



Missouri
Sentencing Advisory Commission

Missouri Risk and Needs Assessment at Sentencing

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Workshop Content

1. Introduction
2. A sentencing overview
3. Risk Assessment in the SAR – results
4. Construction of a risk instrument
5. Incorporating a risk measure into the Recommended Sentences
6. Demonstration of the automated recommended sentences
7. Discussion of sentencing using actual SARs
8. Sex offender assessment in the SAR
9. Development of a risk reduction instrument by the Board of Probation and Parole
10. Discussion

Introduction

- Sentencing in Missouri
- Sentencing Advisory Commission
- Development of the 2004 System of Recommended Sentences
- Development of the Sentencing Assessment Report
- MOSAC objectives

The Sentencing Overview

Studies of sentencing and advocates of what works always begin with a reference to the increase in the US incarceration rate.

- US rate increased from 201 in 1986 to 445 in 2008
- Missouri rate increased from 203 in 1986 to 509 in 2008

Should know the reasons for the increase before adopting new policies

What has caused the increase in the incarceration rate?

- Longer sentences for the same offense
- More offenders being sent to prison instead of probation
- Offenders serving longer in prison before release
- Increase in the recidivism of prison releases
- Increase in the recidivism of probationers
- More crime, more felony convictions

What do you think are the most
important factors

Rank the six factors in the previous slide

Don't turn over the page

Incarceration and Conviction Rates in Missouri since 1986

	1986-2004		2004-2009	
	Increase	Annual Rate	Increase	Annual Rate
Increase in incarceration rate per 100,000 population	164%	9%	-1%	0%
Increase in felony conviction rate per 100,000 population	137%	8%	-3%	-1%

Impact of the Six Factors

	1986	2004	2009	Population Impact	Rank
Felony conviction rate per 100,000 population	282	454	438	1,650	1
Sentence length (years)	7.2	7.3	7.1	Neutral	5
Percent of felony sentences receiving probation	59%	64%	63%	-876	6
Percent of prison time served	39%	40%	41%	553	4
Prison recidivism (after 2 years)	37%	48%	41%	613	3
Felony probation recidivism (after 2 years)	16%	24%	20%	932	2

Changes in the type of offense with a felony conviction

	1986-2004		2004-2009	
	Increase	Annual Rate	Increase	Annual Rate
Drugs and DWI	553%	31%	-9%	-2%
Nonviolent crimes	77%	4%	3%	1%
Violent and sex crimes	121%	7%	16%	3%

The components of the Sentencing Assessment Risk Instrument (SAR)

Sentencing Assessment Risk Score has 11 variables:

- Prior felonies convictions
- Prior misdemeanors
- Prior incarcerations
- Revocations
- Time since last conviction/release
- Recidivist offense
- Education
- Employment
- Substance abuse
- Escapes
- Age at assessment

Validation of the SAR

What is a good risk measure?

A working definition of recidivism

- Incarcerations or new convictions
- Time periods: From 12 months to three years from start of probation supervision or release from prison.
- Measures when the first event occurs and expressed as a percent of the offenders released for that time period

Sentencing Assessment Reports in the Validation Study

The SAR started late 2005.

