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Child Welfare Fact Sheet

Advanced Analytics for Child Welfare: Spotlight on Supervision Support

Protecting children is demanding, with new challenges arising seemingly every day. High caseloads and workload demands are putting tremendous pressure on child welfare staff. Cases are increasingly complex, especially during times of emergency response, when families face high unemployment, poverty, substance abuse, and other factors that can compromise child safety. This complexity is coupled with the ever-present struggle with staffing, from recruitment to training and retention. With all the demands and stresses on the system, how can a child welfare agency identify a high-risk situation before tragedy occurs?

Predictive risk model

To protect children, child welfare agencies need to take advantage of the latest data-informed solutions for assessing safety, supporting decision making, and furthering the best interests of the child. Predictive risk models (PRMs), which pair the latest in advanced analytics with existing data from the systems of record, support data-informed decisions for identifying and prioritizing children at highest risk.

PRMs can be used at various points throughout a child's engagement with the child welfare system, but they all work in essentially the same way. A PRM tool can be embedded at key points in the process, such as when a caseworker receives a hotline referral. It automatically provides a risk assessment using available data fields about each person included in the hotline call or involved with the case. These fields can include previous interactions recorded in the systems of record, or other administrative data. Because PRM scores rely on data in administrative systems, there is no additional data entry, reducing the burden of data entry for caseworkers. The PRM process uses a set of rules (called an algorithm) to combine the data fields and generate a predicted probability of a future event. This risk score provides a standardized, data-informed resource to support decision making.

Support for supervisors

Problem

We know that not all child welfare investigations or cases are of the same severity or complexity. However, supervisors and frontline caseworkers have limited empirical methods for triaging caseloads. The lack of supervisory triage tools can compromise children's safety (and any number of other related outcomes) for at least three reasons.

1. **Varying degree of case complexity.** Child welfare investigations or cases vary in severity or complexity due to the unique factors of each case. The failure to follow up on a conversation with a teacher, a missed medical screening with a doctor, or an inaccurately completed risk or safety assessment by a social worker will amount to minor administrative oversights for a majority of low-risk investigations or cases. But those same human errors can have tragic consequences in the context of a relatively small number of high-risk cases.

2. **Varying degrees of staff experience and competence.** Large public child welfare agencies perpetually struggle with consistent staffing (that is, issues related to experience, training, recruitment, and retention) both within and across regional or county offices. This leads to unevenness in the quality and completeness of investigations and practice with open cases.

3. **Varying workload and context for decision making.** Perhaps not surprisingly, offices that often struggle the most with recruiting and retaining experienced staff are also often those that encounter (1) high volumes of child maltreatment investigations and correspondingly high caseloads and (2) cases that are more complex due to above-average rates of poverty, substance abuse, and other factors that compromise child safety.

These three practice realities in child welfare create a situation where practice mistakes and supervisory errors are more likely to occur because of staffing and workload dynamics and where the consequences of those slips are more likely to be tragic.

Opportunity

Using a PRM as a supervision support tool equips supervisors with data that will help them staff and supervise the highest-risk cases better. In particular, it can help supervisors focus their review, coaching, and support activities where they are most needed to minimize potential practice mistakes that could compromise child safety.

The supervision support PRM does not require any new data entry on the part of workers to generate a risk score for cases. The risk score is based on available case information, coupled with historical data in the agency systems of record concerning the victim child, the child's siblings, the child's parents, and any other alleged perpetrator.

It is important to note that the supervision support tool is not a replacement for clinical decision making. Rather, it is integrated as part of a data-informed decision-making process that emphasizes clinical experience and supports intensive oversight and supervision for key decisions, from investigation to case management to case closure.

Uses and benefits of a supervision support tool

✔ Can be deployed at any point during the life of a case to support decision-making and resource allocation

✔ Does not require cross-sector data and can use existing child welfare data

✔ Can help identify children at risk of entering foster care, supporting implementation of the Family First Prevention Services Act

✔ Can help agencies better identify children who have a high risk of experiencing near-fatal or fatal maltreatment

Implementing PRM tools

The importance of guardrails

At the beginning of each opportunity to work with a state or county child welfare agency to implement a PRM tool, we collaboratively define a set of guardrails that will promote trusted use of PRMs.

