



Introduction to Risk Assessment for Criminal Justice & Related Administrators

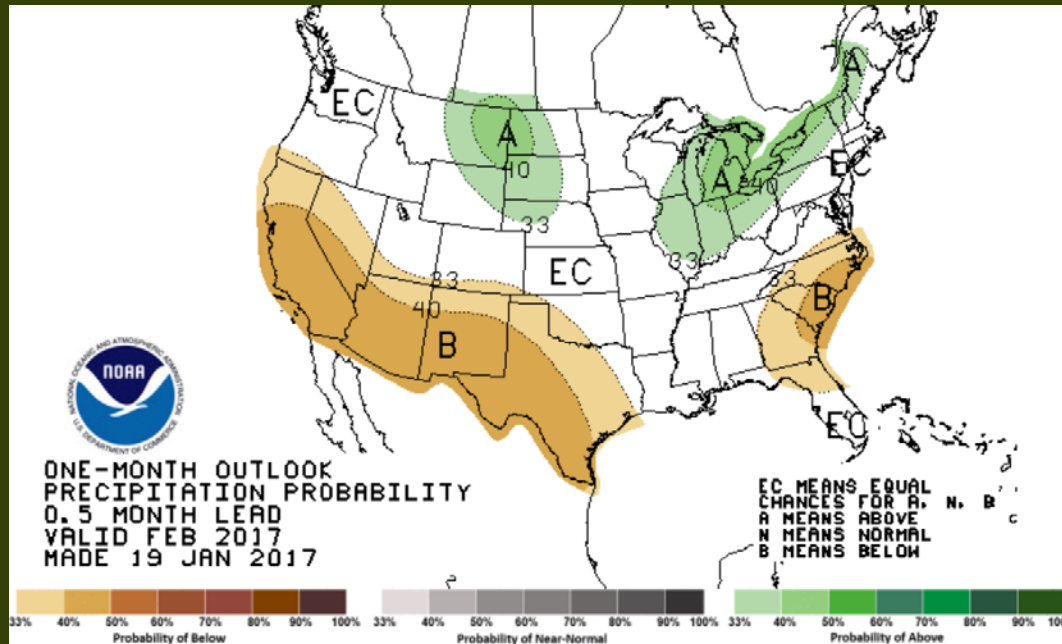
Kris Henning, Ph.D.
Portland State University

Today's Agenda

- What is forensic risk assessment?
- Why do we need risk assessments in CJ?
- How **are** risk assessments done in CJ?
- How **should** risk assessments be done in CJ?
- How are risk scales developed & evaluated?
- Recommendations for selecting and using risk assessment scales

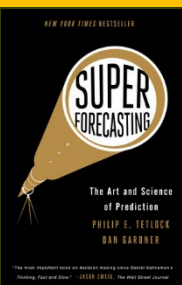
Attempts to Predict Future Happen Every Day

Weather forecasting is the application of science & technology to predict the state of the atmosphere for a given location



Motor vehicle crashes
Work performance
Political movements

Economic conditions
Sporting events
Movie preferences



What is Forensic Risk Assessment?





*Attempt to identify the probability that a given individual will engage in a specific antisocial behavior within a defined follow-up period**

* Definition suggested by Stephen Hart

What is Forensic Risk Assessment?

Attempt to identify the probability that a given individual will engage in a specific antisocial behavior within a defined follow-up period

- Errors will always occur – false positives & false negatives
- Goal is to find and use methods that minimize errors (improvement over current practices)

<u>Prediction</u>	<u>Outcome</u>	
	Not Violent	Violent
Low Risk		
High Risk		

What is Forensic Risk Assessment?

*Attempt to identify the **probability** that a given individual will engage in a specific antisocial behavior within a defined follow-up period*

- Barefoot v. Estelle (1983)
 - There is a “100% and absolute chance” that Mr. Barefoot would commit future acts of criminal violence (Dr. Grigson)
- Human behavior too complex for absolute predictions

What is Forensic Risk Assessment?

Needs Assessment: *Attempt to identify the dynamic or changeable factors in a person's life that may be causally linked to their risk for recidivism*

- Education & employment
- Housing
- Mental health
- Peer associations
- Family relationships
- Attitudes
- Leisure activities
- Alcohol & drug use

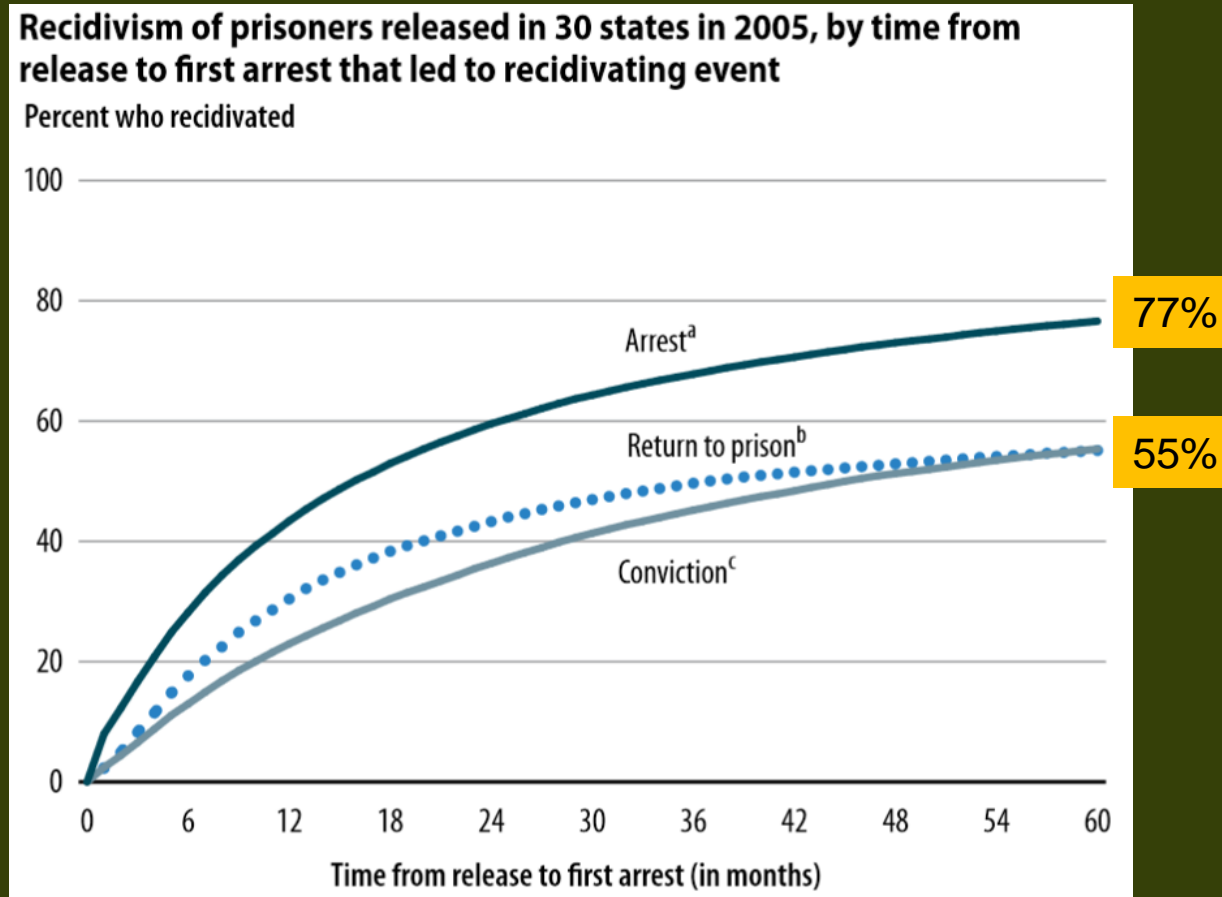
What is Forensic Risk Assessment?

