



# **The Role of Predictive Analytics in Structuring Child Welfare Decision Making**

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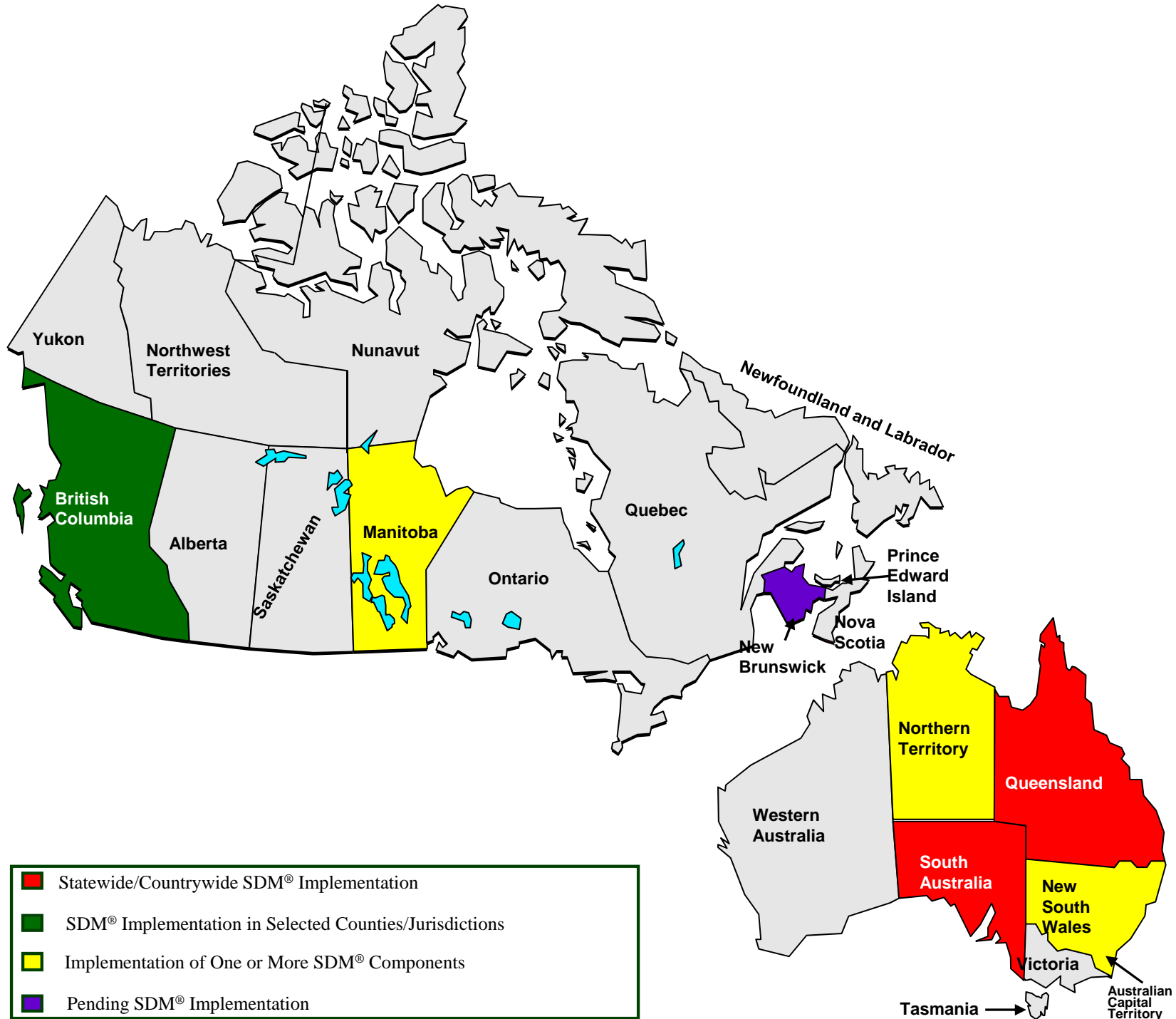
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*The Children's Research Center is a nonprofit social research  
organization and division of the  
National Council on Crime and Delinquency*





