



# *ProDES*

Program Development and Evaluation System


## What does 'risk' classification mean?

*A CJRI Briefing*

October, 2000

Peter R. Jones,  
Philip W. Harris,  
Jamie J. Fader  
and  
Lori K. Grubstein

Crime and Justice Research Institute  
520 N. Columbus Boulevard  
Suite 600,  
Philadelphia, PA 19123  
[www.prodespromis.cjri.com](http://www.prodespromis.cjri.com)



***ProDES*, the Program Development and Evaluation System that tracks all court-committed Philadelphia juveniles, is operated by the Crime and Justice Research Institute. It is funded by the Department of Human Services and is a service of the Department's Division of Juvenile Justice Services. The contracted programs conduct all data collection at both intake and discharge. Follow-up data (six months after discharge) are collected as well, and include youths committed to DPW.**

***ProDES Staff***

**Directors**

**Philip W. Harris, Ph.D.**

**Peter R. Jones, Ph.D.**

***ProDES* Research Associates**

Jamie J. Fader and Lori K. Grubstein

**Information and Training Manager**

Ellen M. Harris

**System Administrator**

Chris Park

**Administrative Assistants**

Donna J. Wolf and Marangelie Vasquez

**Data Collection/ Entry**

Ansik Chang, Monika Fairfax,  
Emilia Golanska, Lutando Hamilton,  
Beth Holbrook, John Kouyoumdjian

***Department of Human Services***

**Alba Martinez**

**Commissioner**

**Joyce L. Burrell**

**Deputy Commissioner,**

**Division of Juvenile Justice Services**

## Risk classifications

### Risk Classifications -- Why?

One of the most consistent findings from the literature on both adult and juvenile programs is that the greatest treatment and prevention effort will be achieved with those youth that present the highest risk of the outcome to be prevented. That is, given finite resources one would want juvenile programs to target the highest risk youth for treatment and early intervention. The argument runs that low risk youths will be far more likely to reduce or even desist their delinquent behavior without any formal treatment intervention at all. In contrast, the highest risk youth will need effective interventions if they are to be prevented from committing future delinquent acts.

*Of course, this begs the question of just who are the highest risk youth.* Most people involved with youth corrections and delinquency prevention have their personal theories and hypotheses. High on the list would come the same sort of risk factors that one finds in the delinquency literature -- school related risk factors, individual and peer group factors, family risk factors and community risk factors. However, which ones are the most important? Is it possible that some of these overlap to such an extent that once you know one there is nothing gained by knowing the other?

There are so many risk classification systems already developed that many people find the entire issue confusing. In this briefing we will outline some of the key issues to understand about risk instruments and provide an overview of the instrument that we plan to use in all future *ProDES* outcomes and trends reports.

### Risk of what?

Perhaps the most important aspect of a risk instrument from a practitioner's point of view is to know exactly what is being predicted. Risk classifications can vary widely -- from tools that predict any delinquency (measured perhaps on the basis of an arrest, petition or adjudication) to those that are very selective, predicting perhaps violent or sex-related offending. In addition, the user needs to know the time frame of the prediction tool -- are we looking at risk for the next six months or six years?

All risk instruments should make explicit exactly what they are predicting as

*"There are so many risk classification systems already developed that many people find the entire issue confusing."*

**Risk, Stakes  
and  
Treatment**

well as the time frame for the prediction. For example, *the ProDES tool predicts delinquency as measured by all new court petitions at any time from entry into a program until six-months following discharge from that program* (that is a variable time period that can vary from just over six months to more than two years).

**Risk, Stakes and Treatment**

One of the most common misconceptions about risk instruments is that they identify the most serious offenders or even the most challenging cases from a treatment perspective. They do not necessarily do either.

*There is often little or no relationship between the type of offense committed by a youth (or adult for that matter) and their subsequent risk of offending.* When such a relationship does exist it is almost always one that at first sight seems counterintuitive -- the minor offenders are higher risk. It is important to recognize the distinction between the risk of re-offending and the seriousness of the offense for which they have been adjudicated. These two factors -- often called risk and stakes -- usually form two independent dimensions of a classification matrix in which juveniles can range from low risk/low stakes ('x') to high risk/high stakes ('xx')(see Table 1).