Risk Management: *Development and implementation of a plan to reduce a person's risk for recidivism (i.e., address need areas)*

- Restrictions (e.g., people, locations, firearms)
- Expectations (e.g., maintain employment, education)
- Supervision (e.g., frequency, home visits)
- Monitoring (e.g., random drug/alcohol testing, GPS)
- Treatment (e.g., BIP, sex offender group)

Why Do We Need Risk Assessments?

■ Recidivism happens.....a lot

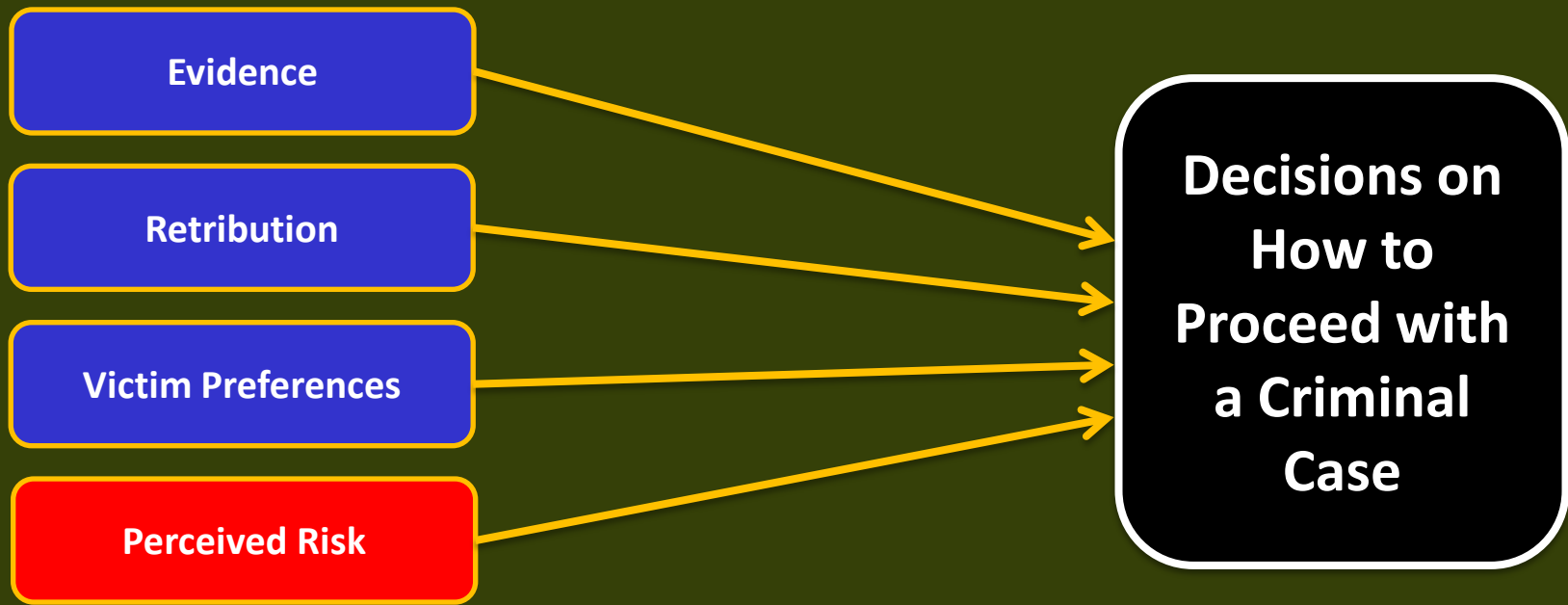


BJS (2014) study with 30 states and 404,638 inmates released from prison in 2005

Why Do We Need Risk Assessments?

- Efforts to reduce recidivism are significantly more effective when we attend to **risk** (Bonta & Andrews, 2017)
 - **R**isk - Prioritize resources for highest risk offenders
 - **N**eeds - Focus efforts on changing dynamic risk factors linked to crime & recidivism
 - **R**esponsivity - Use treatment approaches that are proven to be effective with offenders (e.g., behavioral and cognitive-behavioral interventions)
- 33% lower recidivism from programs that adhere to principles of RNR (Dowden & Andrews, 2006)

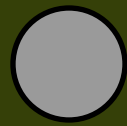
How Are Risk Assessments Done in CJ?



“Prediction of future criminal conduct is an essential element in many of the decisions rendered throughout our criminal justice system.”

Justices Stewart, Powell, and Stevens
in *Jurek v. Texas*, 428 U.S. 262 (1976)

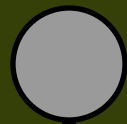
How Are Risk Assessments Done in CJ?



Unstructured Professional Judgment

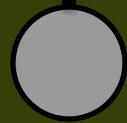
- *“Based on my 12 years of experience in (insert from list below) I would say this guy will almost certainly be arrested again.”*
 - Law Enforcement
 - Corrections
 - Prosecution
 - Psychiatry/Psychology/Social Work
- Most common form of decision-making in CJ system

How Are Risk Assessments Done in CJ?



Unstructured Professional Judgment

- *“Based on my 12 years of experience in _____ I would say this guy will almost certainly be arrested again.”*



