

# Assessment and Management of Violence Risk in Psychiatry

Michael A. Norko MD, MAR  
Madelon Baranoski PhD, MSN  
Law & Psychiatry Division  
Yale University School of Medicine

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# The Quest

To be able to reliably determine who will be violent in the future, when the violence will occur and under what circumstances, and what we can do to prevent it.

# The Reality

- We can determine current dangerousness reasonably well, for clinical purposes, when the danger is due to psychiatric conditions
  - We can respond reasonably well to those circumstances
- We can assess risk of violence, but that does not tell us who will and who will not be violent, when violence will occur, or the targets of that violence
  - But it helps us decide how to manage the risk, at least when it is related to psychiatric conditions

Violence Risk:  
Selected Research Highlights

Swanson et al 1990:  
Epidemiological Catchment Area Survey

- 10,000 respondents from Baltimore, Raleigh-Durham, and Los Angeles
- Assessed: hit other, throw objects, weapon use, physical fights during last 12 months
- No frequency or severity data

## Swanson et al 1990 (#2)

- Male, young age, low socioeconomic status, substance abuse, & major mental disorder associated with violence (race unrelated to violence when SES controlled)
- Lowest SES 3x more violent than highest SES

# Swanson 1990 (#3)

% Violent

Socioeconomic Status

<u>Sex/Age</u>	<u>lowest</u>	<u>highest</u>
M 18-24	16.1	6.1
M 25-44	7.7	2.6
M 45-64	3.3	0.3
F 18-24	9.1	3.3
F 25-44	3.9	1.1
F 45-64	0.9	1.0

# Swanson 1990 (#4)

% Violent by # / type of Dx's

None	2.1		
Anxiety only	2.4	+ SA	20.3
Affective only	3.5	+ SA	29.2
Schiz. Only	8.4	+ SA	30.3
SA only	21.3		
Schiz + Anx.	4.3	+ SA	15.2
Aff. + Anx.	11.1	+ SA	16.7
Schiz. + Aff.	21.1	+ SA	100 (n = 1)



## Link et al 1992: Washington Heights Study

- Sample: 521 community residents & 232 patients (46 in-pts, rest out-pt)
- Risk due to mental illness less than that due to age, gender, and roughly equivalent to risk due to 4-5 year difference in education
- For patients not currently psychotic, no more risk than average person

# Developmental Issues

- Alcohol use before age 15 leads to a more than six-fold increase in risk of violence
- Conduct Disorder diagnosis is associated with nearly a ten-fold increase in risk of violence

Fulwiler & Ruthazer 1999

# MacArthur Violence Risk Assessment Study

- 1,000 discharged civil psychiatric patients in 3 sites
  - Worcester, Pittsburgh, Kansas City
- 1 year follow-up study of violence
- violence = battery resulting in physical injury, sexual assault, use of weapon, threat with weapon in hand

# MacArthur study

- Patients were more violent in the period immediately following discharge than at the end of the year
- Patients who did not use substances were no more violent than non-patients living in the same communities who were also not using substances

Steadman et al 1998

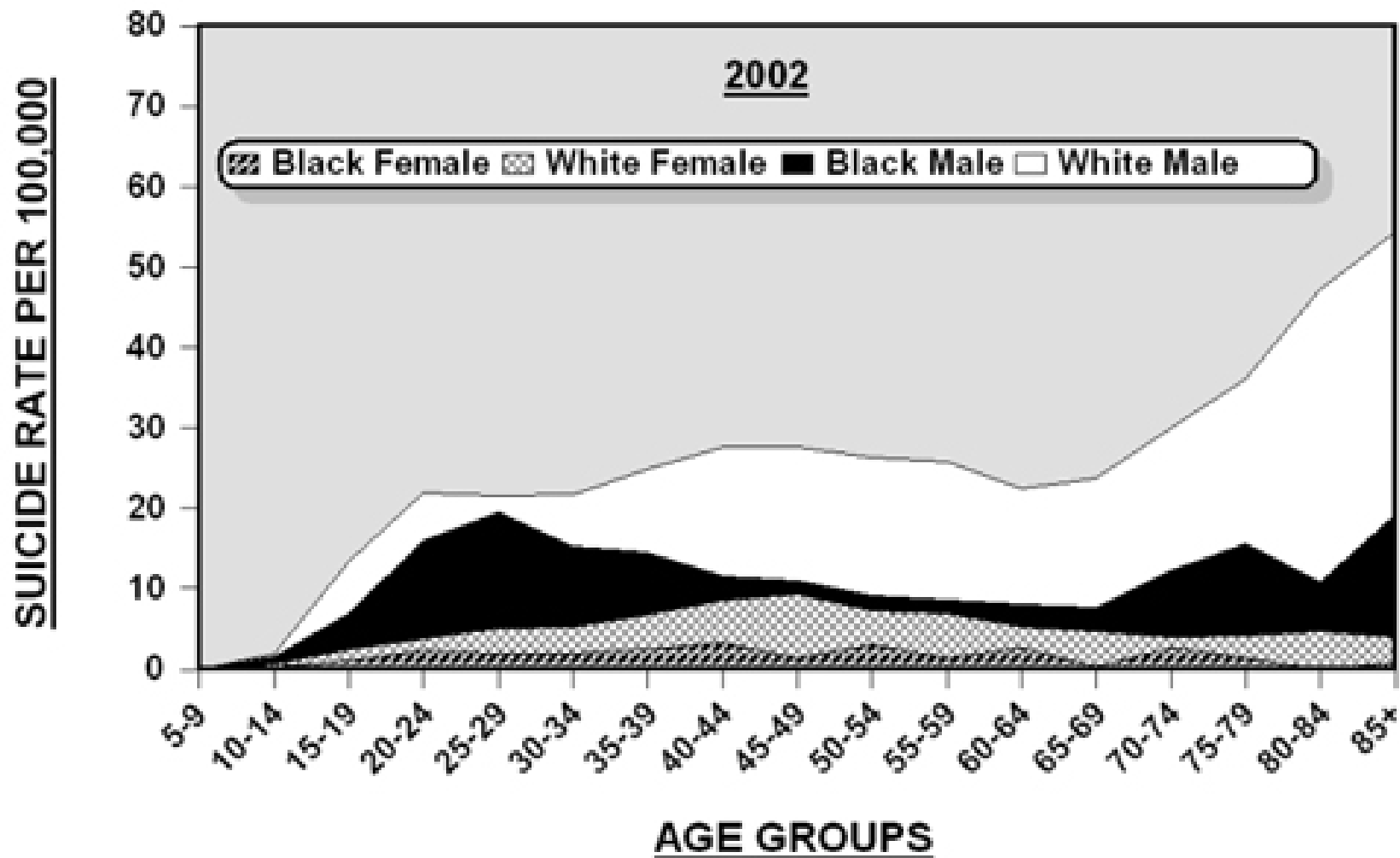
# “Attributable Risk”

- In a US study, 5% of all violence was attributable to persons with mental illness
  - Relative risk = 3:1
  - Absolute risk = 7% per year
  - Among individuals with a history of psychiatric hospitalization, but no active symptoms of psychiatric disorder in the past year, rate of violent behavior was 2% per year. (Swanson et al 1994)
- In Sweden, attributable risk for persons with serious mental illness = 5%

# Suicide data

- In 2010, 61% of gun-related deaths were by suicide (CDC 2013)

# U.S. SUICIDE RATES BY AGE, GENDER, AND RACIAL GROUP



Source: National Institute of Mental Health  
Data: Centers for Disease Control And Prevention, National Center For Health Statistics

# Psychiatric “Prediction” of Violence

- Clinical predictions of violence achieve modest (better than chance) accuracy
  - Mental illness is a modest risk factor for violence
- Clinical factors are more predictive for inpatient violence
- Historical factors are more predictive for long-term community violence (actuarial methods)
- Past behavior may be a better predictor of violence than clinical judgment





# How Do We Apply the Research?

- Incorporation of risk factors into tools for categorizing risk and placing patients in risk groups.
- Application of tool presents an “odds–ratio” type of assessment: an estimate of the risk of a violent outcome, based on group identification.
- Clinical assessment incorporates group estimate and creates individual assessment.