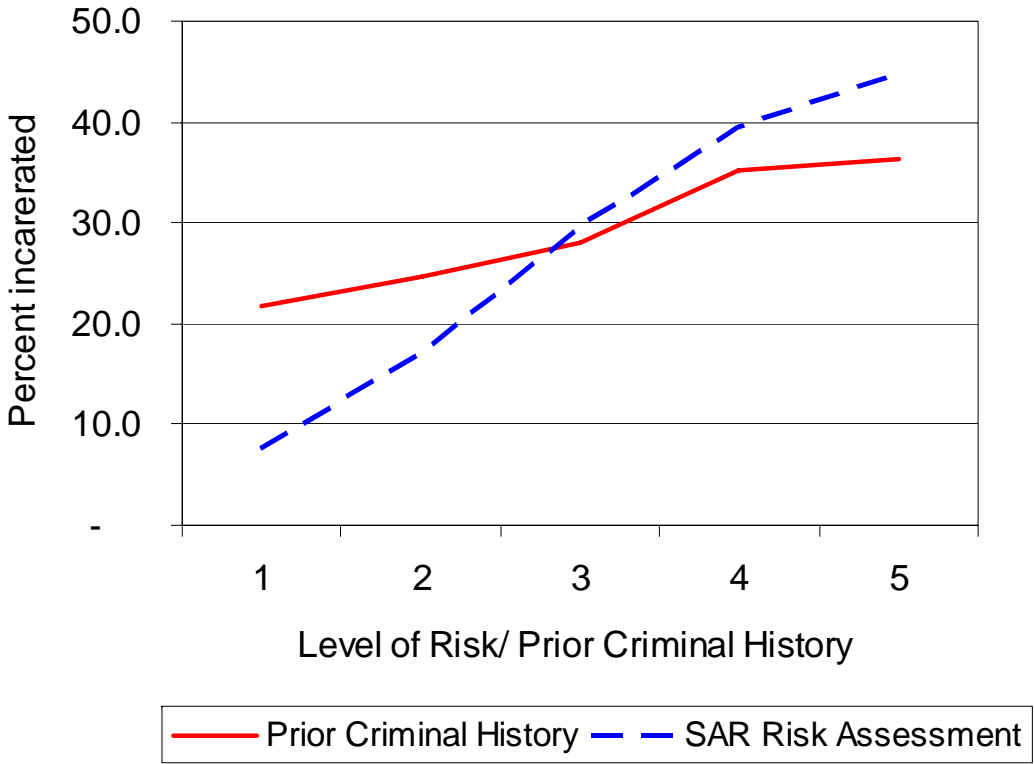
The study group is 19,516 of which 9,740 have been under supervision at least 2 years. There are 1,323 shock probation releases and 660 prison releases

Sentencing Assessments in the Study - Offenders on supervision or released, position at June 30, 2010

	Probation	Shk/Trt	Prison	Total
Started Supervision	14,747	2,907	1,862	19,516
Still Incarcerated	-	589	3,030	3,619
Total	14,747	3,496	4,892	23,135
<i>Percent in study</i>	100%	83%	38%	84%