**Table 1: Risk and Stakes Classification**

	<b>Stakes</b>		
<b>Risk</b>	Low	Medium	High
Low	x		
Medium			
High			xx

Using such a matrix allows for the distinction between juvenile offenders that have been adjudicated on a serious petition but for whom the risk of re-offending is low (high stakes/low risk) and those that are both serious and high risk (high stakes/high risk). The key point here is that one does not confound factors measuring the seriousness of the offense with those predictive of future offending.

*"There is often little or no relationship between the type of offense committed by a youth (or adult for that matter) and their subsequent risk of offending."*

## The ProDES Risk Classification

The risk/treatment nexus can be equally confusing. When a program considers a youth from the perspective of treatment, there will inevitably be some issues that are pertinent to risk assessment. For example, chronic drug and/or alcohol abuse is both a treatment and a risk factor. However, there are other factors that present major treatment challenges -- mental health problems, sexuality issues for example -- that may have no significance with regards to predicting future offending. ***As a result, there will be juveniles that are classified low risk who pose very challenging and difficult cases from a treatment perspective.*** Equally, there will be high risk offenders who are among the least challenging from a treatment perspective. As with risk and stakes, the independent dimensions of risk and treatment must not be confused.

Why have a *ProDES* Risk Classification?

When programs review outcome measures such as retention rates, AWOLs or re-offending, they tend to consider the results in the context of the type of juvenile they received. Similarly, if outcomes across different programs are to be compared, then it is vital that the outcomes be considered in the context of the type of intake population. The risk classification of individual juveniles reflects one of the dimensions that should be considered. In other words, rather than simply compare outcomes for programs, one compares outcomes for like cases across programs. For example, what are the re-offending rates for high-risk juveniles across different residential programs?

For this approach to outcomes assessment to be useful, the risk classification must actually work. Unfortunately, this is not always the case.

Developing a risk classification is a complex and time consuming task requiring a good deal of information on juveniles over an extended period of time. In many situations this is simply not possible, so agencies use existing 'off-the-shelf' risk instruments that may have been developed on an entirely different juvenile population, at a different time and in a different place. It is a major (and often untested) leap of faith to believe that these instruments really do predict re-offending or risk level for your own population.

*"In many situations... agencies use existing 'off-the-shelf' risk instruments that may have been developed on an entirely different juvenile population, at a different time and in a different place."*

## *Risk and protective factors*

### Risk and Protective Factors

Risk-focused approaches to delinquency prevention were pioneered in public health and have been successful in preventing problems as diverse as cardiovascular disease and traffic-related injuries. These approaches to prevention try to identify and interrupt the causal processes that are responsible for producing a problem. Risk factors are conditions in an individual or the environment (social or physical) that predict an increased likelihood of developing the problem -- in this case delinquent behavior.

Some researchers have argued that, in addition to risk, we should pay close attention to protective factors (see Hawkins, 1996). These involve conditions in the individual or environment that counter or ameliorate risk by increasing resistance and inhibiting or at least slowing down their development. The balance of risk and protective factors help predict increased or decreased probability of problem behavior, though they cannot guarantee that any individual will develop or avoid such behavior. Therefore, we can identify factors that are related to risk of delinquency among the juvenile population but we cannot with certainty specify that any particular individual will indeed re-offend.

*"Risk factors are conditions in an individual or the environment (social or physical) that predict an increased likelihood of developing the problem -- in this case delinquent behavior."*

Risk-focused preventive efforts in health seek to reduce risk factors (such as smoking) and promote protective factors (such as regular exercise). Risk-focused approaches to delinquency prevention would seek to reduce or eliminate factors that predict an increased probability of delinquent behavior, and strengthen the factors that seem to mediate or moderate exposure to risk. Of course, it is likely that some risk factors cannot be changed or will be inordinately difficult to affect. Nevertheless, knowledge of these risk factors can help define populations that should receive preventive interventions designed to enhance protection in the face of risk exposure. Finally, by knowing what factors affect risk, we can attempt to mediate at some time prior to the developmental point at which they begin to predict subsequent delinquency.

