MINISTRY OF SOCIAL DEVELOPMENT
TE MANATŪ WHAKAHIATO ORA

18 MAY 2016

Ms Madeleine Ashton-Martyn
Operations Coordinator
JustSpeak
fyi-request-3866-7401ec9b@requests.fyi.org.nz

Dear Ms Ashton-Martyn,

On 7 April 2016 you emailed the Ministry requesting, under the Official Information Act 1982, copies of the following documents:

1. *Ministry of Social Development. (2014). Outcomes for Children in Care: Initial data-match between Child, Youth, and Family, the Ministry of Education and the Ministry of health [Unpublished]. Wellington: Ministry of Social Development.*
2. *Centre for Social Research and Evaluation. (2012). Outcomes for children discharged from CYF care in 2010. Wellington, NZ: Ministry of Social Development. Unpublished manuscript.*
3. *Chrichton, S., Templeton, R., Tumen, S., Otta, R., Small, D., Wilsn, M., & Rea, D. (2015). new findings on outcomes for children and young people who have contact with Child, Youth and Family. Wellington, NZ: Ministry of Social Development. Unpublished manuscript.*
4. *EY. (2015). Investment approach for vulnerable children: Feasibility assessment. Unpublished manuscript.*
5. *Insights MSD. (2014). Outcomes for children in care: Initial data-match between Child, Youth, and Family, the Ministry of Education and the Ministry of Health. Unpublished manuscript.*
6. *Ministry of Social Development (2015). No two pathways disabled children project: CYRAS case review. Unpublished manuscript.*
7. *Templeton, R. & Rea, D. (2015). Young women with a history of involvement with Child, Youth, and Family during childhood have higher rates of early parenting and subsequent involvement with child protection as parents, Wellington, NZ: Ministry of Social Development. Unpublished manuscript*
8. *Templeton, R. & Rea, D. (2015) Abuse and neglect is associated with an increased risk of morality during teenage years. Wellington, NZ: Ministry of Social Development. Unpublished manuscript*

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Please find enclosed copies of the requested documents. Note that document five is a duplicate of document one and as such, is not provided. The Ministry apologises for this error within the Expert Advisory Panel Final Report. Document six is withheld in full under section 9(2)(f)(iv) of the Official Information Act as it is under active consideration. The release of this document is likely to prejudice the ability of government to consider advice and the wider public interest of effective government would not be served.

As you are aware, Hon Anne Tolley, Minister for Social Development recently announced an overhaul of the Child, Youth and Family model. The overhaul, which is expected to take up to five years to be fully implemented, will include a child centred operating model, direct purchasing of vital services such as health, education and counselling support and a stronger focus on reducing the over-representation of Māori in the system.

The new operating model will provide a single point of accountability and lead the establishment of a common purpose across the sector to ensure that the needs of vulnerable children and young people are met. Legislation will also make other government agencies explicitly accountable for their contribution to better outcomes for children and young people.

The Ministry and the State Services Commission are doing further work regarding what organisational structure and leadership will best support the new operating model with Ministers reporting back to Cabinet in May 2016. Cabinet will consider a paper on the final components of new operating model in July.

I hope you find the enclosed documents helpful. You have the right to seek an investigation and review of my response by the Ombudsman, whose address for contact purposes is:

The Ombudsman
Office of the Ombudsman
PO Box 10-152
Wellington 6143

Yours sincerely

Jeremy Corban
General Manager, Insights MSD

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Outcomes for Children and Young People in Care

Initial data-match between Child, Youth and Family, the Ministry of Education and the Ministry of Health

Prepared by

Insights MSD and Child, Youth and Family,
Ministry of Social Development

Prepared for

Child, Youth and Family, MSD

Ministry of Education

Ministry of Health

Unpublished Report

March 2015

Contents

Glossary of outcome measures

Enrolment in early childhood education (ECE)	Estimates the number of 18 to 36 month-olds in in Child, Youth and Family care who are enrolled in Early Childhood Education
Enrolment in school	Compares children in care who enrolled in school at five years to the national population
Stand downs, suspensions, exclusions and expulsions from school	Compares observed rates of stand-downs, suspensions, exclusions and expulsions for students in care to expected rates for students between the ages of 5 and 19
Achievement in Level 2 NCEA or above	Compares the achievement of young school leavers in care and nationally who attained NCEA level 2 or above
Enrolment in primary health care	Number of children and young people in the care who were enrolled with a Primary Health Organisation
Immunisation rates	Number of children and young people in care with a completed immunisation record by 'milestone' age compared to national immunisation rates
Emergency department attendance rates	Number children and young people in the care with an Emergency Department event
Access to mental health services	Level of access to specialist mental health and addiction services by children and young people in care
Transition from care and protection to youth justice services	Number of children that had ever previously been in care that subsequently progressed to youth justice, including severity and frequency of offending
Transition from youth justice to corrections services	Number of young people aged 17–20 years old in the Corrections population who have had a prior youth justice referral
Number of placements while in care	Number of children and young people who had more than three caregivers in the previous 12 months
Duration in care	Number of children and young people who have been in care for more than two years
'Home for Life' permanency rate	Number of children and young people who left CYF's care and achieved a permanent 'Home for Life' arrangement with extended family/whānau or non-kin caregivers

Introduction

This report was developed as part of joint work between the Ministry of Social Development (MSD), Ministry of Education (MOE) and Ministry of Health (MOH). It looks at current outcomes and outcome measures for children and young people in the care of Child, Youth and Family's (CYF).[1]

The report includes snapshots of several outcome measures:

- educational participation and attainment
- access to and engagement with health services
- offending by children and young people aged 0 to 17 years who are or have been in CYF care, and
- care placement stability.[1]

Data from CYF was matched with data from MOE and MOH to report against these outcome measures. The outcome measures are compared where possible to all children and young people in New Zealand.

For most outcome measures, the period adopted is from 1 July 2010 to 30 June 2011 (i.e. the 2010/2011 financial year). As the results are based on the 2010/2011 cohort some are considerably out of date, for example, ECE enrolment for children in care aged 18-36 months has increased from 49.7 per cent for the 2010/11 cohort to 72.3 per cent for those in care at 30 June 2014, in line with the estimated national attendance rates.

This report is an initial data-matching exercise. It is intended that the outcomes measures will be further improved and expanded over time to provide more comprehensive information about the outcomes for children and young people in CYF's care in comparison to the general New Zealand population.

Additional details on method and calculations are shown in the appendix to the report.

[1] 'Children and young people in care' are defined as those children and young people in the custody of the Chief Executive of the Ministry of Social Development for care and protection reasons under sections 78, 101, 102, 110(2)(a), 139 and 140 of the Children, Young Persons, and Their Families Act (1989).

Part 1 – Educational participation

Enrolment in early childhood education

CYF subsidises the cost of early childhood education (ECE) for all children in care aged 18 months to three years. In addition, the MOE's free 20 hours of ECE a week becomes available to all children when they turn three. Participation in quality ECE has significant benefits for children and their future learning outcomes. Studies have found that engagement with ECE helps to develop strong foundations for future learning success.

Limited information about the participation in ECE of children in CYF care is currently available. More will become available in 2015/16 as planned changes to CYF's information systems enable improvements in data capture. In future years, it may also be possible for additional information about ECE and children in care to be gathered following the implementation the MOE's Early Learning Information (ELI) system.

Using CYF financial data, it is possible to estimate the number of 18 to 36 month-olds in care who are enrolled in ECE. Nearly 50 percent of all children aged 18 to 36 months in care were in ECE as at 30 June 2011.

Table 1: The number and percentage of children aged 18 to 36 months enrolled in ECE (2010/2011)

	Number	Percent
Children in care aged 18 to 36 months enrolled in ECE[1]	163	49.7%
Total number of children aged 18 to 36 months in care[2]	**328**	**100%**

1. Estimate of early childhood education enrolment based on the number of children who had ECE payments in October 2011.
2. Number of children aged 18 to 36 months as at 30 June 2011 in the care of the CE of MSD.

Enrolment in school

This indicator compares children in care who enrolled in school at five years to those of the national population. The enrolment rate of the care cohort is 99.5 percent, ahead of the national cohort at 96.3 percent. This is an encouraging result. All but two children in care enrolled before they turned six and the last two children enrolled while they were six years old. Enrolment in school is not legally required until a child turns 6 years old.

Table 2 takes a cohort of children born in 2006 (turning 5 in 2011) from the MOE's electronic enrolment management system (ENROL). Those children identified as being in State care during 2011 were flagged within the national cohort and their enrolment rates were compared to the national average.

Table 2: Comparison of the number of children in care turning five with national enrolment rates (enrolled in school at 5 years or under in 2011)

	Enrolment (In care)				Enrolment (National)			
	Enrolled at 5 years old	**Not Enrolled**	**Total**	**Percent Enrolled**	**Enrolled at 5 years old**	**Not Enrolled**	**All children born in 2006 (from ENROL)**	**Percent Enrolled**
Maori	224	0	224	100%	15,117	241	15,358	98.4%
Pasifika	35	0	35	100%	6,317	259	6,576	96.1%
Asian	6	0	6	100%	5,932	563	6,495	91.3%
Other	0	0	0	0%	315	64	379	83.1%
Middle Eastern, Latin American, and African (MELAA)	3	0	3	100%	1,198	115	1313	91.2%
European/Pākehā	123	2	125	98.4%	32,036	1,113	33,149	96.6%
Total	**391**	**2**	**393**	**99.5%**	**60,915**	**2,355**	**63,270**	**96.3%**
Female	186	1	187	99.5%	29,798	1,173	30,971	96.2%
Male	205	1	206	99.5%	31,117	1,182	32,299	96.3%
Total	**391**	**2**	**393**	**99.5%**	**60,915**	**2,355**	**63,270**	**96.3%**

Stand downs, suspensions, exclusions and expulsions from school

Student attendance and engagement are fundamental foundations for student achievement. The levels of stand-downs, suspensions, exclusions and expulsions provide indications of where engagement in productive learning is absent and behavioural issues are present.[2]

This measure uses the July 2011 education roll returns to create expected rates of stand-downs, suspensions, exclusions and expulsions for students between the ages of 5 and 19. These were compared to the observed rates for the students in CYF care.

Table 3 shows much higher rates of stand downs, suspensions, exclusions and expulsions for children in care than for the national population. The difference is most marked for stand downs, suspensions and exclusions where children in care are at least six times more likely to experience these sanctions than the general population.

[2] A school may consider the formal removal of a student through a stand-down from school for a period of up to five school days. A suspension is a formal removal of a student from a school until a school Board of Trustees decides the outcome at a suspension meeting. Exclusions and expulsions are subsets of suspension where an enrolment is terminated. Students who are 15 and under may be excluded, while only students 16 years and over may be expelled.

Table 3: Age-standardised rates of stand-downs, suspensions, exclusions and expulsions by ethnicity and gender for children and young people in care and school students nationally aged 5 to 19 (2011 standardised)[3]

	Rates (In care)				Rates (National)			
Gender / Ethnic Group	Age-standardised stand-down rate per 1,000	Age-standardised suspension rate per 1,000	Age-standardised exclusion rate per 1,000	Age-standardised expulsion rate per 1,000	Age-standardised stand-down rate per 1,000	Age-standardised suspension rate per 1,000	Age-standardised exclusion rate per 1,000	Age-standardised expulsion rate per 1,000
Māori	149.1	47.4	17.6	4.0	46.1	11.4	4.6	2.8
Pasifika	87.4	24.9	6.3	20.8	30.1	5.4	2.2	3.3
Asian	76.8	0.0	0.0	0.0	6.5	0.8	0.1	1.5
Other[4]	190.2	0.0	0.0	0.0	17.3	3.8	1.8	3.0
European/ Pākehā	149.3	38.4	20.9	0.0	17.8	3.4	1.4	0.9
Female	89.0	20.8	10.9	0.0	14.3	2.8	1.1	0.6
Male	190.7	57.2	23.7	6.0	34.3	7.6	3.1	2.7
	Rates (In care)				**Rates (National)**			
Overall Rates	**144.0**	**40.4**	**17.8**	**3.3**	**24.5**	**5.2**	**2.1**	**1.6**

[3] Standardised among the ages that are eligible (i.e., only students who are 16 and over are eligible for expulsion and only those 15 and under are eligible for exclusion). Age standardised rates are calculated using the observed rates of the State care population divided by the expected rates of the national population, multiplied by 1000.

[4] 'Other' group includes MELAA, Middle Eastern, Latin American, and African students.

Part 2 – Educational achievement

Achievement in Level 2 NCEA or above

Around seven out ten school leavers attained NCEA level 2 or above in 2011, but only two out of ten young people in care during 2011 left school with NCEA level 2 or above. As shown in **Table 4**, the attainment level of the care cohort has shown a small decline between 2010 and 2012, while the attainment levels of the general population has increased.

Table 4: The number and percentage of young people in care and nationally in 2011 that left school with NCEA Level 2 or above

	Achievement (In care)						Achievement (National)					
	2010		2011		2012		2010		2011		2012	
Gender / Ethnic Group[1]	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Māori	10	13.7%	29	15.6%	36	15.1%	6,145	49.5%	6,858	52.2%	6,755	54.6%
Pasifika	6	33.3%	7	25.0%	13	27.1%	3,941	60.2%	4,181	63.6%	4,146	64.8%
Asian	0	0.0%	3	60.0%	3	33.3%	5,031	84.9%	5,262	86.1%	5,308	87.0%
European/Pākehā	27	26.5%	48	26.2%	58	25.6%	29,549	75.5%	30,682	77.7%	29,860	79.6%
Total	**43**	-	**87**	-	**110**	-	**44,666**	-	**46,983**	-	**46,069**	-
Female	17	22.7%	48	29.4%	55	25.7%	22,148	74.8%	23,209	76.8%	22,995	78.2%
Male	22	20.2%	31	14.4%	46	17.1%	20,682	66.0%	21,988	68.4%	21,628	70.6%
Total	**39**	**21.2%**	**79**	**20.8%**	**101**	**20.9%**	**42,830**	**70.3%**	**45,197**	**72.4%**	**44,623**	**74.3%**

1. Students are able to identify with up to three ethnic groups. The sum total of the ethnic groups is therefore greater than the number of students.

Part 3 – Access to health services

Children and young people have the same basic health care needs. However, children and young people in CYF care often have greater health needs that require specialist assessment and intervention due to their circumstances and background. In 2011, investments in "Gateway" health and education assessments by District Health Boards (DHBs), and mental health services for children and young people in care were announced to help address these needs.

Enrolment in primary health care

Table 5 shows that 92 percent or 6,473 children and young people in the care of CYF were enrolled with a Primary Health Organisation (PHO) as at 30 June 2011. At 95.6 percent, the rate of PHO enrolment of 0-16 year olds in the general population was slightly higher.

Table 5: The number and percentage children and young people in care enrolled with a PHO (30 June 2011)

	Number	Percent
Enrolled with a Primary Health Organisations (30 June 2011)	6,473	92%
Total children and young people in care[1, 2, 3]	**7,038**	**100%**

1. The number of children and young people who were in the care of the CE of MSD in the preceding year to 30 June 2011 who were matched to a MOH National Health Index number and were identified as alive at the start of the period.
2. The period that this figure is taken from is the July-September 2011 quarter as data for this quarter is submitted to the MOH by PHOs in June so it is the period most closely linked to the reference date of 30 June 2011.
3. Data were sourced from PHO enrolments only as this was the only available source at the time of reporting.

Immunisation rates

Immunisation rates are measured using the MOH's National Immunisation Register (NIR). The NIR was rolled out nationally in 2005. Only children born from 2005 onwards are on the NIR (with some exceptions). The number of children on the NIR is therefore considerably lower than the 7,190 client records provided by CYF for the 7,038 unique health identities that the MOH was able to find for children in care. **Table 6** shows immunisation rates for children in care fall consistently behind the national average at all age groups.

Table 6: The number and percentage of children and young people in care with a completed immunisation record by 'milestone' age compared to national immunisation rates (30 June 2011)

	Milestone age[1]					
	6 months	8 months	12 months	18 months	2 years	5 years
Number of eligible children on the National Immunisation Register[2]	2,024	2,024	2,024	2,024	1,990	978
Number of children with completed immunisation[3]	861	1,224	1,492	1,245	1,540	694
Completed immunisations by children on National Immunisation Register	42.5%	60.5%	73.7%	61.5%	77.4%	71.0%
National immunisation rates[4]	**69.8%**	**Not available**	**89.2%**	**79.1%**	**88.8%**	**75.4%**

1. 'Milestone age' refers to immunisations required at different age stages.
2. 'Number of eligible children on the National Immunisation Register' refers to the number of children in the care of the CE of MSD in the 2010/11 who were found to be on the National Immunisation Register for each Milestone age.
3. 'Number of children with completed Immunisation' refers to the number of children in the Care of the CE of MSD in the 2010/11 year who have a record of completed immunisation against that milestone age.
4. The percentage nationally of children who turned the milestone age between 1 July 2010 and 1 July 2011 and who have completed their age appropriate immunisations by the time they turned the milestone age.

Emergency department attendance rates

Nearly one in four or 24.3 percent of children and young people in care aged 0 to 17 years had an emergency department event in 2010/2011, compared with 16.0 percent of the general population aged 0 to 17 years in 2010/2011.[5]

Table 7: The number and percentage of children and young people in care with an Emergency Department event (2010/2011)

	Number	Percent
Children and Young People in care with an Emergency Department event[1]	1,713	24.3%
Total children and young people in care[2]	**7,038**	**100%**

1. Defined as receiving treatment in an emergency department in 2010/11. Most of these patients will be discharged from the emergency department. A proportion will be subsequently admitted to hospital as inpatients.
2. The number of children and young people who were in the care of the CE of MSD in the preceding year to 30 June 2011 who were able to be matched to a MOH National Health Index number.

5 Data source: Ministry of Health, National Non-Admitted Patient Collection.

Access to mental health services

This measure provides an indication of the level of specialist mental health and addiction services accessed by children and young people in care. In 2010/2011, 19.1 percent of all children and young people in care received a mental health service. This is considerably higher than the 1.8 percent of 0-16 year olds in the general population who received a mental health service.

Table 8: The number and percentage of children and young people in care who received a mental health service (2010/2011)

	Number	Percent
Children and young people who received a mental health service[1]	1,346	19.1%
Total children and young people in care[2]	7,038	100%

1. 'Mental health service' refers to a face-to-face contact with a mental health professional.
2. The number of children and young people who were in the care of the CE of MSD in the preceding year to 30 June 2011 who were able to be matched to a MOH National Health Index number and were identified as alive at the start of the period. Data source: Ministry of Health, PRIMHD (Programme for the Integration of Mental Health Data).

Part 4 – Offending

The following examines a range of outcome measures related to offending by children and young people.

Transition from care and protection to youth justice services

In 2008, there were 175 children aged 12-13 who had offended. Of this number, 34 or 19 percent had previously been in care prior to their first offence. Of the 175 children who had offended in 2008, 117 or 67 percent went on to offend when they were older and were referred for a new Youth Justice (YJ) Family Group Conference (FGC) in 2011.

Table 9: The number and percentage of child offenders who had previously been in care and the number who subsequently progressed to youth justice

	Number	Percent
Children aged 12-13 who had previously been in care[1]	34	19%
Children aged 12-13 with subsequent youth justice referral[2]	117	67%
Total children aged 12-13 who committed an offence	**175**	**100%**

1. Children aged 12 or 13 years (child offenders) who committed offences in 2008 who had been in care of the CE of MSD under sections 78, 101, 102, 110(2a), 139, 140 of the CYPF Act prior to their first offence
2. Children who were aged 12 or 13 years who committed offences in 2008 and had a subsequent youth justice referral as 14 to 16 year olds by the end of 2010/2011.

Of the 117 children who offended who were subsequently referred to a YJ FGC in 2011, 30 or 25.6 percent had previously been in care.

Table 10: The number and percentage of child offenders with a youth justice referral who had previously been in care

	Number	Percent
Children with a subsequent youth justice referral who had previously been in care[1]	30	25.6%
Total children who committed an offence with a subsequent youth justice referral[2]	**117**	**100%**

1. Children aged 12 or 13 years who committed offences in 2008 who had been in care of the CE of MSD under sections 78, 101, 102, 110(2a), 139, 140 of the CYPF Act prior to their first offence.
2. Children who were aged 12 or 13 years who committed offences in 2008 and had a subsequent youth justice referral as 14 to 16 year olds by the end of 2010/2011.

The 117 children who had offended and were subsequently referred to a YJ FGC in 2011 accounted for 2.7 percent of all new young people who offended in 2011. Of all young people who offended and were involved in new YJ FGCs in 2011, less than 20 percent had previously been in care.

Table 11: The number and percentage of young offenders who had previously been a child offender and been in care

	Number	Percent
Children who committed an offence with a subsequent youth justice referral[1]	117	2.7%
Young people with a new YJ FGC who had previously been in care[2]	815	18.8%
Total young people involved in a new YJ FGC	**4,337**	**100%**

1. Children aged 12 or 13 years who committed offences in 2008 who had been in care of the CE of MSD under sections 78, 101, 102, 110(2a), 139, 140 of the CYPF Act prior to their first offence.
2. Children who were aged 12 or 13 years who committed offences in 2008 and had a subsequent youth justice referral as 14 to 16 year olds by the end of 2010/2011.

Transition from youth justice to corrections services

At the end of 2011, 5,456 17-20 year olds in the Corrections population had a prior YJ referral. Of these, 971 or 18 percent had been in care previously and 4,485 or 82 percent had not.

Table 12: The number of young people aged 17–20 years old in the Corrections population who have had a prior youth justice referral (2010/2011)

	Number	Percent	Rate per 10,000[3,4]
Those aged 17 to 20 year olds in the Corrections population who had a prior youth justice referral, who had previously been in care[1,2]	971	17.8%	37.0
Those aged 17 to 20 year olds in the Corrections population who had a prior youth justice referral, who had never previously been in care	4,485	82.2%	170.8
Total 17 – 20 year olds who have had a previous youth justice referral	**5,456**	**100%**	**207.7**

1. As at end of 2010/2011 financial year.
2. Young people who had been in care of the CE of MSD under sections 78, 101, 102, 110(2a), 139, 140 of the CYPF Act (1989) and had either a youth justice referral or youth justice family group conference (CP care and YJ) or a YJ Placement (CP care and YJ care) and the young person had a spell of Corrections management (including prison) by the end of the financial year.
3. Taken from Statistics NZ website on 28 June 2013: The sum of the Estimated Resident Population of 17, 18, 19 and 20 year olds as at year end June 2011 was 262,660
4. The rate against the total 17 to 20 year olds population nationally provides a more stable base population than the 17 to 20 Corrections population as this is likely to fluctuate across reporting years due to changes in both court processing and Police practices.

Part 5 – Placement stability

The great majority of children and young people who come into CYF's care do so because of abuse and neglect. For children and young people who need care for the longer term, creating a sense of belonging and emotional security is vital to their well-being and health. Ensuring a stable, quality placement is therefore very important.

Number of placements

This measure looks at the number of children and young people who have been in an out-of-home placement for more than 12 months and who had more than three caregivers in the previous 12 months. Children and young people entering care may have more than one caregiver in their first year because they may be placed with temporary caregivers until a longer term care arrangement is determined, either through a Family Group Conference or by the Family Court. This measure does not include new entries into care.

Table 19: The number and percentage of children and young people in care and protection out-of-home placements with more than three caregivers in the previous 12 months (30 June 2011)

	Number	Percent
Children with more than 3 caregivers in past 12 months[1]	280	9.7%
Total number of children in out-of-home placements for more than 12 months[2]	**2,900**	**100%**

1. The number of children and young people who had been in out of home placements for over 12 months and had more than three caregivers in the previous 12 months.
2. The number of children and young people in care and protection out-of-home placements for more than 12 months as at 30 June 2011.

Duration in care

This measure provides the number of children and young people who have been in care for more than two years as at 30 June 2011. Forty-eight per cent of children and young people spent less than two years in care, while 52 percent had spent more than two years in care.

Table 20: The children and young people in care of the CE of MSD who have spent more than two years in care (30 June 2011)

	Number	Percent
Children who have spent more than two years in care as at 30 June 2011	2,592	52%
Total number of children in care[1]	**5,020**	**100%**

1. The number of children and young people in custody of the CE of MSD as at 30 June 2011.

Home for Life

'Home for Life' is a package of support aimed at encouraging families to bring a child into their home permanently where it is determined the child cannot return to their parents, thereby giving the child the stability and security they need.

This measure provides the total number of children and young people who left CYF's care and achieved a permanent 'Home for Life' arrangement with extended family/whānau or non-kin caregivers.

The initiative commenced in October 2010 and 430 children and young people had achieved a "Home for Life" by June 2011.

Table 21: The number and percentage of children and young people achieving 'Home for Life' (October 2010 to June 2011)

	Number	Percent
Children and young people who achieved 'Home for Life'[1,2]	430	6.9%
Total number of children in care[3]	**6,197**	**100%**

1. Achieving home for life occurs when the Chief Executive's custody is discharged in favour of a permanent caregiver. 'Home for Life' started in October 2010 so for 2010/11 data is only available for the period October 2010 to June 2011.
2. Number of children and young people who achieved "Home for Life" during the period October 2010 to June 2011.
3. The number of children and young people in the care of the CE of MSD during the period October 2010 to June 2011.

Appendix

Health data

All health data was provided by the MOH. From the 7,190 client records CYF provided MOH for the data-match, 7,041 were able to be matched to National Health Index number (97.9 percent match). Of the 7,041 records, three were found to be duplicates leaving the base data set for these measures with 7,038 records.

Education data

Methodology for calculating stand downs, suspensions, exclusions and expulsions from school as provided by the Ministry of Education

This data extract uses a conservative methodology to create age-standardised rates of stand-downs, suspensions, exclusions and expulsions for a 2011 cohort of CYF students matched with education data.

To maintain comparability with the national rates, the methodology was as closely aligned with the general population methodology as possible.

The methodology for the general population uses the July roll returns (students at each school of each gender, ethnicity and age) to create expected rates of stand-downs and suspension cases by school, territorial authority and region. Only those between the ages of 5 and 19 are included in calculations.

Of the 6,833 children in care matched to MOE 81 students had privacy flags. These students were removed from all analysis meaning 6,752 CYF students were input for analysis. 4,740 were enrolled as at 1 July 2011.

To create the expected rates for the age-standardised rates with the CYF cohort, only CYF students that were enrolled as at 1 July who were between the ages of 5 and 19 were selected. In total 4,111 students that were enrolled as at 1 July 2011 and in the required age brackets were included to create the denominator. The age-standardised rates were then calculated using the process below.

Calculation of rates

Numerator

The numerator was the observed number of cases of stand-downs, suspensions exclusions and expulsions for the students in the 3,444 students in the cohort that occurred in the 2011 calendar year.

Denominator

The denominator was the number of expected stand-downs/suspensions/exclusions and expulsions for the cohort based on the national rates for each age.

Expected rate = sum (national rate for age group*number of students in age group from cohort).

The numerator and denominator are then multiplied by the national rate per 1,000 students to give a standardised rate per 1,000 students, ie, observed/expected*National rate per 1000.

Exclusions and expulsions

Exclusions and expulsions are subsets of suspension. Only students who are 16 and over are eligible for expulsion and only those 15 and under are eligible for exclusion. As such, these are only standardised among the ages that are eligible.

Notes on Standardisation

Age-standardisation artificially adjusts the age-distribution of different groups so that they are the same. When looking at stand-downs etc. we standardise by age because the overwhelming majority of cases occur for the 13-15 year age group and those groups with more students in these age groups are not comparable to other schools with less of their students in these age-groups.

In this instance the standardisation has used the 2011 rate as this is a baseline measure for 2011. The data for the national comparator also uses the older standardisation, whereas the MOE is currently using 2012 to standardise against. Year on year the standardisation changes based on current year level distribution e.g. for a 2011-2012 comparison, standardisation would be to the 2012 population so that year to year the age distributions have been adjusted to be the same.

Ethnicity

For this indicator ethnicity is prioritised in the order of Māori, Pasifika, Asian, other groups and European/Pākehā. European/Pākehā refers to people who affiliate as New Zealand European, Other European or European (not further defined). For example, this includes and is not limited to people who consider themselves as Australian (excluding Australian Aborigines), British and Irish, American, Spanish, and Ukrainian.

Methodology for NCEA attainment as provided by the Ministry of Education

Data for this indicator was extracted from MOE school leaver datasets which are used by the MOE as the basis of school leaver reporting. CYF learners in the spread sheet were matched where possible to the school leaver data dating back to 2009 using their National Student Numbers (NSN). Most of the learners in the spread sheet did not have leaver information from these years.

By linking to the existing school leaver data most required exclusions etc. have already been applied. The data is simply joined to the CYF individuals.

Any CYF individuals with a privacy flag were removed during the linking and extraction process. Of the 6,833 CYF clients who were matched to an NSN, 6,752 had no privacy flags and only 1,109 had leaver information.

Calculation of Rates

Numerator

The numerator is the number of leavers in a group with NCEA level 2 or above, or an equivalent qualification.

Denominator

The denominator is the total number of leavers in the group.

Total response ethnicity

The ethnic breakdown of this indicator uses total response ethnicity. Students who identified in more than one ethnic group have been counted in each ethnic group so the total of the ethnic groups when summed will be greater than the total number of students.

Outcomes for Children Discharged from CYF Care in 2010

MAY 2012

MINISTRY OF
SOCIAL DEVELOPMENT
Te Manatū Whakahiato Ora

Prepared by
Centre for Social Research and Evaluation

Outcomes for Children Discharged from CYF Care in 2010

Executive Summary

This report provides preliminary findings based on analysis of Child, Youth and Family (CYF) administrative (CYRAS) data for children who left the custody of the Chief Executive in 2010 and went into the permanent care of kin and non-kin care-givers or who returned to their biological families.

We found that children who are discharged from care are for the most part safe and their care is stable in the medium term. There are weaknesses in return home situations, particularly for Maori children, and care is less stable for teenagers. Our findings also suggest some small differences between non-kin care and kin care which need further exploration to consider the interaction of other factors such as age.

Background

This work was completed to respond to the recommendation of Mel Smith for urgent evaluation of kin care, which will be picked up through the White Paper on Vulnerable Children. These findings are preliminary until they can be confirmed through two other pieces of care outcome research that are imminent; the Home For Life Evaluation due at the end of June and the Outcomes for Children Discharged from CYF Care in 2008, which is due to be completed at the end of August. The Home For Life Evaluation was commissioned by CYF Ex Com and the 2008 Care Outcomes was developed last year by CSRE to meet the objectives of the Vulnerable Children research work programme.

Research Questions

The research sought to answer the following questions:

- What is the medium term success (safety and stability) of permanent care arrangements made for children discharging from CYF custody in 2010?
- Are there differences between the medium term stability and safety of kin, non-kin care and return home situations?
- Are gender, age or ethnicity related to the safety and stability of care?

Methodology

The research involved all children who were discharged from their first episode of CYF care or custody during the period July 1 2009 to 30 June 2010 and were under 15 years. A total of 1015 children were included in this research. These children had been in CYF care either through Custody Orders or section 140 Care Agreements, made under the Children, Young Persons and their Families Act (1989). In some cases CYF retained Services, Support, and Guardianship Orders after discharge and in other cases post discharge support was offered informally rather than through court orders.

Administrative records were reviewed to classify the child's permanent care arrangements into one of three categories[1]:

- return home (including children who moved to a previously non custodial biological parent)
- non-kin care
- kin care (including caregivers who were friends of the family).

Eighteen months of CYRAS records were available post the date of discharge. These records were reviewed to determine whether these children had subsequent referral to CYF and the nature of this contact. Re-referrals did not include contact records. In particular, the data were analysed for outcomes of safety from child maltreatment and stability of care. Further analysis was conducted to look for differences in outcomes for those placed permanently with kin, non-kin and those returned home.

Findings

Overall, permanent care is generally safe and stable in the medium term with 91% of all the children having no further re-entry to care and 85% experiencing no further substantiated abuse. Most children who were discharged from care in 2010 went on to live with either their biological families or extended family/whanau. Only 14% were discharged into non-kin care as shown in Table 1 below.

Table 1: Number of children who ended their first care episode during the 2010 fiscal year by type of permanency achieved

Permanency achieved	Number	Percent
Return home	480	**47%**
Non-kin care	140	**14%**
Kin care	395	**39%**
Total	**1015**	

[1] CYRAS contains a large amount of highly sensitive data and while the Privacy Act permits data to be used for research purposes, care was taken to ensure that no personal information was disclosed or any individual identifiable in the output from this research.

Re-referral to CYF

Overall 30% of the children were re-referred to CYF within 18 months of their discharge date. There were significant differences in re-referral of children between the three types of care with the most re-referrals occurring in the group of children who had returned home.

- 42% of children who return home
- 9% of children placed with non-kin
- 22% of children in kin care

were re-referred to CYF within 18 months of the date which they were discharged from care.

Substantiated maltreatment

Overall 15% of the children had maltreatment substantiated within 18 months of their discharge date. This rate differed significantly between the three types of permanent placement with the most substantiated maltreatment occurring amongst the group of children who had returned home.

Table 2 below shows that:

- 23% of children who returned home
- 10% of children placed with kin
- 1% of children in non-kin placements

had an abuse finding recorded within 18 months of the date from which they were discharged from care.

Table 2: Number of children ending their first care episode during the 2010 fiscal year by type of permanency achieved and by re-abuse

Permanency achieved	Re-abuse			Proportion of re-abuse	Total Proportion of re-abuse
	No	Yes	Total		
Return home	372	108	480	23%	
Non-kin care	138	2	140	1%	
Kin care	357	38	395	10%	
Total	**867**	**148**	**1015**		**15%**

Re-entry to care

Overall 9% of children in the group re-entered care within 18 months. Re-entry to CYF care occurred significantly more often in return home situations (12%) than in other types of care placements. There were no significant differences between kin and non-kin care in the rate of re-entry to CYF care (refer to Table 3 below).

