Re-validation of the Nonviolent Offender Risk Assessment Instrument:
Study Findings

Current Instrument

Legislative Directive for Nonviolent Offender Risk Assessment
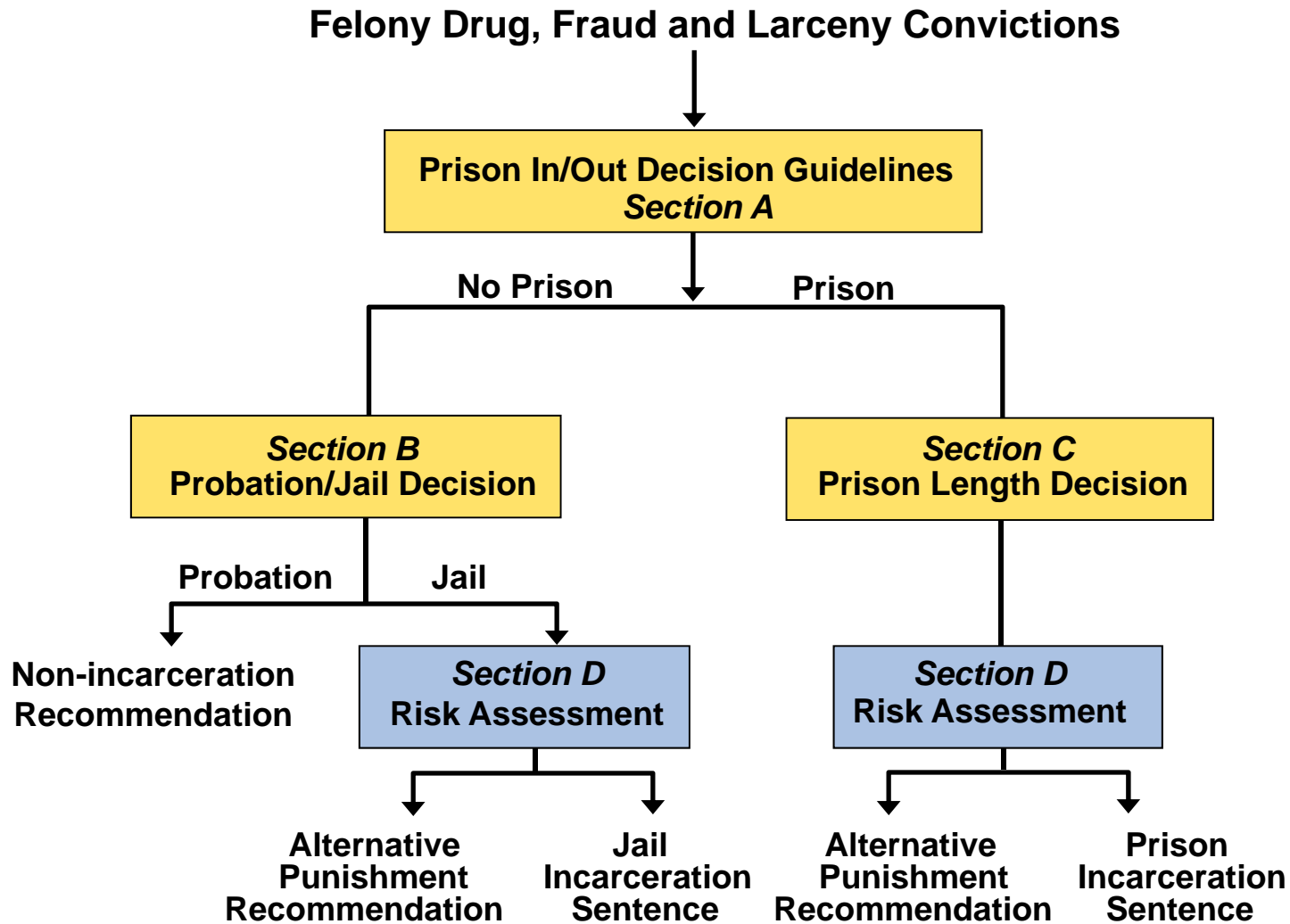
- In 1994, Virginia's legislature directed the newly-created Sentencing Commission to:

    - Develop an empirically-based risk assessment instrument predictive of a felon's relative risk to public safety to determine appropriate candidates for alternative sanctions

    - Apply the instrument to nonviolent felons recommended for prison, with a goal of placing 25% of those offenders in alternative sanctions

Legislative Directive to Revisit Nonviolent Offender Risk Assessment

- **In 2003, the General Assembly directed the Commission to determine, with due regard for public safety, the feasibility of adjusting the instrument threshold to recommend additional low-risk nonviolent offenders for alternative punishment**

- **The Sentencing Commission concluded that the threshold could be raised from 35 to 38 points without significant risk to public safety**

  - **Change became effective July 1, 2004**

Use of Nonviolent Offender Risk Assessment

Felony Drug, Fraud and Larceny Convictions

Prison In/Out Decision Guidelines
Section A

No Prison → → Prison

Section B
Probation/Jail Decision

Section C
Prison Length Decision

Probation   Jail

Non-incarceration Recommendation

Section D
Risk Assessment

Section D
Risk Assessment

Alternative Punishment Recommendation   **Jail Incarceration Sentence**

Alternative Punishment Recommendation   **Prison Incarceration Sentence**

Offenders must also meet certain eligibility criteria

Nonviolent Risk Assessment ❖ Section D

Offender Name: _____

❖ **Ineligibility Conditions**

A.	Was the offender recommended for **Probation/No Incarceration** on Section B?	☐Yes	☐No
B.	Do any of the offenses at sentencing involve the sale, distribution, or possession with intent, etc. of cocaine of a combined quantity of 28.35 grams (1 ounce) or more?	☐Yes	☐No
C.	Are any prior record offenses violent (Category I/II listed in Table A of the Guidelines Manual)?	☐Yes	☐No
D.	Are any of the offenses at sentencing violent (Category I/II listed in Table A of the Guidelines Manual)?	☐Yes	☐No
E.	Do any of the offenses at sentencing require a mandatory term of incarceration?	☐Yes	☐No

> **If answered YES to ANY, go to "Nonviolent Risk Assessment Recommendations" on cover sheet and check Not Applicable. If answered NO to ALL, complete remainder of Section D worksheet.**

❖ **Offense Type** *Select the type of primary offense*

Drug 3
Fraud 3
Larceny 11

❖ **Additional Offense(s)** —————— If YES, add 5 ➤ 0

❖ **Offender** *Score factors A to D and enter the total score*

A.	Offender is a male 8	☐
B.	Offender's age at time of offense	+
	Younger than 30 years 13	☐
	30 - 40 years 8	
	41 - 46 years 1	
	Older than 46 years 0	+
C.	Offender not regularly employed (during 2 years prior to arrest date) 9	+
D.	Offender age 26 or more and never married (at time of offense) 6	=

Enter A to D Total

☐ Information above not available (i.e., unable to interview defendant, defendant's lack of cooperation, etc.)

❖ **Arrest or Confinement Within Past 18 Months** *(prior to instant offenses)* —— If YES, add 6 ➤ 0

❖ **Prior Felony Convictions and Adjudications** *Select the combination of adult and juvenile felony convictions/adjudications that characterizes the offender's prior record.*

Adult felony convictions only 3
Juvenile felony convictions or adjudications only 6   0
Both adult and juvenile felony convictions/adjudications 9