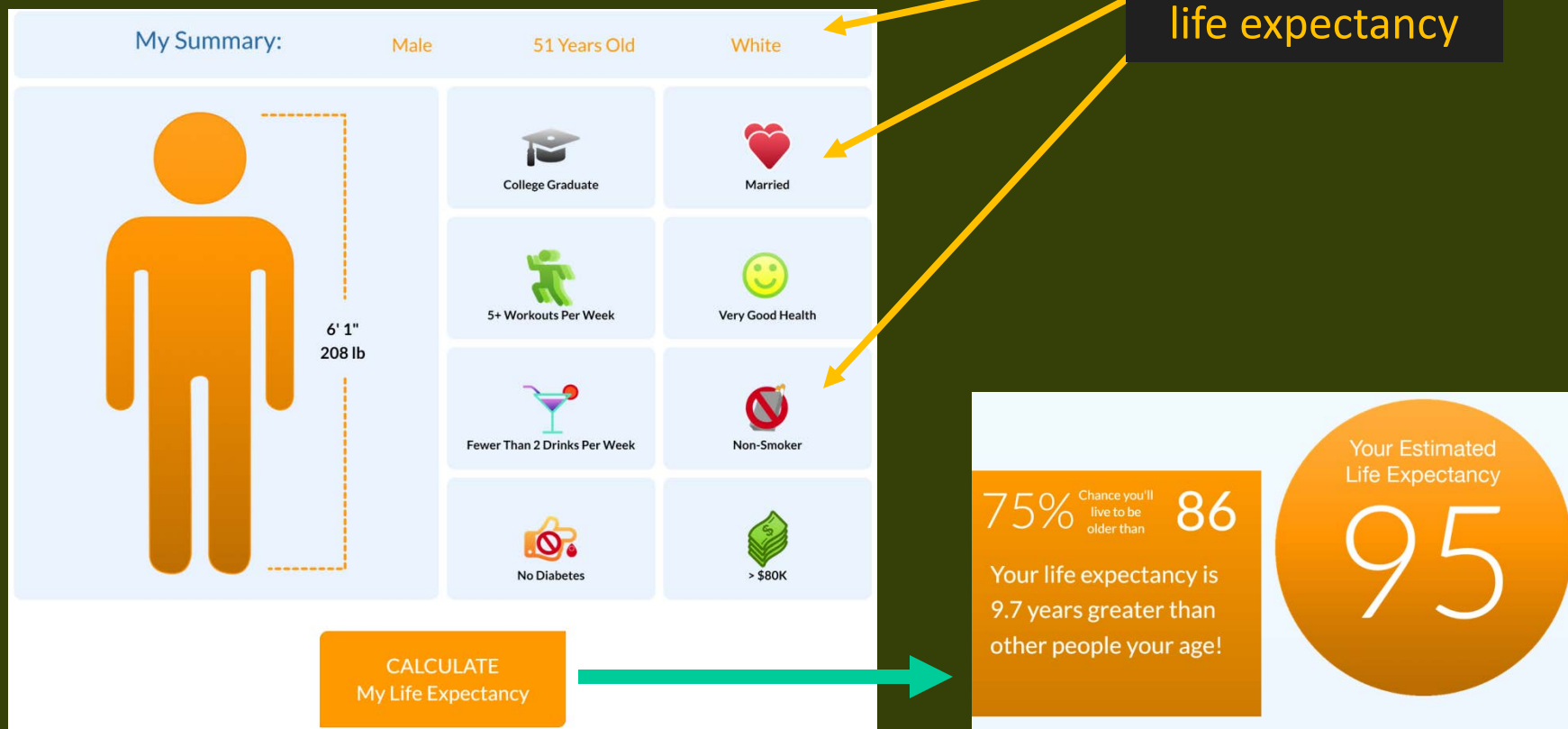
Actuarial Risk Assessment

- Statistical formulas or algorithms that combine risk factors to maximize accuracy of predicting targeted outcome in a “developmental sample”

How Are Risk Assessments Done in CJ?

Actuarial Prediction of Life Expectancy

Factors
associated with
life expectancy

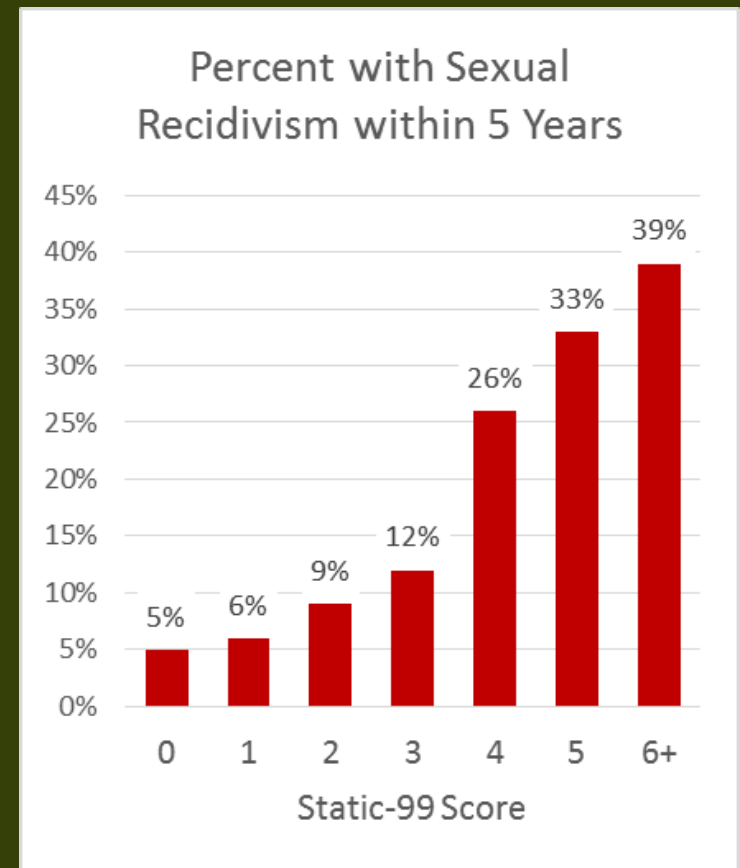


Based on data from 500,000 people (<https://www.myabaris.com/tools/life-expectancy-calculator-how-long-will-i-live/>)

How Are Risk Assessments Done in CJ?

Question Number	Risk Factor	Codes	Score										
1	Young (S9909)	Aged 25 or older Aged 18 – 24.99	0 1										
2	Ever Lived With (S9910)	Ever lived with lover for at least two years? Yes No	0 1										
3	Index non-sexual violence - Any Convictions (S9904)	No Yes	0 1										
4	Prior non-sexual violence - Any Convictions (S9905)	No Yes	0 1										
5	Prior Sex Offences (S9901)	<table><tr><th>Charges</th><th>Convictions</th></tr><tr><td>None</td><td>None</td></tr><tr><td>1-2</td><td>1</td></tr><tr><td>3-5</td><td>2-3</td></tr><tr><td>6+</td><td>4+</td></tr></table>	Charges	Convictions	None	None	1-2	1	3-5	2-3	6+	4+	0 1 2 3
Charges	Convictions												
None	None												
1-2	1												
3-5	2-3												
6+	4+												
6	Prior sentencing dates (excluding index) (S9902)	3 or less 4 or more	0 1										
7	Any convictions for non-contact sex offences (S9903)	No Yes	0 1										
8	Any Unrelated Victims (S9906)	No Yes	0 1										
9	Any Stranger Victims (S9907)	No Yes	0 1										
10	Any Male Victims (S9908)	No Yes	0 1										
	Total Score	Add up scores from individual risk factors											

Hanson's Static-99 for recidivism by sex offenders

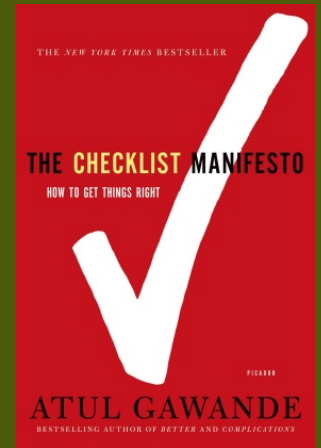


How Are Risk Assessments Done in CJ?

Unstructured Professional Judgment

Structured Professional Judgment

- “Checklist” of risk factors must consider
- Items supported by research and/or theory
- Evaluator has discretion in how items are combined & weighted
- Pilots pre-flight checklist; Surgical checklist



Actuarial Risk Assessment

How Should Risk Assessments Be Done in CJ?

- Statistical (actuarial) methods are more accurate in a broad range of decision-making activities (Grove & Meehl, 1996; Aegisdottir et al., 2006)
 - Violence, recidivism
 - Academic functioning
 - Job performance
 - Response to medical treatments
 - Sports (Oakland A's) —

How Should Risk Assessments Be Done in CJ?

- Problems with unstructured risk assessments
 - **Overconfidence** – people are overconfident in ability to predict; fail to acknowledge, learn from past errors
 - **Poor inter-rater reliability** – people assessing same offender often arrive at different conclusions; reliability sets statistical boundary on accuracy
 - **Overemphasis** – too much weight to items/factors that may not predict outcome (severity of index crime)
 - **Racial/ethnic bias** – conscious/unconscious bias based on race, ethnicity, gender, SES, etc.

How Should Risk Assessments Be Done in CJ?

- Legitimacy of CJ system enhanced when we:
 - Make **consistent/reliable** decisions
 - Make **accurate** decisions
 - Make **unbiased** decisions
 - Make **transparent** decisions
 - Make **timely** decisions
 - Use our limited resources **efficiently**
- Actuarial & structured risk assessments, when done well, can help achieve these goals

How Are Actuarial Risk Scales Developed & Evaluated?

Violence Risk Scale (Henning & Renauer, 2015)

1. Specify population or group you are trying to make predictions about
 - Released from prison or starting probation term in Oregon
2. Specify what are you trying to predict (outcome)
 - New “violent” crime within 3 years
3. Find sample with known outcomes to use in developing new scale
 - 24,000 felony offenders in Oregon DOC (2008 or 2009)

How Are Actuarial Risk Scales Developed & Evaluated?