## How to identify the risk factors?

### Protective Factors

The fact that so many youths are exposed to multiple risk factors and nevertheless manage to negotiate their way through adolescence without becoming delinquent suggests that there are powerful factors that can insulate against risk.

Three classes of such protective factors have been identified: factors inherent in the individual, factors related to the development of social bonding, and factors reflecting healthy beliefs and clear standards for behavior.

Individual protective factors include female gender, high intelligence, a positive social orientation and a resilient temperament. Social bonding includes warm, supportive, affective relationships or strong attachments with family members or other adults. It also includes strong commitment to social institutions such as family, school or a religious organization. Healthy beliefs and clear standards include family and community norms opposed to crime and supportive of educational success and healthy development.

*"Three classes of such protective factors have been identified: factors inherent in the individual, factors related to the development of social bonding, and factors reflecting healthy beliefs and clear standards for behavior."*

### How Do We Identify The Risk Factors?

Reviews of research on risk prediction and classification have provided a rich source of information on the main risk factors that consistently are found to predict delinquency. These factors can be divided into a number of different domains: community, family, school and the individual and peer group. Fortunately, *ProDES* offers multiple measures for each of these domains.

***In the ProDES analysis we have purposively restricted ourselves to the use of information that is routinely available in the juveniles' Family Court file. By doing so, we ensure that the risk classification is based only on information known to decisionmakers at the time of the dispositional decision. This is a significant departure from the risk classification we have previously used in program reports, which takes into account some staff assessment and self-report scale data.***

The method of developing the risk instrument involves the use of a statistical

## Why Change the Risk Classification?

technique called configural analysis. In essence, this technique searches through all the possible associations between the potential predictor variables and the outcome (re-offending). It first identifies the strongest predictor -- in this case gender.

Having identified the first predictor and the number of categories within that variable (in this case two -- males and females) the analysis then takes each category separately and searches for the best predictor in each instance. As a result, the second predictor may not always be the same for each category -- though in this case the number of prior arrests emerges as the second predictor for both males and females. The analysis progresses in the same fashion -- identifying the best predictor for each subgroup of cases -- until it can progress no further.

### Why Change the Risk Classification?

When *ProDES* began reporting data, we employed a standardized risk instrument developed by the National Council on Crime and Delinquency (NCCD). This is a staff assessment measure that is collected at the point of intake and again at discharge, and includes items such as: prior arrest record, prior placement history, substance abuse history, peer relations, etc. The final risk score came from the addition of each individual item's score and were then grouped into low, medium, and high risk. After several years of collecting these data, we were able to test the validity of the risk instrument for Philadelphia's population - that is, we wanted to see if it measured the likelihood of later offending. We found that the staff assessed risk instrument did not work for Philadelphia's delinquent program clients and that it was necessary to develop our own risk classification.

We developed a new risk instrument by selecting items from the entire range of *ProDES* intake data (including J-file, staff assessment, and self-report scale data). Though many of the predictors were the same or similar to those in the NCCD risk instrument (e.g., prior offenses) this new instrument included other predictors, such as the juvenile's gender, age at the time of program

## What Are the Risk Factors?

commitment, the juvenile's self-reported perceptions of problems at home and self-reported measures of parental control and supervision. This revised classification has been used in system-wide and program-level reports, primarily to make comparisons of key outcomes across programs (i.e., to make comparisons for low, medium, and high risk clients separately so that programs with a lower risk intake population didn't artificially look more successful than those who took a higher risk clientele).

Recently, Family Court has expressed an interest in using a risk instrument as part of their information gathering process prior to disposition. The utility of the *ProDES* instrument was limited by the fact that some of the required items are unavailable at, or just prior to, the point of disposition. Accordingly, we agreed to further revise the risk instrument to include only the information available at the point of disposition.

