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*Article*

# Problem-solving for problem-solving: Data analytics to identify families for service intervention

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**Abstract**

The article draws on Bacchi's ideas about problematisation (2020) and links to technological solutionism as governing logics of our age, to explore the double-faceted problem-solving logic operating in the UK family policy and early intervention field. Families with certain characteristics are identified as problematic, and local authorities are tasked with intervening to fix that social problem. Local authorities thus need to identify these families for problem-solving intervention, and data analytics companies will solve that problem for them. In the article, we identify discourses of transmitted deprivation and anti-social behaviour in families and the accompanying costly public sector burden as characteristics that produce families as social problems, and discursive themes around delivering powerful knowledge, timeliness and economic efficiently in data analytic companies' problem solving claims for their

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data linkage and predictive analytics systems. These discursive rationales undergird the double-faceted problem-solving for problem-solving logic that directs attention away from complex structural causes.

**Key words**
families and early intervention, predictive analytics, problem-solving, social problems, technological solutionism

## Introduction

The promise of technological fixes in the social policy field provide a common-sense 'solutionism' for social and economic ills (e.g. Bishai et al., 2015; Maturo, 2014; Means, 2018). Carol Bacchi (2020) argues that problem-solving has become a pervasive concept and a governing logic of our age, increasing in both intensity and scope. It operates to shape social and political relations in contemporary western societies and organisations. Amongst other examples, she points to the 'what works' evidence-based policy and service delivery approach which rests on a problem-solving logic for fixing pre-set and taken-for-granted problems. Problem-solving or solutionism assumes the existence of distinct and self-evident social problems. These problems are accepted as a taken-for-granted truth, which sidesteps the way in which they are created as particular sorts of problematisations (Bacchi and Goodwin, 2016). The constructed problematisations in turn invite particular sorts of solutions and exclude others. Increasingly, these involve technological solutions and the 'datafication' of citizens (Mayer-Schönberger and Cukier, 2013), turning people into data: identifying and categorising them to predict future behaviour, allocate resources, and determine eligibility for services and interventions. The shift towards what has been termed 'digital welfare' is global (Privacy International, 2020). It is a mode of governance that depends on the institutional and discursive normalisation of the collection of electronic data as part of everyday administrative and social practices (Dencik et al., 2019; Morozov, 2013).

In this article we are concerned with the way that the logic of problem-solving doubles itself in the UK family policy and early intervention field in particular, as a case where a welfare state is being pushed, through austerity measures that ravage public services, towards a government-industry complex in which questions may be raised about what shapes the problems and solutions that the system addresses: companies offering services, the governments buying them, or citizen's needs (Privacy International, 2020). The COVID-19 pandemic has provided an additional pretext for the push, with the UK's National Data Strategy stating:

> Our experience responding to the coronavirus pandemic . . . has underlined the need for the public sector to move away from a culture of risk aversion towards a joined-up approach, where the presumption is that, with appropriate safeguards, data should be shared to drive better outcomes. The rollout of the Coronavirus (COVID-19) Shielded Patients List showed how much can be achieved through appropriate data sharing across central and local government and the private sector. (DDCMS, 2020)

In the family policy and early intervention field, sets of administrative and other data are linked together in order to identify and classify families as sub-optimal for forms of local authority provided or contracted programme interventions in the way that parents bring up their children. We discuss the intrinsic double-faceted problem-solving logic involved – families with certain characteristics and behaviours are identified as problematic, and local authorities are given the responsibility of intervening to solve that social problem; local authorities need to identify and target these families for the problem-solving intervention and data analytics companies will solve that problem for them.

We begin with a general consideration of problem-solving and solutionism to set the scene for our specific investigation of this in relation to operational data linkage and analytics for targeting family intervention. Operational data linkage refers to the way that data from a range of national and local administrative and other sources is pulled into a form of electronic 'warehouse', quaintly referred to by some as a 'data fusion centre', pooled in a central repository (Benjamin, 2019; Stanislava, 2004), ready for use to inform service delivery. The data are regularly updated, integrated and subject to application of algorithmic tools and predictive risk modelling. Statistical algorithms (automated analysis on the basis of set indicators) are applied to the data to identify families with particular social-behavioural characteristics (such as unemployment, mental health issues, rent arrears, child truancy, youth offending) which indicate that they are 'problematic' currently or there is a risk that they may be so in the future. The outcomes of this analysis are identifiable data to inform interventions to address or pre-empt problems, and targeting for enhanced outcomes, with specified families.