# How Risk Factors Work

- Association with “bad” outcomes
- Risk factors that can be changed are targets for treatment
- Risk factors that cannot be changed are targets for monitoring

# Limitations of Risk Factors

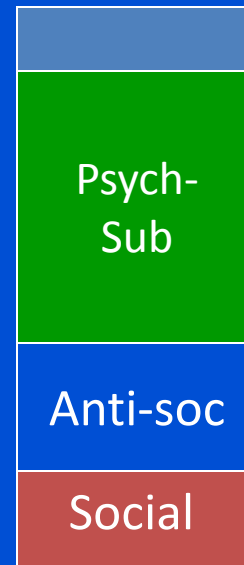
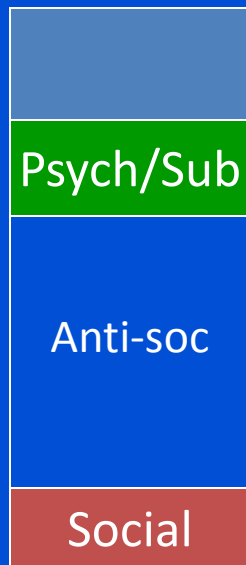
- No certainty of outcome unless risk factor is sufficient cause for outcome
  - **Major gas leak in a home = explosion**
  - **Genetic abnormality = expression of disease**
  - Cell phone use while driving = accident
  - *Mental illness = violence*
- Some “risk” factors are misleading (spurious)
  - **Smoking as risk for incarceration**
  - *Mental health diagnosis and violence*
- Risk factors do not determine intervention.
- The group with the risk factor cannot receive the “full dose of intervention.”

# Greatest Limitation of Risk Research

- Risk research directs our attention but does not tell us what to do
  - We cannot “manage a risky person”; we manage risky behavior. (Consider what to do about a “bad driver”)
  - Risk must be analyzed
  - Risk factors suggest areas for treatment, monitoring, resources

# Characterizing Risk

## What to Do to Manage Risk



# Two Approaches to Risk Assessment

- Inductive : relying on aggregate information to make assessments of future and specific situations. Apply what is known about others to an individual (Actuarial Risk Assessment).
- Deductive: Focus on the particular facts of this particular case over time. (Guided Professional and Clinical Assessment)

The use of profiles is ineffective and inefficient, carries with it a considerable risk of false positives, has a potential for bias and has been criticized for its potential to stigmatize... (Reddy et al 2001)

Evaluating risk for targeted violence  
in schools:  
Comparing risk assessment,  
threat assessment, and other  
approaches

Marisa Reddy, Randy Borum, et al. 2001

[http://www.secretservice.gov/ntac/ntac\\_threat\\_postpress.pdf](http://www.secretservice.gov/ntac/ntac_threat_postpress.pdf)



# Actuarial Risk Assessment

- Identification of individuals at higher risk because of selected traits that correlate with violence
- Established through empirical association of traits with violence

# Review of Actuarial Prediction Studies

Harris & Rice 1997, Monahan 1997:

- Actuarial methods for predicting violence more accurate than unaided clinical judgment in a non-psychiatric population
- Predictors include: age, sex, past antisocial and violent conduct, psychopathy, aggressive childhood behavior, and SA

# Advantages of Actuarial Measures

- Remain constant
- Indicate characterological risk or its absence
- Can identify those who will require closer monitoring and those who will respond to treatment
- Provide direction for referrals and resources needed

# Disadvantages of Actuarial Measures

- Are not valid for assessments of risk from major psychiatric disorders
- Will not show effect of treatment
- Will not identify risk for the first episode
- Cannot be used in emergency assessments
- Cannot stand alone in a psychiatric population

# Actuarial Instruments Supported by Research

- Psychopathy Checklist -Revised (PCL-R)
- Violence Risk Appraisal Guide (VRAG)

# Clinical Risk Assessment

- Assessment of an individual at a specified time
- Immediacy of risk
  - *Current state*, given the *traits* of the person
- Individual assessment
  - Indicators/correlates of increased risk
  - Triggers of dangerous behavior
  - Indicators/correlates of decreased risk
  - Deterrents to dangerous behavior

# Sources of Information

- Clinical interview
- Behavioral observations
  - *Therapeutic use of self*, counter-transference
  - That special feeling that something is wrong
- Collateral Data
  - Historical data - records
  - Family, employer, police, others
- Uniqueness of situation
- Change in function and change in mood

# Assess Change

- Identify trajectories of decline and improvement
  - Stability (housing, grades, friends, successes/failures, bullying)
  - Function (management of emotions, organization of thinking, control of behavior, socialization)
- Response to treatment and other interventions
  - Reaction to help
  - Interaction with others
- Anger
- Isolation



# Integrated Actuarial and Dynamic (Clinical) Measures Supported by Research

- Historical/Clinical/Risk Management 20 Item (HCR-20)
- Iterative Classification Tree (ICT)
- Classification of Violent Risk (COVR)
- Level of Service Inventory – Revised (LSI-R)

These combine historical and clinical measures and the scores change in response to interventions.

# Steadman et al 2000

- Risk factors correlated with violence */r*:
  - psychopathy / .26
  - freq of prior arrests / .24
  - alcohol *or* drug abuse / .18
  - drug abuse dx / .17
  - anger scale / .16
  - father's drug use / .16
  - father arrested / .15

## Steadman et al 2000 (#2)

- Risk factors correlated with violence /*r*:
  - child abuse seriousness / .14
  - recent violence / .14
  - escalating violent fantasies / .13
  - violent fantasies, target present / .12
  - property arrest / .11
  
  - TCO sx / -.10 (threat, control-override)
  - schizophrenia / -.12

# Swanson 2013

- Firearm fatality rate (by state) is strongly correlated with household gun ownership rate (by state)
- $r = .63$

# Coid, Ullrich et al. 2013

Relationship between anger and violence during 1<sup>st</sup> episode of psychosis:

- Anger related to delusions was associated with violence:
  - Persecutory
  - Being spied on
  - Conspiratory
- In the absence of anger, delusions were not associated with serious violence.
- Implications for ongoing assessments and “eyes –on.”

