Emerging Developments in Evidence-based Practices in Child Welfare:

The Role of Proactive, Data Driven, Community Safety Interventions

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Jennifer Stoneham, Keira Stockdale, and Delphine Gossner

Government of Saskatchewan

SASKATOON POLICE

University of Saskatchewan

Faculty/Presenter Disclosure

- **Presenters:**

  - Jennifer Stoneham, Delphine Gossner, and Keira Stockdale

- **<u>Relationships with commercial interests</u>:**

  - None

Disclosure of Commercial Support

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  - No conflicts of interest

Mitigating Potential Bias

- **Does not apply**

Purpose

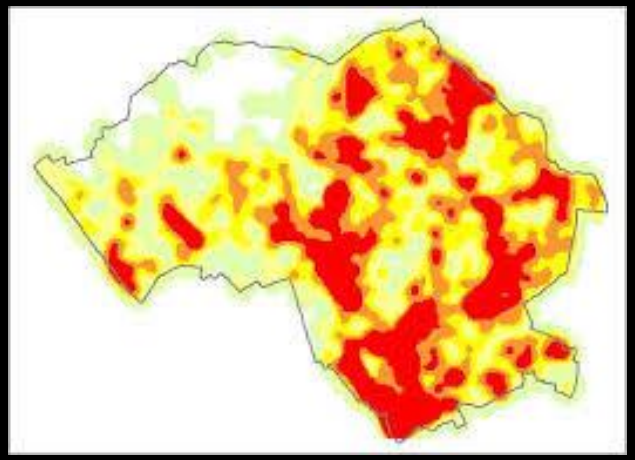
1. Discuss key components of *Proactive Child Welfare: The Predictive Analytics Approach* literature review
2. Introduce and define a common language around predictive analytics
3. Highlight promising applications of proactive analytics in child welfare
4. Highlight ongoing work in the area of community safety analytics here in Saskatchewan

Predictive Analytics - The practice of extracting information using mathematical techniques to identify the likelihood of future outcomes. Identifies patterns not normally visible using standards techniques.

Proactive Analytics - The action that needs to be taken based on the results of a predictive analysis.

Applications of Predictive Analytics?

- Business
- Health
- Law Enforcement
- Social Services



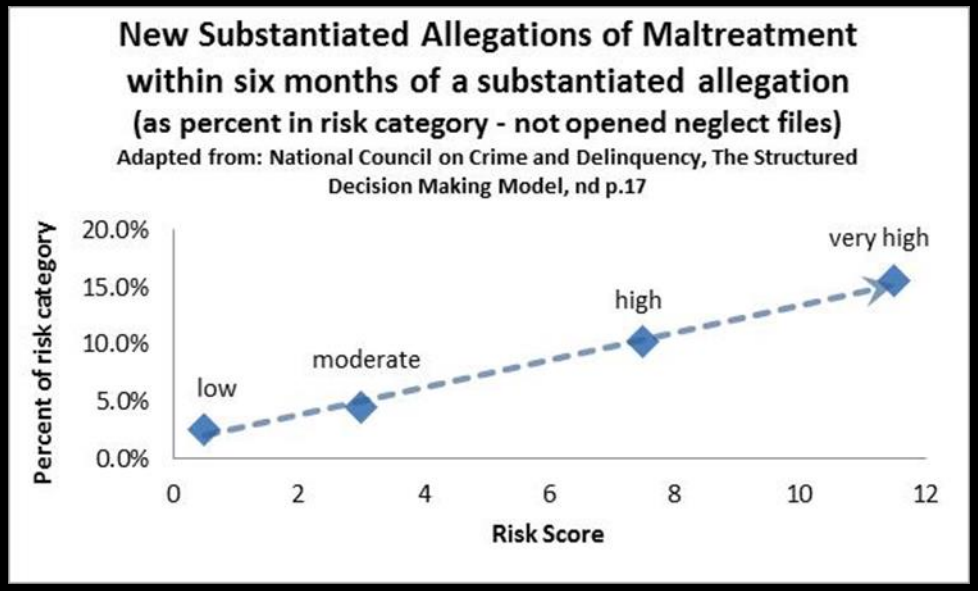
E.g., "Hot spotting"

Why Proactive Analytics in Child Welfare?