Drawing on analysis of local and national government reports and data analytic company online materials, we consider the double-faceted logic of the intervention and operational problem-solving model in the UK family policy and early intervention field. On the one side, we look at the production of families presenting particular sorts of social problems that local authorities target and fix. On the other side, we explore the nature of problem-solving claims made by data analytic companies about their data linkage and predictive analytics systems. We identify integrally linked sets of discourses of

transmitted deprivation and anti-social behaviour in families and the accompanying costly public sector burden; and discursive themes around data analytic systems related to delivering powerful knowledge, timeliness and economic efficiency. These discursive rationales undergird the double-faceted problem-solving for problem-solving logic.

## Problem-solving and technological solutionism

The model of problem-solving increasingly dominates the contemporary intellectual and policy landscape, and is integrally linked to a process that Bacchi (2020; Bacchi and Goodwin, 2016) refers to as 'problematisation'. She discusses the rise of the problem-solving model through an examination of how it functions in international skills-testing programmes (surveys evaluating the young people's and adults' cognitive problem-solving capacities) to produce passive and divided subjects (2020). Bacchi argues that problem-solving has become taken-for granted as a truth, which works to limit political debate and to regulate political subjects. Taking a Foucauldian-influenced post-structuralist approach, Bacchi focuses on forms of governmental practices and the ways of thinking that emerge from them. She begins from the position that governing – that is, the ways that society is organised and administered with the intention of shaping the lives of citizen subjects, is far from neutral and reactive. Rather, it takes place through governments' active discursive (re)constitution and 'fixing' of social issues as particular sorts of problems: a process Bacchi refers to as 'problematisation'. There are, Bacchi explains, no problems separate from their problematisation; governing is effected through problematisations that implicitly impel particular actions rather than through policies. Policymaking is understood in terms of efforts to solve problems-that-exist, problems that self-evidently need to be solved. She calls for critical interrogation of what the problem is represented to be in specific policies, the underlying ingrained conceptual logics and the process of their authority, what is left aside, the governing and lived effects produced, and possible alternative representations.

One example that Bacchi points to is the evidence-based policy approach that is dominating policy initiatives and political discussion (and research) in many countries, which is reliant on a problem-solving logic indicated in the 'what works' mantra. In the UK, for example, the government funds a network of 'What Works' centres to test solutions and provide evidence for policy and practice care (What Works Network, 2018). Of relevance to our focus in this article, the network includes What Works centres for children's social care, which aims to synthesise evidence and generate new tools to inform practice, and for early intervention, which evaluates early intervention programmes that seek to improve outcomes for children and young people. The

problematisation rationale is embedded within the focus of these centres; for instance, it is assumed that early intervention is the way to improve outcomes (rather than, say, dealing with poverty).

Through these and other means, the condition that is to be fixed by interventions that have been judged to 'work' is treated as self-evident and pre-set; a taken-for-granted problematisation. These problematisations become the bread and butter of local government, charities, advocacy organisations and indeed researchers seeking to establish credibility for their field. Again, relevant to our focus here, the formulation of ACEs (Adverse Childhood Experiences) is a good example of problematisation, establishing the existence of a measurable problem consisting of categorically identified items of experience in childhood, around which an industry of fixing interventions has been built (White et al., 2019; Davidson and Wright, 2020).

