

Considerations for  
Implementing  
Predictive Analytics  
in Child Welfare

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## Compiled by

**Yvonne Humenay Roberts, Kirk O’Brien, and Peter J. Pecora**

Research Services

Casey Family Programs

Please direct comments or questions to Research Services at Casey Family Programs:  
[ResearchTeam@casey.org](mailto:ResearchTeam@casey.org).

## Executive summary

The use of administrative data collected from child welfare and other sectors to support decision-making and improve outcomes continues to evolve. Predictive analytics (PA), also known as *predictive risk modeling* or *analytics*, uses existing data to predict the likelihood of future outcomes. PA takes information from data sources and applies analytic techniques to identify patterns in the data that could not otherwise be observed to support clinical decision-making.

This document can serve as a guide as jurisdiction leaders embark on engaging in PA. While many uses of PA currently exist, some potential uses in child welfare include helping to identify families who may benefit from early intervention services, identifying factors correlated with child safety and placement disruption, and predicting which children are most likely to experience long stays in out-of-home care.

This brief highlights issues associated with applying PA in child welfare. Included are some cautions to consider when applying PA. While this brief is not intended to be exhaustive, it provides 12 critical considerations for agencies as they engage in PA:

1. Align PA initiatives with agency priorities to enhance existing work.
2. Engage internal and external stakeholders to create understanding and buy-in.
3. Assess jurisdictional readiness to ensure the jurisdiction has sufficient resources.
4. Establish an ongoing communications plan to keep stakeholders engaged.
5. Prepare for media attention to enable quick and accurate response.
6. Establish a framework to ethically guide PA design and implementation.
7. Identify if PA will be conducted internally or with a contractor.
8. Assess data available to conduct PA.
9. Understand the assumptions behind the PA and monitor to ensure the assumptions remain true.
10. Use PA to strengthen practice.
11. Evaluate PA process and outcomes to maximize model fidelity and success.
12. Use PA to improve policy.

Addressing these considerations should support effective implementation of PA including the synergy between clinical decision-making and PA. As PA use in child welfare spreads further, additional considerations will need to be added to reflect what we learn as this work evolves.

## Introduction

Over the last several decades, tremendous growth has occurred in the use of administrative data collected on individuals served by human services to inform decision-making and improve outcomes. With the increased use of predictive analytics (PA), child welfare has become more capable of using data to support decision-making by line staff and to help allocate resources more efficiently. While child welfare caseworkers might be good at identifying children in immediate danger, recognizing the often complex patterns of “long arc” risk is much more difficult (Vaithianathan, 2017). This is where PA can play a critical role.

### PREDICTIVE ANALYTICS

Empirical methods that seek to uncover patterns and capture relationships to predict future outcomes based on historical and current data.

