

EVENING THE ODDS

MODELLING WELLBEING TO DRIVE BETTER OUTCOMES

Daniel Miles of Oranga Tamariki

30 Nov 2017



New Zealand's Children: The Case for Change

- Children and young people referred to CYF are living in families with multiple and complex needs.

36% had parents known to CYF

- Māori children are disproportionately represented.

6 out of 10 children in statutory care are Māori

- Vulnerable children experience repeat referrals and further trauma.

Those with previous CYF interaction are less likely to achieve at school, and reach independence later in life from benefits and the justice system

ORANGA TAMARIKI



Background about the transformation programme: The Expert Advisory Group found that 36% of children in the system also had parents known to CYF; massive over-representation of Māori, etc. Really big structural issues that represented a moral failing, and we needed to do better.

Disclaimer:

Access to the data presented was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistics Act 1975.

These findings are not official statistics. The opinions, findings, recommendations, and conclusions expressed are those of the authors, not Statistics NZ.

Making Measurement Useful

- Modelling **all** children

Providing a tool to determine scope, not prejudging, and understanding flows in and out of scope.

- Wellbeing**, not liability

Speak the language of frontline, and provide a measure that helps decision makers take action.

- Recognition that **wellbeing is complex**

Cross-sector data and interactions required – wellbeing can't be understood just from engagements with us.

- Consider the **present** as well as the **future**

Help the business support immediate needs, as well as setting families up for the future.

ORANGA TAMARIKI



Our part was providing a measurement backbone and we had some criteria we wanted to consider. First, we wanted to model **all** children, not just people who had engaged with us in the past or been taken into care. We wanted to understand the flows in and out of vulnerability, the drivers of vulnerability before it really showed itself. Straight away we had to model all children – a large departure from the work that had been done in the past.

We wanted to focus on **wellbeing**. It felt wrong to focus on vulnerability and cost. Wellbeing is useful; it talks about what is driving poor or positive outcomes and starts pointing us in the direction of what we might do about it.

We wanted to recognise that wellbeing is **complex**. If you recognise that, you recognise that you need to be looking at outside data – just looking at engagements with Oranga Tamariki misses a huge scope of what's out there.

And we wanted to consider the **present and the future**, which is a really interesting challenge. We wanted something that would give us a valid window into current wellbeing – how well the lived experience is for any child at any one time – but we also wanted something that would give us an idea of the long term outcomes for the future and understand how if we change wellbeing now what that means for the future.

Three Areas of Activity

The wellbeing work is focussed across three areas of activity:

- **Conceptual Wellbeing**
- **Current State Wellbeing**
- **Wellbeing and Activity Projections**

ORANGA TAMARIKI



That led us to the three areas of activity I'm going to talk about today.

One is the conceptualisation of wellbeing that we're using, the second one's the current state of wellbeing, how we're trying to measure and understand that. And the third one is the wellbeing and activity projections that we're working with.

Conceptual Wellbeing

The conceptual wellbeing construct provides a theoretical backbone to our use of wellbeing

- **Safety** – both being and feeling **safe from harm**
- **Security** – having appropriate access to **financial and social resources**
- **Stability** – understanding who they are, where they belong, and their **connection to culture**
- **Wellness** – both **physically and emotionally healthy** and free from trauma
- **Development** – equipped with the **skills they need to be independent** and meet their aspirations

ORANGA TAMARIKI



We've got a wellbeing construct that's built across five domains – safety, security, stability, wellness and development.

The safety domain's pretty straightforward. It represents the historic focus for Child, Youth and Family and now Oranga Tamariki – both being and feeling safe.

Security – think of having access to financial and social resources. Things like having a roof over your head and being fed before you go to school.

Stability is a complicated one, which we will get to later on. There's a real paucity of data, but what we mean is connections to people and understanding yourself.

Wellness, think broadly health – both physical and mental.

And development – think skills to prosper later in life; broadly education.

Why Wellbeing?

ORANGA TAMARIKI



How is that conceptualisation of Wellbeing useful for us? What classic investment approach models have done in the past is project forward the future fiscal spend associated. Importantly for us, we project forward things that look like outcomes rather than just money, which gives us a good connection into the rest of the system and the accountability process with ministers. It gives us an idea of what the long term impact of the changes that we are making might be.