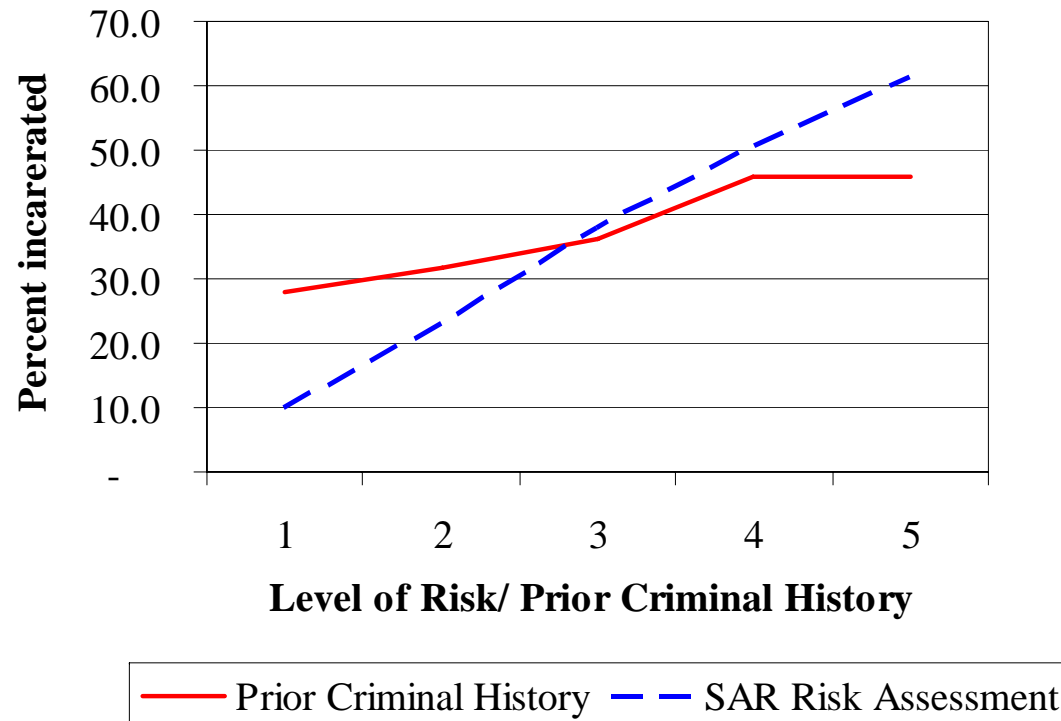
Recidivism after 2 years

Recidivism Rates by Level of Risk and Prior Criminal History
Incarceration after two years



Recidivism after 3 years

**Recidivism Rates by Level of Risk and Prior Criminal History
Incarceration after 3 years**



Incarceration

Recidivism and the SAR Risk Score (FY2006-FY2010)

SAR Risk Category	Percent Incarcerated Within		
	12 mths	24 mths	36 mths
1. Good	3.3	7.6	9.8
2. Above Average	8.5	16.9	23.0
3. Average	16.0	29.6	37.8
4. Below Average	21.7	39.5	50.7
5. Poor	27.8	44.8	61.3
	13.1	23.9	30.5

New convictions

Recidivism and the SAR Risk Score (FY2006-FY2010)

SAR Risk Category	Percent Convicted Within		
	12 mths	24 mths	36 mths
1. Good	0.9	2.3	4.0
2. Above Average	1.8	5.2	8.9
3. Average	3.8	9.9	15.2
4. Below Average	4.4	12.5	20.5
5. Poor	5.8	16.6	32.3
	2.9	7.8	12.5

Conclusions

- Good difference between each of the five levels of risk
- Risk is a better predictor of recidivism than the five levels of prior criminal history in the Missouri Recommended Sentences

Why might the increase in recidivism in the study be fairly flat for increasing prior criminal history?

Does this make the comparison invalid?

Constructing a risk instrument

Analyze each of the variables against recidivism

Look for differences in recidivism between each of the variable scores

Is the variable sufficiently discriminatory in population?

Measures - correlation coefficient

- range










Retest the weights/scores to maximize the correlation/ association

Some statistical terms

- Correlation coefficient- measures the degree of linear relationship between two numeric variables. Score from -1 with a negative relationship to +1 for a positive relationship. 0 is no relationship. Associated with linear regression.
- Recidivism variables generally have low correlations because computed as a dichotomous variable (1-recidivated or 0-not recidivated within the time period).
- Recidivism rates over longer time periods generally have a higher correlation.
For the SAR after 12 months .2195
 after two years .2771
 after three years .3261
- Correlation calculated upon the aggregate data explains over 97% of the variation in the SAR.




Analyzing the Prior Criminal History variables

Reduction in Recidivism attributed to each factor in the SAR

Variable	Score	N	Recidivism	
Prior Incarceration				
One or more	-1	859	34.8	
None	0	4,367	23.4	
			<i>Reduction</i>	11.4
Prior Felonies				
Two or more	-1	727	32.9	
One	0	1,062	26.2	
None	1	3,437	23.4	
			<i>Reduction</i>	9.5
Prior Misdemeanors				
Four or more	-1	480	34.8	
Three or less	0	4,746	24.3	
			<i>Reduction</i>	10.5
Five Years Conviction Free				
Yes	0	2,749	30.7	
No	1	2,477	19.2	
			<i>Reduction</i>	11.5
Revocations				
Yes	-1	1,147	36.9	
No	0	4,079	22.0	
			<i>Reduction</i>	14.9

Age

Reduction in Recidivism attributed to each factor in the SAR

Variable	Score	N	Recidivism
Age			
-1	1109	35.4	
0	2162	26.7	
1	1161	19.7	
2	794	15.1	
<i>Difference</i>		20.3	