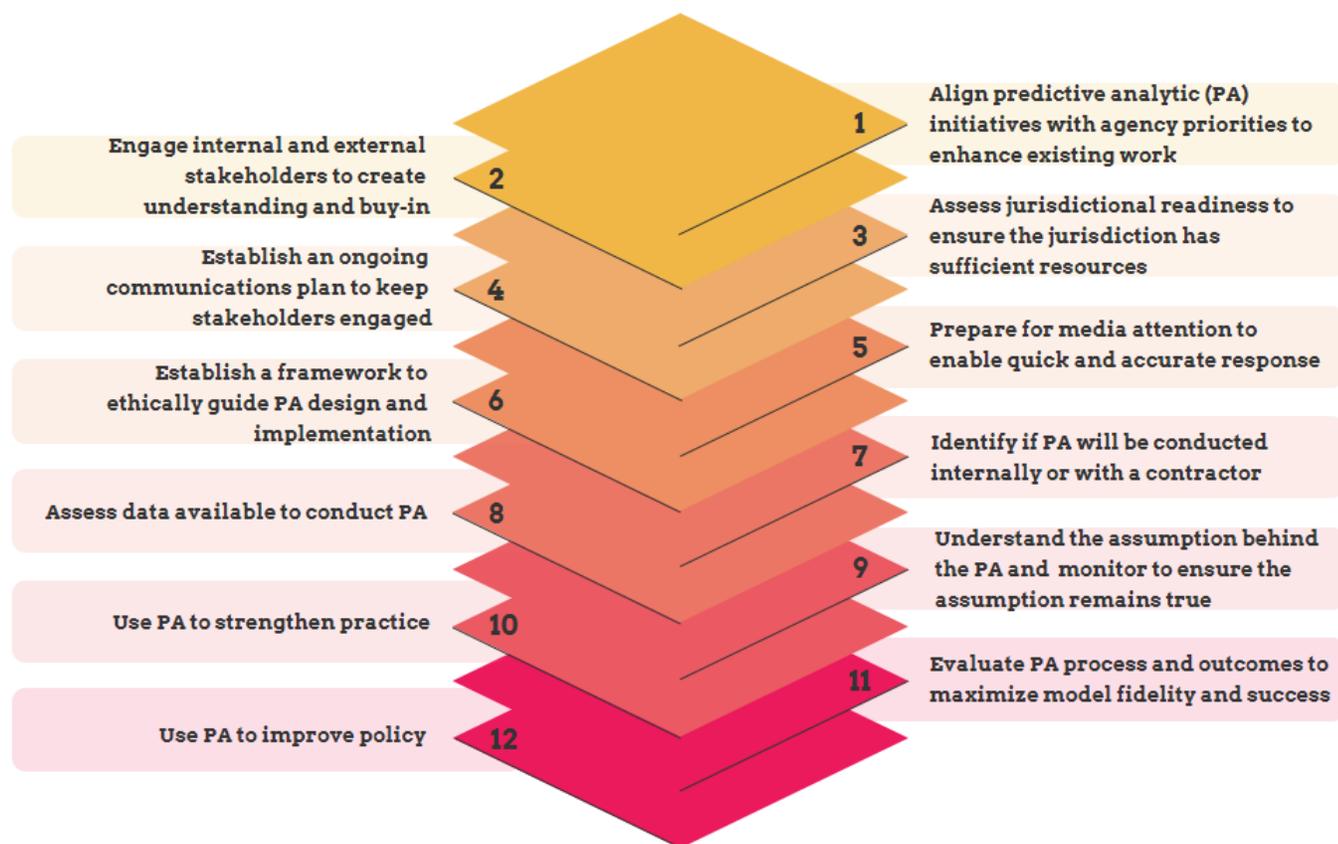
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Gandomi & Haider, 2014

This document can serve as a guide for jurisdiction leaders as they embark on engaging in PA. It is not meant as a nuts-and-bolts guide for the statistically inclined (those details can be found elsewhere). Rather, this brief focuses on how jurisdictions and leaders can manage the process of engaging in PA and considerations to support its effective implementation. Because of the rate at which the use of PA in child welfare is evolving, this brief reflects considerations of where we are currently and these considerations will continue to evolve in the years to come. Lastly, the considerations included here are not an exhaustive list. They are based on a review of the current national landscape. No doubt local considerations will also need to be taken into account. Our hope is that this brief can enhance and support those considerations.

## Considerations for Applying Predictive Analytics

This brief breaks considerations for applying PA into 12 considerations. Some of the considerations are foundational and include items to address before implementing a PA model. Other considerations focus on steps to take as PA is introduced to the field, and then later, how data and evaluative findings can be used to help youth and families.

## 12 Considerations for Applying Predictive Analytics in Child Welfare



### 1. Align PA initiatives with agency priorities to enhance existing work

Child welfare leaders need to take the time to understand what PA is and appreciate the limitations of this approach. Once this has been established and before embarking on PA, it is important to decide on the purpose, gap, or key planning or practice questions the approach will address. Identifying how PA aligns with existing priorities and initiatives is an important step to support this process.

### 2. Engage internal and external stakeholders to create understanding and buy-in

Involving key constituencies in considering various PA approaches and questions the PA could help identify or address and in the actual implementation process will help create and sustain buy-in from the beginning. Further, this engagement from the beginning can help increase receptivity to findings as they become available.

#### A. Engaging experts/stakeholders

An important component of PA is determining who to include as part of the process outside the agency. Community stakeholders may need to be engaged to ensure that community needs and impact are addressed. Youth and families need to be included in the process to ensure that they provide insights on the impact of

PA on the supports and services they receive. The establishment of an advisory group (see below) for promoting transparency and for access to content experts is one strategy for a jurisdiction implementing PA. Establishing this level of partnership has the ancillary benefit of supporting stakeholder engagement.