### What Are the Risk Factors for Philadelphia?

The first and most important predictor of re-offending was the gender of the juvenile (Figure 1). The male re-offending rate was almost 40%, whereas the female rate was just 14%. Though additional variables did differentiate risk within the female subgroup, there was no category for whom risk reached either medium or high risk. However, since there is some variation in the re-offending rates among sub-groups of female offenders, we examine them in Figure 2.

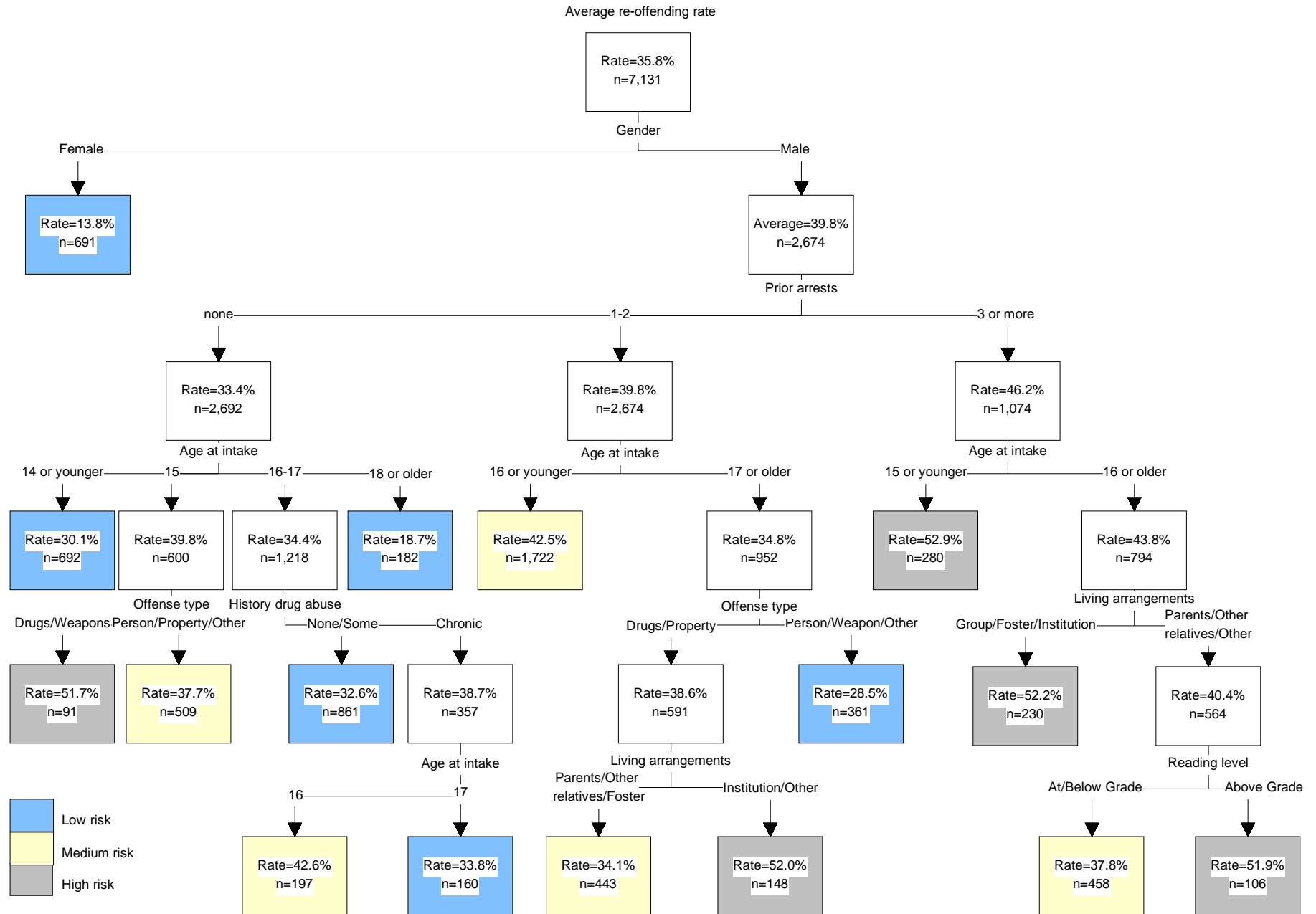
For males the next most important split was on prior arrests -- with risk increasing as the arrest record grew.