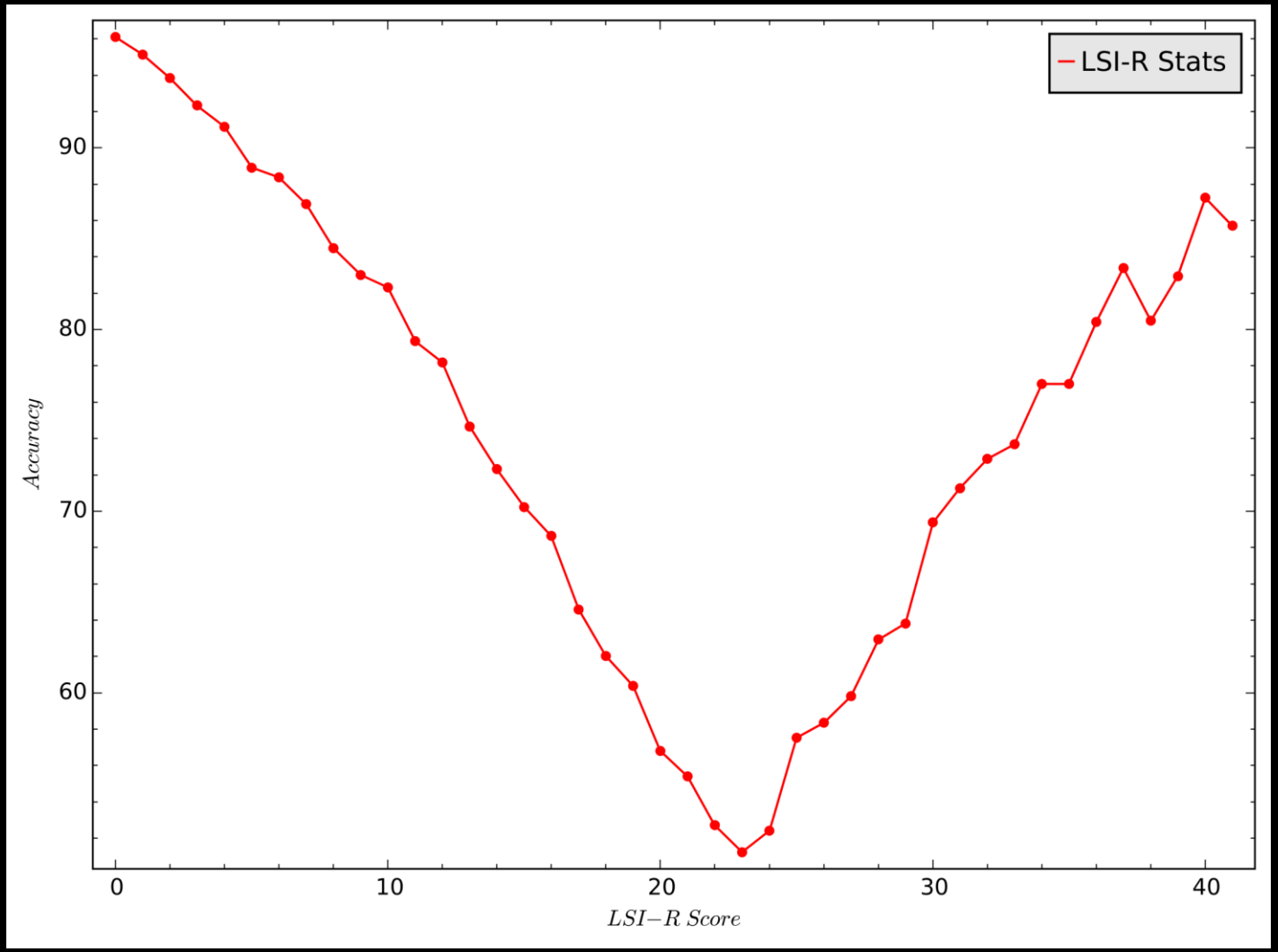
- It is not enough to merely predict that either a negative or positive event may occur to a child or youth
- Actions must be taken to prevent the negative event and/or increase the likelihood of the positive event

Predictive Analytics is not new!