# Clinical vs. Actuarial Detection of Risk

- McNeil et al. 2003
  - Clinical factors may be most relevant for acutely ill individuals
  - Historical data may be most relevant for treated patients and for assessment of long-term risk
- This may be evidence that treatment works



# Meaning of Actuarial Test Outcomes

- Risk level
- Positive predictive power
- Number needed to detain



# Generic Risk Screening Tool

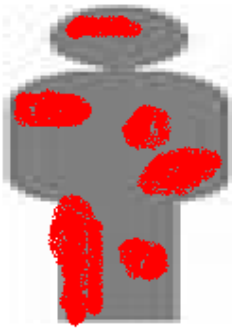
(GRST)

# GRST Validation Data

- Separates subjects into low risk and high risk groups as well as the best available instruments
- “High risk” has average risk of 37%
- “Low risk” has average risk of 9%
- Overall risk in population is 18.5%

What does 37% risk mean?

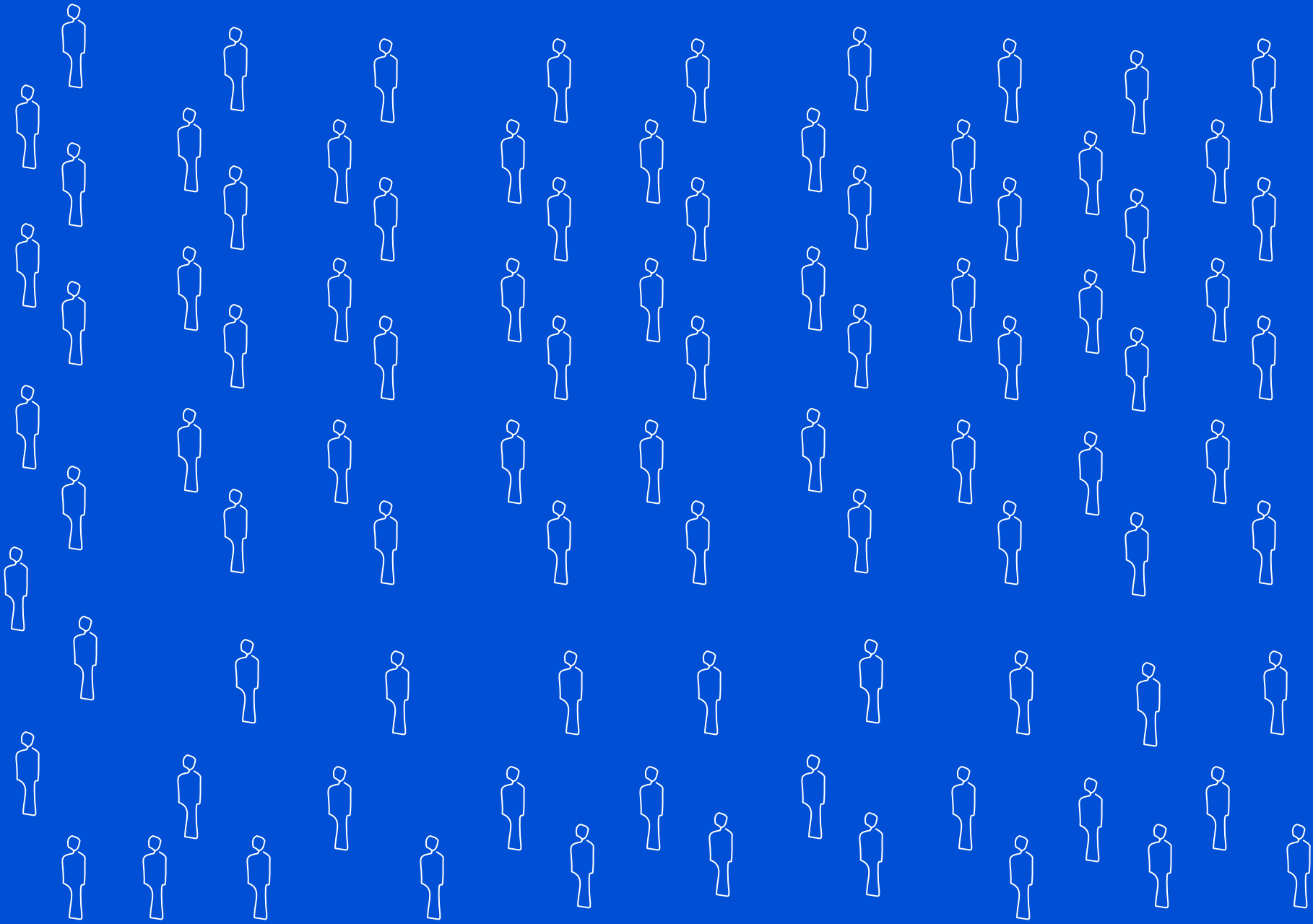
Is the person 37% risky?



Is the person risky 37% of the time?



So what does it mean?