Reduction in Recidivism attributed to each factor in the SAR

Variable	Score	N	Recidivism	
Education				
No HSD/GED	0	2,203	31.3	
HSD/GED	1	3,023	20.9	
		<i>Reduction</i>	10.4	
Substance Abuse				
Yes	0	4,217	27.5	
No	1	1,009	15.8	
		<i>Reduction</i>	11.8	
Employment				
Unemployed	-1	1,881	38.4	
Part time	0	1,553	22.9	
Full time	1	1,792	13.5	
		<i>Reduction</i>	25.0	
Escape				
Yes	-1	48	45.8	
No	0	5,178	25.1	
		<i>Reduction</i>	20.8	
Recidivist Offense				
Yes	-1	707	40.45	
No	0	4,519	22.88	
		<i>Reduction</i>	17.6	

How many variables to include

- More variables add to the stability of the instrument

But

- More variables with lower association may add to more random error and lower correlation
- More variables being significantly explained by other variables – multi-collinearity

Rule of thumb 10 should be sufficient

Multi-collinearity in the SAR risk assessment

Positive association

- Prior felonies and incarcerations .700
- Revocations and incarcerations .571
- Conviction free and prior felonies .325
- Age and recidivist offenses .271

Negative association

- Age and prior felonies -.280

Little association

- Education and prior felonies -.015

Correlation Coefficients with recidivism after two years

Rank	Factor	Correlation
1	Employment	-.222**
2	Age	-.153**
3	Revocations	-.142**
4	Recidivist Offense	-.138**
5	Five Years Conviction Free	-.132**
6	Education	-.118**
7	Substance Abuse	-.107**
8	Incarcerations	-.097**
9	Felonies	-.073**
10	Misdemeanors 4+	-.070**
11	Escape	-.046**

** significant at 95% confidence

Using stepwise multiple regression to select the independent variables

Rank	Factor	Cumulative Correlation (r)
<i>Included in Model</i>		
1	Employment	0.222
2	Age	0.257
3	Revocations	0.288
4	Substance Abuse	0.298
5	Recidivist offense	0.305
6	Five years conviction free	0.311
7	Education	0.315
8	Prior incarcerations	0.316
9	Prior misdemeanors	0.317
<i>Not Included in Model</i>		
10	Felonies	
11	Escape	

Incorporating Risk Assessment into the Recommended Sentences

Why is it a good idea?

Options:

- Risk measures or risk reduction measures
- In the Recommended sentences matrix
- Advice/ Information