# Information Theory and Predictive Analytics

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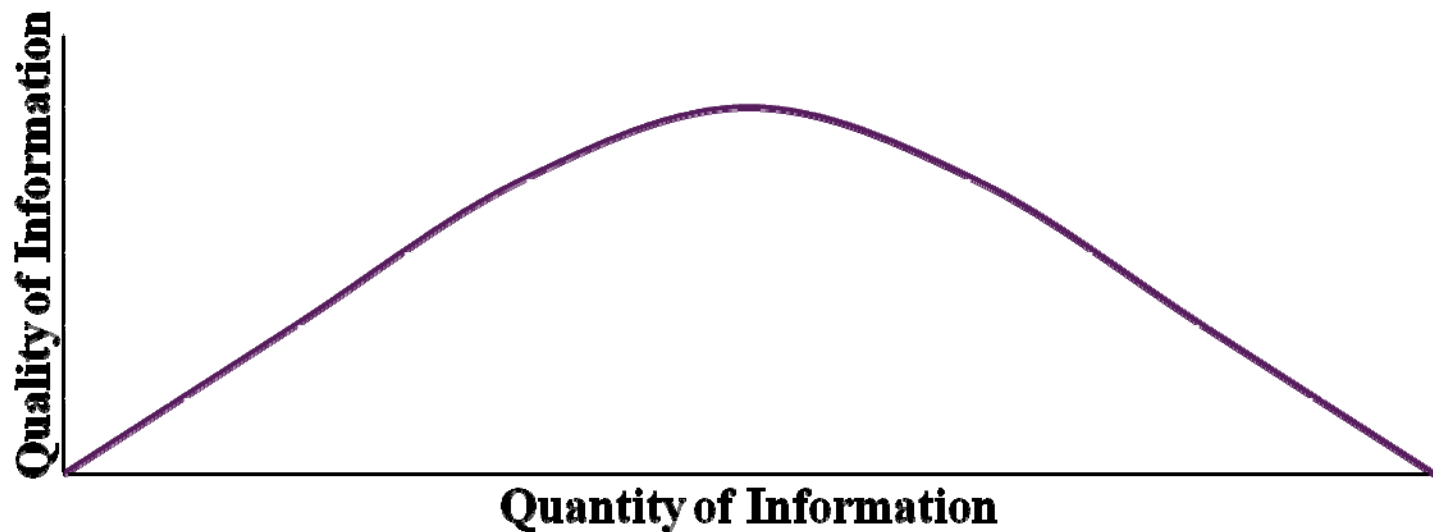
## First Tenet:

- All data are not information. Information reduces uncertainty, data do not.
- Confusing data with information produces disparity.

# Information Theory and Predictive Analytics

## Second Tenet:

- Humans process a limited amount of information effectively: more is not always better.



# Information Theory and Predictive Analytics

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Predictive analytics can process vast amounts of data and identify what is truly information

BUT

Not all decisions should be based on  
“PREDICTION”

# Information Theory and Predictive Analytics

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Agencies must consider “STAKES”  
as well as efficiency.

# “Structuring” Child Welfare Decisions

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## Structure

- Explicitly identifies criteria to be considered at each decision point (good decision systems break a problem into its components: Dawes, 1993)
- Determines how each criterion relates to decision at hand
- Results in a presumptive decision

# A Good Decision System Contains the Following Properties

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**Validity:** Does the system measure what it purports to measure? Does it accomplish its goals?

