MO Juvenile Offender Recidivism

2009 Statewide Juvenile Court Report

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Juvenile Offender Recidivism Report

A 2009 Statewide Juvenile Court Report

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Executive Summary

This report examines the demographic and offense characteristics and related risk and needs factors that influenced recidivism rates for a 2007 group of Missouri juvenile offenders. Recidivism rates for the juvenile offender group analyzed are presented at the state level.

Background

Juvenile courts across the country are being asked to provide evidence that public funds are used in cost-effective ways to reduce and prevent juvenile crime. For Missouri juvenile courts to measure progress in this area, a statewide definition of juvenile offender recidivism was needed. Informed by a survey of Missouri's 45 juvenile officers, the following definition of juvenile offender recidivism was developed:

"A juvenile offender recidivist is any youth, referred to the juvenile office for a legally sufficient law violation[1] during a calendar year, who receives one or more legally sufficient law violation(s) to the juvenile or adult court within one year of the initial referral's disposition date."

This statewide definition guided the baseline examination of juvenile offender and case attributes related to recidivism described in the remainder of the report. Identification of these attributes is essential for matching juvenile offenders with evidence-based programs designed to reduce the likelihood of future delinquency.

Method

All person, case and assessment data for juvenile offenders from calendar 2007 were extracted from Judicial Information System (JIS) databases. Data reflecting recidivism from calendar 2007 to calendar 2008 similarly were extracted. An initial descriptive analysis of the juvenile offender population was performed on these data. Logistic regression analysis then was applied to estimate the statistical influence of various demographic, offense and risk/needs factors on recidivism. Data analyses were performed using Statistical Analysis System (SAS) software.

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[1] Legally sufficient law violation- an offense that is classified as an ordinance violation, misdemeanor, or felony, is legally sufficient when a juvenile officer has identified enough evidence to suggest the perpetrator committed the offense and to move the case forward through the court system.

Summary Findings

Descriptive findings for the juvenile offenders from calendar 2007 include:

- Slightly more than 2 percent (15,910) of Missouri's 648,648 youth aged 10-17 were juvenile law offenders in calendar 2007.
- Of these 15,910 juvenile law offenders studied:
    - About 26 percent re-offended with a new law violation within one year of the disposition date of their sufficient initial law violation referral.
    - Approximately 20 percent re-offended either with a class A misdemeanor **or** a felony offense within one year of the disposition date of their initial law violation referral.
    - Nine percent re-offended with a felony offense within one year of the disposition date of their initial law violation referral.
    - Approximately 9 percent committed two or more acts of recidivism.
- Nearly 41 percent of recidivating juvenile offenders re-offended within the first three months of their initial offense disposition date.
- Nearly 29 percent of male offenders re-offended within 12 months, compared with 19 percent of females.
- Thirty-one percent of black youth returned to the attention of juvenile authorities through an act of recidivism, the highest rate among all race categories, followed by American Indian offenders. White offenders had the third highest rate of recidivism (26 percent).
- Twenty-nine percent of offenders aged 13-15 re-offended within 12 months, compared with 22 percent of offenders aged 10-12 and 22 percent of offenders aged 16-17.
- Juvenile offenders whose initial law offense referral was a sex offense had the lowest rate of recidivism (13 percent). Rates of recidivism for offenses involving Public Order (28 percent), Other Person (assault, robbery, etc) (27.5 percent), Property (26 percent), and Substance (24 percent), were similar.
- Class C felony offenders had the highest recidivism rate (29 percent), followed by Class B & C misdemeanor offenders (26 percent, respectively). Class A felony offenders had the lowest rate of recidivism (18 percent).
- Juvenile offenders whose cases were filed formally with the juvenile court recidivated at a higher rate (31 percent) than their informally processed counterparts (25 percent for those receiving informal adjustment with supervision, 22 percent for those receiving informal adjustment without supervision, and 23 percent for those receiving informal adjustment, counsel and warn). When the outcome for formally processed cases is

- About 20 percent of low-risk offenders; 29 percent of moderate-risk offenders; and 41 percent of high-risk offenders recidivated. Risk level was identified using the Missouri Juvenile Offender Risk Assessment.

Findings of the logistic regression analysis* for the juvenile offenders from calendar 2007 include:

- Male offenders had greater odds of being recidivists than female offenders.
- Black offenders had greater odds of being recidivists than white offenders.
- Offenders aged of 13–15 had greater odds of being recidivists than older youth.
- Youth whose initial offense was a Public Order, Other Person, Property or Substance offense had greater odds of being recidivists than youth whose offense was of sexual nature.
- Offenders with misdemeanor offenses had higher odds of recidivating than those with infraction offenses as the most serious offense in their original referrals.
- In their relative order of importance, youth assessed with the following risk/needs had greater odds of being recidivists when compared with youth not having these problems:
  - One or More Prior Referrals
  - One or More Assault Referrals
  - History of Out-of-Home Placement
  - Age at First Referral (13–15)
  - Moderate or Severe Substance Abuse Problem
  - Below Average or Failing Academic Performance
  - Moderate or Severe Behavior Problem
  - Moderate or Severe School Attendance Problem
  - Strong Negative Peer Relationships
  - No Positive Social Support System

  Findings of the logistic regression analysis control for the influence for all other factors contained in the regression model. Only statistically significant findings are reported.

Recommendations

This report represents a starting point for future research of Missouri's juvenile offender population and the programs needed to treat these offenders and ensure public safety. The following recommendations are offered to support this effort:

➤ Examine subgroups of the juvenile offender population to appraise thoroughly the rate and underlying determinants of recidivism for these youth. Subgroups of interest include youth committed to the Division of Youth Services, youth living in urban/rural locations and youth under supervision.

➤ Revalidate Missouri's risk instrument to ensure it effectively estimates the relative likelihood of recidivism for all youth, regardless of gender or race. Risk and needs factors not currently assessed by the instrument may play an important role in correctly identifying the relative risk of recidivism for female and black youth.

➤ Produce circuit-level reports for juvenile court use. These reports would contain information about circuit-level recidivism rates and the risk/needs characteristics of circuit recidivists and could serve as a basis for identifying evidence-based programs designed to reduce juvenile offender recidivism.

➤ Evaluate the effects of evidence-based programs on reducing juvenile offender recidivism. Any intervention should be based on a solid theory or theoretical perspective that has been validated by research [drug courts, cognitive behavioral interventions, gang prevention, truancy prevention, academic skills and enhancements to improve performance and enhance bonding, school classroom environment, restitution/probation, family functional therapy] (Lipsey M. and Wilson, D., 1998; Aos, S., Miller, M., and Drake, E., 2006).

Introduction

Purpose

This report examines the demographic and offense characteristics and concomitant risk and needs factors that influenced recidivism rates for a CY 2007 cohort of Missouri juvenile offenders. Recidivism rates for the juvenile offender cohort are presented at the state level. Circuit level recidivism information was provided individually to each jurisdiction.

Background

Juvenile court systems throughout the country are being asked to provide tangible evidence [performance measures] that public funds are being used in cost-effective ways to simultaneously obligate juvenile offenders to repair harm done to victims, improve the ability of offenders to function pro-socially, and ensure public safety.

Missouri juvenile courts have adopted many practices associated with the balanced approach to juvenile justice implied above. Since 2002, Missouri juvenile courts have used a risk assessment and classification system (Appendix A) to identify sanctions to hold youth accountable for criminal conduct and a needs assessment to establish their competency building programming needs. Further, Missouri's statewide Judicial Information System (JIS) provides juvenile courts with a mechanism to collect data on a variety of performance measures related to victim compensation and offender rehabilitation, including restitution ordered and paid, community service ordered and completed, and the successful and unsuccessful outcomes for various educational, vocational and other competency building programs. An effort to produce a meaningful measure associated with ensuring public safety has proved vastly more difficult. While the standard measure for assessing juvenile court effectiveness in ensuring public safety has been recidivism, opinions on how to define this concept have varied considerably across jurisdictions.