Requirements

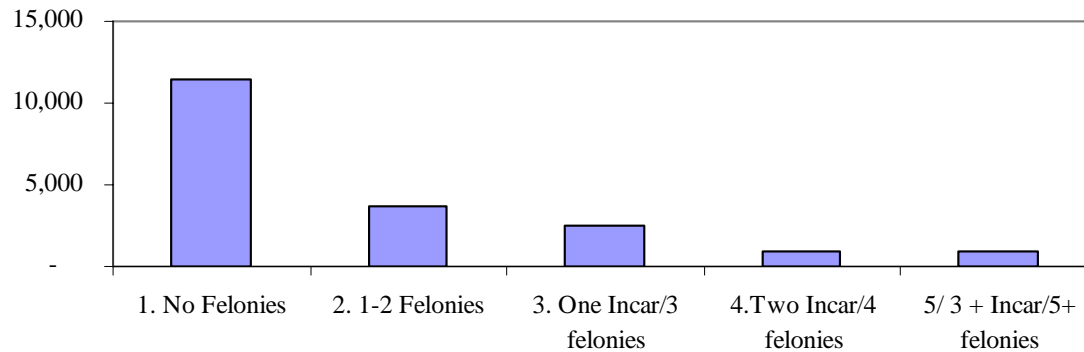
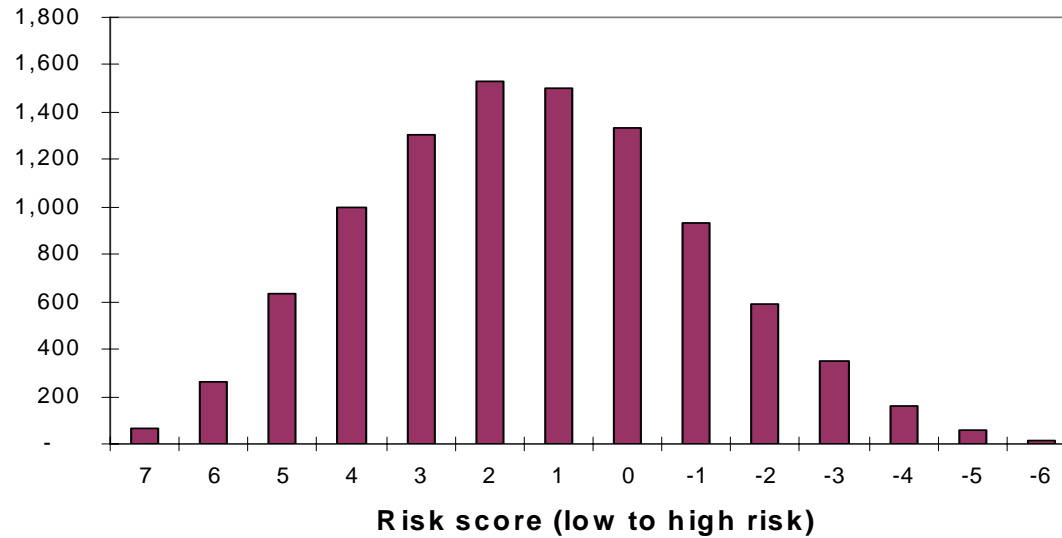
- Sentencing and risk data that can calculate the actual sentence for each offense severity and risk level.
- Testing the compliance of the recommended sentencing model with actual sentencing

Issues:

- Do courts give greater emphasis on prior criminal history than on other risk factors?
- The distribution problem - Prior criminal history and offender risk often have very different distributions

