.0	2	4
29	50.0	2	50.0	2	4
30	100.0	1	0.0	0	1
31	50.0	1	50.0	1	2
33	0.0	0	100.0	1	1
Total	56.4	362	43.6	280	642

Pearson chi2(32)= 48.101
P-value= 0.034

Table A-12 Risk Score Crosstabs – White Youth Only

	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
Risk Score	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	83.3	10	16.7	2	12
1	94.1	16	5.9	1	17
2	96.3	26	3.7	1	27
3	76.9	40	23.1	12	52
4	84.9	45	15.1	8	53
5	76.1	51	23.9	16	67
6	85.3	64	14.7	11	75
7	73.4	47	26.6	17	64
8	77.5	62	22.5	18	80
9	69.8	67	30.2	29	96
10	79.7	63	20.3	16	79
11	71.9	69	28.1	27	96
12	71.3	62	28.7	25	87
13	69.7	76	30.3	33	109

14	58.7	64	41.3	45	109
15	66.3	63	33.7	32	95
16	55.0	55	45.0	45	100
17	57.4	54	42.6	40	94
18	61.3	65	38.7	41	106
19	57.4	54	42.6	40	94
20	49.4	38	50.6	39	77
21	36.6	30	63.4	52	82
22	47.5	28	52.5	31	59
23	43.1	22	56.9	29	51
24	51.1	23	48.9	22	45
25	51.4	18	48.6	17	35
26	65.4	17	34.6	9	26
27	38.9	7	61.1	11	18
28	50.0	7	50.0	7	14
29	73.3	11	26.7	4	15
30	33.3	2	66.7	4	6
31	100.0	3	0.0	0	3
32	0.0	0	100.0	2	2
33	0.0	0	100.0	1	1
40	100.0	1	0.0	0	1
42	0.0	0	100.0	1	1
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(35)= 163.209

P-value= 0.000

Table A-12 Risk Score Crosstabs – Female Youth Only

	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
Risk Score	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	100.0	4	0.0	0	4
1	100.0	2	0.0	0	2
2	100.0	4	0.0	0	4
3	71.4	10	28.6	4	14
4	88.2	15	11.8	2	17
5	88.9	16	11.1	2	18
6	85.0	17	15.0	3	20
7	80.0	16	20.0	4	20
8	80.0	16	20.0	4	20
9	83.7	36	16.3	7	43

10	75.9	22	24.1	7	29
11	82.8	24	17.2	5	29
12	67.7	21	32.3	10	31
13	80.6	25	19.4	6	31
14	62.9	22	37.1	13	35
15	73.7	28	26.3	10	38
16	61.1	22	38.9	14	36
17	62.5	25	37.5	15	40
18	60.0	21	40.0	14	35
19	60.5	23	39.5	15	38
20	59.1	13	40.9	9	22
21	41.4	12	58.6	17	29
22	59.1	13	40.9	9	22
23	53.8	7	46.2	6	13
24	35.7	5	64.3	9	14
25	50.0	2	50.0	2	4
26	66.7	8	33.3	4	12
27	40.0	2	60.0	3	5
28	66.7	2	33.3	1	3
29	100.0	2	0.0	0	2
30	100.0	1	0.0	0	1
33	0.0	0	100.0	1	1
42	0.0	0	100.0	1	1
Total	68.9	436	31.1	197	633

Pearson chi2(32)= 59.808
P-value= 0.002

Table A-12 Risk Score Crosstabs – Male Youth Only

Risk Score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				Total
	No recidivism event found		Recidivism event found		
	%	No.	%	No.	No.
0	80.0	8	20.0	2	10
1	95.0	19	5.0	1	20
2	96.3	26	3.7	1	27
3	78.2	43	21.8	12	55
4	83.6	46	16.4	9	55
5	71.0	44	29.0	18	62
6	84.8	67	15.2	12	79
7	65.6	40	34.4	21	61
8	74.7	68	25.3	23	91

9	58.8	50	41.2	35	85
10	73.8	59	26.3	21	80
11	62.5	65	37.5	39	104
12	66.0	62	34.0	32	94
13	60.4	67	39.6	44	111
14	52.8	57	47.2	51	108
15	62.3	66	37.7	40	106
16	57.1	60	42.9	45	105
17	51.5	52	48.5	49	101
18	58.3	63	41.7	45	108
19	58.5	48	41.5	34	82
20	48.4	44	51.6	47	91
21	41.0	34	59.0	49	83
22	40.6	26	59.4	38	64
23	47.3	26	52.7	29	55
24	48.9	22	51.1	23	45
25	50.0	19	50.0	19	38
26	65.2	15	34.8	8	23
27	30.4	7	69.6	16	23
28	46.7	7	53.3	8	15
29	62.5	10	37.5	6	16
30	42.9	3	57.1	4	7
31	66.7	4	33.3	2	6
32	0.0	0	100.0	2	2
33	0.0	0	100.0	1	1
40	100.0	1	0.0	0	1
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(34)= 145.317