Problematisation often invokes problem-solving that is dependent on expert management, latterly via 'troubleshooting' style business methods and technological solutionism. This puts in place a double-faceted policy and operational problem-solving process and logic. Data analytics companies, as expert data managers, are involved in solving problems for local authorities, who are held responsible and accountable for solving problems that are ready-packaged by central government (see the example of the Troubled Families programme discussed below). The companies are a necessary part of the chain of fixing, where the hidden order of the data systems and algorithms they contract to deliver are what Christopher Church and Amanda Fairchild refer to as a 'silver bullet' (2017) that is beyond the understanding of many users and inaccessible to scrutiny. Virginia Eubanks (2018) has highlighted the intensified 'regime of data analytics' taking hold in public services in the USA such as automated eligibility procedures for welfare benefits and statistical modelling screening tools for child protection, but the issue applies beyond a specific national context (Dencik and Kaun, 2020). Evgeny Morozov (2013) has critiqued 'technological solutionism' – the idea that technologies such as algorithms can solve a broad range of issues, supplementing and improving human decision-making to identify and fix social problems. Technological solutionism recasts complex and fluid social phenomena like politics, public health, education, and law enforcement 'either as neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized — if only the right algorithms are in place!' (2013: 5). For Morozov, artificial intelligence offers a retreat from the realm of value; technology is regarded as neutral or apolitical, and he positions this as a problem-solving approach that overtakes governance. He argues that technological solutionism is dehumanising and shifts power away from elected governments towards technology companies. Morozov, similarly to Bacchi, says that solutionism 'presumes rather than investigates the problems that it is trying to solve' (2003: 5), but in some contrast Bacchi regards

problem-solving technological fixes as part of governance through the production of particular problematisations as a mechanism for its enactment, rather than outside of it.

## Methods

This article discusses data and analysis drawn from a larger project investigating the dynamics of social licence and trust for the operational use of data linkage and analysis to identify families for service interventions. The research project is concerned with the nuances and circumstances for social licence among parents of dependent children around these practices – the social acceptance of practices that lie outside of general norms, particularly among different sub-populations of parents (http://generic.wordpress.soton.ac.uk/parentdata/).

Bacchi's intellectual endeavour of problematisation is enacted methodologically through the application of discourse analysis to policy documents. As part of the research project, we undertook a critical discourse analysis of policy and public declarations and statements about data linkage and analytics, and family intervention. The study of discourse, how patterns of meaning and knowledge are constructed, is central to understanding the ways that data science is part of wider processes of societal categorisation and governance – discourses animate the comprehension of data and technology (Hoffman, 2020). Our discursive analysis, which we explain below, was oriented around Bacchi's key question: 'what is the problem represented to be?', discernable not only through the way that problem issues are posed but in the ways of dealing with them that are put forward (Bacchi and Goodwin, 2016). Towards this, we aimed to identify the range and content of discourses that frame discussions in different sources about integrating data, data analytics and family intervention, and to draw out the various supportive and critical rationales and their contingencies.

Our analytic focus includes (but in the larger project is not restricted to) the national and local government reports and online assertions, and commercial data analytic companies' websites that we refer to in this article. Our sampling criteria for national and local government reports, statements and other materials addressing operational data linkage involved time period and specific reference to families and children's social care, using the following online search terms, in various combinations: AI, artificial intelligence, children, children's data, children's services, data analytics, data ethics, data in children's social care, data linkage, data privacy, ethics, government, linking data, predictive analytics, social care. We sampled 15 relevant texts published over a two-year period (from summer 2018 on). Our sampling frame for the data analytics companies was the government's digital marketplace

procurement framework: https://www.digitalmarketplace.service.gov.uk/. From this, we selected those companies cited most commonly for family intervention programmes in the national and local government reports and statements. We sampled publicly available online material from 12 data analytics companies. (A list of the reports and other materials we analysed, along with links, is available as a supplementary appendix on the SAGE *CSP* website page for this article).

Our selection of documents for analysis was not exhaustive, though we continued to the point where we could be reasonable assured that we had identified the recurrent key discursive problem-solving rationales deployed (akin to inductive thematic saturation: Saunders et al., 2018). Our analytic entry point to the material covered rationales for and against operational data integration and analytics, summarising and affording attention to patterning of discursive constructions as these posed and resolved problems. We adapted Fairclough's critical discourse analytic approach to the materials (2010), working with three dimensions in our examination of the underpinning conceptual assumptions and logics, and authoritative claims, in what was being communicated. This involved interrogating the materials at the level of the choice of terms being used being used (text dimension), the composition of sets of ideas brought into play in the problem-solving rationales (discursive practice dimension), and the creation of social relationships and flows of power involved (social practice dimension). This approach supported a form of empirical 'thin description' (Brekhus et al., 2005; Hoffman, 2020) that can map and critically assess discursive legitimisations and intersections. We discuss below the set of problem-solving and technological solutionism discourses as part of our analysis in relation to family intervention. Before this, we outline the issue of problem-solving through intervention in families that is felt to require technological solutionism.