Table 3: Number of children ending their first care episode during the 2010 fiscal year by type of permanency achieved and by re-entry to CYF care

Permanency achieved	Re-entry			Proportion of re-entry to care	Total Proportion of re-entry to care
	No	Yes	Total		
Return home	421	59	480	12%	
Non-kin care	137	3	140	2%	
Kin care	370	25	395	6%	
Total	**928**	**87**	**1015**		**9%**

Age

A smaller proportion of children under 3 years old were returned home in comparison to the other age groups. More of those children who were under 3 years old went into non-kin care than other age groups. Teenagers between 13 and 15 years were more likely to be returned home than other age groups (refer to Table 4 below).

Table 4: Number of children ending their first care episode during the 2010 fiscal year by type of permanency achieved and by age at the end of first care episode

Age at the end of first episode	Permanency Achieved			
	Return home	Non-kin care	Kin care	Total
Under 3	129	73	146	**348**
4 to 7	125	39	109	**273**
8 to 12	149	20	110	**279**
13 to 15	77	8	30	**115**
Total	**480**	**140**	**395**	**1015**

Age at the end of first episode	Proportion of Permanency Achieved			
	Return home	Non-kin care	Kin care	Proportion
Under 3	37.1%	21.0%	42.0%	**100%**
4 to 7	45.8%	12.3%	39.9%	**100%**
8 to 12	53.4%	7.2%	39.4%	**100%**
13 to 15	67.0%	7.0%	26.1%	**100%**
Total	**47.3%**	**13.8%**	**38.9%**	**100%**

Age (continued)

Older children were more likely to experience unstable care. 22% of the 115 young people in the group who were aged between 13 and 15 years at discharge re-entered care within the 18 month timeframe (refer to Table 6). There were no differences between the age groups in re-referral or maltreatment.

Table 6: Number of children ending their first care episode during the 2010 fiscal year by age at the end of first care episode and by re-entry to CYF care.

Permanency achieved	Re-entry to CYF care			Proportion of re-entry to care
	No	Yes	Total	
Under 3	331	17	348	5%
4 to 7	250	23	273	8%
8 to 12	257	22	279	8%
13 to 15	90	25	115	22%
Total	**928**	**87**	**1015**	**9%**

Gender

There were no differences in care outcomes between male and female children.

Ethnicity

Fewer Māori children were returned home after discharge than non-Māori children and fewer were placed with non-kin. Significantly more Māori children were placed in whanau care following discharge from CYF care (50% compared with 23% for non Maori). Table 7 below shows the number of Māori and non-Māori children who ended their first care episode during the 2010 fiscal year by type of permanency achieved.

Ethnicity (continued)

Māori Children

Permanency achieved	Number	Percentage
Return home	228	42%
Non-kin care	41	8%
Kin care	269	50%
Total	**538**	

Non-Māori Children

Permanency achieved	Number	Percentage
Return home	262	47%
Non-kin care	99	18%
Kin care	126	23%
Total	**447**	

Māori were significantly more likely to have substantiated abuse after discharge than children of other ethnicities (18% compared with 11% for non-Māori). However there were no detectable differences related to ethnicity in re-referral to CYF or re-entry to CYF care.

Abuse for Māori children was significantly more likely to happen when returned home than it was for non Māori returned home. 29% of Māori children returned home were re-abused compared to 17% of non Māori children returned home as shown in Table 8 below.

Māori Children

Permanency achieved	Re-abuse			Proportion of re-abuse	Total proportion of re-abuse
	No	Yes	Total		
Return home	163	65	228	29%	
Non-kin care	40	1	41	2%	
Kin care	240	29	269	11%	
Total	**443**	**95**	**538**		**18%**

Ethnicity (continued)

Non-Māori Children

Permanency achieved	Re-abuse			Proportion of re-abuse	Total proportion of re-abuse
	No	Yes	Total		
Return home	209	43	252	17%	
Non-kin care	98	1	99	1%	
Kin care	117	9	126	7%	
Total	**424**	**53**	**477**		**11%**

Limitations

Home for Life policy became effective in October 2010; after the discharge dates for the population under study.[2] However the findings from this study are still useful in that they can help to focus other research and assist in ongoing practice discussion within CYF.

A limitation of CYRAS data includes recording error and missing records. A data set of 1100 was generated which included all children and young people who had been discharged from their first ever episode of care in 2009/2010. Around one quarter of this group had key missing data which were then populated by reference to case notes. During the course of the review, 85 cases were removed because their records suggested these children were either still in care (with CYF or a Child and Family Support Service) or they had been discharged and left the country. Other recording errors were harder to address. For example, referrals may be included that do not relate to post discharge care because they may concern past abuse or issues about parents who are no longer custodial. Some recording error will also exist in the categorisation of care placement type, not all of which has been detected.

Conclusions

These findings suggest that in the medium term most children discharged from CYF care are safe and stable, although return home is less secure, particularly for Māori and there may be some differences between non-kin care and kin care for the group as a whole. These findings need to be viewed as preliminary until they can be confirmed in further care outcome research reporting this year (Outcomes for Children Discharged from CYF Care in 2008 and the proposed Home For Life Evaluation).

[2] The three year post-discharge support and home for life support package were introduced as a way of supporting the stability of permanent placements, and to remove barriers that were largely fiscal by nature. Ways to Care was also introduced at the time of the Home for Life policy, to better recruit, assess, and prepare carers for the many options of care available (including permanent care).

New findings on outcomes for children and young people who have contact with Child, Youth and Family

Sarah Crichton, Robert Templeton, Sarah Tumen (The Treasury) and Rissa Ota, Debra Small, Moira Wilson and David Rea (Ministry of Social Development)

(1) Overview

1. Until recently there has only been limited statistical information available about the subsequent life outcomes of children and young people who have contact with child protection services. This paper provides some important insights into the nature and extent of contact with Child, Youth and Family, as well as subsequent adult outcomes depending on the level of contact.

2. The paper uses a new dataset that links records from a range of government agencies. This new data allows an analysis of government service utilisation for a cohort of children born between 1 July 1990 and 30 June 1991.

3. The analysis looks at the extent to which children in the birth cohort had contact with Child Youth and Family as a result of either care and protection or youth justice concerns. Prior to 18 years of age around 15% of the cohort had some form of care and protection contact with Child Youth and Family. Approximately 4.4% were referred to Child, Youth and Family for youth justice reasons.

4. The paper also reports on the subsequent education, benefit receipt and criminal justice outcomes. The data shows that compared to other children in the cohort, those who had contact with Child, Youth and Family were less likely to attain basic school qualifications, were more likely to be early entrants to the benefit system (sometimes with their own children), and were more likely to have later contact with the adult corrections system.

(2) The Integrated Child Dataset

5. The Integrated Child Dataset was developed by the Ministry of Social Development and draws together administrative data from the Ministry of Social Development (benefit, care and protection, Family Start), Department of Corrections (sentencing), Ministry of Education (participation and attainment), Department of Internal Affairs (birth and death registrations) and Ministry of Health (including maternal health and hospitalisations). Information on individuals in the dataset is drawn from different collections by matching individuals according to names, gender, and date of birth.

6. Much of the analysis reported here was undertaken by the Treasury's Analytics and Insights team who were seconded to the Ministry of Social Development to work on the analysis of this data. Ethics approval for the data linkage and programme of work was granted by the Central Region Health and Disability Ethics Committee (12/CEN/46).

7. The estimates in this note should be treated as having wide margins of uncertainty for a number of reasons including:

   - there is incomplete Child, Youth and Family data from the early 1990s which means that some of the estimates of prevalence are understated because of lack of data at early ages

   - the process of matching is probabilistic and creates some level of error as there are cases where individuals cannot be matched (and appear in the data with less service delivery utilisation than actually occurred), as well as cases where individuals have been wrongly matched (and appear in the data with inaccurate estimates of service delivery utilisation)

   - the data covers a specific time and cohort and some care must be taken in generalising to the experience of current cohorts of children. More recent cohorts have had a higher likelihood of being notified to Child, Youth and Family, partly because of administrative changes related to family violence events attended by Police.

8. The analysis reported here should be seen in the context of what is known from New Zealand's longitudinal surveys about life course outcomes following exposure to abuse and neglect, as well as youth offending trajectories.[1]

9. Key features of the new data reported here is that it represents the records of the entire population and their contact with selected government services. An important caveat is that the administrative measures of substantiated findings of abuse and neglect or Police referral to Child, Youth and Family are not necessarily comprehensive or reliable measures of the underlying phenomena of maltreatment or youth offending. The data is also limited in the description of individual characteristics and circumstances captured in interactions with government services.

(3) Contact with Child, Youth and Family

Care and protection

10. Children, Young Persons, and Their Families Act (1989) provides the statutory basis for Child, Youth and Family's intervention with children and young people. Section 17 of the act sets out the responsibilities of Child, Youth and Family social workers around the investigation of reports of concerns. Section 14 of the act defines a child or young person in need of care or protection. This includes the fact that the child or young person is being, or is likely to be, harmed (whether physically or emotionally or sexually), ill-treated, abuse or seriously deprived. A child is defined in the Act as being under 14 years of age, while a young person is defined as being 14, 15, or 16 years of age.

11. A child or young person's contact with Child, Youth and Family for care and protection reasons can be divided into a number of different levels of contact depending on the *highest* level of the child's involvement with Child, Youth and Family. These categories are:

[1] Fergusson D., Poulton R., Horwood L., Milne B., Swain-Campbell N. (2004) Comorbidity and coincidence in the Christchurch and Dunedin longitudinal studies. Report prepared for the New Zealand Ministry of Social Development, and Ministry of Education and the Treasury; Fergusson D., Boden J., Horwood L., (2008) Exposure to childhood sexual and physical abuse and adjustment in early adulthood. Child Abuse & Neglect 32:607-619; Moffitt T., Caspi A. (2001) Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. Development and Psychopathology 13:3SS-375.

- 'notification only' occurs where a member of the public or an agency has expressed a concern about the care or protection of the child to Child, Youth and Family (and this has been assessed by a social worker and recorded as a report of concern that does not require further action)

- 'notification and investigation' describes a higher level of contact where following an initial assessment, a site level social worker has conducted an investigation or child and family assessment

- 'notification, investigation and substantiated findings of abuse and neglect' occurs where a social worker has made a formal finding that the child has suffered physical, emotional, or sexual abuse or neglect.[2] This category may also include a subsequent Family Whanau Agreement or Family Group Conference where the social worker has concluded that statutory intervention is necessary

- care where a court has determined that a child or young person is in need of care and protection and grants a custody or guardianship order. In most cases the child or young person will have had a substantiated finding of abuse and neglect.

12. It is important to recognise that these administratively derived measures of engagement may not be a reliable measure of the real occurrence of child maltreatment. This reflects both the extent to which children are notified to the agency, as well as the uncertainty inherent in making a determination that maltreatment has occurred.[3]

13. Graph 1 describes the childhood and protection experience of the cohort of children born in the 12 months before 30 June 1991. As can be seen:

    - around 15% of children in this birth cohort had some form of contact with Child, Youth and Family up until age 18 years

    - for just under 5% of children in the birth cohort their highest level of contact with Child Youth and Family was at least one substantiated finding of abuse or neglect

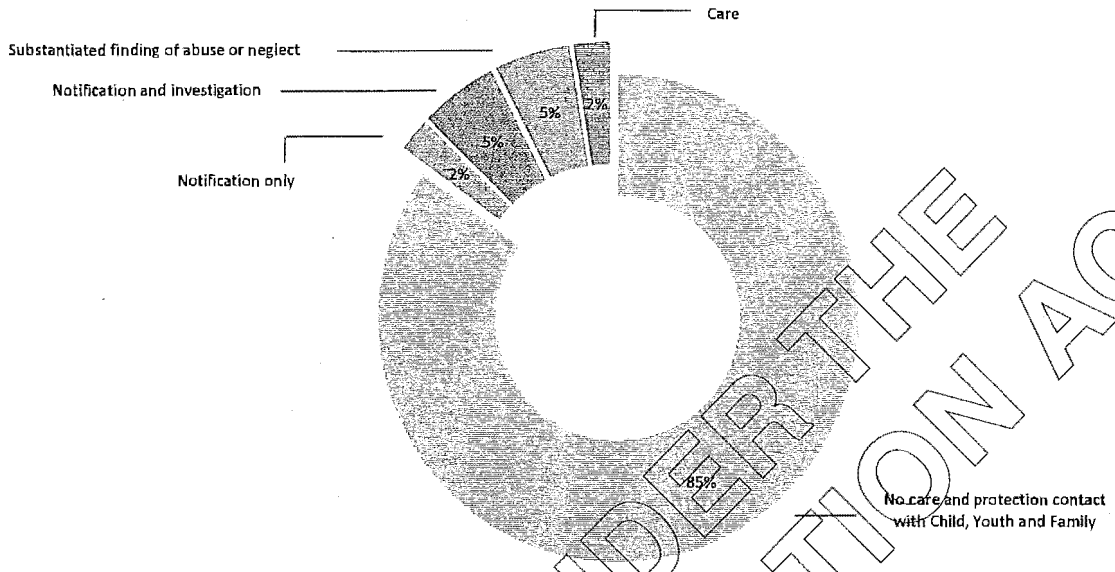
    - a further 2% of children in the cohort entered care at least once.

14. In total over 7% of the cohort appear to have had at least one substantiated finding of abuse of neglect (ie as well as the 5% whose highest level of contact was a substantiated finding, the majority of children who experience care will have had a substantiated finding of abuse or neglect).

[2]This excludes findings related to the child's behavioural difficulties or intentions of self-harm.

[3]Hussey, J. M., Marshall, J. M., English, D. J., Dawes Knight, E., Lau, S., Dubowitz, H. and Kotch, J. B. (2005) 'Defining maltreatment according to substantiation: Distinction without a difference?' Child Abuse and Neglect, 29(5), pp. 479–92. Manion, K. and Renwick, J. (2008) 'Equivocating over the care and protection continuum: An exploration of families not meeting the threshold for statutory intervention', Social Policy Journal of New Zealand, 33, pp. 70–94. Fluke J. (2009) Allegory of the cave: on the theme of substantiation. Child Maltreatment 14(1):69-72; Ministry of Social Development (2015) Validation of maltreatment "not found" in CYRAS reported data, Unpublished paper.

Graph 1: Prevalence of highest level of care and protection contact with Child, Youth and Family up until 18 years of age: cohort born in the 12 months to 30 June 1991



Source: Integrated Child Dataset
Note: The population is identified using Ministry of Education data on school enrolment since 2006. The analysis uses a research linkage (linkage 5), and it is important to note that data linkage errors means that the figures should be viewed as estimates.

15. The estimates above represent the highest level of contact, and it is important to recognise that for most children and young people who had some form of contact with Child, Youth and Family, there would have been multiple contacts over prolonged periods of time. The extent of multiple contacts can be seen in the children who make up the current case-load of Child, Youth and Family. Of the 28,079 children who are currently engaged with the agency in some form, 70% have been previously notified to the agency (on average six times), 20% have had previous findings of maltreatment, and 20% have previously been in care.

16. The analysis presented above uses the 1990/91 birth cohort as this enables enough time to have elapsed so as to measure later adult outcomes.

17. However a key issue for this analysis is that there is incomplete data in the early 1990s because not all paper and prior electronic records were entered into the CYRUS database when it was established in 2000. This means that the real extent of contact with Child, Youth and Family is underestimated.[4]

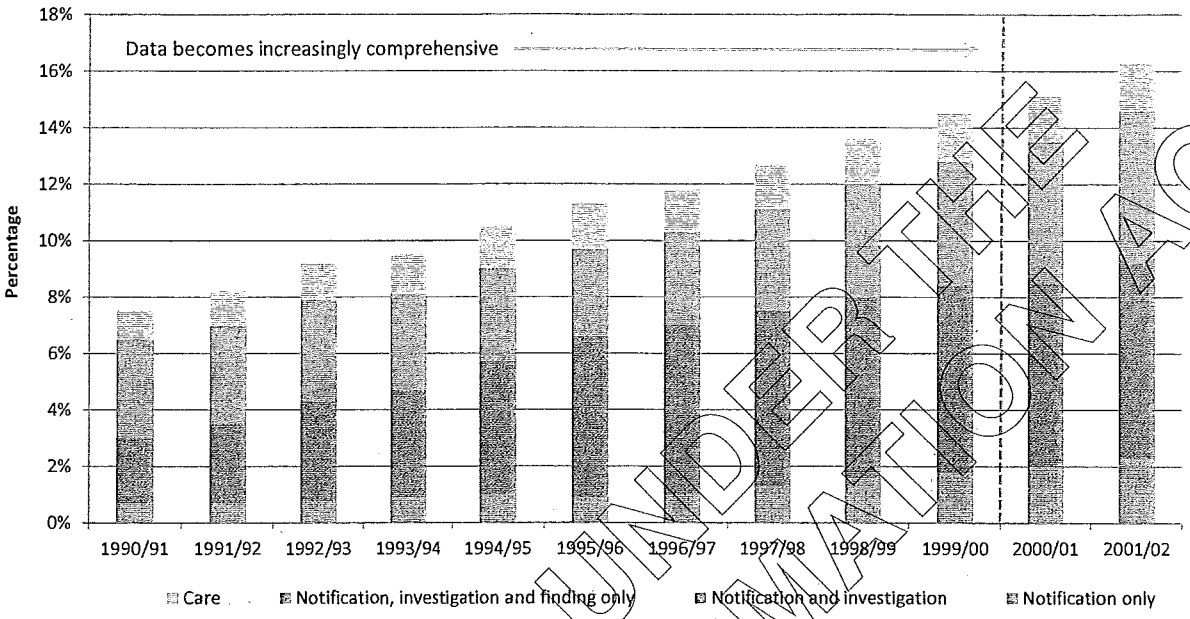
18. Relatedly, another issue is the extent to which the real experience of the 1990/91 cohort is representative of what current cohorts might experience in the future.

19. Graph 2 shows the care and protection contact with Child, Youth and Family by age 10 years for multiple birth cohorts. As can be seen, later cohorts have had higher levels of contact with Child, Youth and Family. This increase in measured rates of contact is an artefact of both more comprehensive data, as well as changes in the real level of contact. For more recent birth cohorts there has been a real increase in contact, which appears to be partly the result of

[4]Previous research has found that 20% of the 1993 birth cohort had some form of contact with Child, Youth and Family. This compares with 15% for the 1990/91 birth cohort. The estimates of the prevalence of substantiated findings and care are however very similar. Ministry of Social Development (2012) Children's contact with MSD Services, https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/childrens-contact-with-msd-services/index.html

changes in Police procedures for notification where there has been a family violence incidence, as well as an increased recognition of emotional abuse or neglect.

Graph 2: Care and protection contact with Child, Youth and Family by 10 years of age for selected birth cohorts



Source: Integrated Child Dataset.
Note: Birth cohorts born between 1 July and 30 June each year

20. Table 1 shows the prevalence of contact with Child, Youth and Family for care and protection reasons for the 1990/91 birth cohort by sex and ethnicity. The table reports slightly higher levels of contact for females compared to males. The table also shows marked differences by ethnicity. Approximately 28% of Māori children, 18% of Pacific children, 12% of European children and 4% of Asian children in the cohort had some form of contact with the care and protection system.

Table 1: Care and protection contact with Child, Youth and Family by age 18 for cohort born in the 12 months to 30 June 1991, by sex and ethnicity

	No care and protection contact (%)	Highest level of contact				Total care and protection contact (%)
		Notification only (%)	Notification and investigation (%)	Notification, investigation and substantiated finding of maltreatment (%)	Care (%)	
Female	83.9	2.3	5.5	5.9	2.4	16.1
Male	86.2	2.1	5.2	4.2	2.3	13.8
European	88.0	1.8	4.5	4.0	1.7	12.0
Māori	72.0	3.8	9.3	9.4	5.5	28.0
Pacific	81.8	3.0	6.3	6.7	2.2	18.2
Asian	96.0	0.9	1.5	1.2	0.4	4.0
Other ethnicity	89.5	2.8	3.8	2.5	1.4	10.5
Total	85.1	2.2	5.3	5.0	2.4	14.9

Source: Integrated Child Dataset

Note: The analysis reflects the population at 30 June 2012 and in this case is identified using Ministry of Education data on school enrolment since 2006. The analysis uses a research linkage (linkage 5), and it is important to note that data linkage errors means that the figures should be viewed as estimates.

Youth justice

21. Child, Youth and Family is required under the Children, Young Persons, and Their Families Act (1989) to respond to children and young people who have offended or who are at risk of re-offending. This includes responsibility for managing and implementing the Family Group Conference process, supporting the Youth Court in providing interventions for serious young offenders, providing youth justice residential facilities, and purchasing community-based services for child and young offenders.

22. Graph 3 provides information on the life-time prevalence of contact with Child, Youth and Family for youth justice reasons for the cohort born in the 12 months to June 1991. Overall approximately 4.4% had at least one youth justice referral to Child, Youth and Family between the ages of 10 and 17 years.

23. An important point is that just over half of the young people who had youth justice contact with Child, Youth and Family had some level of prior contact with the agency for care and protection reasons.

Graph 3: Prevalence of youth justice contact with Child, Youth and Family up until 18 years of age: cohort born in the 12 months to 30 June 1991

Source: Integrated Child Dataset
Note: The population is identified using Ministry of Education data on school enrolment since 2006. The analysis uses a research linkage (linkage 5), and it is important to note that data linkage errors means that the figures should be viewed as estimates.

24. Graph 4 provides a comparison of the youth justice related contact for the 1990/1991 cohort compared to later birth cohorts. This shows a decline in measured contact which is consistent with declining levels of Police referrals to CYF in recent years.

Graph 4: Youth justice related contact with Child, Youth and Family for selected birth cohorts up until age 18 years (cohorts born in 12 months to 30 June)

Source: Integrated Child Dataset

25. Table 2 provides a breakdown of differences in youth justice contact with Child, Youth and Family by gender and ethnicity. As can be seen, males are significantly more likely than females

to have a youth justice referral to Child, Youth and Family. There are also marked differences by ethnicity with almost 10% of Māori young people in the birth cohort having had youth justice related contact with Child Youth and Family.

Table 2: Youth justice related contact with Child, Youth and Family for cohort born in the 12 months to June 1991, by sex and ethnicity

	No youth justice contact (%)	Total youth justice contact (%)
Female	97.8	2.2
Male	93.5	6.5
European	96.8	3.2
Māori	90.1	9.9
Pacific	95.6	4.4
Asian	99.4	0.6
Other ethnicity	97.5	2.5
Total	95.6	4.4

Source: Integrated Child Dataset

Note: The population is identified using Ministry of Education data on school enrolment since 2006. The analysis uses a research linkage (linkage 5), and it is important to note that data linkage errors means that the figures should be viewed as estimates.

(3) Life course trajectories by type of contact with Child, Youth and Family

26. Analysis of the Integrated Child Dataset enables some important insights about the subsequent life course trajectories of children and young people who had contact with Child, Youth and Family. In what follows we report school achievement, benefit receipt, youth justice and adult corrections outcomes for individuals within the 1990/91 birth cohort up until 21 year of age.

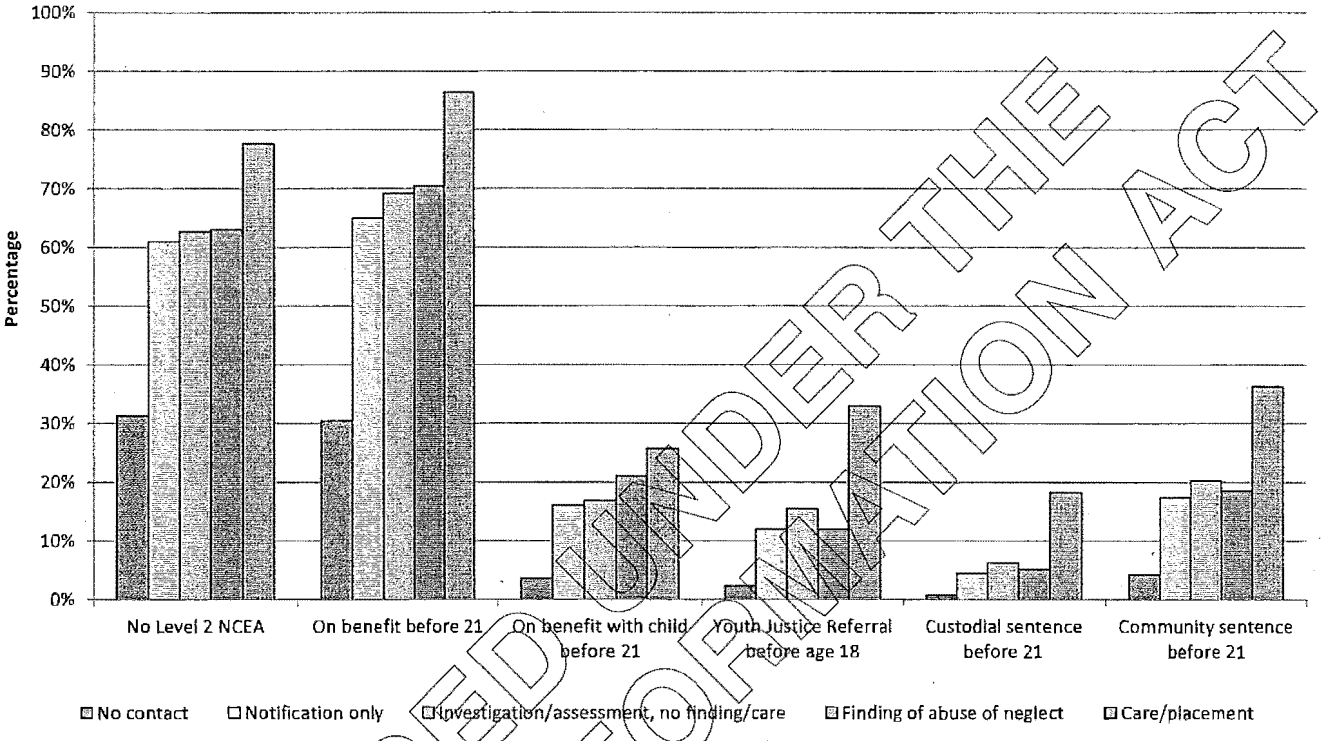
Care and protection

27. Graph 5 shows outcomes for children who have contact with Child, Youth and Family for care and protection reasons. The data shows that for children and young people with any form of care and protection contact, a larger proportion experienced adverse outcomes compared to children who had no contact. By age 21, individuals who had any level of care and protection contact with Child, Youth and Family were more likely to have:

- left school with less than a level 2 NCEA qualification
- been in receipt of a main benefit
- been in receipt of a main benefit with a child included
- been referred to Child, Youth and Family for youth justice reasons, and
- received a community or custodial sentence in the adult corrections system.

28. Graph 5 shows the dramatically worse average outcomes for children who experienced care. For example, almost 80% of those who experienced care left school with less than NCEA level 2, 33% had a youth justice referral, and over 85% had been in receipt of a main benefit by age 21 years.

Graph 5: Selected life course outcomes to age 21 for cohort born in the 12 months to June 1991, by type of contact with Child, Youth and Family until 18 years of age



Source: Integrated Child Dataset
Note: The population is identified using Ministry of Education data on school enrolment since 2006. The analysis uses a research linkage (linkage 5), and it is important to note that data linkage errors means that the figures should be viewed as estimates.

29. It is useful to put this analysis in the context of other recent research that looks at the needs of children and young people who are currently in care. Children and young people currently in care have higher rates of stand downs, suspensions, exclusions and expulsions from school, lower levels of NCEA achievement, lower levels of PHO enrolment and high rates of use of mental health services.[5]

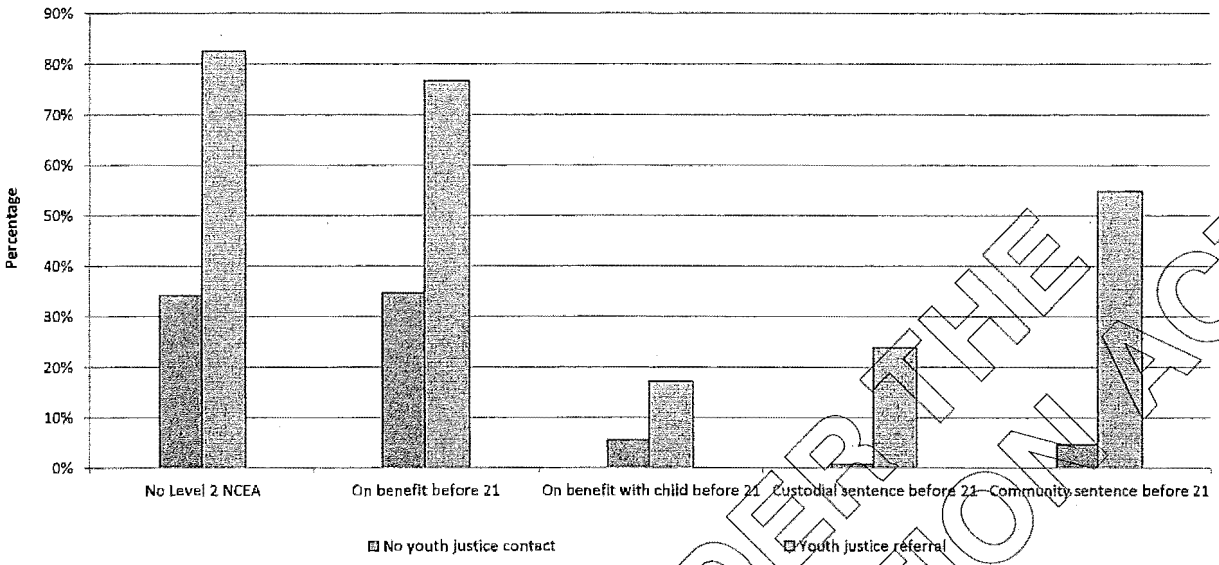
30. The relatively small difference in outcomes for those who had substantiated findings of maltreatment as opposed to only notifications is an important finding. This may reflect the quality of decision making that has led to this categorisation.

Youth justice

31. Graph 6 shows outcomes for children and young people who had contact with CYF for youth justice reasons. As can be seen, those with youth justice contact had significantly higher rates of leaving school with less than NCEA level 2, receiving a main benefit or having a child included in their main benefit by age 21, and receiving a custodial and/or community sentence.

[5] Insights MSD (2014) Outcomes for Children in Care: Initial data-match between Child, Youth and Family, the Ministry of Education and the Ministry of Health, Unpublished.

Graph 6: Selected life course outcomes to age 21 for cohort born in the 12 months to June 1991, by type of youth justice contact with CYF up until 18 years of age



Source: Integrated Child Dataset
Note: The analysis reflects the population at 30 June 2012 and in this case is identified using Ministry of Education data on school enrolment since 2006. The analysis uses a research linkage (linkage 5), and it is important to note that data linkage errors means that the figures should be viewed as estimates.

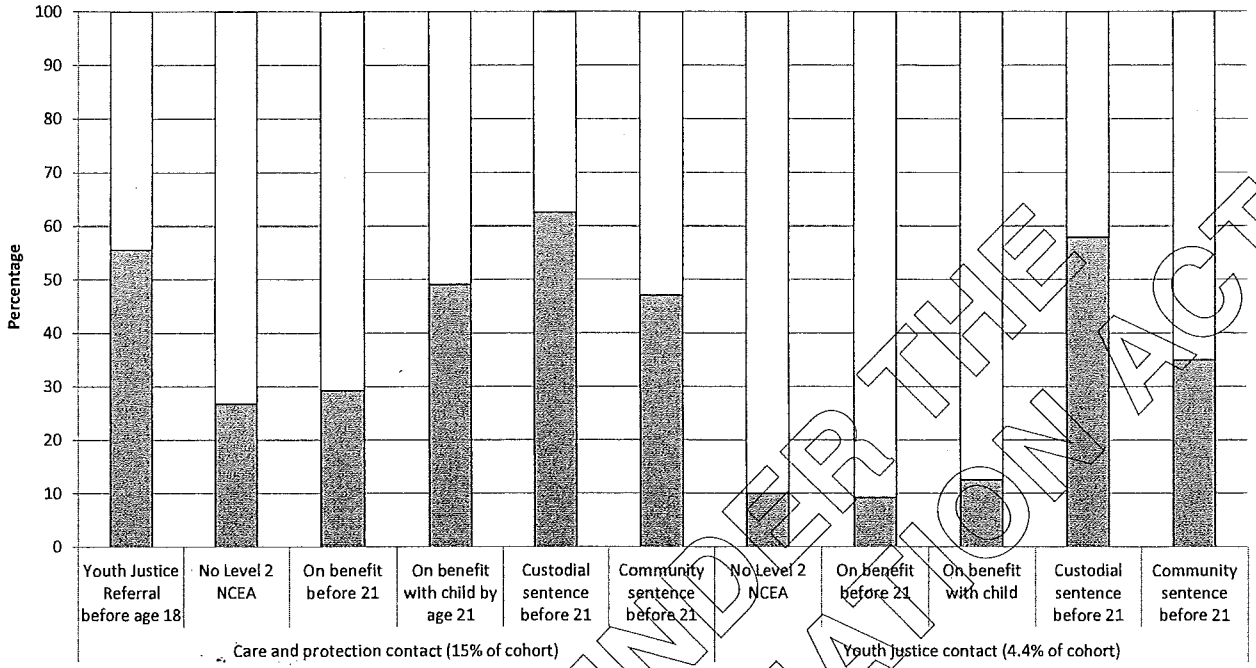
(4) A government service delivery perspective

32. The data shows that many of the children and young people who have contact with Child, Youth and Family experience poor outcomes in the future. These trajectories will likely reflect a range of factors including:

    - the underlying characteristics and circumstances of children and young people (for example poverty or behavioural issues linked to poor mental health)
    - the experience of abuse and neglect, as well as causing immediate physical and psychological harm to children, is highly likely to increase risks of poor health, education underachievement, criminal offending, benefit receipt, and early parenting, and
    - insufficient or ineffective government services.