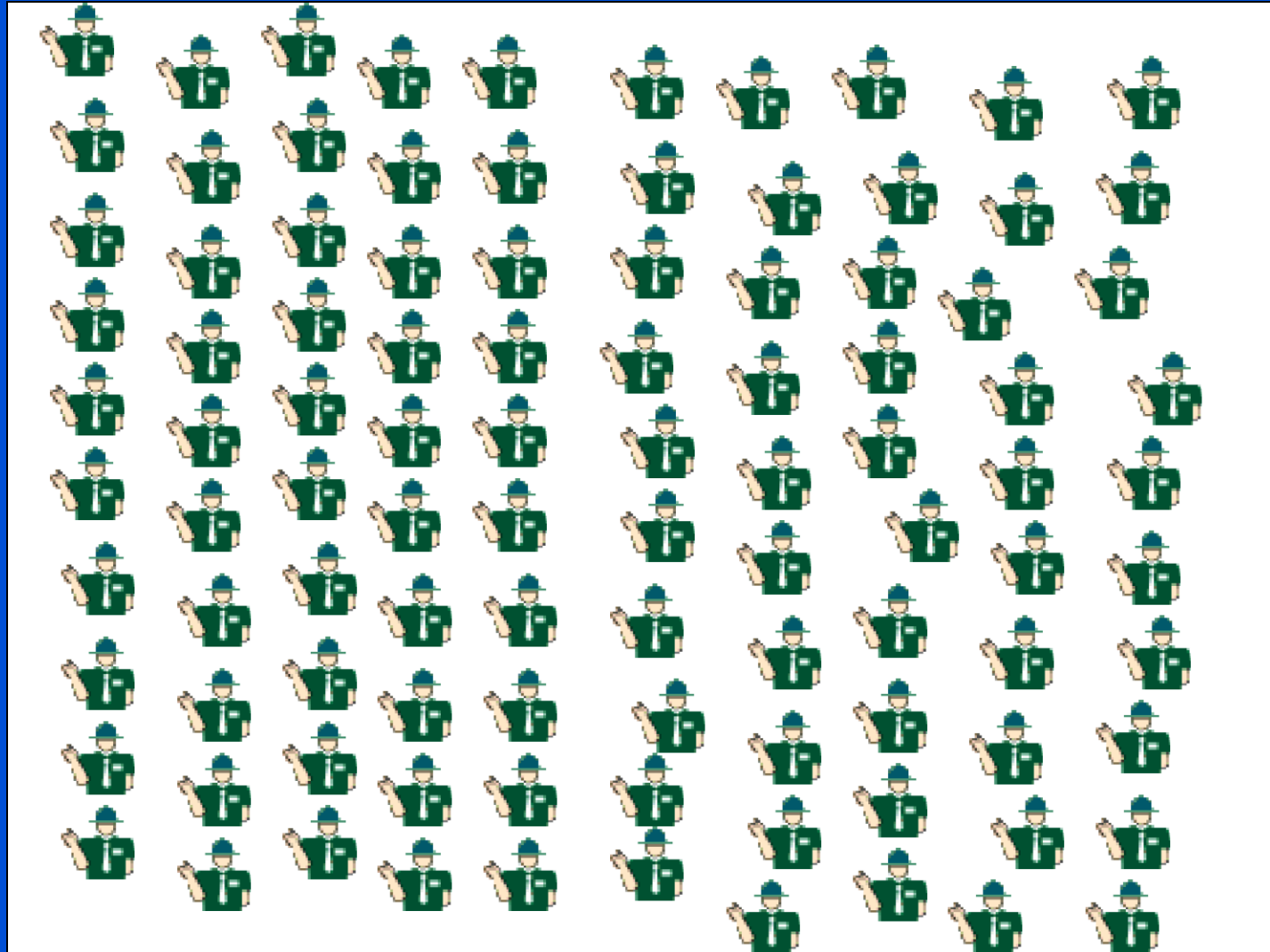


# Identify 100 “High Risk” People

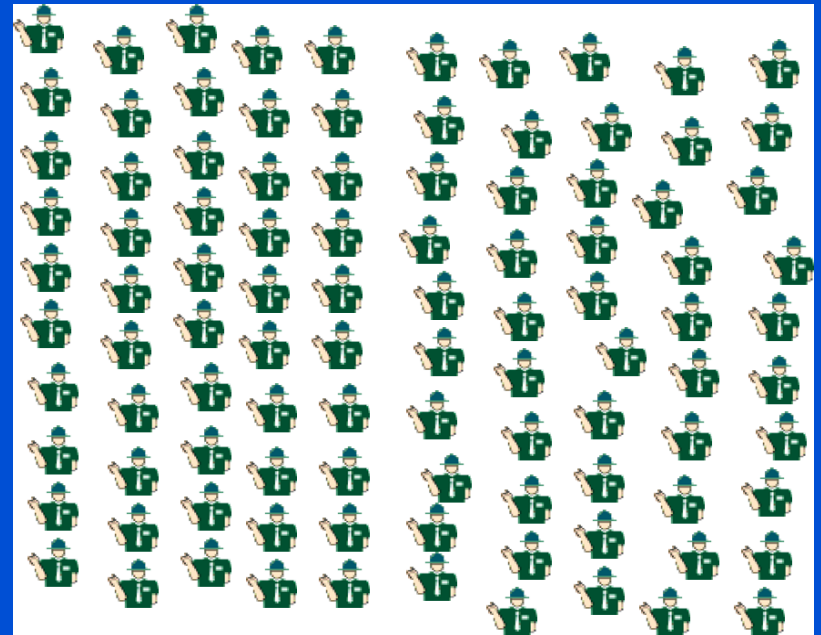




# Identify 100 “Low Risk” People

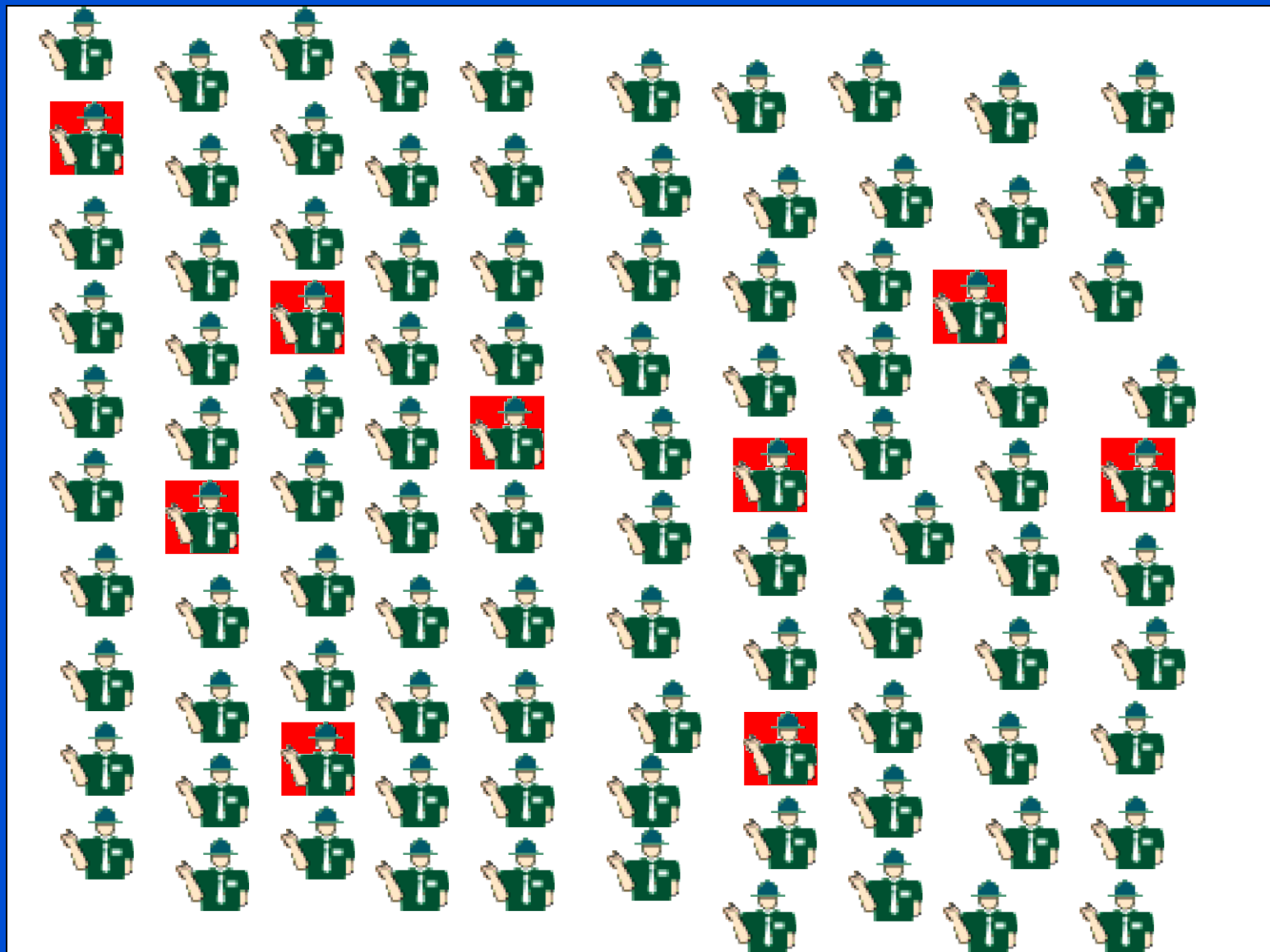


# The Results



What's the Outcome?