Using Risk Assessment in Recommended Sentences- the distribution problem

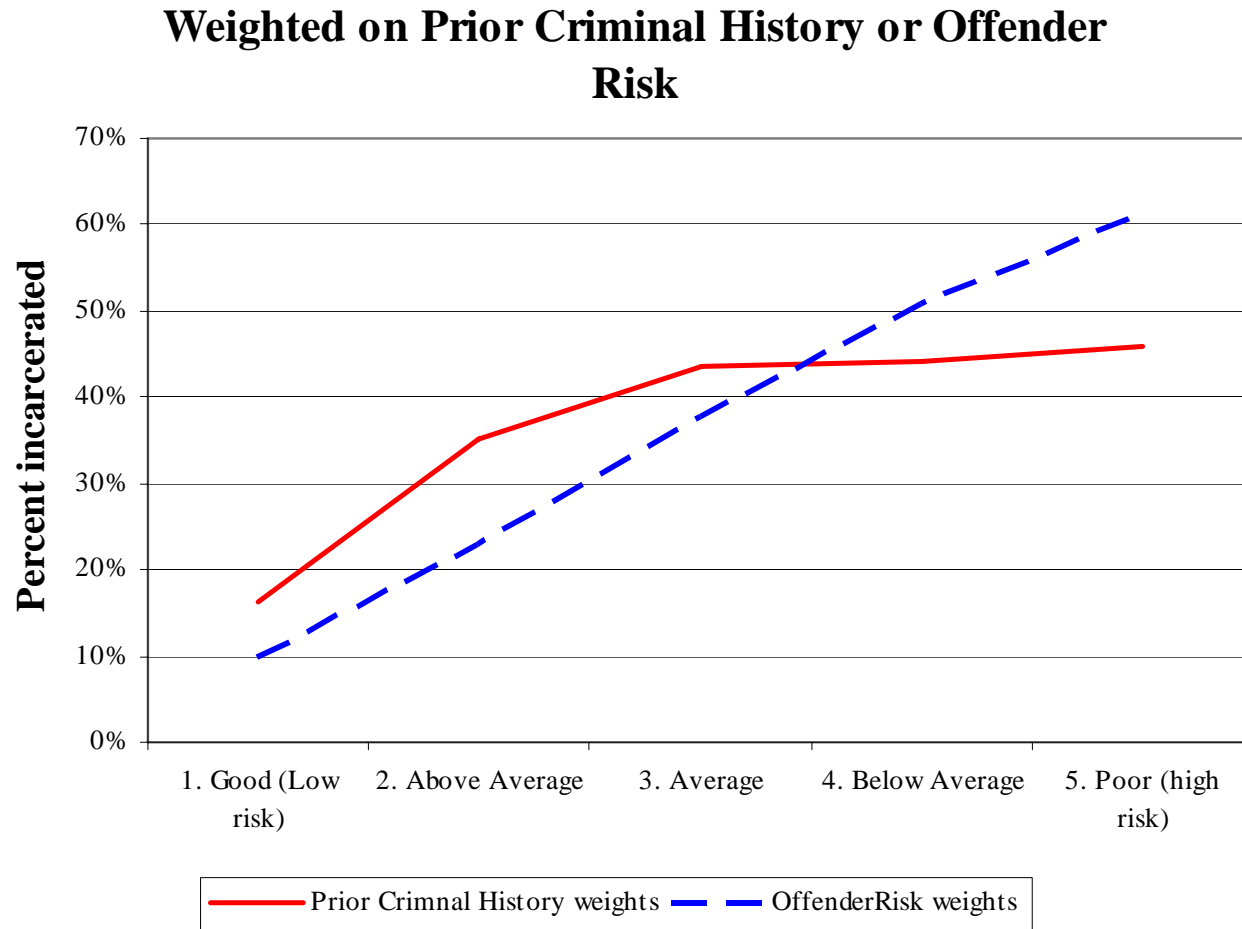
Risk distribution of SARs



What to do if the Prior Criminal History and Risk distributions are very different

- Re-score the risk assessment to increase the low risk category or
- Adjust the recommended sentences – probably downwards

Effect of using prior criminal history weights on the predictiveness of the SAR risk instrument



One alternative - adjust the recommended sentences downwards

If the risk score cannot be adjusted without loss of predictiveness then adjust the recommended sentences

Prior Criminal History

	Prior Criminal History					Average Sentence
	Level I	Level II	Level III	Level IV	Level V	
Recommended Sentence- years	2	3	5	6	7	3.0
Prior Criminal History Distribution	59%	19%	13%	5%	5%	100%

Offender Risk

	Level of Risk					Average Sentence
	Good Low	Above Average	Average	Below Average	Poor High	
Recommended Sentence - years	2	3	5	6	7	4.2
Optimized Risk Distribution	20%	28%	28%	17%	7%	100%
<i>Reduce all the Recommended Sentences by 1 year</i>						
Recommended Sentence - years	1	2	4	5	6	3.2

Another alternative-consider risk as a mitigating or aggravating sentencing factor

- Low offender risk – mitigating sentence
- High risk – aggravating sentence

Does the SAR risk separate high and low risk within the levels of prior criminal history?

Recidivism after 2 years- Prior Criminal History and Offender Risk

Offender Risk	Prior Criminal History				
	Level I	Level II	Level III	Level IV	Level V
Low Risk	7.4	9.7	-	-	
Medium Risk	24.5	21.2	20.0	22.9	14.6
High Risk	53.1	40.5	34.7	41.5	36.1

There is a difference in recidivism but also high covariance.