**B. Training staff and other key stakeholders**

Staff, administrator, and leadership training must be undertaken before implementation. Engaging PA content experts and implementation science specialists may be beneficial to help plan the orientation and training of staff and community stakeholders. Training can include an overview of PA, how it will be implemented, how statistical models are constructed, and how findings can be used to support practice. Discussions can highlight specific roles and expectations and any new workflow or processes that will occur because of implementation. The training can also outline any impact on data collection procedures and other quality assurance processes. The training should help build understanding of the policy and practice for using the tool and address any major worries about the approach or the upcoming implementation. Ongoing processes for training new staff and “booster sessions” for staff afterward need to be established to support ongoing use of PA.

**3. Assess jurisdictional readiness to ensure the jurisdiction has sufficient resources**

Readiness assessments address the organizational, structural, and human factors needed to implement a new initiative. Before venturing into PA, it is imperative to assess readiness to ensure that a jurisdiction has the resources to effectively implement a PA project. As part of an implementation science approach, consider carefully what resources will be needed for the initial implementation activities and the ongoing staff coaching and other *model maintenance* activities. While a readiness assessment will not prevent all pitfalls, they can draw attention to many issues that can prevent future problems. For example, if a jurisdiction does not have the staff capacity to monitor and take action when safety issues arise, high-profile issues may develop.

A readiness assessment also provides an opportunity to talk with caseworkers, supervisors, and other key stakeholders to determine if they are ready for such change, and whether they have the ability and resources to implement a PA program. This further supports the buy-in described above.

**4. Establish an ongoing communications plan to keep stakeholders engaged**

Communication is one of the most critical components to implementing a new process or program. Communication plans can include several touch-points (both before and after implementation of a PA initiative) that focus on several audiences within the jurisdiction.

**A. Before implementation**

Communication from child welfare leadership that shares details of the PA initiative is key for buy-in and sustainability. Discussions can include how the new initiative will benefit the jurisdiction, a rough timeline of rollout, and leadership's role. A communications plan that includes several opportunities for engagement and learning before initiating implementation with child welfare managers and staff will help set expectations and boost adoption. The plan can also include creation of an approval process and information-sharing process for when and how data and evaluation findings will be shared.

**B. After implementation begins**

A communications plan can include strategies to inform key stakeholders of the initiative on an ongoing basis, including strengths, challenges, and any support needed to maintain and enhance the project. This plan should be revisited and updated regularly. Direct and ongoing communication with child welfare staff, youth and families, and other stakeholders is essential. Observations about strengths, challenges, systemic barriers, and success stories can be included in regular communications. This will help to keep staff interested in the initiative to sustain buy-in.

**5. Prepare for media attention to enable quick and accurate response**

While jurisdictions engage in PA with the best of intentions, critics may cite problems of using data in novel ways, that may have racial biases, and to intervene in people's lives when jurisdictions shouldn't. This may come before any analyses are conducted. Preparation may include the following:

- Developing brief summaries of the purpose, process, and anticipated benefits of the PA approach in non-technical language. These summaries can also be shared with internal and external stakeholders.
- Engaging communications/public relations staff at the start of PA endeavors. This allows time to review previous media critiques so if attention is brought to the work, the agency is prepared. Additionally, agencies can reach out to other jurisdictions to see how they have handled similar situations.
- Brainstorming and carefully documenting lists of likely questions and criticisms of the PA approach and potential responses.
- Proactively engaging reporters and other social media content developers so they understand the PA approach. Proactively preparing for media attention enables agencies to respond quickly and accurately if necessary.