4. Collect information on **possible risk factors** for each case at **time 1** (prison release/start of probation)
 - **LEDS** – state arrest records (e.g., age at first arrest, total number of arrests, arrests for violence in past 5 years, criminal diversity)
 - **DOC** – Prior custody cycles (e.g., prior prison sentence, revocation of conditional release)
 - **JJIS** – Juvenile Justice Information System (e.g., age at first referral, total number of referrals)
 - **Misc. Sources** – Demographics (e.g., current age, gender)

How Are Actuarial Risk Scales Developed & Evaluated?

5. Code outcome at end of follow-up time for each case (time 2)
 - Yes/no for violent arrest in 3 years since release or start of probation*

*PARTIAL LIST

Assault (I, II, III, IV)

Harassment (A Misd., Aggravated)

Intimidation (I, II)

Kidnapping (I, II)

Murder

Rape (I, II, III)

Stalking Felony

Strangulation Felony

Trafficking In Persons

Unlawful Sexual Penetration (I, II)

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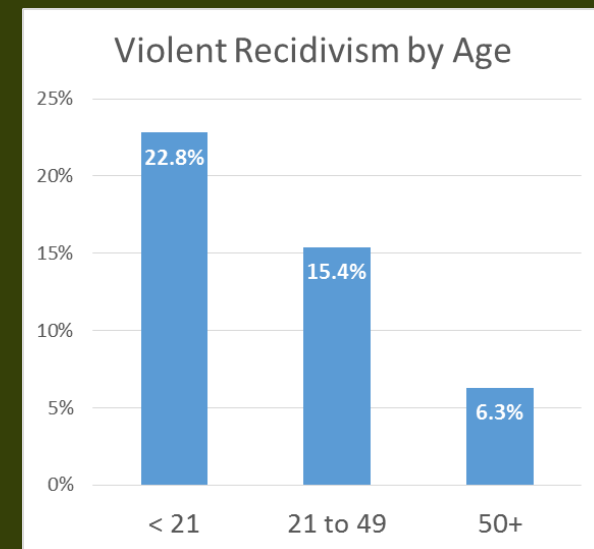
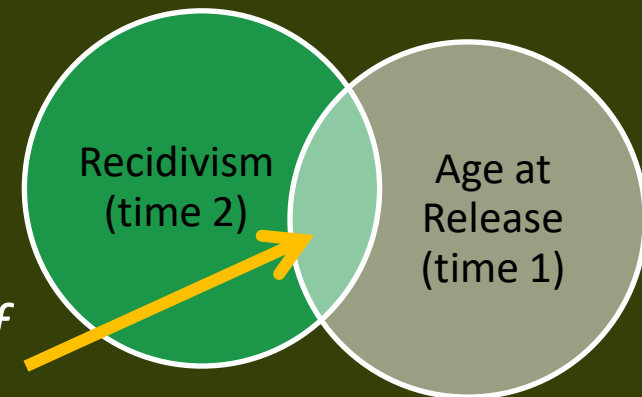
How Are Actuarial Risk Scales Developed & Evaluated?

6. Identify individual risk factors that predict outcome (bivariate analyses)

- **Correlation** (range -1 to 1, 0 = no relationship)

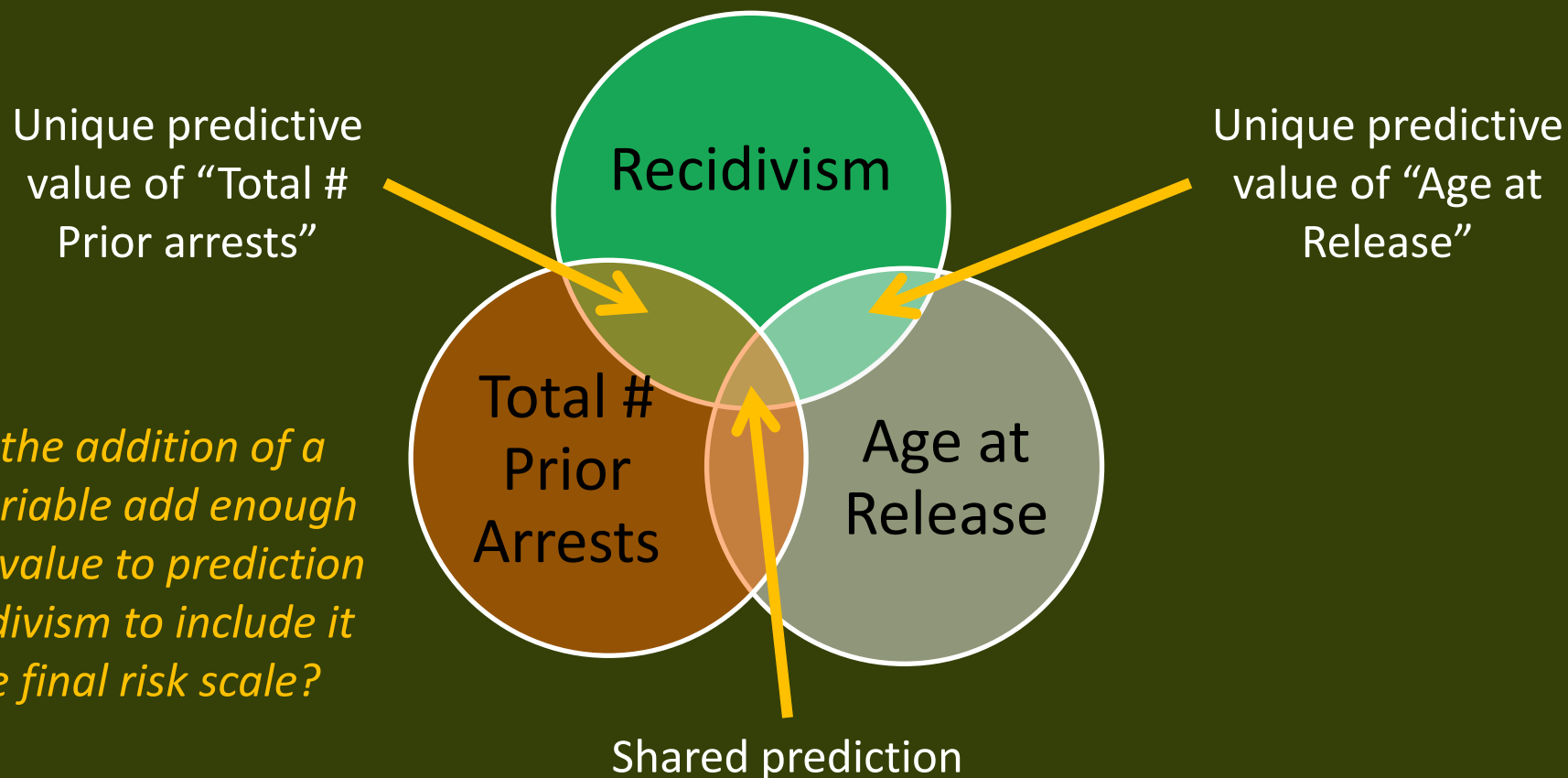
-.16 = “younger age at release (start of probation) is associated with higher likelihood of subsequent arrest for violence”