33. Despite being a relatively small proportion of the cohort, children who have had contact with Child, Youth and Family make up a sizeable proportion of the 'at risk' group of many other agencies. This can be seen in graph 7 which shows the percentage of individuals in the cohort who experienced poor outcomes, and who have previously had contact with Child, Youth and Family. For example, among young people in the 1990/91 birth cohort who were in receipt of a benefit with a child by age 21, just under half had previously had contact with Child, Youth and Family for care and protection reasons.

Graph 7: Percentage of individuals with adverse outcomes who had prior contact with Child, Youth and Family (1990/91 birth cohort)



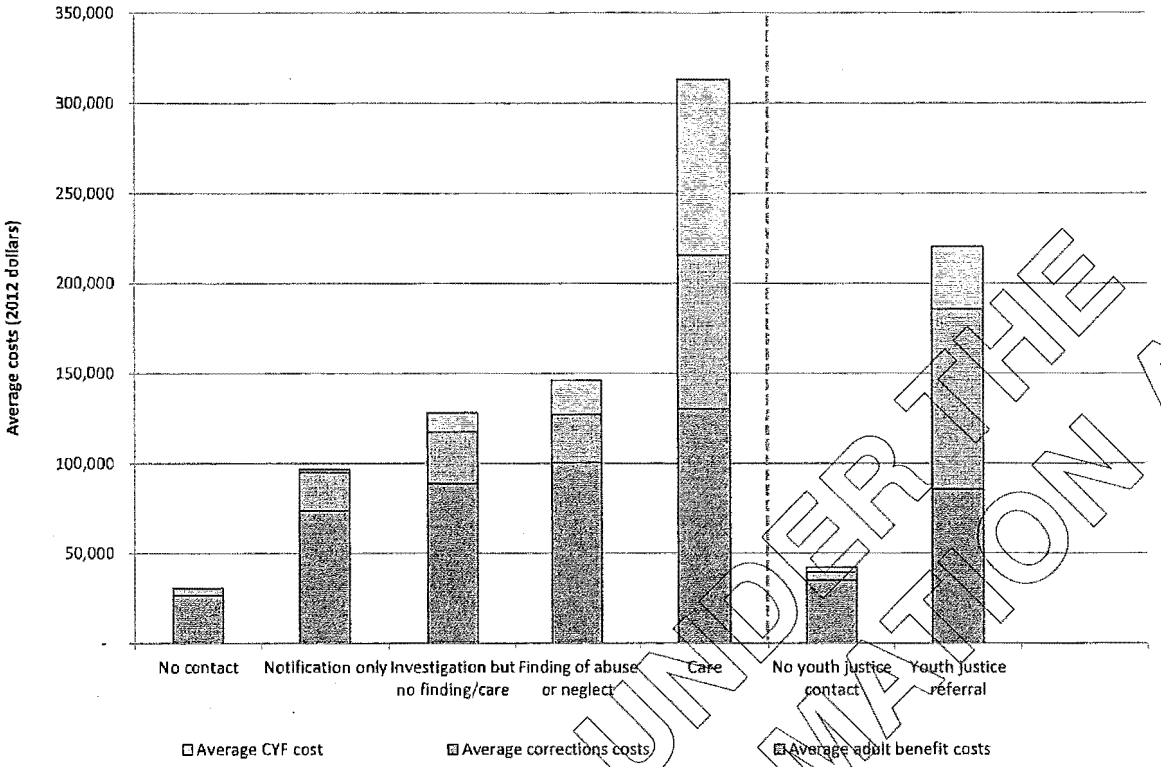
Source: Integrated Child Dataset
Note: The percentage who have had prior contact with Child, Youth and Family is under-estimated because of lack of data in the early 1990s.

34. The high prevalence of poor outcomes among children and young people who had contact with Child, Youth and Family is associated with considerable fiscal costs to government. Graph 8 provides estimates of the average per person Child, Youth and Family, benefit, and corrections spending for each of the groups. These estimates represent actual and modelled costs to 35 years of age.

35. As can be seen, on average there are large fiscal costs associated with adult benefit receipt and corrections sentences for individuals who have an episode of care or youth justice referral. For example:

- for individuals who had at least one care experience, the average amount of Child, Youth and Family spending was almost $100,000, and the subsequent benefit and corrections expenditure to age 35 years was over $200,000
- for young people who had a youth justice referral, average Child, Youth and Family spending was just under $35,000, while subsequent welfare and corrections expenditure to age 35 years was nearly $190,000

Graph 8: Selected fiscal costs life course outcomes for cohort born in the 12 months to June 1991, by type of contact with CYF up until 18 years of age



Source: Integrated Child Dataset
Note: The percentage who have had prior contact with Child, Youth and Family is under-estimated because of lack of data in the early 1990s.

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Investment approach for vulnerable children

Feasibility assessment

Prepared for the
New Zealand Ministry of Social Development

FINAL REPORT – 4 December 2015

Building a better working world

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Table of contents

Conclusion, executive summary and recommendations

1. Conclusion

The Expert Advisory Panel on Modernising Child, Youth and Family (the Panel) has commissioned advice regarding the feasibility of an investment approach for vulnerable children.

Our conclusion is that an investment approach for vulnerable children is feasible and is highly desirable to support the expected recommendations of the Panel which aim to improve outcomes for vulnerable children.

We recommend that an investment approach for vulnerable children ultimately be implemented as part of a global investment approach model for most New Zealanders and most government social benefits and services.

In the interim, and in order to support the near term next steps in the reform of services for vulnerable children, we recommend that an initial implementation could include one or all of the following:

1. An investment approach for young people ageing out of the Care and Protection and Youth Justice systems, and transitioning to adulthood. This is a small cohort, but one that is known to have particularly poor outcomes as represented by experience of the Welfare and Corrections systems.
2. An investment approach for all children and young people currently known to Child, Youth and Family (CYF)
3. An investment approach as for model 2, but extended to all children and extended to better model outcomes and costs of the secondary system (i.e. prior to any contact with CYF)
4. A population model for remaining children and adults (from which projections of new entrants are made, and an estimate of unmet need is derived)

The order of implementation should broadly follow the likely transformation pathway of the service system. It is therefore likely that items 1 and 2 above would be considered before items 3 and 4.

Vulnerability is expressed as a measure of wellbeing and development towards the outcomes desired for all New Zealanders as described in a wide selection of outcomes frameworks. Our feasibility study has established that these are goals that are coherent across all levels of the system (national/system/cohort/frontline) and they can almost certainly be populated from a variety of data sources.

We propose this measure for all children in scope, but emphasise the need to consider the child in the context of their environment: parents, carers, siblings, family, and community, including whānau, hapū and iwi where relevant. This requires measurement of the wellbeing of these entities in a child's life as they are key contributing factors for the child's own wellbeing.

The measure of liability is the net present value of future expected government spending, along with financial proxies for certain other poor outcomes not captured by the fiscal measure. This is completed by a measure of need as identified by the level of wellbeing (which can be thought of as a gap or deficit from the realisation of good outcomes). The wellbeing measure acts as both a shorter term outcome (improvements in reaching wellbeing and development milestones) and as a risk factor that describes future liability and outcomes (through a continued deficit or unsustained development). These measures will meet the objectives of being child-centered while also providing transparency and accountability over agency interventions and their impact over the short and long term.

An investment approach for vulnerable children would have five major components:

- An actuarial model, informed by social welfare policy and practice for vulnerable children;
- Analytics and decision support tools, including evaluation and service design, required to inform and complement the model and to operationalise the findings from the model and other analysis by informing decisions across the operating model including investment decisions;

- A control cycle, a process by which continual learning and updates are made to the system of data, analysis and modelling (with respect to the monitoring of the system) and to the design of the system itself, its tools and its services (through being informed by the results of the modelling);
- Data to support these, and
- Appropriate governance, accountability and funding arrangements to support the operationalisation of the approach.

The application of the lifetime view of vulnerability and the associated control cycle methodologies provides a consistent systematic way of interpreting vulnerability, its change over time and its relationship to various actions taken. This will inform decisions to shift the emphasis of existing and new spending and provision of services, and the timing of that spending, to those interventions most effective in achieving better lives for vulnerable children. It also provides a mechanism to understand the financial implications of these decisions.

The combination of these elements enable a series of analyses to be performed that inform the four levels of decision making. This includes:

- headline measures that inform policy direction
- population segment measures that inform potential populations for investment
- service level measures that inform service response, effectiveness over time and priorities for investment (including ROI)
- individual level measures that inform front line resource allocation and practice (including risk measures for structured decision making tools)

Operational and practice models, toolsets and monitoring systems (management, performance, outcomes and benefits) both inform, and are informed by, the investment approach.

We acknowledge the advanced state of readiness in New Zealand to implement many aspects of the investment approach including the sophisticated linked datasets available and the maturity of existing understanding of investment approach principles and practice as developed over the last few years of implementation and experience in other areas of human services.

To achieve outcomes for vulnerable children requires the implementation of an appropriately designed operating, service and commercial system that supports the identification, assessment and case management of vulnerable children (and their families), and the referral to effective services that prevent or heal vulnerability and transition a vulnerable child to a well-adjusted childhood and adulthood. This proposed transformation represents a significant investment by government in the shorter term. The investment approach will provide a systematic and controlled way to understand the system of services and both anticipated and emerging impact of change, thereby informing management decisions and accountability.

An investment approach to vulnerable children is feasible with current data and information, but requires increased investment in capability and capacity to build and maintain the approach. The power of the approach will not be fully realised without further investment in developing the quality and quantity of data. There are particularly significant information gaps around the assessment of needs, effectiveness of services and interventions and quality individual-level data on some interventions.

2. Executive summary

2.1 An investment approach for vulnerable children

Recent analysis performed by the Ministry of Social Development (MSD) has clearly demonstrated that children who have had contact with Child, Youth and Family (CYF) are considerably more likely to experience poor lifetime outcomes (across health, justice and welfare dependency), as discussed in the Interim Report from the Panel.

The existing services of CYF are largely focused on a subset of outcomes for children - short term safety and offending. Importantly, vulnerable children also have a range of other needs, including (but not limited to):

- safety needs, being safe from harm or neglect in the longer term
- foundational needs, such as basic health, shelter and food security
- development needs, such as educational and social skills
- resilience needs, such as good mental health or connectedness to community, culture, family and support networks

Once children become known to CYF, it is likely that they and their family have accumulated risk and complex needs across many of these wellbeing dimensions. Existing services are aimed at safety and offending meaning the healing of already developed vulnerability and incurred trauma is not currently well addressed.

Additionally, the existing provision of services is focused on children to the age of 17. Where a child does not have adequate support provided by the birth family or carer (including foster or kinship) post this age, the child will have few pathways available to them to transition into well-adjusted adults. Access to basic housing, employment and higher education, for example, are likely to be out of reach to many in this situation. This can lead to homelessness, welfare dependency, offending and intergenerational contact with the child protection system.

This broader context suggests the existing system requires substantial transformation to more effectively intervene, both in a preventative and mitigation sense, to provide the support needed to vulnerable children and their families. This could reap significant benefits in the longer term, with these benefits captured both by children and families, in terms of improved wellbeing and outcomes, and by government through lower spending on the impacts poor outcomes have in the future.

An investment approach to vulnerable children, and the associated analyses, would help support the transformation of the child protection system from one that focuses on short-term safety and offending, to one that considers a lifetime view of a broader set of outcomes for vulnerable children.

The lifetime view will inform across the multiple layers of information needed for effective governance, accountability and investment decision making, including:

- Informing policy design and monitoring impact through understanding lifetime vulnerability, risk development over time and monitoring change through a control cycle approach1.
- Identifying segments subject to significant vulnerability, across geography, community, socio-economic and demographic dimensions to inform investigation into cause and effect.
- Providing insights into the long-term drivers of vulnerability enabling better targeting of services
- Informing and monitoring the build of services, their scalability and their efficacy over time in conjunction with evaluation processes.

[1] The control cycle is explained in detail in Sections 2.2.5 and 5.6.2

- Informing and monitoring the application of front line services, including resource allocation, risk ratings for structured decision making tools and effectiveness over time at case managing and intervening (in conjunction with practice evaluation processes and assessment tools).

The application of the lifetime view of vulnerability and the associated control cycle methodologies provides a consistent systematic way of interpreting vulnerability, its change over time and its relationship to various actions taken. This will inform decisions to shift the emphasis of existing and new spending and provision of services, and the timing of that spending, to those interventions most effective in achieving better lives for vulnerable children. It also provides a mechanism to understand the financial implications of these decisions.

2.2 Components of an investment approach

An investment approach for vulnerable children would have five major components:

- An actuarial model, informed by social welfare policy and practice for vulnerable children;
- Analytics and decision support tools, including evaluation and service design. These are required to inform and complement the model and to operationalise the findings from the model and other analysis. This informs decisions across the operating model including investment decisions;
- A control cycle, a process by which continual learning and updates are made to the system of data, analysis and modelling (with respect to the monitoring of the system) and to the design of the system itself (through being informed by the results of the modelling);
- Data to support these, and
- Appropriate governance, accountability and funding arrangements to support the operationalisation of the approach.

2.2.1 Implications for the actuarial model

One element of the investment approach being recommended is an actuarial model. This model seeks to understand the development of risk, need, outcome and cost over the short and long term lifetime of individuals. By bringing information together in this modelling framework, it can help to inform decisions, estimate the expected effects of decisions, monitor the actual effect of those decisions, and inform new decisions (in a cycle). As decisions and interventions improve, outcomes for vulnerable children will improve.

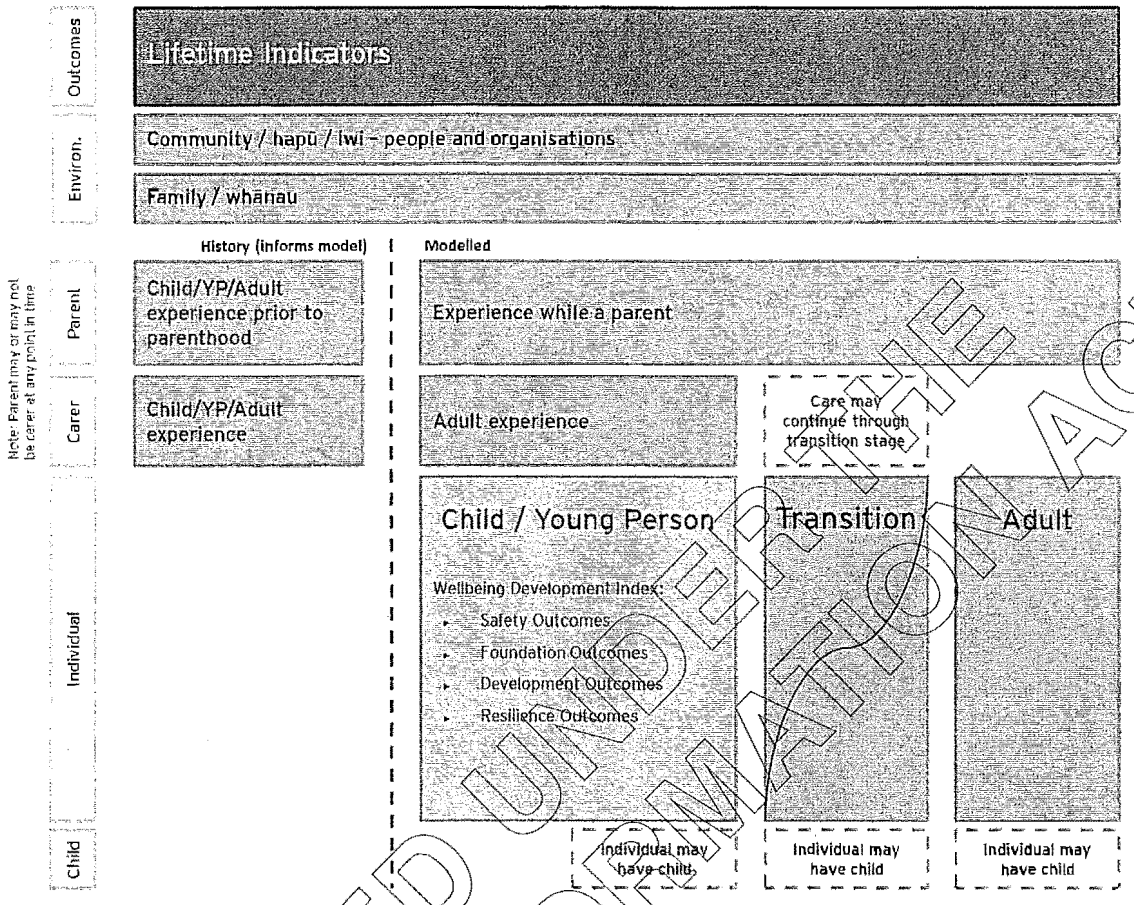
The investment approach implemented for the Work and Income model used an actuarial model that was benefits based. The relationship between the target outcome of employment and the payment of benefits are closely aligned.

For vulnerable children, however, the needs are inherently more complex, the time horizons over which vulnerability acts are longer, and the number of agencies and service providers involved is significant. The wellbeing dimensions discussed above form a basis for unpacking the need and interaction points that lead to vulnerability (defined as a deficit in wellbeing across those dimensions). They also provide an understanding of how need can connect to services, and provide a way of differentiating the interaction between wellbeing elements that can change the nature and severity of vulnerability. A simple illustration is where a child with strong resilience factors can be less impacted by other wellbeing deficits than a child with weak resilience factors.

A further complexity is that the vulnerability of the child cannot be viewed in isolation from the environment in which they live. This includes understanding relevant details about the parent/s, carer/s, extended family and community in which the child and their family live. Many of the services may be provided to the parent/carer as much as services are provided to the child. For example, access to basic shelter is as much a need of the parents as the child.

This level of complexity means an actuarial model must describe the need separate from the service and benefits being applied to treat that need. It also suggests that a child-centric model, with appropriate understanding of their environment, is required.

The diagram below shows the complexity of the interactions.



The implications of the nature of vulnerability in children and its impact on a life course for the design of an actuarial model are as follows:

Understanding vulnerability is complex.

- *We propose the use of a common and overarching wellbeing framework to describe wellbeing (the deficit of which describes vulnerability or need). The model should include the wellbeing of the child (and relevant factors for their family) using a "Wellbeing Development Index" (WBDI) capturing the domains of wellbeing (and consistent with other current wellbeing frameworks in NZ)*

A child's wellbeing is impacted by the wellbeing and characteristics of the individuals and community around them.

- *We propose the actuarial model should be need and individual centric, and simulate an individual's future pathway of need and service usage. It should model the characteristics of both the child and their broader environment, including resident and non-resident family (for example, parents, carers, siblings, whānau) and include characteristics associated with their community (for example, hapū, iwi, interaction with government/NGOs through school, health etc.*

The transition to adulthood is an important phase for vulnerable children.

- *We propose the actuarial model should explicitly include a focus on 17 to 24 year olds, where the build of transition services is intended.*

Vulnerable children may have children that then go on to have contact with Child, Youth and Family.

- *We propose to include at least one generation of children in any forecast, to quantify the intergenerational effects of vulnerability.*

The impacts of vulnerability are present at short and long durations.

- *We propose to model short term and long term financial impacts of vulnerability, including a lifetime financial measure. Additionally, we propose that the wellbeing development index be*

forecast for each time period over the lifetime of the individual. We note it is feasible to convert this forecast over time into a single summary lifetime wellbeing index (such as a wellbeing-adjusted expectation of life along the lines of QALYs or DALYs), but believe this is not necessary if the WBDI is forecast over the lifetime of the individual.

The wellbeing development index is the linchpin of the model for vulnerable children, given its long-term and multi-dimensional nature. It plays several roles:

- Achievement of wellbeing means achievement of the outcomes New Zealand aspires to for its children and adults
- Lack of wellbeing indicates a vulnerability and/or need exists. It is both a measure of a poor current outcome and a risk factor indicating a greater potential for future poor outcomes and associated costs. It is also a summary of need that should guide a service response as part of a formal process of assessment of need
- Wellbeing (or lack thereof) in the child's environment impacts the child's own wellbeing and is also both a measure of a poor current outcome and a risk factor indicating a greater potential for future poor outcomes and associated costs to occur for the child
- Investments must be aimed at meeting a need (improving wellbeing). Changes in wellbeing following an intervention will be the guide that allows us to consider that risk factors have changed and thus to expect future improved wellbeing and lower future costs associated with future services, benefits and interventions

2.2.2 Implications for data collection and architecture

For the investment approach to be most effective, it requires a consistent and comprehensive information architecture. This information architecture will be consistently updated and improved to provide continuous and consistent monitoring of the system.

The Integrated Data Infrastructure (IDI) currently includes significant data from multiple agencies that describe:

- Individual level data describing socio-economic, demographic and other characteristics.
- Individual level data describing the participation in services.

The data set can currently help provide an observational view of the individual, the services they have used in the past and the services they use now. This provides a good platform to commence an actuarial model.

There are further datasets that agencies have within their own systems that describe:

- Some client-level data that describes need in the form of assessments performed.
- Some client-level data for some interventions.
- Community and aggregate level data for services that are currently block funded, including a significant proportion of the family support services funded through Community Investment.
- Some service-level data of the evaluation of efficacy of interventions or services.
- Cost level information, some of which is at a unitised level describing services and interventions for vulnerable children, young people and adults.

As the system of services transforms from its focus on safety and offending to a focus on a child's holistic wellbeing (or vulnerability), there will be new information sources derived. Importantly, the existing and expanded tools used to assess need (across agencies) and evaluate services or interventions should be progressively calibrated under a holistic view of the individual's age related wellbeing milestones. These assessments and evaluations will be critical inputs to the frontline,

commissioning functions, and policy and planning functions of a cross agency response to improving outcomes for vulnerable children.

Information captured from more comprehensive needs assessment tools and evaluation of services will further inform the actuarial model and help to link the assessment of need and the evaluation of interventions with the development of wellbeing.

This study concludes that the investment approach is feasible and useful with current data and information, but would be considerably improved with the continued development of targeted data and information, particularly with:

- The addition of comprehensive and consistent needs assessment information across the domains of wellbeing.
- Client-level data for interventions which are currently block funded, including a significant proportion of the family support services funded through Community Investment.
- Service effectiveness information across the social sector, and particularly across CYF interventions.
- Cost information associated with services and interventions at a unitised level.

It is further recommended that these information sets be progressively considered for addition to the IDI. Timely ongoing contribution of data to the IDI will be a key success factor in its feasibility. A trade-off to the richness of the data in the IDI is the presence of some restrictions in data extraction at the most granular (individual) level. We propose that agencies continue to use MoUs[2] where required to address these restrictions.

2.2.3 Implications for analysis and supporting functions

The information contained within the IDI and held by agencies can be used to construct a holistic view of each vulnerable child, their parents, carers, family and the community in which they live. This will require a data matching approach to bringing information together for analysis purposes. Using the available histories of this data, a longitudinal view of individuals can be obtained.

Whilst it is noted that the data going forward could be improved (particularly with respect to assessment of need, evaluation of services and the unitisation of costs), the existing information available will provide good insight into the issues currently presenting to vulnerable children and their families, including:

- a better understanding of children and their families, including their current wellbeing, and their risks of poor outcomes over their lifetime;
- the services that different groups of children and families are using, and
- the cost of these services and their effectiveness in improving the short and long-term wellbeing of children and their families.

The analysis process will need to identify key areas of correlation between emerging vulnerability and both short and long term wellbeing and service usage outcomes. It is likely some parts of the information base will be unknown and these will need to be supplemented by other information gleaned from research, clinical studies, trials, international experience and expertise. These information bases would progressively be replaced as new information and histories become available to inform the analysis and the actuarial model.

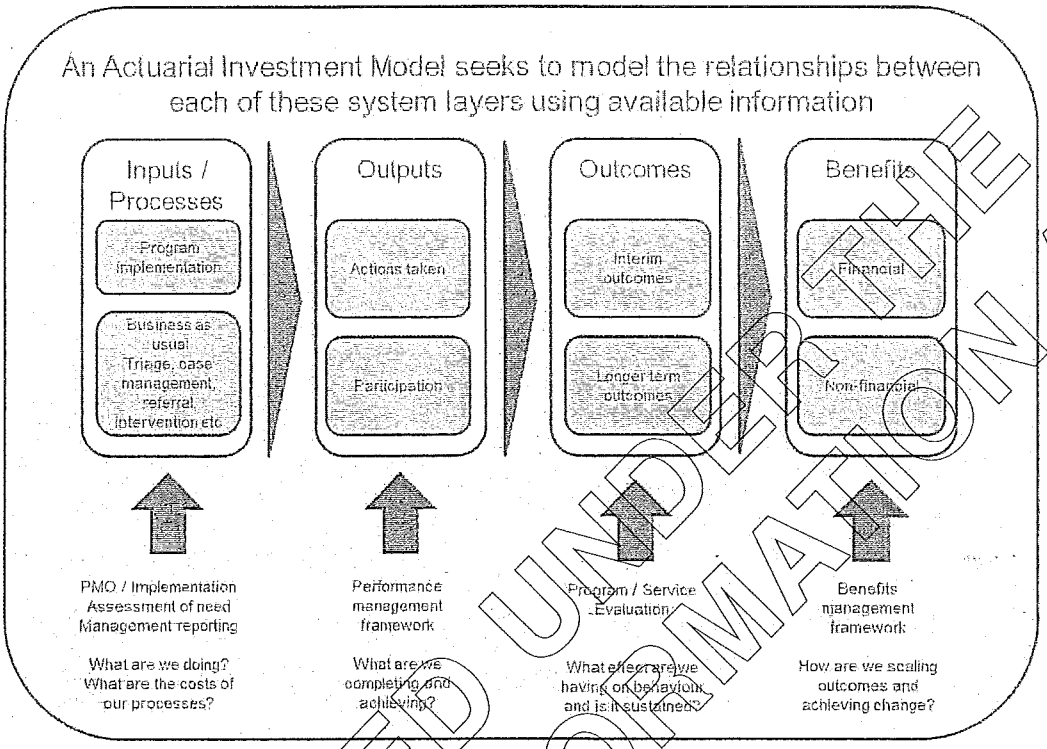
The connectivity between pathways of risk and future service usage for vulnerable children will be based on the past histories collected. These will need to be analysed and interpreted within the policy and external environment that existed at the time of recording the information.

Importantly, the efficacy of services at diverting individuals from a poor life pathway will only be known over time. It will therefore be important to develop a series of time dependent performance,

[2] Memoranda of Understanding allowing data exchange directly between agencies. It is noted that these have developed in a somewhat ad hoc manner and could also be reviewed and simplified.

outcome and benefit indicators that will inform this process going forward.

The actuarial model will effectively include these parameters that cover the spectrum of inputs, processes, outputs, outcomes and benefits that are associated with a system for vulnerable children. The diagram below shows how the different components will need to be informed and controlled through the relevant monitoring frameworks.



Operationally, the services and processes delivered by agencies and other entities, aim to alter the outcomes for individuals in a cost efficient manner. Monitoring the operations at different levels helps to understand the likely emergence of outcomes and benefits before many of them fully realise.

- Inputs and processes are visible first and are descriptive of the individuals and the processes applied to them
- Outputs emerge once services and interventions are commenced, such as uptake, participation and completion of services by individuals
- Shorter term outcomes may emerge, such as the achievement of new development milestones
- Longer term outcomes eventually emerge, such as becoming self-sustaining, and
- Benefits emerge in the form of longer term fiscal savings.

The collective calibration of the frontline assessment tools, performance indicators, evaluation frameworks, duration based outcomes and the actuarial liability valuation provides a consistent and transparent framework from which investment decisions, accountability and governance can be derived.

In particular, each emergence of an indicator in line with expectation provides greater certainty that longer term objectives are on track. As an example, if the shorter term wellbeing factors are improved for individuals, through providing them safe environments, achieving their development need and increasing their resilience, it follows from existing analysis that there is a greater chance that this success will lead to longer term outcomes than if these shorter term outcomes were not met. A series of indicators that define a trajectory will be important in defining the success of the measures taken.

In particular, we see the age appropriate wellbeing indicator as both an outcome (defining if you

have reached an age appropriate level of wellbeing) and a risk measure (where deficits define the probability of future poor outcomes). The common calibration of operational decision and measurement tools to an overarching framework provide the mechanism where process, action, intervention and outcome are all developed with a consistent view of the individual and the objective sought.

2.2.4 Implications for decision levels and accountability

The combination of the actuarial model and the information sets available enable a series of analyses to be performed that inform the four levels of decision making, supported by a single coherent model. This includes:

- headline measures that inform policy direction
- population segment measures that inform potential populations for investment
- service level measures that inform service response, effectiveness over time and priorities for investment (including ROI)
- individual level measures that inform front line resource allocation and practice (including risk measures for structured decision making tools)

This information would particularly help to identify when earlier and more effective prevention could make the biggest difference.

Analytical work done with this comprehensive information architecture would also inform the creation of tools and information for the frontline, to enable improved screening at the point of intake and better needs and risk assessments to help to determine the best response. It would also support the shift of the system, from one focused on defining the threshold for statutory intervention, to one that considers contact with the system as a potential opportunity for earlier intervention and support to achieve a long-term improvement in outcomes and wellbeing. A set of operational analytics will be required to help embed the findings of the investment approach into operations.

We further note that the conceptual methodology put forward should seek to maintain consistency with a full social cost benefit analysis to the extent possible. At this stage consideration should be given to including estimates of broader social and economic return to the individual and society into the investment approach framework.

The investment model also provides a way of understanding emerging results over time. Actual results achieved can be compared to the outcomes that were anticipated (at the time of change of policy or implementation). The identification of the source of differences allows an understanding of what was or was not within the control of management. As the wellbeing development architecture is also intended to be projected, the combination of the financial and non-financial measures provides a way of understanding change with respect to emerging outcomes as well as fiscal implications.

Critically, the choice of financial measure and interpretation of change must be appropriate. For example, identification of unmet need should be regarded as a positive output. Inaction or ineffective service or intervention should be regarded as a negative output or outcome. The investment approach should be supported by a series of monitoring frameworks as noted above, including management, performance, outcomes and benefits monitoring frameworks.

The decision level architecture also lends itself to understanding where results are being achieved and where they are not. Examples are:

Level 1 - overall effectiveness at achieving policy objectives

Level 2 - matching of supply of services and interventions to demand (need)

Level 3 - service and intervention efficacy

Level 4 - efficacy of identification, assessment and case management

The wellbeing concept and risk segmentation approach is also helpful in understanding attribution of effect to different agencies or programs. Many elements must work together to achieve an outcome.

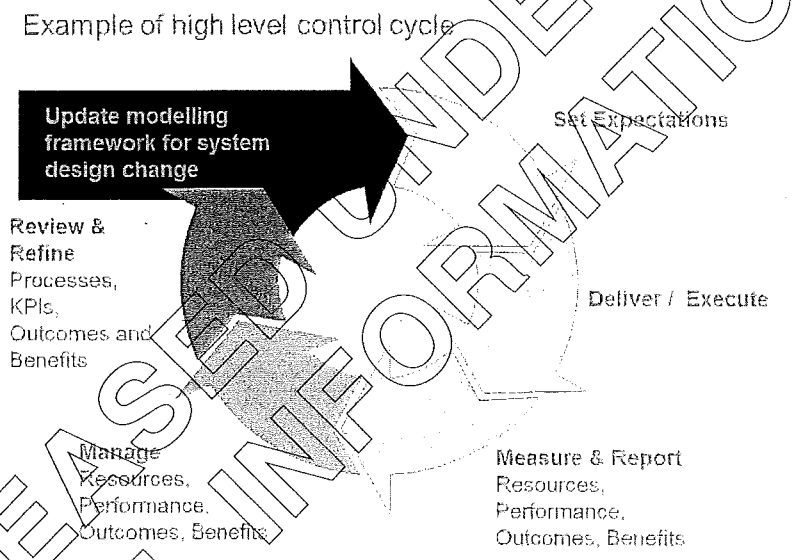
For some individuals, a series of interventions must operate together to achieve an outcome. For others, targeted one (or fewer) dimensional interventions may suffice. This will also interact with the design of the service system (stage gating) where lead and supporting agencies may be defined.

The accountability structures will need to be addressed for the service system in its current form, and as it is transformed to apply more holistically to the needs of vulnerable children.

2.2.5 The need for the control cycle

The control cycle methodology is an integral component of the investment approach. This will capture any updates to the design of the services or structures in the vulnerable children's system, as well as new information sources that may become available. It also allows for assumptions to be tested and refined over time. Having a continuous cycle of measurement, monitoring and learning is necessary because there will be much uncertainty, complexity and change in the system. Should any part of the design or response associated with the system for vulnerable children be ineffective, it can have profound impacts on the emergence of the outcomes and benefits sought. The control cycle is a mechanism which helps to capture unexpected features earlier so that design can be altered to better achieve desired outcomes.

The following illustrates the key components of a control cycle.

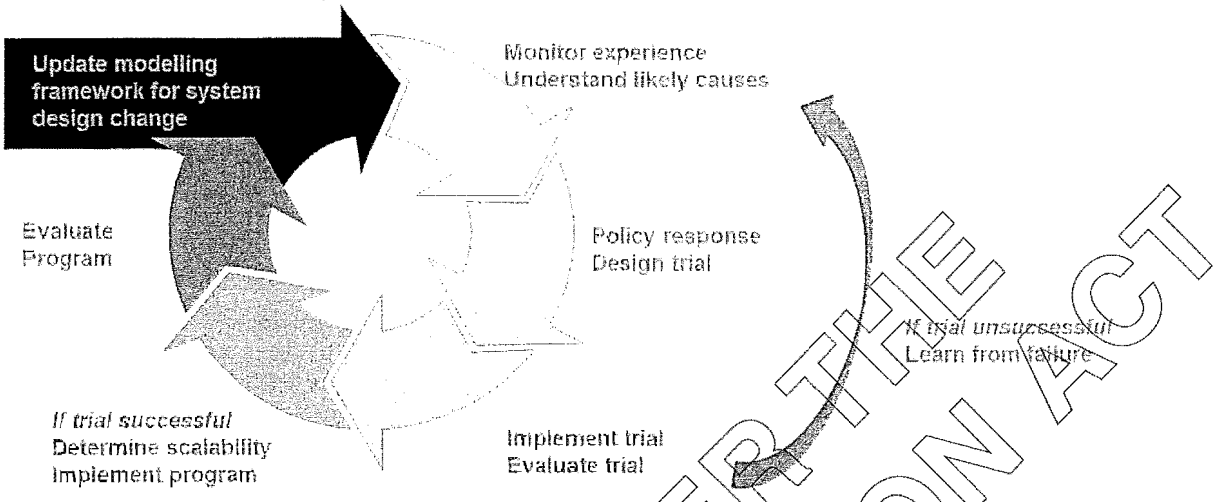


This framework includes informing performance and accountability metrics, to check that the system is continuing to improve outcomes.