❖ **Prior Adult Incarcerations**

Number: 1 - 2 3
3 - 4 6   0
5 or more 9

Total Score ————————————➤

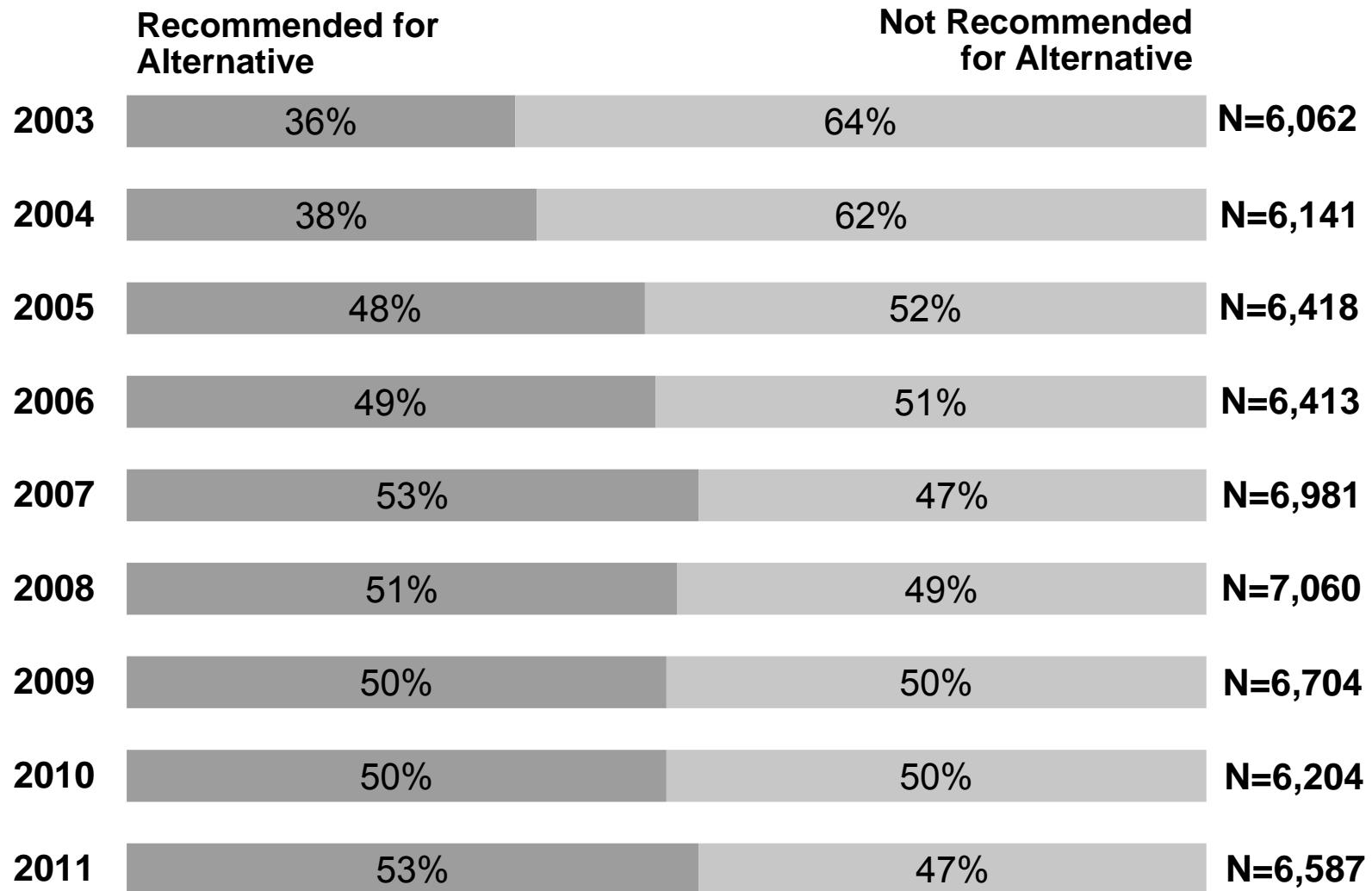☐ 38 or less, check Recommended for Alternative Punishment.
☐ 39 or more, check NOT Recommended for Alternative Punishment.

Drug Schedule I or II
Section D

Go to **Cover Sheet** and fill out **Nonviolent Risk Assessment Recommendations**.

Current Risk Assessment Instrument:
Significant Factors in Assessing Risk

Relative Degree of Importance
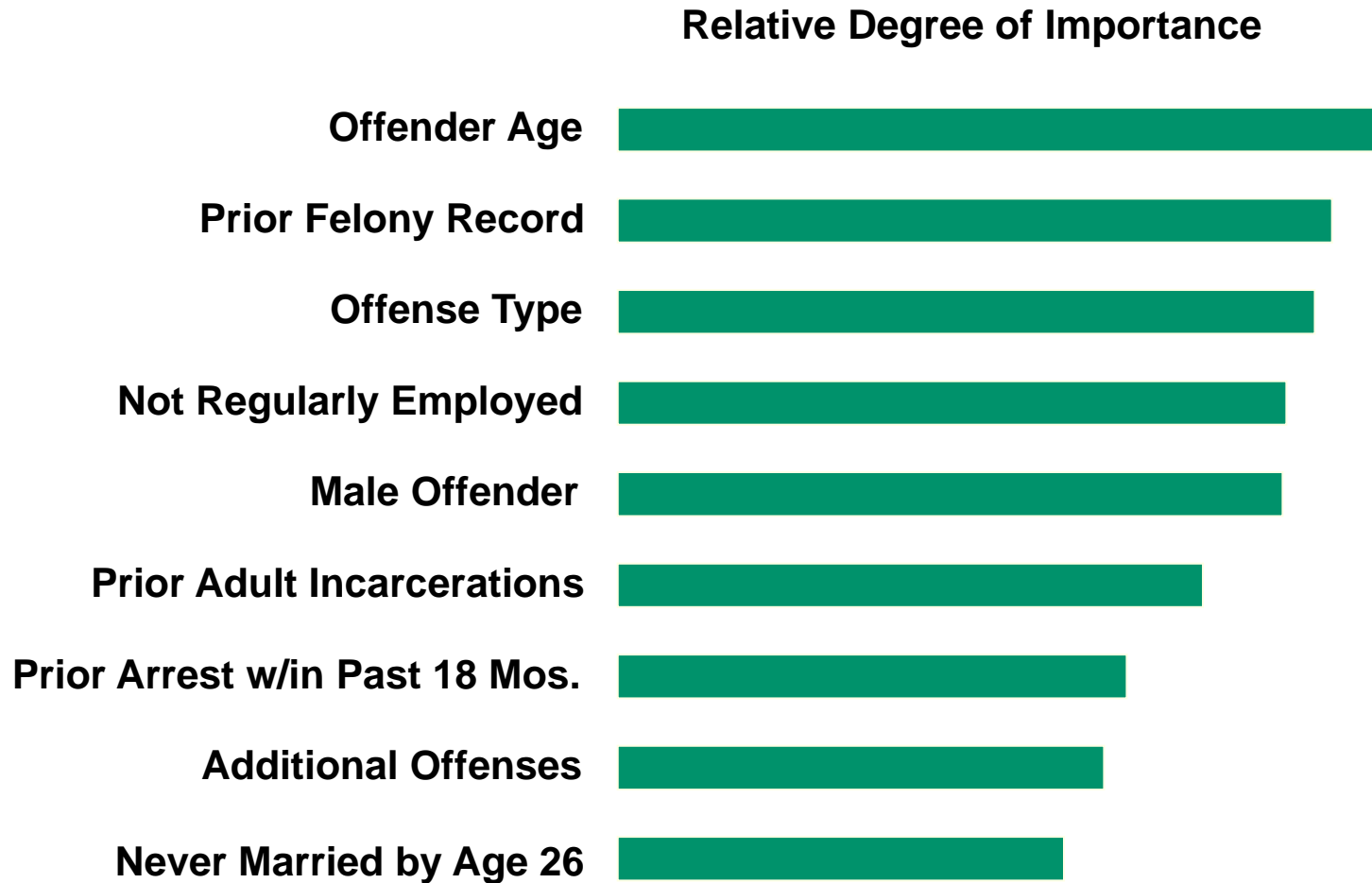
Risk Assessment Outcomes for Nonviolent Offenders *

Recommended for Alternative   **Not Recommended for Alternative**

Year	Recommended	Not Recommended	N
2003	36%	64%	**N=6,062**
2004	38%	62%	**N=6,141**
2005	48%	52%	**N=6,418**
2006	49%	51%	**N=6,413**
2007	53%	47%	**N=6,981**
2008	51%	49%	**N=7,060**
2009	50%	50%	**N=6,704**
2010	50%	50%	**N=6,204**
2011	53%	47%	**N=6,587**

* Offenders recommended by the sentencing guidelines for prison or jail incarceration

Study Methodology

Identification of Offenders for the Study

- **Offenders were identified from the sentencing guidelines database**

- **Selection criteria:**

  - **Felony fraud, larceny, and drug offenders**

  - **Sentenced in FY2005 and FY2006**

  - **Recommended for incarceration by the sentencing guidelines (jail or prison)**