Among the males with ***no prior arrests*** the next split was on the basis of age at the time of disposition.

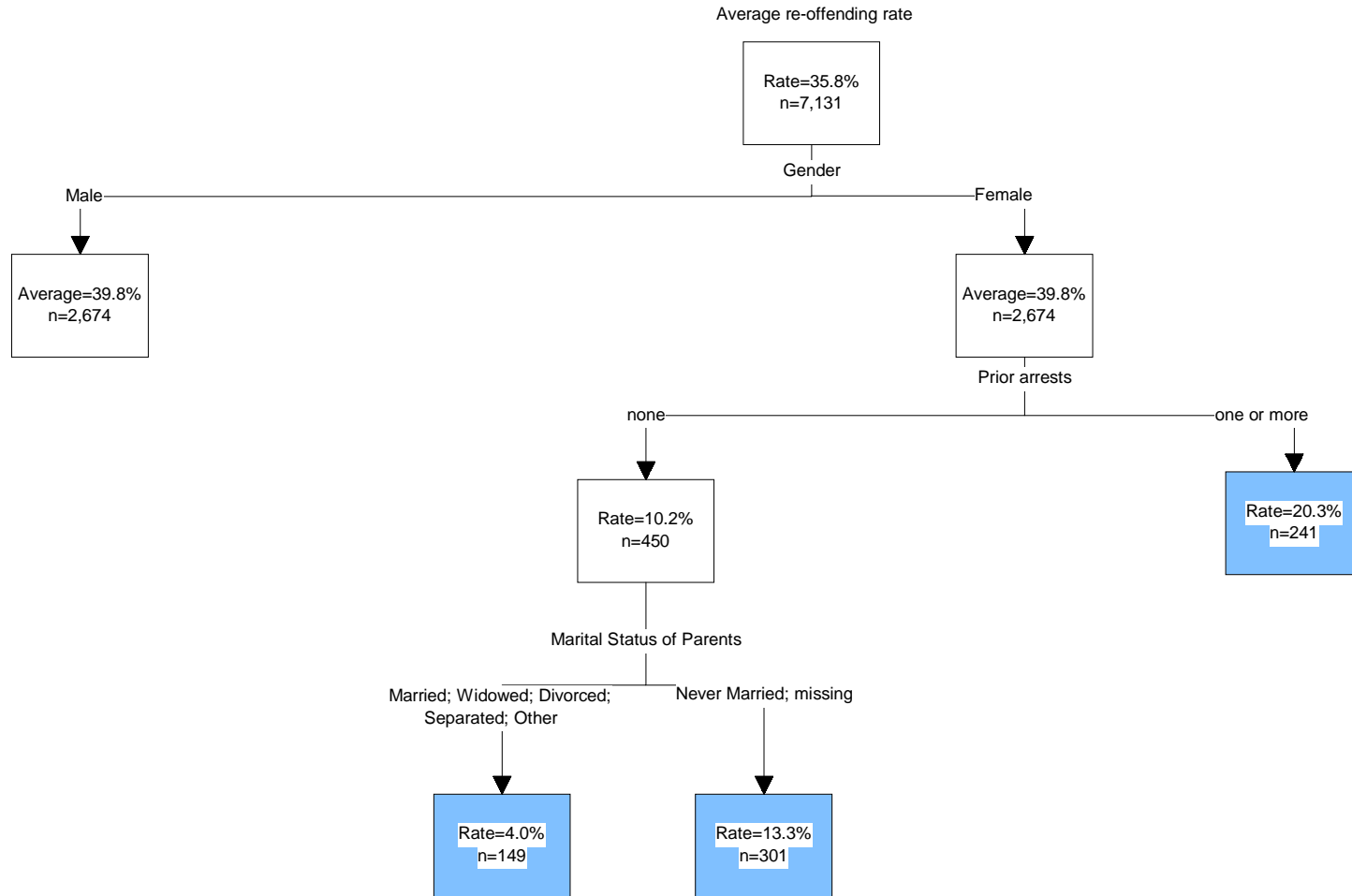
- ◆ The very youngest juveniles -- those aged 14 or younger -- all fell into the low risk category.
- ◆ The 15 year olds had the highest rate within the "no prior" group, and could be further divided on the basis of offense type into a medium (per-