- Criterion validity
- Concurrent validity

**Reliability:** Do similar cases receive similar recommendations for placement and services?

**Equity:** Is the system fair to various groups?

**Utility:** Does the system actually guide decisions at the individual case level? At the agency level?

# How the SDM<sup>®</sup> System Addresses Child Safety and Risk of Future Maltreatment

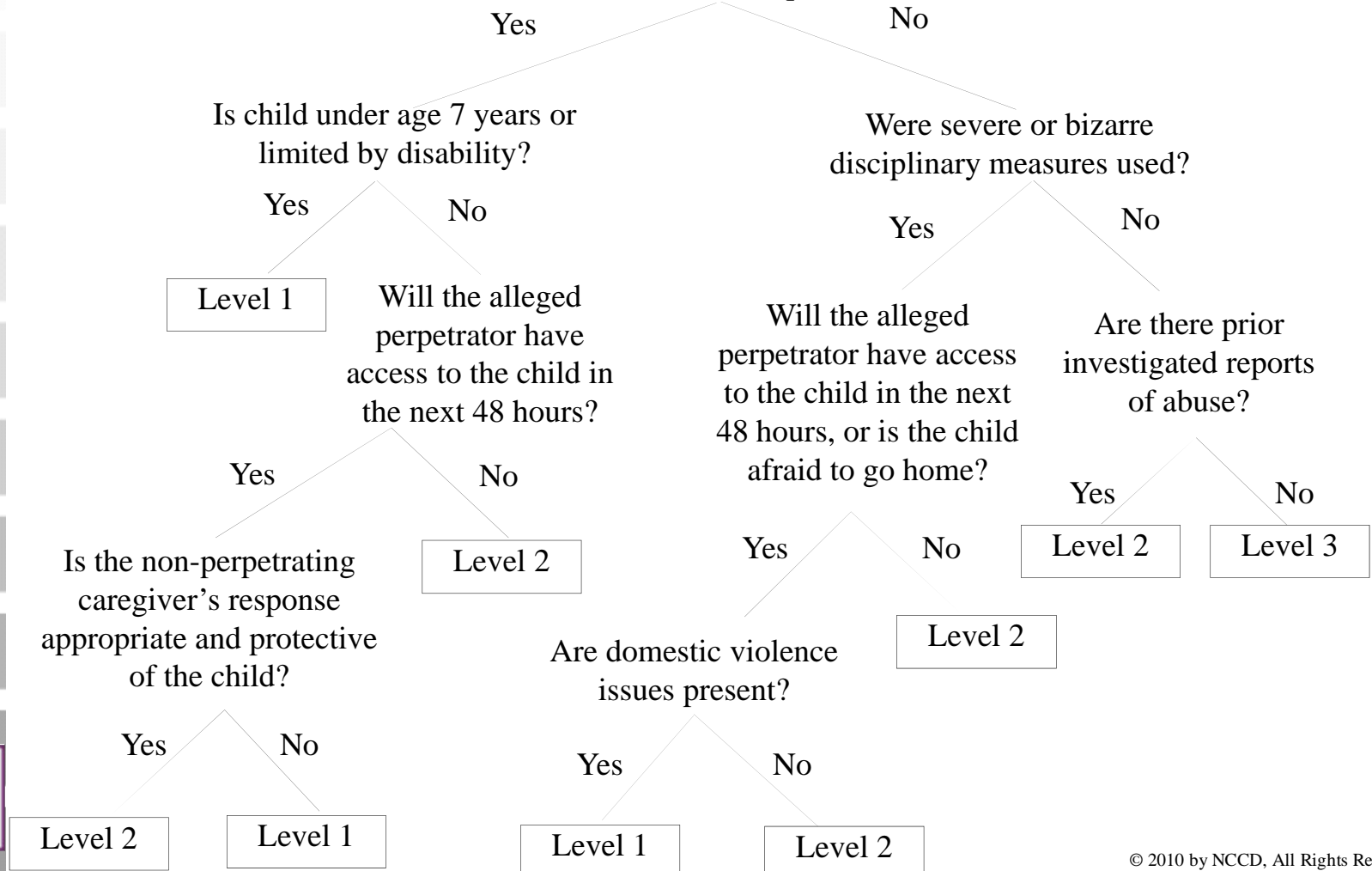
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A response priority tool, which uses a decision-tree model to screen referrals at intake and to determine which children appear to be at sufficient risk of imminent harm to warrant an immediate, face-to-face contact with an investigation caseworker;

# Response Priority

## PHYSICAL ABUSE

*Are significant bruises, contusions, or burns evident or is medical care required?*