**6. Establish a framework to ethically guide PA design and implementation**

Before agencies embark on PA, they must put in place an ethical framework that includes protocols for ensuring confidentiality of information, training for agency staff, updates to relevant agency policy, and thoughtful engagement of families (Christian, 2015; Parton, 2006; Pollack, 2010). An ethics analysis for the Allegheny County

Family Screening Tool project (see Appendix A for more information) by Dare and Gambrill (2017) highlighted the advantages of some PA approaches:

... while it is true that all predictive risk modeling tools will make errors at any threshold, it is also true that they are both more accurate than any alternative — they make fewer errors than manually driven actuarial risk assessment tools and even very good child protection professionals relying on professional judgement and experience — and they are more transparent than alternatives, allowing those assessing a tool's performance to accurately identify likely error rates and to accommodate them in responses to the predictions of a particular modeling tool. The greater accuracy and transparency of predictive risk modeling tools also allows them to serve as (inevitably imperfect) checks against well-understood flaws in alternative approaches to risk assessment. (p. 51)

Aspects to address when preparing an ethical framework include:

*A. Aligning the question with the methodology*

An ethical framework begins with identifying what problem a jurisdiction wants to address using PA. Many tools are available to address questions in child welfare including case reviews, interviews, and focus groups. Aligning the question with the right tool will help find the right answer. Identifying the right question to be analyzed by PA and who is impacted by its findings (youth, families, staff, community) lays the foundation for building an ethical framework.

*B. Creating a process to use information to engage/support families and staff*

Any application of PA should be truly supportive of both families and staff. For staff, establishing a process for how to use the information gleaned from the PA to support clinical decision-making needs to be established. For families, applying PA in a way to support families (not punish them) must be addressed.

*C. Establishing an advisory group to support use of information*

Jurisdictions may want to establish governance (e.g., a predictive analytics approval committee) specifically responsible for oversight of the development of PA. This group will allow for consistency of decision-making that transcends administrations (i.e., the committee remains as directors come and go) and will also support the core value of transparency (the public is aware of the guidelines informing decision-making and the decisions that come from this group).

One role an advisory group can play is in managing the PA results. For example, one common concern is that personal information could be used by child welfare agencies without the consent of families (Christian, 2015; Kiddell, 2014).



Subsequently, those families could be contacted for services by child welfare agencies without prior notice or they might be designated as “high risk” without justification. An argument supporting the use of PA to shift child protection toward prevention is to interpret a “high” PA score as indicating that a family is *at risk* rather than *a risk* (Langan, 2010, as cited in de Haan & Connolly, 2014). The critical point here is that while PA may identify at-risk families, it is the responsibility of the agency, with input from stakeholders, to decide what to do with the information.

#### D. *Examining implicit bias*

A growing concern with PA is that its uses may inadvertently promote racial, socioeconomic, and other biases present in our society because of the data that are selected, the particular algorithms that are applied, or how the findings are interpreted (Capatosto, 2017; Eubanks, 2017). This concern stems from the idea that if racial and/or other biases are embedded within our data, PA models will “hard-wire” those biases into the data outputs they generate (Center for the Study of Social Policy and the Alliance, 2016 as discussed in Nash, 2017). A systematic examination of how different racial and ethnic groups will likely be affected by a proposed action or decision could help minimize unanticipated adverse consequences. Models should perform with consistency across racial (and other vulnerable) groups.

In addition to establishing an ethical framework, some endeavors may need institutional review board approval, further ensuring that ethical procedures are in place. Further, agencies could contract with experts in ethics reviews to conduct a review of the PA approach to identify areas of caution or concern. In sum, an ethical framework acts as a guide for agencies in practicing PA and actions taken based on PA findings by “ensuring governance and leadership around ethical considerations is not a one-off ‘tick the box’ exercise. Ethical governance needs to be built into the agency for the lifetime of the tool; regular ethical reviews are essential for the maintenance of community support” (Vaithianathan, 2017, p. 5).

### 7. **Identify if PA will be conducted internally or with a contractor**

As mentioned previously, details of the how-to of PA can be found elsewhere. Several agencies around the country have begun to conduct PA themselves. If the PA is done internally, capacity building and infrastructure need to be addressed. If done externally, other decisions need to be made. As the use of PA has grown, so has the number of contractors who specialize in this work. Agencies may already have relationships with PA contractors or they may need to identify a contractor through other means such as issuing a request for proposals (RFP). The considerations below include questions/items to include whether an RFP is issued or not.



A. *Issuing a Request for Proposals*

Many jurisdictions have Request for Proposal (RFP) requirements around structure and approval procedures. Some considerations for inclusion in RFPs include having the contractor provide examples of specific experiences working in child welfare. Experience with child welfare data systems, managing ethical considerations, and dealing with media and other critics is helpful in making decisions.