*"Though additional variables did differentiate risk within the female subgroup there was no category for whom risk reached either medium or high risk."*

**Figure 1: Predictors of Re-offending for Philadelphia Boys**



**Figure 2: Predictors of Re-offending for Philadelphia Girls**



son, property or 'other' offense) and high risk (drugs or weapons offense) group.

- ◆ The 16-17 year olds were divided on the basis of history of drug abuse and, for the chronic drug abusers, age at intake, into two groups -- two low risk (no/some history of drug abuse; history of chronic drug abuse and 17 at time of disposition) and one medium risk (history of chronic drug abuse and 16 at time of disposition).
- ◆ Among the males with **1 - 2 prior arrests** the next split was also age at the time of disposition.
- ◆ Those juveniles aged 16 or younger fell into the medium risk category.
- ◆ Those aged 17 or older were further divided on the basis of offense type and living arrangements into low, medium and high risk subgroups. The low risk subgroup comprised the juveniles with a person, weapon or 'other' offense. The medium risk subgroup comprised those juveniles with a drugs or property offense and who lived with their parents, foster parents or other relatives at the time of the offense. The high risk subgroup comprised those juveniles with a drugs or property offense and who lived in an institutional setting at the time of the offense.

*"Among the males with three or more arrests, those aged 15 or younger were all high risk."*

Among the males with **three or more prior arrests** the next split was again age at the time of disposition.

- ◆ Those juveniles aged 15 or younger were all high risk.
- ◆ Those aged 16 or older were further divided on the basis of living arrangements and reading level into medium and high risk subgroups. The medium risk subgroup comprised those juveniles living with parents or other relatives and who had a reading level that was at or below their age appropriate grade level. The high risk groups comprised juveniles living in a group or foster home or an institution at the time of the offense or juveniles living with parents or other relatives and who had a reading level that was above their age appropriate grade level.

Among females (Figure 2), the best predictor of re-offending was the same as that for males - prior offending. Those with no prior arrests were half as

Using Risk to Understand the System

likely (10%) as those with one or more priors (20%) to receive a new petition.

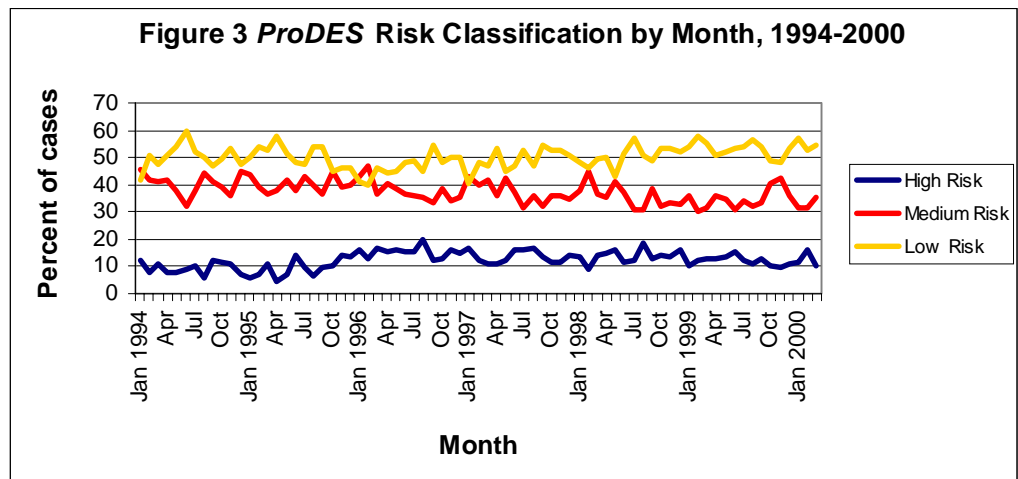
Girls with no prior arrests could be further differentiated by knowing the marital status of their parents. Girls whose parents were never married were significantly more likely (13%) to re-offend than were those whose parents were married, divorced, widowed, or separated (4%). The latter subgroup of girls were the least likely of all girls to re-offend.