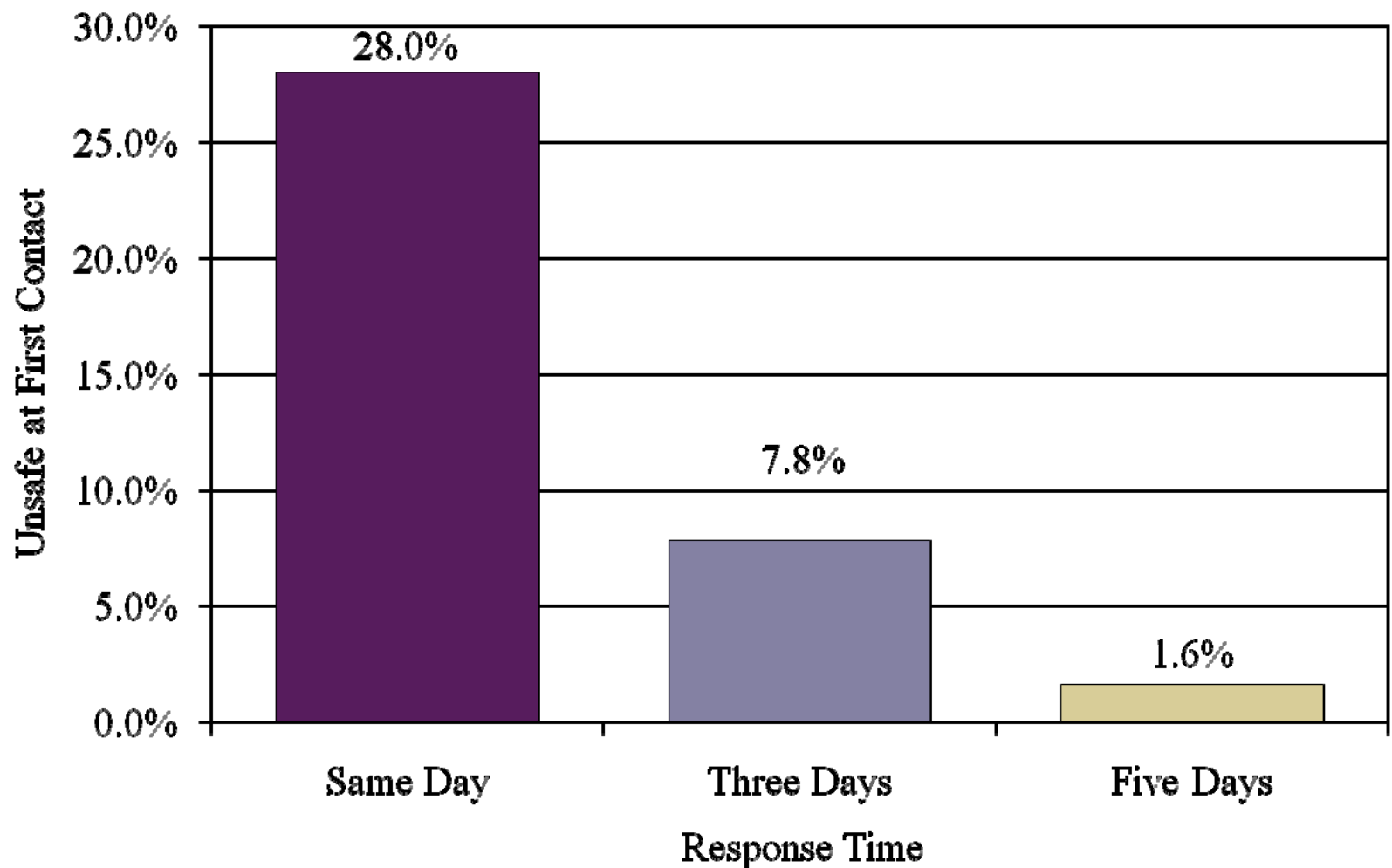


## **How the SDM<sup>®</sup> System Addresses Child Safety and Risk of Future Maltreatment**

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A safety assessment protocol, using a modified decision-tree model, to confirm whether a child is currently unsafe or is likely to sustain harm in the imminent future, and to guide actions to ensure the child's protection while a more thorough assessment is completed;