- E.g., Budgeting
- E.g., Child welfare caseload forecasts
- But, linear relationships are often assumed!



Predictive Accuracy of LSI



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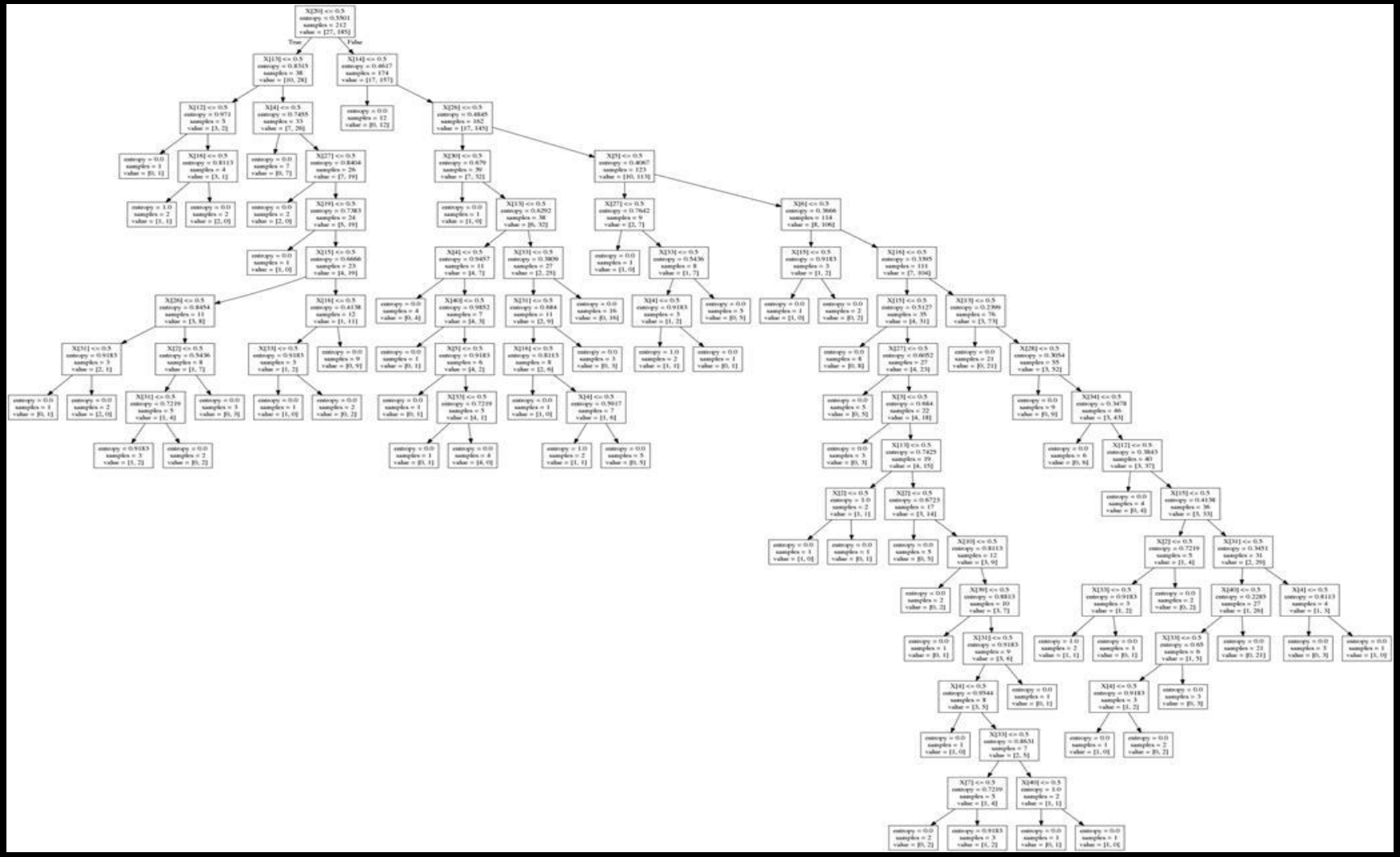
LSI Decision Tree