## Problem-solving through data analytics for family intervention

Families, and especially how mothers and fathers bring up their children, have long been an issue of social and political concern, thought to be simultaneously a symbol, symptom, cause of and solution to the state of the nation. From the late 1990s on, though, parenting has been pushed firmly to the centre of social policy developments as an overt focus. There have been a series of intervention programmes to step-in to fix the situation where problems are regarded as embedded, and to pre-empt problems with families identified at risk (Edwards and Gillies, 2016). The Troubled Families programme, for example, constructs parents as irresponsible and thus in need of intensive micro-management by the state (Crossley, 2018), while discourses of early

intervention and brain science underpin initiatives such as the Family-Nurse Partnership programme training young mothers how to stimulate their babies (Garrett, 2018; Gillies et al., 2017).

A main element of the problematisation here is constructed as the social and biological transmission of deprivation and anti-social behaviour by inadequate parents to their children. Deterministic notions have placed family and parenting at the core of persistent troublesome behaviour, and parents in problem families are posed as in need of expert guidance and ultimately sanctioning, crossing between parenting support and the criminal justice system. As Emily Keddell (2015) points out, this problematisation reifies troublesome behaviour and parenting as objectively knowable through data about sets of characteristics and aspects of behaviour, turning difficulties into risks. It frames families in individualistic and moralistic ways, positioning parents and mothers in particular as the sole genesis of poverty and irresponsible behaviour, separate from the wider social world and lifted away from structural context, and thus to be the target of intervention. Rather than preventing causal social and economic inadequacies of disadvantage, the problematisation focuses on pre-empting individualised family difficulties.

Another element of the problematisation is that the families in need of fixing are also said to be a costly burden for the public sector because of the multiple and ongoing demands that they place on a range of different services. Local authorities are tasked with lead responsibility for problem-solving the expensive transmitted deprivation and anti-social behaviour, delivering family intervention initiatives either directly or by commissioning services from third sector and private organisations:

> Troubled families are those that have problems and often cause problems to the community around them, putting high costs on the public sector . . . The aims of the Troubled Families Programme are to get children back into school, reduce youth crime and antisocial behaviour, put adults on a path back to work and bring down the amount public services currently spend on them. All 152 upper-tier local authorities in England are taking part in the programme and have agreed the number of troubled families in their area that they will work with. (DCLG, 2012: 9)

In the context of austerity with successive UK governments cutting funding of public services to the bone, local authorities are looking for ways to ease the pressure on their budgets and secure sources of revenue that will enable them to deliver on their service obligations. Accompanying the problem of failing and costly families that is to be solved by intervention has been the rolling out of payment by results, where an intervention is commissioned and funded wholly or partially on the basis of results achieved (of problematisations solved) rather than the cost of the service (MHCLG, 2020). There are

thus a series of incentives for local authorities and their partner services to target families deemed to be in need of intervention and get measurable results.

Targeting families for intervention in an attempt to pre-empt social problems and enhance children's well-being and outcomes is accepted by local authorities as socially valuable, and as potentially both saving costs and generating funds in constrained budgetary conditions. Many local authorities now have an Office of Data Analytics (Eaton and Bertoncin, 2018) to facilitate this. The recording of data that is regarded as capturing the characteristics and behaviours of families that are the indicators of their problematisation has always been central to the governance of families and allocation of resources to deal with their needs (Horsley et al., 2020). But over the centuries this has shifted. First, digitised data capture tools have allowed mass data collection. Second, the analysis of these mass data bases has become highly concentrated around assessments of risk and children's needs (Horsley et al., 2020; White and Wastell, 2017). Towards this end, the warehousing of regularly updated data sources on the general population and service users, and application of data analytics, is seen as offering the possibility of improved and more efficient public services. It holds out the promise of quick and objective categorisations, assessments and predictions of risk that will pre-empt problems and improve outcomes. The application of algorithmic tools is a form of technological solution; based on indicators to data that is routinely collected by national and local government departments and services, and from other sources, in an effort to draw out profiles, patterns and predictions that enable services to target and fix problematised families.

