Governing by Algorithm? Child Protection in Aotearoa New Zealand

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Abstract

In 2014, the new Minister for Social Development in Aotearoa New Zealand, Anne Tolley, was presented with a briefing paper from the National Children's Director at the Ministry for Social Development (MSD) titled 'Vulnerable Children Predictive Modelling: Design for Testing and Trialling.' The paper included a proposal for a two-year observational study 'to assess whether children identified by the Predictive Modelling as at high risk of an adverse outcome/s did in fact suffer that outcome'. Though it was not the MSD's intent, Tolley viewed the 'observational study' along with an additional comment that 'the PM score would be calculated at birth for a known cohort of children and then these children's outcomes and service contacts observed' as MSD suggesting a suspension of child protective services as a means to test the accuracy of the Predictive Risk Model (PRM). Consequently, Tolley called for the PRM's implementation to stop immediately, after which she released the proposal, along with her annotations, to the media. The resulting coverage sparked debate on the ethics of using the tool and whether it had social license for its implementation. A number of public sector management issues also emerged, including agencies' capacities; change management requirements; and the timing and form of the required consultative processes both within and outside of government. It was these issues, rather than the predictive ability of the data analytics tool itself, which seemed to determine the outcome of the implementation process.

Introduction

The use of a predictive algorithm to help identify children at risk of maltreatment did not sit easily with Anne Tolley, Aotearoa New Zealand's Minister for Social Development. A career politician, Tolley won the seat of East Coast for the National Party from the Labour Party in 2005. It was November 2014, two months into a new government with Prime Minister John Key's government having been returned with the loss of one seat. Tolley was just settling into her new job as Minister for Social Development when she was presented with a briefing paper from the National Children's Director at the Ministry for Social Development (2014) titled 'Vulnerable Children Predictive Modelling: Design for Testing and Trialling.'

Tolley[1] was generally familiar with issues of child maltreatment having served as Minister in the previous government in the portfolios of Police, Corrections, and Education. The briefing paper was the first official advice she had received in her new capacity as Minister for Social Development. Its subject was a plan for implementing a Predictive Risk Modelling (PRM) tool being developed by a team at the University of Auckland in conjunction with MSD.

The use of data and actuarial methods by social workers to augment their professional judgements was well-established and accepted. However, the PRM was different. It sought to rate children across the whole cohort of families accessing social welfare benefits with the aim of identifying those where children were at greatest risk of abuse and neglect. This included rating children in families with no prior history of child maltreatment and where there was no indication that harm might occur.

Tolley was troubled by the proposed implementation arrangements, particularly a proposal in the paper for a two-year observational study 'to assess whether children identified by the Predictive Modelling as at high risk of an adverse outcome/s did in fact suffer that outcome' (p.7). The label of 'observational study' and the separate comment that 'the PM (Predictive Modelling) score would be calculated at birth for a known cohort of children and then these children's outcomes and service contacts observed' read to her as if MSD was proposing a hands-off approach for observing and testing the veracity of the algorithm.

Such a proposal went against her gut instincts. To go along with it or to intervene?

Background

The idea of using a predictive algorithm in Aotearoa New Zealand began in 2011 with the Government releasing a Green Paper on child protection 'Every child thrives, belongs, achieves'. The impetus for finding a new way was endorsed by Prime Minister Key who prefaced the Green Paper with the comment:

> I'm very concerned that in the past 10 years, despite hundreds of millions of dollars extra being invested across health, education, the benefit system, Child, Youth and Family and the justice system, public services have too often failed the children who need them most (New Zealand Government Green Paper 2011, p. 2).

The paper argued that 15 per cent of children (163,000) could be considered vulnerable; too much money was being wasted on false positives; agencies providing services were not sufficiently aware of the other services the families were accessing; and services were not being provided early

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[1] Interviews conducted with the Anne Tolley by the authors on 31 August and 3 November 2021. Unless stated otherwise, quotes from Tolley are from these interviews.

enough, when the greatest gains could be made. The White Paper (New Zealand Government White Paper 2012) released the next year included advice that the Government was working with the University of Auckland to develop a risk predictor tool.