In June 2008, the Office of State Courts Administrator (OSCA), Division of Court Programs and Research, surveyed Missouri's 45 administrative juvenile officers regarding their opinions on a statewide definition of juvenile recidivism. Results of the survey supported a statewide definition of recidivism that is: 1) measured as close to the behavioral act of re-offending as possible,

without violating the evidentiary rights of youth; 2) based only on new law violations to the juvenile or adult court; and 3) measured annually, using a 12 month tracking timeframe. Based on these recommendations, the following statewide definition of juvenile offender recidivism emerged:

"A juvenile offender recidivist is any youth, referred to the juvenile office for a legally sufficient law violation during a calendar year, who receives one or more legally sufficient law violation(s) to the juvenile or adult court within one year of the initial referral disposition date."

This statewide definition guided the examination of juvenile offender and case attributes related to recidivism described in the remainder of the report. Identification of these attributes is essential for matching juvenile offenders with evidence-based programming designed to reduce the likelihood of future delinquent behavior.

Method

All person, case, and assessment data for a CY 2007 juvenile offender cohort were extracted from Judicial Information System (JIS) databases. A descriptive analysis of the juvenile offender population was initially performed on these data. Logistic regression analysis was then applied to estimate the statistical influence of various demographic, offense, and risk/needs factors on recidivism. Data analyses were performed using Statistical Analysis System (SAS) software.

Data for the CY 2007 juvenile offender cohort were extracted following specifications consistent with Missouri's definition of recidivism. These specifications and data delimitations are outlined below.

> ➤ Person, case, and assessment information for law violation referrals disposed between Jan 1, 2007 & Dec 31, 2008 was extracted to form a base dataset. Two years data were extracted to allow for a 12 month tracking timeframe for recidivism to occur for any youth with a law violation referral disposed between Jan 1, 2007 and Dec 31, 2007.

➢ Both the initial law violation referral and subsequent law violation referral(s) ("recidivism") required legal sufficiency to be included as part of the recidivism study. Legally sufficient law violation referrals were identified as having one of the following docket entries, or "dispositions" entered on the CDADOCT form of JIS: Informal Adjustment Counsel & Warn (DVCAW); Informal Adjustment without Supervision (VIANS); Informal Adjustment with Supervision (VIAWS); and Petition Filed (DVPTN). Misdemeanor and felony filings in the adult associate **or** circuit court were considered legally sufficient acts of recidivism when these cases were filed subsequent to an initial legally sufficient juvenile law violation referral.

➢ Disposition date for the initial law violation referral was used as the start date for tracking recidivism. Disposition date was selected in lieu of referral initiation date because juvenile courts have yet to exercise authority over the youth at case initiation and therefore have no opportunity to reduce the likelihood of recidivism. It should be noted that using a disposition tracking start date excludes acts of recidivism that occur between the time a youth referral is received by juvenile authorities and the point at which a disposition in the case is imposed.

➢ The initiation date for the first legally sufficient law violation referral following the initial law violation for a recidivating offender signaled the end of tracking. For non-recidivists, 365 days post disposition date of the initial law violation signaled the end of the tracking period. For cases filed in adult court, case initiation date signaled the end of the tracking period; the underlying assumption being that only sufficient cases are filed with associate and circuit level courts.

➢ Consistent with JIS data entry standards, the first allegation entered in JIS was considered the major allegation for the referral for the purpose of reporting recidivism data.

➢ Risk and needs assessments were selected for youth based on their availability and proximity to initiation of the initial law referral. The assessment completed closest to the initial referral date was extracted.

➢ No effort was made to collect out-of-state recidivism because reliable information pertaining to these occurrences is difficult, if not impossible, to obtain.

➢ In-state recidivism occurring outside the jurisdiction (circuit) of a youth's initial crime was not included in the analysis because a unique JIS personal identifier cannot be guaranteed.

➢ Acts of recidivism perpetrated by youth who are committed to the custody of the Division of Youth Services (DYS) were included as part of the statewide recidivism data even though courts are not generally informed as to when these youth are assigned to some form of community based placement where they are "eligible" to recidivate. For the purpose of statewide measurement of recidivism, all youth committed to DYS on the basis of their first referral in the calendar year are considered potential recidivists. However, only youth who receive a subsequent sufficient law violation referral are actually considered recidivists. Consistent with the statewide definition, youth transferred to DYS on the basis of the new referral are not considered recidivists.

Section 1 - Descriptive Results for the CY 2007 Juvenile Cohort

Section 1 presents a description of the recidivating juvenile offender cohort. Readers are cautioned against making gross inferences regarding relationships between any given characteristic or "variable" discussed and recidivism. In Section 2 of the report, the results of a statistical procedure which explores the relationship between specific variables and recidivism, while controlling for the influence of others, is discussed in detail. The results of this analysis are more informative in terms of identifying statistically significant effects of individual variables on recidivism than are the results of the descriptive analysis presented here.

Offender Population as a Proportion of Missouri Youth

The number of delinquent youth as a proportion of the total number of youth aged 10 -17 in a population is a useful statistic for gauging the general magnitude of delinquency. According to Missouri census data (2007), there were 648,648 youth aged 10 -17 statewide in CY 07. Approximately 2.5% (15,910) of these youth were juvenile law offenders (Table 1).

Table 1 - Offender Population as a Proportion of Missouri Youth

Youth Group Age 10-17	Number	Percent
Non-offenders	632,639	97.5%
Offenders	15,910	2.4%
Total	648,648	100%

Recidivism for Youth Offender Group

Of the 15,910 juvenile law offenders identified in the CY 07 cohort, 26% recidivated with a new law violation within one year of the disposition date of their initial referral (Figure 1). Figures 1a and 1b provide secondary views of recidivism rates. Figure 1a shows that of all offenders, 20% recidivated either with a new class A misdemeanor, or felony offense. Figure 1b shows the recidivism rate is substantially lower when only new felonies are considered acts of recidivism (9.0%).

Figure 1 – Recidivism Rate for Youth Offender Group (All Law)

Non-recidivists
11804
74.19%

Recidivists
4106
25.81%
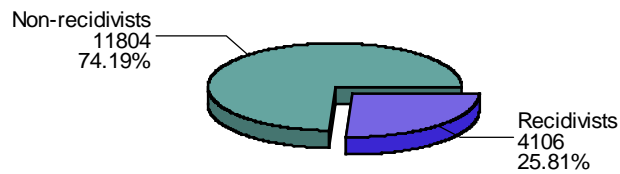
Figure 1a – Recidivism Rate for Youth Offender Group (Misd A & Felony)
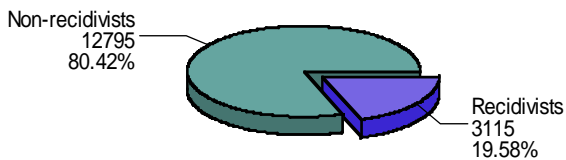
Figure 1b – Recidivism Rate for Youth Offender Group (Felony)

Non-recidivists
12795
80.42%

Recidivists
3115
19.58%

Non-recidivists
14482
91.02%

Recidivists
1428
8.98%
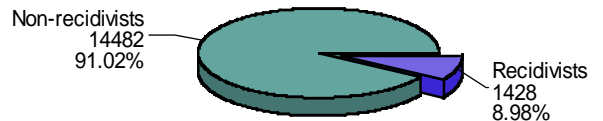
Changing criminogenic conditions and juvenile justice programming can act to exacerbate or lower recidivism rates. Trend lines help illustrate how these factors affect recidivism rates over time. Figure 2 provides the initial statewide data points for recidivism from which subsequent data years can be referenced.

