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Base rates: who cares?

• The base rate for recidivism determines:

- The opportunity cost of prevention vs. containment
- The difficulty in identifying risk factors
- The performance characteristics of risk assessment methods
- The utility of ROC Area Under the Curve values.



What to do?

- Mostly, JSO risk borrows from theory or adult risk factors (except the JSORRAT-II)
- Most adult risk factors fail with juveniles
 - Male child victim:
 - Robust predictor with adult offenders
 - 18 studies in JSO's, 16 found no relationship with sexual recidivism; 2 found a protective effect (lower sexual recidivism among JSO's with a male victim).
 - Prior sexual offense
 - 16 studies; 13 *n.s.*; 3 significant.

Nature and limits of ROC analysis

- ROC was initially developed to evaluate the relative predictive accuracy of radar systems.
- In radar systems; as you adjust the sensitivity dial, you evaluate whether you get a ping and whether it is accurate.
- Utility of a risk scale with a significant AUC depends on how it's used, and it's calibration.

Mossman (19	994)		
Ultimate Outcome Status	Prediction	Polly	Libby
Violent (<i>n</i> = 100)			
	Admit (high risk)	93	50
	Release (low risk)	7	50
Non violent (<i>n</i> = 900)			
	Admit (high risk)	450	60
	Release (low risk)	450	840
Fraction correct		-54	.89
ROC AUC		.856	.856



ROC illustration

- 1000 imaginary people classified using an imaginary scale
- The scale has 5 risk levels
- The base rate is 10%





Risk level	Total number	Recidivism rate	Number of recidivists
1- Low	480	4.0%	20
2 – Mod Low	210	8.0%	20
3 - Moderate	105	16.0%	20
4 – High	50	26.7%	20
5 – Very High	30	40.0%	20



Decline in Juvenile Sexual Recidivism Study

Meta-analysis of JSO recidivism

- Search of several databases, gov't reports, unpublished data, dissertations, conference presentations and posters, etc.
- Studies included if they had:
 - N > 20, mostly male adolescent JSO's
 - Not heavily screened (NGI, Tx successes, etc.)
 - Reported sex recidivism from some official source
 - Reported follow-up time
 - Ideally also reported general recidivism, year of the study, location, source of the sample, other details.

Studies characteristics

- Search yielded 106 data sets from 98 reports published between 1938 & 2014. Median year = 1997.
- Total *N* = 33,783 ; *Median* = 171.
- 79 had been peer reviewed, 27 not.
- US = 79; Canada = 13; Australia = 8; Switzerland & Netherlands = 2; UK & Singapore = 1.
- F/U Mean = 60.0 months, Range = 12 420 months.

Study characteristics

- Retrospective studies of adult recidivism of JSO's = 27
- Prospective JSO's including only JSO recidivism = 28
- Retrospective using JSO and adult recidivism = 51
- 79 were peer reviewed
- 27 not peer reviewed reports or unpublished data sets
- 48 drawn from community placed JSO's
- 23 drawn from residential community settings
- 29 drawn from secured corrections settings

Results

- Weighted Mean sexual recidivism rate = 4.97%.
- Mean general recidivism rate = 41.24% (SD = 1.9%).
- Weighted Mean follow up of 62.06 months.
- 49 studies reported sexual recidivism below 5%.
- 3 reported sexual recidivism at 15% or above.
- 5 studies reported sexual recidivism of 0%, 2 reported rates < 1%.
- Middle 75 percentile range = 3.14% to 9.50%.

	Number of data sets	Sexual recidivism (%) Mean / (SD)	Follow – up months / (SD)	Mean age / (SD)
Total sample (weighted)	106	4.97	62.06	14.94
U.S. studies	79	6.43 ^a / (4.61)	52.60 (36.14)	14.88 (0.80)
All other countries	27	7.92 ^a / (3.62)	64.19 (39.75)	15.21 (0.65)
Unpublished	27	3.74 ^d / (3.10)	38.54 ^a (17.88)	14.64 ª (0.78)
Published	79	8.17 ^d / (4.76)	61.56 ª (40.42)	15.05 ª (.076)
Juvenile only recidivism	28	7.05 / (5.79)	28.50 ^{cd} (11.99)	14.78 / (0.75)
Adult only recidivism	27	6.95 / (4.07)	70.30 ^d / (43.63)	15.24 / (1.02)
Both	51	7.08 / (4.64)	63.27° / (35.83)	14.92 / (0.60)
	• = p < .0	5; ^c = p < .005; ^d = p <	.0005.	



Results

- Unpublished studies tended to be statewide studies of all adjudicated JSO's (not pre screened)
- 9 of the 10 statewide or national studies were unpublished.
- Lowest sexual recidivism rate (*Mean* = 3.74, *SD* = 3.10, *F* = 10.49, *p* < .0005).
- Also shortest f/u time 38.54 months (*SD* = 17.88, *F* = 2.34, *p* <.05). Also, slightly younger mean age.