We particularly note that the level of uncertainty involved in achieving longer term change for vulnerable individuals is great. This means it is important to implement a learning cycle trained on identifying successful change across durations, so that ineffective investments can be ceased earlier in the cycle in favour of successful investments or new trials. This will involve extending the control cycle over the portfolio of investments that contribute to the outcomes of interest. This will provide essential information on the evolution of the effectiveness of the portfolio of investments over time, and how these are contributing to any movements in wellbeing and the liability.

Extending the control cycle across all four decision levels is recommended. This is particularly helpful during the transformation and build of the new system of services and interventions to apply to vulnerable children. For example, a version should apply to the construction, trialing, scaling and evaluation of programs, services and interventions.

Example of application to new services



A similar control cycle approach can be taken to the development of decision support tools (such as assessment of need).

2.3 Sustaining the approach and getting buy in

2.3.1 Feasibility of the investment approach

The study has found the following is required to enable the investment approach to move forward:

- Data
  - The IDI has significant data from which an investment approach can be commenced.
  - This can be augmented with other data sourced from agencies, research, clinical studies, primary data capture and expertise to build a baseline model.
  - New data will be collected as the system of services, assessment tools and evaluation practice transforms.
- Systems
  - The IDI has significant processing and system storage available, but only 8 cores (out of 38) are available for use with existing SAS licences. The other 30 cores are available to other software.
  - SAS is not as efficient at running large complex simulation models as some other enterprise level software.
  - A comparison of the cost of using a SAS environment versus alternatives available should be conducted.
  - A decision on the software environment should take into account the trade-offs between existing capability in SAS, the existing models in SAS and the likelihood that a large model would not perform well in a SAS environment. Hybrid approaches should also be investigated.
- Capability
  - There is likely to need to be an expansion of analytical capability within the organisation to be able to develop this data and information over time. It would also require capability to operationalize this investment approach. This will include constructing tools, information and measures to support both management and the frontline.

- Process
  - A control cycle should be established and followed. This will consist of a baseline valuation to provide the first forward looking view of the projected outcomes and liability for New Zealand's current population of vulnerable children and ongoing periodic valuation and system performance reports with detailed monitoring and analysis of drivers of change in the liability, outcomes and the effectiveness of the portfolio of investment.
  - An appropriate cross-agency governance model be adopted to drive accountabilities. This could use existing cross-agency governance arrangements such as the Vulnerable Children's Board. The valuation and system performance reports will be addressed to an appropriate cross-agency governance group and there should be independent actuarial review established. The specific scope of accountability that it will be possible to implement will need to be defined step-by-step in conjunction with the build of elements of the model.

Section 4 of this report outlines the approach used to test the feasibility of the investment approach, sections 5 to 8 detail the key requirements of an investment approach and sections 9 to 13 outline the detailed findings.

2.3.2 Effecting change in the system

The following components are fundamental to an investment approach that helps to achieve a sustained change over time. These are not all specifically related to the implementation of the actuarial model, but rather the various structures, processes and services that act upon people to effect a desired change in the approach overall. Examples of these include:

- The education of key stakeholders as to the benefits of an investment approach, the information emerging from the analyses and the need for action. This includes cross agency buy in at all levels of decision making.
- The establishment of a common framework across agencies that can calibrate with front line assessment processes and the evaluation of efficacy of services.
- The implementation of an appropriately designed operating, service and commercial system that supports the identification, assessment and case management of vulnerable children (and their families), and the referral to effective services that prevent or heal vulnerability and transition a vulnerable child to a well-adjusted childhood and adulthood.
- Accountability frameworks in place so that appropriate action is taken.
- Investment decisions are informed by the relative returns on investment of programs aimed to achieve particular social outcomes. This is informed by the anticipated change to liability and wellbeing indicators.
- Decisions are made that assist in the realisation of the outcomes and benefits as consistent with policy.
- Strong bipartisan sponsorship, funding arrangements and a governance structure that support a cross agency implementation of change and an investment approach.
- Independent oversight of the approach by a Board and/or external monitor.
- Cross-agency buy-in and oversight of the approach, such as through existing mechanisms such as the Vulnerable Children's Board or other such cross-agency body.
- Funding arrangements that recognise the large transformation being proposed, the large uncertainties involved and the need to test and learn new strategies, in a controlled environment, to progressively effect change.

2.4 Road map and next steps

The proposed concept for an investment approach to vulnerable children, across all social sector interactions and potentially across all children, is bold and ambitious. Further, the system of services and interventions is proposed to undergo significant transformation. The investment approach will therefore be evolving over time, as information is refined, services are built and efficacy is understood.

We believe that the approach of building an investment approach can be staged and should focus on supporting the transformation of the system. In broad terms, there are three sections of the system being transformed:

- Secondary system of prevention activity
- Tertiary system of intervention (CYF)
- Transition to adulthood

The latter two components are more related to those children who are currently (or have recently) interacted with CYF, or are notified to CYF and are most at risk of interacting with CYF soon. These parts of the system are likely to progress faster in the transformation journey than the build out of the secondary system which would require greater architecture to be built out, for example differential response pathways.

The initial analytics required to support, complement and operationalise the approach may commence first, to inform the development of a formal actuarial model. Expansion to all children would then progress "backwards" through the risk accumulation process (through the secondary system then to the population of all children).

This will allow for the transformations to be assessed for effectiveness, while also potentially providing an advanced proof of concept for further expansion of an investment approach to all vulnerable children.

We envisage that the build of the model for vulnerable children would likely result in a merging over time of the investment approaches across the social sector, for a comprehensive and consistent view of the population. This is desirable so that the one view of an individual can be achieved across the many services with which they interact. We note there are options for each agency to use a "one model" and still obtain their service view, but retain the linkage to the holistic understanding of the individual and the other services with which they interact. In the shorter term, however, it is likely that these models may work semi independently, as a full build of the magnitude required to effect a "one model" would take time.

Ultimately the order of any build should be consistent with the intended order of transformation of the vulnerable children's system, as proposed by the Panel and decided by government, ideally with bilateral support.

Due to time constraints, only a high-level conceptual feasibility study was requested as initial advice. We recommend, as a next step, that further work be completed in a detailed scoping study/model specification, before any substantial work to build a model begins.

3. Recommendations

The following is a summary of the recommendations that can be found in the detail within this report. Please refer to the relevant sections for the discussion underpinning these recommendations.

3.1 Recommendations on outcome measures - Section 6

- A common overarching wellbeing framework be developed/chosen and applied to children, including the impact of their environment (parents, carer, family and community). The framework should:
  - have age specific measures and milestones (where the deficit from a desired level or distribution indicates a risk of vulnerability)
  - be adopted across government and be usable across agency and service providers and importantly
    - be calibrated with the assessment tools used by government to define needs (we note some of these tools are yet to be fully developed)
    - be calibrated with the evaluation tools used by government to define efficacy of service and that evaluation of outcomes is performed on material services associated with vulnerable children
- The wellbeing measures will also serve as predictors for the current and future usage of services and benefits (and hence cost). This will provide a connection between need, outcome (defined as change in need) and financial measures
- The predictors within the wellbeing framework be adopted as a means of describing the current state need and interim outcome for a child being represented in the investment approach

3.2 Recommendations on lifetime measures: financial and non-financial - Section 7

- A lifetime financial liability and return on investment measures be adopted
- A thorough explanation of change in liability be implemented
- Non-financial measures associated with short term and expected long term change in wellbeing should be used to help contextualise financial measures
- Non-financial lifetime measures can be calculated but are not considered essential

3.3 Recommendations on usage of the measures - Section 8

- At level 1 (population level), financial indicators, such as liability, be adopted as well as measures of the distribution of wellbeing relative to desired levels to help contextualise financial measures
- At level 2 (population segment level), financial indicators such as liability be adopted as well as measures of the current and expected distribution of wellbeing to help contextualise financial measures
- At level 3 (service response and effectiveness), financial indicators such as return on investment be adopted as well as measures of the distribution of wellbeing achieved. These

should be calibrated with evaluations of services. Further non-financial information should also be used to understand expected service delivery profiles that inform supply need.

- At level 4 (information provided to front line), non-financial information be provided for use in building or updating appropriate assessment tools, resource allocation tools and demand management tools.

3.4 Recommendations on scope - Section 9

- That decisions of scope be made in light of priority areas for implementation. For example, if transformation of CYF and build of services assisting vulnerable children to transition to adulthood are scheduled first, the investment approach should be built such that it can set a baseline and inform these transformations.
- As the model is built, we recommend that all children fall within its scope, with particular depth of build on any child that comes into contact with CYF or has a risk of coming into contact with CYF (secondary and tertiary systems). This will include relevant characteristics of the families, carers and communities associated with the child.

3.5 Recommendations on data - Section 10

- That the IDI be used as the central point of analysis (although this could be reconsidered if a comprehensive operational dataset was established)
- That additional data sources be brought into the IDI as required, from agency administration data and from other sources, such as research data and findings. Where feasible, these should be matched at a client level.
- That additional data be collected and brought into the IDI, particularly in respect of assessment of need, wellbeing and outcomes, evaluation of service efficacy and unitised cost data. Where feasible, these should be matched at a client or service level (as appropriate).
- That MoUs continue to be established to enable operational implementation of risk assessment and other approaches for individuals using actual administration data
- That a representative dummy dataset be created by Statistics NZ to allow users to familiarize themselves with IDI data structures without having to be in the environment
- That the department continue to investigate the legislative restrictions around the access to and use of the IDI data sets. Particularly in light of the likely need to use offshore expertise in the build of models and the potential benefits of using cloud technology to expand processing speed. Appropriate controls over data would be required due to the extremely sensitive nature of the identified and matched data sets

3.6 Recommendations on modelling - Section 11

- That all agencies using, developing or considering an investment approach work towards a single model and a single view of each person modelled. This is recognised to be a medium term objective
- That this model allow for agency-specific views, inputs and scenario testing to meet agency specific requirements for performance, outcome and benefits management. The model could be centrally created and maintained, but have user interfaces allowing agencies to run their own scenarios. This would retain the base case settings for all agencies, allowing interaction effects to be understood

- That the model for an investment approach for vulnerable children be developed to run using data from the IDI, and thus most likely also be run from within the IDI (although this could be reconsidered if a comprehensive operational dataset was established)
- That the actuarial model should be need and individual centric and simulate an individual's future pathway of need and service usage. It should model the characteristics of both the child and their broader environment, including resident and non-resident family (for example, parents, carers, siblings, whānau) and include characteristics associated with their community (for example, hapū, iwi, interaction with government/NGOs through school, health etc).
- That the actuarial model should explicitly include a focus on 17 to 24 year olds, where the build of transition services is intended.
- That at least one generation of children be included in any simulated forecast, to quantify the intergenerational effects of vulnerability.
- That any "one model" approach use a language that is efficient at running large complex simulations.
- That a further assessment be made on the software environment to apply, in the shorter term, to the build of the investment model. A trade off exists between the use of SAS (used for the existing Work and Income model) and other software environments
- That appropriate model governance be instituted and followed

3.7 Recommendations on process and capability - Section 12

- An annual cycle of valuation and detailed reporting in the first instance, while the processes are bedded down. Active monitoring and management of the system should, however, be pursued on a continuous basis.
- That a control cycle be designed and implemented, with links to performance, outcome and benefits management strategies, frameworks and reporting.
- That the valuation and system performance reports be addressed to an appropriate cross-agency governance group. This could be an existing mechanism such as the Vulnerable Children's Board.
- That the valuation and system performance reports should be subject to independent actuarial review by a role such as Chief Actuary for the Government as a whole
- That there be oversight by and interaction with actuarial resources from within the New Zealand government regarding the actuarial model, including mandated knowledge transfer from the external provider to the extent possible
- That there is a need for additional analytical resources to support the supporting analysis for, use and maintenance of an investment approach and associated management reporting. In addition, these resources would be required to build and manage the required assessment tools and provide ongoing program evaluation for services associated with vulnerable children

3.8 Recommendations on implementation & next steps - Section 13

- That the medium term goal be a comprehensive "one model" that generates different agency views but preserves the one view of the individual
- That the investment approach be built in a staged implementation that matches the transformation pathway intended by government (and therefore provides maximum use and value as it is built)
- That a scoping study be undertaken to detail the form of the models, with a minimum coverage of the priority areas for transformation

Introduction and context

4. Introduction

4.1 The context

An independent Expert Panel was established by the Minister for Social Development in April 2015 to oversee the development of the business case for Modernising Child, Youth and Family.

The Panel provided its Interim Report in July 2015 which represents an initial assessment of the issues and future opportunities. In December 2015 the Panel will provide a detailed plan and proposals for the future agency.

The Panel identified a number of findings in their understanding of the needs of vulnerable children and their families:

- Repeated re-entry and re-victimisation within the system
- Complex, long-term needs
- Over-representation of Māori children
- Poor long-term outcomes despite significant fiscal expenditure.

Further the Panel has spent time listening to the voices of the system as well as especially the voices of children and young people who have experience of the Care and Protection and Youth Justice systems.

The Panel made significant findings in respect of the system and performance of the current operating model, those of particular relevance to an investment approach include:

- The system is fragmented and lacks common purpose and clear accountabilities
- The system does not place children at the centre
- The system does not reflect a high level of aspiration for vulnerable children
- The system is not effective in supporting families and whānau to care for their children
- The system does not focus on providing earliest opportunities for a loving and stable family
- There is a lack of evidence-based approaches to achieve results
- There is more work to do on supporting the connection of children to their cultures and communities
- The use of residences and custodial remand reflects an overly institutional approach to care and youth justice
- Vulnerable young people need and deserve far more support to make a successful transition to adulthood

Four key areas for change were identified:

- Moving to a child-centred system
- Changing the professional practice framework
- Engaging all New Zealanders, and
- An investment approach

The investment approach is a foundational element to support a shift in the system from an event-driven and response-based approach to one focused on evidence and long-term results across the social sector.

This context has closely informed our approach to our engagement.

4.2 Brief overview of the child protection and youth justice system

The Expert Panel's Interim Report provides a summary of the history of the child protection and youth justice systems in New Zealand. It also provides a current analysis of the experience of New Zealand's vulnerable children.

The reader is referred to this document for further background if necessary.

4.3 The scope of the request

The Interim Report noted that while it is a factual observation that children who have contact with Child, Youth and Family are considerably more likely to experience poorer outcomes and higher fiscal cost to the Crown in certain areas than other children, there is currently not a systematic approach to identifying how CYF and the broader social sector are working to influence these outcomes and costs.

The Report also noted that much long-term spending on these children is from organisations other than CYF, including the Children's Teams, Community Investment, Health, Work and Income, Housing, Education and across the Justice sector, including Police, Courts and Corrections.

An actuarial investment approach could help reorient an agency view of spending to a more child-centred view of spending, and also aid in linking that spending more directly to the impact on outcomes for the child. For it to be effective is essential that the actuarial liability is a good measure for the risk of poor outcomes for children and that the population of children and young people can be segmented into groups with different risk profiles and characteristics.

An effective implementation of the investment approach will also allow clearer and earlier investment in meeting vulnerable children's needs, changing the way services are delivered and ultimately improving performance of the system via strong accountability and governance mechanisms.

To this end the Panel, via the Ministry of Social Development, commissioned this feasibility study with the following aims:

- To advise on how an investment approach, utilising an actuarial valuation, could be implemented for vulnerable children;
- To advise on potential uses of such an approach;
- To advise on quantitative measures suitable for comparing lifetime outcomes for vulnerable children;
- To provide innovative thinking on how to reflect the complexity of the system, and
- To advise on what would be required to operationalise such an investment approach.

A number of other questions were raised in the Request for Proposal. This report will address:

1. A broad overview of how a cross-agency valuation(s) could be set up for vulnerable children,
2. What benefits/support it would provide for managing the social system and improving outcomes for vulnerable children,
3. How could it be used to measure performance, support decision making,
4. How can it be used to support accountability structures
5. A brief review of available data and what limitations (if any) this might impose on determining a forward liability.

A reference table identifying where these questions are addressed is provided in Appendix A.

4.4 Criteria for assessing conceptual feasibility

The project required that we investigate the conceptual feasibility of the application of the investment approach to vulnerable children. The study was completed over a compressed, six week period and was a scan of requirements, barriers and gaps that may affect the implementation of an investment approach.

The methodology we used to assess the conceptual feasibility of an investment approach is described by the following key work steps:

1. Confirm stakeholder objectives, requirements and priorities
2. Identify high level investment approach requirements, based on stakeholder objectives
3. Assess the extent to which requirements can be met now or in the future
4. Consolidate findings, identify options and assess overall feasibility
5. Report and feedback

The above steps were assessed using a combination of:

- Stakeholder engagement
- Research
- Review of documentation
- Application of our knowledge base of other jurisdictions

The components that were assessed as part of the conceptual feasibility study are outlined in more detail below. In particular, the actuarial investment approach was tested as follows:

a) Objectives: Can the investment approach meet the objectives of the key stakeholders and government? (Section 5)

b) Appropriate measures: what are the appropriate financial and non-financial measures that could be implemented? (Section 6 and 7)

c) Uses of the Investment Approach: How could the investment approach link to tangible actions within the New Zealand child protection and family services systems and broader government system with the aim of reducing lifetime vulnerability (Section 8)

d) Scope of inclusion: What population is included in the scope of the investment approach? What agencies and types of services are included in scope of the investment approach? (Section 9)

e) Data: Is the information and data available and of sufficient quality and detail to inform the investment model? (Section 10)

f) Modelling and Systems: What is the high level modelling frame that would address the complexity of the scope? How might this model interact with other existing and future planned models and evolve over time? Are systems capable of housing and running the models required? (Section 11)

g) Process and Capability: Is there the right capability and capacity available to build and implement the models? What processes and governance will be required to run the investment approach? (Section 12)

h) Implementation considerations: What are the considerations associated with using or implementing the approach that need to be managed? (Section 13)

i) Options and Evolution: what are the options for implementation of an investment approach? Can the investment approach cope with evolution of the system design and/or availability and change of information and services? (Section 13)

4.5 Thanks and acknowledgements

The EY team engaged to prepare this report received exceptional support in compressed timeframes from core members of the Panel Secretariat assigned to facilitate this engagement. They were highly responsive and effective in arranging access to documents and agency representatives, often at short notice.

Agency representatives also made themselves available and were very generous in sharing their work and experiences in respect of data, programmes, evaluation and costing, including sensitive documents not publically available, which improved our ability to fully assess the feasibility of an investment approach for vulnerable children.

A list of documents received and meetings held can be found in Appendix B and Appendix C respectively.

5. Objectives of an investment approach for vulnerable children

5.1 Introduction

The Interim Report of the Expert Advisory Panel identified the key objective for an investment approach is to contribute to improving outcomes for vulnerable children.

It is expected to enable this in a number of ways:

- Providing information to improve an understanding of what works for whom, via risk based segmentation of the population and improved understanding of the impact of interventions (i.e. service efficacy)
- Supporting changes in the service delivery model via improved risk assessment process and collecting and interpreting evidence from trials of specific interventions
- Supporting changes at agency level in governance and accountability, funding and contracting and performance measures.[3]

The aim is to provide an evidence based approach to determine where to best invest limited resources to have the most beneficial impact on the lives of these children.

We further anticipate that the approach will help to consider the needs of vulnerable children over their lifetime, covering short term wellbeing objectives and the objective of avoiding vulnerability over their life course.

5.2 Principles

In designing a measure for child vulnerability over their life course the following principles, listed in the table below, were set out by the Secretariat for consideration.

We have separated the principles for a quantitative measure into those that are child-related and those that are service-related:

Child related principles	Service related principles
Child centred	Able to support operational responses
Long term focussed	Consistent across agencies
Able to measure impacts	Usable across sector
Timely	Acceptable to various agencies and their Ministers
Provides information on the drivers of long term poor social outcomes	Capable of providing ongoing information on effectiveness of management and policy response

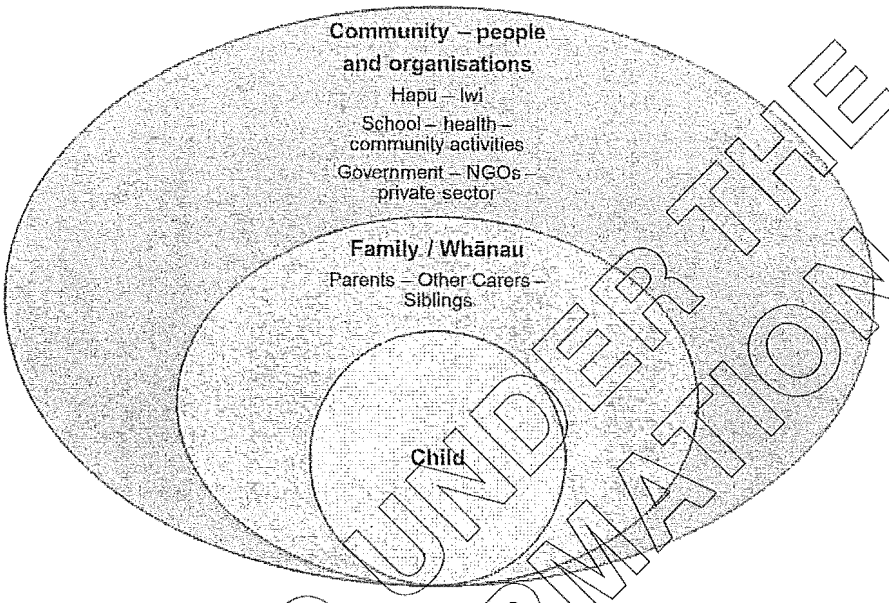
It is also noted that any financial lifetime measure chosen should be a good proxy for the lifetime outcomes for vulnerable children.

This study has sought to use these principles in determining the feasibility of applying the investment approach to vulnerable children.

[3] Drawn from Figure 8.1, p106, Modernising Child, Youth and Family Expert Panel: Interim Report, 2015

5.3 Child centric

Any design of the investment approach for vulnerable children needs to be child centric. No matter where or with whom a child lives, they will always have a broader family construct consisting of parents, carers, siblings and broader relatives, including grandparents and whānau. The child also exists within a community that is broader again, made up of both persons and organisations such as hapū, iwi, schools, doctors and so on.



It is important for a child centric model to also refer to these layers which will fundamentally affect the environment in which the child lives. For example, the carer's living conditions define the child's living conditions and the community crime level in the area in which the child lives impacts the child's safety level. The association between parental benefit history and local socio-economic deprivation, to cite just two examples, and poor outcomes for children is already fairly well understood. These are risk factors for the child's wellbeing which have implications for their future outcomes and associated costs.

The wellbeing and need of the child is dependent on the characteristics and often the wellbeing and need of the parent/carer, family and community.

5.4 Needs based

There are multiple frameworks that exist that describe wellbeing and vulnerability. The following table shows at a high level existing frameworks that are used in NZ and ones that we have used in the past.

Vulnerability themes from CYF Strategy report	For example: • Involvement of child protective services • Carer issues (e.g. substance abuse, mental health issues) • Family violence • Abuse and neglect	For example • Below poverty line • Social housing • Health and lifestyle issues • Food insecurity	For example • Health • Education • Emotional and behavioural development • Family and peer relationships • Living skills and self-care	For example • Family structure • Values and belief system • Extended family support • Clear sense of self-identity (personal, cultural and spiritual) • Access to support networks • Participation in community groups
Cultural Framework	Safety		Healthy Achieving	Belong Participate
Social Report (2010)	Safety	Economic standard of living	Health Knowledge and Skills	Paid work Cultural identity Leisure and Recreation Social Connectedness Life Satisfaction Civil and Political Rights
Children and Young People: Indicators of Wellbeing in New Zealand (2015)	Safety	Economic Security Environment	Health Environment Education	Care and Support Economic Security Culture and Identity Social Connectedness Civil and Political Rights Justice
Vulnerable Children Outcome Framework	Children are safe	Children are safe (basic physical needs are met)	Children are healthy Children are achieving	Children belong Children participate

We understand that there is a new outcome framework (Whānau Ora Outcomes Framework) that is drafted but not published or approved as at the date of writing. Once promulgated, we propose that this framework also be incorporated in the reconciliation to a single framework for the investment approach.

The frameworks used by NZ government agencies seem to reconcile well to the above architecture proposed. The concepts have also been well accepted when tested in the multi-agency group constructed by the Secretariat for the purposes of obtaining input and reaction to these emerging constructs. In particular, we are aware that there has been further work on cross agency frameworks developed as part of work for Budget 2016. It is clear that the New Zealand government's overarching goals for its people are wellbeing oriented. Appendix D contains more detail on the publically available frameworks we examined.

The principle aim of reducing a child's vulnerability is to increase their current and future levels of wellbeing. This includes:

a) Keeping children safe from harm

b) Providing the basic foundations required to have a reasonable quality of life (such as shelter and food security)

c) Investing in children's development to allow them to reach a new potential economic and social pathway in life

d) Promoting a child's resilience to allow them to sustain their quality of life and social inclusion through time

Through achieving these objectives, the government seeks to reduce the incidence and severity of vulnerable children's potential to, for example:

- become welfare dependent
- offend or interact with corrections
- become homeless
- interact with Child, Youth and Family in their capacity as a future parent

In the discussion above, it was noted that a child centric approach must consider the needs of the child in the context of the broader needs of the carer, the family and the community.

- Community and extended family factors can influence the disadvantage and vulnerability of the carer(s) and child(ren). This influence may be positive (e.g. existence of strong community organisations that promote belonging or cultural identity) or negative.

- The history of disadvantage or vulnerability of a parent or carer can impact their current wellbeing, vulnerability and level of disadvantage. This in turn impacts directly on the children in their care.
- The ability for a vulnerable child to transition to adulthood will affect their future interaction with the welfare, support and service system.
- Intergenerational disadvantage can occur where a vulnerable child or young person has children themselves (either when a young person or as an adult).

5.5 Challenges, complexities and considerations associated with vulnerability measures

Any investment approach applied to the vulnerable children sector will need to allow for multiple elements of complexity. The table below shows some of the key differences between the approach used for Work and Income (Work and Income model) and the elements discussed in this study for vulnerable children.

	Work and Income model	Vulnerable children model
Scope	Adults in receipt of benefit plus 5 years future entrants	All children plus adults in their environment and the impact of broader community
Outcome dimension	Employment	Full spectrum of life outcomes
Agencies	MSD Work and Income	Multiple agencies
Service usage	Benefit receipt	Primarily service delivery Some benefit receipt

There are specific complexities inherent in populating this framework in respect of vulnerable children, including the need to incorporate a view of the family situation and community setting, the number of factors to be populated and the difficulty in observing many of them.

The outcomes being sought are multiple and occur through time. A framework is necessary to understand the age appropriate milestones that are desirable against which vulnerability can be measured as a deficit (as noted above, a wellbeing framework would enable this). Underpinning this framework will be analysis that links the current characteristics and wellbeing of an individual now to future pathways of wellbeing development and service usage.

The very nature of the services and interventions applied to changing an individual's wellbeing requires a cross agency view of that individual. Clear linkages between the individual, the services applied, their efficacy at impacting wellbeing and the interaction between services for those with complex needs (such as those with more than one wellbeing deficit) will require services to work together.

The multiple layers of data and agents in the system and linkages between them are complex. Data definitions, granularity and quality may vary, and not all datasets will be able to be linked to other datasets.

Addressing these complexities will require a combination of administration data, linked across agencies, complemented by data from longitudinal studies and relevant research. There may remain elements that cannot be populated until further data collections are initiated, or for which data may never be collected and models may need to be constructed to best represent the process. Data linkage where possible will be a key issue.

This complexity indicates that a different approach to the modelling will be required for vulnerable children than that applied to the Work and Income environment. In particular, the model will require an additional state to be modelled (being that of need) compared to the Work and Income model. The wellbeing architecture proposed would be the key component that can link:

a) Need to service (through assessment, referral and intervention procedures in the front line),

b) Service to outcome (through the evaluation process being aligned to the framework)

c) Short term outcome and individual wellbeing profiles to longer term outcomes (through the actuarial liability model)

d) Investment to service (through the investment approach)

This makes a child & family centric needs based model possible as an alternative to the service based model effectively used in Work and Income.

5.6 Signaling big reform

The current system, as reflected by Child, Youth and Family services and interventions, is largely focused around addressing safety and offending behaviour in children and young people. The Expert Panel has signaled they are considering a significant reform of the child protection system to expand the focus to vulnerable children. Importantly, this would expand the intervention and services considered to apply to a child's holistic need. This includes:

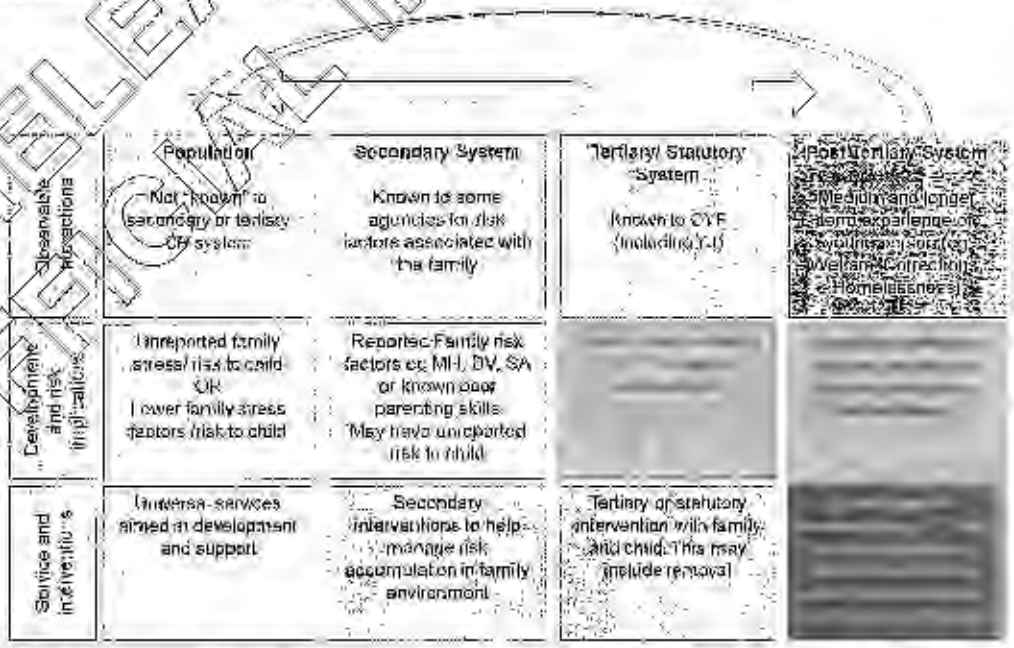
a) Preventing the emergence of vulnerability

b) Healing services for those who have incurred vulnerability

c) Transition services supporting vulnerable children to become self-sufficient adults.

There is a need to understand how an individual, their family and community incurs vulnerability (the development of risk implications) and how services and interventions can be applied to either divert the accumulation of vulnerability, to reverse vulnerability that has been incurred, and/or to assist vulnerable children transition to a well-adjusted adult life experience.

The illustration below shows how the interaction between individuals and the service system produces different levels of information about risk and need. As people become "known" to an agency, multiple agencies and NGOs, the level of information describing their situation is increased. However, there will be those that are not "known" to the system but have vulnerability and need. An element of unreported vulnerability will exist in the population and indeed some individuals who are known to the system will not have information describing all their needs. This is because the current system is set up to understand what services we provide to people but not necessarily with a view to their full need or the success of the services applied. It is also recognized that people can move between risk states and need states through time (and themselves take on different roles as they become parents for example).



The current system, which is focused mainly on child safety and youth offending, has significant

gaps across these levels in the services it applies to individuals, their families and communities. Most notably across:

a) secondary services targeted at diverting the incidence or accumulation of vulnerability

b) tertiary services targeted at the healing of vulnerability

c) transition services aimed at assisting young people become self-sufficient and well-adjusted adults

As these gaps are filled, any investment approach will be updated to reflect the new services, pathways and other implications associated with an evolving system.

5.6.1 Understand ongoing impacts at the macro and micro level

The considerations outlined above have proposed a child centred approach where the need of a child is informed by a child's wellbeing characteristics including the influence of community, family, parent and carer. The assessment and change in need will also be impacted by the development of the service system and how each element interacts with a child, family or community. Coverage, quality and efficacy of services (relative to need) will determine how change will occur over time.

In addition, there are many population and economic level impacts that will influence trends in vulnerability and may be exogenous to the service system being considered within the investment approach. These include the implications of:

- migration (often can lead to new clusters of disadvantage)
- catastrophe (can lead to localised infrastructure damage, loss of life and economic shock)
- economic change (unemployment for example)
- ongoing change in youth culture (for example social media impacting vulnerability through cyber-bullying/abuse)
- ageing of the population, changes to fertility rates or other demographic change (can lead to stretched resources)

These components will need to be understood as inputs to the forecast and/or as elements of change that explain movement from one period to the next.