# Relationship Between Response Priority and Safety Assessment (2003)



N = 1,662



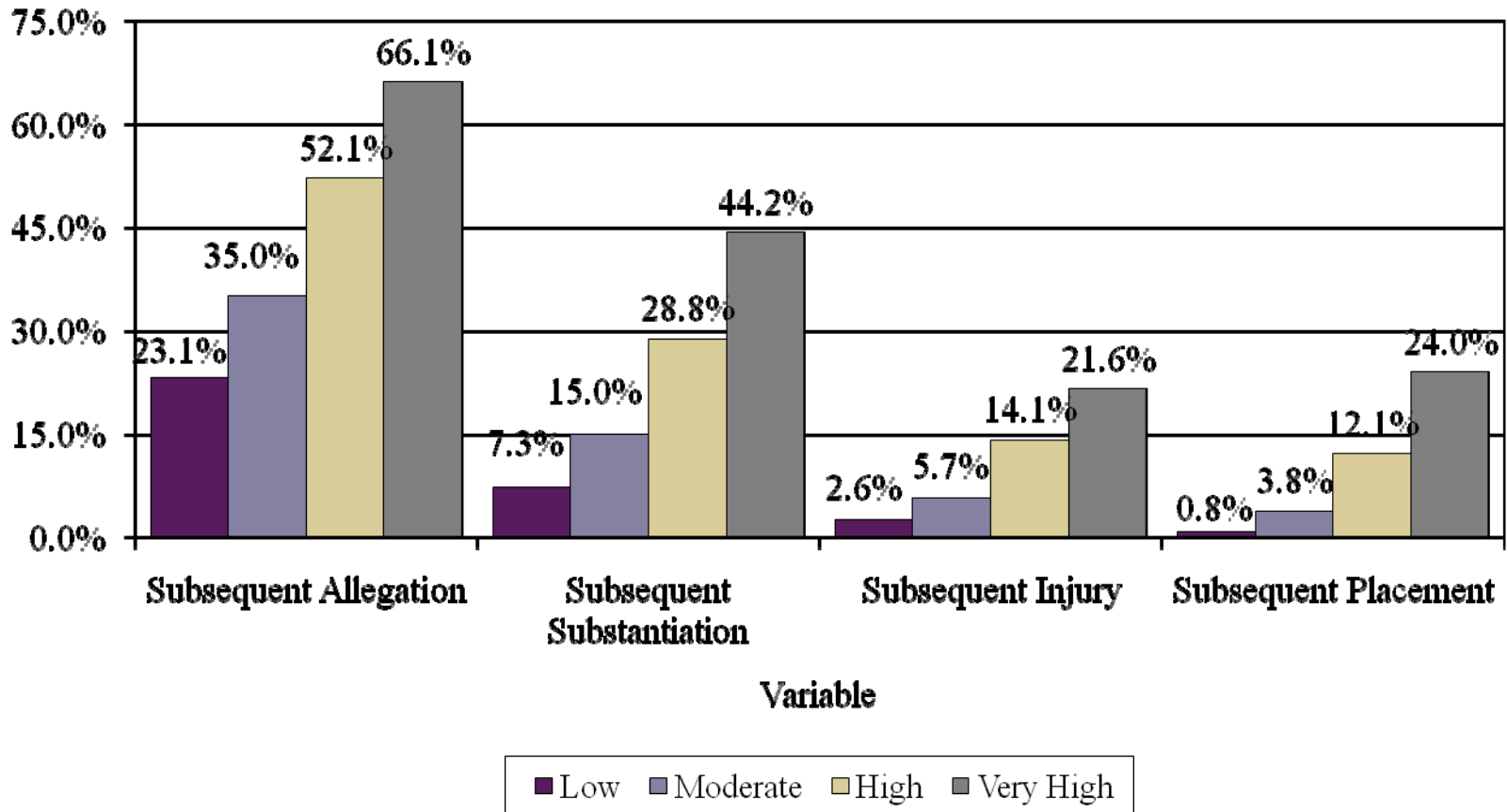
## **How the SDM<sup>®</sup> System Addresses Child Safety and Risk of Future Maltreatment**

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An actuarial risk assessment tool, which estimates the probability of future maltreatment and categorizes families into risk levels, to inform case disposition decisions—that is, whether to open a case for child protective services, refer a family to other providers for case management and supportive social services, or close the referral at the intake level.