P-value= 0.000

Table A-13 Risk Score Crosstabs –Youth Supervised by OJA Only

	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
Risk Score	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	100.0	2	0.0	0	2
1	100.0	4	0.0	0	4
2	100.0	7	0.0	0	7
3	71.4	15	28.6	6	21
4	82.6	19	17.4	4	23
5	77.1	27	22.9	8	35
6	88.4	38	11.6	5	43

Risk Score	%	No.	%	No.	No.
7	74.3	26	25.7	9	35
8	77.3	34	22.7	10	44
9	68.1	32	31.9	15	47
10	77.8	42	22.2	12	54
11	76.7	46	23.3	14	60
12	65.6	40	34.4	21	61
13	76.3	45	23.7	14	59
14	61.1	44	38.9	28	72
15	74.6	50	25.4	17	67
16	59.7	40	40.3	27	67
17	55.1	38	44.9	31	69
18	63.8	44	36.2	25	69
19	57.6	34	42.4	25	59
20	43.8	28	56.3	36	64
21	40.0	28	60.0	42	70
22	51.0	25	49.0	24	49
23	52.8	19	47.2	17	36
24	50.0	16	50.0	16	32
25	48.0	12	52.0	13	25
26	64.7	11	35.3	6	17
27	33.3	4	66.7	8	12
28	36.4	4	63.6	7	11
29	66.7	4	33.3	2	6
30	66.7	2	33.3	1	3
31	50.0	1	50.0	1	2
32	0.0	0	100.0	1	1
33	0.0	0	100.0	1	1
40	100.0	1	0.0	0	1
42	0.0	0	100.0	1	1
Total	63.6	782	36.4	447	1,229

Pearson chi2(35)= 104.399
P-value= 0.000

Table A-13 Risk Score Crosstabs –Youth Supervised by DOC Only

	Recidivism Rate				
Risk Score	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	83.3	10	16.7	2	12
1	94.4	17	5.6	1	18
2	96.0	24	4.0	1	25
3	79.2	38	20.8	10	48

4	85.7	42	14.3	7	49
5	71.7	33	28.3	13	46
6	83.1	49	16.9	10	59
7	66.0	31	34.0	16	47
8	74.6	53	25.4	18	71
9	66.3	55	33.7	28	83
10	70.9	39	29.1	16	55
11	60.5	46	39.5	30	76
12	67.7	44	32.3	21	65
13	57.8	52	42.2	38	90
14	50.7	37	49.3	36	73
15	59.3	48	40.7	33	81
16	56.8	42	43.2	32	74
17	55.4	41	44.6	33	74
18	56.4	44	43.6	34	78
19	59.1	39	40.9	27	66
20	60.0	30	40.0	20	50
21	46.8	22	53.2	25	47
22	43.9	18	56.1	23	41
23	50.0	18	50.0	18	36
24	43.3	13	56.7	17	30
25	52.9	9	47.1	8	17
26	68.4	13	31.6	6	19
27	35.3	6	64.7	11	17
28	71.4	5	28.6	2	7
29	73.3	11	26.7	4	15
30	40.0	2	60.0	3	5
31	75.0	3	25.0	1	4
32	0.0	0	100.0	1	1
33	0.0	0	100.0	1	1
Total	63.1	934	36.9	546	1,480

Pearson chi2(33)= 99.433

P-value= 0.000

Cross-Tabulations – Domain Scores in Full Sample

Table A-14 Offense Domain Crosstabs – Full Validation Sample

| YLS Offense domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	65.9	606	34.1	313	919
1	63.0	589	37.0	346	935
2	59.8	247	40.2	166	413
3	61.5	195	38.5	122	317
4	65.5	74	34.5	39	113
5	41.7	5	58.3	7	12
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(5)= 8.054

P-value= 0.153

Table A-15 Family Domain Crosstabs – Full Validation Sample

| YLS Family domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	73.8	491	26.2	174	665
1	67.4	406	32.6	196	602
2	58.2	302	41.8	217	519
3	54.4	245	45.6	205	450
4	56.6	180	43.4	138	318
5	62.8	76	37.2	45	121
6	47.1	16	52.9	18	34
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(6)= 67.283

P-value= 0.000

Table A-16 Education/Employment Domain Crosstabs – Full Validation Sample

YLS Education/Employment domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	75.1	558	24.9	185	743
1	66.8	409	33.2	203	612
2	59.9	360	40.1	241	601
3	52.3	191	47.7	174	365
4	51.4	133	48.6	126	259
5	51.0	50	49.0	48	98
6	48.1	13	51.9	14	27
7	50.0	2	50.0	2	4
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(7)= 95.022