Figure 2 – Annual Trends in Recidivism Rate for Youth Offender Group
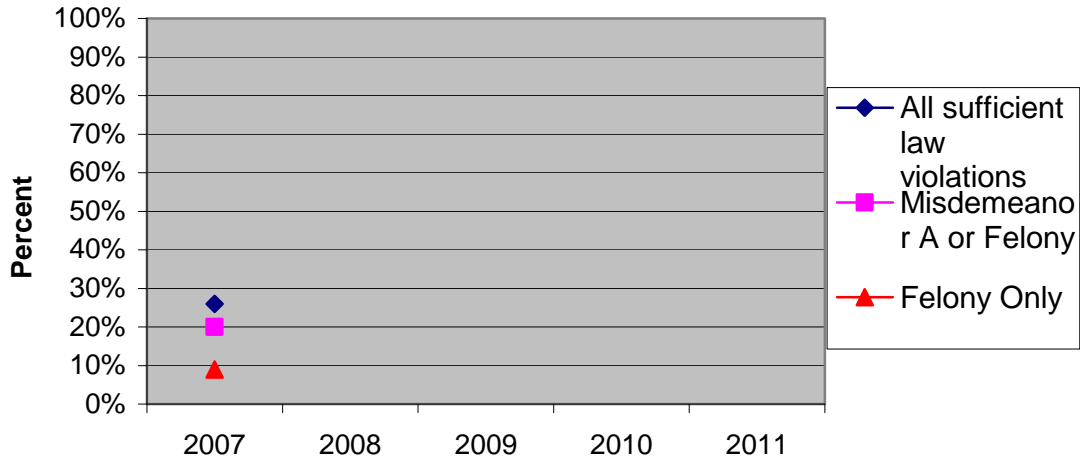
Offender Recidivism Group by Time to Recidivate

Figure 3 shows nearly 41% (40.9%) of youth who re-offended, did so within the first three months of their initial offense disposition date. Approximately 25% of the youth re-offended between the fourth and sixth month of the initial offense disposition. Combined, 65.1% of youth re-offended within the first half year. Approximately 34.2% re-offended during the second half year.

Figure 3 – Recidivating Offenders by Time to Recidivate
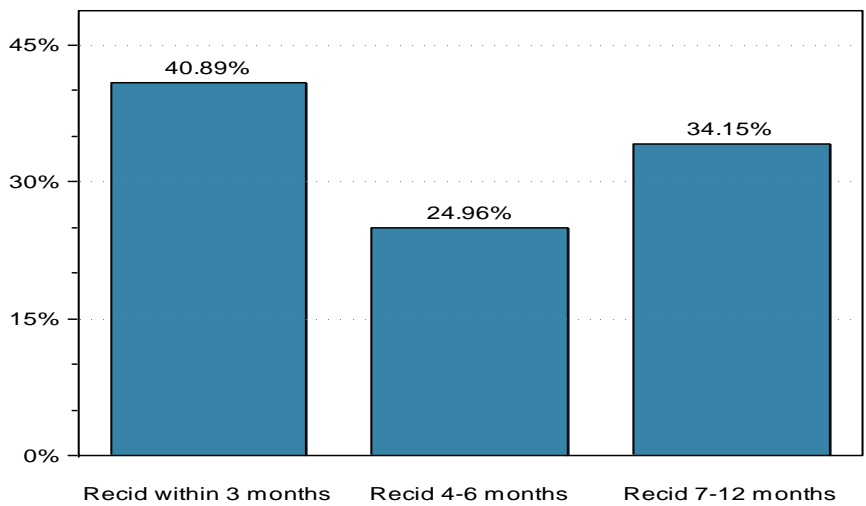
Youth Offender Group by Number of Subsequent Referrals

Table 2 shows the percent of total recidivism for which offenders receiving one, two, or more recidivating law offenses were responsible. Approximately 9% of all juvenile offenders received two or more new law offense referrals during the tracking period. These offenders accounted for over a third of (33.4%) of total recidivism. The remaining 66.6% of total recidivism was committed by offenders receiving one new law offense referral during the tracking period.

Table 2 - Youth Offender Group by Number of Subsequent Referrals

Number of Referrals	Number of Youth	% of Total Youth	% of Total Recidivism
None (non-recidivists)	11804	74.2	0
One	2733	17.2	66.6
Two	855	5.4	20.8
Three or more	518	3.3	12.6

Recidivism for Youth Offender Group by Gender

Table 3 shows recidivism rates for male law offenders are considerably higher than for their female counterparts. Twenty-eight and half percent of male offenders recidivated within 12 months, compared with 19% of female offenders (Table 3).

Table 3 - Recidivism for Youth Offender Group by Gender

	Female	Male
Non-recidivists	3632	8172
Recidivists	846	3260
Proportion of Total	28.2%	71.8%
Recidivism Rate	18.9%	28.5%

Recidivism for Youth Offender Group by Race

Thirty-one percent of Black youth returned to the attention of juvenile authorities through an act of recidivism, the highest rate among all race categories. White offenders had the third highest rate of recidivism (24%), followed by Hispanics (22%) and Asians or Pacific Islanders (18%). While American Indians or Alaska Natives had the second highest rate of recidivism (26%) they represented only a small fraction of youth sampled (.2%), making their relative ranking suspect (Figure 4).

Figure 4 - Recidivism Rate for Youth Offender Group by Ethnic Category
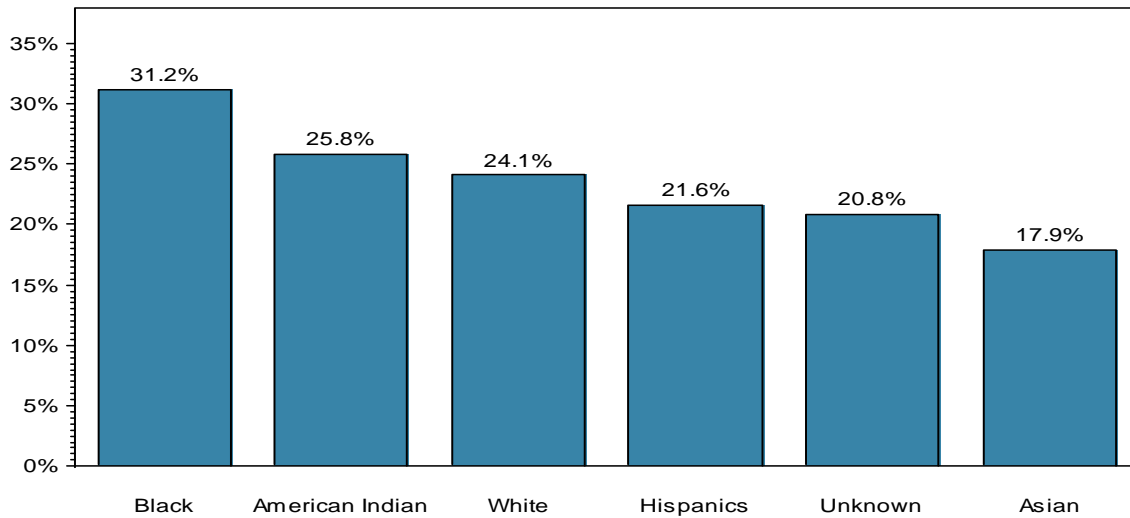
	Black	American-Indian	White	Hispanic	Unknown	Asian
Non-recidivists	2822	23	8537	243	133	46
Recidivists	1278	8	2708	67	35	10
Proportion of Total	25.8%	.2%	70.7%	2.0%	1.1%	.4%
Recidivism Rate	31.2%	25.8%	24.1%	21.6%	20.8%	17.9%

Recidivism for Youth Offender Group by Age

Figure 5 shows the rate of recidivism for juvenile offenders peaks between the ages of 13 -15, a period when peer influence and developmental changes exert strong influence on adolescent behavior. Thirty-two percent of offenders aged 13 -15 re-offended within 12 months, compared with 26% for 10 -12 year olds and 26% for youth aged 16 -17.