B. *Interviewing potential contractors*

In addition to following up on information in the RFP, it is important to require contractors to present findings from PA efforts during the interview process. It is critical to work with a contractor who can clearly articulate what was done, what was found, and the practice and policy implications.

C. *Hiring a contractor*

After selecting a contractor, it is helpful to build certain expectations into the contract. For example, establishing timeframes that the contractor will follow in providing information on how prediction models are built, how often they are updated, and the key predictors of outcomes will provide a necessary level of transparency for leaders, staff, and stakeholders. Some careful negotiations may need to occur if the contractor believes that it owns the process by which it created the algorithms.

D. *Crafting data-sharing agreements*

Before sharing agency data with a contractor, a data-sharing/data-use agreement may be necessary. This will describe who owns the data, who owns the analytics process, what analyses will be run, what data analytic tools will be used, and who owns any reports created as a part of the PA.

**8. Assess data available to conduct PA**

During the decision-making process, it is helpful to consider the quality and completeness of the data that will be used and form hypotheses about the relationship between predictors and outcomes. Involving the contractor in this process is critical. Not only should data be checked for quality and completeness before their use in a predictive model but also regularly thereafter. It will also be important to assess whether current technology allows for data sharing between the agency and any outside contractor, when applicable.

**9. Understand the assumption behind the PA and monitor to ensure the assumption remains true**

Every PA model has an assumption behind it: that one of the best predictors of the future is past behavior. It is important for child welfare leaders to understand that assumption and to test the model before implementation. Continued monitoring of the

PA model over time to test whether that assumption remains true is also important. If working with the model shows that the assumption no longer holds, model recalibration may be necessary.

A. *Model recalibration*

Recalibration occurs when the PA team re-examines the relative weights of the different variables contained in the model to take account of changes in demographics, epidemiology, clinical practice, or data coding. A recalibrated model uses the same set of predictor variables as the original model, but after recalibration, each variable may be weighted differently from the previous iteration of the model.

Generally speaking, predictive models should be run regularly. The length of time between PA recalibrations needs to be balanced with clinical use of the model. Depending on the systems in place, running the model more often can place an unsustainable administrative burden on staff trained to use the model and can cause confusion if child/family risk scores fluctuate wildly. In contrast, however, running the model less often may be problematic if child and family characteristics are not identified by the PA; a child or family may suffer a poor outcome before being identified by the model as at higher risk.

B. *Establishing and evaluating risk thresholds*

Equally as important as model creation and monitoring is the decision of what threshold to use when determining if a child or family is at higher risk and if that threshold is appropriate for whatever services or supports a jurisdiction has decided to offer based on the risk score. PA can identify the likelihood that a poor outcome for a child or family may occur. This threshold must align both with practice and staff capacity/bandwidth. Further, most models provide an opportunity for “clinical overrides” — where experienced child welfare line staff (and their supervisors) can exercise their professional judgement about the most appropriate responses to a family that has been identified by the PA model as at high risk.

As with any model, some error around the estimates exists, and some children will be identified as being at higher risk who are not (“false positives”), while other children who are at higher risk may not be identified (“false negatives”). Discussions about these cases can help improve model precision. Child welfare leaders should strive to ensure that intervention is supportive of core agency values and best practices and that it is positive and supportive, rather than punitive of caseworkers.

## 10. Use PA to strengthen practice

In devising a predictive risk model, the question is not, for example, “What contributes to [child] maltreatment?” but rather “What variables can help us best discriminate



between spells [service episodes] that are high risk and ones that are low risk?” (Vaithianathan et al., 2012, p. 11). If a worker has information about the degree of risk, that is an additional piece of information to use in deciding how to proceed clinically.

To support clinical decision-making, jurisdictions need to provide ongoing resources for additional staff, training, and technology, as needed. Further, information about the model, the process, and how it relates to their clinical work should be regularly communicated to staff through visually appealing and understandable messaging.