Agency Role
Implementing a PRM tool requires multiple choices and trade-offs. It is important that the agency (working closely with the PRM partners) makes key policy and practice choices and communicates these to its community. Ownership of the tools, programming code, and all other material should also lie with the agency.

Transparency and ethics
Documentation should be provided to the agency so it can share information about the use of the PRM tool with the public. Documentation should be transparent and allow an assessment of how the PRM tool was developed (for example, data fields used), its accuracy (including for subpopulations), and the specific use-cases for which the tool was built. If there are concerns about using PRMs, then an independent ethical evaluation of the tool could be valuable. Such an evaluation could set out the potential value and possible drawbacks of the proposed use-case and provide suggestions about how to manage these.

Community voice
Because PRMs are relatively new and use data from the local community being served by the child welfare agency to develop the model, the agency must initially obtain social license from the community to use its data in this way. Seeking out community input—especially from those who are most likely to be affected by the tool—before, during, and after implementation is an important step in obtaining that license.

Evaluation and monitoring
It is important to carefully evaluate the impact the PRM tool will have on case decisions. Commissioning an initial independent impact evaluation can be valuable to determine whether the promoted benefits have occurred. However, agency leadership must continuously monitor PRM tools to ensure they remain accurate and useful.

Our partnership
We have established a partnership focused on the safe and ethical use of predictive analytics for child protection and can assist states and counties with implementing PRM tools, including the supervision support tool. The partnership is a collaboration across several organizations, which brings together leaders and experts in the field of child welfare and data analytics with the experience and capacity to work collaboratively with state and county agencies to implement PRM tools. The following people are leading the partnership:

- Rhema Vaithianathan, professor of health economics and director of the Centre for Social Data Analytics, Auckland University of Technology, New Zealand, and professor of social data analytics, Institute for Social Science Research, The University of Queensland, Australia

- Emily Putnam-Hornstein, John A. Tate Distinguished Professor for Children in Need, University of North Carolina at Chapel Hill, and co-director of the Children's Data Network, University of Southern California Los Angeles

- Matthew Stagner, vice-president and director of human services, Mathematica

- Elizabeth Weigensberg, senior researcher and lead for state and local child welfare, Mathematica

Our approach to identify and address bias

Our approach is based on recognizing that data bias and human bias are unfortunately entrenched in the child protection system. Any tool that supports decision making must acknowledge these biases and work to reduce their effect in a measurable way.

Data and analytic tools, including PRMs, can serve as a useful guard against individual biases and an important means of ensuring that families with more complex needs are identified to receive additional attention or supervision. However, no statistical modeling tool can or should replace clinical judgment. Furthermore, these modeling tools should not replace tools that gather clinically relevant information on safety and protective factors.

Our approach to developing PRM tools includes open discussions of the ethical and implementation considerations from a range of perspectives, including the local community and those who the system is designed to serve. Because our current child welfare system and its data are not free of bias, the potential to use PRMs to identify and address bias plus the potential for unintended consequences must be openly and transparently discussed and evaluated on an ongoing basis.

PRM tools in use

Several agencies across the United States are implementing PRM tools to support their child welfare practice, including a few highlighted below.

Allegheny Family Screening Tool. In 2016, the Allegheny Family Screening Tool was developed and implemented. This tool was the first to use an automated risk algorithm to support the screening of child maltreatment allegations. This work in Allegheny County, Pennsylvania, established that staff from child protection hotlines could use PRM scores to triage children based on the likelihood of future involvement with the child protection system. An independent evaluation conducted by researchers at Stanford University concluded that using the tool was not associated with any harmful effects on children or families, improved the accurate identification of children in need of services, had no detectable effect on decisions to screen out children without investigation, and was associated with a modest, but detectable reduction in racial disparities in case openings. More information on this tool is available at www.alleghenycountyanalytics.us.

Douglas County Decision Aide. In 2019, the Douglas County Decision Aide was developed as a hotline screening tool in Douglas County, Colorado. Two aspects of this tool are notable: it is a PRM built using only data on child welfare and public benefit eligibility, and it is being evaluated in a randomized controlled trial, which an independent team at Cornell University expects to complete in June 2020.

More information

To learn more about how PRM tools can support your state or local child welfare agency, please contact Elizabeth Weigensberg at 312-585-3297 or EWeigensberg@mathematica-mpr.com. More information is also available at https://www.mathematica.org/our-publications-and-findings/publications/predictive-risk-modeling-for-child-protection.

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