The history of the development of this tool began with the pioneering work of Emil Putnam-Hornstein (2011) in California, who developed a predictive model of children at risk using a handful of variables. In 2012, a team led by Associate Professor of Economics at the University of Auckland, Rhema Vaithianathan, published a paper about developing a predictive tool drawing upon historical data sets from multiple government databases of New Zealand children. These children had had contact with government, having received a benefit for any length of time, between the child's birth and fifth birthday (Vaithianathan 2012).

The tool represented ground-breaking innovation. It drew upon data from multiple sources, including data from a variety of government agencies. The 224 variables identified initially were pared down to 132 after eliminating those that were statistically insignificant. Also eliminated were those found to be perfectly correlated as complete correlation generally suggest that the variable being used is not truly independent from the variable being predicted. Most of the remaining variables related to demographics of the caregiver and the caregiver's partner such as the proportion of time the care-giver had spent on unemployment benefit in the last two years; court-issued reports for the other children of the care-giver; criminal record of the care-giver and the care-giver's partner; and youth justice reports for the partner.

To test its predictive capabilities, the PRM was trialled in 2012. The data set was based on 'spells', the period in which a child enters or re-enters the social welfare benefit system. The trial data set consisted of 103,397 spells of children born between the start of January 2003 and June 2006. This reflected 57,986 individual children. It was found that one in eight of the children in the dataset suffered substantiated maltreatment between the start of the benefit spell and reaching five years of age.

The study reported predictive accuracy for children under age two as 'fair, approaching good, strength in predicting maltreatment by age five' (2012, p. 3). The technical measure of predictive accuracy, the area under the curve of the Receiving Operator Characteristic, was reported as 76 per cent, about halfway between no association (50 per cent) and complete association (100 per cent).

Implementation

MSD was keen to support further development and use of such a tool. Tolley's predecessor, Paula Bennett, and Brendan Boyle, the Chief Executive of MSD, together with the officers on the ground and the university researchers, were agreed that existing methods for intervening were capable of major improvement in identifying children at risk and finding the right intervention points for the so-called 'million-dollar kids'. The label was a reference to another issue of agreement – far too much money was being wasted chasing false leads (or 'false positives').

In progressing the development and use of the algorithm, the Ministry took its cue from Deputy Prime Minister English's enthusiastic endorsement of data-driven government:

> We owe it, at least to the taxpayer, but absolutely to the people needing our help, to use every tool available to change lives. Lives which are described by the data (Withers and Edelson 2015, n.p.).

This was endorsed by then Social Development Minister, Paula Bennett:

> By taking the same approach to data analytics that the corporate sector has been doing for decades, MSD (Ministry for Social Development) saw a huge opportunity to learn more about who receives benefits and to make better decisions about the support and investment they need (Ministry for Social Development 2013, n.p.).

The Government's White Paper on Vulnerable Children, released in October 2012, included the announcement that 'on the basis of the promising early findings on the use of predictive risk assessments… the Government will develop and trial a new model designed to: systematically alert professionals to vulnerable children and families in their communities who may need more support….' and that 'The introduction of the new model will be subject to the outcome of a feasibility study' (Vol.2, p.79) Officials proposed a staged implementation beginning with completion of the technical design (Ministry for Social Development, 2014). This was to be followed by a second implementation stage with two parallel streams – the two-year observational study would be progressed while guidelines for using it in triage were developed.

The Minister intervenes

The implementation paper presented several concerns for Tolley. The chief one was the aforementioned 'observational study'. The paper advised that 'two years allows sufficient follow-up time' for assessing whether the children assessed at being at high risk levels did suffer from harm (Ministry for Social Development 2014, p.7). Tolley took this to mean that MSD's proposal included withholding services from children identified as being at risk over the two-year period, notwithstanding that this was not MSD's intention.

Allied to this, Tolley was not persuaded that there was an adequate pathway through to final implementation. There was also a concern that the approval being sought from the Government's Ethics Committee was only for rating newborns and not for intervening in higher risk cases involving older children.