  - **Meets risk assessment eligibility requirements**

  - **No worksheet errors**

Offenders Meeting Selection Criteria
by Most Serious Offense

Drug 6,099

Larceny 3,887

Fraud 2,456

Total = 12,442
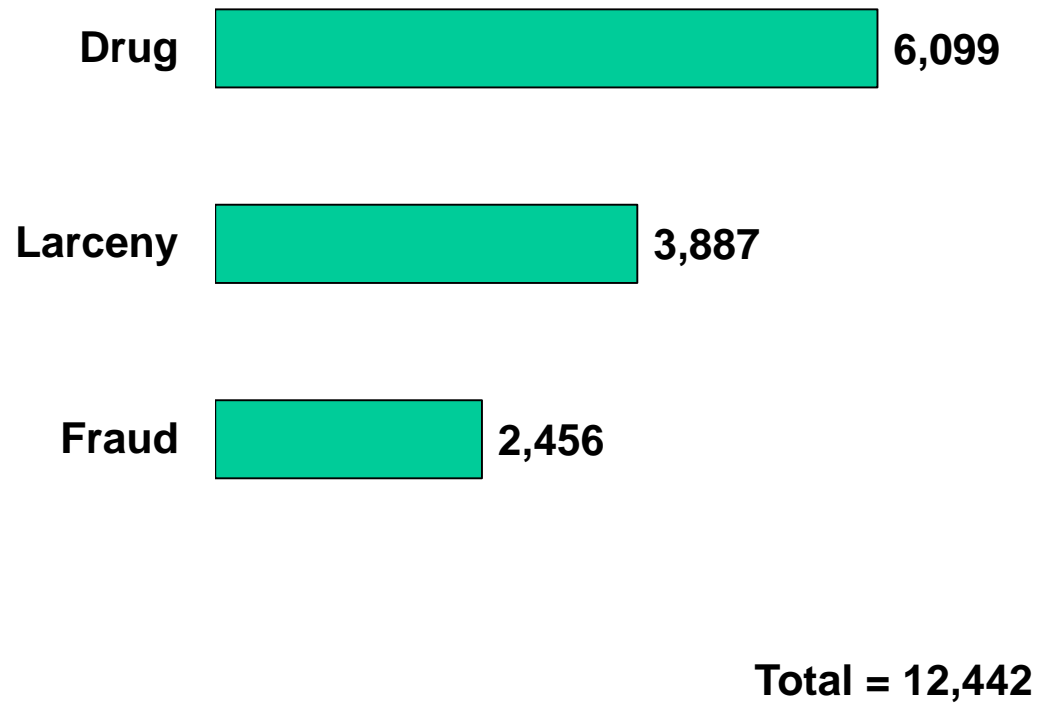
Selection of Study Sample (based on approved design)

- Staff drew a sample of 1,799 offenders who met the selection criteria

- Staff selected cases based on a stratified random sampling technique to increase the likelihood of including offenders with juvenile adjudications of delinquency

  - Criminological studies have shown that juvenile record and the age of first contact with the juvenile justice system are often correlated with subsequent offense behavior as an adult

Composition of the Sample

	No Juvenile Record	Juvenile Record
Drug	300	300
Larceny	300	300
Fraud	300	299

Total sample: 1,799 offenders

For the analysis, the sampled cases were weighted to reflect each subgroup's actual proportion in the population

Virginia Criminal History Records

- **Staff requested and received criminal history records ("rap sheets") from the Virginia State Police**

  - **These only reflect criminal arrests and convictions within Virginia**

  - **Records were provided in database format**

  - **Staff examined the data to remove duplicate records and records incorrectly matched to offenders in the sample, and to identify offenders for whom no rap sheet was found**

Virginia Criminal History Records

- **For much of this data (25,439 arrest records, or more than 2/3), the VCC offense code was missing (only statute or text description was available)**

  - **Staff researched cases and filled in VCC offense codes with the best available information**

  - **Having offense identifiers is helpful in the analysis phase**

- **For 5,307 of the 36,025 arrest records, there was not a court disposition**

  - **Staff used other criminal justice databases to identify and fill in convictions wherever possible**

Out-of-State Criminal History Records

- Sentencing Commission staff completed the necessary forms and procedures to request out-of-state criminal history records from the FBI

- Request was reviewed by a FBI special board and approved

- Sentencing Commission received out-of-state rap sheets in two forms: paper copies and PDF (image) files on disc

- For the 15 states that do not participate in the FBI's electronic rap sheet system, these records came on paper (532 rap sheets)

- For the remaining states, the records came in PDF (image) files

Out-of-State Criminal History Records

- **Since none of these records were in database format, staff examined the rap sheets**

  - **Needed information was recorded on a specially-designed data collection form**

  - **This information was then automated and added to existing databases**

- **These records were used to supplement prior record, if necessary, as well as to identify recidivism activity**

A total of 137 cases had to be excluded from the analysis

Reason	Number	Percent
Offender has prior violent felony	65	47.4%
Offender has current violent felony	17	12.4%
Offender still in prison	53	38.7%
Rap sheet could not be located	1	0.7%
Other	1	0.7%
TOTAL	137	100%

Recidivism Measures

- As with prior nonviolent offender risk assessment studies, the official measure of recidivism is a new felony conviction within 3 years

- However, multiple measures of recidivism were collected

  - Any new arrest

  - New felony arrest

  - Any new conviction

  - New felony conviction

   New conviction is measured as a new arrest within three years of release that ultimately resulted in a conviction

Analytical Approach

■ **Two analysts have been working largely independently of one another using two different statistical techniques**

  ● **Staff have been discussing and reconciling differences in the two statistical models to develop an improved final model**

Study Findings

Offender Characteristics – Prior Record
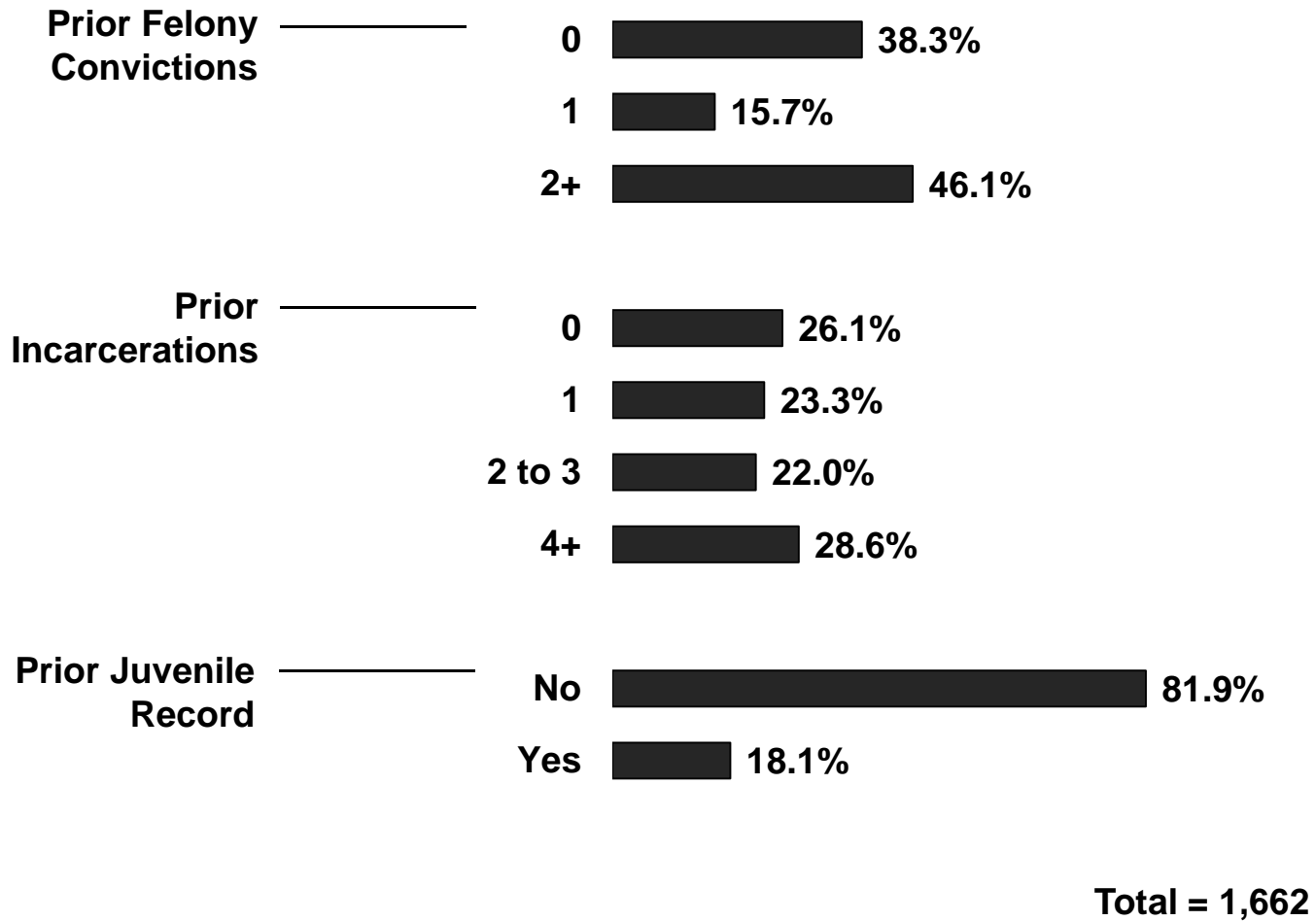
Prior Felony Convictions