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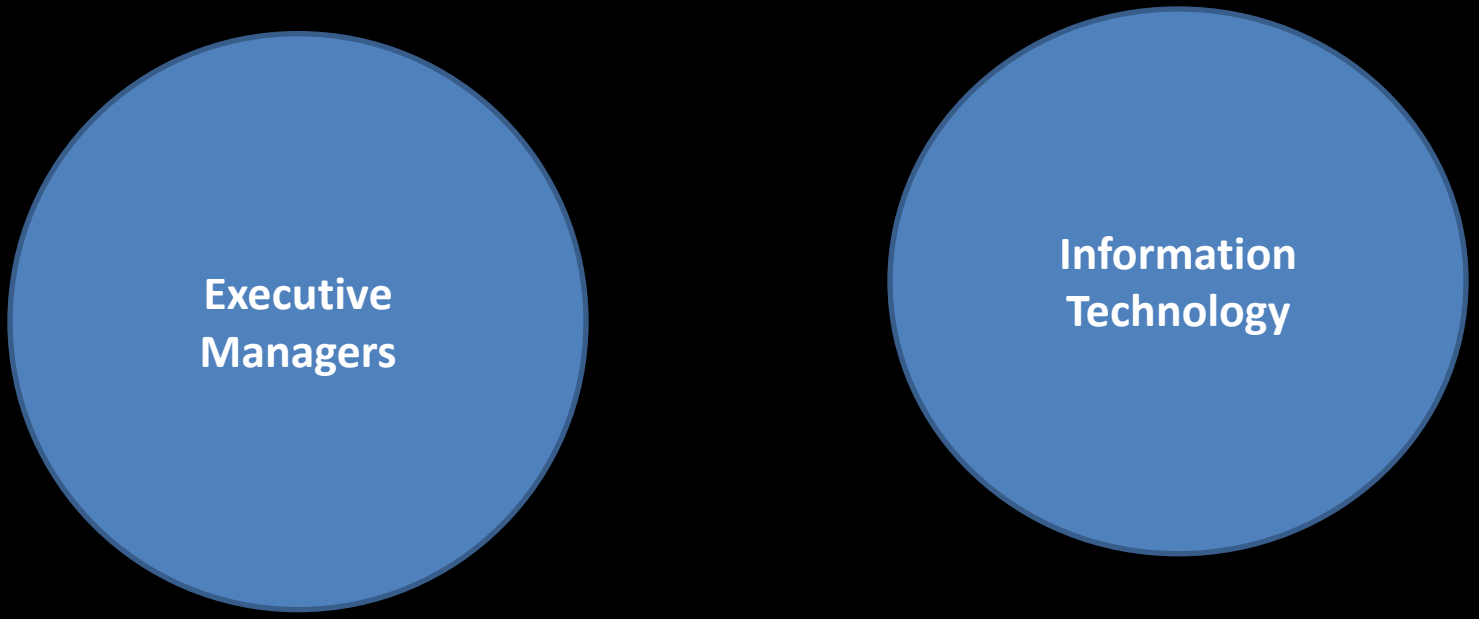