P-value= 0.000

Table A-17 Peer Relations Domain Crosstabs – Full Validation Sample

YLS Peer Relations domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	74.4	229	25.6	79	308
1	72.1	176	27.9	68	244
2	66.7	595	33.3	297	892
3	67.5	114	32.5	55	169
4	54.9	602	45.1	494	1,096
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(4)= 63.192

P-value= 0.000

Table A-18 Substance Abuse Domain Crosstabs – Full Validation Sample

| YLS Substance Abuse domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	67.5	705	32.5	339	1,044
1	60.0	260	40.0	173	433
2	60.3	182	39.7	120	302
3	59.7	234	40.3	158	392
4	62.1	310	37.9	189	499
5	64.1	25	35.9	14	39
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(5)= 13.714
P-value= 0.018

Table A-19 Leisure/Recreation Domain Crosstabs – Full Validation Sample

| YLS Leisure/Recreation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	71.3	375	28.7	151	526
1	67.7	481	32.3	230	711
2	59.9	651	40.1	436	1,087
3	54.3	209	45.7	176	385
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(3)= 39.186
P-value= 0.000

Table A-20 Personality/Behavior Domain Crosstabs – Full Validation Sample

| YLS Personality/Behavior domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	77.7	321	22.3	92	413
1	72.1	352	27.9	136	488
2	67.1	341	32.9	167	508
3	59.8	237	40.2	159	396
4	54.8	218	45.2	180	398
5	49.4	167	50.6	171	338
6	48.3	69	51.7	74	143
7	44.0	11	56.0	14	25
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(7)= 117.138
P-value= 0.000

Table A-21 Attitude/Orientation Domain Crosstabs – Full Validation Sample

| YLS Attitude/Orientation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	73.5	529	26.5	191	720
1	63.7	654	36.3	373	1,027
2	54.9	350	45.1	287	637
3	59.3	156	40.7	107	263
4	42.6	23	57.4	31	54
5	50.0	4	50.0	4	8
Total	63.3	1,716	36.7	993	2,709

Pearson chi2(5)= 63.678
P-value= 0.000

Cross-Tabulations – Domain Scores for Black Youth

Table A-22 Offense Domain Crosstabs – Black Youth Only

| YLS Offense domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	56.4	124	43.6	96	220
1	57.9	113	42.1	82	195
2	51.5	53	48.5	50	103
3	58.3	56	41.7	40	96
4	57.1	16	42.9	12	28
Total	56.4	362	43.6	280	642

Pearson chi2(4)= 1.366

P-value= 0.850

Table A-23 Family Domain Crosstabs – Black Youth Only

| YLS Family domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	58.8	90	41.2	63	153
1	64.1	98	35.9	55	153
2	52.3	69	47.7	63	132
3	49.5	54	50.5	55	109
4	57.6	38	42.4	28	66
5	50.0	12	50.0	12	24
6	20.0	1	80.0	4	5
Total	56.4	362	43.6	280	642

Pearson chi2(6)= 10.139

P-value= 0.119

Table A-24 Education/Employment Domain Crosstabs – Black Youth Only

| YLS Education/Employment domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	65.4	87	34.6	46	133
1	58.1	75	41.9	54	129
2	54.5	79	45.5	66	145
3	52.3	58	47.7	53	111
4	52.9	46	47.1	41	87
5	40.7	11	59.3	16	27
6	55.6	5	44.4	4	9
7	100.0	1	0.0	0	1
Total	56.4	362	43.6	280	642

Pearson chi2(7)= 9.454

P-value= 0.222

Table A-25 Peer Relations Domain Crosstabs – Black Youth Only

| YLS Peer Relations domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	70.2	40	29.8	17	57
1	66.7	54	33.3	27	81
2	56.7	106	43.3	81	187
3	72.0	36	28.0	14	50
4	47.2	126	52.8	141	267
Total	56.4	362	43.6	280	642

Pearson chi2(4)= 22.032

P-value= 0.000

Table A-26 Substance Abuse Domain Crosstabs – Black Youth Only

| YLS Substance Abuse domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	61.4	181	38.6	114	295

1		43.8	46	56.2	59	105
2		49.3	37	50.7	38	75
3		59.8	55	40.2	37	92
4		56.2	41	43.8	32	73
5		100.0	2	0.0	0	2
Total		56.4	362	43.6	280	642

Pearson chi2(5)= 13.213
P-value= 0.021

Table A-27 Leisure/Recreation Domain Crosstabs – Black Youth Only

YLS Leisure/Recreation domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	62.6	82	37.4	49	131
1	59.4	98	40.6	67	165
2	52.4	132	47.6	120	252
3	53.2	50	46.8	44	94
Total	56.4	362	43.6	280	642