A. *Supporting clinical judgment*

PA is a tool that takes information from many cases to identify patterns in data that sometimes could not otherwise be observed. It is intended as a tool to support clinical judgment to help make sense of how information collected across a population of youth can be used to better serve individual youth. It is possible that caseworkers will access information that is counter to the implications of PA findings. When this happens, a different course of action may need to be taken.

Further, PA need not be prescriptive; rather, it is a tool to support the decision-making process of the clinician and the agency. “There's nothing in the predictive analytics model that our workforce doesn't already have access to in the descriptive way. ... What this does is help to reduce variation in decision-making and make it so that similarly risked kids are treated similarly,” (Erin Dalton, who is spearheading the PA work for Allegheny County in Rivlin-Nadler, 2016).

Proactive steps can be taken to integrate PA information within current practice structures and processes to enhance work with youth and families, including:

- Establishing safeguards in using the PA approach (e.g., what supervisory reviews are required, how will “clinical overrides” occur). This may include a process for workers to document the logic behind why they may disagree with the PA with additional information, and a way to track these occurrences.
- Regularly reviewing the PA approach and the practice responses that it informs as part of a multifaceted communications and continuous quality improvement process to not only improve practice but to refine the PA model itself.
- Ongoing communication with the field to assess understanding and use of the PA approach and practice response in everyday work.

B. *Intervening early*

PA can be used to identify individual cases that have specific factors or a constellation of factors that may put children and families at greater risk for poor outcomes. Agencies may be able to intervene earlier by addressing those risk factors with targeted services. PA provides more information so that early intervention is possible. For example, application of an automated predictive risk model such as the New Zealand model (see Appendix A) has the potential to support an upstream shift toward prevention and early intervention (Vaithianathan et al., 2013; Vaithianathan, Rouland, & Putnam-Hornstein, 2018). That said, jurisdictions will need to balance prevention with any potential unintended consequence with regard to surveillance or profiling of children and families.

C. *Reducing bias*

Inherent biases exist in child welfare. Institutional racism, organizational culture, and work bias (both positive and negative) are inherent in every case (Funke, 1991; Khaneman, 2011; Munro, 2008). PA may have the potential to reduce biased, subjective human decision-making. For example, algorithms are capable of synthesizing a large amount of information and “learning” over time which variables are most accurate for predicting a particular outcome, which may help line staff and supervisors find blind spots or other errors in decision-making (Munro, 1999, 2008).

D. *Helping ensure transparency*

Another major concern is the transparency of predictive algorithms, both between any potential contractor conducting the modeling work and the agency, and between the child welfare agency leadership and agency staff. Transparency helps to ensure that the tool is understandable to the community, agency, and front-line workers. If it is not transparent, “it is hard to gain necessary trust and support” (Vaithianathan, 2017, p. 5). While it is generally agreed that some transparency is important, the level of transparency provided and to whom will have to be decided upon. This is an ongoing point of discussion in the field. Some argue that if the PA approach produces only a risk score or a risk designation of low, medium, or high risk, staff will not have the information on the key elements that led to those designations, depriving them of knowing *why* the family is at higher risk. Including information as to the *why* is critical in developing worker knowledge, decision-making skills, and service delivery action plans. If the PA process is a “black box,” worker and organizational learning are shortchanged (e.g., Brauneis & Goodman, 2017; Church & Fairchild, 2017; Munoz, Smith, & Patil, 2016; Nash, 2017), and the ability to use the PA as a supportive decision-making tool is compromised. It is possible that providing front-line staff with such knowledge may bias their perception of the case and inhibit their decision-making skills.



## 11. Evaluate PA process and outcomes to maximize model fidelity and success

Part of evaluating a PA model and the process that a jurisdiction develops around that model involves assessing whether key aspects of implementation are related to outcomes. Evaluation is part of a quality assurance process for PA that is meant to assess how well it is being implemented and whether the PA approach and practice response are achieving the outcomes they were intended to affect.

Evaluation of predictive models should be ongoing processes that assess model fit, data inclusion and exclusion, application thresholds, whether practice or policy changes are reflected in the model, and whether application of the model needs to be modified or changed. Evaluation should also include measuring if staff are implementing the PA approach with fidelity. Gentrification and population shifts are another reason why ongoing evaluation is critical, as models should be updated as the population of focus changes.