- Categorical analysis →



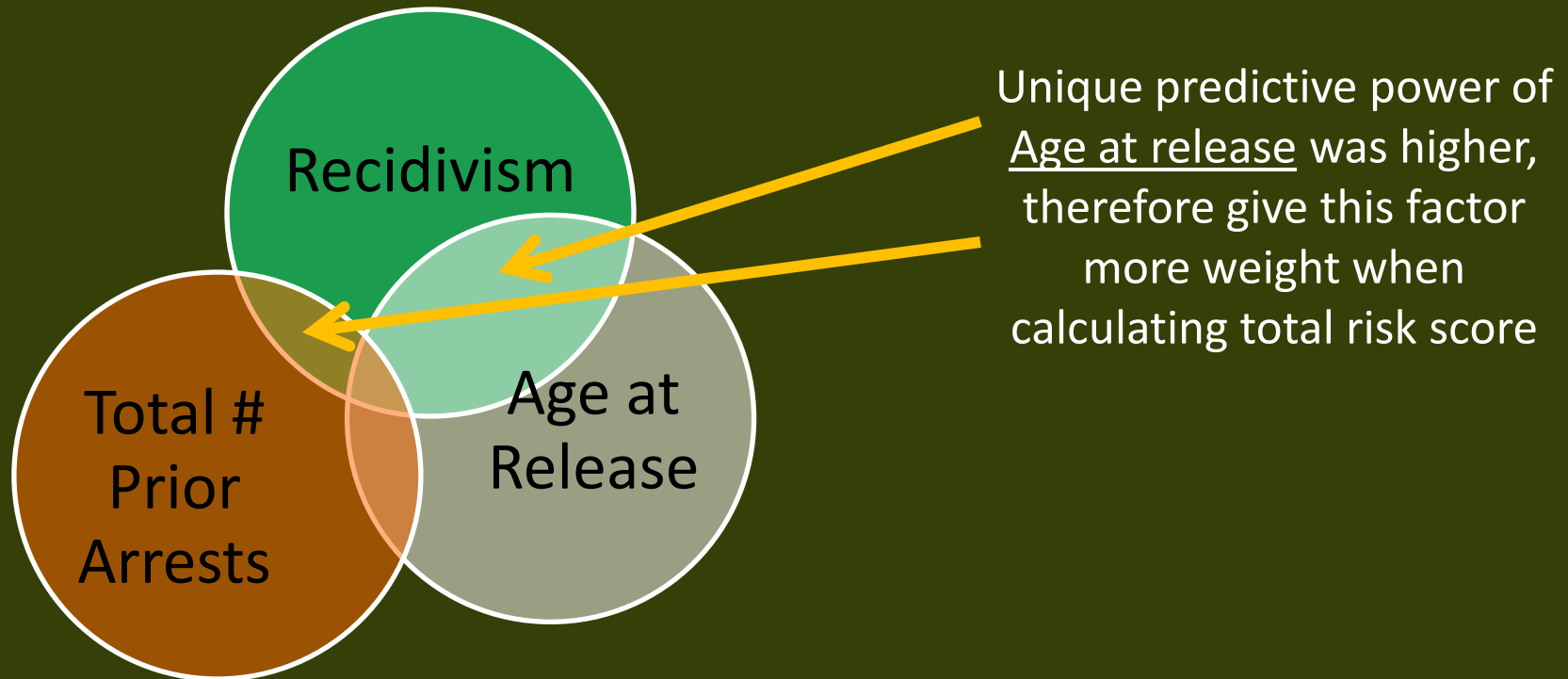
How Are Actuarial Risk Scales Developed & Evaluated?

7. Combine individual risk factors to obtain most **robust** and **efficient** prediction of targeted outcome



How Are Actuarial Risk Scales Developed & Evaluated?

8. Identify items weights (often but not always done)



How Are Actuarial Risk Scales Developed & Evaluated?

9. Calculate **total risk score** for each case by adding up points/weights

POINTS

1. Current Age of the Suspect/Defendant/Offender (any reliable source).....

< 21.....

21 to 49.....

50+.....

+1

0

-1

2. Any Conviction for Assault Offense (DOC or Court Records)

No

Yes

0

+ 1

Include any conviction in past for Assault (I to IV), Strangulation, Menacing, Reckless Endangerment, Criminal Mistreatment, Assault of a Public Safety Officer, Use of Mace/Stun Gun/Tear Gas, Aggravated Harassment, or Environmental Endangerment.

3. Any Revocation of Release to Community (DOC)

No

Yes

0

+ 1

4. Age at First Criminal Referral to Juvenile Justice System (JJIS)

< 13

13 to 17.....

No Juvenile Referrals ...

+2

+1

0

5. Number of Criminal Referrals to Juvenile Justice System (JJIS)

0 or 1.....

2 to 3.....

4+.....

0

+1

+3

6. Diversity of Arrests in Past 5 Years (LEDS).....

4 or less.....

5.....

6+.....

0

+1

+2

Count of the offense categories from the attached Arrest History Review where the person had at least one arrest over the past 5 years.

6. Arrests for Trespass, Mischief, Vandalism in Past 5 Years (LEDS)

None

1.....

2+.....

0

+1

+3

Applicable offenses are listed in the attached Arrest History Review. Count each arrest date with two or more of these offenses as a single arrest.

7. Arrests for Assault in Past 5 Years (LEDS).....

None

1.....

2+.....

0

+1

+3

Applicable offenses are listed in the attached Arrest History Review. Count each arrest date with two or more of these offenses as a single arrest.

8. Arrests for Assault More Than 5 Years Ago (LEDS)

0 or 1.....

2.....

3+.....

0

+1

+2

Applicable offenses are listed in the attached Arrest History Review. Count each arrest date with two or more of these offenses as a single arrest.

9. Age at 1st arrest (LEDS)

18 or less.....

19 to 24.....

25 to 44.....

45+.....