Pearson chi2(3)= 4.695
P-value= 0.196

Table A-28 Personality/Behavior Domain Crosstabs – Black Youth Only

YLS Personality/Behavior domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	71.6	58	28.4	23	81
1	60.6	60	39.4	39	99
2	62.3	71	37.7	43	114
3	48.2	53	51.8	57	110
4	58.3	56	41.7	40	96
5	45.7	42	54.3	50	92
6	44.4	20	55.6	25	45

			6		
7	40.0	2 3	0.0 4	3 2	5
Total	56.4	62	3.6	80	642

Pearson chi2(7)=
20.581
P-value= 0.004

Table A-29 Attitude/Orientation Domain Crosstabs – Black Youth Only

| YLS Attitude/Orientation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	64.0	89	36.0	50	139
1	56.5	130	43.5	100	230
2	51.5	86	48.5	81	167
3	57.3	47	42.7	35	82
4	42.9	9	57.1	12	21
5	33.3	1	66.7	2	3
Total	56.4	362	43.6	280	642

Pearson chi2(5)= 7.167
P-value= 0.209

Cross-Tabulations – Domain Scores for White Youth

Table A-30 Offense Domain Crosstabs – White Youth Only

| YLS Offense domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	68.1	448	31.9	210	658
1	63.8	452	36.2	256	708
2	61.4	178	38.6	112	290
3	61.8	126	38.2	78	204
4	67.5	52	32.5	25	77
5	36.4	4	63.6	7	11
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(5)= 9.835
P-value= 0.080

Table A-31 Family Domain Crosstabs – White Youth Only

| YLS Family domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	77.2	369	22.8	109	478
1	68.1	292	31.9	137	429
2	59.5	217	40.5	148	365
3	55.5	178	44.5	143	321
4	55.1	129	44.9	105	234
5	66.0	62	34.0	32	94
6	48.1	13	51.9	14	27
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(6)= 63.909
P-value= 0.000

Table A-32 Education/Employment Domain Crosstabs – White Youth Only

| YLS Education/Employment domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	76.8	446	23.2	135	581
1	68.7	311	31.3	142	453
2	60.6	260	39.4	169	429
3	50.6	119	49.4	116	235

	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
4	49.1	82	50.9	85	167
5	53.1	34	46.9	30	64
6	41.2	7	58.8	10	17
7	50.0	1	50.0	1	2
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(7)= 89.450

P-value= 0.000

Table A-33 Peer Relations Domain Crosstabs – White Youth Only

	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
YLS Peer Relations domain score	%	No.	%	No.	No.
0	74.8	178	25.2	60	238
1	75.2	118	24.8	39	157
2	68.5	459	31.5	211	670
3	64.3	72	35.7	40	112
4	56.2	433	43.8	338	771
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(4)= 46.994

P-value= 0.000

Table A-34 Substance Abuse Domain Crosstabs – White Youth Only

YLS Substance Abuse domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	69.5	494	30.5	217	711
1	63.8	196	36.2	111	307
2	63.2	132	36.8	77	209
3	58.2	166	41.8	119	285
4	62.3	249	37.8	151	400
5	63.9	23	36.1	13	36
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(5)= 13.685
P-value= 0.018

Table A-35 Leisure/Recreation Domain Crosstabs – White Youth Only

YLS Leisure/Recreation domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	73.0	271	27.0	100	371
1	69.7	363	30.3	158	521
2	60.9	477	39.1	306	783
3	54.6	149	45.4	124	273
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(3)= 34.094
P-value= 0.000

Table A-36 Personality/Behavior Domain Crosstabs – White Youth Only

| YLS Personality/Behavior domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	80.1	249	19.9	62	311
1	74.8	273	25.2	92	365
2	67.6	250	32.4	120	370
3	62.6	169	37.4	101	270
4	52.8	150	47.2	134	284
5	49.6	118	50.4	120	238
6	46.7	42	53.3	48	90
7	45.0	9	55.0	11	20
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(7)= 107.857

P-value= 0.000

Table A-37 Attitude/Orientation Domain Crosstabs – White Youth Only

| YLS Attitude/Orientation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	75.1	413	24.9	137	550
1	65.1	489	34.9	262	751
2	55.3	249	44.7	201	450
3	58.2	96	41.8	69	165
4	39.3	11	60.7	17	28
5	50.0	2	50.0	2	4
Total	64.7	1,260	35.3	688	1,948

Pearson chi2(5)= 54.697

P-value= 0.000

Cross-Tabulations – Domain Scores for Female Youth

Table A-38 Offense Domain Crosstabs – Female Youth Only

| YLS Offense domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	68.4	147	31.6	68	215
1	69.4	179	30.6	79	258
2	65.9	54	34.1	28	82
3	68.4	39	31.6	18	57
4	85.0	17	15.0	3	20
5	0.0	0	100.0	1	1
Total	68.9	436	31.1	197	633