0	38.3%
1	15.7%
2+	46.1%

Prior Incarcerations

0	26.1%
1	23.3%
2 to 3	22.0%
4+	28.6%

Prior Juvenile Record

No	81.9%
Yes	18.1%

Total = 1,662

**Analysis is based on the sample weighted to reflect the population
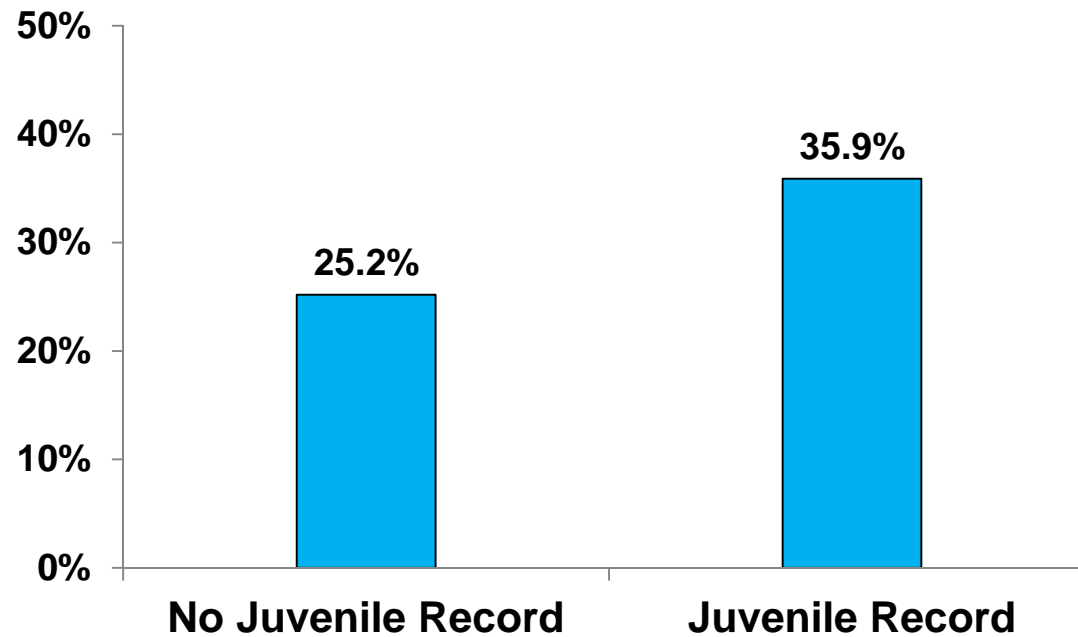of offenders eligible for risk assessment**

Criminal History Records

Offenders with Arrests/Charges Outside of Virginia

33.6%

↓

Most common jurisdictions for out-of-state arrests/charges:

Maryland
North Carolina
Washington DC
Tennessee
Federal
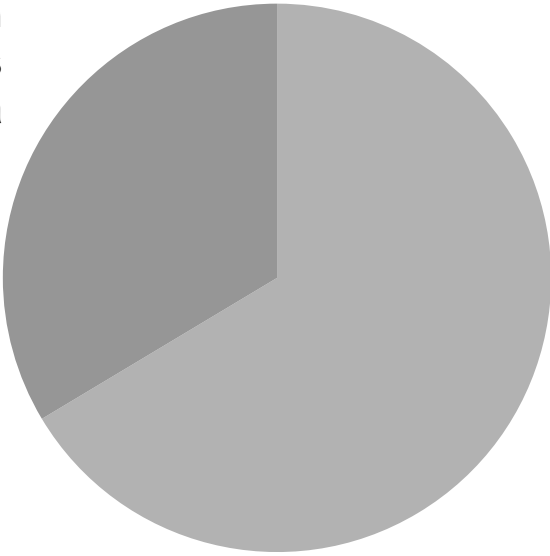
Offenders with Arrests/Charges in Virginia Only

66.4%

Total = 1,662

Type of Disposition Received
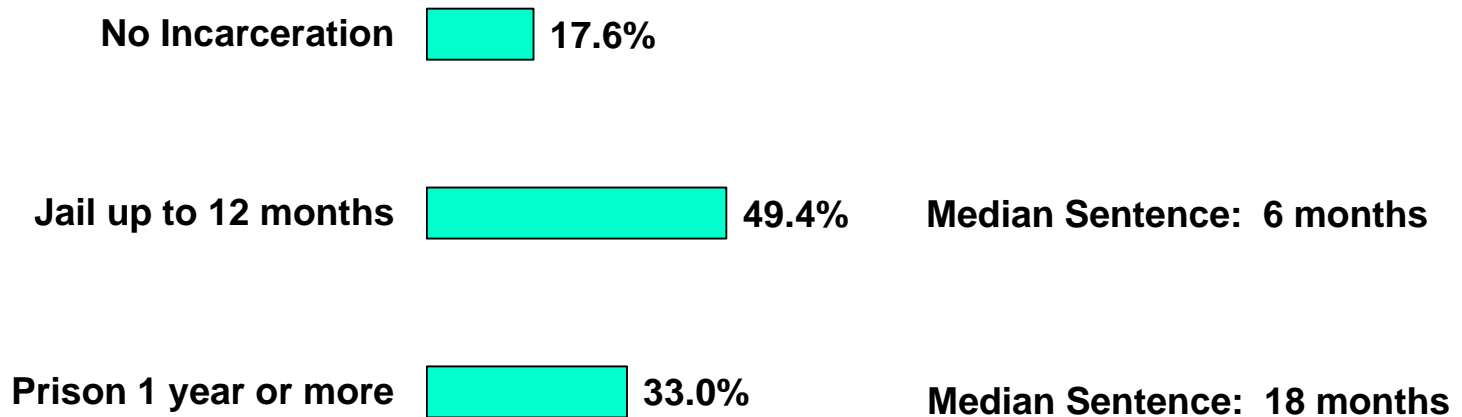
No Incarceration ▮ 17.6%