Importantly, as the service system, population and economy evolves, so too will the manner in which need is assessed and the understanding of the short, medium and longer term efficacy of services in changing outcomes. Through implementing a common framework through which need and services are assessed and evaluated, the investment approach can bring these evolving pieces of information and effect together into a systemised view that:

- informs what is driving children's risk of long-term vulnerability
- provides a financial assessment of the future cost of long-term vulnerability
- informs what is driving the change in this cost
- provides a means of measuring performance in managing the outcomes of vulnerable children over time
- provides a means of analysing the financial impact of policy and operational changes

5.6.2 System of measures, the control cycle and feedback loops

In a perfect world, all parts of the vulnerable child system of interventions would have perfect design and information. This will not be the case as the existing system of services is largely based around child safety and offending and will be progressively built with respect to services that prevent vulnerability, heal it or assist in transitioning vulnerable children into well-adjusted adulthood.

The actuarial investment model can be progressively built, based on the information available and existing design of the system. The underlying models inform the change of the system through the application of scenario generators that look at intended change and understand the scaled and

potential future impacts (based on assumptions that are informed by data, research, clinical studies or expertise depending on what information is available).

This patchwork of information will progressively inform the performance of the existing system design in place, the potential performance of future changes to the system design and inform where there may need to be design of intervention in areas that are yet to achieve the desired outcomes.

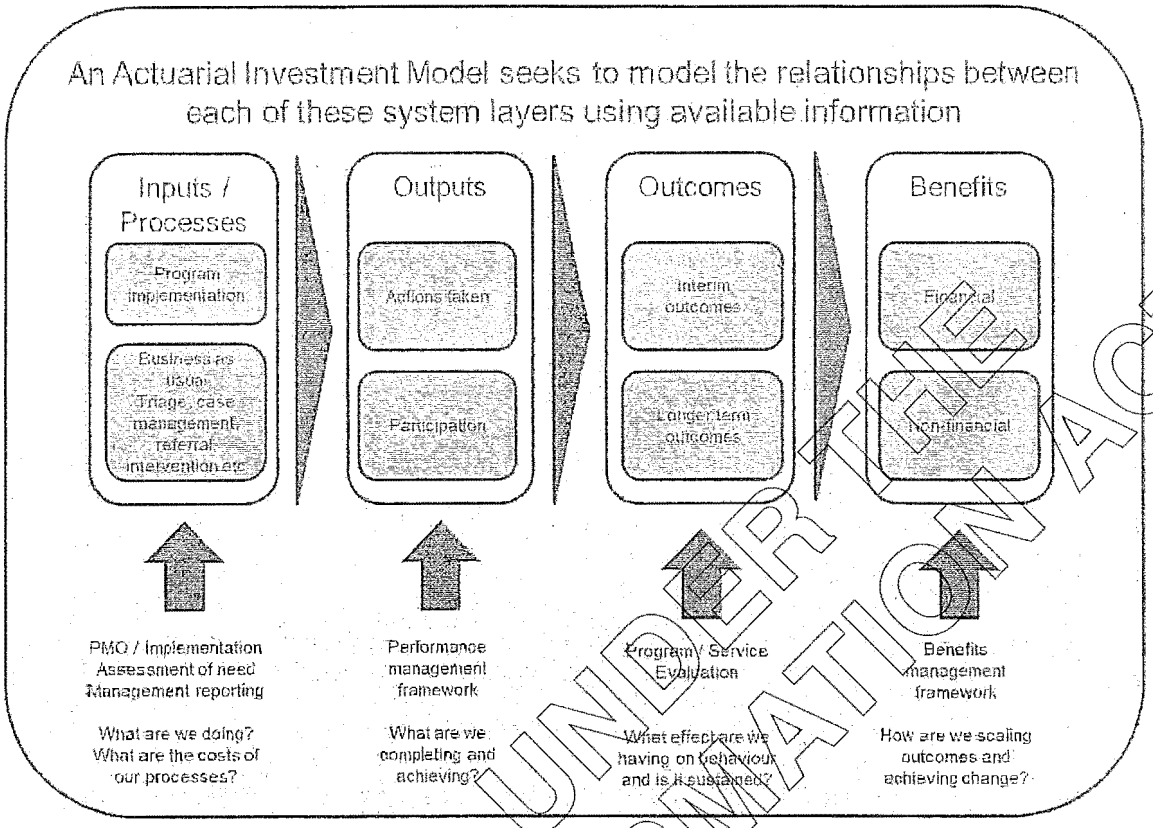
The diagram below illustrates how the system of management, service and program information comes together to drive reform in any government system.

Inputs and processes describe the individuals in the system, the processes and services that government applies to them and the costs associated with those processes and services. Processes applied are generally observable prior to outputs.

Outputs relate to the participation of the targeted individuals in the system of services and programs provided. Outputs may include the participation rates, completion rates and completed actions taken by case managers (such as Family Group Conferences). Outputs are generally observable prior to outcomes.

Outcomes relate to a change in the behaviour, risk or need associated with the individual for whom an output has been achieved. This may be interim in nature (emerging earlier in the time period and indicative that a more holistic outcome is likely to emerge) or be a targeted holistic outcome defined at various durations (short term, medium term and longer term emergence). Outcomes emerge over time and are generally closely linked with the benefits of the system of services and interventions. Outcomes tend to describe the success of a service or intervention in changing a person or cohort of people's attitudes, behaviours, risks or need.

Benefits generally relate to financial and non-financial desired states that relate to a portfolio or population. A good example is the lifetime liability measure (financial) and measures such as expectation of life, disability adjusted life years (DALYs) or Quality of Life indicators (non-financial). Benefits are generally a measure of the scale and interaction of multiple layers of outcomes (achieved through the action of process and outputs on inputs in the system measured).

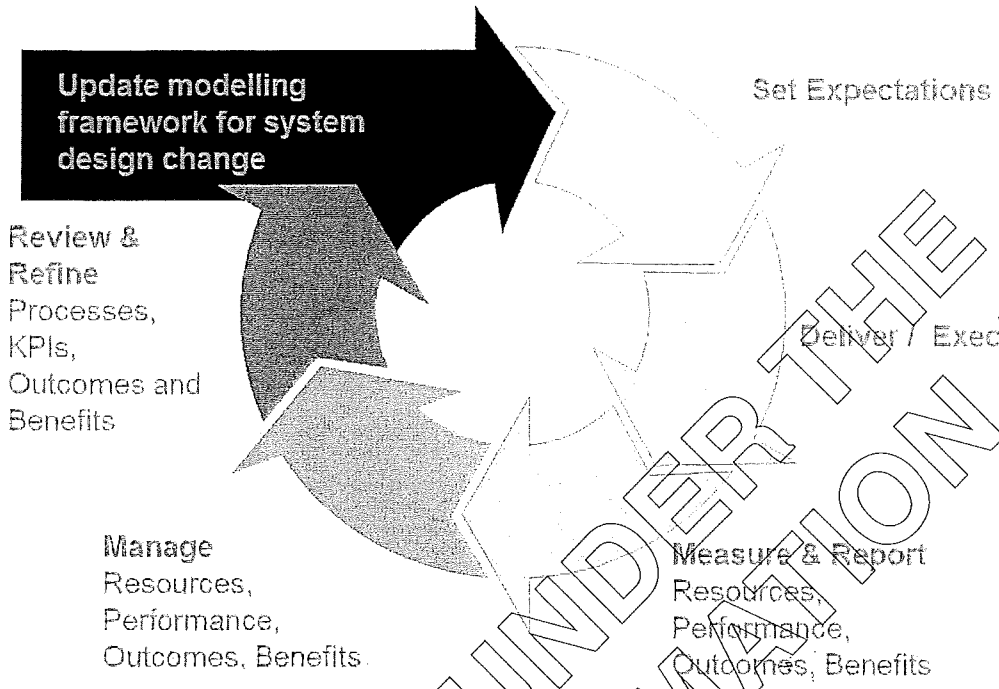


This system of information when drawn together (for example through the actuarial investment approach), will help to inform the connections between the information points both now and into the future. This approach provides more insight than viewing the information in silos alone. It also provides you a platform to run scenarios of change, scaled roll out or exogenous impact that can help to understand how best to design the system of services and interventions to best achieve a desired state of policy outcomes, within the boundaries of available funding levels and having regard to the inherent uncertainty associated with the multiple dimensions and influences involved.

Information sources and quality will grow over time as new services are implemented, new information sources are collected and new observations are made. The actuarial investment approach and associated modelling will need to be refreshed on an annual basis to incorporate this change and new information. In this way, assumptions based on research progressively give way to assumptions based on New Zealand data observations.

To achieve this, a control cycle must be wrapped around the investment approach that allows the capture of design and information source changes. The following illustrates the key components of a control cycle:

Example of high level control cycle



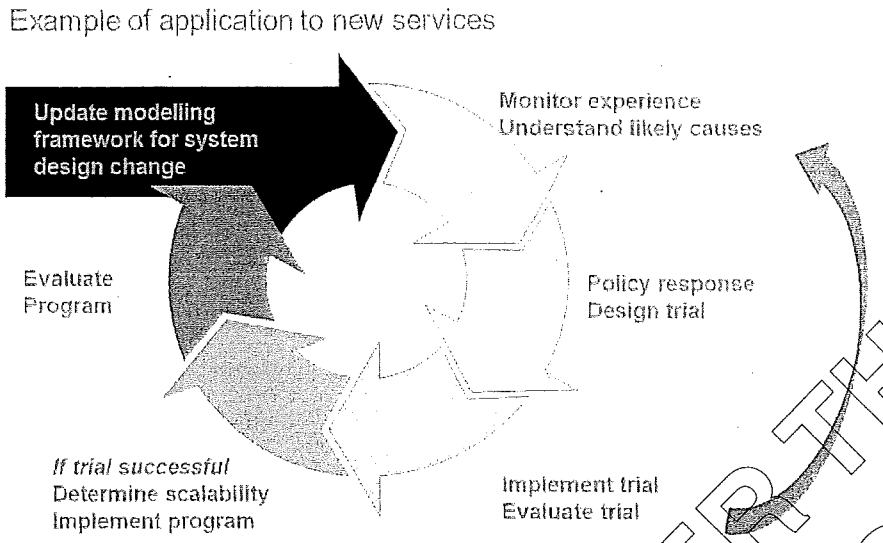
It starts with design of a system of services being applied to achieve an outcome. There is a representation of this design in a modelled context. It identifies an expectation of the results that are anticipated based on the inputs, processes, outputs and the efficacy of the services (or outcomes) anticipated. As these services are delivered (or change implanted), measurements of results are taken and analysed. These may lead to further change in the approach taken to manage the system of services and the individuals within it. Further analysis and review is then undertaken of the ending results to understand the effectiveness of the system design (and/or modelling design) this ultimately results in a review of the design of the system of services (and the model approximating that system) with the benefit of greater knowledge, data and analysis.

This process applies both to the actuarial model but also as part of the governance process of the broader investment approach, in particular to the portfolio of investments made, monitoring and managing ongoing understanding of service efficacy and outcomes.

This framework includes informing performance and accountability metrics, to check that the system of services and interventions is continuing to improve outcomes.

We particularly note that the level of uncertainty involved in achieving longer term change for vulnerable individuals is great. This means it is important to implement a learning cycle trained on identifying successful change across durations, so that ineffective investments can be ceased earlier in the cycle in favour of successful investments or new trials.

Extending the control cycle across all four decision levels is recommended. This is particularly helpful during the transformation and build of the new system of services and interventions to apply to vulnerable children. For example, a version should apply to the construction, trialing, scaling and evaluation of programs, services and interventions.



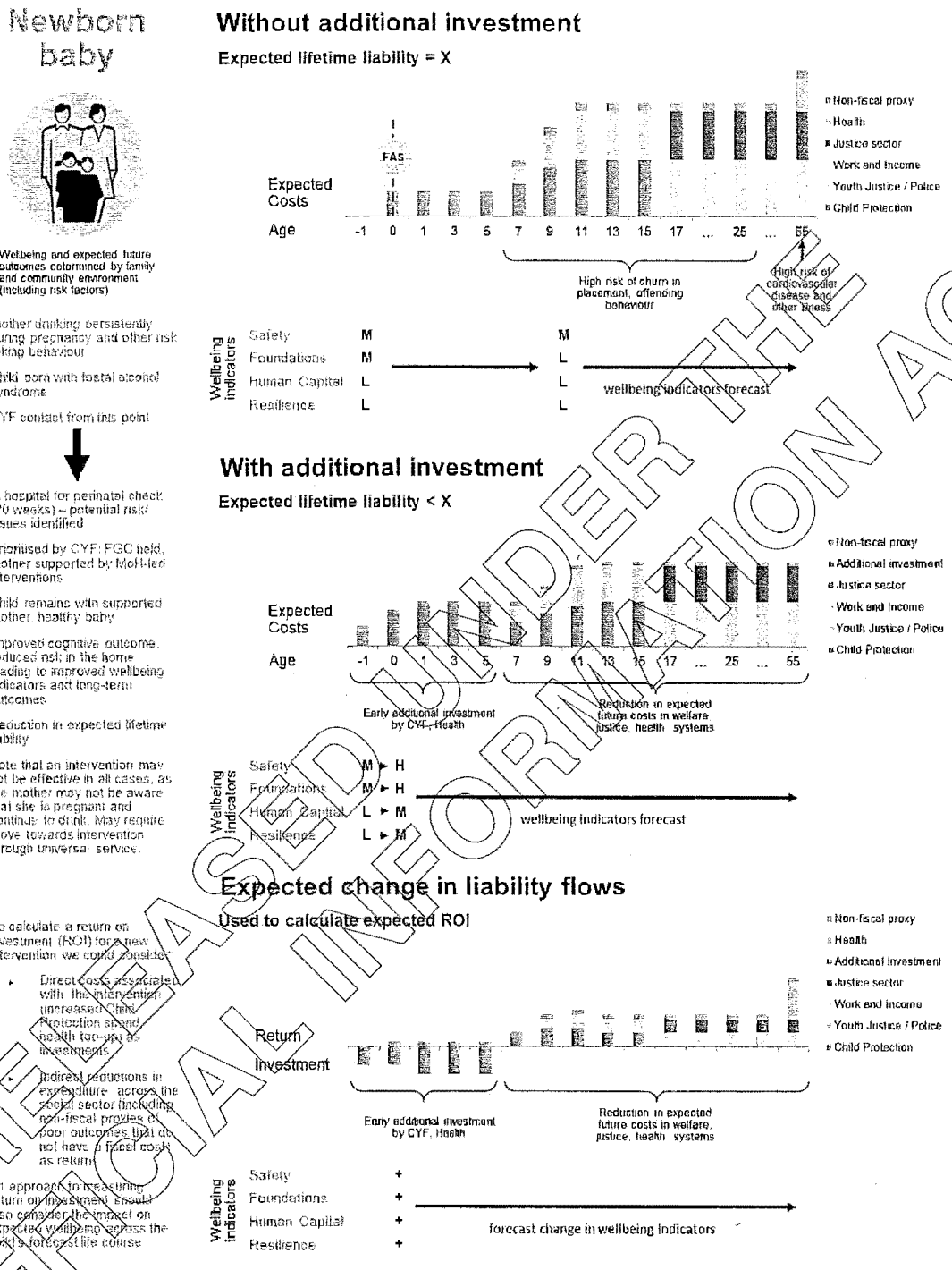
A similar control cycle approach can be taken to the development of decision support tools (such as assessment of need).

5.6.3 Illustration of investment approach in action

The illustration below shows how the investment approach conceptually applies to a case study of the impacts of foetal alcohol syndrome and a hypothetical service response being considered. It is noted that the graphs below represent an "expected value" concept which is actually underpinned by a distribution of potential outcomes around this expectation. This reflects the variation expected between individual cases in terms of the presentation of need and the success of services applied.

Foetal alcohol syndrome refers to the situation where an expectant mother drinks persistently during pregnancy. This exposure to alcohol damages the foetus' brain development. A baby born with foetal alcohol syndrome (FAS) will likely suffer long term adverse health and wellbeing consequences, including increased incidence of early mortality, reduced educational achievement, behavioural problems and longer term health issues (such as increased cardiovascular risk). A child diagnosed with FAS will have lower wellbeing measures (as per our proposed framework) than other children without this diagnosis. A distribution of future life vulnerability can be forecast for children with FAS based on the information and evidence available.

Interventions targeted at the mother either prior to conception or during pregnancy can prevent or mitigate these lifelong risks associated with the child. This results in a shift in dollar costs to government and society from those spent over the lifetime of the child to those spent on the interventions targeting the mother's drinking and other risk taking behaviour. The investment in improving the mother's wellbeing will change the risk factors for the child and impact on the child's own wellbeing. This enables the anticipation of a different pathway for the child in terms of future outcomes and liability.



Note: This is a representative example only. All expected cost graphs are stylised and are not based on actual data.

Where this succeeds on an individual basis, the improved outcomes for the child are clear (and can be measured in respect of the difference in wellbeing indicators now and anticipated in future periods). Where the interventions can also be scaled to succeed across a population subject to risk of FAS, this also scales both the social and economic benefits that can be achieved (including future fiscal savings).

This is also an example, and there are many others, where early intervention leads to lower long term costs. An investment approach will help to understand the implications of delayed responses from across the system to addressing need in vulnerable children.

Design concepts/precepts:

- Outcome/lifetime measures both financial and non-financial, and use of measures

6. Outcome measures: Vulnerability – Wellbeing – Development

Key points:

- The overall aim of transforming the child protection and youth justice system would be to improve outcomes for vulnerable children, both in the short term (as children) and in the longer term (as adults)
- The system is complex, the outcomes multidimensional and multiple service providers and agencies will need to be involved to achieve better outcomes for vulnerable children. This means a common view of an individual child and their environment is required to enable aligned intervention and service

Recommendations:

- A common overarching wellbeing framework be developed/chosen and applied to children, including the impact of their environment (parents, carer, family and community). The framework should
  - have age specific measures and milestones (where the deficit from a desired level or distribution indicates a risk of vulnerability)
  - be adopted across government and be usable across agency and service providers and importantly
    - be calibrated with the assessment tools used by government to define needs (we note some of these tools are yet to be fully developed)
    - be calibrated with the evaluation tools used by government to define efficacy of service and that evaluation of outcomes is performed on material services associated with vulnerable children
- The wellbeing measures be analysed for predictors that describe current and future usage of services and benefits (and hence cost). This will provide a connection between need, outcome (defined as change in need) and financial measures
- The predictors within the wellbeing framework be adopted as a means of describing the current state need and interim outcome for a child being represented in the investment approach

6.1 Principles

The overarching aim of the proposed transformation of the child protection and youth justice system from a safety and offending focus to a vulnerable children focus, means that measuring outcomes must be the "target variable" of any investment approach. In the Work and Income model, the desired outcome is improved economic engagement via employment. This step is not explicitly modelled, and benefit receipt is modelled directly as the fiscal cost of and financial proxy for a poor result on this outcome dimension. Due to the multi-dimensional nature of vulnerability in children and the multi-dimensional nature of the way government services help address vulnerability to help children achieve outcomes, we cannot omit this step in an investment approach model for vulnerable children for a number of reasons.

It has been observed in many countries that the experience of a child growing up can have fundamental implications for their life course and overall quality of life. Longitudinal studies, such as the Dunedin Multidisciplinary Health and Development study, have captured information over the lifetime of cohorts of children as they grow and develop. These studies have concluded that there are significant predictors of future life experience as an adult that can be seen during childhood.

The investment approach would seek to capture an understanding of these predictors and other

observations, when constructing a view of the NZ population of children.

The overarching aim is to improve the safety, wellbeing and development of children so that there is an increase in overall quality of life (both as children and future adults) and a reduction in future costs (for example resulting from lower welfare dependency, lower offending rates and/or lower intergenerational impacts on children to name a few).

To achieve this, there needs to be an understanding of:

a) What factors are associated with a child's vulnerability (or holistic wellbeing and development)

b) What factors lead to an increase in a child's vulnerability (or a decrease in a child's holistic wellbeing and development)

c) How services can be applied to either reduce the factors that cause a build-up of vulnerability or reduce incurred vulnerability

6.2 Summary of process

The process we have adopted in testing the conceptual feasibility of a wellbeing framework for vulnerable children has been as follows:

- Research existing New Zealand frameworks for wellbeing and in particular as applied to children or vulnerable children
- Compare to knowledge of international experience (particularly UK and Australia) and the framework EY have used in previous work with vulnerable children
- Discuss and seek feedback from the Secretariat to refine information and language used
- Workshop key concepts with a specially constituted Inter Agency Working Group to determine the overall acceptance of such an approach and seek further information from agencies
- Discuss concepts with the Panel for further input and direction
- Combine knowledge and map connectivity and derive a proposed summary framework.

This process uncovered many different frameworks in use across agencies. However these frameworks are very consistent with largely only language or categorization differing between them. It was observed that a common language on wellbeing and development was achievable in the discussions.

6.3 Proposed approach

It is proposed that an overarching wellbeing framework be developed that is consistent with the latest approaches that have been / will be adopted by the New Zealand government. This should incorporate age appropriate milestones for key sub factors. This, along with advanced analysis of the key predictors of future cost and wellbeing pathway, should form the basis of the wellbeing architecture to be used in the models underpinning the investment approach.

In addition, the framework should be calibrated across the assessment tools used by the front line to determine risk and need parameters, and across evaluations of outcomes which should be used to determine service efficacy.

6.3.1 Dimensions of vulnerability and wellbeing

It was generally agreed that vulnerability of a child was not just associated with a child protection or youth justice event or risk. There are those in the population who don't have contact with CYF or YJ who may still be classified as vulnerable. Indeed, it was recognized that the existing system of services within CYF are focused mainly on the safety and offending behaviour of youths. Vulnerability can manifest because of many other issues associated with disadvantage across multiple dimensions including, but not limited to, income, housing, health, education, situation and behaviour.

However, most could agree on a definition that was centered on the holistic wellbeing of a child (being considered the opposite of vulnerability) that described the positive outcomes that contribute to a well-adjusted economic and social life course. The following framework for considering holistic wellbeing of a child was generally agreed as conceptually feasible.

Child Wellbeing consists of reaching minimum, desired or potential levels across the following factors:

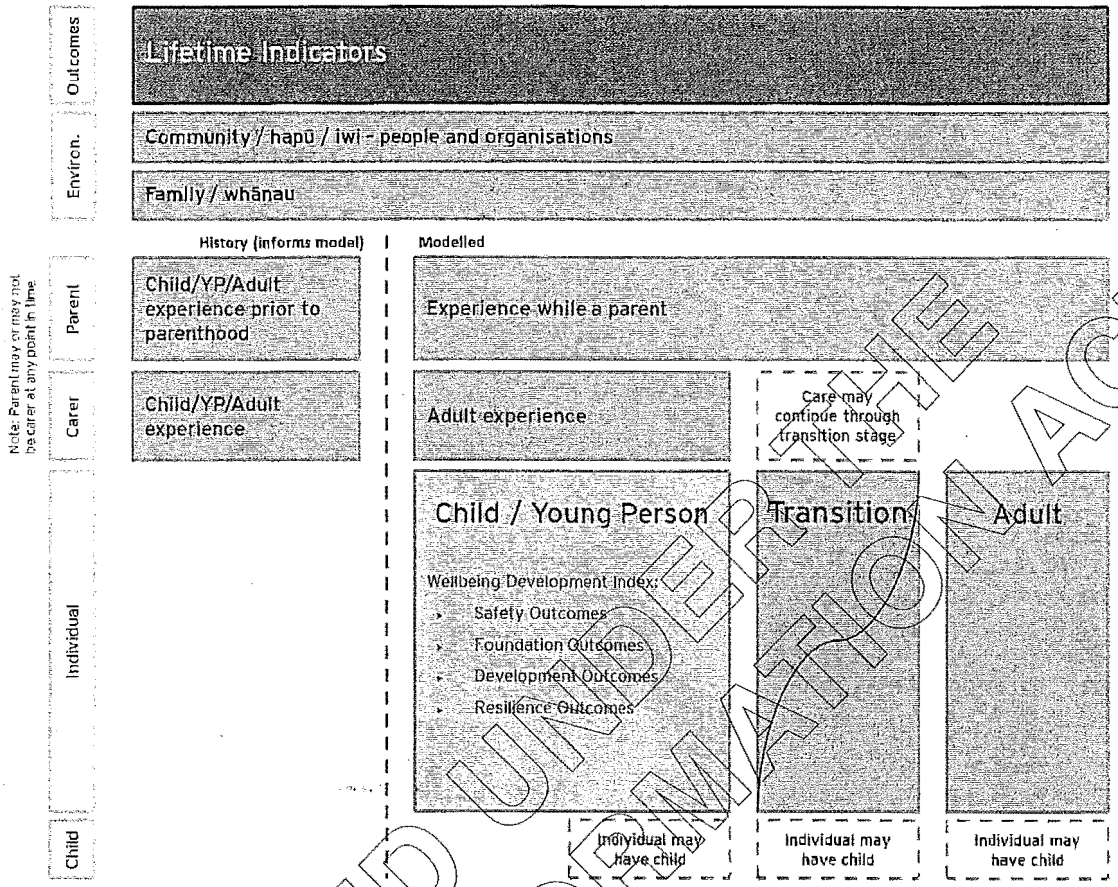
1. Safety milestones
    a) Safe environment
2. Foundation milestones
    a) Access to basic shelter (including adequate housing)
    b) Food security
    c) Basic health
    d) Basic financial coverage (such as income level or a poverty measure)
    e) Feeling loved
3. Development milestones
    a) Education
    b) Social skills and behaviour
    c) Healthy lifestyles
4. Resilience milestones
    a) Belonging
    b) Participation
    c) Feeling safe

The concept of vulnerability of children, therefore, becomes a concept of deficit to the specific milestones that represent the minimum (or distribution of minima) wellbeing factors.

6.3.2 Levels - child, family/carers, community

It is recognised that the wellbeing state of the child is impacted by the wellbeing state of the parents, carers, extended family and community.

The diagram below shows the multi-dimensional nature of vulnerability, including the intergenerational aspects and influence of environmental factors.



The history of disadvantage or vulnerability of a parent or carer can impact their current wellbeing, vulnerability and level of disadvantage. This in turn impacts directly on the wellbeing of children in their care, and can be considered as a risk factor for the child. Adult experience can already be profiled across Work and Income, Justice, Police, Housing, Health, CYF, Education etc. This can give an understanding of the level of disadvantage of the household and provide information that influences Safety, Foundation, Development and Resilience milestones of the children in that household. Importantly, the experience of the parent and carer has an influence on the risk segment in which a child would appear.

Community and extended family factors can influence the disadvantage and vulnerability of the carer(s) and child(ren). For Māori this includes hapū and iwi. The trajectory of a child and family can be influenced by the profile of the extended family and/or community (safety factors as well as support factors).

It is also important to identify that the transition of a child to adulthood is a critical stage of achieving longer term wellbeing. The ability for a vulnerable child to transition to adulthood will affect their future interaction with the welfare, support and service system. In particular, with many support functions ending when the child turns 17 (such as foster care), the ability for a child without other support measures to access housing, employment, higher education or other milestones is impaired.

Additionally children and young adults that are vulnerable may have children of their own. Intergenerational disadvantage can occur where a vulnerable child or young person has children themselves (either when a young person or as an adult) that are therefore born into vulnerable environments.

It is proposed that the investment model would allow for the following components:

- Child wellbeing profile as described above
- Parent/carer profile of disadvantage and wellbeing

- Extended family profile of safety and resilience*
- Community profile of safety and resilience*

*Data for this may only be available when there is significant interaction of families and children with government services.

The depth of understanding and granularity of criteria or proxies measured will depend on the data available. For children and families/carers, the level of data capture depends principally on the interaction with the services that government fund or provide.

The following table outlines examples of the areas of measurement at community, family and individual level that should be considered in the development of a child wellbeing and development framework.

Factors	Population Indicators	Family Indicators	Individual child or young person Indicators
Safety	▶ Crime rates by: ▶ Anti-Social Behaviour ▶ Domestic / Family Violence ▶ No of known offenders – e.g.: Child Protection Registrar	▶ Parenting capacity ▶ Single parent, new intimate partner ▶ Teen pregnancy ▶ Prior known Care and Protection history ▶ Parental Mental Health ▶ Parental Drug and Alcohol ▶ Justice / criminal behaviour	▶ Abuse: ▶ Physical ▶ Sexual ▶ Emotional ▶ Neglect ▶ Exposure to domestic / family violence ▶ Placement in alternative care arrangement
Foundation	▶ Concentration of below poverty line ▶ Unemployment	▶ Housing ▶ Employment security / welfare recipient ▶ Food security ▶ Family Connection and extended family structures	▶ Housing ▶ Employment security / welfare recipient ▶ Food security ▶ Family Connection and extended family structures
Development	▶ % attend Perinatal health and support ▶ % population access to Playgroups, Home visiting ▶ % children with completed health records ▶ % children in pre-school and primary education by age and days per week	▶ Health & Lifestyle ▶ Educational attainment ▶ Vocation / Training	▶ Special needs / support ▶ Risk taking behaviour ▶ Justice / criminal behaviour ▶ Health and lifestyle ▶ Educational attainment ▶ Early education ▶ Primary ▶ Secondary ▶ Tertiary
Resilience	▶ Cultural connectedness, maturity of iwi organisations ▶ Community groups	▶ Family Structure and value/belief system ▶ Cultural connectedness	▶ Clear self-identity ▶ Extended family support ▶ Secure attachments ▶ Confidence of being loved and valued by one's family and friends ▶ Cultural connectedness ▶ Participation in community groups/ peer relationships

The interaction between risk and protective factors noted above defines a child's overall level of wellbeing or vulnerability.

Part of the build process for an investment approach would need to consider the quality of information available that describes the current level of elements of the wellbeing framework for a child, family member or community. This may need to use proxies where information that directly matches is not available or is unreliable the overarching components of the wellbeing framework. Naturally as new data is collected, these proxies may get replaced over time. Refer to Section 10 for further discussion over data available to inform the investment approach.

6.3.3 Forecasting wellbeing of individuals

The state in which a child and their parent/carer exists may change over time. As their situation changes, their wellbeing will alter, which will have flow on effects to the opportunities they can access in life. The wellbeing framework looks at fundamental groupings of characteristics that either describe:

a) The risk that an individual may experience, such as a form of trauma

b) The ability to access basic employment or quality of life pathways by having access to the foundational milestones of appropriate shelter, food security and transport.

c) The ability to access employment and social options that help the individual achieve a greater participation in economic or social inclusion

d) The ability to sustain economic and social inclusion through periods of hardship, either by relying on their own resilience factors or being supported by family or community through episodes of hardship.

By understanding how these factors should develop through time for a well-adjusted life pathway, any measured deficit to these factors can be assessed as having a probability of impact associated with less desirable lifetime outcomes. The more complex and interdependent the deficits are, the greater the likelihood and severity of the undesired life outcome.

The analysis stage of setting up an investment approach would seek to unpack and understand these relationships through time. Through calibration with the overarching framework, the projections of wellbeing become usable in understanding change and interpreting this in a policy context. In particular the alignment with assessment tools will help to understand if need is directed to the right services. The alignment with evaluation approaches will help to understand the foreshadowed outcomes of those services and link this to longer term assumptions (for services not yet evaluated). The wellbeing architecture will enhance the use of the investment approach in its ability to be more specific as to the direction of change and the target level (child, carer, family, community or macro exogenous factor). The proposed use of a wellbeing architecture is what makes the investment approach for vulnerable children both child and need centric. This contrasts with the existing versions of the Work and Income model which is largely a "service" centric model (noting this is feasible for welfare due to the extremely high correlation between being "on benefit" and "unemployed and in need of assistance").

The dynamism with which the child and parent may transition between states will necessitate an individual simulation approach that interacts with the processes and services which may alter the outcomes for these individuals. The conduit to this dynamic interaction is the common wellbeing framework that helps to link process, need, service, output, outcome and ultimately benefits together.

The community and broader economic or exogenous environment also will change with respect to their impact on vulnerable children through time. However, the indirect impact of community and macro exogenous factors will mostly affect the probabilities of those within their sphere of impact more or less equally across individuals (although this will manifest in a distribution of outcomes at the individual level). For example, a community with considerable safety issues will impact all families in that community.

As a result, less dynamism would be included in the modelling of the future states of communities and macro exogenous factors, although their impact on the simulated pathways of individuals will be

dynamically modelled. The 'transition' states of the community and exogenous macro factors will therefore most likely be deterministically defined in any one set of simulations. Any policy targeted at a change in these elements (e.g. employment policy or community investment) would therefore be informed through a scenario of change approach to see the impact of changing the state of the community or factor on the individuals within its sphere of influence.

6.3.4 Perspectives across the system - Māori/Pasifika

Māori and Pasifika cultures are over represented in the population of vulnerable children – Māori even more so than Pasifika. Careful consideration of the reasons why this is the case must be reflected upon. Whilst a cursory analysis may resolve that there is a strong correlation between being of Māori / Pasifika descent and the poor outcomes that we are observing in later life, it is by no means a causal relationship. It is likely that a combination of history and the intergenerational nature of disadvantage have created a continued cycle of disadvantage for these cultural groups. However there are significant features of culture that will require a focus, particularly:

- The definition and cultural alignment of need
- The design and cultural alignment of services
- The definition, nature and potential impact of broader family
- The definition, nature and potential impact of community

It is likely that investing in the most vulnerable populations to improve life course outcomes will provide the greatest level of return. Given the high level of relative vulnerability of Māori and Pasifika children, this should inform priorities for investment.

6.3.5 Perspectives across the system - Disability

Children with disability need specific consideration in the investment approach. This applies both to children who are already in contact with CYF as well as those in the broader population. There are specific issues related to overrepresentation of children with disability in the CYF system and identified underfunding and under-diagnosis of disability in general.

The wellbeing framework and considerations of liability need to be refined to allow for the presence of disability. For example, the National Disability Insurance Scheme in Australia has developed an outcomes framework that addresses eight domains: choice and control, daily activities, relationships, home, health and wellbeing, lifelong learning, work, and social, community and civic participation[4]. New Zealand has used such frameworks in the context of disability also[5]. These frameworks should be incorporated into the overall approach, with adjustment made for the realisation of potential specific to the individual.

Similarly the financial measures need to be reported in a way that is understood and appropriate for children/people with disability.