While the submission only asked her to note progress, she decided to intervene. Her annotation on the advice of the observational study in the briefing paper read 'not on my watch! These are children, not lab rats' (p.7). She ordered that both streams of the Phase 2 implementation be stopped 'immediately'. Conscious of the document being discoverable under Aotearoa New Zealand's Official Information Act, she arranged for it to be released publicly - complete with her annotations - to avoid having it 'go underground'.

Anne Tolley annotated the report with comments.
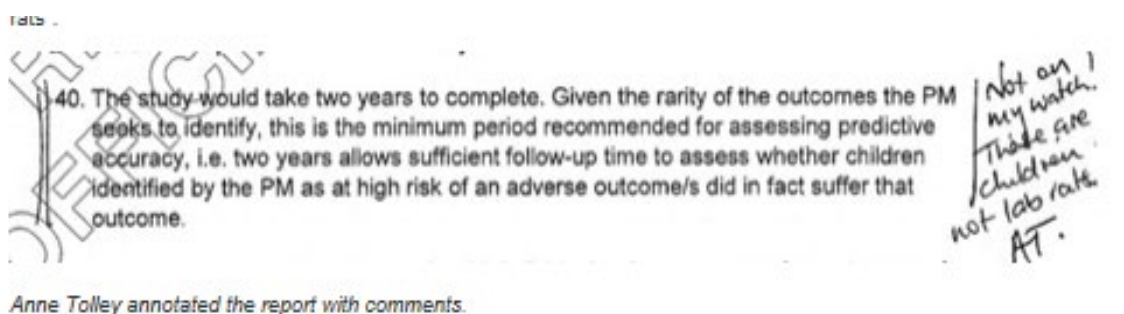
Controversy

A media firestorm erupted (See Exhibit A).

In a media interview, Tolley strengthened her opposition to the Department's implementation strategy generally and to the observational study in particular. 'I was not impressed and I was not going to have a bar of it. I could not believe that they were actually even considering that. Whether it would have gotten through the ethics committee - I hoped it wouldn't (Kirk 2015, n.p.).' She added that 'she could not fathom what her officials were thinking'.

One media outlet editorialised that 'no social problem, even one as serious as this, justifies treating children like "lab rats"' (Kirk 2015, n.p.). UNICEF New Zealand joined in:

> We urge caution in the development and implementation of this or similar tools, to ensure all of the ethical and human rights issues are thoroughly tested. And we remind the Government of the opportunities to improve children's safety through a wide range of social, economic and community development measures (UNICEF 2015, n.p.).

Children's Commissioner Russell Wills also weighed in as well by acknowledging that the intentions behind the proposal were good and adding:

> But there's lots of fishhooks. As I understand it, one of the aspects of the proposal was to not intervene if there were high risks - and no ethics committee in New Zealand is going to wear that (RNZ 2015, n.p.).

University of Otago public health statistician, Nevil Pierse, was reported as saying that the whole predictive risk modelling (PRM) study should be stopped commenting that 'it would do nothing to address the underlying causes of child abuse and was largely an "excuse for inaction" (Otago Daily Times 2015, n.p.).

Not everyone agreed. Tim Dare, the ethicist who prepared the original ethical review of the tool, did not accept the Minister's view that the children would have been left unprotected:

> During the period of the study, the children being observed would have received exactly the same services they would have received if there had been no study (Dare 2015, n.p.).

In condemning what he saw as Tolley's use of 'inflammatory rhetoric', Dare concluded that 'science collided with politics, and politics won'.

Another controversy surrounded the use of the tool for prediction. Dorothy Adams, General Manager of Insights at the MSD told Radio New Zealand that the department was not using the tool for prediction as 'we don't feel we are ready for that' and that it was first necessary to understand 'the interaction that comes out of the model and the people at the front line that will have to use that information' (RNZ 2015, n.p.).

For tool developer Rhema Viathianathan, whose team from the University of Auckland had been commissioned by MSD to prepare the PRM, there was a benefit in moving faster. On the same radio program she referred to the way risk factors accumulate for individual children, adding that 'I am just frustrated because everyone knows that the earlier we get into working with these families, the less the cumulative risk factors are going to shape the future of this child' (RNZ 2015, n.p.).