Understanding the population: that's a really important use and it helps policymakers have conversations in terms they couldn't have before. That's a construct where they can talk about the thresholds of what's ok in New Zealand and what's not ok, and start to define a target population for the Ministry – where we really need to be engaging and where the government may not want to engage.

Assessing need: this is lining up with our frontline. We wanted to build a construct that would allow us to have people on the frontline talking and thinking in the same way that we were talking and thinking. We are starting a process at the moment with the Office of the Chief Social Worker where we're trying to get as much feedback from them as we can and work together with them to evolve this construct into something that's going to be embedded at the frontline and help social workers, our frontline people really working to make kids' lives better, and helping us to talk their language.

Contracting: There's not a huge amount of detail about that, but it's something that's going to be a focus going forward with our Partnering for Outcomes division, and starting to think through how we can explain what our contracts and what our various partners in the system are doing in terms of helping to build child wellbeing.

And finally, **service evaluation.** We've got a couple of evaluation teams within Vasantha's group at Oranga Tamariki, and we're starting to understand everything that we're doing in terms of how much it builds child wellbeing.

Current State Wellbeing

Measuring proxies aims to give us an understanding of each New Zealand child's wellbeing, in the context of them, their family, and their broader community.

- **Safety** – family violence, notifications, injuries...
- **Security** – social housing register, benefit history...
- **Stability** –
- **Wellness** – family chronic conditions, mental health...
- **Development** – school changes, truancy, achievement...

ORANGA TAMARIKI



Current state wellbeing – this is trying to build a measurement construct to give us a measurement of what wellbeing looks like for children at any point in time. Now, I'll talk a little bit about the IDI – an amalgamation of government data from right across the system. It takes feeds of data from Health, from Education, from us and from MSD, etc. Importantly, it anonymises everything. So everything that we're working with from the IDI – we can't see the names, we don't know who the person is, there are incredibly strict privacy controls. There's a lot of information on [Statistics NZ's website](#) about how the IDI works and the controls placed to preserve the privacy of people's data.

So with the IDI, we had a look at all the measurements and pieces of data we could see, and asked what seems to act as a valid proxy for the things we want to be measuring within our conceptualisation of wellbeing. For example, in the **safety** domain we look at things like family violence history, notifications to Oranga Tamariki, injuries.

In **security** we look at things like a family being on the social housing register, or benefit histories.

Wellness, we look at things like chronic conditions within the family, mental health history of the family.

In **development** we're looking at things like truancy, achievement, school changes...

Stability is not currently in the model and that's a major issue for us. It has the potential to explain a lot of variance in outcomes where one child looks one way across the other four domains and goes onto great things, and where another child looks broadly the same across those four domains and goes onto not-so-great things. We think a lot of that differentiation there is those resilience factors that sit within the stability domain, so this is a key focus for us now. We want to 'take the lid' off that and really understand the stability of New Zealand's children.

Another really important thing behind that current state wellbeing measurement is that these are all proxies. These are not measures of wellbeing; these are things that help suggest what wellbeing might be like. As time goes by and certainly as the assessment process starts to change, we hope that we can start to implement some actual measures of what we'd like to observe. We are not there yet. That's not what government's been set up to do in the past, so we're doing the best we can with what we've got.

