

Safer Children, Stronger Communities: Data-Driven Tools for Queensland's Child Safety System

A Submission to the Queensland Child Safety Inquiry

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August 2025



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About the Team

For more than a decade, Professors Rhema Vaithianathan and Emily Putnam-Hornstein have pioneered the responsible use of machine learning in child protection. They co-founded Social Data Analytics (SDA), a mission-driven public good company, to bring evidence-based predictive tools into practice.

Their research led to the first predictive risk tool ever deployed in child welfare (the Allegheny Family Screening Tool in Pennsylvania) and the development of the Los Angeles County Risk Stratification System, which has delivered measurable safety gains and reduced disparities.

Independent evaluations, including randomised controlled trials, have confirmed that SDA's tools:

- Improve child safety and reduce preventable harm;
- Enhance fairness by reducing unwarranted decision-making variation; and
- Save worker time and support better allocation of scarce resources

SDA solutions are now in use or development in California, Colorado, Pennsylvania, and Idaho, where they have consistently supported better screening decisions and provided supervisors with actionable, real-time insights.

Professor Rhema Vaithianathan, PhD is a health and social data scientist and co-director of the Centre for Social Data Analytics at Auckland University of Technology (New Zealand). She co-developed the Allegheny Family Screening Tool, one of the world's first predictive risk models for child welfare which has been internationally recognized for reducing decision-making disparities while strengthening safety outcomes. She has advised governments across the world on responsible and effective uses of predictive analytics in social services. She has also held academic appointments at the Australian National University, Harvard University, the University of Queensland, and Singapore Management University.

Professor Emily Putnam-Hornstein, PhD is a professor at the University of North Carolina at Chapel Hill and director of the Children's Data Network. Trained in social work and demography, she has led a substantial body of research at the intersection of child welfare, health, and education. She is internationally regarded for her expertise in linked administrative data and co-designed the Los Angeles County risk stratification system, which demonstrated measurable safety improvements and equity gains. Professor Putnam-Hornstein earned her PhD from the University of California, Berkeley.

Executive Summary

Queensland's child protection system faces escalating challenges: over-reliance on residential care, workforce pressures, and inconsistencies in decision-making that undermine both safety and fairness.

SDA offers a proven, evidence-based suite of predictive modules tailored to each jurisdiction's policy, legislative, and cultural context. These tools:

- Provide transparent, data-driven decision support to reduce bias and variation
- Deliver real-time alerts and dashboards to ensure no child falls through the cracks
- Enable smarter resource allocation, preventing unnecessary removals while targeting high-risk cases
- Incorporate equity-focused algorithms to address the overrepresentation of Aboriginal and Torres Strait Islander children in the system

Validated through independent evaluations and RCTs, SDA's solutions have delivered measurable safety gains and improved oversight in large jurisdictions such as Los Angeles County (population 9.7 million). With Queensland's child safety system under urgent pressure, these tools provide a practical, scalable, and cost-efficient pathway to reform.

Module-Mapped Submission

1. Reforming the Residential Care System

Challenge: *Queensland's child protection system is heavily reliant on residential care, driving up costs while producing poorer outcomes for children.*

SDA Solution:

The **Screening Module** flags children very early (at referral) who are most at risk of future residential placement and directs them toward community-based services and wraparound supports, reducing the likelihood of entry into care.

The **Investigation** and **Open Case Modules** provide supervisors with early warnings of escalating risk in active investigations or in-home cases, enabling timely interventions before problems reach the point of high-cost placement. These tools also track case activity in real time - for example, monitoring whether face-to-face visits are occurring- so that children with the greatest needs receive appropriate attention and intensity of support.

The **Caseload Monitoring Module** gives supervisors real-time visibility into staff workloads, highlighting when caseworkers are managing escalating or unbalanced caseloads. This enables timely adjustments and additional support, preventing burnout while ensuring vulnerable children are not overlooked.

2. Fixing a Broken System

Challenge: *Inconsistent decision-making and reactive case management undermine both safety and fairness in the child protection system.*

SDA Solution:

SDA tools provide transparent, data-driven risk assessments that reduce *unwarranted variation in decision-making*. Unwarranted variation in professional decisions are those that cannot be explained by the actual circumstances of the case, but instead arise from subjective factors such as individual judgement, bias, or local practice culture. The

system prioritises the highest-risk cases for urgent attention while enabling faster resolution of low-risk referrals, allowing resources to be focused where they are most needed. Crucially, these tools are designed to support - never replace - professional judgement, giving workers and supervisors clearer insights without undermining their expertise. They also integrate seamlessly with existing case management systems, requiring no additional data entry and minimising disruption to frontline workflows.