Viathianathan's quote highlighted the tension between developers and agencies over the implementation of the PRM, particularly the urgency of putting it to use. For Brendan Boyle, the Chief Executive of the MSD at the time, this tension was productive. In an interview for this case study, Boyle noted[2]:

> You need people who are prepared to push the boundaries and challenge, but equally you also need people to push back and ensure that ideas do not get too carried away without having the confidence or social license to support them.

Looking back

In retrospect, Tolley reflected that, while the specific proposal for the observational study triggered her intervention and the demise of the use of the tool in Aotearoa New Zealand, there were deeper issues which troubled her at the time.

One of these was administrative overreach. She was particularly concerned by the highly centralised approach to both development of the PRM and its intended use:

> My feelings were that this was something that was developed by the bureaucrats or by the academics, with no real appreciation of what's happening on the ground.

She was also concerned at what she felt was a clumsy bureaucratic arrangement for coordinating numerous agencies that needed to do business with each other. Moreover, she did not think they were doing enough for the clients.

> I remember going in there one day and they put a particular woman's circumstances on post-it notes, as she travelled through the system. So they started at one end of the room where she was being beaten by her husband who now started beating the children. She left him because she needed housing support and the post-it notes went right round one wall and along another wall before she got to the end of a month. She had met with all these different agencies and she was still looking for a house.

Against the background, Tolley's own concern was how the use of the tool would play out on the ground:

> So what are we going to do? Are we going to knock on the door of these people and say hello we are from the government and we understand that your family has a propensity for violence and so we are here to protect your children and can you sign up to our study please?

Tolley's instinct was to look for more community-generated solutions. Her East Coast electorate was the largest by area in New Zealand's North Island with a diverse population made up of people identifying as European or Pākehā, Māori, Pacific Islanders and Asian. The proportion of people identifying as Māori was the largest of any electorate at that time. Tolley brought a grassroots style to her representation of the electorate, having learnt to work closely with communities in her nine years in local government. She brought this same approach to her various ministerial roles in successive national governments. As New Zealand's first female Minister for Education, a position she occupied from 2008 to 2011, she attracted attention on one occasion for overturning a decision to close a school with 10 children enrolled. She initiated community consultation on the issue and

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[2] Interview conducted with Brendan Boyle by the authors on 23 November 2021

listened to the results (Lewis 2011). This was typical of her approach. When faced with a social policy problem, she gravitated instinctively to tapping communities for solutions.

Her electorate included a number of families that she considered would be identified as high risk by the PRM. However, she could not see that an analytics tool would add materially to addressing the problem:

> You know people in your community. I could provide the names of the top 10 families that MSD have to deal with on a confidential basis. Also, for the Māori and for the Pākehā (Te Reo Māori for European descent), a child is not just an individual child but is part of a wider group. That is why the things that work normally come from the community.

Allied to this was a lack of conviction on her part that the necessary social licence had been achieved. For these purposes, establishing social licence may be seen as the requirement 'to meet the expectations of society and to avoid activities that societies… deem unacceptable' (Gunningham et al. 2004, n.p.). The use of PRMs presents governments with particular difficulties in meeting that test. Problems have been encountered not only with the use of PRM for as predicting child maltreatment but also with the use of other applications such as predicting the likelihood of a bail applicant re-offending and identifying spatial areas which crime is more likely to take place. As Brauneis and Goodman (2018) explain:

> An individual can be denied parole or credit, fired, or not hired for reasons that she will never know and which cannot be articulated. In the public sector, the opacity of algorithmic decision making is particularly problematic, both because governmental decisions may be especially weighty and because democratically elected governments have special duties of accountability (p.103).

MSD was clearly aware of both the ethical issues involved and the need to achieve social licence for using the PRM. It had made extensive preparations for securing agreement at the political and administrative levels. It had commissioned three ethical reviews and another three reviews of the principal review.

Tolley summed it up:

> Even when we went out of government after five years, I don't know that we necessarily had the social licence agreed.