Measuring Wellbeing

ORANGA TAMARIKI



Variable	Description	Flag	Source Year	Age																									
				0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
fac_w0teenparents_cil	child is teenage parent - personal, lifetime	flag = 4 if w0teenpreg_cil + w0teenpat_cil = 1	1990+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3sochohousing_olp	in social housing	flag = 2 if w3sochohousing_olp = 1	1990+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3pubhousing_ctr	Child / young person was on social housing register over the last year: 1 if priority A 2 if priority B 3 if not on register or not priority A/B (Note: you can be both a tenant in social housing and on register - e.g. if needing another house due to overcrowding / health)	flag = 4 if w3pubhousing_ctr = 1 flag = 2 if w3pubhousing_ctr = 2 flag = 0 if w3pubhousing_ctr = 3	1990+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w0numsb_oci	number of siblings	flag 0 if w0numsb_oci <= 3 flag 2 if w0numsb_oci = 4, 5, 6 flag 4 if w0numsb_oci >= 7	1990+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3daysben_ccr	days on benefits (adult) - personal, over the last year	flag = 1 if w3daysben_ccr in [1, 92] flag = 2 if w3daysben_ccr in [93, 184] flag = 3 if w3daysben_ccr in [185, 276] flag = 4 if w3daysben_ccr in [277, 366]	1993+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3propifeben_cci	proportion of lifetime on benefits - personal	flag = 1 if w3propifeben_cci in [1, 25] flag = 2 if w3propifeben_cci in [26, 50] flag = 3 if w3propifeben_cci in [51, 75] flag = 4 if w3propifeben_cci in [76, 100]	1993+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w0daddchg_ocr	number of address changes over the year	flag = w0daddchg_ocr maximum = 4	1993+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w0teenpreg_pil	teenage pregnancy - parent, lifetime	flag if w0teenpreg_pil = 1	1990+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3propifeben_pci	proportion of lifetime on benefits - parents	flag 1 if w3propifeben_pci in [1, 75] flag 2 if w3propifeben_pci in [76, 100] double the scale for age 0-4 (i.e. 2 or 4 instead of 1 or 2)	1993+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3recben_pir	Parent/caregiver recently on benefits, on single parent or supported living support	flag 2 if w3recben_pir = w3slp_pir + w3singpar_pir = 1 flag 4 if w3recben_pir = w3slp_pir + w3singpar_pir > 1	1993+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
fac_w3slp_pir				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
fac_w3singpar_pir				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of variables				23	28	28	28	28	28	28	28	27	27	27	27	27	26	26	26	26	26	26	26	26	26	26	26	26	26
Maximum factor score				23	28	28	28	28	28	28	27	27	27	27	27	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Cut-off score: 1				4	8	8	8	8	7	7	6	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	
Cut-off score: 2				20	12	12	12	12	11	11	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9

This is a peek under the hood of one of the wellbeing domains – the security domain.

Each of these colours is a different weighting, each column is a different age for a child from zero to age 25. There are different thresholds which people are being assessed against, with a combination of indicators potentially reaching a threshold.

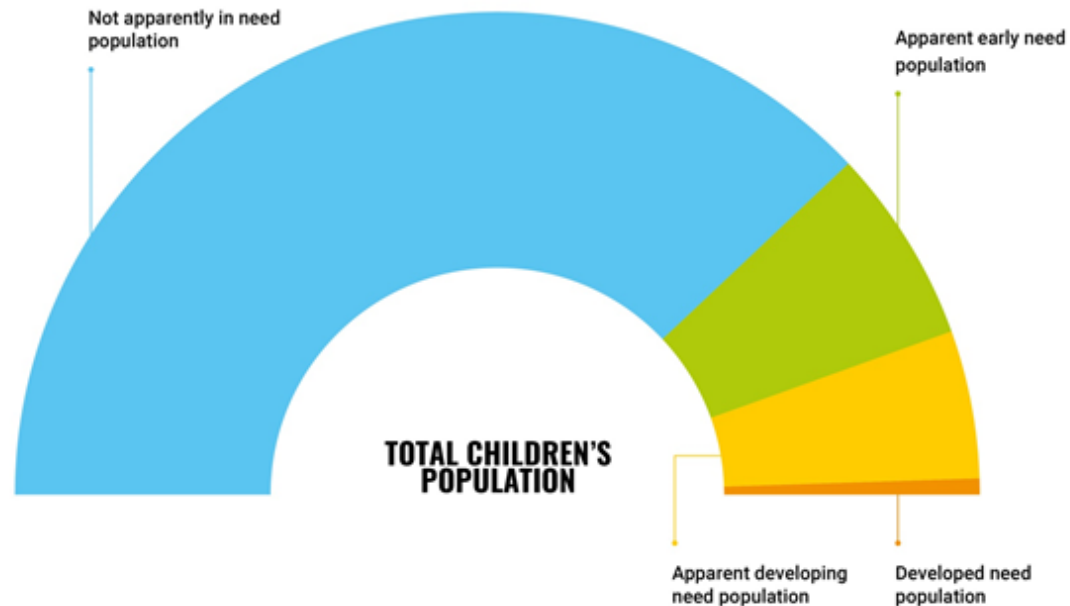
I'm not presenting this to show the detail of each indicator, but to show you that there is a lot of thought and change that goes into this.