Results

- No significant difference in sexual recidivism rates across settings (Community, residential, secured)
- No significant difference in sexual recidivism rates across 3 recidivism sources (juvenile only, adult only, both)
- BUT juvenile only studies had shorter f/u times.
- US studies reported *LOWER* recidivism rates than other countries.

Results: Follow - up times

- How long is a long enough f/u time?
- Divided f/u times into 12 one-year categories.
- Series of logistic regressions comparing each one-year step in f/u to the longer f/u group.
- Studies with f/u 36 months & more reported sexual recidivism similar to 36 months & less (F 1,56, = 2.76, R^2 = 0.05, p < n.s.).
- 8 studies exceeded 10 years, not significantly higher sexual recidivism rates (8.8%, SD = 2.9%,); 3 to 10 years = 7.3%, SD = 4.2%, n.s.)

Evaluating trends in recidivism rates

- The studies conducted before 1980 often included "fornication", "homosexuality", "cohabitation" and "promiscuity" in their definitions of sexual offenses.
- In very old studies (before 1940's), the majority of JSO's were female.
- Studies conducted before 1980 were censored (*n* = 94).
- We entered the f/u time and year of f/u in a linear regression model to predict sexual recidivism.

Factors	R ²	Std. β	Sig.	Eta	95% C.I.
	change		(p =)	square d	
Step 1: Months of follow-up	.12	0.346	.001	.119	.021 / .252
Step2: Months of follow-up		0.276	.005		
Year of follow – up	.13	- 0.369	.0002	.149	.036 / .286

How much of a decline?

- Classed studies into "older" studies (1980 to 1995) and "newer" (2000 to 2014)
- Older = 45 studies with 9,106 cases
- Newer = 33 studies with 20,008 cases
- No differences on location, age, f/u time, etc.





Rates	s of general	recidivism
35%	34.47%	
34%		
33%		
32%		
31%		
30%		30.00%
29%		
28%		
27%		
-,	1980 to 1995	2000 to 2010





Perspective

- Crime in general, and violent crime in particular has been dropping in recent decades.
- Lots of speculation as to why, no one thing explains it all, (but see Finkelhor & Jones, 2004, 2006, 2012).
- FBI arrest rates show a decline.































Other Explanations

- More adolescents being arrested means more low risk offenders in the pool in recent years.
 - BUT arrest rates for juvenile sexual offenses is dropping.
- More juveniles being prosecuted as adults means fewer high risk offenders in the pool in recent years.
 - BUT transfer rates are declining. Several states have made it more difficult to transfer youth, and the number of youth held in jails on adult charges is dropping.

Other Explanations

- Sex offender registries, community notification and residency restriction came in about the time the decline started.
 - BUT every study of the issue has found no general or specific deterrent effect for any of these policies.
 - This wouldn't explain the decline in juvenile arrest rates because most juvenile arrests are first offenses.
 - More data that the unintended effects of these policies may increase risk.
- More likely the decline is in spite of, not due to, these policies.

Other Explanations

- More youth going to secured custody could mean more incapacitation OR
- Less secured custody could mean less iatrogenic recidivism
 - Same proportion of secured custody youth in early and recent studies
 - No significant differences across settings
 - · Wouldn't explain decline in victim survey data

More Explanations

- Better treatment and community supervision services.
 - There are far more treatment services available in the recent time frame.
 - Evidence based treatment is more common
 - Standards for treatment programs have been generated by ATSA
 - Few well constructed efficacy studies, but the early indications are that treatment can be effective.
 - Does not explain all the victimization survey results, but no contradictory data to dismiss better Tx & Sup. as factors.

Quirky Explanation

- Violent video games may be keeping youth that are prone to violence in their Mom's basement playing GTO or WOW instead of out raping and pillaging.
- Would explain the drop in general violence, BUT
 - Large meta-analysis (Anderson, et.al., 2010) pretty convincingly shows that violent video games cause more aggression.

More Explanations

- Better prevention programs in school may be reducing the global propensity for violence and crime in society.
 - Prevention studies are limited to college aged folks
 - Prevention has improved in the recent time frame
 - Studies show prevention programs can change attitudes
 - With a few exceptions, little evidence that prevention reduces sexual violence (but there is some).

More Perspective

 Sexual recidivism rates of adult offenders has also shown temporal instability, with significant declines in recent decades.









Tartar & Streveler caveats

- About the same number of recidivists in each time frame.
- Decline is due to much larger numbers of SO's released.
- Could be that higher adult incarceration rates has diluted this pool.



Helmus (2009)

- The decline began in the mid 1970's
- Analysis of the last 15 years showed some decline, but not statistically significant.

Risk Assessment Implications

- With very low base rates, AUC data has limited value.
- These results suggest the link between a JSO adjudication and the propensity for sexual recidivism may be eroding.
- Adult risk assessments that rely on juvenile adjudications may need updating.
- "static" risk assessments may not be as static as we thought.