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Data Governance and Analytics in Children's Services

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Key Points

- In Ontario, Canada, and England, in the United Kingdom, child protection services encounter problems related to data quality and usefulness, underlying infrastructure deficits, and incongruities between objectives and measures.
- Solutions related to data governance, digital and organizational infrastructure, and the range of objectives and outcome measures can help to overcome some of these problems.
- Insights from these specific child protection cases are beneficial to other public sector service areas and jurisdictions seeking to govern data for analytics that serve everyone.

Introduction

Governments around the world are undertaking strategies to successfully harness the potential of data and digital technologies while also mitigating key risks (United Nations Department of Economic and Social Affairs 2024; Department for Science, Innovation and Technology 2025).[1] Data analytics are seen as a way to make services more efficient and effective by identifying areas where decisions could lead to meaningful and observable changes (Daniell, Morton and Ríos Insua 2016). However, governments often struggle with the technological and human infrastructure and capacity needed to govern their data for the purpose of service improvement (Howlett 2009).

Government strategies encounter unique challenges and opportunities in service sectors aimed at supporting families and keeping children safe (Department for Education [DfE]

1 See www.ontario.ca/page/building-digital-ontario.

About the Author

Thomas Vogl is a researcher whose work explores the unanticipated consequences of information technology change on public policy and its administration. Thomas completed his doctorate at the Oxford Internet Institute at the University of Oxford where he contributed to the work of the Oxford Commission on AI & Good Governance, the Data Science for Local Government project, and the Oxford Martin Programme on Misinformation, Science and Media. His research has been published in *Public Administration Review* and the *Proceedings of the International Conference on Information Systems*. Thomas has spoken on expert panels, delivered conference presentations around the world, and been involved in public policy discussions in the United Kingdom, Indonesia and Canada, briefing public sector officials on technology's implications for the workings of government. Previously, he completed a master of public policy at the University of Toronto and worked in the Ontario Public Service where he received an Amethyst Award.

2023a).[2] How, then, can the public sector improve analytics in children's services? The answer depends on data governance, the underlying technological and human infrastructure, and the guiding purpose and outcome measures.

This policy brief tackles priorities associated with efforts to digitalize elements of child protection services in Canada and the United Kingdom, drawing on examples of enterprise case management system change in Ontario (Ministry of Children and Youth Services 2016) and the use of predictive analytics in children's social care in England (Clayton et al. 2020). These technological change initiatives have encountered unintended consequences that reveal three key challenge areas around data quality and usefulness, underlying infrastructure, and incongruities between objectives and measures.

This brief proposes three interrelated priorities to overcome these challenges, including improving data governance, ensuring the underlying expertise and digital infrastructure are in place, and expanding the range of meaningful outcomes by exploring measures beyond compliance that include safety, well-being and progress over the life course.

This policy brief provides grounded advice to policy and operational staff working to implement information technologies (ITs) aimed at enhancing service, monitoring and oversight. Insights from the analysis of these three priorities will be immediately beneficial to the child protection sectors in Ontario and England and they should also be valuable more broadly for other jurisdictions and social service sectors.

Child Protection Backgrounder

Child protection is a public service that investigates allegations of harm and, where a threshold is met, removes children from their families and places them in alternative care arrangements. Where a threshold is not met, investigations are closed, or families are referred to other

2 See www.ontario.ca/page/improving-child-welfare-system.

community services to help satisfy unmet needs. The sector is staffed by social workers supported by management, legal staff, administrative teams and other service providers. This sector relies on historical information about past involvement, sometimes intergenerationally, to help inform present decisions and depends on case-level record-keeping to ensure that services are compliant with regulation. Child protection services have been on a trajectory of digitalization that has aimed to improve both the collection and use of data and information for service and oversight. Ontario has made the shift from independent information systems in each of its children's aid societies to one enterprise case management system, called the Child Protection Information Network (CPIN), and some local authorities in England explored the use of predictive analytics to provide risk scores for cases referred to children's social care.