Our discursive analysis of local government reports and statements identified a series of recurring rationales about the benefits of problem-solving through technological solutions. Data integration and analysis is regarded by local authorities as: enabling them to be proactive in identifying 'under the radar' problem families and improving outcomes, and supporting them to take a more strategic and sophisticated intelligence-led approach to commissioning and innovating service provision. It will also reap them economic efficiency through targeted resources and reducing demand for high cost services, and generally working in a speedy and more efficient manner. For example, as part of the Local Government Association's programme to help councils develop digital solutions to support their work, Camden Council lists the benefits of bringing together information from a range of sources as:

- an enhanced understanding of the needs experienced by families across the borough, which would help to shape the strategic direction of the council and its partners and to target scarce resources as effectively as possible
- the identification of residents who have previously 'gone under the council's radar', despite experiencing significant and complex need, because they had not been formally referred to council services

- a step change in automating current processes, including the routine and secure bulk uploading of matched data into the council's primary case management system (Framework-I/Mosaic) thereby cutting down the time spent by frontline staff on ad hoc information gathering
- easier and quicker recording of information against the shared Resilient Family Outcomes Framework agreed by the council and its partner agencies, together with a 'family information dashboard' giving frontline staff information on a variety of measures about the families with which they are working
- the creation of a blueprint for making links between master data management and case management processes and systems, while also integrating partner datasets
- close collaboration with Camden's existing work on developing a 'single view of the customer' that will ensure that frontline staff from all services are able to identify which other services work with a client
- new opportunities to exploit predictive analytics to inform early intervention and preventative work with residents and to reduce the use of expensive reactive services; for instance, combining social care records with school attendance data might help identify children acting as carers and in need of support
- further encouragement of a 'data-driven' mind-set within the council and support for user-centred service redesign. (Local Government Association, 2018: 6)

The problem-solving of families in need of fixing requires information about, e.g., parental unemployment, parental mental health problems, housing arrears, police and criminal records, and children's school attendance and exclusion data. These data from different sources are to be integrated and subject to analytics and modelling to identify families for intervention, whether they are experiencing problems or flagged as at risk of having them, to then implement preventive intervention by local service providers. For example, the Financial Framework document for the Troubled Families Programme provides a list of identified problems that should trigger intervention, each with a table of indicators and associated information sources and data feeds (MHCLG, 2020). The table for the problem of families experiencing or at risk of worklessness, homelessness or financial difficulties includes the indicator of a child who is about to leave school with no/few qualifications and no planned education, training or employment. The problem of parents or children involved in crime and antisocial behaviour states:

> The indicators below also offer the flexibility for criminal justice professionals to nominate parents and children where there is a potential crime problem, but no proven offence and they believe this could be a sign of wider family problems

> and as such they would benefit from a whole family intervention. (MHCLG, 2020: 25)

The suggested indictors involve information from 12 different data sources, including housing providers, schools and pupil referral units, hospital accident and emergency departments, police, and youth offending and probation teams.

In the double-faceted problem-solving logic, families in need of intervention and costing public money are identified as a social problem and local authorities given the responsibility of fixing that problem. Local authorities need to seek out and target these families for intervention. And it is experts in data analytics that, in turn, will solve that identification problem for them.

## Problem-solving through data analytics companies

There are a range of different extents and types of involvement of data analytic companies in place in local authority efforts to problem-solve the identification and costs of problematised families through operational data linkage and predictive analytics (Redden et al., 2020). The processes may be carried out in-house by the public sector. For example, Bristol City Council has its own 'Think Family' integrated analytics hub, drawing on over 30 discrete sources including school, benefit, health, housing, social care and criminal records, Often however, data warehousing, integration and analytics is outsourced to data analytic companies to solve local authorities' need for modelled data. These private companies are contracted by local authorities for use of their, off-the-shelf or bespoke, commercial systems for integrated data bases, profiling, identity verification and proprietary algorithmic risk assessments (Dencik et al., 2019). The details of these contracted relationships and digital systems are hard to access, protected by intellectual property rights and commercial sensitivity (Church and Fairchild, 2017; Redden et al., 2020). Indeed, many are multinationals covering a range of sectors and areas. Public services may be listed under 'industries', alongside banking and insurance, catering, retail etc.. Here, we are interested in the issue of how data analytics companies are located in the double-faceted problem-solving logic, drawing on publicly available materials posted on company websites. Indeed, companies such as (to name a few) Accenture, Experian, Sentinel, and Xantura routinely refer to their products as 'solutions': '. . .we can deliver proven solutions end to end' (Accenture); 'The solution will load, match and report on information from a variety of third party sources . . .' (Liquid Logic).