MSD management impacts

Brendan Boyle, Chief Executive of the MSD, thought the outcome went well beyond differing interpretations of the proposal and generated some valuable lessons for the Department. The most important of these was the need for agencies to recognise early that the adoption of technical innovations can carry significant implications for how those agencies go about their work. He also reflected on the demise of the predictive risk model for child protection in New Zealand:

> You can't just superimpose something cutting edge like this on top of established policy and practice in such a sensitive area. The technology and the context in which you are using it need to be joined at the hip. This requires deep change management in areas such governance, management, and oversight for ensuring the risks associated with these innovations stay within the bounds of what is acceptable to the community. Most importantly, the professionals working in the area have to be brought along with you.

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An important success factor for the change management effort was to secure the Ministers confidence in it. Boyle thought that the Minister's understanding of such an important innovation needed to be 'built up' progressively before seeking her support for the implementation plan. The build-up needed to include clear allocation of accountabilities and some reassurance from the field about Adams's point: that social workers being able to harness its benefits while integrating its use into their daily practice.

Language was key to getting social workers to see how the PRM fitted into their practice. Boyle recalls struggling to engage with social workers when his team referred to the predictive risk model as a 'background risk indicator'. More successful engagement with social workers came when the team stopped focusing on risk scoring and instead emphasised the model's benefits for more effectively allocating scarce child protection and early intervention resources.

Another issue was whether MSD had the administrative capacity to follow up all the leads. Enhanced predictive capability would still generate many false positives but the success of the innovation relied heavily upon MSD being able to provide higher levels of support than previously at earlier stages in the accumulation of risk factors. This required lifting the intensity of assistance to a level which may have been beyond MSD's resourcing.

The timing of taking it to the community was also critical. The initial focus of building a social licence for the tool was within government and that was a necessary first step. However, this planning also needed a clear pathway for taking it to the community. According to Boyle:

> A public consultation agenda would need to include the rationale for predictive modelling, its implementation, and an assessment of its relative benefits and burdens, considering the cultural perspective for both Māori and non-Māori.

In conclusion, Boyle remarked that one of the principal lessons he took from this experience was that when implementing something new and cutting-edge in public service, 'How and when to engage people matters...You've got to take people along with you. So you want to consult early in the process. At the same time, you have to have something sufficiently well-developed to consult on.'

Epilogue

Ultimately, the political reaction sparked by Tolley's intervention spelt the death of the use of the algorithm, at least for Aotearoa New Zealand. It was replaced by a shift to multi-agency Social Service Teams made up of officials from the Ministries of Social Development, Education and Justice. Thus, the Government sought to improve the efficacy and efficiency of intervening by drawing together information from across government agencies, the very same objective which under-pinned the design of the algorithm.

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Exhibit A

From New Zealand to Pittsburgh, a Moneyball Approach to Helping Troubled Kids

In a program pioneered in New Zealand and arriving soon in Allegheny County, Pennsylvania, social workers use data to figure out who's most at risk.

By **Tracy Withers** and **Josh Eidelson**
May 9, 2015 11:30 PM ACST

Finance Minister Bill English speaks to media after delivering a Pre-Budget Speech at Parliament House on May 1, 2015 in Wellington, New Zealand. *Photo by Hagen Hopkins/Getty Images*

Children 'not lab-rats' - Anne Tolley intervenes in child abuse experiment

STACEY KIRK
Last updated 05:00, July 30 2015

ROSS GIBLIN/FAIRFAX NZ

Social Development Minister Anne Tolley has halted an experiment which would have seen 60,000 children monitored for two years to see if they were abused.

Anne Tolley scraps 'lab rat' study on children

30 Jul, 2015 10:04 AM

4 minutes to read

Social Development Minister Anne Tolley said infants would not be treated as "lab rats" under her watch. Photo / Mark Mitchell, NZ Herald

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NEW ZEALAND

Child abuse risk study 'ethically flawed'

8:19 pm on 30 July 2015

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The Children's Commissioner says he doesn't believe a study criticised for treating children like lab rats would ever have got past an ethics committee.

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Sunday, 4 October 2015

Call to stop child abuse risk modelling study

By Elspeth McLean

Property | Borrowing | Saving | Investing | Banking | Insurance | Personal | Rural | Public Policy

NZ Initiative's Jenesa Jeram argues that the overhaul of Child, Youth and Family needs to be evidence-driven

7th Sep 15, 8:39am by Guest

Jenesa Jeram*