6.3.6 Items and measures

Indicators that describe the wellbeing of a child or young person will be constructed from a range of measures that are indicative of outcomes across the four domains identified to be core components of wellbeing (safety, foundations, development and resilience). This will also be performed for the parents, carers, family and wider community of the child/young person.

Development of the wellbeing indicators used in the model would require a number of these outcome-indicator pairs to be identified for each outcome domain, and would require consideration of the source of data (i.e. from what agency) that could be used to populate them. Examples are shown below:

[4] http://www.ndis.gov.au/continuous-improvement

[5] For example, the Office for Disability Issues, NZ Disability Strategy Implementation Review 2001-2007, http://www.odi.govt.nz/nzds/progress-review/changes-to-life-outcomes.html

Outcome domain	Example outcome	Example indicator	Potential data source
Safety	Safe from harm	Victimization experience Not living with an offender	Police Justice/Corrections
Foundation	Suitable living environment	People in dwelling by number of rooms	Census/HFLS
Development	Healthy	Infant immunization No rheumatic fever	Health Health
Resilience	Economic contributor	Employed / not on benefit	IRD and/or Work and Income

Because components of wellbeing differ depending on the life-stage of an individual (i.e. whether they are an infant, child, young person or an adult) we would also require 'age-appropriate' indicators to be comprised of different sets of measures depending on life stage. The table below provides an example of an age-appropriate measures/milestone that might be relevant from an education or health perspective:

Outcome domain	Young child	Child	Young adult
Development (education)	Child involved in ECE	Child/ young person enrolled in school	Young person achieves NCEA level 1,2,3
Development (health)	Birth weight (not low) Caries free at age 5	Not smoking at age 14-15	Hazardous drinking Presence of mental health disorder

We have been made aware of considerable work to identify indicators and potential measures of those indicators, including identification of data sources. We were able to explore this in more detail in short discussions with data experts from a wide variety of ministries, which is further discussed in Section 10. When moving to scoping and implementation a process of selection of specific indicators based on appropriateness, data availability and coherence with both assessment tools and ongoing evaluation of service efficacy will be required.

7. Lifetime measures: non-financial and financial

Key points:

- Financial measures require careful design and interpretation to enable effective use
- The system is complex and the outcomes multidimensional

Recommendations:

- A lifetime financial liability and return on investment measures be adopted
- A thorough explanation of change in liability be implemented
- Non-financial measures associated with short term and expected long term change in wellbeing should be used to help contextualise financial measures
- Non-financial lifetime measures can be calculated but are not considered essential

7.1 Principles

The following principles focus on the requirements for financial measures to align with non-financial measures, in the form of level of wellbeing.

7.1.1 Good proxy for outcomes

It is desirable for the financial measure, in the form of a "liability", to be a good proxy for the level of outcomes.

This means that higher liability should be representative of poorer expected outcomes and vice versa. This signals the potential for investment to improve outcomes, which should then be reflected in a lower liability and a positive return on investment.

Continuing from the above, it is important that the financial measure reacts in the expected way when it is acting as a proxy for outcomes. Liability should go up when outcomes deteriorate and vice versa.

However, a liability figure can move in multiple ways between periods of measurement. The explanation of the change in liability is critical in understanding and interpreting the results.

The following features can change a liability without having an impact on underlying outcomes for individuals:

- A drop in the unit cost of service
- A change in the discount rate used
- Changes in the number of individuals in the population

There are also situations where future cost may reduce whilst individual outcomes are negative, for example where a child dies.

These show that careful interpretation of the movement in any liability from period to period is required to understand if the movement is good, bad or neutral with respect to outcomes.

In a system as complex and multidimensional as that of vulnerable children, the use of non-financial measures to help interpret the level and change in liability is desirable.

7.1.2 Perverse incentives should be identified and managed

Well understood, and often cited, examples of potential perverse outcomes include:

- Early death for any reason. This is clearly a poor outcome, but the liability will move to zero unless it includes a financial proxy for this event. This suggests that deaths need to be analysed as a separate element in the analysis of change in liability (or analysis of "actuarial

release"). Alternatively a cost per expected life year lost could be attributed to mortality events. This would create a higher liability for a child with poorer mortality, and if that child died, a significant cost would appear in that year.

- When a child is taken into care, expected liability for that individual child will increase, as the future costs of care are now highly likely to be incurred. This is an example of where care needs to be taken when considering measures on an individual level as opposed to a cohort level and at the level at which measures are used in decision making. At a cohort level, the liability may still be moving in total as expected, but this individual child's outcomes have deteriorated, as an event has occurred that has negatively impacted wellbeing to the point where a placement in care is justified. The deterioration in wellbeing is linked with an increase in liability for the child, which means the measures are reacting in the right way. However, the possibility that the liability number influences front line decisions to not intervene must be avoided. The liability increase is effectively associated with the increased risk that has now become apparent through the reporting and assessment process, not due to the action taken to address this risk. For example, where there are significant safety concerns justifying placing a child in care, the liability increase should not be a consideration in the decision to intervene. The equivalent might arise in Work and Income if a frontline worker tried to block a potential recipient from completing the necessary process to receive benefit. This is currently managed in the Work and Income system through a variety of mechanisms, including an understanding of overall goals of the agency, and should also be manageable in the context of vulnerable children.

7.1.3 The measures should handle exogenous changes

If the Crown changes policy settings and determines that it wishes to aim for a higher standard of universal wellbeing outcomes via an injection of funds into benefits or services, liability will increase to simply reflect the additional funding in the system. Wellbeing outcomes should also improve. It means that the whole system has moved to a new level of fiscal investment. This would need to be considered as a separate exogenous change from the "business as usual" operation of the investment approach in a fixed policy setting, where investment to improve outcomes is expected to reduce liability through avoidance of previously expected poor outcomes and associated fiscal outgo.

7.1.4 The measure shouldn't penalise addressing unmet need/demand

Unmet need / demand is likely to be a more significant segment of the vulnerable child population than it might be in the adult beneficiary population.

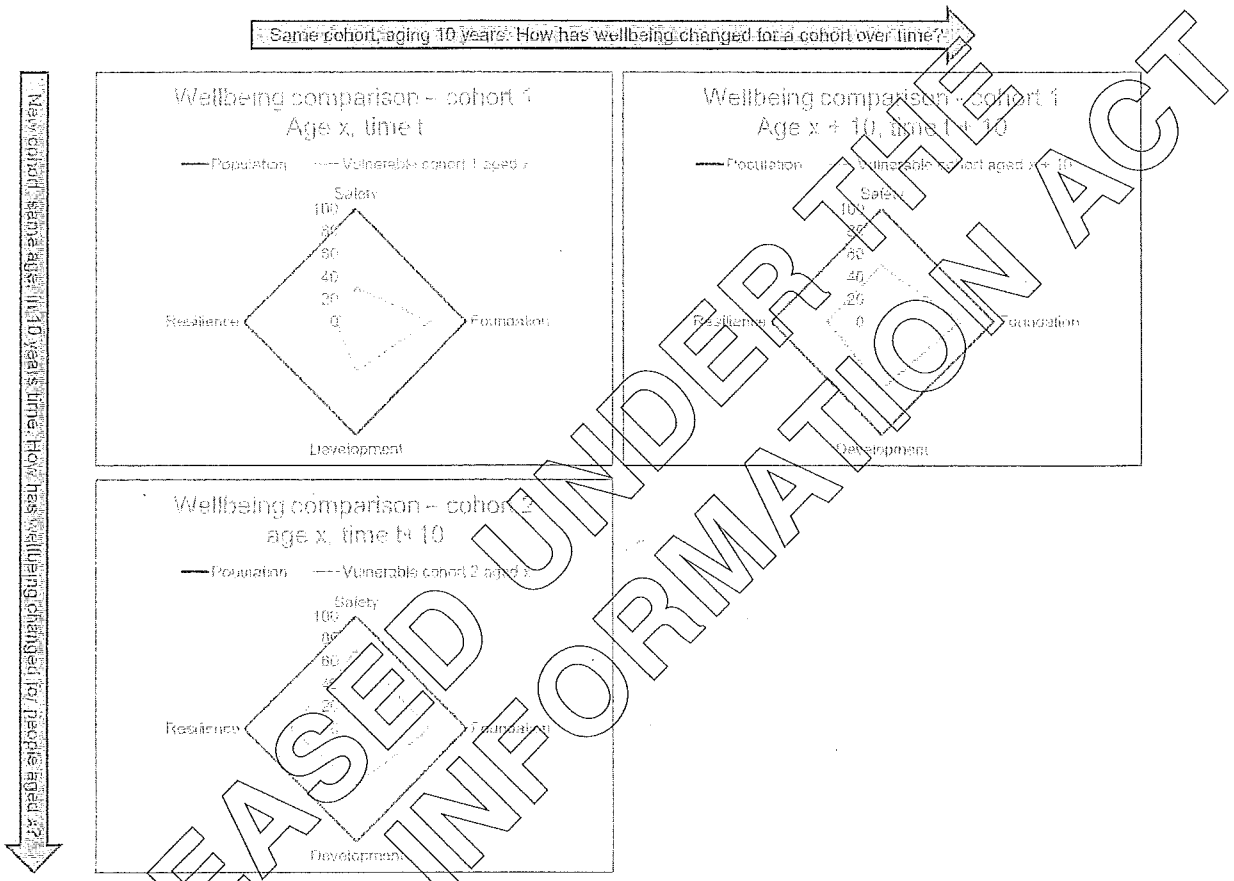
It is important that the identification of unmet need, which will imply recognition of worse than previously known outcomes and a new associated liability, is not considered a poor result for the investment approach. Rather this is a sign of obtaining more complete information about individuals in the population so that need can be acted upon.

In an insurance system, unmet demand might be considered as "Incurred but Not Reported" claims, which are frequently set aside as a form of liability. Some consideration could be given to attempting to estimated unmet demand, or it could be identified as a separate element in the analysis of change in liability (or analysis of "actuarial release").

7.1.5 Non-financial measures working in tandem with financial measures

The proposed wellbeing framework discussed in Section 6 can be used to describe the need of individuals and used as predictors of future service and benefit being incurred. Through understanding how wellbeing changes over time, and its relationship to future cost, a combined financial and non-financial measure can be established. The nature of the wellbeing index will evolve over time as information to describe its current levels and the desired age based levels improves. Initially, some elements of the framework may be sparsely populated with measured need, but as the system of assessment matures, this will expand. Observational data is currently available (a mixture of participatory information and assessment information) but may also need to be supplemented by assumptions based on research in the shorter term or implicit in the statistical distributions fitted over observed data.

In the diagram below, we illustrate the change in wellbeing factors over a 10 year period. Horizontally we illustrate the impact of a cohort ageing and changes to the wellbeing in that period from services and interventions made. Equally we can compare the wellbeing outcomes of the new cohort of individuals aged x compared to those aged x ten years ago. Each theme has been represented in the spider diagram as a sub-index relative to a desired state (being represented as 100 in this example). The cohort in question, for example, may have 75% of its individuals achieving foundational requirements (of basic health, food security and shelter).



These measures provide a sense of how wellbeing is changing for individuals through time, and how new generations of individuals are faring compared to those in the past. This can be completed in a detailed view of each individual factor underlying the sub-factors shown, or an index produced for each sub-factor to illustrate the movement more simply through time. The example above shows a situation where a cohort of individuals is being tracked (horizontal illustration) and shows improvement relative to their age based expectations in all factors. It also shows a situation where an equivalent aged cohort (but 10 years later on) is exhibiting better wellbeing factors than the previous generation.

In particular, by placing the values in equivalent terms (adjusting for items noted above), the movement in liability would reflect the weighted change of wellbeing factors on future outcomes (on the valuation assumptions).

Through having the combination of the wellbeing factors and the financial information, however, we can calculate a return on investment that is similar in concept to a social cost benefit calculation.

This implies running scenarios of change that move toward a short term and long term wellbeing outcome, and understanding of the associated financial implications.

Ultimately this enables you to ask the following questions:

- In the short term, for a given dollar spend, what is my expected impact on wellbeing? OR
- For a given short term wellbeing target, what is the dollar investment required?

And, the further implications can then be estimated:

- For my expected impact on short term wellbeing, what is the potential impact on longer term wellbeing and associated financial savings?
- For this policy outcome, what is my return on investment?
- What is the level of uncertainty associated with this return on investment?

It should be noted that wellbeing includes the impact of community, family, carer and parent on the individual child. As a consequence, investment may be made that may be targeted at any of these levels.

7.2 Lifetime financial measures and return on investment measures

Lifetime financial measures will be made up of three principal elements:

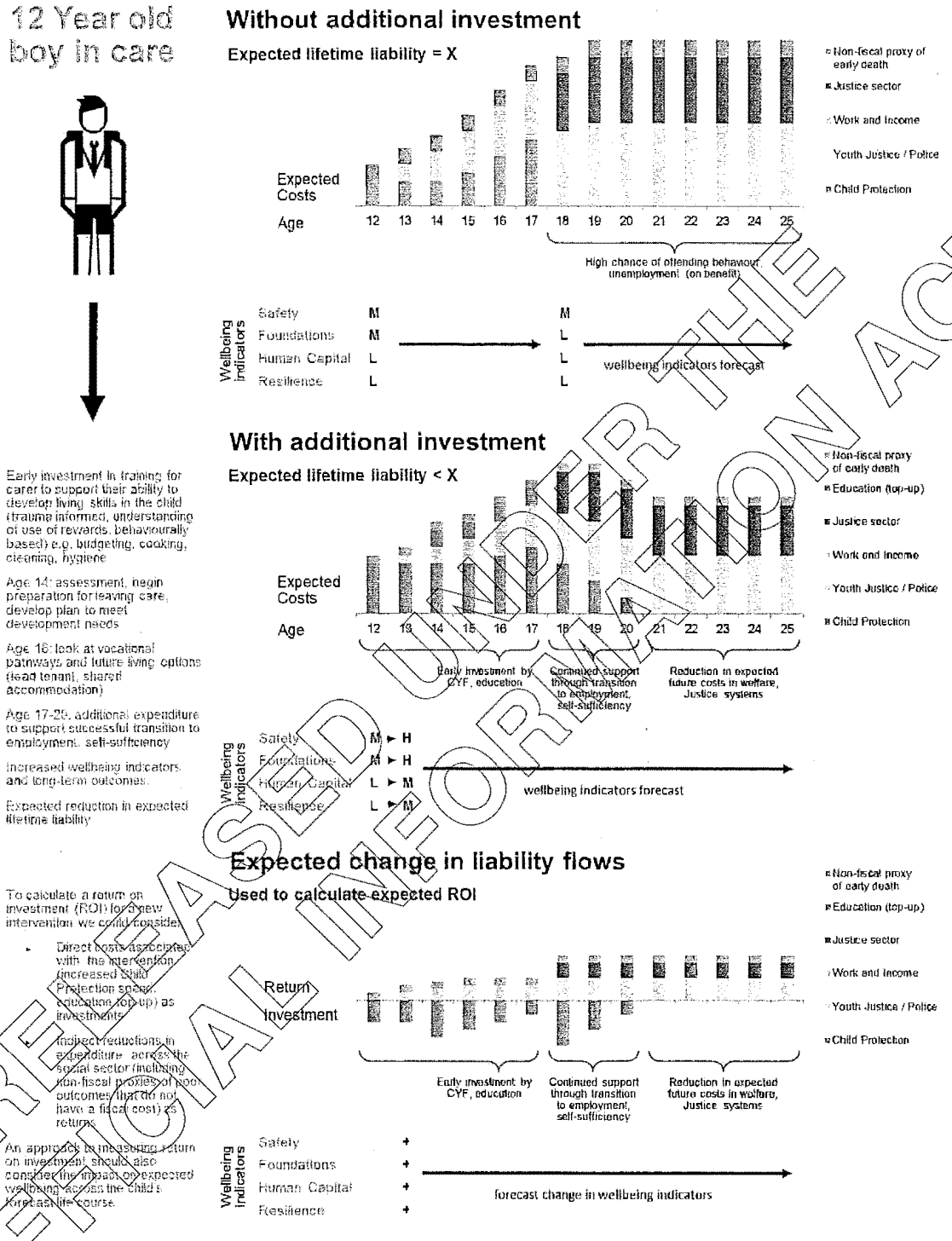
1. Fiscal cost of benefit provision, principally those provided by Work and Income
2. Fiscal cost of service provision. To the extent the investment approach intends to measure outcomes across all domains for vulnerable children this is likely to cover elements of spending from the following agencies:
   a) Ministry of Social Development (Child, Youth and Family covering both Care and Protection and Youth Justice; Work and Income, Social Housing).
   b) Justice Sector, covering Police, Courts, Corrections and Justice itself
   c) Ministry of Health and District Health Boards
   d) Ministry of Education

   It would also include the Children's Teams and the contracted spending of those agencies, such as Community Investment
3. Financial proxies of non-fiscal impacts of poor outcomes. Examples of these include an estimate of the impact in dollar terms of a sexual assault per incident (which also has a fiscal component), a quality-adjusted life year (QALY) gained.

Each of these elements will be projected to produce expected future costs for a child or young person over their lifetime. The projected expected costs incurred at each time point will be discounted to the date of the valuation in order to provide the expected lifetime loss of potential associated with the child's current wellbeing and expected future outcomes, the "liability".

Costs that may not be included include those associated with universal services or those not associated with poor outcomes, for example provision of student loans. The decision of which costs might be in scope is further discussed in Section 9. The data available to identify these costs is discussed in Section 10.

We refer to the example provided in Section 5 on foetal alcohol syndrome and provide a further example here in order to illustrate several features of the financial measures.



- Early investment in training for carer to support their ability to develop living skills in the child (trauma informed, understanding of use of rewards, behaviourally based) e.g. budgeting, cooking, cleaning, hygiene
- Age 14: assessment, begin preparation for leaving care, develop plan to meet development needs
- Age 16: look at vocational pathways and future living options (lead tenant, shared accommodation)
- Age 17-25: additional expenditure to support successful transition to employment, self-sufficiency
- Increased wellbeing indicators and long-term outcomes
- Expected reduction in expected lifetime liability

- To calculate a return on investment (ROI) for a new intervention we could consider:
  - Direct costs associated with the intervention (increased Child Protection spend, education top-up) as investments
  - Indirect reductions in expenditure across the social sector (including non-fiscal proxies of non-outcomes that do not have a fiscal cost) as returns
- An approach to measuring return on investment should also consider the impact on expected wellbeing across the child's first task life course

Note: This is a representative example only. All expected cost graphs are stylised and are not based on actual data.

The actuarial model will produce for each individual in scope:

- Their initial wellbeing state
- A projection of their future expected wellbeing levels
- A projection of the future expected costs of benefit receipt, service interaction and non-fiscal impacts associated with their anticipated wellbeing.

- The expected lifetime liability (being the discounted value of the projected costs). This is denoted as X in the illustration.

Note that the illustration demonstrates the multi-dimensional nature of the expected costs - a mix of benefit receipt (from Work and Income), service costs (from other agencies) and non-fiscal impacts (such as a proxy of the cost of early death from risky behavior, poor health or exposure to harm).

When an investment is being considered in order to positively impact outcomes and reduce liability, it can be viewed from different perspectives.

Firstly the investment must establish a program logic, or theory of change: how is the program intended to achieve its desired outcomes? What is expected to change for the individual? Is it their environment or something about themselves? This will be reflected in expected impact on the individual's wellbeing along one or more dimensions. Ideally this expectation will be set using evidence of program or service efficacy, linking the intervention to the achievement of outcomes. Sources for evidence are discussed in Section 10.

The investment must then consider where costs might be expected to change. This can be tested using the actuarial model, as it is the difference in wellbeing that is expected to determine different levels of benefit receipt and service usage.

Finally the cost of the investment must be established.

In the example for our 12 year old boy in care, this is illustrated by:

- Additional investment by both CYF and Education over the ages of 12 to 17, and additional investment by CYF over the ages of 18 to 20, as described in the text.
- Wellbeing is expected to increase across most dimensions as the child/young person experiences improved housing security during transition, improved educational outcomes and improved life skills.
- Savings are expected to be realized in Youth Justice and Police costs to age 17, then in reduced benefit receipt from Work and Income and reduced adult Justice Sector costs across Police, Courts and Corrections. Non-fiscal impacts of improved outcomes are reflected in the reduced risk of early death due to behavioural change.

In the example for the newborn baby at risk of foetal alcohol syndrome, we aim to point out that investment for vulnerable children may well be an investment made in the people around them. It is the wellbeing of the mother that will be impacted on several dimensions and this will, in turn, impact the wellbeing of the child, across dimensions such as safety at home as well as the child's own cognitive abilities, leading to improved educational outcomes for example.

In both cases the expected lifetime liability allowing for both the investment and the reduced costs is now expected to be less than X, a positive return.

In the final panel of the illustrations we show specifically how an ROI calculation can be performed, with the new investments associated with the specific intervention placed below the line and the return in the form of reduced expected costs above the line. The return can be expressed as a dollar figure per child/young person, as a benefit-cost ratio or as a percentage return on investment (e.g. using an internal rate of return calculation).

Attribution, which will be quite complex in reality, can in principle be determined by the relative contributions of different agencies to investments and interventions. In our examples, CYF and Education could share the attribution of the benefits to be realized via their joint intervention for the 12 year old and CYF and Health could do the same for our newborn. Consideration would need to be given to the timing of that attribution as early impacts on wellbeing may be observed before long term cost savings arise.

Accountability can also be managed via the breakdown of the liability into agency and program specific elements and close monitoring and detailed analysis of movements in the actual liability compared to that expected.

7.3 Lifetime non-financial measure

There are a number of lifetime non-financial measures that could be used to describe levels and movements for cohorts and in populations. Examples include quality-adjusted expectation of life or other indices of national wellbeing.

A process of calibration and scaling the wellbeing framework to lifetime measures could theoretically be undertaken with enough observations.

However, it is our view that the use of such a measure is unlikely to provide any greater usable information to decision makers than what would be inherently available in the proposed wellbeing structure and financial measures.

8. How would the measures be used?

Key points:

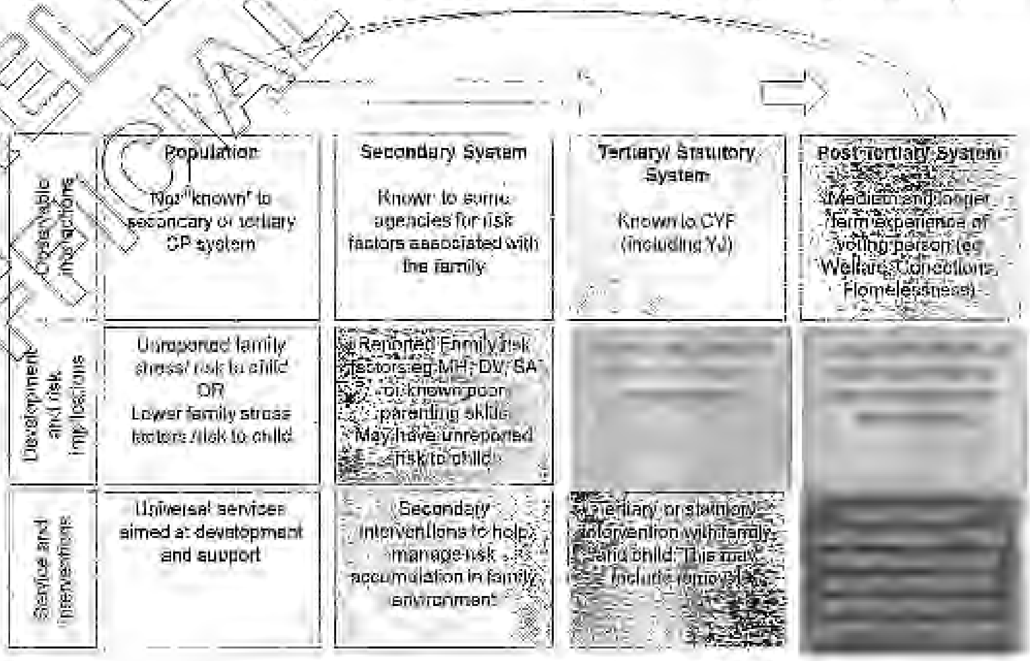
- The level of interaction an individual and their family have with government services will determine how much awareness government has over their situation. There will be an element of the population where need is not reported and therefore unmet
- More interaction with services is generally indicative of greater risk or stress within the family environment and greater levels of vulnerability for associated children
- The information required to inform decisions differs depending on the population "level" at which the decision is targeted. This ranges from whole of population and segments of population down to individuals

Recommendations:

- At level 1 (population level), financial indicators, such as liability, be adopted as well as measures of the distribution of wellbeing relative to desired levels to help contextualise financial measures
- At level 2 (population segment level), financial indicators such as liability be adopted as well as measures of the current and expected distribution of wellbeing to help contextualise financial measures
- At level 3 (service response and effectiveness), financial indicators such as return on investment be adopted as well as measures of the distribution of wellbeing achieved. These should be calibrated with evaluations of services. Further non-financial information should also be used to understand expected service delivery profiles that inform supply need.
- At level 4 (information provided to front line), non-financial information be provided for use in building or updating appropriate assessment tools, resource allocation tools and demand management tools.

8.1 Visibility of individuals to the service system

The degree to which each child's wellbeing and characteristics are visible to agencies and the service system will vary depending on how much interaction they have with the service system.



Where a child and their family members are only visible through universal services, there will be fewer data points describing their wellbeing. Health and education milestones become important differentiators, as well as community influences and the absence of other service or benefit exposure. However, whilst many individuals in this category may have lower vulnerability, some may simply have unreported or unobserved vulnerability, leading to the potential for unmet demand.

Where a child and family progressively become visible to agencies across the service system, the level of understanding of wellbeing increases. This will either be through notification, presentation at service (e.g. at hospital), occurrence life event, offending, victimization, usage of benefits or usage of services. Many agencies may also be undertaking assessments of individuals they come into contact with.

Interactions with Health, Education, Work and Income, Police, Justice, Courts and Child, Youth and Family will all provide information that could help ascertain the level of family stress and/or child vulnerability or risk of vulnerability.

Where a child is notified to the Child, Youth and Family (to Care and Protection or Youth Justice) a greater level of information and assessment becomes available, describing more elements of the child's wellbeing and situation. As the assessment tools used in CYF mature, these will also lead to interventions better targeted at the need of the child and family.

This level of "system awareness" will be important when understanding the uses of the investment approach. Where the system is aware of a vulnerable child, an assessment can be made and an intervention followed where appropriate.

However where the system is unaware of a vulnerable child (the vulnerability is not observed or reported), no assessment or intervention is likely to occur. This concept reflects that there will be a level of unknown vulnerability in the population (or unmet demand).

8.2 Levels of usage of the investment approach

Underpinning the investment approach is a robust and systemised way of collating, analyzing, interpreting and reflecting on information. This informs multiple layers of need from overarching policy to frontline practice. The level of complexity behind the need of a child or family, the level of awareness of this across agencies and the operating model will all determine how an individual may interact with the system when it comes to assessment and intervention.

	Population level	Users	Connections	Financial measures	Non-Financial measures
Headline measures and outcomes	Total population	Ministry Public Accountability	Connecting the purpose to $ and policy	Liability	Quality of Life National wellbeing BPS targets
Segments of population	Cohort	Agency Setting priorities for policy and investment	Connecting $ and policy to service	Liability Scenarios of change	Segmented Wellbeing Development Indicators
Service response and effectiveness	Cohort	How will the service impact? Evaluation	Connecting service to people	Liability ROI Scenarios of change	WBDI Service demand profiles
Information provided to the frontline	Individual	Frontline staff	Connecting practice to people	Indirectly, through high-needs kids indicator	WBDI by dimension Risk, safety & triage Demand profiles

The table above outlines at a high level the way New Zealand has segmented the use of the investment approach across different levels of government and service delivery. It highlights key users, connections and likely measures appropriate for each level.

This information base assists in understanding complex needs and which agencies are interacting with the individuals involved. It therefore begins to inform frontline staff and service response:

- By understanding where individuals with complex needs are distributed across geography (both current and likely in the future), front line practice and service demand can be informed. For example
  - resource allocation models for frontline staff and for supply of services over time
  - contributing data through time to assist with calibration of structured decision making tools (for example by understanding which complex needs combinations lead to more complex vulnerability outcomes now and in the future)
- By understanding how service interactions occur and the efficacy of services at changing short and long term outcomes, the approach can inform:
  - how a multi-agency model of servicing complex individuals may be pursued
  - how effective services can be scaled across the population by understanding where like populations will emerge

The approach also can inform policy, return on investment and inform directions for design of services through the segmented and population level information. For example:

- by understanding the risk emergence of vulnerability and the probability of future outcomes and usage of services, a case for change can be constructed to intervene earlier
- the ability to scale trialed services can be estimated through understanding where like populations may lie
- the emergence of actual results and systematically testing them against expected results helps to update design in a continual improvement strategy
- where funds are limited, the approach and information sets created can assist in understanding the tradeoffs inherent in the choice of different policy targets

The following table illustrates how MSD and Justice have reflected on these different levels of information provision.

Level	Description	Welfare example	Justice example
1	System level measurement of performance	Future cost of beneficiaries	Future crime or variant (such as future cost of crime)
2	Segmentation to understand concentration of risk	Segmentation of beneficiaries to indent those most at risk of future benefit receipt	Segmentation of offenders, victims and locations to understand those most at risk of future crime
3	Investment in effective services with a good return on investment	Comprehensive understanding of the effectiveness of all employment assistance	Comprehensive understanding of the effectiveness of all crime prevention expenditure
4	Effective implementation and evidence-based practice	Triage and intensive case management model	Framework for evidence based policing

When considering vulnerable children, we are faced with a much more complex interaction of factors associated with the child and their environment and also the multi-agency nature of how communities, families and children interact with the service system. The table below shows the nature of this complexity and how the investment approach informs and/or interacts with this complexity at different levels. In spite of this complexity, it is vital to support these four levels of usage with a single, coherent model framework, such that there are four different levels at which information from the model is used, rather than four separate models.

Level	Description	Vulnerable Children example
1	System level measurement of performance	Future fiscal cost associated with caring for vulnerable children with a propensity to have future interaction across the service system. Current distribution of wellbeing measures that are predictive of future cost (which could be represented against a targeted distribution reflective of policy intent) Potential to expand to include global measures such as quality-adjusted expectation of life measures
2	Segmentation to understand concentration of risk	Children and young adults (transitioning to adulthood) would be segmented based on their wellbeing profile (and therefore the risk of future service or benefit receipt). Wellbeing profile includes the characteristic of the child, their carer, family and community in which they live. Different cohort views could therefore be constructed to understand concentrations by community, gang association, age of child etc. Multiple views of the segmentations will be required to link risk to the multi-layer nature of service and intervention (to community, child and family but also across wellbeing factors of safety, foundation, development and resilience milestones).
3	Investment in effective services with a good return on investment	Evaluation approaches should be outcomes based and calibrated with the overarching wellbeing framework. A comprehensive understanding of the efficacy of interventions and services provided to vulnerable children, their families and the community (across agencies). This includes the ability to understand interaction and cumulative effects between elements defining wellbeing and the programs and interventions to which the child, family or community are subject This spans: a) Prevention and demand management strategies b) Services aimed at healing and repairing child wellbeing c) Transitioning vulnerable children to adulthood and an ability to engage in employment and society
4	Effective implementation and evidence-based practice	Implementation to calibrate front line assessment and triage tools within the overarching wellbeing framework. Secondary assessment, triage, referral, take up of service / intervention, completion and impact across different time periods should be pursued. Differential response and a variety of case management models will be required depending on triage and whether the intervention is secondary, tertiary or statutory in nature.

8.3 Evolving usage over time

The panel has signaled a likely transformation of the child protection system, which is currently focused on safety and offending of youths, toward a more holistic vulnerable children's framework.

We note that the initial incarnation of the investment approach will reflect the information available and the current service system. At present, good information is available to inform the investment approach to define key areas where higher liability exists and to inform a view of wellbeing.

As the service and intervention system is built out, a greater investment in triage and assessment models will likely be needed (to expand to a risk and needs concept expanding from a safety and offending focus to include prevention, healing and transition). This will naturally provide new information as these models are implemented and assessments are recorded through time. There is a requirement to calibrate these models and the overarching wellbeing framework that underpins the investment approach so that a vertical alignment between practice and different levels of information can be achieved.

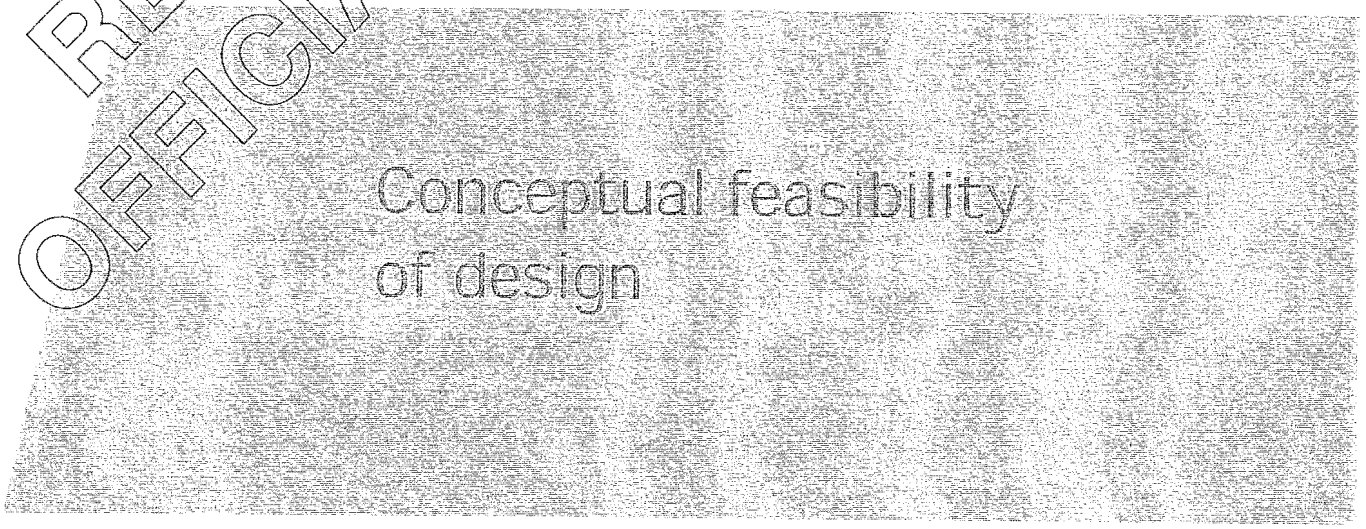
Front line decisions informed by a Child Wellbeing Framework

The Child Wellbeing Framework can significantly enhance the early decisions made at the intake and triage stage after receipt of a child protection report. The framework can be used to underpin the development of structured tools and resources that assist in prioritising matters for allocation. Risk ratings can be applied to each matter based on the available information on the child and their family by streaming of the information through a range of risk identification trees embedded in the tool and calibrated with data from the Child Wellbeing Framework. This process would provide a rating of potential or likely risk that the call centre operator can use to inform a risk priority rating or timeframe by which the report needs to actioned at the local service outlet. A system to then triage this information at the local level to enhance allocation decisions would be in place using the framework as an important design input that guides professional thinking by raising the importance of the most critical pieces of information at hand to reflect or align to the outcomes of the Wellbeing Framework.