Figure 5 - Recidivism Rate for Youth Offender Group by Age
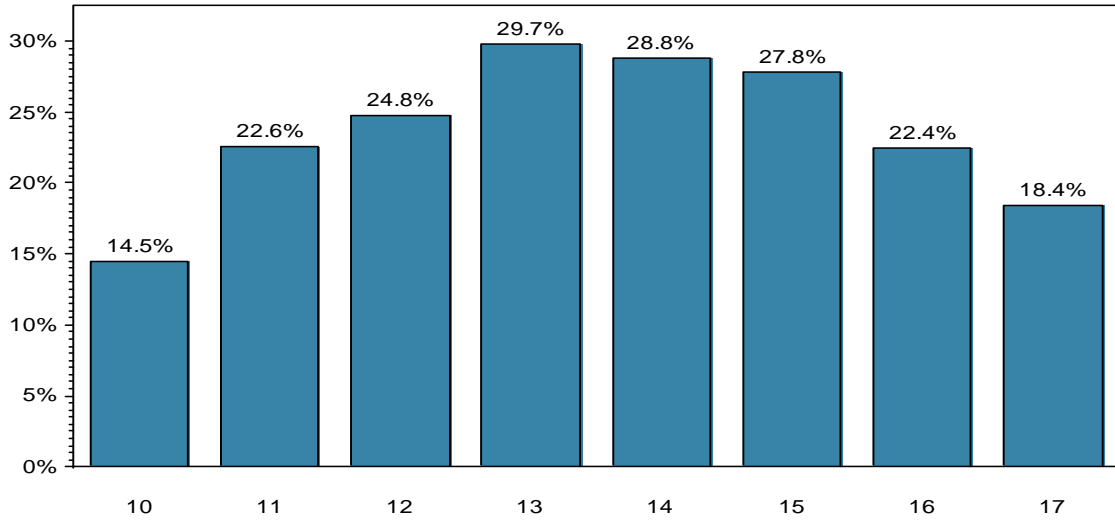
Age	10	11	12	13	14	15	16	17
Non-Recidivists	266	415	777	1383	2164	2835	3765	199
Recidivists	45	121	256	585	876	1090	1088	45
Proportion of Total	2.0%	3.4%	6.5%	12.4%	19.1%	24.7%	30.5%	1.5%
Recidivism Rate	14.5%	22.6%	24.8%	29.7%	28.8%	27.8%	22.4%	18.4%

Recidivism for Youth Offender Group by Initial Offense Type

The recidivism rate associated with initial referral offense type is depicted in Figure 6. Sex offenders (12.7%) and substance abuse offenders (24.3%) had lower rates of recidivism than offenders whose initial referral was for a public order, other person (assault, robbery, etc), or property offense. The rate of recidivism for these offenders varied minimally – 28.1%, 27.5%, and 25.6%, respectively.

Figure 6 - Recidivism Rate for Youth Offender Group by Initial Offense Type
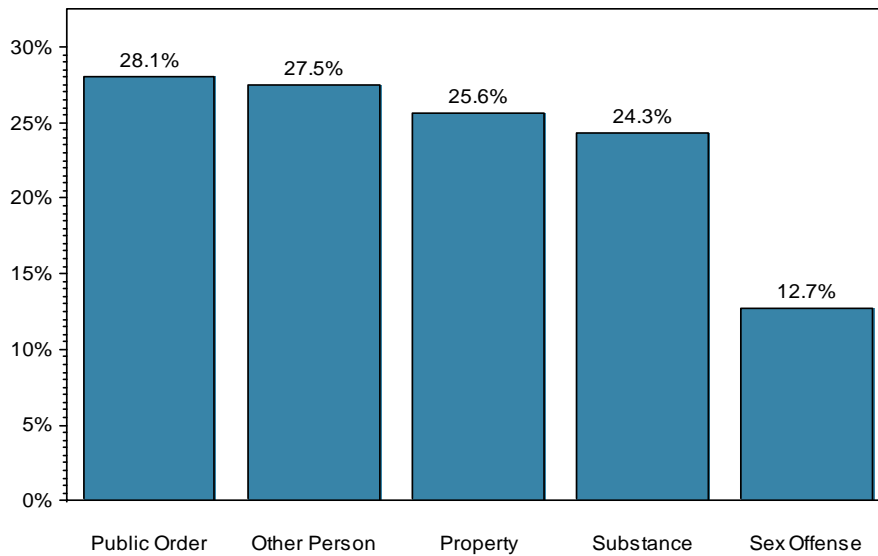
	Public Order	Other Person	Property	Substance	Sex Offense
Non-Recidivists	1743	2876	4934	1771	480
Recidivists	680	1090	1697	569	70
Proportion of Total	15.2%	24.9%	41.7%	14.7%	3.5%
Recidivism Rate	28.1%	27.5%	25.6%	24.3%	12.7%

Recidivism for Youth Offender Group by Initial Offense Severity
Figure 7 shows the rate of recidivism by initial referral offense severity. Offenders whose initial referral was for a Class C felony had the highest recidivism rate (28.6%), followed by Class C & B misdemeanor offenders (26.9% and 26%). Class A felony offenders had the lowest rate of recidivism (18.2%). The rate of recidivism for infraction violators was 21.9%.

Figure 7 - Recidivism Rate for Youth Offender Group by Initial Offense Severity
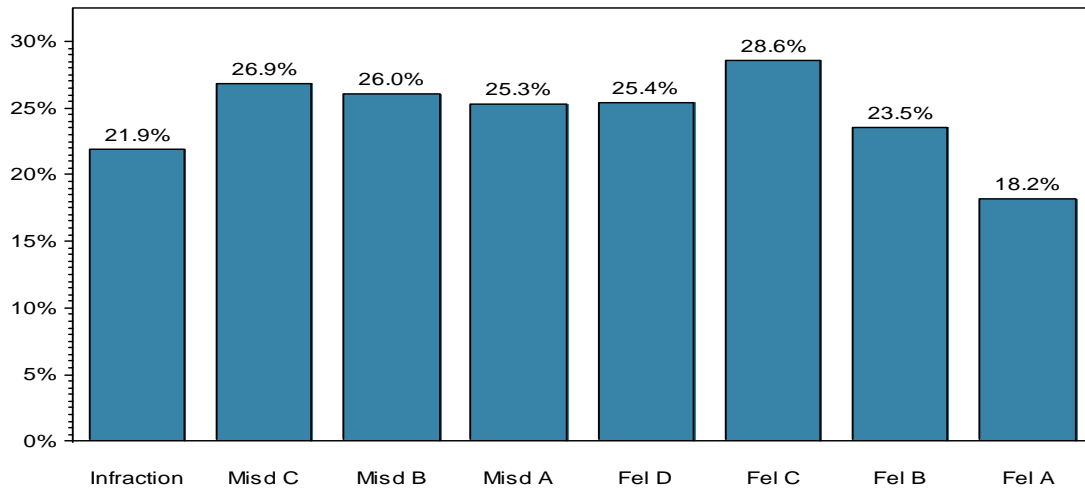
	Infra	Misd C	Misd B	Misd A	Fel D	Fel C	Fel B	Fel A
Non-Recidivists	418	1855	1813	4796	751	1554	325	292
Recidivists	117	681	638	1627	256	622	100	65
Proportion of Total	3.4%	15.9%	15.4%	40.4%	6.3%	13.7%	2.7%	2.2%
Recidivism Rate	21.9%	26.8%	26.0%	25.3%	25.4%	28.6%	23.5%	18.2%

Recidivism for Youth Offender Group by Docket and Outcome
Missouri's definition of recidivism requires the initial referral received for an offender to have been found legally sufficient. For the purpose of reporting recidivism, legal sufficiency is defined through the following four JIS docket entries: DVCAW (Informal adjustment, warn and counsel), VIANS (Informal adjustment, no supervision), VIAWS (Informal adjustment, with supervision), and DVPTN (Petition filed; formal process). Figure 8 indicates formally court processed juvenile offenders (DVPTN) recidivated at a higher rate (31.3%) than their informally processed (VIANS, DVCAW, VIAWS) counterparts, 21.6%, 22.6%, and 25.3%, respectively. When the outcome for formally processed cases was considered (Table 4), adjudicated youth recidivated at a higher rate (34.4%) than those who were not adjudicated (23.2%). Table 4a shows that youth certified to the adult court (26.5%) recidivated at a slightly higher rate than youth who were not certified (25.8%).