Pearson chi2(5)= 5.050

P-value= 0.410

Table A-39 Family Domain Crosstabs – Female Youth Only

| YLS Family domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	78.3	101	21.7	28	129
1	75.7	103	24.3	33	136
2	63.3	69	36.7	40	109
3	61.5	75	38.5	47	122
4	65.1	56	34.9	30	86
5	63.2	24	36.8	14	38
6	61.5	8	38.5	5	13
Total	68.9	436	31.1	197	633

Pearson chi2(6)= 14.493

P-value= 0.025

Table A-40 Education/Employment Domain Crosstabs – Female Youth Only

YLS Education/Employment domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	86.3	139	13.7	22	161
1	76.5	114	23.5	35	149
2	63.5	99	36.5	57	156
3	50.6	42	49.4	41	83
4	44.1	26	55.9	33	59
5	65.0	13	35.0	7	20
6	75.0	3	25.0	1	4
7	0.0	0	100.0	1	1
Total	68.9	436	31.1	197	633

Pearson chi2(7)= 61.371

P-value= 0.000

Table A-41 Peer Relations Domain Crosstabs – Female Youth Only

YLS Peer Relations domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	65.0	39	35.0	21	60
1	82.2	60	17.8	13	73
2	74.0	162	26.0	57	219
3	78.3	36	21.7	10	46
4	59.1	139	40.9	96	235
Total	68.9	436	31.1	197	633

Pearson chi2(4)= 21.375

P-value= 0.000

Table A-42 Substance Abuse Domain Crosstabs – Female Youth Only

| YLS Substance Abuse domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	69.7	170	30.3	74	244
1	66.7	76	33.3	38	114
2	72.5	50	27.5	19	69
3	69.1	65	30.9	29	94
4	66.3	69	33.7	35	104
5	75.0	6	25.0	2	8
Total	68.9	436	31.1	197	633

Pearson chi2(5)= 1.200
P-value= 0.945

Table A-43 Leisure/Recreation Domain Crosstabs – Female Youth Only

| YLS Leisure/Recreation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	79.5	93	20.5	24	117
1	69.9	116	30.1	50	166
2	66.9	170	33.1	84	254
3	59.4	57	40.6	39	96
Total	68.9	436	31.1	197	633

Pearson chi2(3)= 10.715
P-value= 0.013

Table A-44 Personality/Behavior Domain Crosstabs – Female Youth Only

| YLS Personality/Behavior domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	87.9	87	12.1	12	99
1	83.7	77	16.3	15	92
2	69.9	79	30.1	34	113

3	63.1	70	36.9	41	111
4	64.3	63	35.7	35	98
5	50.7	37	49.3	36	73
6	50.0	20	50.0	20	40
7	42.9	3	57.1	4	7
Total	68.9	436	31.1	197	633

Pearson chi2(7)= 49.001
P-value= 0.000

Table A-45 Attitude/Orientation Domain Crosstabs – Female Youth Only

YLS Attitude/Orientation domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	80.2	150	19.8	37	187
1	69.7	177	30.3	77	254
2	55.6	75	44.4	60	135
3	64.6	31	35.4	17	48
4	42.9	3	57.1	4	7
5	0.0	0	100.0	2	2
Total	68.9	436	31.1	197	633

Pearson chi2(5)= 29.515
P-value= 0.000

Cross-Tabulations – Domain Scores for Male Youth

Table A-46 Offense Domain Crosstabs – Male Youth Only

YLS Offense domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	64.8	447	35.2	243	690
1	60.0	396	40.0	264	660
2	57.5	181	42.5	134	315
3	59.0	148	41.0	103	251
4	58.6	51	41.4	36	87
5	45.5	5	54.5	6	11
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(5)= 7.845
P-value= 0.165

Table A-47 Family Domain Crosstabs – Male Youth Only

| | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| YLS Family domain score | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	72.4	377	27.6	144	521
1	64.4	293	35.6	162	455
2	56.2	221	43.8	172	393
3	50.8	161	49.2	156	317
4	52.2	118	47.8	108	226
5	61.7	50	38.3	31	81
6	38.1	8	61.9	13	21
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(6)= 60.087
P-value= 0.000

Table A-48 Education/Employment Domain Crosstabs – Male Youth Only

| | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| YLS Education/Employment domain score | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	71.4	405	28.6	162	567
1	63.5	285	36.5	164	449
2	58.2	252	41.8	181	433
3	51.6	141	48.4	132	273
4	52.3	102	47.7	93	195
5	44.4	32	55.6	40	72
6	40.9	9	59.1	13	22
7	66.7	2	33.3	1	3
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(7)= 56.787
P-value= 0.000

Table A-49 Peer Relations Domain Crosstabs – Male Youth Only

| YLS Peer Relations domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	76.6	187	23.4	57	244
1	68.0	115	32.0	54	169
2	63.8	420	36.2	238	658
3	61.9	73	38.1	45	118
4	52.5	433	47.5	392	825
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(4)= 55.996
P-value= 0.000