The issues faced by local authorities in addressing problematised families are characterised as ones that require technological solutions. In the

double-faceted problem-solving logic, it is application of the company's analytics systems, which have built in the problematised pre-set indicators of inadequate parenting and costly families to a proprietary algorithmic coding system, that can solve local authorities' problems with fixing dysfunctional transmission and with constrained resources. A number of rationales are evident in the data analytics companies' promotion of the problem-solving capacity of their products on their websites, with recurrent references to (i) the power of superior knowledge and (ii) harnessing time, ultimately resulting in (iii) economic efficiency.

## *(i) The power of superior knowledge*

The technology is presented as providing solutions because it is powerful, with the data analytics systems handing control of superior knowledge to local authorities, putting that problem-solving force at their disposal: 'Unleashing the power of Artificial Intelligence (AI) and optimising its benefits' (Sentinel); 'harnessing the power of data' (Accenture). At the same time, however, there is an attempt to include human decision-making within the technological solutionism. It is technically powerful but data analytics is positioned as a vital tool that meets the needs of local authority staff in a supportive way. These assertions act as a counter to any hint of replacing or threatening professional decision-making, which is a criticism made of the adoption of data analytics for operational intervention (e.g. Keddell, 2015; Redden et al., 2020). References to strengthening, empowering, and aiding human decision-making are common: '. . . it puts you in control of setting profiling criteria and the scenarios that trigger automatic alerts – empowering you to deliver the interventions that families need' (Sentinel), as summed up in Accenture's coining of the term 'Human+' for their products.

Indeed, the data analytic products enable local authority staff delivering interventions to work together in a joined up fashion, with: 'true collaborative working among teams and partner organisations' (Sentinel). This mirrors the way that the various sources of data of problematised objects (families) are brought together and integrated. Reinforcing this, there are calls for local authority Offices of Data Analytics to share data across geographical areas, not just services within an area (Eaton and Bertoncin, 2018). The power of technology promises local authorities an enhanced understanding of family situations and behaviours that enables increased control. The 'full sight holistic view' (TechUK) made possible by the objectivity and accuracy of data linkage and analytics gives a sense of vision and insight into problematised families that would otherwise be unavailable. Products provide 'a single view of the truth containing everything that is known about the person, their issues, needs and risks' (Sentinel), and illuminates any hidden risks and needs. This

ability is posed as bold and transformational because, as the innovation foundation Nesta puts it, 'business as usual is not an option'.

### *(ii) Harnessing time*

Innovative transformation through data analytics is also presented as a digital revolution that invokes a recurrent theme of timeliness: 'When the world moves, move ahead' (Accenture). Time is harnessed in the service of problem-solving for local authorities through data analytics – past, present and future. The provision of a holistic view of the past enables a 'fully joined up view of all that is known and all that has gone before' (Sentinel). There is incoming 'real time' data about families in the present, pulled into the data warehouse for holistic analysis as soon as new information is inputted to the sources (e.g. schools, police, health). Consequently, it is claimed, products allow for quick identification of problematised families as issues arise. Early action is enabled by this 'early warning system' (Capita One). Data analytics thus allow local authorities to refocus work away from dealing with crises and embedded problems, towards predicting risk and preventive early intervention with families. Indeed, more than using the past to pre-empt in the present, data analytics faces the future. It is presented as a forward-looking technology that will enable local authorities to plan accurately. Predictive data analytics systems allow for 'actionable foresight' (PredictX) thereby 'securing your tomorrow' (Unisys).