Key Challenges

Data Quality and Usefulness

Identity and Record Duplication

Child protection has unique data governance challenges, including system avoidance, where people may attempt to obscure their identity (Brayne 2014), and the presence of individuals who may not have government identification documents readily available (Marrelli 2017; Majid 2021), a problem around the world (Clark, Metz, and Casher 2023). In practical terms, this can lead to the creation of duplicate records (Vogl 2020a; Office of the Auditor General of Ontario 2015).

Record duplication proliferated as agencies that had served the same client migrated to CPIN (Office of the Auditor General of Ontario 2015; Ontario Association of Children's Aid Societies 2017). Efforts were made to identify and merge duplicate records (Ontario Association of Children's Aid Societies 2020b), but in the absence of unique identifiers, attempts to automate detection and deduplication failed (Vogl 2020a). This left workers having to sort through up to 30 or more possible duplicate records whenever they tried to do history search, which perpetuated duplicates, as workers opted to create new duplicate records rather than risk adding notes to the wrong one (ibid.). With duplicate records and verification issues, history search becomes increasingly difficult and time consuming — and the reliable use of analytics almost impossible.

Data Migration, Maintenance and Continuity

Child protection relies on historical records to ensure social workers can make informed decisions about the safety of children. High-profile child deaths have revealed that when historical information is not available, effective decision making can be impeded (Laming 2003; Office of the Chief Coroner of Ontario 2014; Catholic Children's Aid Society of Toronto 2014). In England, migration was handled at the local authority level and proceeded from one legacy system into a new system; in Ontario, there were seven legacy systems with different logics that needed to be migrated into one enterprise system (Commission to Promote Sustainable Child Welfare 2012). This process was so complex that some information was left behind because fields could not be matched (Wald 2024). Veteran workers had practical understanding that records could exist across, for example, microfilm, an IBM "green screen," Lotus Notes applications, or third-party legacy case management software, while a newer worker may not have realized these historical repositories exist (Vogl 2023). With records across multiple systems or formats, crucial information for search or analysis could be missed and it could become impossible to tell stories about intergenerational involvement and how to prevent it.

Interpretation Consistency

In both Ontario and England, there were concerns about interpretation. Children's aid societies in Ontario complained that despite having the same enterprise information system with identical data elements, staff in agencies were still interpreting those elements differently (Ontario Association of Children's Aid Societies 2016). There was a working group developed to try and standardize interpretations (Ministry of Children, Community and Social Services 2024). In England, data scientists working on predictive analytics were unable to aggregate data across local authorities because of the different interpretations of data elements and approaches to taking case notes, which "add considerable noise as well as signal" (Clayton et al. 2020, 63). For example, the recording

of whether a child was "seen" could be taken literally or mean the worker also completed direct work with the child (Vogl 2023). Efforts to standardize data interpretations were made to improve the consistency of data definition use between local authorities (Scourfield et al. 2019). Inconsistent interpretations of data elements can undermine the usefulness of the associated data.

Relevance of Data Elements

In child protection, much of the data collection focuses on compliance of workers and agencies with administrative standards, organizational performance or a selection of socio-economic outcomes, rather than on interventions that prevent involvement (Lemay 2011; Hood et al. 2016). In England, there is greater emphasis on outcomes data, with a focus on educational attainment (DfE 2025c), as well as information on offending, substance misuse, health and housing (DfE 2024b). However, data can be set up to identify patterns of involvement, but not how to break them. In Ontario, social workers were concerned that the data elements prioritized by CPIN emphasized compliance to the point where they lacked fields to place information that was relevant to their front-line service needs (Vogl 2020b). When there are questions about the relevance of data, outcomes might not be actionable, and some groups might be missing crucial information.