9% of the low risk group commits the act



37% of the high risk group commits the act



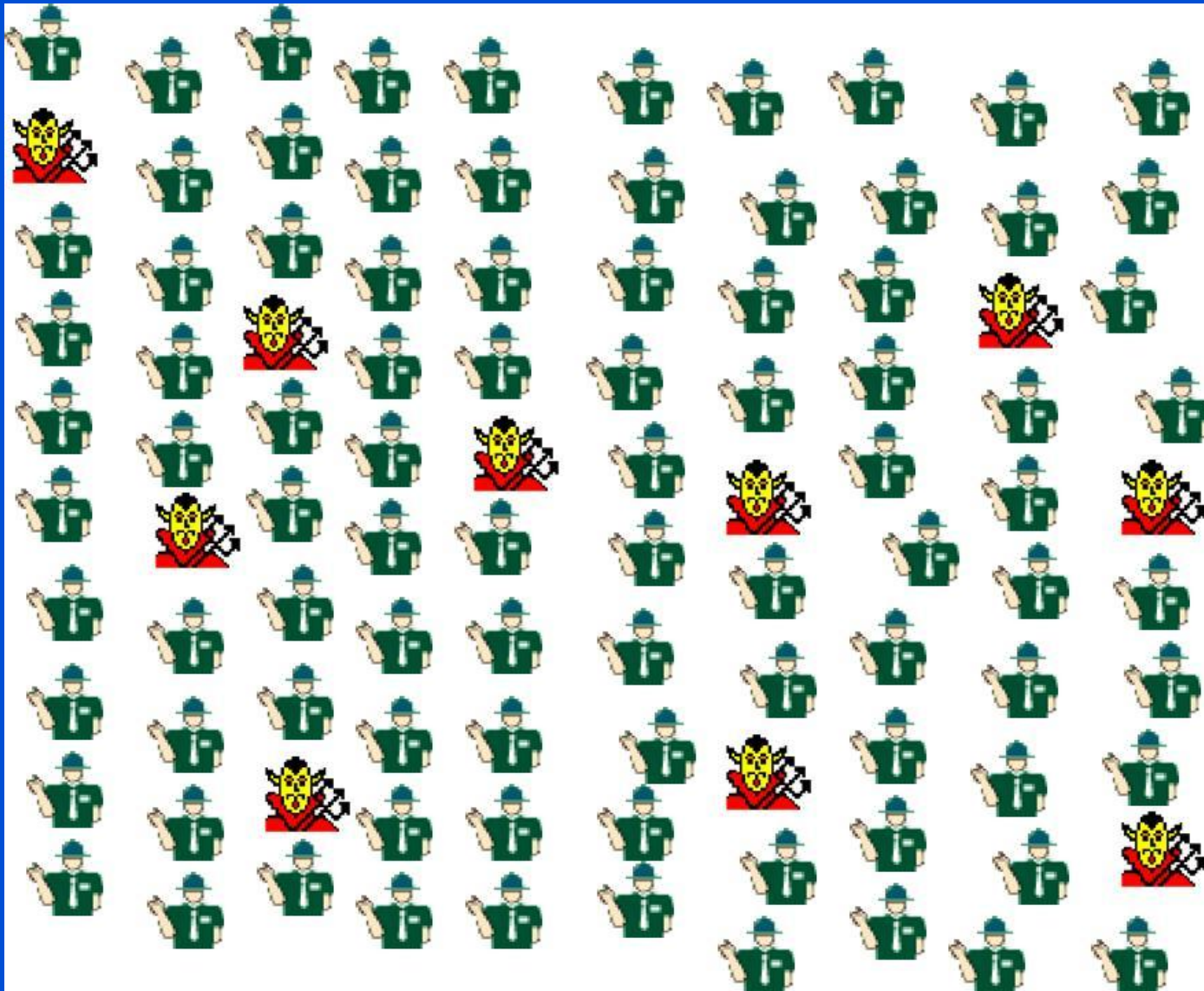
...and 63% do NOT commit the act



# A sea of false positives...

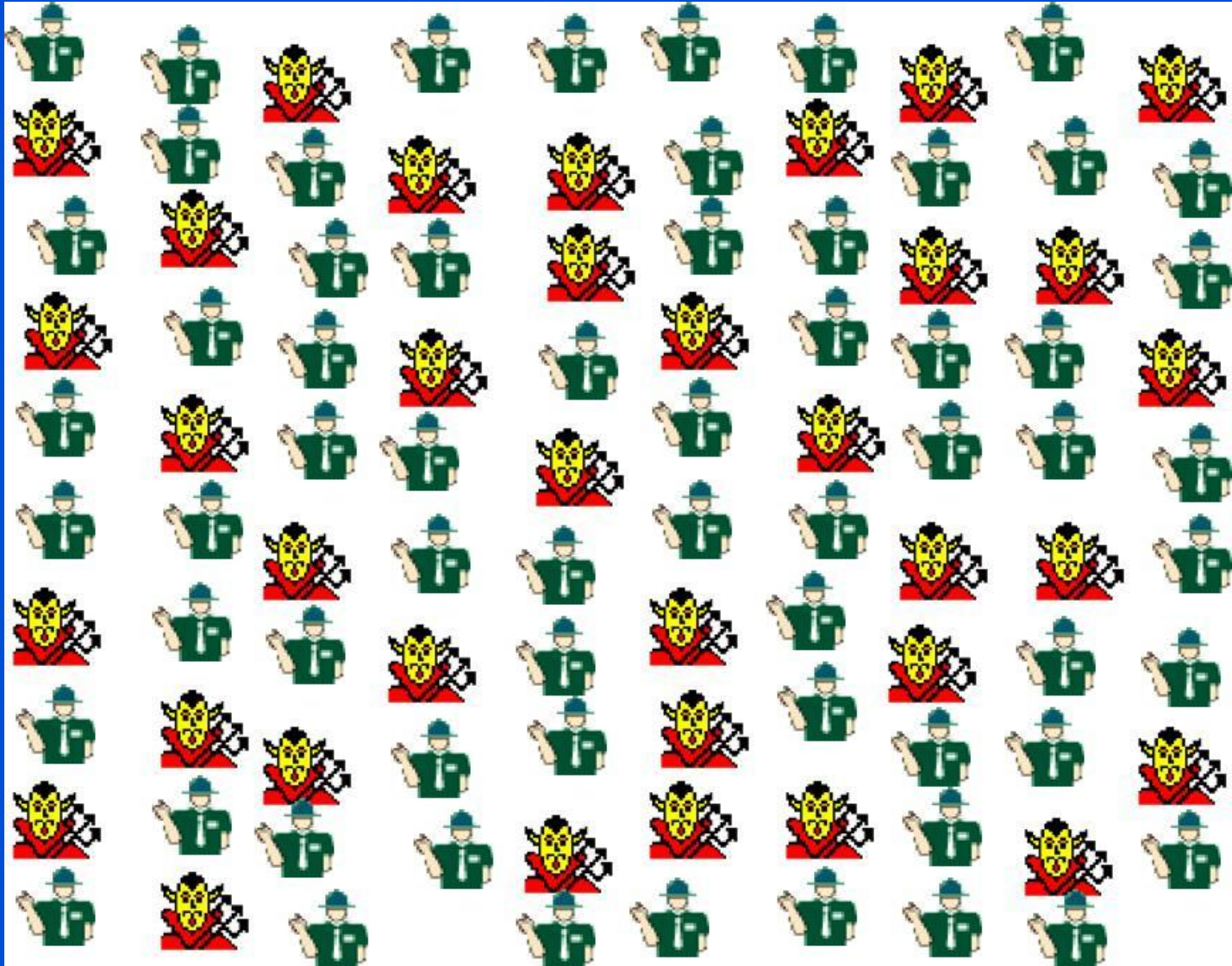


# The “Low Risk” Group





# The “High Risk” Group



# Meaning of Actuarial Test Outcomes

- % Risk level
  - X% of people just like the subject will commit act w/in y period of time
- Positive predictive power
  - The % of the people predicted to commit the act who actually do