Jail up to 12 months ▮▮▮▮ 49.4%   Median Sentence: 6 months

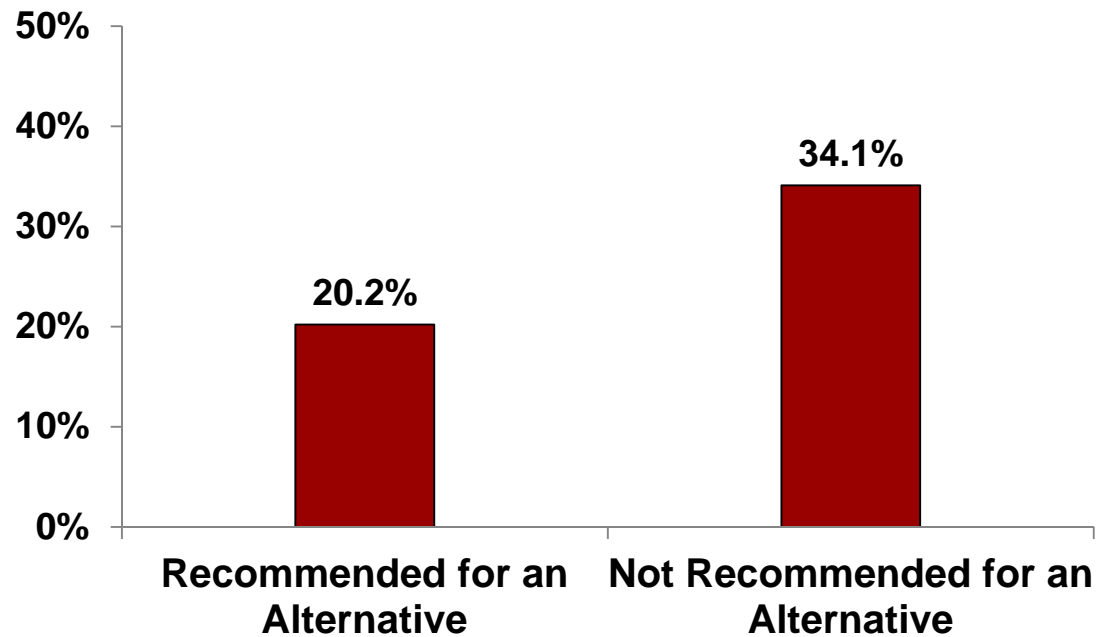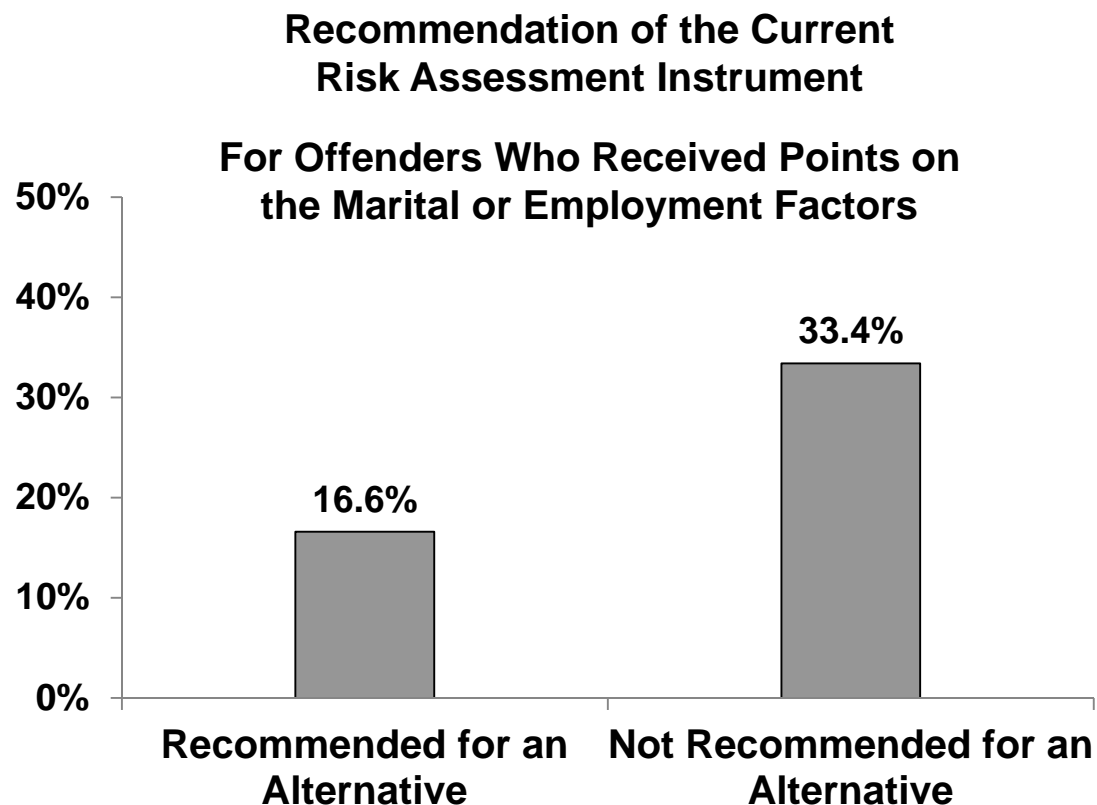Prison 1 year or more ▮▮▮ 33.0%   Median Sentence: 18 months

Total = 1,662

Analysis is based on the sample weighted to reflect the population
of offenders eligible for risk assessment

Three-Year Recidivism Rates (following release to community)
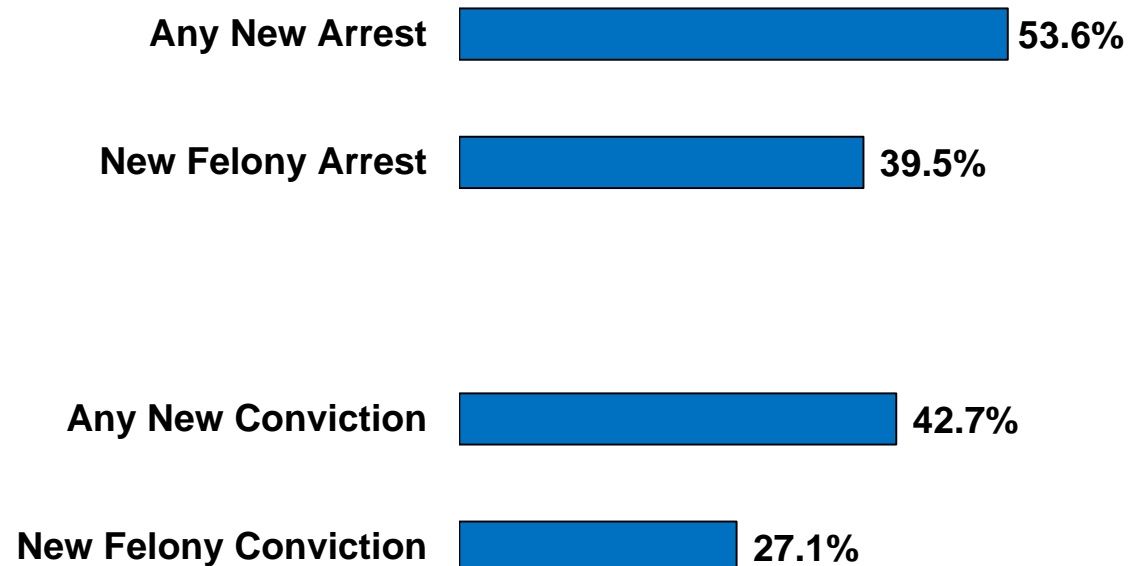
Any New Arrest	53.6%
New Felony Arrest	39.5%
Any New Conviction	42.7%
New Felony Conviction	27.1%

New conviction is measured as a new arrest within three years of release that ultimately resulted in a conviction

1,509 of the 1,662 offenders could be tracked for the full three years

Analysis is based on the sample weighted to reflect the population of offenders eligible for risk assessment

Recidivism Rate (New Felony Conviction within Three Years) by Offense Group
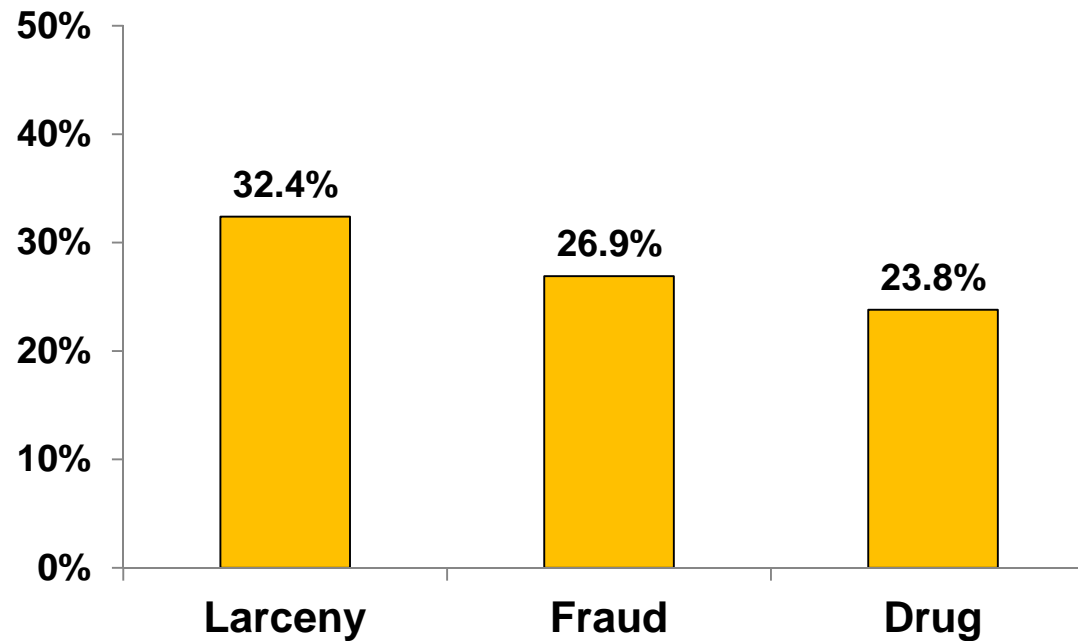
Total = 1,509

Analysis is based on the sample weighted to reflect the population of offenders eligible for risk assessment

Recidivism Rate (New Felony Conviction within Three Years) by Juvenile Record

Total = 1,509

Analysis is based on the sample weighted to reflect the population
of offenders eligible for risk assessment

Recidivism Rates (New Felony Conviction within Three Years) by Offender Characteristics

Age

Under 21	31.7%
21 to 29	28.7%
30 to 43	25.1%
44+	22.7%

Sex

Male	28.7%
Female	23.0%

Total = 1,509

Analysis is based on the sample weighted to reflect the population of offenders eligible for risk assessment

Recidivism Rate (New Felony Conviction within Three Years)