+1

0

-1

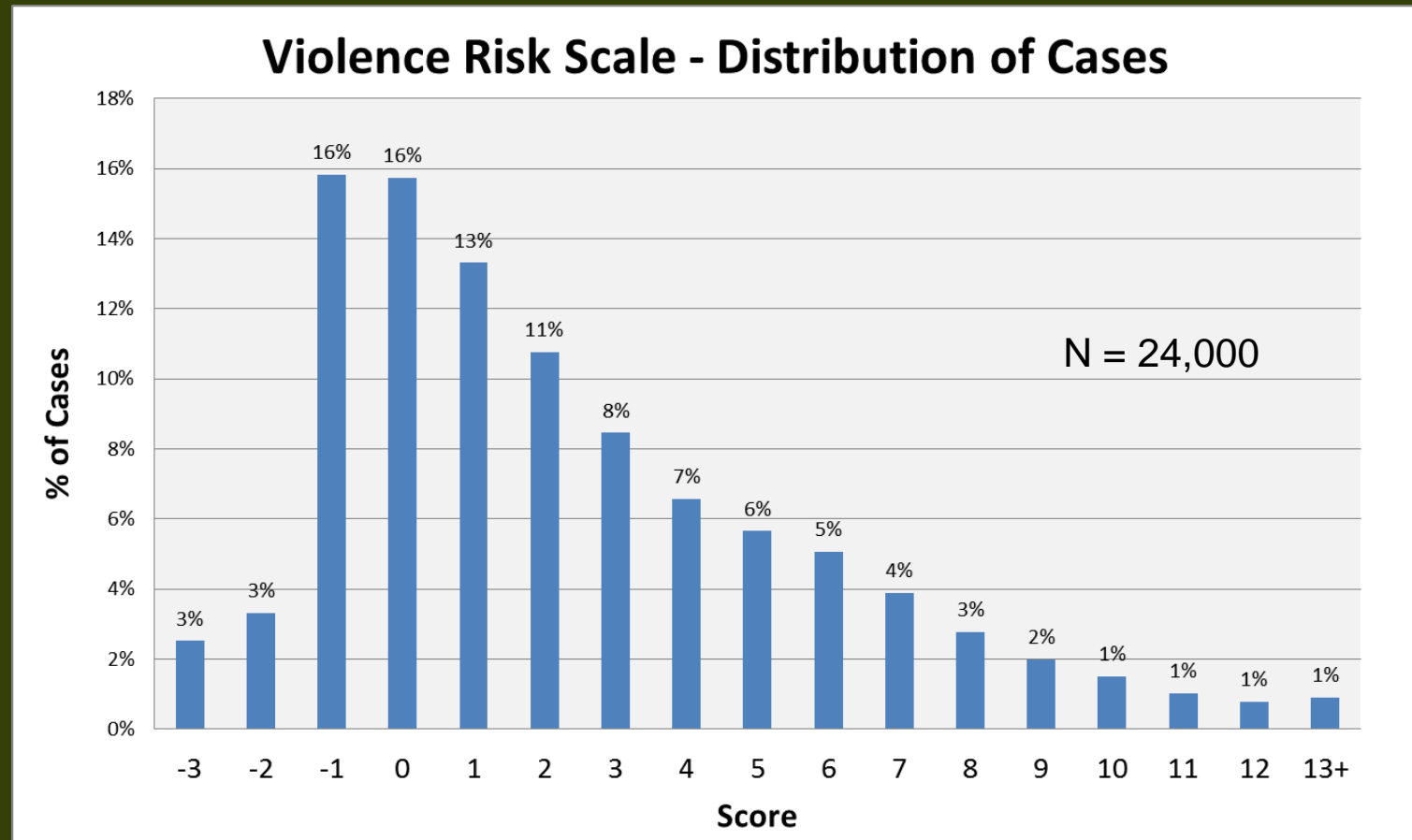
-2

Applicable offenses are listed in the attached Arrest History Review. Count each arrest date with two or more of these offenses as a single arrest.

TOTAL POINTS

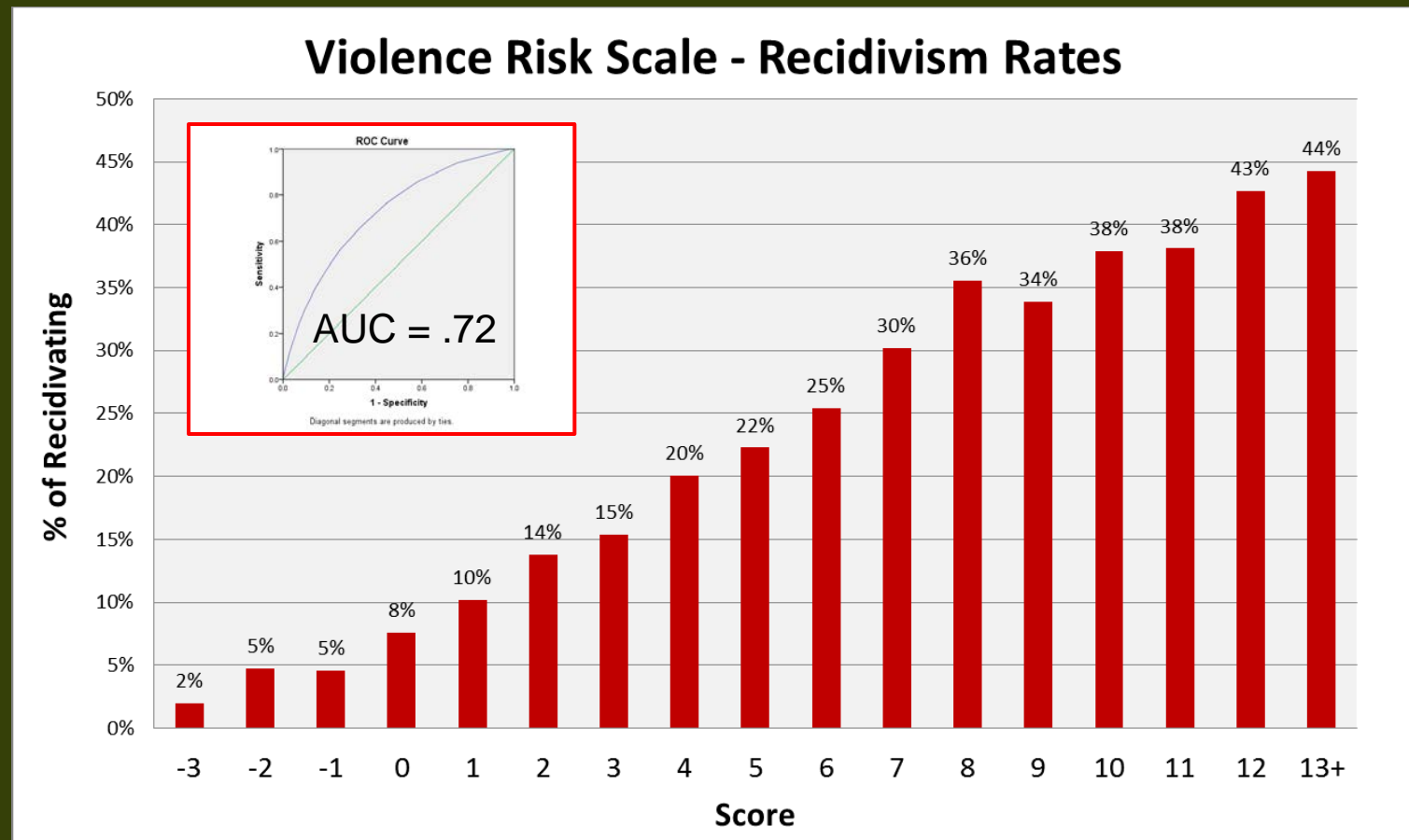
How Are Actuarial Risk Scales Developed & Evaluated?

10. Examine distribution of **total scores** to ensure that scale differentiates offenders in developmental sample



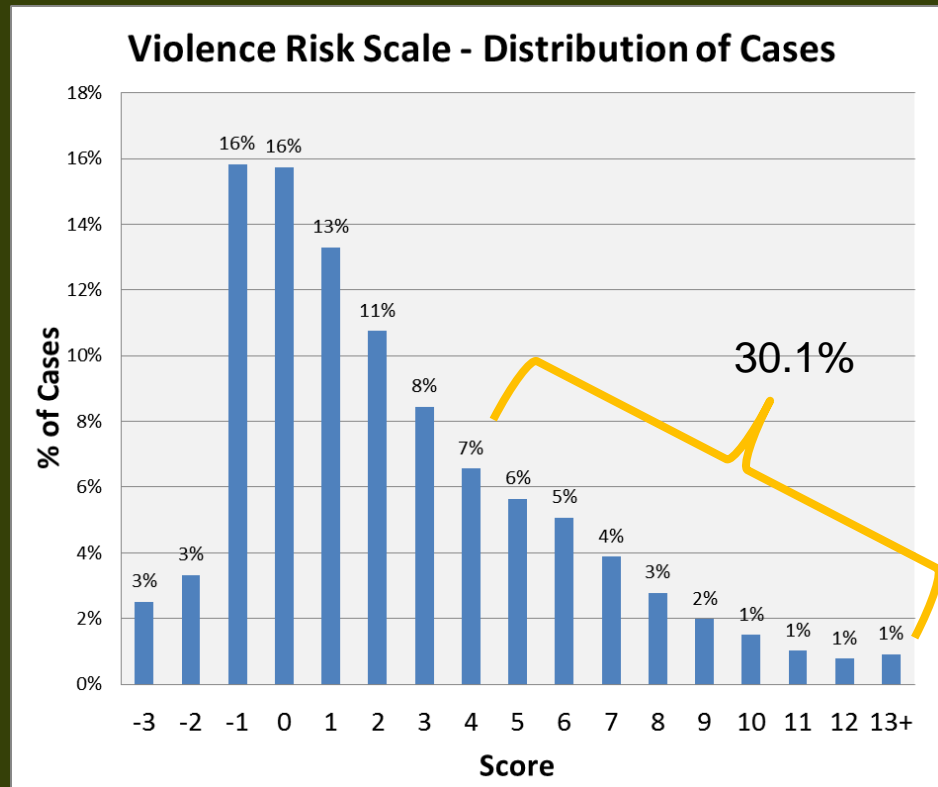
How Are Actuarial Risk Scales Developed & Evaluated?