There are also hints of dire consequences in the promises that data analytics holds out if the powerful problem-solving technology is not embraced. Anna Lauren Hoffman (2020) describes these sort of discourses as an implicit threat: either adopt the data technologies or return to an inefficient and failing state. Data sources that are not integrated and subject to algorithmic analysis will remain fragmented and siloed (Sentinel). Not adopting technological fixes is presented as inaction that carries a high cost (Accenture) in the face of the problematised familial cycles of deprivation and crime. In contrast if local authorities pursue technological problem-solving for their family problem-solving responsibilities then risk can be managed, and childhood trauma prevented (Xantura). Society will be all the better for technological solutionism.

### *(iii) Economic efficiency*

The high expense of 'inaction' is an economic as well as a social cost where sub-optimal families are a drain on constrained local authority budgets. Ultimately, technological solutionism results in economic efficiency. A key selling point for data analytics products is that existing local authority resources of finances and staffing will be managed efficiently: 'better understanding to enable the true costs associated with a child and family to be understood and

managed' (Liquid Logic). Staff productivity is increased and improved; calling on new public management tropes (Ellison, 2007), data analytics systems are claimed to have the effect of optimising tasks and 'reducing unproductive time or workers' (Accenture). There are efficiency savings through the identification and combating of fraud that the data analytic systems allow (Sentinel). The data trail that the systems produce means that difficult but assured choices about where to put or withdraw resources can be made and justified. Budget oversight, reporting and planning is also problem-solved by data analytics technology, with many companies signalling products that cater specifically for local authorities to claim payment-by-results for their interventions to fix problematised families:

> Automatically prepared Government returns, evidenced by a full chronology of events and outcomes. With a simple click of a button you can produce a detailed NIS [National Impact Study] costing report, the Family Progress Data (FPD) return and PRB [Payment By Results] claim. (Sentinel)

To further maximise the income that can be secured for constrained budgets, there are even assertions that data analytics will ensure that local authorities invest in interventions with families that will meet the payment criteria, promising to 'pinpoint which families are likely to meet or fail particular criteria' (Capita One).

Public services generally, and family intervention, are characterised as facing rising demands alongside the competing need for cost savings. Harnessing future time, companies claim the accuracy and objectivity of data analytics enables the prediction, management and, crucially, reduction of demand and hence costs – somewhat of a paradox where the problem-solving holistic 'single view of the truth' claims about identification of hidden risks and needs arguably mean more demand. Turning from cost saving to revenue generation, the forward planning enabled by data analytics systems is claimed to place local authorities in an advantageous position when responding to future central Government initiatives and the income that these may secure for constrained budgets: 'Developed to meet the evolving requirements of the Troubled Families programme, the agile solution also helps our clients conform to the Data Maturity Model while enabling them to look ahead to future Government initiatives' (Sentinel).

## Conclusion

The double-faceted problem solving relationship calls up a government-industry complex. It invokes a set of dependencies between public services and data analytics companies, where companies are reliant on citizens being

datafied by local authority and other public services, and local authorities are dependent on the technological solutionism of data analytics companies manipulating that data. While technological solutionism carries an aura of indisputability because it deals in neutral, objective facts, there are questions to be asked around whether or not data linkage and analytics does in actuality provide powerful, insightful superior knowledge and efficient solutions for local authorities.

Concerns have been raised about inaccuracies, misinformation and discrimination in the data sources that are swept up into the central data warehouse and then pooled, along with errors and bias in the design of the data analytics and predictive modelling systems that are applied to it. At the very least these potential flaws constrain understanding and reduce the claimed illuminative holistic viewpoint (Afeltowicz and Pietrowicz, 2018; Dencik et al., 2019). More seriously, there can be built in discriminatory practices and consequences, resulting in unfair and unethical targeting of certain families (Church and Fairchild, 2017; Leslie et al., 2020). The heavily racialised and classed aspects to the technological solutionism of automated modelling and targeting are apparent. Particular populations are disproportionately represented in welfare benefit, social care and criminal systems, which means that the generation of risk scores in predictive models using their data codes in existing hierarchies of race and socio-economic inequalities (see, for example, Benjamin, 2019; Eubanks, 2018; and Keddell, 2015). For instance, there is an over-representation of young Black men in the Metropolitan Police Service Gangs Violence Matrix that amounts to digital profiling, a database which is shared with other agencies such as education (Amnesty International UK Section, 2018), while the predictive risk modelling used in child protection obscures the in-built equation of socio-economic disadvantage with risk, building in discrimination against the poor (Vannier Ducasse, 2020). Double-faceted problem solving then can involve coding in and embedding of doubled up prejudice and stigmatisation, further entrenched by machine learning processes where the analytic systems develop algorithms without being explicitly programmed (Church and Fairchild, 2017).