# Positive Predictive Power

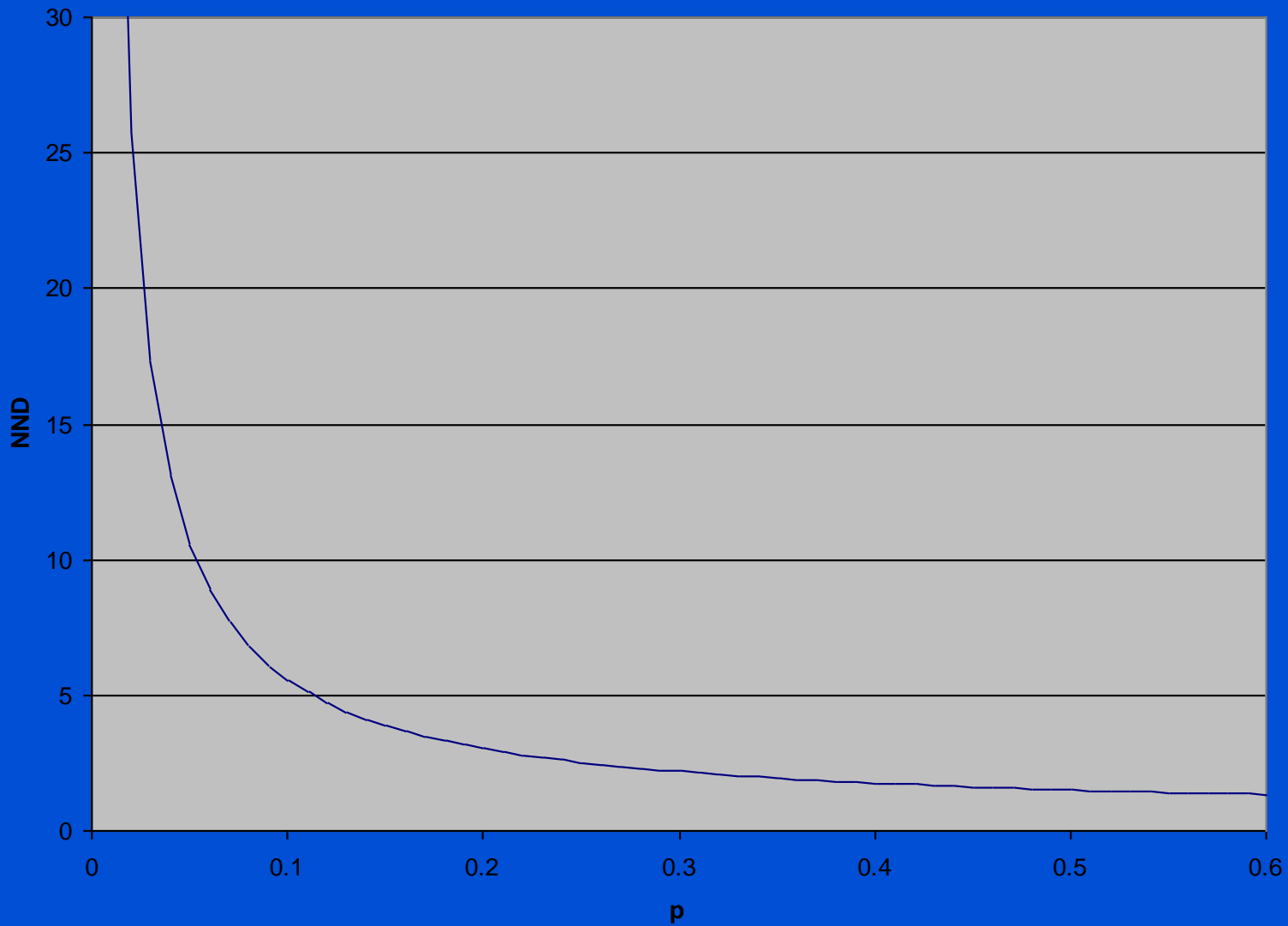
- PPP almost never  $> .50$ 
  - In other words, the majority of nearly all identifiable high risk populations never commit the predicted act
- Low base rates make this worse, even with very good instrument
  - If 20% of study sample is violent, positive predictive power will be only 0.37 (wrong in nearly 2 of 3 predictions)
  - At 6% base rate,  $ppp=0.14$  (wrong in 6/7)
  - For very serious violence, at rate of 1%, test will be wrong 97% of the time

Szmukler 2001

# Buchanan 2008

- Number needed to detain (NND)
  - the number of individuals who would need to be detained in order to prevent one violent act

Relationship between Number Needed to Detain (NND) and prevalence (p)  
when sensitivity = 0.73 and specificity = 0.63  
[from Buchanan A: Psych Services Feb 2008]