Take for example this indicator – your mother's age at birth. That's used as a proxy for how well your mother may or may not be able to provide for you. Importantly nothing here is definite. Nothing means anything in and of itself. That's why domains are really important – aggregating all these different indicators.

If a several indicators are all pointing in the same direction that might be meaningful; if only one indicator's pointing in that direction, it probably isn't something we need to be too worried about. So that mother being young at the time you're born, we think there's an argument that it's important for the first five years of your life; maybe it's a bit important for the next five years after that. We think that by the time you hit the age of 10 it's very unlikely that it affects your security at all.

Child Wellbeing – 30 June 2016

ORANGA TAMARIKI
Ministry for Vulnerable Children



What does it look like when you apply this construct across the population? We've got four broad segments. About 750,000 children in New Zealand that seem to be doing pretty well when you assess them against these domains and against their history of engagement with Oranga Tamariki. Those are the two things that we consider, by the way, underneath these segments.

We've got about 140,000 children in the **apparently early need population**. Potentially there's an argument that we should be doing something with some or all of these children.

Then you've got 100,000 children in what we call the **developing need** population. These are children who are at much greater risk of escalation into the statutory care system.

Finally we've got about 11,000 children in the **developed need** segment. These are children who are in statutory care right now where things have escalated to the point where they needed to be removed from their homes, or they're being actively case managed.

Projection Model

The current state measure of wellbeing is then combined with additional risk and resilience factors to project and scenario test the population forward across a range of outcomes:

- **Wellbeing Domains** – quarterly through age 25
- **Employment/ Benefit** – transitions 16-24, reliance 25-64
- **Youth Justice** – until age 16
- **Justice/ Corrections** – offending 17-24, lifetime usage
- **Health** – five factors (mental health, hazardous substances, reproductive health, infections, injury), plus obesity

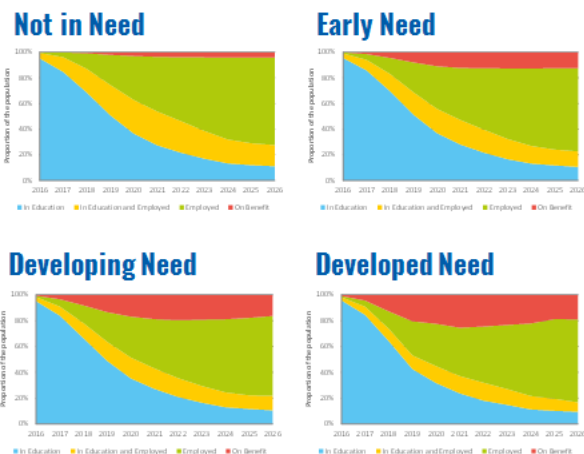
ORANGA TAMARIKI



Finally, the third part – the projection model. It’s an incredibly complex amalgamation of a bunch of different projection models. We also leverage whatever else exists wherever we can. So Justice have a projection model – we’re not going to reinvent the wheel, so we join into their model. MSD, obviously have their projection model, and we connect to this. That has created some slight issues for us as well. Using the MSD model to pick up on projection of employment when their model only looks at people who have engaged with the benefit system, means it’s not tremendously helpful if you want to understand a teenager growing up and eventually winding up on a benefit, or being employed, or being in further education.

So we have an unbelievably talented team of actuaries who have been trying to build that transition model, often using customised data. The big customisation is Health. We project a variety of health outcomes which otherwise hasn’t been done before, it’s exciting.