Figure 8 - Recidivism Rate for Youth Offender Group by Docket
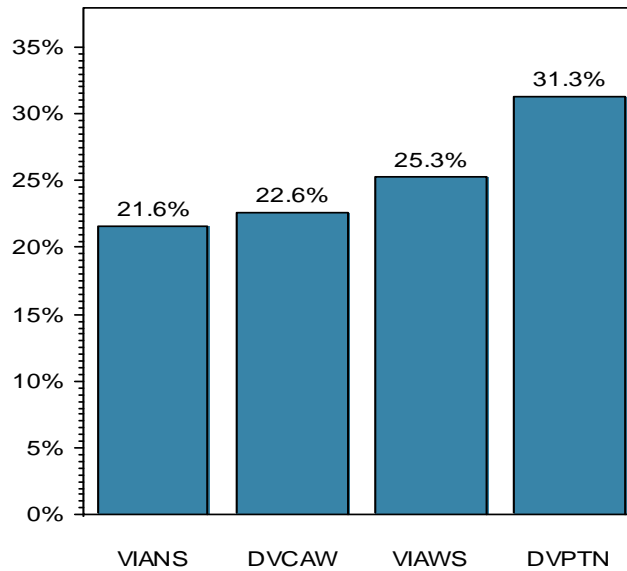
	(VIANS)*	(DVCAW)*	(VIAWS)*	(DVPTN)*
Non-recidivists	2423	3109	2855	3417
Recidivists	669	908	969	1560
Proportion of Total	19.4%	25.3%	24.0%	31.3%
Recidivism Rate	21.6%	22.6%	25.3%	31.3%

*(VIANS)   Informal adjustment, without supervision
*(DVCAW) Informal adjustment, warn & counsel,
*(VIAWS)   Informal adjustment, with supervision
*(DVPTN)   Petition filed

Table 4 - Recidivism for Youth Offender Group by Adjudication Status

	Non-Adjudicated	Adjudicated
Non-recidivists	9128	2423
Recidivists	2751	1271
Proportion of Total	76.3%	23.7%
Recidivism Rate	23.2%	34.4%

Table 4a - Recidivism for Youth Offender Group by Certification

	Not-Certified	Certified
Non-recidivists	11501	50
Recidivists	4004	18
Proportion of Total	99.6%	.4%
Recidivism Rate	25.8%	26.5%

Recidivism for Youth Offender Group by Risk Level

Missouri juvenile courts use an objective decision-making model to assign services and apply sanctions to youth based on their psychosocial needs and relative risk of recidivism. Based on the results of the risk assessment portion of this classification process, each youth is assigned to one of three levels – Low, Moderate, or High risk of recidivism. Figure 9 shows that 14.2% of low risk; 29.9% of moderate risk; and 43.4% of high risk offenders recidivated.

Figure 9 - Recidivism Rate for Youth Offender Group by Risk Level
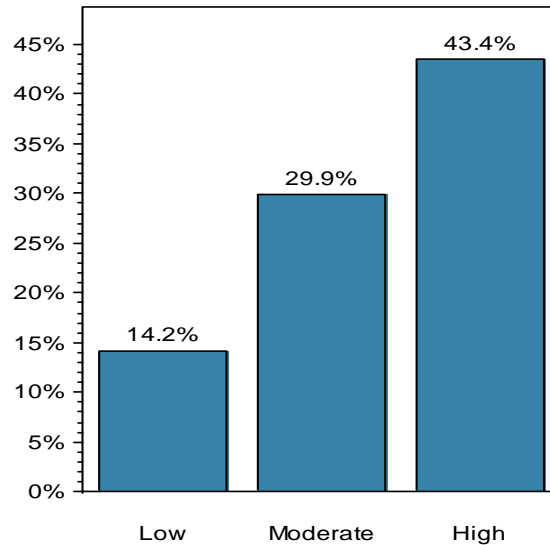
	Low (-3,0)	Moderate (1,7)	High (8,14)
Non-Recidivists	2821	5714	1065
Recidivists	465	2434	818
Proportion of Total	24.7%	61.2%	14.1%
Recidivism Rate	14.2%	29.9%	43.4%

Section 2 – Logistic Regression Results for the CY 2007 Juvenile Cohort

Section 1 provided a descriptive overview of the demographic, offense and risk/needs characteristics and corresponding recidivism rates for a CY 07 juvenile offender cohort. Readers were cautioned against making inferences regarding the significance of the relationship between these characteristics and recidivism. For example, Table 3 showed that male offenders (28.5%) recidivated at a higher rate than did their female counterparts (18.9%). However, it is unlikely that being male exerts a direct effect on recidivism. Instead, factors strongly correlated with being male, also correlated with recidivism, such as strong negative peer (gang) influence and substance abuse, exert a more direct effect on recidivism. To assess the impact an individual variable [like gender] has on recidivism, one must isolate that variable

from the influence of others. Social science researchers commonly use a multivariate statistical technique known as logistic regression modeling to accomplish this goal.

Using Missouri's statewide definition of recidivism as the outcome or "dependent" variable, the predictive value of the following "independent variables" was evaluated using the logistic regression modeling technique:

➢ **Demographics:** Gender, race, and age.

➢ **Case and Offense-related factors:** Offense type and offense severity.

➢ **Risk and needs factors:** Age at first referral, prior referrals, assault referrals, history of placement, peer relationships, history of child abuse and neglect, substance abuse, school problems, parental management style, parental incarceration, behavior problems, attitude, interpersonal skills, mental health, academic performance, learning disorder, employment, parental mental health and substance abuse, and social support system (Appendix A).

➢ **Court Outcomes:** Disposition of first offense including adjudication, DYS commitment, and certification.

Logistic Regression Results

Table 5 presents logistic regression findings for the model estimating the probability of recidivism. Only those variables found to contribute in a statistically significant way (p<.05) are referenced in Column 1 of Table 5. Column 2, presents the estimated beta coefficients (ß) for each of these variables. Beta coefficients estimate the impact a variable has on recidivism when the influence of other variables is controlled. These coefficients are frequently expressed using their associated odds ratios. Odds ratios significantly greater than positive 1 indicate a variable increases the odds of recidivism. For example, the odds ratio for juvenile offenders with a history of "*One or More Prior Referrals"* was 1.94, indicating these youth were nearly twice as likely to recidivate as offenders with no prior referrals to the juvenile court. Odds ratios significantly less than positive 1 indicate a variable reduces the odds of recidivism. For example, the odds ratio for *"Age" of* juvenile offenders was .93; indicating odds of recidivating were less for older youth. Since odds ratios are estimates, Column 3 provides confidence intervals for the estimate. Confidence intervals provide a range of values between which the actual odds ratio is likely to fall. A 95% confidence interval suggests one can be 95% sure the "true" odds ratio falls

between the upper and lower boundaries of the interval. The confidence interval provides an additional index to assess the accuracy of odds ratios. When the lower boundary of a confidence interval is significantly greater than 1, there is greater confidence in concluding that the "true" odds ratio will be greater than 1 and the variable will increase the odds of recidivism. If the upper boundary of a confidence interval is significantly less than 1, there is greater confidence in concluding that the "true" odds ratio will be less than 1, and the variable will reduce the odds of recidivism. Further, narrow confidence intervals indicate more certainty that the estimated odds ratio represents the "true" odds ratio, whereas wide intervals indicate less certainty.