*It is important to note that much of what program staff report make girls difficult to work with (e.g., history of mental health problems, history of family violence) are not significant predictors of re-offending. This underscores the point that the most challenging clients are not always the ones most likely to re-offend.*

Using Risk to Understand the Juvenile Justice System

Having developed a risk classification system, it is now possible to make more appropriate comparisons and assessments of the juvenile justice system in operation. For example, we are able to monitor trends over time in the risk composition of the incoming juvenile population. Figure 3 shows that the proportion of low risk juveniles has remained constant throughout, while the relative mix of medium and high risk juveniles has changed some-

*"...Much of what program staff report make girls difficult to work with...are not significant predictors of re-offending. This underscores the point that the most challenging clients are not always the ones most likely to re-offend."*



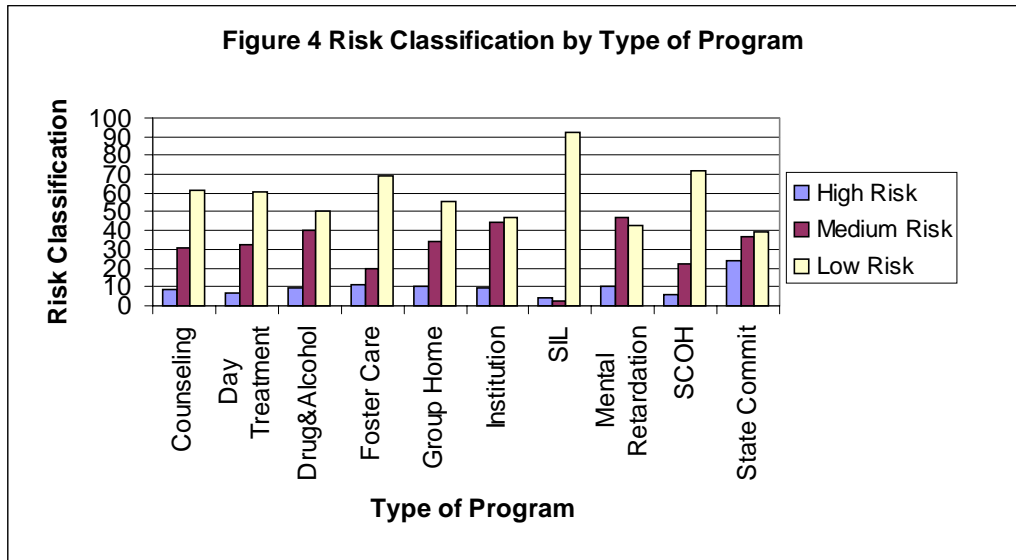
Risk Classification and Type of Program

what toward a larger ratio of high risk.

Figure 4 shows the distribution of risk for each of the major program types as defined by the Department of Human Services service categories. As one might expect, the proportion of high risk juveniles is greatest for the state commits and the proportion of low risk juveniles highest for the supervised independent living (SIL). Not so expected is the similarity of risk in the day treatment and institutional programs -- with high risk youth comprising 7% and 9% respectively of the total intake.