11. Look at recidivism rates for people at each **total score** to assess accuracy of prediction – calculate statistics



How Are Actuarial Risk Scales Developed & Evaluated?

12. Consider cutoffs on **total score** for risk groups (no universally accepted threshold for “Low”, “Med” or “High”)



Capacity-Based Cut Points

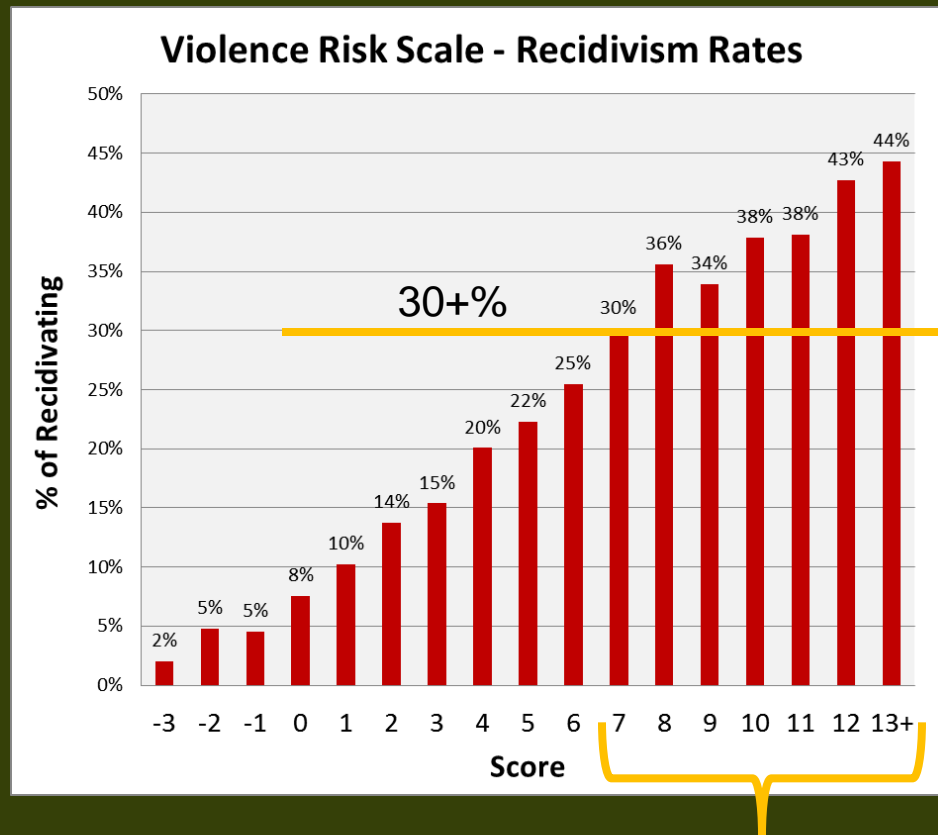
We can handle about 30% of our caseload at the highest supervision level

-- Hence --

Anyone scoring 4 or more on the scale will be labeled “High risk”

How Are Actuarial Risk Scales Developed & Evaluated?

12. Consider cutoffs on **total score** for risk groups no universally accepted threshold for “Low”, “Med” or “High”)



Outcome-Based Cut Points

We are concerned about anyone with a 30% or higher risk for recidivism

-- Hence --

Anyone scoring 7 or more on the scale will be labeled “High risk”

How Are Actuarial Risk Scales Developed & Evaluated?







13. Compare new scale to other approaches to assess predictive accuracy

Violence Risk Scales	AUC
Historical, Clinical, and Risk Management (HCR-20)	.71
Risk Matrix 2000 for Violence (RM2000V)	.70
Violence Risk Scale	.72
Violence Risk Appraisal Guide (VRAG)	.68
General Statistical Infor. for Recidivism (GSIR)	.68
Level of Service Inventory (LSI/LSI-R)	.65
Violence Risk Scale (VRS)	.65

AUC's for other scales from Yang, Wong, & Coid's (2010) meta-analysis on violence prediction

How Are Actuarial Risk Scales Developed & Evaluated?

14. Ensure raters using the scale can complete it reliably

Case	Rater 1	Rater 2	Reliability
	5	5	
	12	2	
	9	9	

The reliability of a scale sets a boundary on the potential accuracy of the scale in predicting outcomes



Not Reliable or
Accurate



Reliable but Not
Accurate



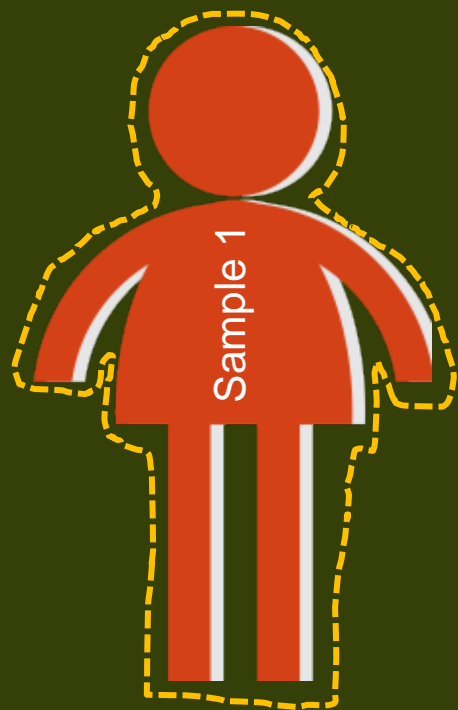
Reliable &
Accurate



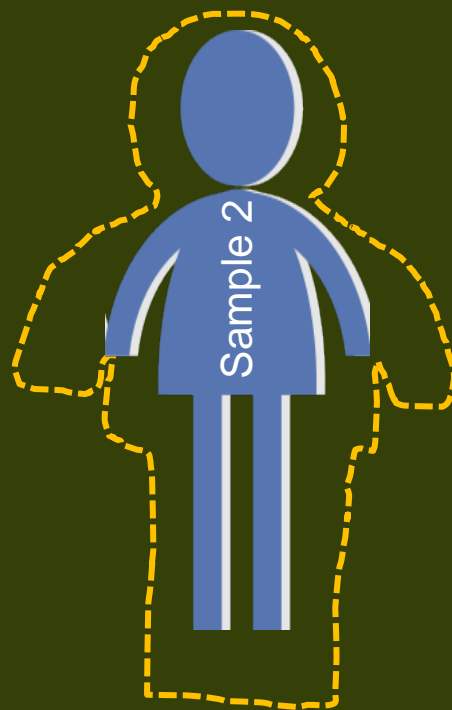
How Are Actuarial Risk Scales Developed & Evaluated?