- Low risk is associated with low criminal history and high risk with high criminal history.
- More offenders with little prior criminal history will be recommended mitigating sentences
- More offenders with considerable prior criminal history will be recommended aggravating sentences
- Net impact likely to be more severe sentencing

Demonstration of the MOSAC Automated Recommended Sentences

Sex Offender Assessment in the SAR

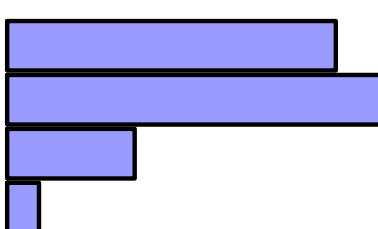
- Static-99 and Static-99R
- The instrument
- Purpose
- Validation in Missouri
- Comparisons with prior criminal history and the SAR risk score

Most Static-99s assessments are low or moderate low risk

Completed STATIC-99s for a SAR By Category

STATIC-99

Category	#	%
1. LOW	178	37.9%
2. MODERATE-LOW	206	43.8%
3. MODERATE-HIGH	69	14.7%
4. HIGH	17	3.6%
TOTAL	470	100.0%



More severe than prior criminal history and the SAR Risk Instrument

SAR Prior Criminal History Level for Completed STATIC-99

Prior Criminal History Level	#	%
I	309	65.7%
II	76	16.2%
III	50	10.6%
IV	22	4.7%
V	13	2.8%
TOTAL	470	100.0%

SAR Risk Assessment Category for Completed STATIC-99

SAR Risk Assessment Category	#	%
1. GOOD	282	60.0%
2. ABOVE AVERAGE	95	20.2%
3. AVERAGE	69	14.7%
4. BELOW AVERAGE	21	4.5%
5. POOR	3	0.6%
TOTAL	470	100.0%

Sex Offender Assessment

- Sex offender assessment increases the risk score in 45% of SARs on sex offenders
- Included in the Mitigating/Aggravating adjustment to the recommended sentences.
- Static-99 overestimates sex offender recidivism in Missouri

Sex offender recidivism

New sex offense within 5 years of release

- Static 99 18%
- Static99R (2010) 14.7%
- Missouri 4.8%
- Missouri probation 3.5%
- Missouri Any new conviction 14.3%

Measuring Risk Reduction

- Risk instruments measure the risk of recidivating at the time of assessment or sentencing
- Criminogenic based risk needs assessments are still measures of risk
- To identify the potential of an offender to reduce the anti-criminal behavior and to address the deficits requires a risk reduction instrument

Missouri Field Risk Instrument

- Drives the Evidence based Supervision model
- The assessment provides:
- A risk measure to determine the level of supervision
- The likely benefit in reduced recidivism from community treatment for offenders with substance abuse
- The likely benefit in reduced recidivism from community supervision strategies

Missouri Field Risk Reduction Instrument- Assessment Factors

- Prior convictions
- Prior incarcerations
- Revocations
- Recidivist offenses
- Age
- Substance Abuse
- Probation or Parole Status
- Current monitoring of technical and law violations, employment, substance abuse and social condition

Combination of existing assessments available in the field

The Benefit from Community Treatment Measure

- Uses outcomes from past community treatment programs
- Identify variables that are related to program success by comparing the recidivism of offenders who complete a community treatment program to those who fail or not enrolled.
- Weight each of the variables by the degree of impact on recidivism

Example: Supervision Status

Examining the status of the offender indicates that supervision strategies are significantly more useful for parolees than for probationers.

Supervision Status and Supervision Strategies

Supervision Status	No Supervision Strategy	Supervision Strategy	Percent Supervision Strategy	Recidivism after 3 yrs		
				No Supervision	Supervision Strategy	Percent Difference
Misd. Prob	6,199	129	2%	41.9%	38.0%	3.9%
Diversion	1,895	8	0%	56.3%	62.5%	-6.2%
Felony Prob.	36,037	2,701	7%	48.1%	42.3%	5.8%
Parole	10,472	8,686	45%	67.9%	51.6%	16.3%
Total	54,614	11,528	17%	51.5%	49.3%	2.2%

Scoring the Community Supervision Strategy

Supervision Strategies

	Priority Score				
	Highest Benefit	Above Average Benefit	Average Benefit	Below Average Benefit	Least Benefit
Priority Score	2	1	0	-1	-2
Risk Score	9-11	7-8	5-6	4	2-3
Need Score	9-13		6-8		3-5
Supervision Status		Parole	Probation	Diversion	
Offense	Not Significant				
Sub. Abuse (SACA)	Significant but does not enhance scoring				
Gender	Significant but does not enhance scoring				
Age		U-22	22+		
Prior Inst. Treatment		SACA 3-5	SACA 1-2		
Employment (Need Score)		Unemp.	Part Time	FT Emp.	
Revocations		1+	None		
Prior Incarcerations	2+	1	None		

What factors are associated with the successful use of supervision strategies?