There is doubt thrown on the efficacy of predictive algorithmic models, with studies revealing poor success rates in identifying and correctly predicting outcomes for children deemed to be at risk (Clayton et al., 2020; Salganik et al., 2020).[1] There is also little in the way of evidence that predictive systems in particular are effective in problem-solving sub-optimal and costly families for local authorities (Dencik et al., 2019; Redden et al., 2020). Yet, the technological solutionism aspect of problem-solving may elevate analytic outputs above the judgements of professionals in the family intervention field, even in the eyes of the professionals themselves (Clayton et al., 2020; Redden et al., 2020). This can be despite the data analytics companies' assurances, identified above, that they provide supportive rather than threatening systems. The

problem-solving assertions of data analytics companies about powerful insights and innovations, efficiencies of time and economy, but retaining humanity, carry great weight, especially in a context of local authority responsibilities for problematised families and constrained budgets.

Bacchi's problematisation approach calls for critical attention to possible gaps or silences in the (re)construction of what the problem is represented to be (2020). Technological solutionism diverts attention away from foundational issues of problematisation – the representation of the problem as costly and troublesome families that local authorities are to solve through intervention. The weight of superior knowledge to support timely intervention, and cost efficiencies and revenue generation, that is sold as the answer for local authorities, doubles down on this diversion, since it builds in the particular version of problematisation as a self-evident problem that needs to be solved by algorithmic analysis and predictive risk modelling. As noted earlier, this shifts the burden of responsibilities for social problems onto the behaviour of specific families, individualising social problems by emphasising correlation over causation and directing attention away from the structural causes (Dencik et al., 2019; Keddell, 2015).

The double-faceted intersection of problem-solving for problem-solving, with its focus on superior data analytic knowledge, and socially and financially troublesome families, centres the regulation of families and their members rather than the broader framework in which families are located and operating, and simplifies the complex dynamics of the difficulties that they may face. On the one hand, 'solutionist' thinking moralises and individualises, erasing racialised, gendered and classed structural inequities, and supports the blaming of marginalised groups for the systemic social disadvantage and difficulties that they suffer (Maturo, 2014; Means, 2018). On the other hand, the families and their members are dehumanised and side-lined through the centring of the expert problem-solving. In the field of health intervention David Bishai and colleagues argue that complex and dynamic social and health problems 'do not have solutions so much as they have approaches' (2015: 661). Families and communities need to be involved as participants in problem-solving, deciding which issues need addressing, identifying the root causes and finding long term solutions – what Bishai and colleagues refer to as 'honouring of the value of people' (2015: 661).

The question of whether or not algorithms should be built and used to problem-solve social issues, and implemented for operational intervention, in the first place also is left aside. Morozov (2013) identifies how the use of algorithms in policing and other domains is discussed in the 'comfortable' discursive frame of how to build data analytic systems that are ethical without questioning where and when algorithms should or should not be built. The UK Government's Centre for Data Ethics and Innovation's (2020) review into algorithmic decision-making bias is an example of this comfortable

positioning, taking application of algorithms as a given and preoccupied with regulation recommendations for ensuring fairness. The emancipatory potential of technology is subverted and reframed as governance and surveillance avoiding even minor changes to the political economy (Means, 2018). In Bacchi's (2020) terms, a fundamental step back towards addressing these sorts of knotty questions about technological solutionism in the field of family intervention needs to consider what the problem to be solved is represented to be, and the pre-set problematisation of families that leads local authorities to embrace the individualised solutions offered by data analytic companies in the double-faceted problem-solving logic.

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## Supplemental material

Supplemental material for this article is available online.

## Note

1. In response to one study by the What Works for Children's Social Care centre (Clayton et al., 2020), the CEO of Xantura drew on 'power of holistic view' and 'implicit threat' type discourses, arguing that the research had not used the required range of data sources and there needed to be change in organisational culture in local authorities (Shafiq, 2020).

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