Employment Projections

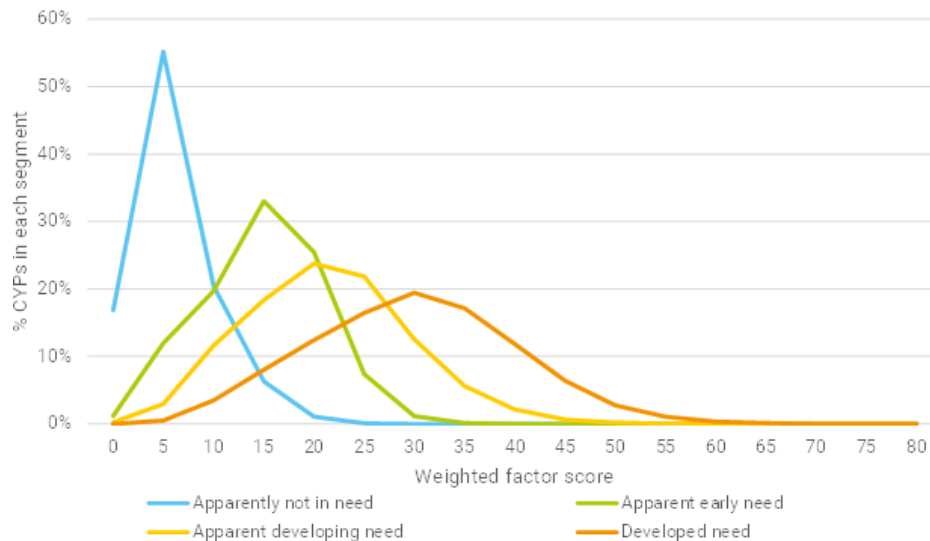


Here’s an example of what one of those projections looks like. Taking those four segments – *not in need, early need, developing need, developed need* – what do transitions onto employment, onto benefit, onto further education, look like?

It says basically what you’d expect it to say. For the vast majority of the population – this is by the way looking at 14-to-16 year olds over the years 2016 to 2026 – a small number of them are likely to go onto benefits. It happens, you’d expect it. A large number are likely to remain in education for quite some time and a significant number of them are going to wind up employed or in both education and employment.

Jump down to the developed needs segment and you see quite a different graph. Again this won’t be a shock to anyone, but children who have experience with the care system, who have been taken into placement, do go on to some particularly poor outcomes. This gives you an idea of the type of data that’s coming out of the model.

Multiple Disadvantage



Let's just ignore all the wellbeing domains and only look at the indicators. We take every indicator that we can and we add up the score. What we see for the average child in the not in need segment, is that they've got a total score of about 5, give or take. And it's a very very narrow distribution, which is what you'd expect. We can't see a lot of things that seem to be going particularly wrong in this child's life.

As you step up through the segments not only do the scores get a lot higher, the distribution gets a lot wider. By the time you're in the developed needs segment things are really broad. We've got people being taken into state care who score 5 or 10, and we've got people all the way up here at 55. From the things we're looking at, if you're reaching a total of 55, there are some really severe things going on in your life.

What this tells me is: firstly it reinforces the approach we've taken with the model – as things seem to get worse for these children we can see more and more about them, we can start to see more of these proxies showing through. But importantly it reinforces the importance of the stability domain where these children are being taken into state care where we can't see a lot of things going wrong beforehand. I think a lot of the answer to that is around this stability domain and as we start to unpick that hopefully we'll be able to get a window into what's going on.

Next Steps

Still a long way to go, in all three areas

- **Conceptual Wellbeing** – Ongoing development with the business and sector, deployment within assessment
- **Current State Wellbeing** – Build of stability domain, community profiles, new data and indicators (eg. income)
- **Projection Model** – Tighter integration of other sector modelling, projecting individuals connected in a family

So what are we doing next? In the conceptual stage we are looking to continue engaging with the rest of the business, we are looking to engage a lot more broadly with the sector and we're looking to deploy this within assessment hopefully in the near future which I think is going to help beef up our conceptualisation of what wellbeing is.

In terms of current state wellbeing, we are looking to build the stability domain obviously, also looking to build a better understanding of communities, and finally we're also exploring new data and indicators as they become available.

On the projection model we're looking to integrate a little tighter with other existing models. At the moment the projection model takes a current state and starts moving people forward as individuals, completely disconnected from anyone else. Developing some way to keep families together is something for the medium term.