Table A-50 Substance Abuse Domain Crosstabs – Male Youth Only

YLS Substance Abuse domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	66.5	522	33.5	263	785
1	57.4	179	42.6	133	312
2	55.2	122	44.8	99	221
3	55.4	159	44.6	128	287
4	60.0	228	40.0	152	380
5	62.1	18	37.9	11	29
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(5)= 18.768
P-value= 0.002

Table A-51 Leisure/Recreation Domain Crosstabs – Male Youth Only

YLS Leisure/Recreation domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	68.4	275	31.6	127	402
1	66.5	354	33.5	178	532
2	56.9	454	43.1	344	798
3	51.4	145	48.6	137	282
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(3)= 32.674
P-value= 0.000

Table A-52 Personality/Behavior Domain Crosstabs – Male Youth Only

| YLS Personality/Behavior domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	74.3	228	25.7	79	307
1	69.5	266	30.5	117	383
2	65.6	252	34.4	132	384
3	57.3	157	42.7	117	274
4	51.5	151	48.5	142	293
5	47.9	124	52.1	135	259
6	43.8	42	56.3	54	96
7	44.4	8	55.6	10	18
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(7)= 83.086
P-value= 0.000

Table A-53 Attitude/Orientation Domain Crosstabs – Male Youth Only

| YLS Attitude/Orientation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	71.1	372	28.9	151	523
1	61.0	456	39.0	292	748
2	53.9	263	46.1	225	488
3	56.2	114	43.8	89	203
4	42.6	20	57.4	27	47
5	60.0	3	40.0	2	5
Total	61.0	1,228	39.0	786	2,014

Pearson chi2(5)= 41.626
P-value= 0.000

Cross-Tabulations – Domain Scores for Youth under OJA Supervision

Table A-54 Offense Domain Crosstabs – Youth under OJA Supervision Only

| YLS Offense domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	64.8	353	35.2	192	545
1	66.0	345	34.0	178	523
2	53.9	48	46.1	41	89
3	51.0	26	49.0	25	51
4	50.0	9	50.0	9	18
5	33.3	1	66.7	2	3
Total	63.6	782	36.4	447	1,229

Pearson chi2(5)= 11.317

P-value= 0.045

Table A-55 Family Domain Crosstabs – Youth under OJA Supervision Only

| YLS Family domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	76.6	147	23.4	45	192
1	74.1	180	25.9	63	243
2	60.4	148	39.6	97	245
3	52.4	141	47.6	128	269
4	58.4	111	41.6	79	190
5	63.8	44	36.2	25	69
6	52.4	11	47.6	10	21
Total	63.6	782	36.4	447	1,229

Pearson chi2(6)= 44.421

P-value= 0.000

Table A-56 Education/Employment Domain Crosstabs – Youth under OJA Supervision Only

YLS Education/Employment domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	79.9	203	20.1	51	254
1	68.1	173	31.9	81	254
2	64.6	186	35.4	102	288
3	54.6	106	45.4	88	194
4	50.6	84	49.4	82	166
5	43.9	25	56.1	32	57
6	30.8	4	69.2	9	13
7	33.3	1	66.7	2	3
Total	63.6	782	36.4	447	1,229

Pearson chi2(7)= 67.278

P-value= 0.000

Table A-57 Peer Relations Domain Crosstabs – Youth under OJA Supervision Only

YLS Peer Relations domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	67.5	54	32.5	26	80
1	74.1	80	25.9	28	108
2	66.0	342	34.0	176	518
3	66.2	43	33.8	22	65
4	57.4	263	42.6	195	458
Total	63.6	782	36.4	447	1,229

Pearson chi2(4)= 14.692

P-value= 0.005

Table A-58 Substance Abuse Domain Crosstabs – Youth under OJA Supervision Only

| YLS Substance Abuse domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	66.8	263	33.2	131	394
1	62.0	103	38.0	63	166
2	62.8	86	37.2	51	137
3	58.0	123	42.0	89	212
4	64.3	196	35.7	109	305
5	73.3	11	26.7	4	15
Total	63.6	782	36.4	447	1,229

Pearson chi2(5)= 5.429
P-value= 0.366

Table A-59 Leisure/Recreation Domain Crosstabs – Youth under OJA Supervision Only

| YLS Leisure/Recreation domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	72.3	170	27.7	65	235
1	64.9	239	35.1	129	368
2	60.3	279	39.7	184	463
3	57.7	94	42.3	69	163
Total	63.6	782	36.4	447	1,229

Pearson chi2(3)= 12.756
P-value= 0.005

Table A-60 Personality/Behavior Domain Crosstabs – Youth under OJA Supervision Only

| YLS Personality/Behavior domain score | Recidivism Rate (Defined by Simulated Supervision Period for OJA) | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	79.7	126	20.3	32	158
1	75.1	151	24.9	50	201