3. Safer Children

Challenge: *Systemic and policy shortcomings can delay intervention and weaken ongoing monitoring, leaving children at risk of harm.*

SDA Solution:

SDA tools provide near real-time alerts when a child's risk profile changes, ensuring emerging concerns are identified promptly. Daily supervisor dashboards give leaders a clear line of sight across all referrals, investigations and open cases, helping to ensure that no child "falls through the cracks." Evidence from multiple jurisdictions demonstrates that these analytics and dashboards lead to improved safety outcomes by enabling agencies to target resources where they are needed most and act quickly. Feedback from frontline staff highlights that SDA tools are especially valuable for maintaining continuity of care in environments with high staff turnover, or where workers rotate frequently due to leave, training, or movement across offices.

4. Safer Communities

Challenge: *Community expectations for safe, nurturing, and accountable care are not always met.*

SDA Solution:

SDA tools help categorise children by the complexity of their needs, making performance monitoring of service providers fairer. Providers who take on children with higher levels of need can have their outcomes assessed in context and be better supported and rewarded. This helps prevent what is often called the "adverse selection spiral" in residential care, where providers working with the most complex children leave the sector. When this happens, families with the highest needs are left with less experienced providers, who in turn struggle and exit, creating a harmful cycle.

In addition, SDA tools track the visibility and safety of every child in care, giving agencies real-time assurance that children are being seen and supported. The tools also include equity-focused algorithms designed to reduce the overrepresentation of Aboriginal and Torres Strait Islander children, supporting culturally safe intervention pathways that strengthen families and communities.

5. Any Other Relevant Matters

Please see the attached appendix for further details on SDA tools and the anticipated costs of adoption in Queensland. We would welcome the opportunity to provide live demonstrations, share independent evaluation reports from other jurisdictions, and engage with Inquiry stakeholders on how these tools can support Queensland's child safety reform agenda.

APPENDIX 1: Further information on SDA Tools

Proven Capability & Evidence-Based Impact

Many States are grappling with an over-reliance on increasingly costly residential care, shortages in foster and kinship placements, and systemic failures that place vulnerable children at risk. **Social Data Analytics (SDA)** and the suite of SDA tools emerged from pioneering research by Professors Emily Putnam-Hornstein (UNC Chapel-Hill) and Rhema Vaithianathan (AUT) on how data informed decision-making can reduce unwarranted variation in decision-making while keeping children safe. Randomized trials and rigorous evaluations confirm these tools *enhance child safety, reduce worker time and decrease racial disparities* when used as a decision-support tool.

SDA is multi-disciplinary team of child welfare specialists, senior data scientists, software engineers and data engineers. The team is located across the globe in Australia, New Zealand and the US.

Tailored to Queensland's Needs

SDA tools are always customized to the State. We begin with a structured discovery process and consultation with key stakeholders whose concerns shape the tools and ways in which they are used. We identify opportunities to support decision points without compromising compliance to Queensland's practice and policy objectives. Supervisors adopt them quickly; in jurisdictions where the tools are used, nearly all users consult the tools daily.

Previous research commissioned from Rhema Vaithianathan by Queensland Child Safety showed that SDA tools were feasible for Queensland given its IT architecture.

Modular & Actionable Risk Stratification

- **Screening Module** helps identify which referrals may be safely diverted to prevention services, reducing over-response and focusing resources where most needed.
- **Investigation Module** flags high-risk cases for elevated supervisory attention and low risk cases for low invasive rapid-reviews.
- **Open Cases & Caseload Monitoring** deliver real-time analytics for children in foster care, or with open cases. Alerting supervisors to risk surges in cases and a caseload monitoring tool to reduce worker burnout and improve oversight.

Scalable, Cost-Efficient Infrastructure

SDA is built on an open-source Python/Django architecture, enabling rapid deployment - typically delivering a jurisdiction's first predictive module for around AUD \$500,000 and within six months of contract. Importantly, the system is hosted within the agency's own IT infrastructure, ensuring full control over data, privacy, and compliance.

High-Impact Demonstration: Los Angeles County

Los Angeles County (pop. 9.7m) implemented SDA's risk stratification with philanthropic funding and saw statistically significant improvements in child safety. Supervisors received daily alerts for top-decile-risk

investigations, enabling more targeted interventions without additional data entry burden. The success led to full county-wide scale-up and expanded use into low-risk diversion review.

Why SDA is the Right Solution for Queensland

Given the urgency of Queensland's child protection crisis with escalating residential care reliance, missing children, unchecked providers, and systemic inequities, SDA's predictive analytic tools offer:

- **Early identification** of high-risk cases and smarter resource allocation.
- **Transparency and oversight**, helping ensure providers follow through on duty of care.
- **Equity-focused decision-making**, enabling interventions that address overrepresentation of First Nations children through data-informed pathways.
- **System-wide cost savings**, allowing investments to shift toward family-based care without compromising safety.

Summary: A Data-Driven Path toward Reform

As the State leadership pursue reform grounded in accountability and better outcomes, SDA stands ready to enable:

- A modern, **evidence-based child protection system**.
- Predictive tools tailored for Queensland that integrate with real-world workflows and customized for offices in city, country and remote settings.
- Measurable improvements in child safety, efficiency, and fairness - backed by global research and jurisdictional success.