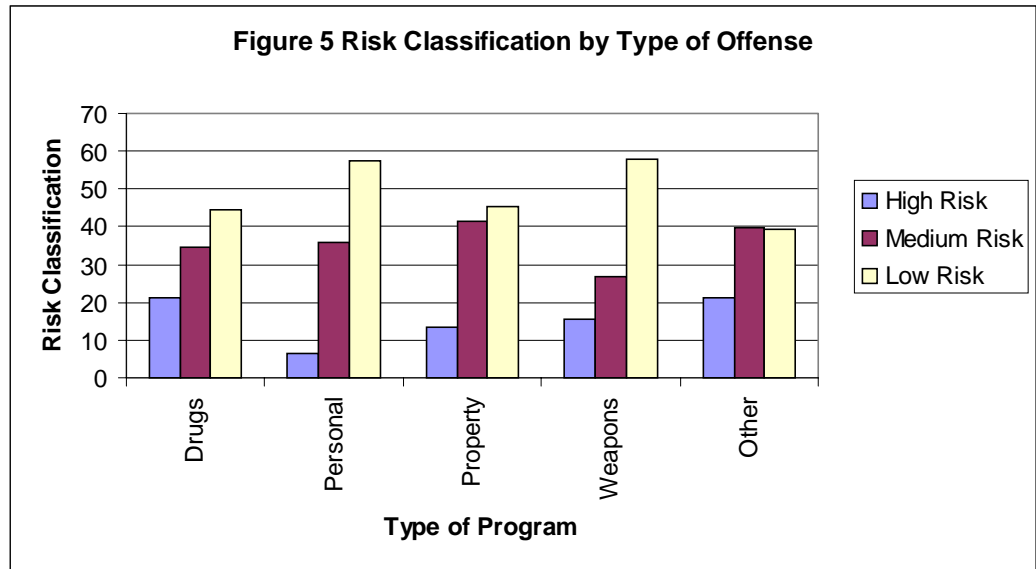
Finally, Figure 5 (next page) confirms the contrast between risk and stakes

"Not so expected is the similarity of risk in the day treatment and institutional programs - with high risk youth comprising 7% and 9% respectively of the total intake."



that was discussed earlier. The proportion of high risk juveniles is highest for drug and 'other' offenses and lowest for juveniles who committed offenses against a person.

## Summary



### Summary

As research and evaluation increasingly relies on the measurement of program outcomes, it is vital that appropriate comparisons are being made. It is naive, even misleading, to examine outcome measures without taking into account variations in the type of intake population. The risk of re-offending represents just one of these dimensions. Others could include needs, treatment difficulty and even seriousness of offense. These are all independent constructs and we stress the need not to confound one with the other.

### References

Development Model: A Theory of Antisocial Behavior (From *Delinquency and Crime: Current Theories*, P 149-197, 1996, J. David Hawkins, ed.

## Appendix

<b>Characteristics of Youths</b>	<b>% Who Re-Offend</b>
<u>Low Risk</u> Female	13.8%
Male w/ no prior arrest; aged 14 or younger	30.1%
Male w/ no prior arrest; aged 16-17; none/ occasional drug abuse history	32.6%
Male w/ no prior arrest; aged 17; chronic drug abuse history	33.8%
Male w/ 1-2 prior arrests; aged 17 or older; person/weapon/other offense	28.5%
<u>Medium Risk</u>	
Male w/ no prior arrest; aged 15; person/property offender	37.7%
Male w/ no prior arrest; aged 16; chronic drug abuse history	42.6%
Male w/ 1-2 prior arrests; aged 16 or younger	42.5%
Male w/ 1-2 prior arrests; aged 17 or older; drug/property offense; lived w/ parent(s), other relatives or foster care at commit date	34.1%
Male w/ 3 or more prior arrests; aged 16 or older; lived with parents, other relatives, other setting at commit date; at or below grade appropriate reading level	37.8%
<u>High Risk</u>	
Male w/ no prior arrest; aged 15; drug/weapon offender	51.7%
Male w/ 1-2 prior arrests; aged 17 or older; drug/property offense; lived at institutional placement/ other setting at commit date	52.0%
Male w/ 3 or more prior arrests; aged 15 or younger	52.9%
Male w/ 3 or more prior arrests; aged 16 or older; lived in residential placement at commit date	52.2%
Male w/ 3 or more prior arrests; aged 16 or older; lived with parents, other relatives, other setting at commit date; above grade appropriate reading level	51.9%