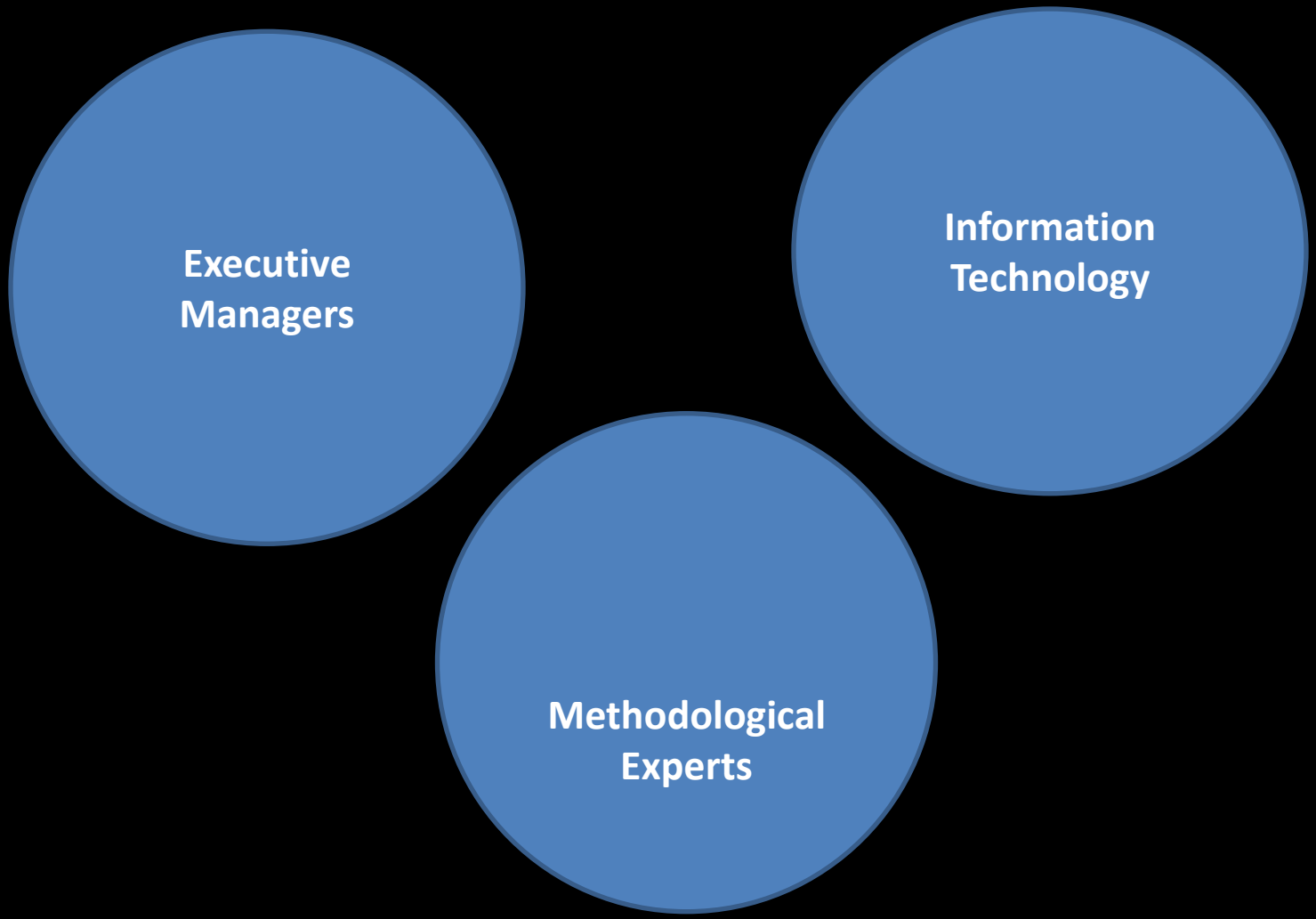
Advanced Predictive Analytics: Paradise Lost