**Recommendation of the Current
Risk Assessment Instrument (as scored)**

Total = 1,509

**Analysis is based on the sample weighted to reflect the population
of offenders eligible for risk assessment**

Recidivism Rate (New Felony Conviction within Three Years)

**Recommendation of the Current
Risk Assessment Instrument**

**For Offenders Who Received Points on
the Marital or Employment Factors**

Total = 963

**Analysis is based on the sample weighted to reflect the population
of offenders eligible for risk assessment**

Scoring of Employment Record on Current Risk Assessment Instrument

- **Staff identified offenders in the study for whom an automated Pre/Post-Sentence Investigation (PSI) record was available**

- **Staff further analyzed offenders who did not receive points on the employment factor on the current risk assessment tool**

  - **The PSI revealed that nearly 36% of those offenders had not been regularly employed during the two years prior to arrest and, therefore, should have received points on the risk assessment instrument**

Scoring of Employment Record on Current Risk Assessment Instrument

- **A check box was added to the Nonviolent Offender Risk Assessment form in FY2011 to indicate when offender information is not available**

Offender Score factors A to D and enter the total score

A.	Offender is a male	8

+

B.	Offender's age at time of offense	
	Younger than 30 years	13
	30 - 40 years	8
	41 - 46 years	1
	Older than 46 years	0

+

C.	Offender not regularly employed (during 2 years prior to arrest date)	9

+

D.	Offender age 26 or more and never married (at time of offense)	6

☐ Information above not available (i.e., unable to interview defendant, defendant's lack of cooperation, etc.)

- **In addition, data entry procedures were modified to track instances where scores were missing in certain data fields**

  - **In FY2011, the check box was marked or information was missing relating to unemployment or marital status in 14.4% of eligible cases**

  - **Some offenders would not have been recommended for an alternative sanction if unemployment or marital status had been accurately scored**

Proposed Model for Drug Offenders

Assessing Risk for Drug Offenders
Comparison of Models

|	**Current Model**	**Model 1**	**Model 2**
Type of Analysis	Logistic Regression	Logistic Regression	Survival Analysis
Sample Size	327	513	571
Follow-Up	3 years	3 years	5 days – 6.7 years
Percent of Offenders Recommended for Alternative Sanctions	61.3%	To be determined	Not included in final analysis

- **While survival analysis allowed for the use of a slightly larger number of offenders in model development, the model resulting from the logistic regression method provides superior predictive ability**

  - **As a result, the model identified using logistic regression was selected as the final model**

Significant Factors in Assessing Risk for Drug Offenders
Comparison of Models

Current Model	Model 1	Model 2
Gender	Gender & Juvenile Record Combination	Gender & Juvenile Record Separately
Age	Age	
Prior Arrest/Commitment w/in 18 mos.	Prior Arrest/Commitment w/in 12 mos.	Prior Arrest/Commitment w/in 12 mos.
Prior Adult/Juvenile Felony Combination	Prior Adult Felony Convictions	Prior Adult Felony Convictions
Prior Adult Incarcerations	Prior Adult Incarcerations	Prior Adult Incarcerations
Offense Type – All Drug Offenders Get Same Score	All Drug Offenders Get Same Score	Drug Offense Type (Possession vs. Dist.)
Additional Offenses – Yes/No		
Not Regularly Employed		
Never Married by Age 26		

Significant Factors in Assessing Risk for Drug Offenders
Model 1

Relative Degree of Importance
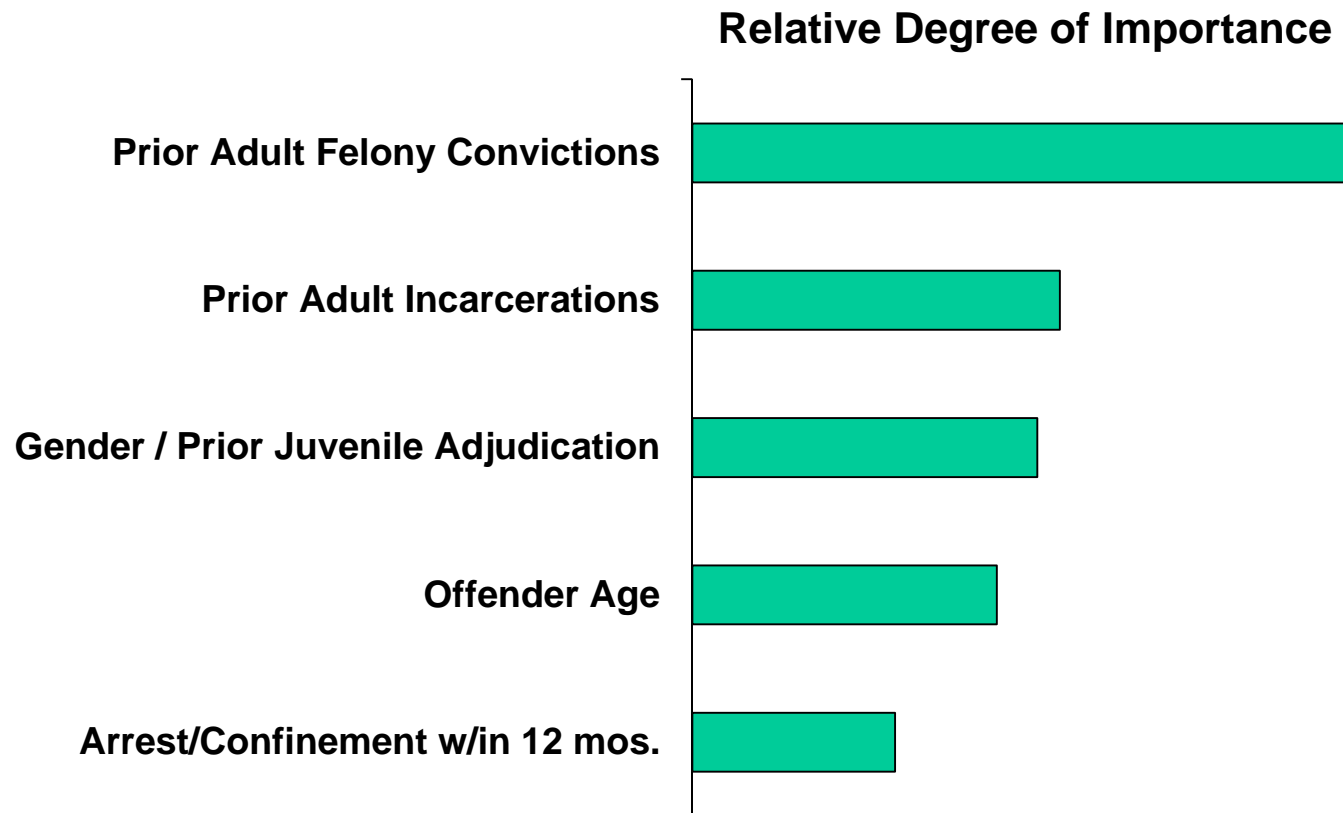
The model currently in use correctly identifies 82.6% of non-recidivists.

The proposed model correctly identifies 84.0% of non-recidivists.
A validation technique called bootstrapping was used to assess the degree of variation of this statistic across different subsamples. This figure was found to be stable across 750 subsamples.

Scoring Significant Risk Assessment Factors for Drug Offenders

◆ **Offender Age at Time of Offense**

                                                   Points

Younger than 21 years ………………… 9
21 to 29 years ………….................. 6
30 to 43 years …………………….....3
Over 43 years ……………………....1

◆ **Gender**

Offender is Male ………………….….. 2

◆ **Prior Juvenile Adjudication**

Female with prior juvenile adjudication …….. 1
Male with prior juvenile adjudication ………… 7

◆ **Prior Adult Felony Convictions**

                                                   Points

Number: 0 …………………………….... 0
            1 – 2 ……………………………1
            3 …………………………….... 5
            4 or more …………………… 15

◆ **Prior Adult Incarcerations**

                                                   Points

Number: 0 …………………………….... 0
            1 – 3 ……………………….…1
            4 or more …………………….. 8