Relational Quality of Data

There are tensions between how data and information systems are structured in relation to individuals, families and the professionals they work with. Contemporary information systems atomize families into constituent individuals. When an individual requests information from their case file, information about others is redacted (Information and Privacy Commissioner of Ontario 2019; Hoyle et al. 2020). In addition, much of the information relating to individuals is not that individual's information, but observations and assessments made by professionals. Focusing on individuals within data sets disregards the relationships embedded in the data and the "co-created" nature of data (Wong, Duncan and Lake 2025). Data analyses in service sectors that engage with individuals within family and community settings and that include information created by professionals need to account for the relationships embedded in, and the provenance of, that data.

Privacy, Transparency and Explainability

The usability of data for analytics could also be impeded by the interpretations of privacy rules and the levels of transparency, which could have implications for the explainability of algorithms. Purpose also matters, as an opaque risk score could cause harm and be difficult to dispute, while recommendations for tailored supports and activities could help a family (Eubanks 2017; Leslie et al. 2020). It is necessary to balance the privacy of individuals with meaningful aggregate findings that can inform service improvements for families and communities (Vogl 2016).

In terms of transparency, England has published data about children's trajectories through services since the 1970s (Bullock and Parker 2017), and up-to-date information it collects and uses is available through its application programming interface-enabled data portal (DfE 2024b). England has also made efforts to be transparent about data and algorithms for predictive analytics and how such risk scoring tools have performed (Clayton, Gibbons and Sanders 2019; Clayton et al. 2020). Ontario still holds similar data behind closed doors, with the following statement on its data catalogue web portal: "This data is not available right now. We are reviewing the data to determine if it can be made open to the public."[3] Establishing the appropriate levels of privacy and transparency can help to balance the needs of trust and explainability with ensuring the quality and usefulness of data for policy analysis, research, administration and service oversight. Ultimately, the level of attention to privacy transparency, and explainability, will determine whether data and algorithms perpetuate inequality or help those experiencing vulnerability to improve their lives.

Underlying Infrastructure

Interoperability Standards

Interoperability issues can impair data linking, sharing and aggregation. In Ontario, the province had not set technological or data standards for agencies ahead of the transition

3 See https://data.ontario.ca/en/dataset/childrens-aid-society-budget-submissions.

to CPIN (Commission to Promote Sustainable Child Welfare 2012). This not only prevented interoperability between legacy systems, in terms of easily sharing digital information about client cases, but it also made migration into CPIN more difficult (Office of the Auditor General of Ontario 2015). Some historical records could not be transferred and remained in legacy systems or were manually uploaded as attachments (Wald 2024). Differences between legacy systems and CPIN led to difficulties measuring key performance indicators during the migration year and limited comparability between data before and after CPIN (Ministry of Children, Community and Social Services 2020). Even having a single enterprise system does not necessarily ensure interoperability across different organizations.

Similar issues of comparability across local authorities were found in England because while standard procedures and data elements were set centrally, decisions about information systems were left up to individual local authorities (Cleaver et al. 2008). The DfE and Ofsted provide guidance on data collection to try and ensure standardization despite different underlying systems (DfE 2024a; 2025a; 2025b; Ofsted 2025), though this has not always been achieved (Clayton et al. 2020). There have also been recent policy efforts in England to improve interoperability, because it supports analysis and information sharing (DfE 2023b; 2023c). Without standards for data and the interoperability of IT systems, there will be variability in analytics and decision making (Keddell 2014; Vogl 2022).

Automation Versus Worker Enhancement

With increasing efforts to automate various elements of work, a tension arises between replacing and enhancing worker skills and expertise (Zuboff 1985; Susskind and Susskind 2015). In Ontario, workers felt as if the information system limited their ability to collect and search for information and that they were not able to recommend novel types of analysis that would benefit their work (Vogl 2023). In the United Kingdom, predictive analytics tools were developed to provide risk scores for incoming or escalating cases to triage those of highest predicted risk. The final decision was left to child protection workers, but the reasons for the score were not entirely clear to those using the tools (Vogl 2024). The types of technologies adopted in these jurisdictions appeared to stifle expertise, but other types of technologies, such as interactive dashboards, dynamic genograms and virtual assistants were thought to enhance worker skills (Jussa and Mallo 2017; Holme 2017; Booth 2024). If the worker-enhancing potential of technology is stymied, then the benefits of novel technologies might not be realized.