Advanced Predictive Analytics: Elements for Success:



Emerging Applications of Proactive Analytics

- Examples from Child Welfare:
  - Department of Child and Family, Los Angeles
  - Department of Child and Family Services, Florida
- Saskatchewan-based projects:
  - Saskatchewan Police Predictive Analytics Lab

Approach to Understanding Risk Assessment (AURA) Tool in Los Angeles

Goals:
1. Prevent critical incidents and child death in care
2. Target limited resources to highest risk cases

- Retrospective research
- Created risk assessment tool using multiple systems
- Risk scores tested against 2013 critical events
- Researchers found it accurately identified 76% of the cases having a critical event

Approach to Understanding Risk Assessment (AURA) Tool in Los Angeles

- Researchers concluded had the department used the tool in 2013, it…

  "…would have enabled significant reduction in the number of tragic outcomes"

- Results published in *2015*, currently looking at implementation

Rapid Safety Feedback Process in Florida

- Nine child deaths from maltreatment in one county in less than three years (open welfare cases)
- Lead agency (Eckerd) reviewed all open welfare cases in the county (~1500)
- Developed a profile of cases with highest probability of child injury or death from multiple sources
- Subsequent development and use of predictive analytics software systems and tools

Rapid Safety Feedback Process in Florida

- Tool: "*rapid safety feedback process*"
- High probability cases identified using predictive models/software and reviewed by staff
- Focusing on 9 critical questions / case practices
- Reported results by Eckerd include:
  - no further abuse related deaths
  - 53% improvement in shared critical case information
  - 33% improvements in safety plans

SK Police Predictive Analytics Lab

Lab Objective:

Interventions developed from analytical findings are intended to be implemented in real-world settings in “real time” by police and community safety partners

Current Collaborators

- Saskatoon Police Service
  - Executive Management Team, Technology Services, Missing Persons Unit, Clinical Psychologist of Policing
- University of Saskatchewan
  - Centre for Forensic Behavioural Sciences and Justice Studies
  - Team of Math and Computer Science Professors, Faculty Advisory Group, Graduate Students
- Ministry of Justice
  - Policing and Community Safety Services, Research and Evidence-Based Excellence Branch
- Ministry of Social Services
  - Child and Family Programs
- All police services in Saskatchewan
- Defence Research and Development Canada (DRDC)

Missing Persons Project

Focus 1 is on Missing Children including children/ youth who run away from care

Primary objectives include:

1. Reducing the length of time children and youth are missing; and
2. STOPPING future running and preventing harmful outcomes by implementing preventative interventions.

Missing Children

Other analytics:

- Is there a relationship between missing children/youth and self harm? Suicide?

Links to Child Welfare

Risk Assessment:

- Risk assessments/factors collected for every case
- Predictive analytic methods can extract risk factors:
  - identification of risk factors for targeted case planning
  - create risk profile
  - strengthen existing tools
  - move to real time analytics
- Evaluate outcomes achieved through decision levels and decision making
- Mechanisms to report to agencies in real time
  - ideally reporting back to multiple community safety partners

Links to Child Welfare

Child Death Review:

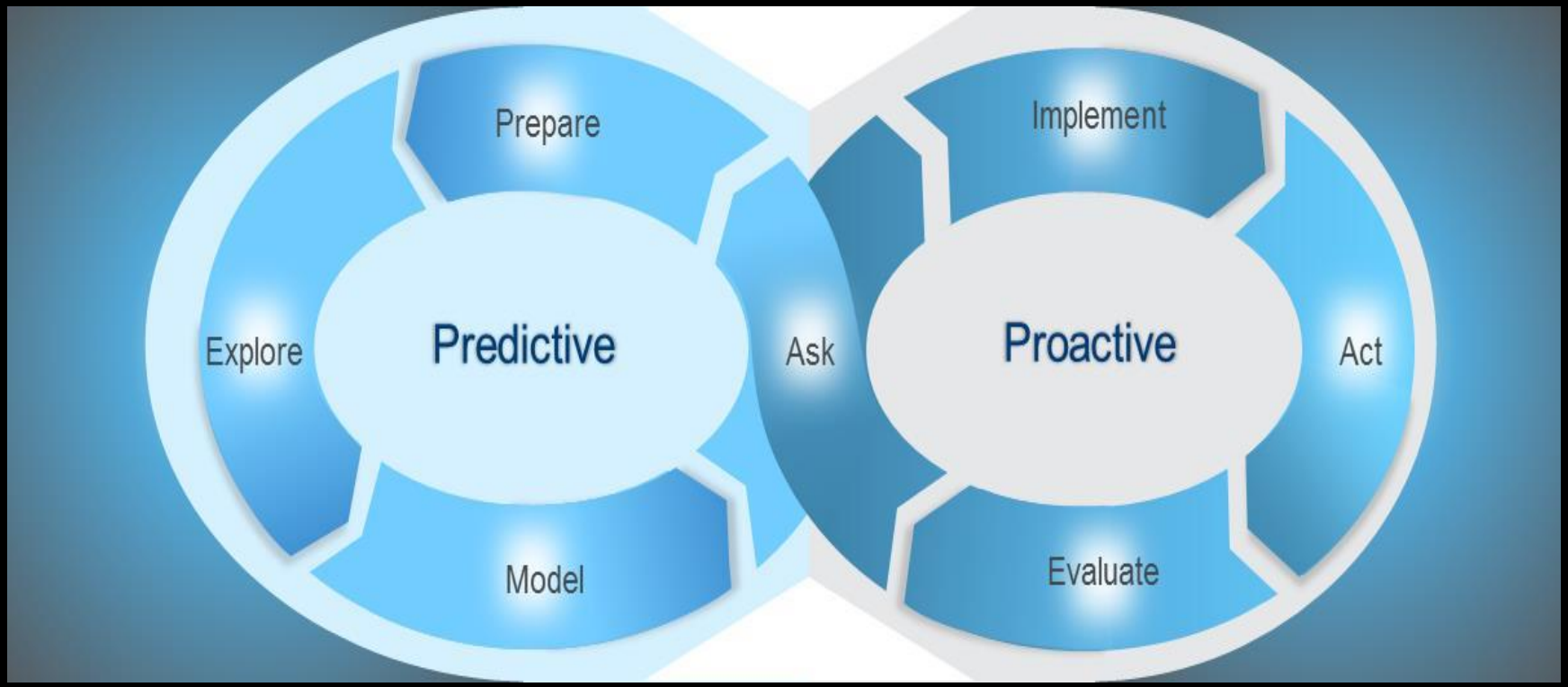
- SPPAL could be a potential resource for "*data driven public safety*" (Ontario 2014 CDR report)
- Possible mechanism for *data sharing and linkage* (Policy Statement - Child Fatality Review; American Academy of Pediatrics 2010)
- Capacity to assist in *identifying significant risk factors and trends in child deaths* and *improve practices and services that may better protect children from harm* (NCRPCD Child Death Review Principles)
  - Beyond "trends" => advanced modeling and applied tools
- Framework for an *evaluative mechanism to determine CDR follow-up* (Canadian Pediatric Society 2013)

Evidence-based Practice

- Examples of how predictive models are linked to real-world case plans
- Predictive analytics complements the evidence base to inform decisions and improve outcomes
- Limited evaluations of proactive projects exist
- Continuous feedback loop

An Iterative Process

(Source: SAS Powerpoint Presentation, *Supporting Analytics in Action: Considerations for a complete Analytics Process,* Tim Trussell, Specialist, Data Sciences, March 2016)



Take Home Message

- Advanced predictive analytic techniques applied within a evidence-based framework can assist community safety partners in improving business practices and decision making tools and ultimately, increase safety and wellbeing for children, youth, their families, and our communities!

Thank you