◆ **Prior Arrest or Confinement Within Past 12 Months** (prior to offense)
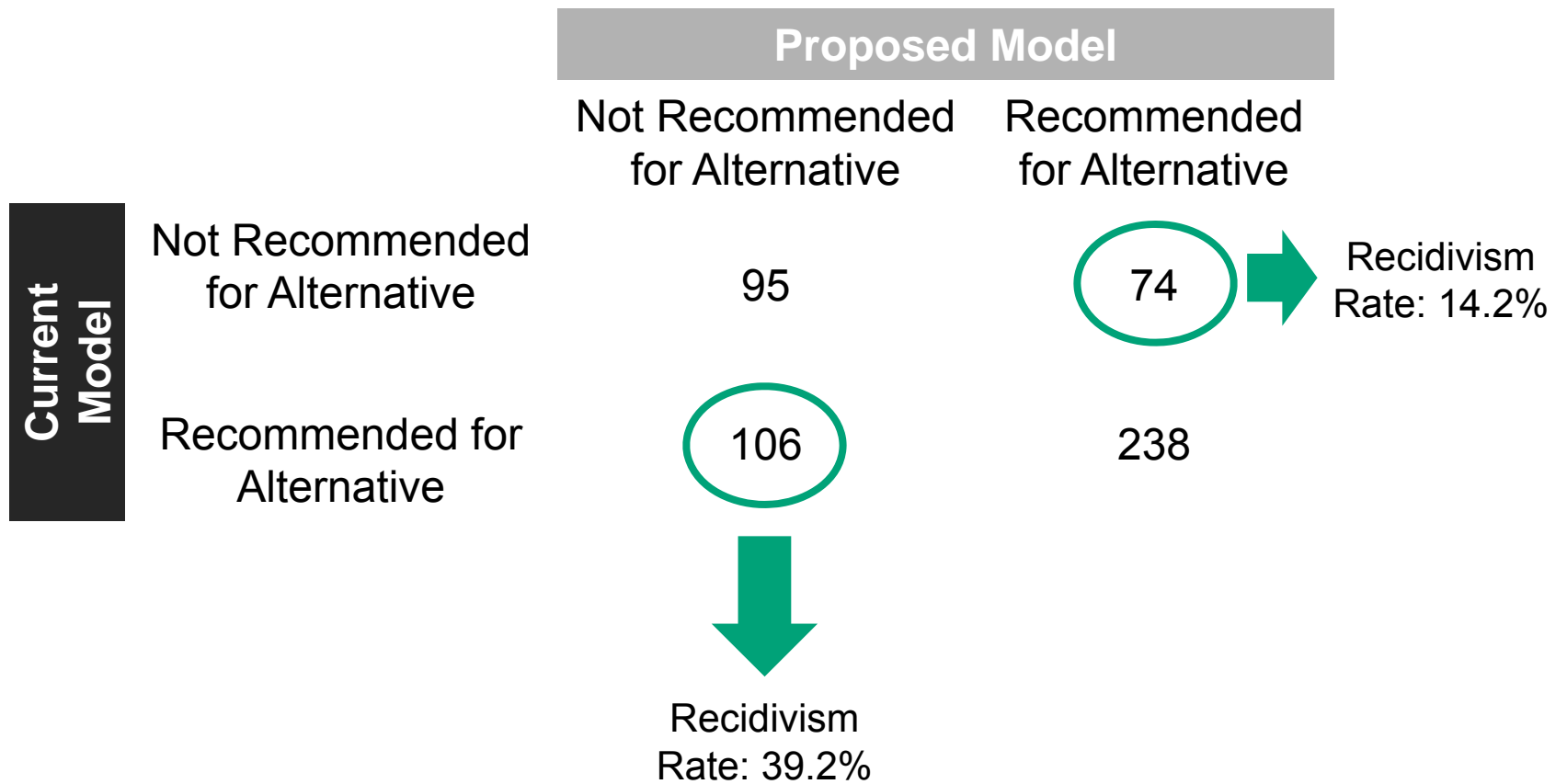
If YES, add 3

TOTAL SCORE ⟶ ☐

Scoring Significant Risk Assessment Factors for Drug Offenders:
Risk Assessment Scores
Comparing Current and Proposed Models

Current Model			Proposed Model		
Score	Percent of Offenders scoring at or below point value	Reconviction Rate for offenders scoring at or below point value	Score	Percent of Offenders scoring at or below point value	Reconviction Rate for offenders scoring at or below point value
33	43.6%	17%	14	59.1%	11.6%
34	44.9%	16.5%	15	63.2%	11.7%
35	48%	17.9%	16	65.5%	12.5%
36	54.1%	18.8%	17	67.1%	13.1%
37	56.3%	18.8%	18	71.7%	14.9%
38	61.3%	19.1%	19	75.2%	15.8%
39	66.4%	20.6%	20	77.9%	16.3%
40	69.9%	20.9%	21	80.3%	17.7%

Scoring Significant Risk Assessment Factors for Drug Offenders: Comparing Current and Proposed Models

Example:
Proposed Threshold =17

		Proposed Model	
		Not Recommended for Alternative	Recommended for Alternative
Current Model	Not Recommended for Alternative	95	74 → Recidivism Rate: 14.2%
	Recommended for Alternative	106 ↓ Recidivism Rate: 39.2%	238

Scoring Significant Risk Assessment Factors for Drug Offenders: Comparing Current and Proposed Models

Score	Rec. for Alt. on Current Model, Not Rec. on Proposed: Recidivism Rate	Not Rec. for Alt. on Current Model, Rec. on Proposed: Recidivism Rate
14	36%	10%
15	38.8%	11.8%
16	39.7%	13.9%
17	39.2%	14.2%
18	40.7%	19.5%
19	40.7%	19.5%
20	43.1%	20.3%
21	37.2%	21%

Proposed Model for
Larceny/Fraud Offenders

Assessing Risk for Larceny/Fraud Offenders
Comparison of Models

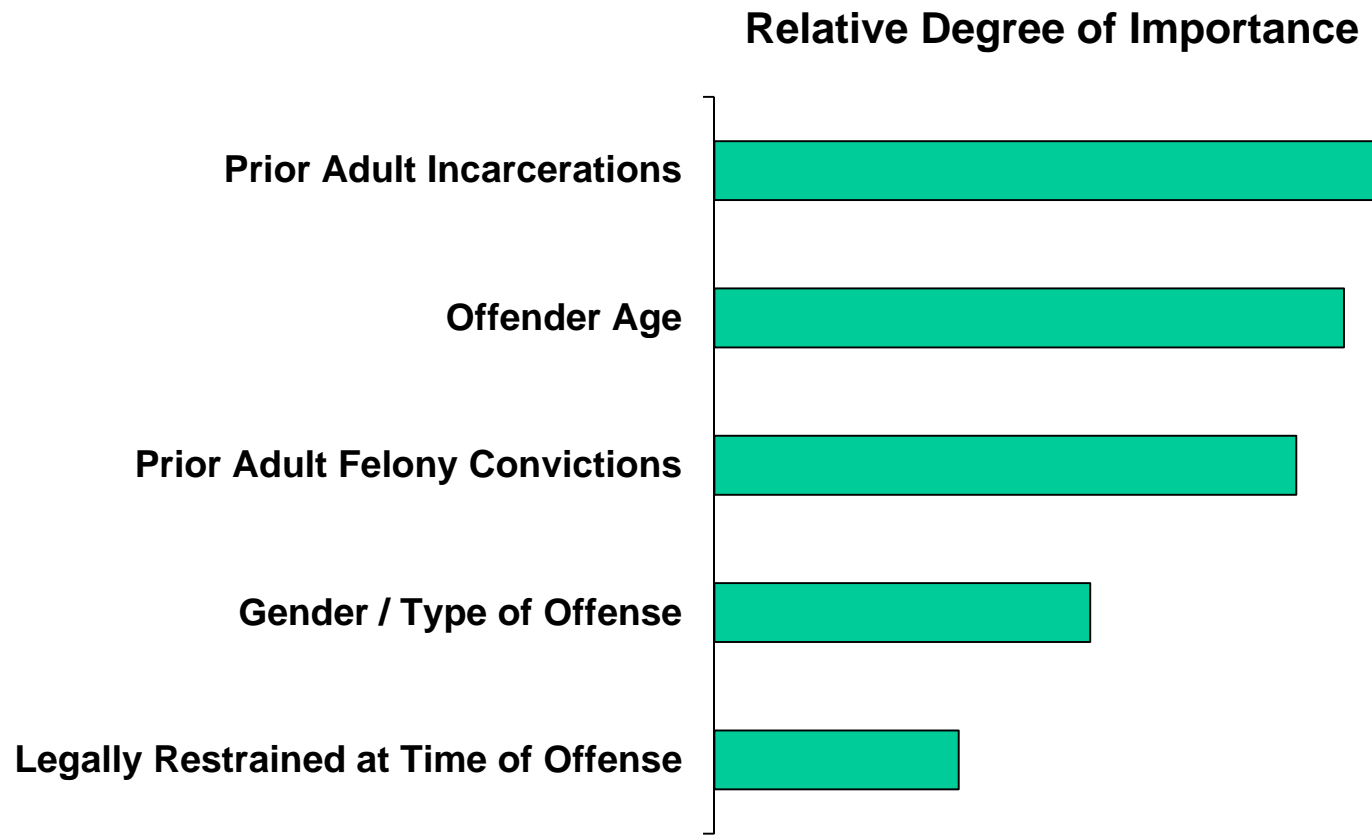|	**Current Model**	**Model 1**	**Model 2**
Type of Analysis	Logistic Regression	Logistic Regression	Survival Analysis
Sample Size	341	996	1,091
Follow-Up	3 years	3 years	12 days – 6.8 years
Percent of Offenders Recommended for Alternative Sanctions	42.6%	To be determined	Not included in final analysis