Demographic Characteristics

All demographic variables included in the regression model proved statistically significant predictors of recidivism. Being male generated the greatest odds ratio (1.67) in comparison with females; being black resulted in the second greatest odds ratio (1.20) in comparison with white youth. In other words, when other model factors were controlled, being male, or being black, increased the odds of recidivism. Recidivism also increased as age decreased, with older youth less likely to recidivate. The odds ratio for age was (.93).

Offense Characteristics

Juvenile offenders whose most serious charge for their original CY 2007 referrals was a Misdemeanor *level* offense had greater estimated odds of recidivating (1.4) compared with offenders whose referral was for an infraction.

Four offense *types* included in the regression model proved statistically significant predictors of recidivism when sex offense was used as base comparison group. Juvenile offenders charged with a Public Order Offense (peace disturbance, harassment, unlawful use of weapon, resisting and disorderly conduct)* had greater estimated odds of recidivating (2.39), followed by youth charged with a Property Offense (2.22) (stealing, property damage, burglary, tampering**)*, Other Person Offenses (non-sex related assault, robbery)* (1.98) and Substance Abuse Offenses (possession of drugs or alcohol)* (1.82) than offenders charged with Sex Offenses, who were least likely to recidivate.

*These offenses accounted for more than 75% of all offenses in the respective category.
**Tampering refers to the interference with, or unwarranted alterations to, the property of another, esp. motor vehicle.

Risk and Needs Characteristics

Seven risk and three needs factors included on the Missouri Juvenile Offender Risk and Needs Assessments were found to be statistically related to recidivism (see Appendix B for the scoring definitions associated with these nine factors).

Controlling for demographic and offense characteristics, and other risk/needs factor attributes, previous juvenile court contact significantly increased the estimated odds of recidivism. Specifically, offenders with a history of *"One or More Prior Referrals"* to the juvenile court had nearly twice the odds to recidivate (1.94) as those with no prior history with the juvenile system. In addition, offenders having *"One or More Assault Referrals"* significantly increased the odds of recidivating (1.26) over those with no referral history of this type. A history of *"Out-of-Home Placement"* also increased the odds of an offender recidivating over those with no such placement history (1.18); as did *"Age at First Referral"* between 13 -15 yrs (1.14), when these offenders were compared with those receiving their first referral after age 15.

Four behavior-related factors significantly increased the estimated odds of juvenile offender recidivism. Moderate to severe *"Substance Abuse"* exerted the most influence on the odds of recidivating (1.41), with moderate to severe *"Behavior Problems"* (1.14) also increasing these odds. In addition, two school-related factors revealed a significant influence on recidivism. Offenders whose school performance was *"Below Average or Failing"* had significantly greater odds of recidivating than offenders who passed without difficulty (1.20). Also, youth assessed with moderate to severe *"School-Attendance Problems"*, in the form of truancy, suspension and expulsion, had increased odds of recidivating (1.13), in comparison with youth who attended school regularly.

Finally, with the influence of other model factors statistically controlled, two interpersonal factors were found to increase the estimated odds of juvenile offender recidivism. Specifically, *"Strong negative peer influence"* and *"Lack of Positive Social Support"* increased offenders' estimated odds of recidivating, with odds ratios of 1.20 and 1.16, respectively.

Court Outcomes

Results of the logistic regression analysis also indicate the odds of recidivating were associated with court outcomes. The odds of recidivism were significantly greater for offenders that were adjudicated (1.28), compared with youth whose cases were informally disposed or dismissed during formal process. The estimated odds of recidivism (.35) were significantly decreased for offenders who were committed to the Division of Youth Services (DYS) when compared with those who were not.

Table 5 – Logistic Regression Results

Demographic Characteristics	Beta	Odds Ratio	95% Confidence Interval
Youth is Male vs. Female	0.51	1.67	(1.49 - 1.87)
Youth is Black vs. White	0.18	1.20	(1.07 - 1.35)
Age	-0.07	0.93	(0.89 - 0.97)
Original Offense Characteristics			
Most Serious Charge was Public Order Offense vs. Sex Offense	0.87	2.39	(1.68 - 3.41)
Most Serious Charge was Property Offense vs. Sex Offense	0.80	2.22	(1.58 - 3.12)
Most Serious Charge was Other Person Offense vs. Sex Offense	0.68	1.98	(1.40 - 2.80)
Most Serious Charge was Substance Abuse Offense vs. Sex Offense	0.60	1.82	(1.26 - 2.62)
Most Serious Charge was Misdemeanor Offense vs. Infraction Offense	0.34	1.41	(1.06 - 1.87)
Risk & Needs Characteristics			
Personal History			
One or More Prior Referrals vs. None	0.66	1.94	(1.71 - 2.18)
One or More Assault Referrals vs. None	0.23	1.26	(1.12 - 1.43)
History of Out-of-Home Placement vs. None	0.17	1.18	(1.05 - 1.33)
Age at 1st Referral (13-15) vs. (>=16)	0.13	1.14	(1.01 - 1.29)
Personal Issues			
Moderate or Severe Substance Abuse vs. None	0.34	1.41	(1.24 - 1.59)
Below Avg or Failing Academic Performance vs. No Problem	0.18	1.20	(1.07 - 1.35)
Moderate or Severe Behavior Problem vs. No Problems	0.13	1.14	(1.00 - 1.29)
Moderate or Severe School Attendance vs. No Problem	0.13	1.13	(1.00 - 1.28)
Social Environment			
Strong Negative Peer Relationships vs. No Problem	0.18	1.20	(1.07 - 1.35)
No Social Support or Negative Influence vs. Strong Support	0.15	1.16	(1.04 - 1.29)
Court Outcomes			
Youth was Adjudicated vs. Not Adj.	0.25	1.28	(1.13 - 1.46)
Youth was Committed to DYS vs. No Commit.	-1.04	0.35	(0.26 - 0.48)

Discussion

A number of observations related to the results of the study merit further discussion.

First, logistic regression modeling was used to estimate the influence of demographic, offense and risk/needs characteristics on juvenile offender recidivism. The power of this analytical tool is related to its ability to estimate the effect of a predictor variable on a dependent variable when other variables are controlled. However, to the extent important mediating variables are not included in a model, results may be spurious. For example, while race [being black] and gender [being male] were shown to increase the odds of recidivism in the present study, it is unlikely these variables *directly* increase the odds of recidivism. Instead, the relationship of these variables to recidivism is likely mediated by socioeconomic and family relationship factors which were not part of the original model. Although information on these factors can be difficult to obtain, future efforts to collect it, possibly through modifications to Missouri's risk and needs assessments, are indicated.

Second, logistic regression analysis requires that each factor examined in a model have a base reference group. The reference group against which all other offenders were compared in terms of offense type was sex offenders. The results of this analysis revealed that offenders were at increased odds of recidivating when their most serious presenting charge was a public order, property, person [non-sex related], or substance abuse related offense, when compared with the base reference group of sex offenders. These findings should not be interpreted to mean that sex offenders may not have an elevated risk for perpetrating subsequent sex offenses, only that non-sex related offenders had higher estimated odds of recidivating based on the standardized definition of recidivism.