	71.5	143	28.5	57	200
2	71.5	143	28.5	57	200
3	61.1	110	38.9	70	180
4	54.2	117	45.8	99	216
5	50.8	99	49.2	96	195
6	47.6	30	52.4	33	63
7	37.5	6	62.5	10	16
Total	63.6	782	36.4	447	1,229

Pearson chi2(7)= 69.049

P-value= 0.000

Table A-61 Attitude/Orientation Domain Crosstabs – Youth under OJA Supervision Only

YLS Attitude/Orientation domain score	Recidivism Rate (Defined by Simulated Supervision Period for OJA)				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	76.0	212	24.0	67	279
1	66.1	336	33.9	172	508
2	52.7	154	47.3	138	292
3	58.7	71	41.3	50	121
4	32.0	8	68.0	17	25
5	25.0	1	75.0	3	4
Total	63.6	782	36.4	447	1,229

Pearson chi2(5)= 49.423

P-value= 0.000

Cross-Tabulations – Domain Scores for Youth under DOC Supervision

Table A-62 Offense Domain Crosstabs – Youth under DOC Supervision Only

| YLS Offense domain score | Recidivism Rate | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	67.6	253	32.4	121	374
1	59.2	244	40.8	168	412
2	61.4	199	38.6	125	324
3	63.5	169	36.5	97	266
4	68.4	65	31.6	30	95
5	44.4	4	55.6	5	9
Total	63.1	934	36.9	546	1,480

Pearson chi2(5)= 8.896

P-value= 0.113

Table A-63 Family Domain Crosstabs – Youth under DOC Supervision Only

| YLS Family domain score | Recidivism Rate | | | | Total |
| | No recidivism event found | | Recidivism event found | | |
	%	No.	%	No.	No.
0	72.7	344	27.3	129	473
1	63.0	226	37.0	133	359
2	56.2	154	43.8	120	274
3	57.5	104	42.5	77	181
4	53.9	69	46.1	59	128
5	61.5	32	38.5	20	52
6	38.5	5	61.5	8	13
Total	63.1	934	36.9	546	1,480

Pearson chi2(6)= 34.995

P-value= 0.000

Table A-64 Education/Employment Domain Crosstabs – Youth under DOC Supervision Only

YLS Education/Employment domain score	Recidivism Rate				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	72.6	355	27.4	134	489
1	65.9	236	34.1	122	358
2	55.6	174	44.4	139	313
3	49.7	85	50.3	86	171
4	52.7	49	47.3	44	93
5	61.0	25	39.0	16	41
6	64.3	9	35.7	5	14
7	100.0	1	0.0	0	1
Total	63.1	934	36.9	546	1,480

Pearson chi2(7)= 45.925

P-value= 0.000

Table A-65 Peer Relations Domain Crosstabs – Youth under DOC Supervision Only

YLS Peer Relations domain score	Recidivism Rate				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	76.8	175	23.2	53	228
1	70.6	96	29.4	40	136
2	67.6	253	32.4	121	374
3	68.3	71	31.7	33	104
4	53.1	339	46.9	299	638
Total	63.1	934	36.9	546	1,480

Pearson chi2(4)= 53.262

P-value= 0.000

Table A-66 Substance Abuse Domain Crosstabs – Youth under DOC Supervision Only

| YLS Substance Abuse domain score | Recidivism Rate | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	68.0	442	32.0	208	650
1	58.8	157	41.2	110	267
2	58.2	96	41.8	69	165
3	61.7	111	38.3	69	180
4	58.8	114	41.2	80	194
5	58.3	14	41.7	10	24
Total	63.1	934	36.9	546	1,480

Pearson chi2(5)= 12.497
P-value= 0.029

Table A-67 Leisure/Recreation Domain Crosstabs – Youth under OJA Supervision Only

| YLS Leisure/Recreation domain score | Recidivism Rate | | | | |
| | No recidivism event found | | Recidivism event found | | Total |
	%	No.	%	No.	No.
0	70.4	205	29.6	86	291
1	70.6	242	29.4	101	343
2	59.6	372	40.4	252	624
3	51.8	115	48.2	107	222
Total	63.1	934	36.9	546	1,480

Pearson chi2(3)= 30.358
P-value= 0.000

Table A-68 Personality/Behavior Domain Crosstabs – Youth under DOC Supervision Only

YLS Personality/Behavior domain score	Recidivism Rate				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	76.5	195	23.5	60	255
1	70.0	201	30.0	86	287
2	64.3	198	35.7	110	308
3	58.8	127	41.2	89	216
4	55.5	101	44.5	81	182
5	47.6	68	52.4	75	143
6	48.8	39	51.2	41	80
7	55.6	5	44.4	4	9
Total	**63.1**	**934**	**36.9**	**546**	1,480

Pearson chi2(7)= 54.078
P-value= 0.000

Table A-69 Attitude/Orientation Domain Crosstabs – Youth under DOC Supervision Only