Additionally, there are current gaps in the evaluation of existing services and interventions which we recommend progressively be addressed. In particular any new intervention should be subject to an outcomes evaluation. Again we recommend that the evaluation framework be calibrated with the overarching wellbeing framework that underpins the investment approach, to gain vertical alignment between the services and interventions applied to the individual and the levels of information provided by the investment approach.

Consistent application of the investment approach will generate new information over time that can further inform the complex interactions not currently visible through individual agency information systems or analysis.

In this way, the investment approach will continue to evolve and provide a consistent, robust and systematic way of understanding change and success of change with respect to the improvement of financial and non-financial outcomes for vulnerable children.



9. Feasibility assessment process and dimensions

Key points:

- A number of decisions will be required as to scope across several dimensions: the population, the forecast horizon, the outcomes, the services and costs
- There are specific considerations regarding costs that will make up the lifetime financial measure

Recommendations:

- That decisions of scope be made in light of priority areas for implementation. For example, if transformation of CYF and build of services assisting vulnerable children to transition to adulthood are scheduled first, the investment approach should be built such that it can set a baseline and inform these transformations.
- As the model is built, we recommend that all children fall within its scope, with particular depth of build on any child that comes into contact with CYF or has a risk of coming into contact with CYF (secondary and tertiary systems). This will include relevant characteristics of the families, carers and communities associated with the child.

9.1 Introduction

Having established objectives of an investment approach, the key outcome measures both financial and non-financial and key lifetime measures, along with how these measures would be used, we now proceed to assess the feasibility of developing the investment approach using these measures.

We considered feasibility along the dimensions of:

1. Data - which is discussed in Section 10
2. Modelling - which is discussed in Section 11
3. Process and capability, including governance and accountability issues - which is discussed in Section 12

However, before moving to these discussions it is important to consider the various dimension of scope and the options available. These are discussed here in order to inform the final recommendations both in respect of a long term goal and a roadmap for implementation of an investment approach for vulnerable children.

9.2 Scope

There are a number of options with regard to scope. The table below shows specific scope options across various dimensions. There may be a long term vision of the scope to be covered in the application of an investment approach to vulnerable children, which will be progressively built towards over time. An initial focus is likely to be those dimensions in scope for high priority transformation of the system for vulnerable children arising from the recommendations of the Panel.

We will examine feasibility of the broadest scope outlined below.

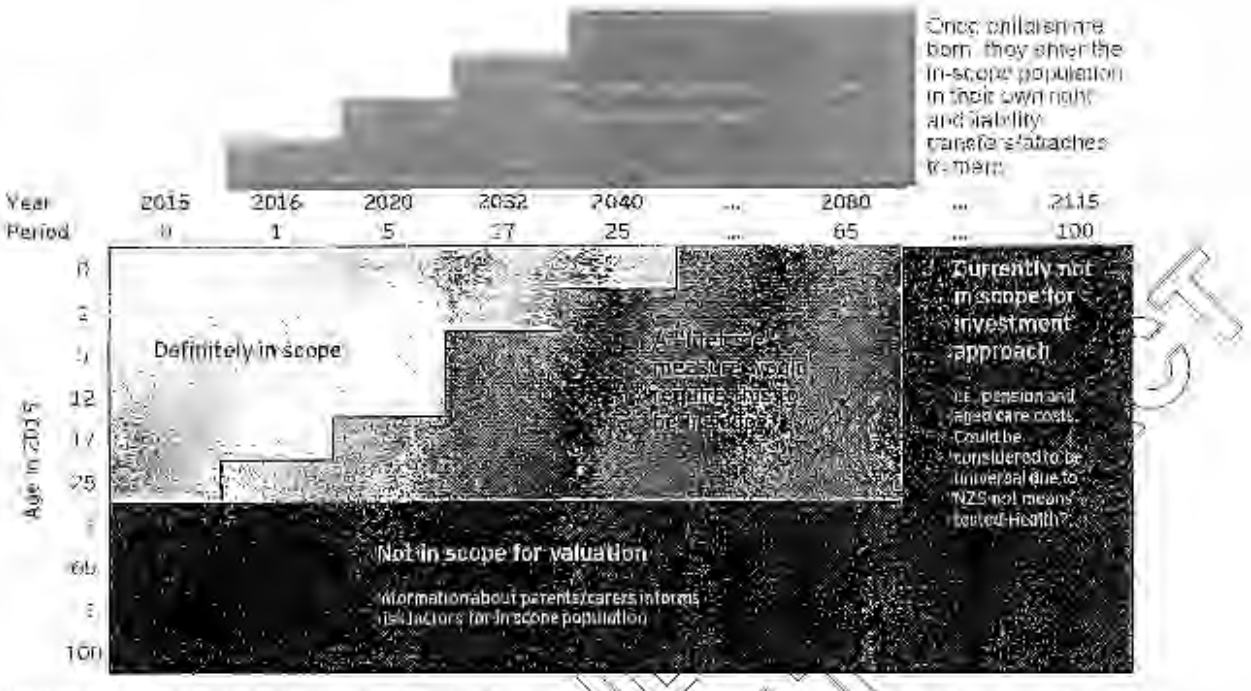
Scope of population	Scope of vulnerability / outcomes / WBDI measures	Scope of services	Scope of costs	Forecast horizon
a) All children b) Or specified subset of vulnerable children: ► i.e. those "at risk" - any dimension ► i.e. those "at risk of abuse/neglect and offending" ► i.e. those with notification (note this means C/YP will move in/out of the valuation)	a) All dimensions b) Selected dimensions? ► Related to neglect/ abuse and offending only? Given VCOF, we expect all dimensions to be in scope. This has implications for scope of services and costs but it could be constrained at this point.	► CYF (Care and Protection) ► CYF (Youth Justice) ► Corrections ► Police ► Courts ► Work and Income ► Housing ► Education ► Health Some or all services ► e.g. universal vs secondary vs tertiary ► top-up investments only	► Benefits ► Services ► Non fiscal a) All fiscal outgo? b) Secondary and Tertiary only (ie. not universal), or including universal/ primary where targeted?	► to age 17 ► to later transition age (e.g. 20 or 25) ► to age 65

9.2.1 Population - all children or a subset? Over what time period looking forward?

The current child protection and youth justice system (as represented by CYF) is focused on creating safe environments for children and addressing youth justice concerns. The External Panel is proposing to transform the sector to a multi-agency focus on child vulnerability, of which safety and offending behaviour are sub-elements of a broader definition.

This intended transformation will be targeted at preventing vulnerability, healing already developed vulnerability and incurred trauma and transitioning vulnerable children into adulthood (with the intent that they lead a better quality life). This naturally expands the scope of population to include children at risk of being vulnerable, children defined with vulnerability and young adults who were vulnerable children and require transition services to help them progress in life.

All children will need to be modelled to understand those that are falling in and out of different wellbeing categories (predictors of future service usage as an adult) and using different elements of the service system (intervening with families or children at risk).



As the vulnerability of the child also includes the experience of the family, carer and community, this also brings adults into the scope of the modelling. To illustrate, the history and state of a prospective parent can have a profound impact on their future child. For example the abuse of alcohol during pregnancy has long lasting impacts on the cognitive development of the child. Therefore interventions targeted at prospective parents known to be at risk would be in scope.

It is therefore proposed that all children and their parents, carers and communities would be focused upon in the modelling. Different levels of focus on different segments of the population will be necessary due to the ability to see vulnerability emerging and the ability to intervene, however the focus on different groups (and the granularity of modelling required) will be consistent with the intended use of the information for that target group.

9.2.2 Outcomes – all dimensions or a subset?

An option could be to only focus on outcomes connected with abuse and neglect and youth offending. As this seems to be a very incomplete view of vulnerability we proposed, and the groups we discussed with agreed, that the approach should measure all dimensions of the desired outcomes. This has significant implications for the scope of agencies and fiscal costs/benefits to be modelled.

However, the scope could be constrained at this point, if appropriate in line with the initial priorities of transformation of the system.

9.2.3 Agencies - CYF only or broader?

The services that a child will interact with broadly cover the following:

Universal services, by nature, apply to all individuals. The outcomes of universal services in education and health are particularly important to consider for vulnerable children. Where age appropriate milestones are not being met, a top up to investment would be considered to enable a vulnerable child to reach a higher milestone achievement. This, in combination with other features, should have a positive impact on future life course.

Secondary services included in this context are those services generally aimed at intervening or improving the environment within which the child exists. These may include interventions aimed at reducing domestic violence, substance abuse, the impact of mental health issues and increasing the level of parenting skills. Overall the interventions are aimed at improving the environment in which children are being brought up, through reducing the escalating impact that stressed care

arrangements have on children's wellbeing (which in turn has an impact on their future pathway and lifetime liability). These include interactions across multiple agencies.

Tertiary services included in this context are those services aimed at both family and child needs. These services are targeted at improving both the environment in which a child is being brought up, but also at ensuring a child's wellbeing needs are being met. It is at this point that a child is more fully assessed with respect to their overarching vulnerability and there is an opportunity to intervene more holistically on the highest risk cases. These include interactions across multiple agencies.

Information used to profile outcomes, risks, wellbeing and service usage will naturally include information sourced from across agencies (and progressively stored within the IDI).

There is also a need to consider which agencies will interact with children from the perspective of intervention (or investment) and which agencies will interact with children from the perspective of future cost or intervention that could have been averted from early prevention.

It is not proposed to model universal services in full in the vulnerable children investment model. These services are aimed at providing a level of service to all individuals in New Zealand. Vulnerable children, however, may fall short of key development milestones such that they require a top up investment to get them to an adequate minimum milestone.

Ministry of Education (MoE)

It is anticipated that MoE will progressively provide key indicators of age appropriate education milestones across a child's life. These milestones would form a component measure in the wellbeing Framework applied in the investment model.

Where individual children are below national standards and/or exhibit behavioural issues, schools would intervene with targeted services. However, where there are gaps in the existing targeted services or their ability to provide for a child that is vulnerable, there may need to be a further top up investment. These interventions would be aimed at achieving appropriate education milestones (healing incurred educational vulnerability), preventing vulnerability from growing or being incurred (prevention) or assisting to transition an individual into appropriate employment through increasing their relevant skills and training (transition).

Ministry of Health

Health, on the other hand, is more complex. Vulnerable children may have needs across elements of basic health need, learning healthy lifetime habits (e.g. targeting obesity) and interventions around mental health and substance abuse. Understanding the lifetime impact of these interventions on health (such as chronic disease outcomes, mortality rates and resilience) may be complex to unpack and attribute, particularly where there are multiple services that may be applied and where genetics also can play a strong part in determining incidence.

The shorter term objectives of increasing health and wellbeing to reduce early mortality seems feasible to measure. However the liability movement (of extending life) may on its own lead to an increase in liability. Careful consideration of how these intervention results are handled is required so that the financial liability movement is contextualised with respect to the desired social outcomes.

Work completed by the MoH also suggests that there are opportunities to measure the impact of early risk factors in childhood and their implication on behaviour and longer term health outcomes. For example, research and clinical studies link maternal stress (in utero) and Fetal Alcohol Syndrome to increased cardiovascular risk. We are aware there are similar pieces of research that also link early mortality and behavioural issues associated with placement churn to these critical factors that influence early cognitive development.

Further work will be required to fully map out those elements of the health system services that are aimed at prevention (for example targeting alcohol abuse in prospective parents), healing (for example mental health services) and maintenance of quality of life (e.g. chronic disease management). Further consideration is needed to understand those costs behind each layer and the extent to which they are truly avoidable costs.

This would then inform how best to determine what parts of the health system are modelled and what is not. The liability measure chosen will need to provide the right movement and indication to drive an investment approach. Not all health components will be necessary to achieve this aim and in the shorter term it would be prudent to target what elements of the complex health system come into the investment approach that provide the right messaging and progressively build capability aimed at issues that are more tangibly influenced in the context of vulnerable children.

Justice, Police, Courts, Corrections

A child's vulnerability is impacted by their care environment and the profile of the broader community in which they live. The interaction their carer/family may have with Police, Justice or the Courts can be indicative of environments that affect a child's safety, development and resilience.

Associated family members who have a history of interaction in the Justice sector may be potential perpetrators of crime (or offending), victims of crime or a combination of both. Communities may also have different levels of crime and victimization present, indicating children who are unsupervised may also have higher risk factors.

Family stress factors such as the incidence of Domestic Violence, Mental Health and Substance Abuse, or the neglect factors that come from inadequate parenting skills or behaviour are indicators that vulnerability is increasing in the environment in which the child lives. Preventative or rehabilitation interventions applied to families (in the Justice sector) will therefore have a flow on effect to vulnerable children. Additionally, where an intervention is made with respect to a parent, there may also be a need for an intervention to provide 'healing' services to the child.

The future cost of offending and/or victimization as an adult is likely to be more prevalent where they have a history of being a vulnerable child. This has been supported by analysis performed by MSD which shows those children whom have come into contact with CYF have poor justice sector outcomes later in life.

Work & Income

Equally, the experience of a family in relation to employment and benefit usage can be indicative of disadvantage and financial stress. Financial stress is often a cause of wellbeing issues in parents which, in turn, have flow on effects in children. Welfare dependency also has an intergenerational aspect, with welfare dependence emerging in multiple generations of the one family. Increasing participation rates and the relevant skills of individuals, and connecting individuals to appropriate job opportunities, are important features of both the adult (parent) population and also vulnerable children who are transitioning into adulthood.

The future cost of drawing on Work and Income benefits as an adult is likely to be more prevalent where they have a history of being a vulnerable child. This has been supported by analysis performed by MSD which shows those children whom have come into contact with CYF have greater drawings on the welfare system later in life.

Housing

Inadequate housing is often a cause of health concern. Location of housing and access to transport or other infrastructure can also lead to constraints on development (access to primary services for example).

The future cost of drawing on housing benefits as an adult is also likely to be more prevalent where they have a history of being a vulnerable child.

Child, Youth & Family

Many of the parents of children who are known to CYF were themselves known to CYF as a child either through Care and Protection or Youth Justice, this is a common feature of the child protection populations in many jurisdictions and points to the intergenerational nature of child protection. It is not uncommon for young persons who are known to CYF to have children at young ages (as children or young adults).

The future costs of CYF associated with this intergenerational implication will need to be modelled. This can be achieved by modelling at least one generation of children being born to the current population of vulnerable children.

9.2.4 Considerations regarding financial elements

The previous section refined the likely scope of costs to be included from an agency perspective across benefit receipt and service delivery. In this section we discuss specific considerations regarding financial elements that will need careful definition in scoping and implementation.

It extends the conceptual introduction in Section 7 into some specific practical areas and then in Section 10 on data we discuss in more detail what is currently available from agencies in regard to costs.

A detailed cost model allowing benefits and service delivery to be unitized and attributed to the lowest level appropriate (child, family, community) will be required.

9.2.4.1 Understanding costs vs investments

The previous section highlighted that not all agency spending would necessarily be in scope for the investment approach.

For example, universal spending on health and education may not be incorporated. If it is truly the same spend at unit level across all children, then incorporating the spending will not add to the differentiation or segmentation of children at greater risk of poor outcomes.

Further, some elements of Government spending would not be considered representative of poor outcomes, and the aim would not be to reduce the liability for these. Examples include:

- Health care costs for "non-avoidable" health events. As discussed in the scope of services above, these would be in the nature of the costs classed as "universal". Isolating the in scope costs such as the avoidable costs associated with poor outcomes (such as rheumatic fever) and identifying preventive spend as an explicit investment will be challenging.
- Government support for tertiary education, although this could be considered an investment aimed at increasing potential economic engagement and reducing the risk of long term welfare dependency, it wouldn't necessarily be included in a base valuation for vulnerable children.

The two schematic examples we have provided should clarify that cost and investment should both be considered when calculating a 'net' liability, although these elements can be separated in order to estimate a return on investment, i.e. cost savings to be realized following explicit investment spending.

9.2.4.2 Capped vs entitlement funding

Benefit receipt is generally an entitlement system whereas much of service delivery is funded in advance during budgeting processes and thus may be subject to caps on spending. As for other fixed expenses, such as infrastructure maintenance, this may require simplification when unitizing costs. These simplifying assumptions should be carefully reviewed on an ongoing basis as funding envelopes change.

To the extent capped funding means unmet need is left unserviced, this should be considered as discussed in Section 7.1.4.

9.2.4.3 Threshold issues

The perspective on liability may change as an individual transitions between states. For example, what might have been consider a cost for a child at a secondary or sub-statutory level may be regarded as an investment at tertiary level.

If we look at a child at a sub-statutory level, there will be an expected liability associated with the risk of entering tertiary Care and Protection. The aim of investment will be to reduce this risk and thus the liability.

If, however, the child's specific pathway should mean that they do actually transition into Care and Protection, the risk has crystallised and the liability will also significantly increase for that individual child. If the estimate of risk of transition to tertiary for the cohort of children at secondary level is correct, then this will not show an overall increase in liability for the cohort per se.

Now spending at a tertiary level must be considered as an investment to continue to reduce the expected liability associated with longer term poor outcomes (such as welfare dependency and adult corrections experience).

9.2.4.4 Coherence with other sources

Determining unit costs will require considerable effort and reconciliation with multiple data sources. Coherence (or difference) with other sources should be clearly documented for ongoing confidence in the figures used to construct the liability.

10. Data

Key points:

- New Zealand has considerable data assets in respect of vulnerable children, their broader environment and risk factors and their outcomes
- The IDI is an invaluable source of linked data that is being continuously expanded, which benefits from a robust environment and data management protocols
- The administration datasets are primarily service-centric, thus are gaps in data collection, particularly around assessment of need, wellbeing and outcomes

Recommendations:

- That the IDI be used as the central point of analysis (although this could be reconsidered if a comprehensive operational dataset was established)
- That additional data sources be brought into the IDI as required, from agency administration data and from other sources, such as research data and findings. Where feasible, these should be matched at a client level.
- That additional data be collected and brought into the IDI, particularly in respect of assessment of need, wellbeing and outcomes, evaluation of service efficacy and unitised cost data. Where feasible, these should be matched at a client or service level (as appropriate).
- That MoUs continue to be established to enable operational implementation of risk assessment and other approaches for individuals using actual administration data
- That a representative dummy dataset be created by Statistics NZ to allow users to familiarize themselves with IDI data structures without having to be in the environment
- That the department continue to investigate the legislative restrictions around the access to and use of the IDI data sets. Particularly in light of the likely need to use offshore expertise in the build of models and the potential benefits of using cloud technology to expand processing speed. Appropriate controls over data would be required due to the extremely sensitive nature of the identified and matched data sets

10.1 Introduction

Progressive implementation whilst improving data, services and understanding

Depending on data availability, the extent to which the investment approach can bring more granular cohorts or individuals into "focus" with respect to their need and liability is affected.

In general, population and universal services information will obtain a level of segmentation that shows groups of individuals subject to overarching risk of increased vulnerability. Where this can be supplemented by deeper profiles of the parent, carer and child, the segmentation can become more granular and specific to their needs. The development of a "child wellbeing and development" framework (and associated indices) can assist in finding proxies that describe the difference between individuals and the type of need that would change vulnerability.

However, existing data has many challenges that will need to be overcome over time to gain the full benefits of the investment approach.

1. Linking of information to achieve a risk and vulnerability profile of
    a) Child
    b) Parent
    c) Carer
    d) Family

e) Community

2. Maturity of assessment tools in each agency that describe elements of risk and/or vulnerability
3. Maturity of the design and information capture of the benefit and service system to understand the application of services to individuals or families, the efficacy of these benefits and services at altering risks and vulnerability and their associated unit costs
4. The gaps in coverage of services and thus information capture across the population that may lead to the existence of unmet demand

We understand that there are current significant gaps in services in both the secondary and transition components described above. We also understand that the services applied in the primary and tertiary levels have gaps, are subject to varied quality and in general lack a level of understanding of the efficacy of many services (including some services that cannot be tracked to individuals).

This suggests that the initial form of the investment model will be less granular and will need to look to other information sources to inform assumptions about scenarios of change associated with intended transformations of the service and benefits system.

In particular, this would include the development and use of

a) primary data capture methods to start collecting information not currently collected that describes elements of the wellbeing and development framework
b) research and international trials to inform a test and learn approach to the implementation of change in New Zealand
c) implementation of widespread and consistent approaches to the assessment of risk and vulnerability as well as the evaluation of efficacy of service (as applied to an individual or family)

Offsetting this is the extensive integrated data infrastructure content available that describes individuals across the service system. This allows the use of proxies and assumptions informed by broader data, to build an investment approach now.

Over time, the use of proxies and assumptions for missing data elements in the investment approach will be replaced with more solid data as evidence bases emerge. In turn, this allows a progressive level of granularity and targeting to be achieved. Through implementing a control cycle and a learning system, component parts of the investment approach can be progressively tuned so that investment can be further targeted through time to achieve New Zealand's overarching goals.

Evidence already exists that suggests different cohorts of individuals have different experiences when it comes to longer term impacts of vulnerability as a child. Action can already be taken to start to improve results. The application of the investment approach and associated control cycle will provide a mechanism to

a) build out capability and data in a consistent way that adds to the understanding of vulnerability and its impacts over a lifetime (financial and non-financial measures)
b) provide information to support cases for change
c) understand change in a systemised and consistent manner through time
d) assess estimated ROI of anticipated changes
e) monitor KPIs and benefits as they emerge

10.1.1 Nature of data required

Data is required for two main purposes:

1. For describing and populating portfolio information at the start of projection, both demographic information and information about their current state of need, wellbeing, vulnerability factors and risk factors.

2. For setting assumptions and parameters, primarily from analysis of historical data. This includes:
    a) transitions and propensities around the development of need
    b) changes in wellbeing outcomes
    c) changes in vulnerability and risk factors
    d) transitions in life events (entering/leaving education, employment, mortality, fertility, migration)
    e) all interactions with agencies including service usage and benefit receipt
    f) understanding of service efficacy for cohorts with different levels of wellbeing
    g) estimates of fiscal costs of service usage, and
    h) other financial proxies for outcomes.

The information to inform a vulnerable children's investment approach would be used to profile children, their parents / carers, their extended families and the communities in which they live. It will be most useful when multiple sources can be linked to an individual through time.

Given the complexity of the system being represented, the demands on data are great.

Data concerning individuals and organisations can be captured in a variety of ways, including through:

a) the administration and finance systems of Government agencies
b) the assessment tools used by government agencies in case records
c) the administration and finance systems of NGOs and service providers
d) the linked datasets held in the Integrated Data Infrastructure by Statistics NZ
e) census or other survey mechanisms
f) longitudinal and other research studies, along with alternative data sources

All these data sources will inform both purpose 1 and purpose 2, although the last item is principally used for enhancing the assumptions and parameters in purpose 2.

10.1.2 Overview of existing data analysis regarding outcomes for vulnerable children

A considerable series of work has already been done in New Zealand analyzing various sources of administrative data to understand risk factors and correlations in terms of the experience of vulnerable children and their long term outcomes in particular with respect to interactions with the social sector.

These include:

- Vulnerable Children: Can administrative data be used to identify children at risk of adverse outcomes? (Auckland University, 2012)
- Using Integrated Administrative Data to Understand Children at Risk of Poor Outcomes as Young Adults (Crichton, Templeton, & Tumen, 2015)
- Work performed for the Panel itself and reported in the Interim Report and Cabinet Papers

These studies have primarily drawn on administrative data from Child, Youth and Family, Work and Income, Department of Corrections, Department of Internal Affairs and Ministry of Education.

These existing studies are a key element in demonstrating the feasibility of analyzing linked data across people and agencies.

10.1.3 Moving from a service centric to a need centric view of the child, parent, carer, family and community

Ultimately the best information sources for an investment approach for vulnerable children would be those that describe the need and/or risks associated with children and their environments.

A need-centric view means we describe the individual or entity in terms of their attributes and requirements, their wellbeing levels, their vulnerability and risk factors and their outcomes.

A service-centric view essentially describes what government or NGOs know of the individual and entity, what they are doing to them and how they have assessed them. This means it primarily records activities and interactions but doesn't describe the need that is being met or the outcome that is achieved in terms of the individual's wellbeing.

To move from a service-centric model to a needs-centric model we will need to link into the assessment process of individuals, entities and services. This means identifying the level of wellbeing before an event or activity and having an understanding of the impact of a service or intervention on meeting the needs of an individual, impacting their wellbeing. This will then influence their potential future pathway.

Factors relevant to transition states of the child include

1. Vulnerability incurred or level of development/wellbeing
    a) Access to basic needs (foundational)
    b) Development milestones, level of wellbeing and access to employment
    c) Ability to sustain an economic, social and wellbeing level
2. Risk of harm or risk that vulnerability will be created
    a) Behavioural factors of the child
    b) Factors associated with the environment in which the child lives
        i. Parent
        ii. Carer
        iii. Family
        iv. Community (including perpetrators)

Factors associated with the transition of the parent or carer which will have equivalent components in the factors associated with the child.

a) Level of individual vulnerability
b) Profile of environment created (safety, permanency, love)

Profiles of extended family or community will also impact the parents, carers and child. Transition of these factors will be allowed for in the modelling only to the extent that specific events, investment and services are targeted at some of the influencing factors for the child.

These headline needs must ultimately be understood and modelled as they will determine the future pathway of individuals within the system and their likely cost to the system.

Critically, the calibration between the actuarial investment approach and the approach used to assessing risk of harm and vulnerability, as well as the nature and extent of vulnerability, is required to determine the liability. The calibration of the service efficacy of interventions is also required so that the anticipated change in liability can be determined post application of scalable and effective services.

However currently much of the data is captured through the lens of the service system, meaning there will be gaps, either related to gaps in service coverage or because the services may not describe the full need of the individual. Additionally, for agencies where services are not provided to an individual but a community, we may need to initially make assumptions about how individuals benefit from that service. Lastly some organizations provide services to individuals but currently

little information if any may exist in their systems concerning that individual.

Until this data can be captured, observation of service usage will serve as a proxy for an indication of need, in the same way that benefit receipt in the welfare investment model is a proxy for the need for employment to attain the outcome of economic engagement.

10.1.4 Level of information about individuals

Information that has been captured will vary about an individual based on the level of interaction they have across government agencies and with other institutions collecting data.

At one end of the spectrum, information on individuals may be limited to a combination of socio-economic and demographic characteristics and information gleaned from universal services.

At the other end of the spectrum, an individual may have a rich history of interaction across agencies, including assessments of their need and services provided. This has been discussed in Section 8.1.

This variable clarity and granularity of data will require careful stitching together to form a full picture of all people in the system. For those where there is little data we will generally not assume those children have an "average" wellbeing, but rather we will determine a distribution of wellbeing levels around the average and the child will be assigned a particular level for the purposes of building up a reasonable view of the distribution of outcomes for cohorts of like children.

10.2 Principal sources of data - IDI and administrative data

There is a fundamental choice to be made about the principal source of much of the available data: either working directly from agencies' administrative data or working from the Integrated Data Infrastructure housed by Statistics NZ.

Data analysis and indeed modelling may take place within the IDI or outside it if agencies provide the necessary data. There are benefits and challenges associated with each approach.

The existing agency data architecture consists of many service-level datasets, which are often grouped in sector-level data hubs. For example, the datasets for CYF (CYRAS), Work and Income (SWIFTT) and Studylink (SAL) have been merged in the Information Analysis Platform (IAP) which provides a summary of interactions that a person has had with MSD. A similar platform exists for the Justice sector (ISIS), and Education (LBDS) and Health (linked by NHI number) have agency wide data warehouses.

Currently operational data-sharing is common, but connections have been developed in an ad-hoc way over time. This has resulted in a number of specific connections between various agencies, not developed as part of a comprehensive assessment of sector-wide information needs. Each connection is negotiated separately, typically with a separate Memorandum of Understanding (MoU) and with rules of use and technical standards of transfer unique to the specific connection.

The existing approach to data sharing is inefficient due to high transaction costs, inconsistent with varying standards of use, inaccessible to members of the public and ineffective due to sub-optimal identity matching.

Much of the data contained in these hubs has now been combined on the Integrated Data Infrastructure (IDI) - see Appendix F which shows the states of linked datasets as at May 2015. Because of the extent of individually linked information across a very wide range of domains the data requires strong protections, is anonymised and persons and purposes must be approved before data is accessed. Consequently, the IDI provides for a good research and development platform, but is less directly relevant to operational decision-making on the front-line, especially in a case management context, due principally to restriction on what can be published from work performed within the IDI.

Within the IDI the analyst is working with individual data that contains all the required detail. It is only when data is reported from the IDI that it needs to be aggregated to a level sufficient to protect identities of individuals.

The IDI has the richest set of data about people, and consequently supports relatively effective identity matching, through development of robust matching algorithms. Outside the IDI different agencies take different approaches to matching, resulting in cases where a single person is treated as multiple people or multiple people as one person.

In particular the linkage of demographic records, including the Census, to an extensive array of administrative datasets provides the most solid foundation for a comprehensive understanding of key segments of New Zealand's population including intergenerational relationships.

Statistics NZ operates within a 'five safes' framework to provide that access to micro data is only allowed if all of the following conditions can be met:

- safe people - researchers can be trusted to use data appropriately and follow procedures
- safe projects - the project has a statistical purpose and is in the public interest
- safe settings - security arrangements prevent unauthorised access to the data
- safe data - the data itself inherently limits the risk of disclosure
- safe output - the statistical results produced do not contain any disclosive results

In our discussions with Statistics NZ and other data experts we learned that the above approach and protections certainly do not preclude the use of the IDI to support the development of an investment approach, as this can clearly be identified as being in the public interest. Public reporting on investment approach results has never been at a level that is disclosive, so this is not a restriction.

Further, in discussions with users of the IDI, we have learned that there is a fast expanding community of practice and support around interpretation and processing of the data which is helping to overcome some of the shortcomings in the quality of the metadata and the data itself and speed up the process of becoming proficient in analysis of the data. All users warned of a steep learning curve in becoming familiar with the architecture and the data itself, and advised proceeding incrementally in any particular undertaking.

It is important to note the trends across agencies for increasingly undertaking cross-agency analysis of data within the IDI. The critical work performed with the specifically created Integrated Child Dataset is currently being redeveloped in the IDI. Justice Sector data experts are moving away from performing analysis on their sector data warehouse towards performing all analysis in the IDI because of the easy access to such richly linked data.

However, the IDI and other agency datasets primarily capture information on service usage and interaction. There is currently far less information captured about:

- Costs of services
- Assessment of need
- Service efficacy

This is discussed in more detail in the following sections.

10.2.1 Population/demographic data

Foundational demographic data is available in the IDI in the form of:

- Life event data contains all records of births, deaths and marriages since 1840 and of civil unions since 2005. Birth records contain information regarding parents, although this is better quality with respect to mothers than fathers generally.
- Migration: MBIE provides data since 1997 on the movement of individuals across New Zealand's border including migrants, international visitors, and New Zealand citizens, as well as information about visas.
- The Census -currently performed every five years - this also captures household and family structures and will be available in the IDI from October 2015.

The model will likely require some exogenous information regarding forecast inflation, GDP growth and so on. Economic data is available in the IDI and also from Statistics NZ and Treasury.

Statistics NZ indicated that current research is underway to better model and understand household and family structures. Social Housing however has good quality data on the residents within their properties however, which is one element of this picture.

A further source of demographic information is the iwi/hapū register held by Te Rūnanga-Ā-Iwi-O-Ngāpuhi. This would provide important information about broader Māori family and community relationships. We have been informed of the existence of this dataset but have not made specific enquires about its accessibility to support development of an investment approach.

Projections of expected population allowing for fertility, migration and mortality and subdivided by age, sex, ethnicity and region are available from Statistics New Zealand, possibly at a more detailed level than that available publically (Statistics NZ, 2015).

10.2.2 Nature of data available from agencies

While the IDI contains extensive data which will allow for rich analysis of observational risk factors regarding vulnerable children, their environment and their outcomes at least in terms of service interactions, we noted above that the IDI generally has been less focused on collecting information regarding:

- Costs of services
- Assessment of need
- Service efficacy

There are other information sets that are currently not held in the IDI but which are held in agency systems. These are specifically around the secondary and tertiary interaction points with individuals and families.

This information would be used to complement that in the IDI by adding elements such as:

a) Cost of services (including benefits paid, services commissioned and services provided by the agency). These may be supported by expense allocation models where services are provided by agencies in the form of case management.

b) Additional data on incidence of events, notifications, crimes or other usage parameters

c) Assessments of eligibility, need or risk associated with individuals and families (for the purposes of applying interventions or services, for example the Corrections Rehabilitation Quotient methodology).

d) Information about service or intervention applied to individuals and families, including take up rates, completion rates and success indicators

e) Information about the supply and quality of services available by geographical region

However, there are varying degrees of quality concerns over some of the information stored by agency and significant gaps in some information components.