Third, the study identified the salient risk and needs characteristics of juvenile offender recidivists. Recidivists were more likely to have had prior referrals, assault referrals, out-of-home placements, and had their first referral between the ages of 13 – 15 when physical, mental and emotional development were undergoing many changes. Offenders with moderate to severe school-related problems had increased odds of recidivating, particularly for youth who were not attending school for behavioral problems related to truancy, suspension, or expulsion, as did offenders with moderate to severe behavior problems manifested through self-injurious and aggressive actions and substance abuse behavior. Peer influences exert their strongest

social influence. Such findings are potentially useful when appealing for the fiscal support of programs specifically designed to reduce juvenile offender recidivism.

Finally, caveats related to the effect of court outcomes on recidivism are merited. Results of the regression analysis indicating offenders who were committed to DYS were at reduced odds of recidivating are conceivably spurious, as many of these higher risk youth may be precluded from recidivating for a portion of the tracking period attributable to highly restrictive sanctions, including incarceration.

Recommendations

This report represents a starting point for future research on Missouri's juvenile offender population and the programs needed to treat these offenders and ensure public safety. The following recommendations are offered to support this effort.

➢ Examine subgroups of the juvenile offender population to thoroughly appraise the rate and underlying determinants of recidivism for these youth. Subgroups of interest include youth committed to the Division of Youth Services (DYS), youth living in urban/rural locations, and youth under supervision.

➢ Revalidate Missouri's risk instrument to ensure it effectively estimates the relative likelihood of recidivism for all youth, regardless of gender or race. Risk and needs factors not currently assessed by the instrument may play an important role in correctly identifying the relative risk of recidivism for female and black youth. Vetting of potential modifications to the instrument is an important consideration. However, the retention, removal and addition of variables or modification of risk level cut scores should be made on the basis of validated research findings and not through a consensus based approach.

➢ Produce circuit level reports for juvenile court use. Reports would contain information on circuit level recidivism rates and the risk/needs characteristics of circuit recidivists. Report information could serve as a basis for identifying evidenced based programs designed to reduce juvenile offender recidivism.

- ➢ Evaluate the effects of evidenced-based programs on reducing juvenile offender recidivism. Any intervention should be based on a solid theory or theoretical perspective that has been validated by research [drug courts, cognitive behavioral interventions, gang prevention, truancy prevention, academic skills and enhancements to improve performance and enhance bonding, school classroom environment] (Lipsey M. and Wilson, D., 1998; Aos, S., Miller, M., and Drake, E., 2006).

References

Aos, S., Miller, M, and Drake, E. (2006) Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates. Olympia: Washington State Institute for Public Policy.

Barnoski, R. (1997) Washington State Juvenile Court Recidivism Estimates: Fiscal Year 1994 Youth. Olympia: Washington State Institute for Public Policy.

Beck, A. (2001) Recidivism: A Fruit Salad Concept in the Criminal Justice World. Justice Concepts, Inc.

DJJ Research Quarterly, Volume III (April, 2005) Juvenile Recidivism in Virginia, Virginia Dept of Justice.

Data & Evaluation Recidivism Reports (2005). Oregon Youth Authority & Oregon Juvenile Department Directors' Association.

Lipsey, M. and Wilson, D. (1998) Effective Interventions for Serious Juvenile Offenders. Serious and Violent Juvenile Offenders: Risk Factors and Successful Interventions, Chapter 13.

Pate, S and Noreus, B. (2004) Maine Annual Juvenile Recidivism Report. Maine Dept of Corrections, Division of Juvenile Services, Muskie School of Public Service, Maine Statistical Analysis Center.

Thomas, D. (May, 2006) How Does the Juvenile Justice System Measure Up? Technical Assistance to the Juvenile Court Bulletin, May. National Center for Juvenile Justice.

THE MISSOURI JUVENILE RISK ASSESSMENT

JUVENILE NAME _____ JUVENILE ID# _____

JUVENILE DATE OF BIRTH _____/_____/_____ SEX _____ M _____ F SS# _____-_____-_____

RACE: _____ WHITE _____ BLACK _____ HISPANIC _____ ORIENTAL _____ AMERICAN INDIAN _____ OTHER

PARENT NAME _____ SS# _____-_____-_____

PRESENT OFFENSE CODE (List multiple offenses) _____ _____ _____

DATE REFERRAL RECEIVED _____/_____/_____ DATE FORM COMPLETED _____/_____/_____

COUNTY _____ CIRCUIT _____ JUVENILE OFFICER _____

Age at 1st Referral
16...-2
15...0
14...0
13...0
12 and under.............................1

Prior Referrals
None 0
One or more..............................2
(Actual number of referrals_____)

Assault Referrals
No prior or present referrals
for assault....................................0
One or more prior or present
referral for misdemeanor assault...........1
One or more prior or present referrals
for felony assault 2
(Actual number of referrals_____)

History of Placement
No prior out-of-home placement 0
Prior out-of-home placement................1

Peer Relationships
Neutral influence 0
Negative influence................................1
Strong negative influence 2

History of Child Abuse
No history of child abuse/neglect 0
History of child abuse/neglect 1
(Petition filed/DFS finding of
probable cause)

Substance Abuse
No alcohol or drug abuse problem........0
Moderate alcohol and/or drug
abuse problem......................................1
Severe alcohol and/or drug
abuse/dependence 2

School Attendance/Disciplinary
No or only minor problems................-1
Moderate problems 0
Severe problems 1

Parental Management Style
Effective management style 0
Moderately ineffective management
style 1
Severely ineffective management
style 2

Parental History of Incarceration
No prior incarceration 0
Prior incarceration 1

RISK SCORE: [   ]

RISK LEVEL:
8 & above = High Risk
1 – 7 = Moderate Risk
-3 – 0 = Low Risk

**Motion to dismiss for
certification sustained:** [   ]

Check action taken (one):
_____ Informal Adjustment
_____ Formal Process/Adjudication

**Check all sanctions you used.
The Matrix recommends sanctions for
a given risk score and offense type.**

_____ None

_____ Warned/Counseled
_____ Restitution
_____ Community Service
_____ Court Fees & Assessment
_____ Supervision
_____ Day Treatment
_____ Intensive Supervision
_____ Court Residential Placement
_____ Commitment to DYS
_____ Other: _____

**If you did not use a sanction
recommended by the matrix, check
one of the following reasons why:**

_____ Nature of the offense
_____ Severity of problems associated
with one or more risk factors
_____ Mitigating or aggravating
circumstances
_____ Judicial decision

THE MISSOURI JUVENILE NEEDS ASSESSMENT

JUVENILE NAME _____ JUVENILE ID# _____

JUVENILE DATE OF BIRTH _____/_____/_____ SEX _____ M _____ F SS# _____-_____-_____

RACE: ___WHITE ____ BLACK ____ HISPANIC ____ ORIENTAL ___AMERICAN INDIAN ____ OTHER

PARENT NAME _____ SS# _____-_____-_____

Behavior Problems
No significant behavior problem ....-1
Moderate behavior problem.................2
Severe behavior problem 4

Attitude
Motivated to change/accepts
responsibility 0
Generally uncooperative,
defensive, not motivated to change.......1
Very negative attitude, defiant,
and resistant to change..........................3

Interpersonal Skills
Good interpersonal skills ....-1
Moderately impaired interpersonal
skills...1
Severely impaired interpersonal
skills...2

Peer Relationships
Neutral influence 0
Negative influence 1
Strong negative influence 2

History of Child Abuse or Neglect
No prior child abuse or neglect.............0
Prior abuse and neglect........................1

Mental Health
(see DSM-IV diagnosis)
No mental health disorder.....................0
Mental health disorder with
treatment..2
Mental health disorder with no
treatment..4

Substance Abuse
No apparent problem 0
Moderate alcohol and/or drug
abuse problem..1
Severe alcohol and/or drug
problem/dependence.............................2

School Attendance/Disciplinary
No or only minor problems..............-1
Moderate problems 0
Severe problems 1

Academic Performance
Passing without difficulty.....................0
Functioning below average...................1
Failing 3
(If subject is 16 and not enrolled in
school, score as 0)

Learning Disorder
(see DSM-IV diagnosis)
No diagnosed learning disorder............0
Diagnosed learning disorder.................1

Employment
Full-time employment 0
Part-time employment 1
Unemployed 2
(Score only if subject is 16 and not
enrolled full-time in school, vocational
training, or other education program.)