User-Friendliness

In both jurisdictions, staff were concerned about the usability of their tools. In Ontario, workers complained that the information system was not user-friendly: navigation was onerous, it was unforgiving and unhelpful in terms of data entry, and search was overly complicated — leading some workers to worry that they might "miss something" (Vogl 2020a). In the United Kingdom, workers were also concerned that tools would not help with tasks that they felt were important, such as history search, summarizing case progress and identifying key areas for intervention (Wastell and White 2014). Tools that do not meet worker needs might degrade practice, thus undermining the desired objectives of technological change.

Secure and Confidential Interaction

While governments protect privacy and personal information contained in public sector information systems, there is a gap around information seeking and communication that occurs over third-party platforms. Child protection workers may use applications such as Google or Facebook to search for information about their clients (Apgar and Cadmus 2023), and they may use messaging tools such as Facebook, Twitter (now X) or WhatsApp to communicate with their clients (Betteridge 2012; Canadian Association of Social Workers 2014). Assuming that these platforms can infer that this is a child protection interaction, from online information and metadata, the algorithms they use may adjust client ad targeting, mood manipulation and credit scores, outside of anyone's knowledge or control (Zuboff 2019). This becomes increasingly problematic as public sector organizations seek to use intelligent assistants, such as ChatGPT, CoPilot or Magic Notes, as part of their work (Koutsounia 2024). In the absence of secure public information infrastructure for person-to-public-sector communication, sensitive data could be harvested by private actors for

unforeseen and undisclosed commercial uses that increase risks of data leakage, profiling or discrimination for vulnerable service users.

Public Sector Capability and Capacity Building

People are the foundation of any analytics or artificial intelligence (AI) infrastructure in child protection services, so any weaknesses in human capabilities could undermine the technological infrastructure. Training for CPIN focused on prescribed recording procedures within the interface, but with little engagement about the reasons for data collection, which may have reduced worker motivation to take accurate recording practices seriously (Ministry of Children, Community and Social Services 2024). A quality assurance worker indicated that case workers did not always keep client educational data up to date in the information system because they did not see it as relevant, but they changed their practice when they were told that scholarships may be available to children in care who were recorded as being in grade 12.[4] It also left little room for workers or supervisors to interrogate the assumptions underlying data collection and offer new insights about what kinds of data might be useful (Research for Social Change Lab 2024). In the United Kingdom, workers were given a risk score, but without a rationale, limiting their capacity to evaluate the veracity of the prediction, understand the underlying assumptions or offer suggestions for improvement (Vogl 2024). If the public sector does not know how to request explainability and security in the tools it uses, then it can put its clients at risk; and if it does not know how to ask, plan and budget for user experience testing and iteration, then it can put unusable or unhelpful tools in the hands of its workers. When skill is understood narrowly as workers being able to use technology as prescribed by managers, designers and developers, rather than as a capacity to engage in co-creation, then emergent benefits of novel technologies may remain untapped.

4 Personal communication, August 31, 2018.

Incongruities Between Objectives and Measures

Compliance Versus Client Outcomes

Accountability in child protection is intended to ensure that children are kept safe, that policies and procedures are being followed, and that the service system delivers value for money. However, there are sometimes difficulties aligning measures with objectives. In Ontario, efforts to report on client outcomes (such as health, educational or criminal-legal outcomes) were subordinate to standardized categories (such as recurrence or time in care) (Nichols et al. 2023; Ontario Association of Children's Aid Societies 2020a). As some workers indicated, "compliance doesn't always mean outcome" (Vogl 2023, 270). Having measures in place gives the impression that there is accountability, but the suite of measures in place may not be suitable proxies for factors that are publicly important and may thus exclude valuable insights (Lemay 2011; Vogl 2025). Without considering a broader range of outcomes beyond compliance, public service sectors such as child protection risk missing important insights into prevention, safety, well-being and the progress of clients over the life course.