A risk reassessment that assesses behaviors and progress and adjusts the risk level accordingly.

# Combined Results of Studies With a 24-month Follow-up



Includes Data From CO 1999 (Alleg., Sub., Injury, & Place), WI Urban Caucuses 1998 (Alleg. & Sub.), RI 1992 (Sub. & Injury), CA 1998 (Alleg., Sub., Injury, & Place.), and CA 2003 (Alleg., Sub., & Place.).

Note: The sample varies by outcome measures. Substantiations, for example, were reported for 11,152 families; placement was an outcome recorded for 9,182 cases. In the substantiation sample, 20% were low risk, 43% moderate risk, 26% high risk, and 11% very high risk. In the placement sample, 22% were rated low risk, 44% moderate risk, 25% high risk, and 10% very high risk.

# Equity

## Michigan Percentage of Families at Each Risk Level

<b>Risk Level</b>	<b>Whites (N = 6,651)</b>	<b>African Americans (N = 5,296)</b>
Low	10.5%	11.3%
Moderate	30.7%	30.0%
High	45.1%	46.0%
Very High	13.7%	12.7%

Source: Michigan Family Independence Agency, 2002.

## Equity (continued)

### Michigan Substantiation Rates at 12 Months (by Rate) 1995

<b>Risk Level</b>	<b>Whites</b>	<b>African Americans</b>
Low/Moderate*	5.0%	6.0%
High	12.0%	15.0%
Very High	30.0%	28.0%

\*Because of the small number of cases rated low risk (when the sample is divided by race), the low and moderate risk categories have been combined.  
Source: Michigan Family Independence Agency, 2002.

# The SDM<sup>®</sup> System and Well-being

## Strengths and Needs Assessment Purposes

- It ensures that all workers consistently consider each family's strengths and weaknesses in an objective format when assessing need for services.
- It provides an important case planning reference for workers and first-line supervisors, which eliminates long case narratives and reduces paperwork.
- It provides a basis for monitoring whether appropriate service referrals are made.

## The SDM<sup>®</sup> System and Well-being (continued)

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### Strengths and Needs Assessment Purposes (continued)

- The initial needs assessment, when followed by periodic reassessments, permits caseworkers and supervisors to easily assess changes in family functioning and thus monitor the impact of services on the case.
- It provides management with aggregated information on the issues client families face. These profiles can then be used to develop resources to meet client needs.

# Merging “STAKES” and Analytics in Reunification Decisions

## Assumptions

- When families reduce risk to an acceptable level and maintain appropriate visitation with their children, the child should be returned home *if* the home is judged to be safe.
- When risk remains high *or* parents fail to meet their visitation responsibilities *or* the home remains unsafe for a specified period time (in concert with federal guidelines and agency policy), it is presumed that the goal will be changed from return home to another plan for permanency.