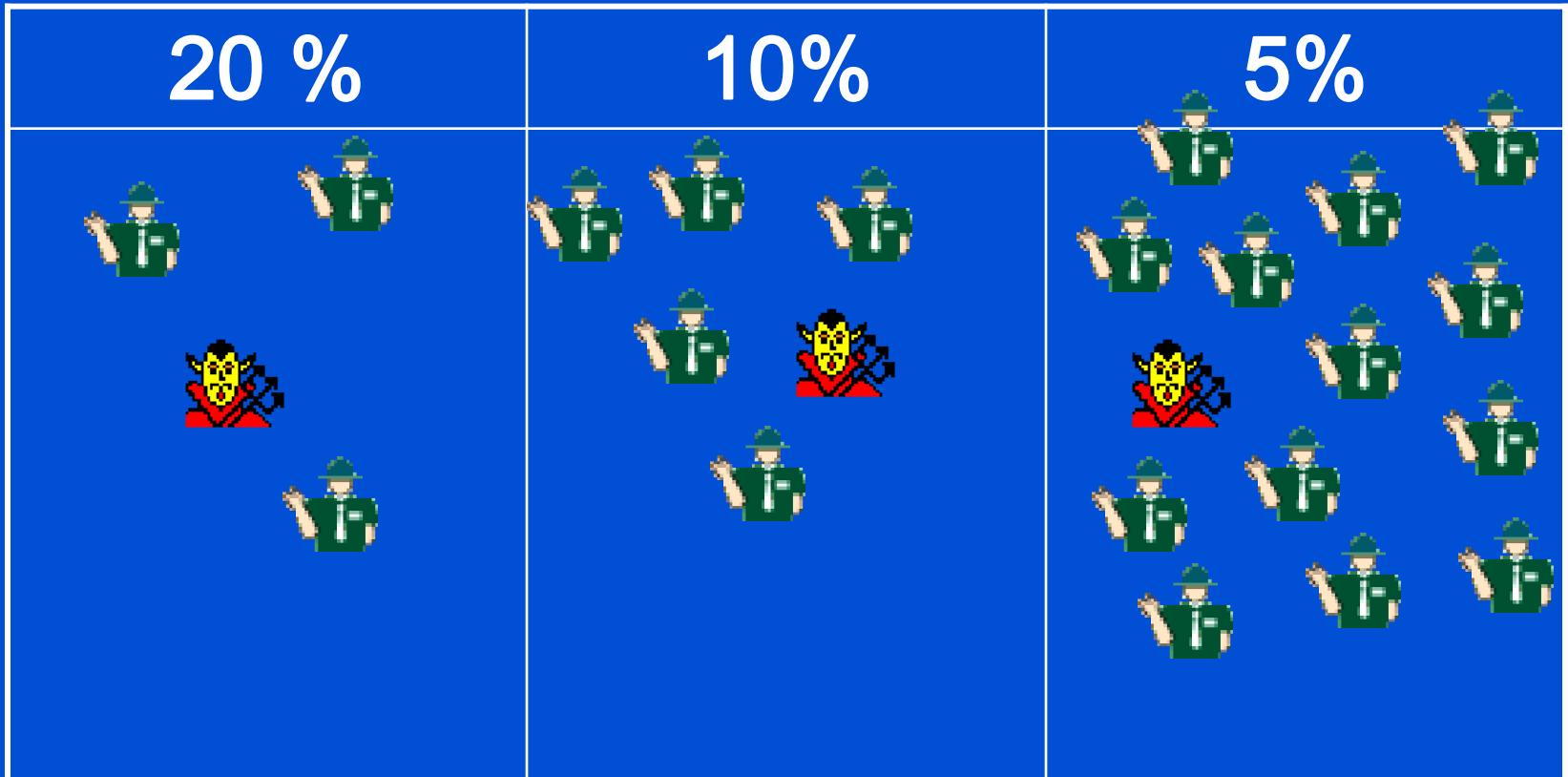
# NND and base rates

(from Buchanan)

4

6

14



# Buchanan 2008 (#2)

- At rate of violence (17%) in ECA study, NND = 3.5
- At rate of serious violence (3.6%) in CATIE study, NND = 15

# NielsSEN et al 2011

- Meta-analysis of data from Australia, Denmark, Finland, Germany & UK
- 1 in 70,000 : risk of stranger homicide/year by person with schizophrenia (.001%)
- For every person with schizophrenia who commits a stranger-homicide, there are tens of thousands who will not (Swanson 2011)



# Nielsen et al 2011 (cont'd)

- Stranger homicides by patients with psychosis are extremely rare (1 in 14 million population per year)
- “...there is little prospect of developing a risk assessment instrument that is sufficiently sensitive or specific to be of any use in predicting which patient might commit this kind of offense.” (p 577)

# Mossman 2000

- Accurate predictions  $\neq$  “correct” predictions
- Modestly accurate predictions not clinically useful
  - They fail to sort patients into subgroups with meaningfully different levels of risk
  - **Predictive instruments truly helpful only if nearly infallible**
- **Violence risk reduction NOT a necessary focus of clinical interventions**



# From Risk Assessment to Management

# Challenges to Violence Research

- Not all violence is the same.
- Violence over-determined (multiple causes)
- Only “common violence” available for research; findings may not apply to rare situations (like studying the common cold to draw conclusions about Avian Flu).
- Treatment can alter course but we can't prove prevention.

We know when something happens but we never know for sure what might have happened but didn't.

# Competing Goals: Prediction vs. Prevention

- Airport metal detectors
  - Do *detect* weapons
  - Do not *predict* hijackings
- Psychiatric evaluations
  - Do *detect* mental illness and impaired capacity
  - Do not *predict* episodes of violence

# Signal Detection Theory

## Reality

		Submarine	Whale
Detection	Submarine	True Positive (Successful detection) ↑	False Positive (Dead whale) ↓
	Whale	False Negative (Enemy attack) ↓	True Negative (Successful detection) ↑

# Signal Detection Applied to Clinical Setting

		Reality	
		Violence	No Violence
Prediction	Violence	True Positive Failed intervention ↓	False Positive Successful intervention ↑
	No Violence	False Negative Failed prediction ↓	True Negative Successful detection ↑



# Management of Risk

# Assessment is Part of Management

- Risk levels are ever changing
- Assessment as a tool of management
  - Measure of effectiveness of treatment
  - Directs attention and “next steps”
  - Determines need for monitoring
- Assessment monitors mitigators and exacerbators
- Assessment should include all appropriate measures

# Clinical Risk Assessment

- Assessment of an individual at a specified time
- Immediacy of Risk
  - *Current state*, given the *traits* of the person
  - Assessment of anger, emotionality, suffering
- Individual assessment
  - Indicators/correlates of increased risk
  - Triggers of dangerous behavior
  - Indicators/correlates of decreased risk
  - Deterrents to dangerous behavior

# Identifying Target Question

- Trait vs. state
- Long-term risk vs. imminent risk
- Discharge placement vs. level of acute care
- Consultation vs. clinical management

# Use of Appropriate Tool for Specific Purposes

<u>Purpose</u>	<u>Method</u>
• classification issue	actuarial
• treatment/management decision	clinical

# Harm Reduction In Risk Management

- Titrate risk with appropriate services
- In high-risk patients
  - Increase risk mitigators, reduce aggravators
  - Increase level of care in response to increase in risk factors
  - Target interventions to specific risk
- Ongoing risk assessment as clinical tool

# Harm Reduction Goals

- Identification of specific factors that alter risk level (mitigation and exacerbation)
- Incorporation of substance abuse treatment
- Adequate information
- Weapons assessment/management
- Assertive engagement and wrap-around services
- Environmental and social stabilization
- Decrease isolation; increase access to treatment
- Increase access to consultation
- Increase “helpful eyes-on”
- Reduce stigma, diminish the view of mental illness as character flaw

YOU'D  
NEVER SAY,  
"IT'S JUST  
CANCER,  
GET OVER IT."

So why do some say that about depression?

It's all in the head. It's just a bad mood. It's a personal weakness. They're just a few of the common misperceptions about depression. The truth? Depression is a real medical illness that can be as debilitating as other major diseases. Like cancer, it can be fatal. And like diabetes, it's biologically based. But like other life-threatening illnesses, it can be treated. Which means there's real hope for everyone who has it.