YLS Attitude/Orientation domain score	Recidivism Rate				
	No recidivism event found		Recidivism event found		Total
	%	No.	%	No.	No.
0	71.9	317	28.1	124	441
1	61.3	318	38.7	201	519
2	56.8	196	43.2	149	345
3	59.9	85	40.1	57	142
4	51.7	15	48.3	14	29
5	75.0	3	25.0	1	4
					1,4
Total	**63.1**	**934**	**36.9**	**546**	80

Pearson chi2(5)= 23.710
P-value= 0.000

Correlation Coefficient

Table A-70 Correlation Coefficients with Recidivism (Defined by Simulated Supervision Period for OJA)

	Full Validation Sample	Black	White	Women	Men	OJA	DOC
Full Scores							
Risk Level	0.18	0.15	0.19	0.19	0.19	0.17	0.18
Total Risk Score	0.22	0.15	0.24	0.25	0.22	0.24	0.20
Individual Domain Scores							
Offenses	0.03	0.00	0.05	-0.02	0.05	0.07	0.01
Family	0.13	0.08	0.15	0.13	0.15	0.15	0.13
Education/Employment	0.18	0.10	0.21	0.28	0.16	0.23	0.14
Peer Relations	0.15	0.15	0.15	0.12	0.17	0.10	0.18
Substance Abuse	0.05	0.02	0.07	0.01	0.06	0.03	0.07
Leisure/Recreation	0.12	0.08	0.13	0.13	0.12	0.10	0.13
Personality/Behavior	0.21	0.15	0.23	0.27	0.20	0.23	0.19
Attitude/Orientation	0.14	0.08	0.16	0.19	0.13	0.18	0.10

AUC-ROC

Table A-71 AUC-ROC with Recidivism (Defined by Simulated Supervision Period for OJA)

	Full Validation Sample	Black	White	Women	Men	OJA	DOC
Full Scores							
Risk Level	0.59	0.57	0.60	0.59	0.60	0.58	0.60
Total Risk Score	0.63	0.58	0.65	0.66	0.63	0.65	0.62
Individual Domain Scores							
Offenses	0.52	0.50	0.53	0.49	0.53	0.53	0.51
Family	0.58	0.54	0.60	0.58	0.59	0.59	0.58
Education/Employment	0.61	0.56	0.62	0.68	0.60	0.63	0.59
Peer Relations	0.58	0.58	0.59	0.58	0.59	0.56	0.61
Substance Abuse	0.53	0.53	0.54	0.51	0.54	0.52	0.55
Leisure/Recreation	0.57	0.54	0.58	0.57	0.57	0.56	0.58
Personality/Behavior	0.62	0.59	0.64	0.67	0.62	0.64	0.61
Attitude/Orientation	0.58	0.55	0.59	0.61	0.58	0.60	0.57

Multivariate Logistic Regression

Table A-72 Multivariate Regression using Risk Level

Variable	(1) Sim. Supervision	(2) Assessment Date	(3) Disposition Date
Risk Level	1.943***	1.991***	1.967***
	(0.000)	(0.000)	(0.000)
Black	1.421***	1.359**	1.325**
	(0.000)	(0.002)	(0.004)
Female	0.679***	0.646***	0.698***
	(0.000)	(0.000)	(0.001)
Age	0.786***	0.793***	0.804***
	(0.000)	(0.000)	(0.000)
Felony	0.970	0.941	0.955
	(0.747)	(0.532)	(0.635)
OJA	0.858	0.643***	0.681***
	(0.072)	(0.000)	(0.000)
Constant	8.585***	7.264***	5.847***
	(0.000)	(0.000)	(0.000)
Observations	**2,709**	**2,709**	**2,709**
Pseudo R2	**0.0587**	**0.0619**	**0.0555**

pval in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table A-73 Multivariate Regression using Risk Score

Variables	(1) Sim. Supervision	(2) Assessment Date	(3) Disposition Date
Risk Score	1.071***	1.072***	1.071***
	(0.000)	(0.000)	(0.000)
Black	1.404***	1.343**	1.309**
	(0.000)	(0.003)	(0.006)
Female	0.688***	0.654***	0.708***
	(0.000)	(0.000)	(0.001)
Age	0.787***	0.795***	0.806***
	(0.000)	(0.000)	(0.000)
Felony	0.985	0.955	0.969
	(0.877)	(0.640)	(0.746)
OJA	0.830*	0.620***	0.658***
	(0.030)	(0.000)	(0.000)
Constant	10.97***	9.540***	7.618***
	(0.000)	(0.000)	(0.000)
Observations	**2,709**	**2,709**	**2,709**
Pseudo R2	**0.0689**	**0.0717**	**0.0650**

pval in parentheses

*** $p<0.001$, ** $p<0.01$, * $p<0.05$