- **While survival analysis allowed for the use of a slightly larger number of offenders in model development, the model resulting from the logistic regression method provides superior predictive ability**

  - **As a result, the model identified using logistic regression was selected as the final model**

Significant Factors in Assessing Risk for Larceny/Fraud Offenders Comparison of Models

Current Model	Model 1	Model 2
Gender	Gender & Offense Type Combination	Gender & Offense Type Combination
Age	Age	Age at Offense & Age at 1st Adult Arrest
Prior Arrest/Commitment w/in 18 mos.	Legally Restrained at Time of Offense	Legally Restrained at Time of Offense
Prior Adult/Juvenile Felony Combination	Prior Adult Felony Convictions	Prior Adult Felony Convictions
Prior Adult Incarcerations	Prior Adult Incarcerations	Prior Adult Incarcerations
Offense Type – Larceny Offenders Get Higher Score		
Additional Offenses – Yes/No		
Not Regularly Employed		
Never Married by Age 26		

Significant Factors in Assessing Risk for Larceny/Fraud Offenders
Model 1

Relative Degree of Importance

Factor	
Prior Adult Incarcerations	
Offender Age	
Prior Adult Felony Convictions	
Gender / Type of Offense	
Legally Restrained at Time of Offense	

This proposed model correctly identifies 79.3% of non-recidivists.
The model currently in use correctly identifies 76.3% of non-recidivists.

Scoring Significant Risk Assessment Factors for Larceny/Fraud Offenders

◆ **Offender Age at Time of Offense**

                                    Points

    Younger than 21 years ……………….... 22
    21 to 29 years …………..…................ 16
    30 to 43 years …………………………... 7
    Over 43 years ………………………….. 1

◆ **Gender**

    Primary offense is Fraud
        Offender is Female ………………. 1
        Offender is Male ………………… 10

    Primary offense is Larceny
        Offender is Female ……………... 13
        Offender is Male …………………. 9

◆ **Prior Adult Felony Convictions**

                                      Points

    Number: 0 …………………………….... 0
              1 – 2 ……………………………5
              3 or more ……………………. 15

◆ **Prior Adult Incarcerations**

                                        Points

    Number: 0 …………………………….... 0
              1 – 9 ……………………………. 4
              10 or more …………………... 32

◆ **Legally Restrained at Time of Offense**

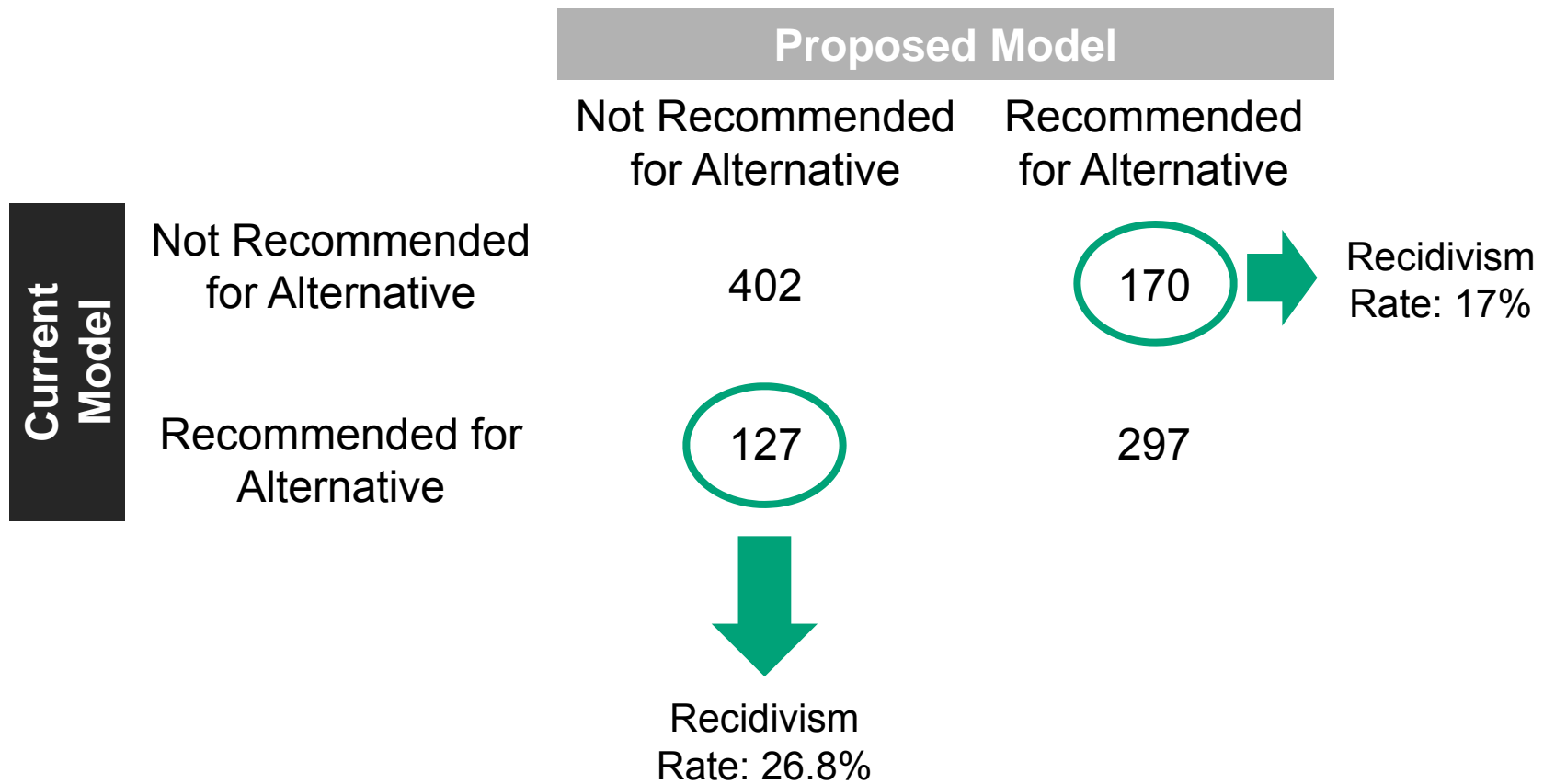   If YES, add 6

                    TOTAL SCORE ⟹ [ ]

Scoring Significant Risk Assessment Factors for Larceny/Fraud Offenders: Risk Assessment Scores
Comparing Current and Proposed Models

Current Model			Proposed Model		
Score	Percent of Offenders scoring at or below point value	Reconviction Rate for offenders scoring at or below point value	Score	Percent of Offenders scoring at or below point value	Reconviction Rate for offenders scoring at or below point value
33	28.5%	19.1%	29	37.5%	18.8%
34	30.7%	20.7%	30	38.5%	19.1%
35	32.9%	20.9%	31	41.6%	18.8%
36	36.6%	21.5%	32	46.9%	18.8%
37	39.5%	22.5%	33	49.9%	18.9%
38	42.6%	21.8%	34	50.5%	18.9%
39	47.3%	21.7%	35	56.7%	20.5%
40	50.3%	22.1%	36	59.3%	20.5%

Scoring Significant Risk Assessment Factors for Larceny/Fraud Offenders: Comparing Current and Proposed Models

Example:
Proposed Threshold =32

		Proposed Model	
		Not Recommended for Alternative	Recommended for Alternative
Current Model	Not Recommended for Alternative	402	170 → Recidivism Rate: 17%
	Recommended for Alternative	127	297

Recidivism Rate: 26.8%

Scoring Significant Risk Assessment Factors for Larceny/Fraud Offenders: Comparing Current and Proposed Models

Score	Rec. for Alt. on Current Model, Not Rec. on Proposed: Recidivism Rate	Not Rec. for Alt. on Current Model, Rec. on Proposed: Recidivism Rate
29	23%	13.2%
30	23.3%	14.8%
31	24.8%	16.6%
32	26.8%	17%
33	30.6%	18.8%
34	30.6%	19.1%
35	30.9%	22.2%
36	33.7%	22.3%