# Reunification Assessment

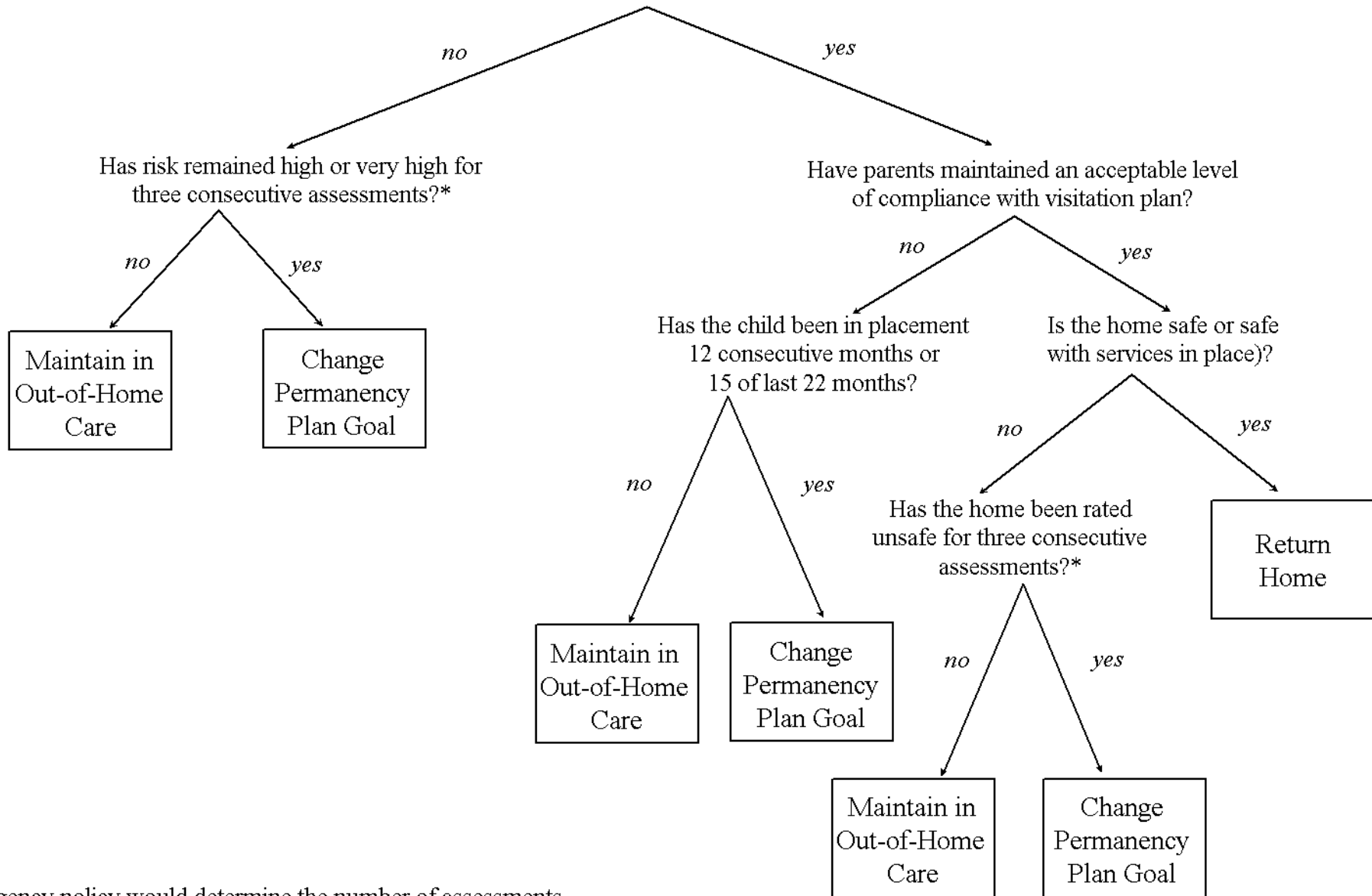
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- A structured risk reassessment;
- A structured evaluation of parental compliance with visitation schedules;
- A reunification safety assessment; and
- Structured guidelines for changing the permanency planning goal.

# Placement/Permanency Plan Guidelines

## Is Risk Level Low or Moderate?

c: 8/99



\*Agency policy would determine the number of assessments conducted before a change in the permanency plan is indicated.

# Summary

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1. Decision protocols should be simple. Criteria considered at each decision point should be explicit and easily articulated to staff, the judiciary, and the community.
2. Decision tools should consist only of criteria that can be assessed with some degree of reliability at the point in time each decision is made, and which relate specifically to the decision at hand.
3. Decision tools should lead *directly* to presumptive decisions. This requires the structure of an additive index, a decision tree or, at a minimum, clear rules on the role of each factor in reaching each decision.

## Summary (continued)

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4. Overrides to tools should be allowed, but reasons for overrides should be documented; approved by a supervisor; and monitored to determine their role in the case management process.
5. Decision tools, regardless of their origin (research based, consensus based, or clinically based) should be tested for reliability, equity, and efficacy. Evidence regarding the effectiveness of each decision tool should be routinely collected, analyzed, and reported back to staff and administrators.

## Summary (continued)

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6. Finally, it is essential that the child protection field recognizes that it is not enough to simply identify factors with a demonstrated relationship to risk and allow these factors to be applied in different ways by different staff members at each decision point. A high level of *structure* is required to ensure that staff make consistent and appropriate decisions to expedite the safety and well-being of children in the care of the child welfare system.