Intervention Versus Prevention

Those working in the child protection sector often talk about a pendulum swinging between protection and prevention, between removing children from their families and keeping their families stable and together (Dumbrill 2006). These discussions often fluctuate between concerns related to high-profile child deaths and fiscal costs and austerity. The pendulum metaphor assumes involvement and does not envisage a world where preventative services and supports are provided automatically to reduce involvement in the first place, which is better for the families, because problems are addressed before child protection services are needed, and better for the state, because it reduces the pressure on service providers and the public purse. In the United Kingdom and Ontario, there is a dearth of public sector information about interventions that best tackle the conditions and factors underlying involvement. Thinking in terms of binary metaphors may blind us to alternative approaches that can only be uncovered by data

collection, analysis and intervention that explore the antecedents of child protection concerns.

Overcoming Siloes

The problem of administrative boundaries impacts both measurement and front-line service provision. Reports on high-profile child deaths have found that inadequate joining up of relevant information (from health, education and law enforcement, for example) have led child protection workers to make decisions that were later judged to be incorrect (Laming 2003; Office of the Chief Coroner of Ontario 2014). Administrative siloes can limit the information available for effective decision making of public sector workers and the measurement of client outcomes.

Priorities

The suite of challenges noted above suggest three key priority areas for intervention: data governance, public infrastructure and measurable objectives.

Improving Data Governance

Challenges around data quality and usefulness suggest that data governance is an important priority to meet objectives related to oversight, accountability and improved outcomes. In the absence of data governance, the application of tools such as predictive risk scores could pose needless risk to the most vulnerable. Data governance frameworks support work around engaging the right stakeholders, stewarding data effectively over time within complex systems, and achieving public value objectives (Eaves, Mazzucato and Vasconcellos 2024; Janssen et al. 2020; Brown and Toze 2017; Micheli et al. 2020). Public value objectives include clarifying the reasons for data collection (Wylie 2018), establishing legal, technological and collaborative arrangements to responsibly manage data for public benefit (Fay 2024; Fumega 2024), balancing power differentials stemming from data (Owen 2018), pre-empting crises (Beall 2024) and democratizing involvement (Tennison 2024). Data governance must account for "multiple, sometimes conflicting, ends" (Medhora 2018). Data governance can ensure trustworthy data that supports the explainability of algorithmic outputs, should disputes or concerns arise.

Ensuring the Underlying Digital and Human Infrastructure Is in Place

Governments also need to focus on key digital public infrastructure that can help provide "shared means to many ends," such as digital identity verification and secure exchange of personal information (Eaves, Mazzucato and Vasconcellos 2024; Eaves and Sandman 2023). Interoperable systems, with open standards that are made up of reusable building blocks, are needed, and the state should retain a level of internal capability to build, maintain and oversee such systems (Eaves, Mazzucato, and Vasconcellos 2024; Pahlka 2023). Rather than just replacing people or making them more efficient, novel ITs offer experts better tools to collect, process and use service data, identify patterns and recommend potential courses of action (Snow 2021; Vogl et al. 2020). Internal capability ensures citizens and institutional stakeholders can get involved, encourages greater cross-departmental collaboration and can reduce risks underlying infrastructure development (Sridharan, Narayan, and Hardinges 2024; Maheshwari 2025), such as has been experienced with the X-Road data exchange in Estonia (Heller 2017) and the Aadhaar identity systems in India (Banerjee 2016). Retaining internal capability ensures digital public infrastructure is stable and reliable (Tusikov 2023) and can help to overcome weaknesses in technological and regulatory infrastructure to "maximize the benefits of AI-driven innovation" (King 2024).