## 12. Use PA to improve policy

PA findings can be used to refine agency policy as well as to better allocate agency services and other staff resources. Because PA aggregates information, it may identify opportunities for improvement at the system level to target limited resources. Use of PA may generate insights to make more informed decisions and improve agency performance. For example, PA has the potential for gap analysis, service evaluation, and service matching. This helps to shift the work toward a prevention focus rather than a solely reaction focus. In this way, PA may help agencies refine resource allocation and execution of programs and services, potentially contributing to improved system efficiency and effectiveness (Puckett, 2016).

## Conclusion

Predictive analytics presents an opportunity for child welfare to use a variety of administrative and other data to inform decision-making and improve outcomes. While new uses continue to be identified, potential uses for PA in child welfare include helping to identify families at higher risk who may benefit from early intervention services, identifying factors correlated with placement disruption, predicting which children are most likely to experience long stays in out-of-home care, and deciding the best allocation of resources within agencies.

The ability to use aggregate-level data to potentially improve outcomes for youth and families is promising. However, PA within child welfare should not be viewed as *the* answer but rather a tool to improve decision-making and to support clinical judgment. There are multiple dimensions to consider, including the particular question(s) to address, the data and analytic approach to use, and the action steps or supports to put in place to help staff use the data generated from PA in timely and appropriate ways. While there are



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# Appendix A

This table highlights the 12 considerations for applying PA in child welfare as well as selected potential action steps within each consideration, and provides several current uses in the field.<sup>1</sup> It should be noted that the effectiveness of most of these approaches is currently being evaluated — they are presented here for illustration.

PA Consideration	Selected Potential Action Steps	Example of Use
1. Align PA initiatives with agency priorities to enhance existing work	<ul style="list-style-type: none"> <li>• Understand the purpose, gap, or key planning or practice questions that the PA approach is addressing</li> </ul>	Georgia’s Department of Family and Child Services (DFCS) is currently evaluating PA models based on their potential to improve decisions by DFCS personnel relating to child safety, including screening decisions and decisions by caseworkers about how to deal with situations involving children in DFCS custody (Blank, 2015).
2. Engage internal and external stakeholders to create understanding and buy-in	<ul style="list-style-type: none"> <li>• Involve key constituencies in considering various PA approaches and in the actual implementation process to create and sustain buy-in</li> <li>• Engage PA content experts and implementation science specialists to help plan the orientation and training of staff and community stakeholders</li> </ul>	California is using PA to help child abuse investigators gauge the risk of maltreatment when a report of child abuse or neglect is made. As part of the process, they have invited California child-welfare leaders and advocates to participate in an advisory group for the predictive modeling project (Loudenbeck, 2017).
3. Assess jurisdictional readiness to ensure it has sufficient resources	<ul style="list-style-type: none"> <li>• As part of an implementation science approach, consider carefully what resources will be needed for the initial implementation activities and the ongoing</li> </ul>	Eckerd Connects is currently working on a readiness assessment to assist jurisdictions interested in implementing Eckerd Rapid Safety

<sup>1</sup> The information provided is not intended to endorse a particular model or agency. Inclusion in this summary does not confer Casey Family Programs’ endorsement.

PA Consideration	Selected Potential Action Steps	Example of Use
	staff coaching and other “model maintenance” activities	Feedback (ERSF), which uses PA to identify cases at higher risk of fatality or serious injury. <sup>2</sup>
4. Establish an ongoing communications plan to keep stakeholders engaged	<ul style="list-style-type: none"> <li>Establish an approval process and information-sharing process for when and how data and evaluation findings will be shared</li> </ul>	Los Angeles County Child Support Services shares data from their PA — which predict the probability that payments will be received in a child support case — down to the line level for each worker to research and improve his or her caseload and performance and to help enable information sharing of best practices (Golightly, 2013).
5. Prepare for media attention to enable quick and accurate response	<ul style="list-style-type: none"> <li>Develop brief summaries of the purpose, process, and anticipated benefits of the PA approach in non-technical language</li> <li>Brainstorm and carefully word lists of likely questions and criticism of the PA approach and how to respond to those</li> <li>Proactively engage reporters and other social media content developers so they understand the PA approach</li> </ul>	Allegheny County, Pennsylvania, recently issued a clarification about its PA approach in response to an article published on Wired (Allegheny County, 2018).
6. Establish a framework to ethically guide PA design and implementation	<ul style="list-style-type: none"> <li>Contract with an independent expert to conduct an ethics review of the PA approach for your community to identify areas of caution or concern</li> </ul>	Allegheny County, Pennsylvania, <sup>3</sup> completed an ethical analysis by an outside third party as part of the development of their PA tool to improve child protection decisions being made by the Department of Human Services.