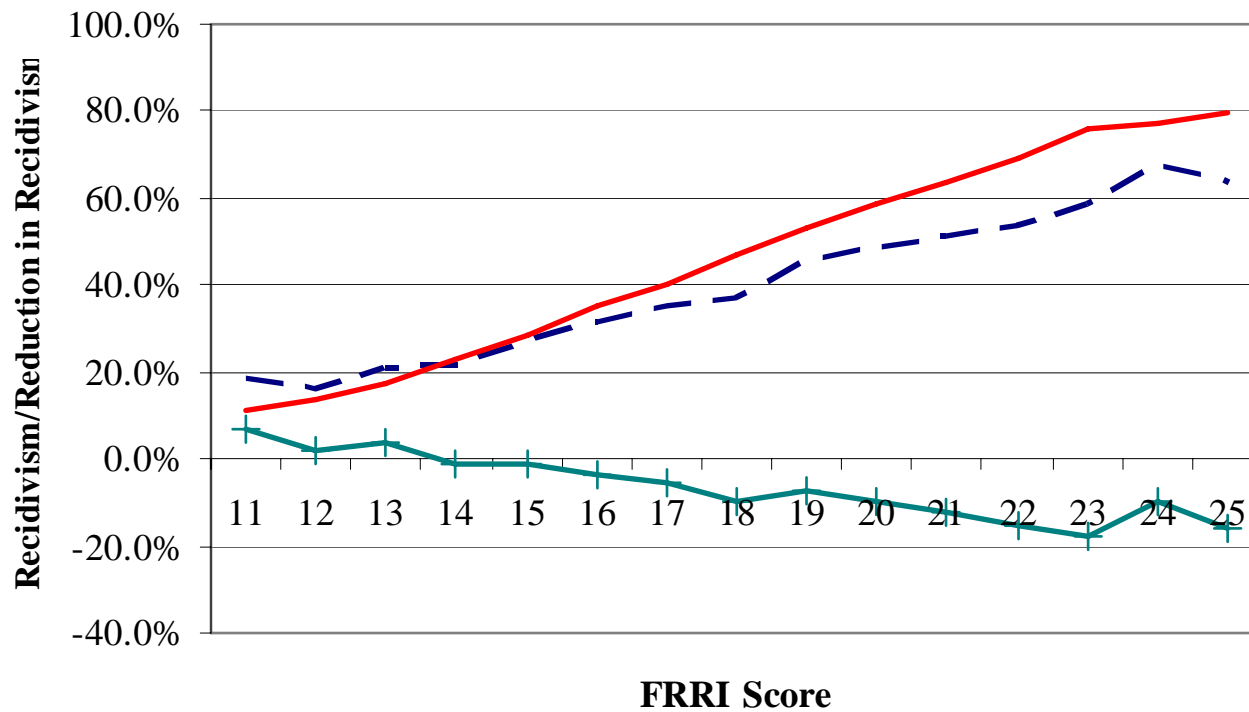
- High Risk/Need scores
- Parole
- Males
- Young- under 22
- Substance Abuse (3+)
- Prior Institutional treatment

What factors are associated with the successful use of community drug treatment programs?

- Substance abuse (3+ on the SACCA)
- Young- under 30
- Nonviolent or sex offense
- Prior Institutional treatment
- Low education grades
- Mild personality problems
- Not on a misdemeanor probation

Ranking the benefit of community supervision

Impact of Supervision Strategies Upon Recidivism



Ranking the benefit from community drug treatment

Impact of Community Drug Treatment Upon Recidivism