15. Determine whether scale works equally well on other samples (cross-validation)

The statistical procedures often used in creating a new scale maximize “fit” to the developmental sample



Expect some “shrinkage”



AUCs

Original VRS = .72

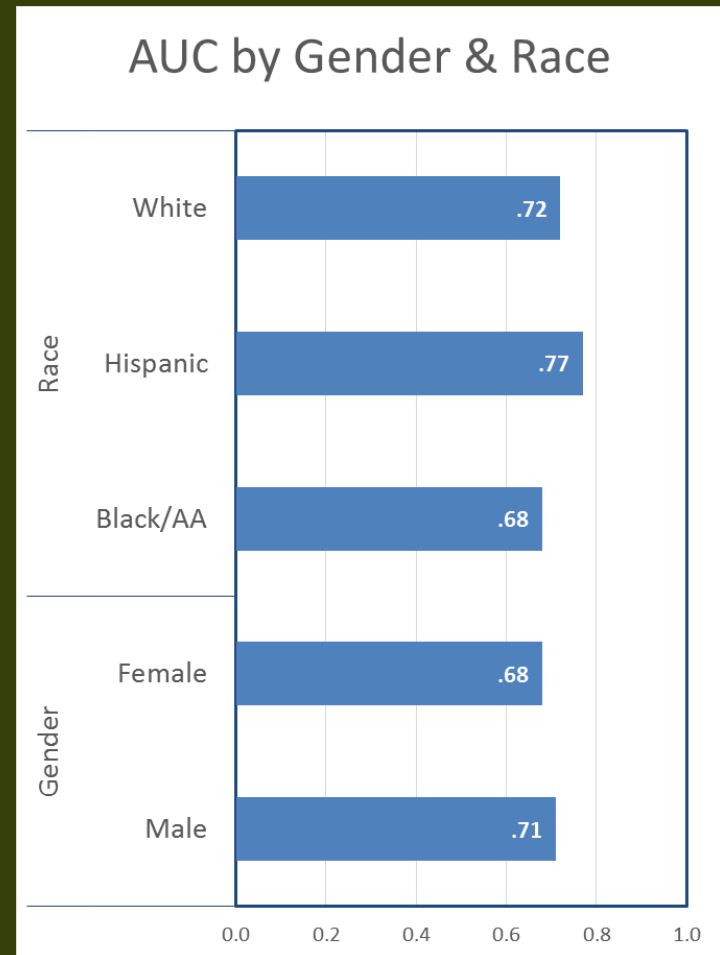
Cross-validation* = .70

*Sample of 2,815

How Are Actuarial Risk Scales Developed & Evaluated?

16. Assess whether scale works equally well for different demographic groups

Can also assess mean differences in total scores and, if cut points are used, proportion of each group falling into “low”, “med”, & “high”

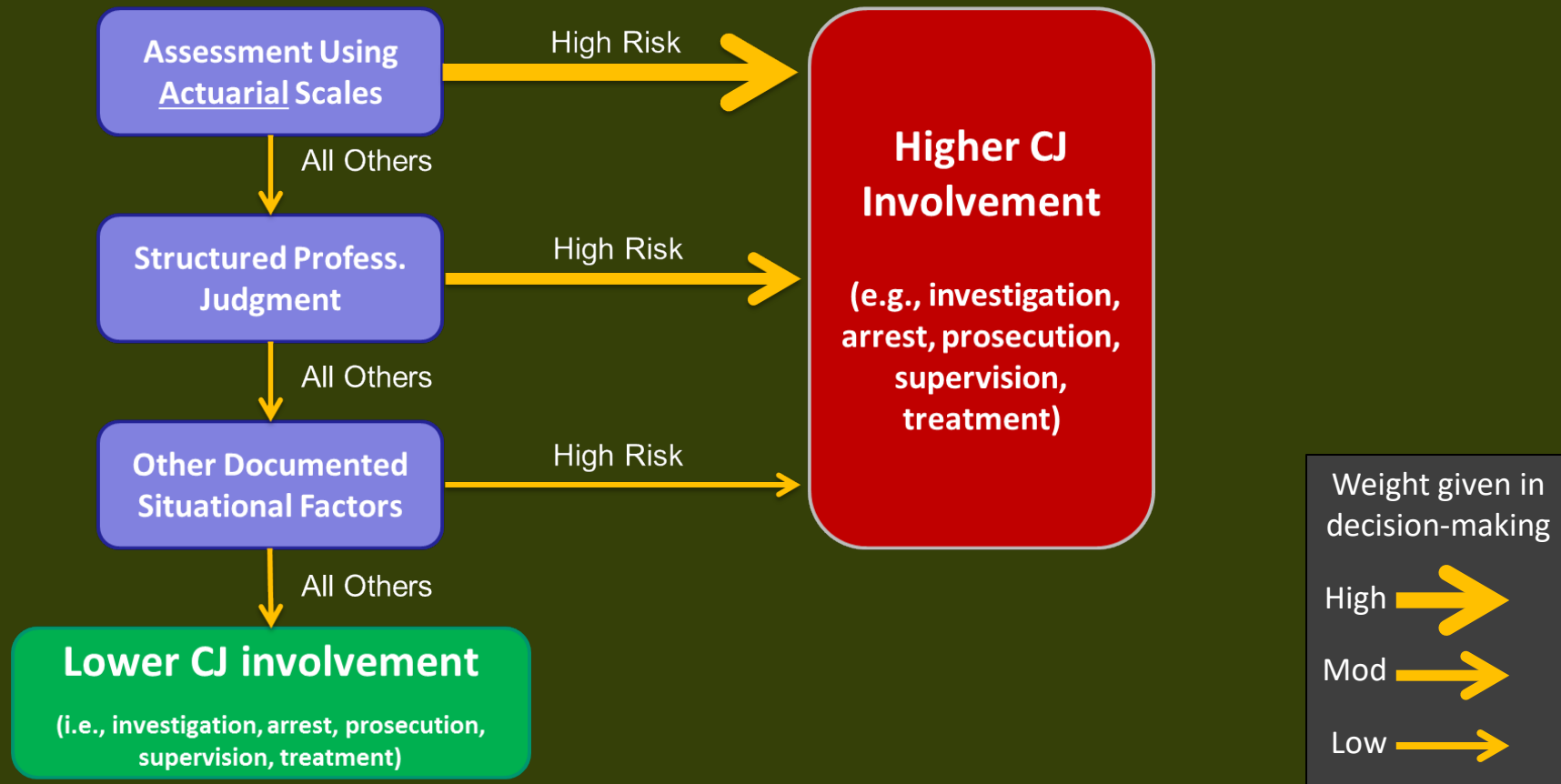


Recommendations on Selecting & Using Risk Scales

- Recognize limitations of different strategies
 - Unstructured professional judgement **alone**:
 - Likely to produce more false positives and false negatives
 - Less reliable across evaluators
 - Greater susceptibility to implicit bias
 - Actuarial scale **alone** - may miss acute issues:
 - Detailed fantasies involving killing spouse
 - Lost job last month and has no source of income
 - Resumed use of heroin ten days ago
 - Recently re-acquainted with former gang

Recommendations on Selecting & Using Risk Scales

- Use multiple approaches and access different sources of information (multi-method & multi-source)



Recommendations on Selecting & Using Risk Scales

- **Carefully assess your agency's goals and capacity**
 - Risk Assessment **vs.** Needs Assessment
 - Balance predictive accuracy **vs.** additional time, effort, and cost
- **Monitor implementation and use of new strategy**
 - Training to ensure high inter-rater reliability
 - Monitor overrides and distribution of cases (e.g., low, mod, high)
 - Evaluate how risk assessments are being used (not used)
 - Monitor impact on race, ethnicity, gender
 - Periodically revalidate scale

Recommendations on Selecting & Using Risk Scales

- Exercise caution in interpreting/presenting risk assessment findings:



“This offender has a 43% chance of recidivating, making him a serious threat to the community.”



“43% of the people in the VRS’s developmental sample with a demographic and in-state criminal history profile similar to the current offender recidivated with a new violent crime in Oregon within three years of starting probation. This places him in the DOC’s high risk category, defined as a score at the 85thile or higher on the VRS.”



Introduction to Risk Assessment for Criminal Justice & Related Administrators

Kris Henning, Ph.D.
Portland State University

khenning@pdx.edu
503-725-8520