Expanding the Range of Meaningful Outcomes

A clear vision is the most important element of effective digital transformation. This calls for focused attention on the purpose of the system, what it is trying to achieve and how it can best measure progress toward that goal (Mazzucato and Kattel 2019). Public sector organizations need to set goals through participatory processes (ibid.), foster norms consistent with information use (Moynihan and Pandey 2010), and take into account the complexity of contemporary governance (Moynihan et al. 2011). Failing to pursue goals in context could lead to unanticipated consequences (ibid.). Any effort to measure performance needs to understand the complex interplay of outcomes expected by different groups, how they are tied to modifiable factors and ultimately how they can "improve the concrete ways in which governments perform and citizens are helped to enjoy better and fuller lives" (Rotberg 2015).

Broader Applicability of Insights

With greater digitalization globally, every jurisdiction needs to govern data. Some of the challenges facing the child protection sector are related to IT issues an order above their service sector, such as provincial or national level identification, secure means to interact with state services and standards for interoperability. These are issues that all states face. This brief gives detailed examples of the kinds of challenges that public sector organizations might encounter in practice.

Further, performance measurement and evidence-based policy are perennial areas of discussion across the public sector. Establishing frameworks that can bring together stakeholders, tackle complexity and identify meaningful and measurable outcomes to support oversight and accountability for services are of benefit to any policy area. Lessons from child protection can inform the design of tailored priorities, frameworks and approaches in other sectors and jurisdictions seeking to govern data for analytics.

Policy Recommendations

The following nine recommendations are offered to help overcome the identified challenges and realize the objectives of the three key priority areas.

Data Quality and Usefulness

- → **Develop improved mechanisms for identification:** Digital identification is one means to enhance data quality. Reduced duplication from better identification could ensure records are tied to the right people, improve search and analysis, and help to overcome issues related to migration and merging as ITs change.
- → **Produce a legislative, regulatory and policy framework that aligns with the types of data in the sector:** Any legal regime needs to reconcile conflicting objectives and balance privacy with the data quality needed for research and longitudinal oversight over time. Legal regimes also need to account for sectors where data about the relationships between people and their contexts are important for decision making.
- → **Establish and empower a data governance team:** A data governance team would work vertically within the administrative hierarchy and horizontally across sectors. It would ensure data continuity over time through plans for the maintenance of data and its transition between information systems, especially in circumstances where historical data is relevant to present service needs. It would also establish clear standards, working groups and training efforts to help ensure data relevance and consistent interpretations of data elements across the sector.

Underlying Infrastructure

- → **Establish a standards oversight body for IT and data:** An oversight body should set system-agnostic standards for IT and data in the ecosystem to support interoperability and ensure requirements are up to date and that they are neither obsolete nor hindering the ability to adopt more efficient, effective or secure approaches.
- → **Establish and empower an interdisciplinary user experience research team:** An interdisciplinary user experience research team would improve user-friendliness of technologies in practice and invite workers and service users to participate. This team would observe technology use in practice to better understand how technologies can seamlessly enter a workplace, with a focus on empowering rather than disempowering users.
- → **Develop improved mechanisms for secure data exchange:** Technical staff should create secure government-operated or government-regulated data exchange infrastructure so that workers need not rely on private sector platforms with opaque terms of service for the communication of potentially sensitive information with service users (such as families and youth).
- → **Create digital-capacity-building programs:** The public sector should build the digital capacity of public servants to be intelligent consumers and users of technologies. At a minimum, public servants should be able to clearly state

what they need and advocate for it. They should also be able to identify issues and have the resources and means to resolve them.

Objectives and Measures

- **Establish a performance regime oversight body:** An oversight body should ensure agencies develop performance regimes that not only set clear purposes with measurable targets, but that also include mechanisms to evaluate the regime and identify and avoid both performance paradoxes, where the system of measures leads to unanticipated behaviours and outcomes contrary to those sought, and narrow thinking, where measures focus too heavily on procedures or symptoms rather than root causes.
- **Enable cross-sectoral and cross-departmental analysis:** Objectives and measures should be understood as a strategic way to tackle departmental policy problems as part of a more complex system and should be designed to engage cross-departmental approaches and analysis to improve not only front-line service but also oversight and policy making.

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