Learn more at [DepressionIsReal.org](http://DepressionIsReal.org)

American Psychiatric Foundation | Depression and Bipolar Support Alliance | Mental Health America  
National Alliance on Mental Illness | National Medical Association



# Clarifying the Mission

- Psychiatric goal
  - Treatment of psychiatric illness
  - Contributing to public safety by reducing psychiatric risk
- Improving the statistical accuracy of violence prediction is counterproductive
  - Clinically useless statistical difference not meaningful
  - Violence prediction identifies treatment failure



# Risk Assessment & Management Models

# Dvoskin & Heilbrun 2001

## Prediction vs. Risk Management

- 3 aspects of risk: likelihood (probability), imminence, severity of outcome
  - severity best defined by prior violence
  - probability best defined by actuarial models
  - imminence defined by patterns of violence, statements, plans, life circumstances

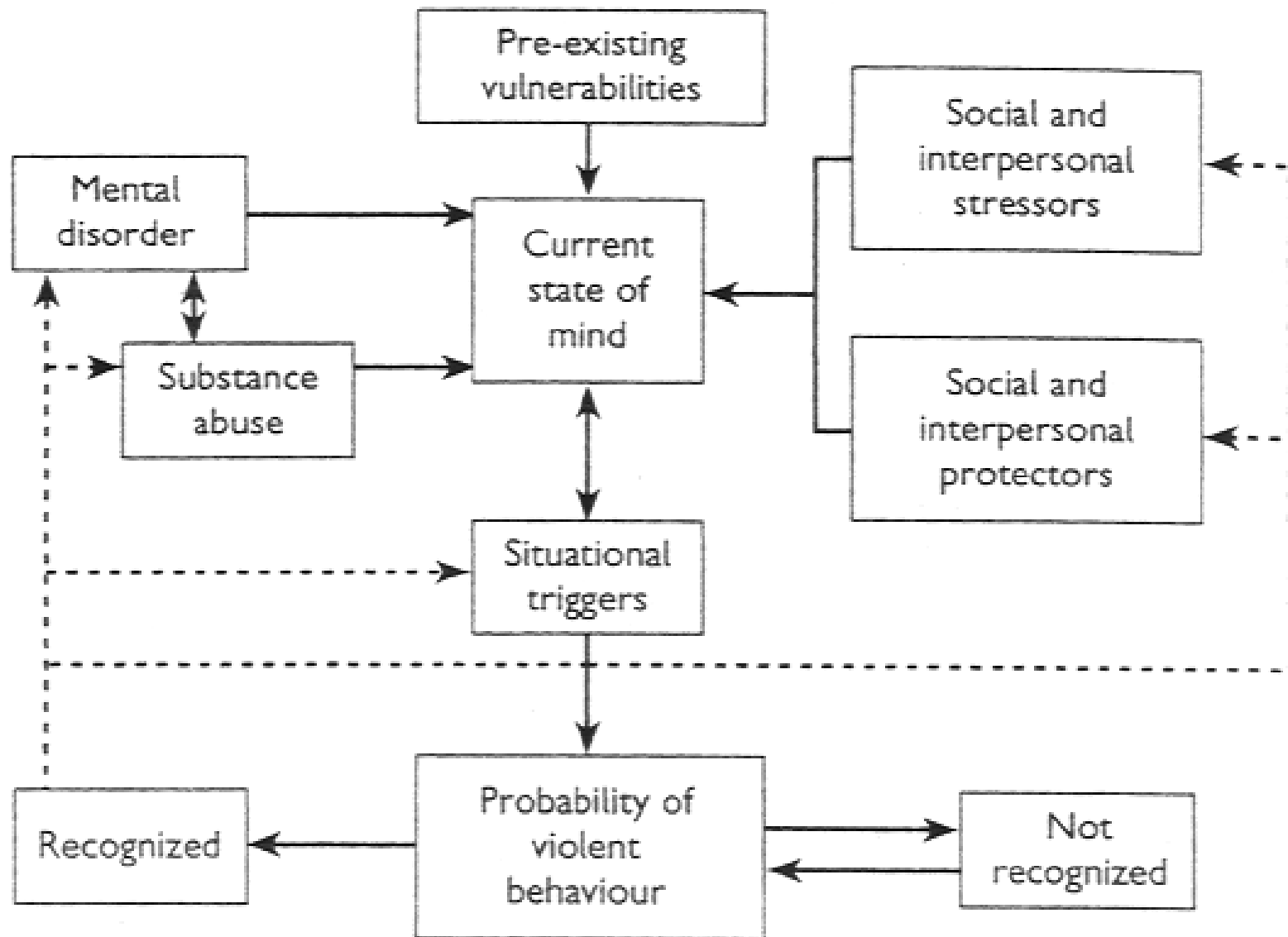
# Dvoskin & Heilbrun 2001 (#2)

- Risk management approach:
  - identify risk-relevant needs and deficits of the individual
  - deliver interventions to target those needs and enhance protective factors
  - “demonstration data” derived from ward behavior, response to treatment, performance in graded release steps (e.g., passes)

# Mullen 2000

- Assess individual's current state of mind
  - pre-existing vulnerabilities
  - protective & aggravating influences in social/interpersonal environment
  - mental disorder
  - substance abuse
- Assess situational triggers
- Address remedial action to factors conducive to escalating predisposition to violence

# Mullen 2000 (#2)



# Characteristics of Risk Measures

- **Profiling (Actuarial)**
  - Stable over time
  - Trajectory of risk independent of context
  - Dependent on accessible data
  - Based on longitudinal data
  - Resistant to fluctuations in day-to-day changes
  - Reliable and valid
- **Treatment Planning**
  - Markers of fluctuation in presenting risk
  - Trajectory of risk based on context
  - History compared to current function
  - Adequate detail of situation
  - Sensitive to treatment effects
  - Clinical impressions relevant
  - Reliable and valid



Present Limits  
&  
Future Directions

# Douglas & Skeem 2005

- Despite significant progress in risk assessment in last 20 years, **science lags behind clinical practice**
  - Empirical investigation of dynamic risk is virtually absent from the literature
  - Need for studies of intra-individual change and relation to risk management and treatment
- **Next great challenge** is to develop sound methods to **identify causal dynamic risk factors for violence**:
  - Precede and increase risk (risk factor)
  - Change spontaneously or w/ intervention (dynamic factor)
  - Predict change in likelihood of violence when altered (causal dynamic risk factor)

# Douglas & Skeem 2005 (cont'd)

- Proposed Dynamic Risk Factors
  - Impulsiveness
  - Negative affectivity
  - Anger
  - Negative mood
  - Psychosis
  - Antisocial attitudes
  - Substance use and related problems
  - Interpersonal relationships
  - Treatment alliance and adherence
  - Treatment and medication compliance
  - Treatment-provider alliance

# Summary

# Attributes of a Clinical Risk Assessment Model

- Integrated with a treatment model
- Identifies both static and clinical risk factors
- Links risk to treatment outcomes
  - Individual risk factors
  - Individual aggravators / mediators of risk
  - Intervention to change indicators
- Prioritizes strategies for risk behaviors and management

# Violence Risk & Mental Illness

- Contribution of mental illness to overall rate of violence in US is very small (5%)
- Vast majority of people with mental illness do not engage in violent behavior (>90%)
- Mental illness is a modest risk factor for violence (less than demographic variables or substance use)
- Stranger homicide by people with psychotic illness is exceptionally rare – not possible to correctly predict

# Risk Assessment & Management

- Risk assessment is performed in order to tailor appropriate individual management
  - Not to make predictions
- Appropriate risk management attends to individuals' needs and to public safety at the same time