<sup>2</sup> Information on Eckerd Rapid Safety Feedback provided by Bryan Lindert. Additional information about the ERSF process is available at <https://eckerd.org/family-children-services/ersf/>.

<sup>3</sup> Information on Allegheny County provided by Erin Dalton, Fran Gutterman, and Evelyn Whitehill. Additional information about the Allegheny County process is available at <http://www.alleghenycountyanalytics.us/wp-content/uploads/2017/04/Developing-Predictive-Risk-Models-package-with-cover-1-to-post-1.pdf>

PA Consideration	Selected Potential Action Steps	Example of Use
7. Identify if PA will be conducted internally or with a contractor	<ul style="list-style-type: none"> <li>• Determine what data safeguards and other contracting components need to be in place if the PA is implemented with the help of an outside contractor</li> </ul>	Georgia's Division of Family and Children Services has partnered with Georgia Tech to develop and implement a framework for using PA to guide effective decision making related to child safety and permanency (Department of Human Services, 2017).
8. Assess data available to conduct PA	<ul style="list-style-type: none"> <li>• Consider the quality and completeness of data that will be used</li> <li>• Form hypotheses about the relationship between predictors and outcomes</li> </ul>	The New Zealand model, which explored the potential use of administrative data for targeting prevention and early intervention services to children and families, linked data sets from several systems, including child and family health care and child welfare systems. At this time New Zealand is not using this approach. (Vaithianathan et al., 2012).
9. Understand the assumption behind the PA and monitor to ensure the assumption remains true	<ul style="list-style-type: none"> <li>• Understand the analytics, findings and implications</li> <li>• Establish, monitor, and adjust risk thresholds to align with clinical judgement and program planning</li> </ul>	In risk terrain modeling, which is used to predict future substantiated child maltreatment cases in a particular neighborhood, the prediction variables and their performance statistics are shared with the agency partners when the agency does not have the capacity to run the analyses (Daley et al., 2017).
10. Use PA to strengthen practice	<ul style="list-style-type: none"> <li>• Specify the various ways that the PA information will support clinical judgment</li> <li>• Integrate PA information within current practice structures and processes to enhance work with youth and families</li> <li>• Regularly review the PA approach and the practice responses as part of a multifaceted communications and continuous quality improvement process</li> </ul>	As part of the ERSF process, a state quality assurance team reviews these cases and when necessary, a supportive coaching session is held with the case social worker and supervisor to ensure steps are taken to ensure child safety.

PA Consideration	Selected Potential Action Steps	Example of Use
	<ul style="list-style-type: none"> <li>• Use PA information to intervene earlier with certain children and their families to address potential risk</li> </ul>	
<p>11. Evaluate PA process and outcomes to maximize model fidelity and success</p>	<ul style="list-style-type: none"> <li>• Develop and apply processes for measuring and then acting upon how well staff are implementing the PA approach with fidelity</li> <li>• Implement a rigorous approach to measuring the extent to which the PA approach is achieving the outcomes it was intended to affect</li> </ul>	<p>New York City’s Administration for Children’s Services (ACS) is using PA to identify children more likely to experience a repeat report of abuse or neglect. ACS has partnered with New York University to evaluate the model as well as to potentially suggest better ways to collect new data (Shroff, 2017).</p>
<p>12. Use PA to improve policy</p>	<ul style="list-style-type: none"> <li>• Use PA findings to refine agency policy as well as better allocate agency services and other staff resources</li> </ul>	<p>Texas Child Protective Services is using PA to improve child safety in Family-Based Safety Services cases by piloting real-time case reviews in high-risk cases. Information is being used to coordinate and improve fragmented quality assurance processes, and to establish clear accountability for overseeing change in state offices and in the regions (Department of Family and Protective Services, 2015).</p>