Juvenile's Parental Responsibility
No children..0
One child 1
Two children 2
Three or more children........................3

Health/Handicaps
No health problems or physical
handicaps..0
No health problems/handicaps
but limited access to health care...........1
Mild physical handicap or
medical condition 2
Pregnancy...3
Serious physical handicap or
medical condition 5

Parental Management Style
Effective management style 0
Moderately ineffective management
style 1
Severely ineffective management
style 2

Parental Mental Health
(see DSM-IV diagnoses)
No parental history of mental
health disorder......................................0
Parental history of mental health
disorder...1

Parental Substance Abuse
No parental substance abuse 0
Parental substance abuse 1

Social Support System
Strong support system........................-2
Limited support system, with
one positive role model 0
Weak support system; no positive
role models...1
Strong negative or criminal influence ..3

TOTAL NEEDS SCORE:

[   ]

Initials: _____

Check all the services you used:

_____ None

Prevention & Education Programs
_____ G.E.D. classes
_____ Tutoring
_____ Mentoring
_____ Vocational training
_____ Shoplifters' program
_____ Drug & alcohol
            awareness programs

Intervention Programs
_____ Family counseling
_____ Individual counseling
_____ Substance abuse groups
_____ Sex offender programs
_____ Other: _____

Custody to:
Division of Family Services
_____ Residential
_____ Foster Care

Services from:

Department of Mental Health
_____ Residential
_____ In-home Services
_____ Other: _____

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Risk and Needs Factors (significant effect in regression model)

■ **Age at First Referral**
> 16 years old — Subject was 16 years old at the time of first referral.
> 15 years old — Subject was 15 years old at the time of first referral.
> 14 years old — Subject was 14 years old at the time of first referral.
> 13 years old — Subject was 13 years old at the time of first referral.
> 12 years old or less — Subject was 12 years old or less at the time of first referral.

■ **Prior Referrals** – DO NOT record referrals for abuse and neglect in this section.
DO NOT include current referral. Prior referrals are defined as a status, municipal, or law violation, sufficient or insufficient, for which the subject was referred to juvenile authorities.   Technical violations of supervision are NOT considered referrals for the purpose of scoring this variable.

> **None** = Subject has no prior status, municipal, or law referral(s).

> **One or more prior referrals** = Subject has one or more, status, municipal, or law referral(s), that may or may not have been adjudicated.

■ **Assault Referrals** – Refer to the page for a complete listing of offenses that are defined as assault for the purpose of scoring this variable.

> **No prior or present referral for assault** = Subject has no prior referral for assault, nor is the present referral for assault.

> **Misdemeanor assault** = Subject has at least one referral for misdemeanor assault.

> **Felony assault** = Subject has at least one referral for felony assault.

■ **History of Out-of-Home Placement**

> **No history of out-of-home placement** = Subject has had no out-of-home placements. Out-of-home placement includes court detention, foster care, hospitalization for mental illness or substance abuse treatment, voluntary placement in respite care, and commitment to the Division of Youth Services or other government-operated or private residential facilities. Out-of-home placement also includes enrollment in boarding/military schools, or placement with a relative other than a parent or primary caretaker exceeding three months for intractable behavior.

> **History of out-of-home placement** = Subject has had one or more out-of-home placements as defined above.

■ **Peer Relationships –** Choose the following description that best characterizes subject's primary peer group. All components of the description need not be present, however. Consider behavior in the past 12 months as of primary importance when scoring this item.

> **Neutral influence** = No member of the subject's primary peer group has been referred to the Court, or, if the current referral involves peers, these youths have no history of prior referrals. Persons with whom subject socializes, and dating partners, are age-appropriate and engage in constructive organized social activities, or informal activities that reflect healthy, pro-social interests. Parents generally approve of subjects' peer group.

> **Negative influence** = Peers negatively influence subject's behavior, contributing to subject staying out late at night, intermittent alcohol and/or drug abuse, disobedience etc., but there is no evidence of gang related activities. Some members of primary peer group have been referred to the Court. Current referral may involve peers who have had previous court contact.   Persons with whom subject socializes, and dating partners, may not be age-appropriate, either several years younger or older. Parents express disapproval of peers. Or, the subject is a loner and has not formed and maintained relationships with peers.

Strong negative influence = Primary peer group is heavily delinquent and members have had frequent court contacts. Gang related activities (street socialization, carrying weapons, serious pattern of substance abuse, and/or drug distribution/trafficking, family members in gang, violence related to defense of neighborhood "turf") among peer group members are probable.

- ■ **Substance Abuse -** Choose the following description that best characterizes the subject's overall pattern of substance use. All components of the description need not be present, however. Consider behavior in the past 12 months as of primary importance when scoring this item.

    No alcohol or drug problem = There is **no** parental suspicion or reliable physical evidence that drugs or alcohol abuse a problem. Relationship with parents is not strained over the issue of drug or alcohol abuse. There are no court referrals involving substance abuse, possession, or distribution. There has been no disciplinary action taken by school authorities related to substance abuse, possession, or distribution.

    Moderate alcohol and/or drug abuse problem = Subject is engaged in intermittent abuse or there is strong parental suspicion of substance abuse based on reliable physical evidence **(alcohol on breath, dilated/constricted pupils, smell and/or residue of drug on person or personal property, slurred speech, staggering, possession of drug paraphernalia, etc.)** that drug and alcohol abuse is a problem. There is tension in relationship with parents over the issue of substance abuse. There may have been a referral to the Court for substance abuse, possession or distribution, but not more than one. Subject may have been disciplined by school authorities for substance abuse or possession, but on not more than one occasion. Subject may have been diagnosed with an alcohol or drug problem, but is currently undergoing successful treatment and is abstinent.

    Severe alcohol and/or drug abuse or dependence = Subject has developed a pattern of regular abuse that is affecting social, familial, and/or school functioning. There is a history of reliable physical evidence indicating substance abuse or dependence is a problem. Subject has been diagnosed as chemically dependent and is currently in need of substance abuse treatment. There is a high level of conflict with parents regarding abuse behavior. There has been more than one referral to the Court for substance abuse, possession, or distribution. Subject has been disciplined by school authorities for substance abuse, possession, or distribution on more than one occasion.

- ■ **School Behavior Problems** - When school is out of session consider disciplinary and academic record for previous school year.

    No or only minor problems = Subject is enrolled and attending school regularly. There have been no out-of-school suspensions, previous expulsions, referrals for truancy, or school records indicating multiple unexcused absences. **OR**, subject is 16 and has full-time employment or part-time employment with a G.E.D., or is enrolled in G.E.D. classes, vocational training, or other educational program and is making satisfactory progress.

    Moderate problems = Subject is currently enrolled in school and attending, but there has been at least one out-of-school suspension, previous expulsion, referral for truancy, or school records indicating multiple unexcused absences. **OR**, subject is not enrolled in school, but is 16 and is enrolled in G.E.D. classes, vocational training, or other educational program. However, evidence suggests that satisfactory progress is **NOT** being made.

    Severe problems = Subject is currently on out-of-school suspension, expelled or has dropped out; and if 16 years old, is not working and has not earned a G.E.D. or enrolled in a G.E.D., vocational training, or other educational program.