In order to gain additional insight we had the opportunity to speak with data experts from a number of key agencies (details of these meetings are in Appendix C) and we were also provided with a number of documents that showed evidence of possible data sources regarding these elements (details of the documents are in Appendix B).

When considering the welfare investment approach it is clear that the principal financial proxy for poor employment outcomes is benefit receipt. In the case of vulnerable children, much of the cost associated with poor outcomes is related to service delivery rather than benefit receipt. For this reason unitised information on those costs becomes essential for representing the financial proxy.

In general we note that agencies have varying degrees of maturity in their understanding of their unit costs of service delivery, recognising that the challenges in estimating this also vary across agency. We note that some financial information (for example some elements of the Community Investment programs) is not clearly unitized and thus simple assumptions regarding the allocation of

that investment to communities and the impact it might have on individual children would need to be made in the first instance while data capture improves.

We also understand that not all costs are fully variable, but suggest that simplifying assumptions to unitise them in the first instance (e.g. cost per bed night in a Youth Justice facility) will likely be an acceptable first representation. It is clear that a more precise way to consider costs is to separately identify how reductions in volumes may translate to cashable savings where fixed costs or overheads are involved. This is particularly an issue in respect of fixed costs in respect of infrastructure such as residential facilities. In the first instance, fully unitized costs may be an acceptable proxy.

We reviewed the Treasury's cost benefit analysis tool, CBAx (The Treasury, 2015), released in October 2015. It contains an estimate in dollar terms of around 120 different potential impacts that have fiscal, social, economic and environmental aspects. For example, in addition to benefit rates it includes service events, such as an estimate of cost per hour of police time and impact of other life events such as an estimate of the impact of a sexual assault per incident in dollar terms or a Quality-adjusted life year (QALY) gained.

This could be incorporated into the cost data for the investment approach model as appropriate so that the underlying data remains comparable across models and levels of usage.

To the extent the use of the CBAx tool forms part of the dataset of evaluation of efficacy of services this should also feed back into the data sources for the investment approach model[6].

We interviewed data experts from a number of agencies to understand how well their existing data captures service participation/usage, unit costs of services, assessments of need, and evaluation of service efficacy. The table below provides a high-level assessment of each agency against these categories, based on the information we gathered during the engagement. Many participants indicated that further information on these points existed within the agency, so this can be construed as a minimum assessment of data availability.

6 There are strong parallels between the social cost benefit approach and the actuarial investment approach. A possible early win might be to develop an ROI model for assessing investments that is much simpler than the full actuarial model, but more complex than the current CBAx tool.

Agency	Participation	Unit Costs	Assessment	Evaluation
Care & Protection/Youth Justice (CYF) Sources: Wall walks Interviews Documents	► Incidence of events, notifications, substantiations, removals – available but varies in quality with some fields being more reliable than others ► Data quality varied; involvement and start dates recorded, but end dates and outcome of intervention often not recorded accurately ► Many services are commissioned on a block payment method, rather than a payment on outputs or outcomes method. This means identifying which services have been associated with which individuals or families is not possible as this information is not captured. For services that are provided by the agency, the level of interaction can be seen for individuals and families to some extent.	► Cost data covering both C&P and YJ. Costs of all events where direct costs are observable (not complete). Not actual cost, but have cost model with average costs of event allocated to individual	► Records of which children in CYF care have disabilities is poor ► Don't have appropriate tools to identify mental health issues early ► Assessment of need using the current Tuituia framework is recorded but not in a sytematised or structured way. There have been variable interpretations and thus comparability is difficult. ► The level of variation and inconsistency is considered too great by data experts to form a useful basis on which to understand need, risk and safety between cases.	► Some work around relative efficacy, lack of control group for absolute measure. ► Evaluations are not completed for many services provided and consequently their efficacy is not understood. ► One example of evaluation is Family Start. The results are expected imminently. ► Resource allocated to C&P, YJ analytics small ► Office of Children's Commissioner understaffed (spot audit, qualitative)
Community providers	► Data for community provided services. Services are block-funded, with no information captured regarding participation or outcomes/effectiveness.			
Health	► Info collected by DHBs fed into health databases ► Info on primary care held only by PHOs ► Well Child Tamariki Ora (WCTO) services, including the B4 school check	► DHB report on funding split in annual reports ►	► Tracker used to identify individuals with probable chronic health condition ► Understand who is receiving disability support (Socrates data in IDI) ► PHO have ability to interrogate primary care systems (not MoH) ► Negotiations are ongoing for access to the individual WCTO data by MoH	► Budget 2016 work has been done to review effectiveness (work-in-progress) ► Review of evidence (identify evidence base)

Agency	Participation	Unit Costs	Assessment	Evaluation
Education	► Available at all levels (primary, secondary, tertiary) – transience, attendance, suspensions, stand-downs ► Early learner information work in progress (attendance etc.) ► Gateway assessment captured by DHB coordinators	► Costs not unitised	► Achievement info at individual level for secondary, tertiary. Aggregate level for primary. ► Vision, hearing data from MoH, provided on enrolment ► Reading recovery – new entrants tested ► Special education data high-level; only at enrolment ► PAT testing – unclear whether this is widely administered, data not held centrally	► Quality of info on reason for intervention is varied ► Main focus is system monitoring, limited understanding of program effectiveness ► Best evidence synthesis – use international evidence to identify effective interventions
Justice, Courts, Police	► Link to developing investment approach work	► Some work on unit costs ► Restorative justice contract	► RoC RoI tool for predicting re-imprisonment	► Investment briefs provide evidence for service efficacy (early intervention, drug treatment)
Corrections	► All corrections data provided to CYF (live feed) – research purposes only (no operations)	► Cost per prisoner data	► Rehab Quotient approach	► Evaluation of most rehabilitative programs in prisons
Work and Income	► Link to existing investment approach work	► Per the public reporting of the valuation, costs of service delivery are included	► Logistic regression model generate probability of being on benefit in next 2 years	► iMSD evaluation history of employment assistance going back 14 years ► Quasi-experimental evaluation and some trialling
Housing	► Link to developing investment approach work			

Note: shade represents relative strength of information available, with lighter shades indicating the strongest information sources.

Sources: Interviews were held with agency data experts (see Appendix C for a list of interviews). The information provided was supplemented by MSD Care and Protection and Youth Justice wall-walks, and other relevant documents. Those that can be referenced are. Others were provided on a confidential basis.

Data in respect of agency and program interactions will also need to be collected, analysed and classified in respect of whether access if universal, targeted (i.e. secondary) or highly targeted (including tertiary and statutory intervention). Most agencies are clearly able to think about their activities in this way already.

We are further aware of work being undertaken across agencies to support analysis of priority populations identified for Budget 2016. This work includes identification of programs, their costs, their level of targeting (i.e. universal, targeted or highly targeted), and evidence for their effectiveness (self-assessed, but against defined criteria). Much of this work is not currently publically available, but should be available as a source to inform implementation of an investment approach and is indicative of meaningful data being available regarding these dimensions. It is indicative of an emerging understanding of the fact that these are gaps in current data and an ongoing effort to fill those gaps.

10.2.3 Information stored by other entities

There is likely to be information stored by other entities that could be of value in enhancing our understanding of the experience of vulnerable children in their environment. This may include information from community organisations and providers, including NGOs. We are aware for example that Plunket holds more detailed information on the Well Child Tamariki Ora program in respect of outcomes than is currently available directly from the Ministry of Health.

10.2.4 Research data and other sources

Other data sources can inform the process when there is missing data in the administration systems

a) Longitudinal studies inform assumptions about the development of vulnerability and key predictors and frequently contain much richer information than administrative datasets

b) International trials may inform new services to trial in NZ

c) Local trials and evaluations inform anticipated and realized efficacy and scalability of proposed interventions

d) Evaluation of scaled intervention informs expectations going forward

e) Some existing services may have an expectation range in which efficacy may lie (based on a combination of research and that implied by residuals in the modeling compared to actual data).

f) Other data sources

Key examples of local longitudinal studies include:

1. The Growing Up in New Zealand study (Morton, Carr, Grant, Berry, Mohal, & Pillai, 2015). Report 6 released in July 2015 identifies risk factors prenatally onwards associated with poor outcomes at age 2 at a detailed level for the 7 000 children being tracked through the study. This can be done at a much more granular level than will be available in most administrative datasets. The study is intended to continue at least until the cohort reaches age 21 so will provide an ongoing flow of timely additional insight into risk and vulnerability factors as well as age appropriate outcomes.
2. The Dunedin Study, which has followed the lives of 1 037 babies born between 1 April 1972 and 31 March 1973 at Queen Mary Maternity Hospital, Dunedin, New Zealand, since their birth (Dunedin Multidisciplinary Health and Development Research Unit , 2015). This will give insight into much longer term outcomes over the life course.

A key example of a resource that provides robust evidence of efficacy of interventions is the reports and benefit-cost results published by the Washington State Institute for Public Policy (Benefit-Cost Results, 2015). These cover a wide range of relevant social policy interventions including child welfare, juvenile justice, education and children's mental health.

The New Zealand Justice Sector publish a series of Investment Briefs which also provide short summaries of existing worldwide, primarily quantitative, research, on what works to reduce crime - we were provided with one such example.

There are also local evaluations underway or recently competed, such as that of the FamilyStart program.

Innovative data sources that have been used in other countries include data from Credit Reference Agencies as an indicator of financial stress and thus a predictor of risk. It should be investigated whether such data could be used in this way in New Zealand.

10.3 Conclusions

10.3.1 Suitability

In our view there is sufficient evidence that there is sufficient data of the coverage and quality required to make an investment approach for vulnerable children feasible. Further work would be required to specify requirements in detail in the form of a scoping study for a specific implementation.

10.3.2 Privacy concerns and legislative environment

Dealing with highly linked individual data is sensitive and must be done in ways that respect privacy concerns and associated legislation. The IDI has existing arrangements in place to manage this.

New Zealand has established the Data Futures Forum and the Data Futures Partnership, whose members include a wide range of academic, private and public sector expertise, including that of Statistics NZ, to increase the potential for safe and trusted data sharing.

Their recent recommendations include:

1. Establishing an independent data council to act as guardians of the system
2. Review information legislation to achieve a more coherent and responsive system

Implementation should allow for liaison with this group to be aware of and influence the direction of these initiatives to the extent they have an impact on access to data for the investment approach.

10.3.3 Gaps – need for future collections

The key gap identified to date is the quality and consistency of the child safety and risk assessment data in the tertiary system.

There is a further gap in the level of evidence arising from evaluation of service efficacy of specific programs in achieving outcomes.

This suggests that most of the information available is observational in nature at this stage. A model can be built that provides an understanding of which characteristics in childhood (including family and community characteristics) would be associated or correlated with poor outcomes in the future. However causation would be informed by an evidence based assessment framework being implemented and linked to evaluations of services targeted at improving the need and wellbeing of children and their families.

An investment approach applied based on this data will therefore tell you where to look but not why. It also won't be able to tell you the current efficacy of existing services and interventions as this information cannot be linked to the individual at this stage.

Some elements will only be fully feasible as gaps in the IDI and the overall infrastructure for linked data are closed, but this is clearly a work in progress with some momentum, so is not a barrier to proceeding. In the meantime many of these gaps can be filled by the use of proxies.

10.3.4 Technical options available for data analysis

The alternative to working within the IDI and drawing additional data in as needed is to continue to work on an agency's existing data platform or to build a new platform.

Working from an existing data platform will provide access to the agency's complete, individually identifiable administrative datasets. It may already complemented by linkages via MoUs to select data from other agency datasets. It will not contain Census and other demographic detail of the

broader population with whom the agency may not have had contact to date and it will not contain other agency data that might be required for a complete picture of service interactions for a vulnerable child. All this would have to be built. This effort seems to considerably outweigh the value of being able to report on individually identifiable data.

Building a new platform would seem to incur even further costs with limited additional advantages. If the current structure of the IDI proves restrictive a more fruitful avenue may well be modification of the operating restrictions of the IDI as understanding of possibly public good purposes to which it may be put evolves.

11. Modelling

Key points:

- The model required is complex, substantially more so than that for Work and Income or that currently contemplated for Justice
- The model will need to interact in some way with these other models. Potential options are presented and these are feasible.
- The model can initially be developed using the proposed long term architecture but to a more narrow scope, in line with the main transitions for services for vulnerable children in New Zealand.
- The long term goal should be a single model for all investment approach requirements of the New Zealand government

Recommendations:

- That all agencies using, developing or considering an investment approach work towards a single model and a single view of each person modelled. This is recognised to be a medium term objective
- That this model allow for agency-specific views, inputs and scenario testing to meet agency specific requirements for performance, outcome and benefits management
- That the model for an investment approach for vulnerable children be developed to run using data from the IDI, and thus most likely also be run from within the IDI (although this could be reconsidered if a comprehensive operational dataset was established)
- That the actuarial model should be need and individual centric and simulate an individual's future pathway of need and service usage. It should model the characteristics of both the child and their broader environment, including resident and non-resident family (for example, parents, carers, siblings, whānau) and include characteristics associated with their community (for example, hapū, iwi, interaction with government/NGOs through school, health etc).
- That the actuarial model should explicitly include a focus on 17 to 24 year olds, where the build of transition services is intended.
- That at least one generation of children be included in any simulated forecast, to quantify the intergenerational effects of vulnerability.
- That any "one model" approach use a language that is efficient at running large complex simulations
- That a further assessment be made on the software environment to apply, in the shorter term, to the build of the investment model. A trade off exists between the use of SAS (used for the existing Work and Income model) and other software environments
- That appropriate model governance be instituted and followed

11.1 Approach to forecasting pathways, outcomes and financial elements

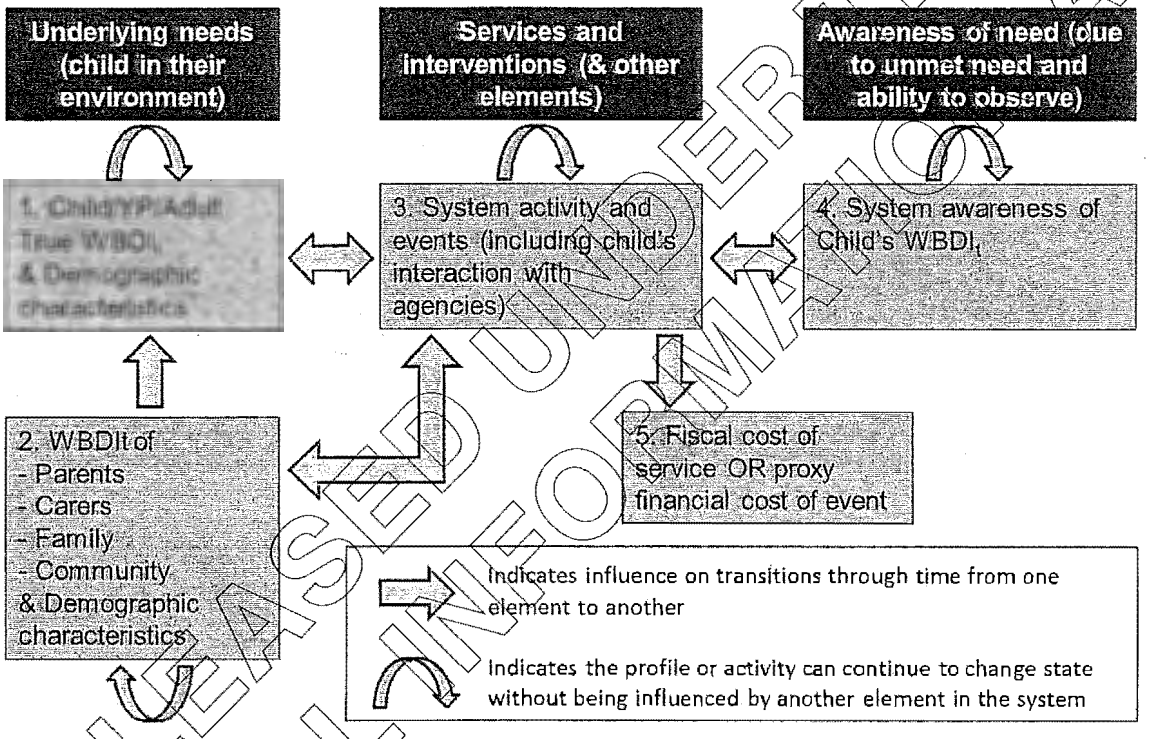
The modelling process can be thought of in three stages.

Firstly there is the conception of the reality we are trying to model. This is the basis of the conceptual framework explored in previous sections. Following this, there is the representation of the "mathematical model" that will be used to logically represent this reality. Finally there is the physical representation and implementation of that model, where specific decisions around modelling techniques, hardware and software tools will be made.

The mathematical model aims to produce the best representation of the reality, given tradeoffs in respect of available data (at a high level), separability of elements in the design and questions of diminishing returns and materiality in the model design.

When considering the computational representation there will be a wider range of possible options connected with the total cost of implementation including hardware and software choices, availability of or cost of collecting specific data, level of granularity desired versus level of approximation that is acceptable and in our case, choices regarding model interoperability in terms of input, output and interaction.

In this section we will outline the "mathematical model", i.e. the architecture of a modelling approach to represent the reality of an investment approach for vulnerable children. Issues regarding the computational representation will be discussed in later sections.



Element	High level discussion of contents
1. Child/YP/Adult True WDBI$_t$	At the start of the projection, the subject will be a child or young person, but as the projection moves further into the future they will become an adult. The true WBDI$_t$, i.e. the Wellbeing Development Indicator at a point in time, t, will be the model's estimate of the child's underlying wellbeing, independent of the awareness of any service or agency of that wellbeing. It can be considered in some sense as the "vulnerability factors" of the child. It will be determined at the start of the projection by the data available for the child, and so will depend on that particular child's past interactions with agencies and the data gathered by them in assessing child wellbeing. It will also be determined by the wellbeing of those around the child: parents, carers, family and community more broadly. However, to take a simple case, in the absence of any information on the child, we will not assume those children have an "average" wellbeing, but rather we will determine a distribution of wellbeing levels around the average and the child will be assigned a particular level. This will enable us to best model the likely distribution of underlying wellbeing in the population of children.

Element	High level discussion of contents
1. Child/YP/Adult Demographic characteristics	This includes the child's gender, age, place of residence, ethnicity for example.
2. $WBDI_t$ of parents, carers, family, community, and demographic characteristics	The $WBDI_t$, i.e. the Wellbeing Development Indicator at a point in time, t, will be the model's estimate of the wellbeing of each of the agents that are found to influence a child's wellbeing (in that sense these can be considered as "risk factors" for the child). It will be determined at the start of the projection by the data available for each agent, and so will depend on that particular agent's past interactions with agencies and the data gathered by them. However, to take a simple case, in the absence of any information on a parent, we will not assume that parent has an "average" wellbeing, but rather we will determine a distribution of wellbeing levels around the average and the parent will be assigned a particular level. This will enable us to best model the likely distribution of underlying wellbeing in the population of parents. The connections between children/young people and their parents, siblings, carers will be captured through a series of tables describing those relationships. Demographic characteristics of persons will be as described for the child. Demographic characteristics of communities might include deprivation index, rate of unemployment, indicators of housing stress and crime levels and so on. These will influence the assessment of wellbeing at a community level.
3. System activity and events	This is the process where the child will experience events and interact with agencies. Examples include: ▶ The events of assessment, triage, referral and service provision. ▶ The events within a given intervention of uptake, completion and effect. ▶ The experience of case management activity. ▶ The event of attending education, obtaining employment, changing residence, having a child, dying, experiencing illness or injury. Interactions with particular agencies would include those with Child, Youth and Family (Care and Protection and/or Youth Justice), Work and Income, Health, Education, Justice (i.e. Police, Courts and Corrections), Social Housing. Interactions with service providers might include Community Investment activities, Family Start, interactions with Children's Teams and so on. The propensity for a child to experience these events or to move from one state to another will depend on their $WBDI_t$ and demographic characteristics and those of their environment. This is the means by which the risk factors and vulnerability factors of the child will differentiate between the different pathways a child may follow. Very simple examples might be that the propensity for a child to attend education is likely higher where their overall wellbeing is higher or the propensity for a child to be referred for a particular intervention addressing their housing needs will be higher if the foundational element of the wellbeing in respect of housing safety is low. Each of these processes will likely be represented as a sub process that the child moves through in a given time step.
4. System awareness of a child's $WBDI_t$	Separating social system awareness of WBDI from underlying WBDI is key in considering the way the system comes to "know" a child, thus identifying and addressing unmet need. System awareness will arise as a function of the interactions a child may have with different agencies and program and whether that interaction occurs at a primary/universal, secondary or tertiary level. In addition, system activity usually cannot respond instantaneously to meet a development need and enhance WBDI. It requires awareness in the first instance and then time is required for the intervention to take effect. This is illustrated in the graphic below the table.
5. Fiscal cost of service OR proxy financial impacts of event	The financial elements will emerge as follows: ▶ benefit receipt by the child/young person (including during adulthood) ▶ unit cost of service delivery to the child/young person (including during adulthood)

Element	High level discussion of contents
	► unit cost of service delivery intended to be an investment in the child's wellbeing, but delivered to their family or their community ► unit costs of items that are proxy financial impacts of events representing poor outcomes (for example impact of early mortality)

All of the elements in the model above will "step forward" in time according to processes describing the propensity for events to occur.

Stepping forward through time the child's WBDI will be influenced by the following:

- intrinsic changes in the child's own state, for example, resilience levels may be affected by the development of a mental health problem
- changes in wellbeing in the child's environment. For example if a parent loses their employment or is imprisoned, this will impact their wellbeing and potentially also that of the child.
- interaction with agencies and service providers. For example interaction with a Gateway assessment by Health or Education may lead to a particular intervention aiming at improving the child's attendance and achievement at school, which will impact the child's development factors.

Similarly the WBDI of those in the child's environment may evolve intrinsically or by integration with agencies and service providers.

The projected expected costs incurred at each time point will be discounted to the date of the valuation in order to provide the expected lifetime loss of potential associated with the child's current wellbeing and expected future outcomes.

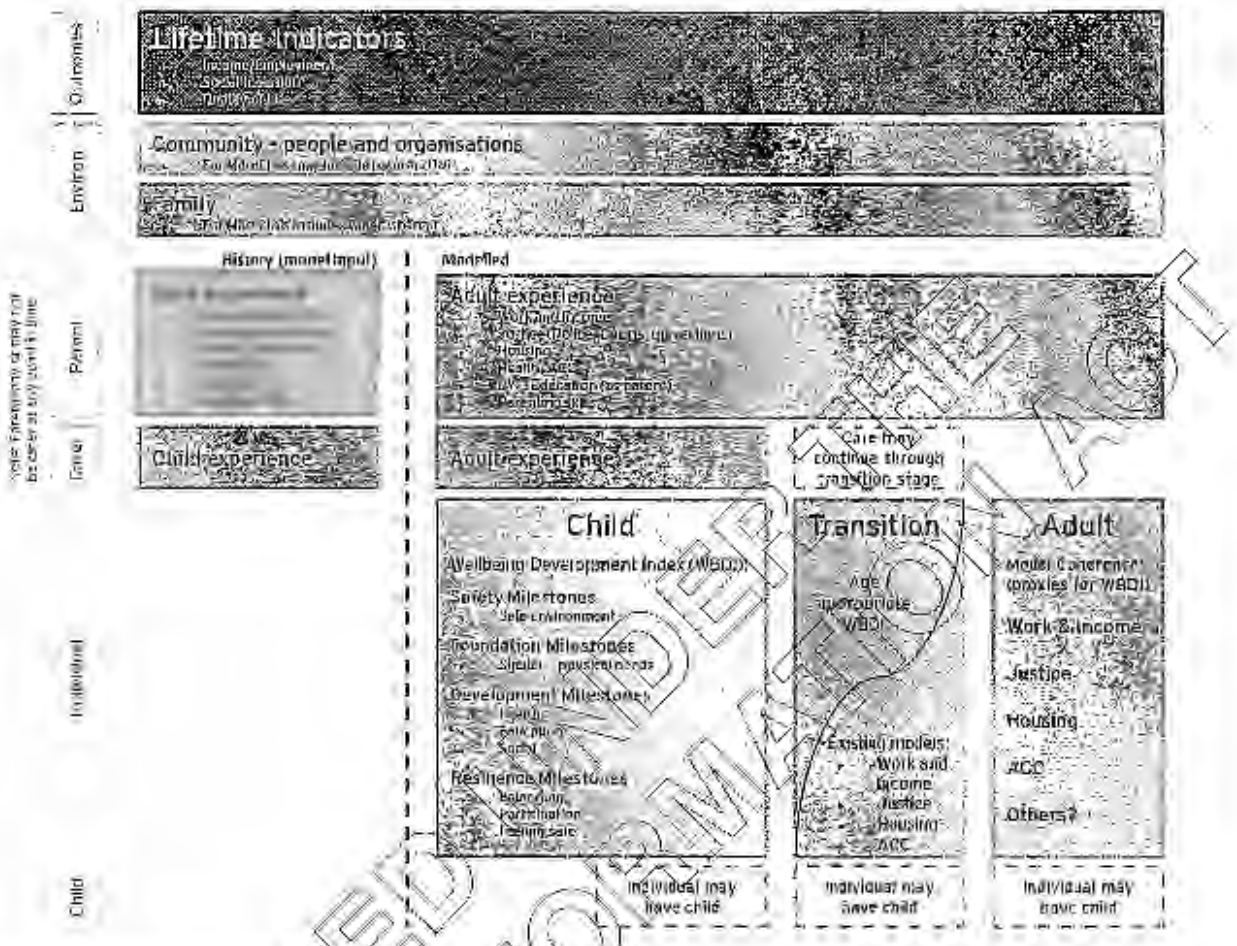
In the first instance, we are unlikely to have a great deal of information on service efficacy, so we may need to proxy impact on WBDI via service usage alone. But this will gradually be replaced by better quality information as assessment data capture and intervention outcome data capture improve.

Detailed design will need to be undertaken at the next stage of development of the logical model structure and process architecture. The model will only be made as complex as necessary to achieve the desired outcomes - there will be a case to made regarding the tradeoffs between options in terms of costs and benefits of additional complexity.

Detailed design will also encompass specific governance for the model itself, creating a clear definition of what modelling services are to be delivered and providing appropriate governance to enable these services to be delivered. Development and consistent application of standards and frameworks in areas such as model governance, engagement with stakeholders, modelling approach(es), quality and the delivery of the results and messages to the stakeholders will be required.

11.2 Overarching model architecture and interim model interoperability

If we recall the design presented in Section 6, we can add more detail in the following diagram. This shows that, in order to capture a lifetime view of a vulnerable child, we will need to consider other investment approach models in at least two areas.



Firstly we will be forecasting the experience of the child/young person as they move into adulthood. This will include their interactions with Work and Income, Housing and Justice, each of whom already has or is considering developing an investment approach model for their own agency responsibilities.

Secondly, we need to consider the ongoing environment of the child. This includes the experience of adults around them, including the experience of those adults with Work and Income, Housing and Justice, among others.

Due to this, our long term recommendation would be to consider moving to a single model for all of New Zealand's investment approach modelling needs, which is discussed in more detail in Section 11.4. In the meantime, before this is realistic, a model can be built using a variety of approaches to interoperability with the existing Work and Income model in particular.

These are discussed in the following section.

11.2.1 Possible simplifications for interim model interoperability

Firstly the model needs to forecast the future expected benefit receipt of the population of children when they become adults themselves.

This could be achieved in a number of ways:

1. Provide all the forecast details of the children when they reach benefit entitlement age (demographic information and risk factors as currently required by the Work and Income model) Call that model to then perform the necessary estimates of future welfare liability associated with a person with those characteristics. There is a "missing step" to be considered here in that the scope of the Work and Income model is only current benefit recipients and the next 5 years of expected entrants to the system. However, between the existing model and the extensive data available in MSD and the IDI it should be relatively straightforward to provide the missing

step i.e. the propensity of a person with certain characteristics to enter the benefit system. The FWL could be returned as a forecast series of expected benefit flows or as a lump sum (a form of commutation function). This may need to be done for a number of simulated pathways per child, which would add to processing time and processing power requirement.

2. An extension of the commutation function approach would be to simple provide a reference table generated from the Work and Income model of "all" possible combinations of characteristics of entrants which would allow a "lookup" of the associated liability rather than a full calculation.
3. The relevant calculations could be reproduced within the vulnerable children's model. This would require considerable attention to model governance and consistency, and may require consideration of software compatibility (e.g. ability of a model built in R or Java to call routines written in SAS).

We would suggest Option 2 would be the most practical way to proceed in the first instance as it should provide an estimate of FWL of sufficient robustness and is certainly the least demanding both in terms of development and ongoing effort.

Secondly, the model also needs to forecast the ongoing wellbeing development indicator of the adults in the child's life, such as parents and carers. This is in order to continue to capture the influence of the wellbeing in the child's environment on the child's own wellbeing.

One element of the WBDI for adults is their economic engagement as represented by their employment status and represented in the current Work and Income model by the proxy of welfare benefit receipt. The correlation between parent's receipt of welfare and relatively poor outcomes for their children (among other factors) has been well established by the analysis already undertaken in MSD and more broadly (Crichton, Templeton, & Tumen, 2015) (Modernising Child, Youth and Family Expert Panel, 2015). Hence it is essential to continue to estimate the parent's evolution with respect to this outcome.

Practically this would ideally imply consistency between the current forecasts and estimates already being performed for these exact same individuals in the Work and Income model.

This could be achieved in a number of ways, which also have implications for accuracy as well as cost of development and ongoing computational intensity:

1. For those already in receipt of benefit, they could be identified at an individual level and the actual forecasts for those individuals could be provided to the vulnerable children's model. For our purposes we would not be interested in the fiscal proxy but could back out the proxy of receipt of benefit and translate it back into an indicator of poor outcome on the dimension of economic engagement, and use it as a risk factor accordingly. We understand there are currently 100 simulations performed for each valuation by the external provider, so we could take either the average of those simulations for one individual or randomly call one of the 100 for each of the simulations required by the vulnerable children's model
2. The model could forecast this particular risk factor, along with the others intended to be modelled, representing other dimensions of wellbeing in the parent (for example corrections experience, parenting experience, housing tenure) independently of the Work and Income model. This would require less model interconnection but would certainly lead to divergence between the forecast employment engagements in the vulnerable children's model and the benefit receipt in the Work and Income model which seems undesirable.
3. It would be feasible to follow options 1 and 3 outlined for children's future benefit receipt as adults. Option 2 (commutation function) would not be useful in this case due to the ongoing temporal interaction between parent wellbeing, child wellbeing and child experience of services and thus associated fiscal costs. These options would obviously be far more computationally intensive than options 1 and 2 for adults.

Option 1 appears to offer the most prospects for consistency between what will initially be independent models while being reasonably straightforward to adapt to the needs of the model for vulnerable children.

A similar process will need to be undertaken in respect of the Justice model as it is designed and constructed. One advantage with respect to the Justice model is that it is our understanding that the IDI will be the preferred development platform.

11.3 Computational platform - hardware and software

It is likely that this model will be quite computationally intensive. This is already the case for the Work and Income model, which is considerably simpler in many ways. Careful consideration will need to be given to constructing each element of the model in a way that takes advantage of user familiarity but doesn't compromise on the computational power required.

Data preparation and analysis and output of results could be developed in SAS while the actual simulation engine running the forecasts and projections might be developed in another language.

The current Work and Income model exists in two installations: one with the external provider, in SAS, which has a reasonable degree of processing power, although constraints are starting to be felt as indicated by the move from "exact" calculation of all pathways to the use of 100 simulations as an acceptable proxy for an exact calculation. The second installation is held within MSD itself. This is apparently even more resource constrained as a single run of the model currently takes 4 hours. This is perhaps acceptable for single scenario testing but not for any volume of simulations.

The MoJ documents we received discuss the use of the IDI as a platform, and in their recent approach to the market they suggested that the development language should also be SAS.

However, in our discussions with Statistics NZ, learning about the options for using the IDI as a development platform we found that their current landscape consists of:

a) A SAS server with 8 cores

b) An SQL/R server with 30 cores

Statistics NZ indicated that it is entirely feasible to install other software packages on the main processing platform (such as Java, Python). They also indicated that it would be feasible to bring into the IDI environment both external data and programs (after appropriate security processing).

This means the current Work and Income model could be installed in the IDI environment. The current SAS implementation may not be sufficiently powerful to run it in its entirety.

What is much more promising are the possibilities for installing or developing other software on the main processing platform, where the computational power is much less restricted. This would allow the model direct access to the IDI data for processing.

We recommend that any "one model" approach use an enterprise modelling language (such as Java) that is efficient at running large complex simulations. Existing SAS licenses (in conjunction with free source programs such as R, or cheaper analytical software such as SPSS) can be used for analyses required to inform the investment model

We recommend that a further assessment be made on the software environment to apply, in the shorter term, to the build of the investment model. A trade off exists between the use of SAS (used for the existing Work and Income model) and other software environments:

- The existing programming capability of the department is in SAS
- Only eight of the thirty eight cores in the IDI are dedicated to SAS (indicating that further system infrastructure would be required to run larger more complex models)
- The license fees for SAS can be expensive relative to other analytical and modelling software
- (SAS) does not perform as well in running large scale simulations as some other enterprise level software environments (such as Java)

We note that any model built that calls upon other investment models built in SAS in an interactive simulation capacity (i.e. for each simulation pathway for a child & family there are many simulations of Work and Income and justice pathways), will likely encounter run time issues. One option to overcome this is to collapse simulation model points from the other investment models to be used as

inputs into the vulnerable children's model. However in the medium term, it is preferable to have one model that is capable of running all agency views on the same individual.

We understand that the IDI can only be accessed from within New Zealand, but if a "dummy" dataset were to be made available then some model development could still take place outside the IDI environment and outside New Zealand.

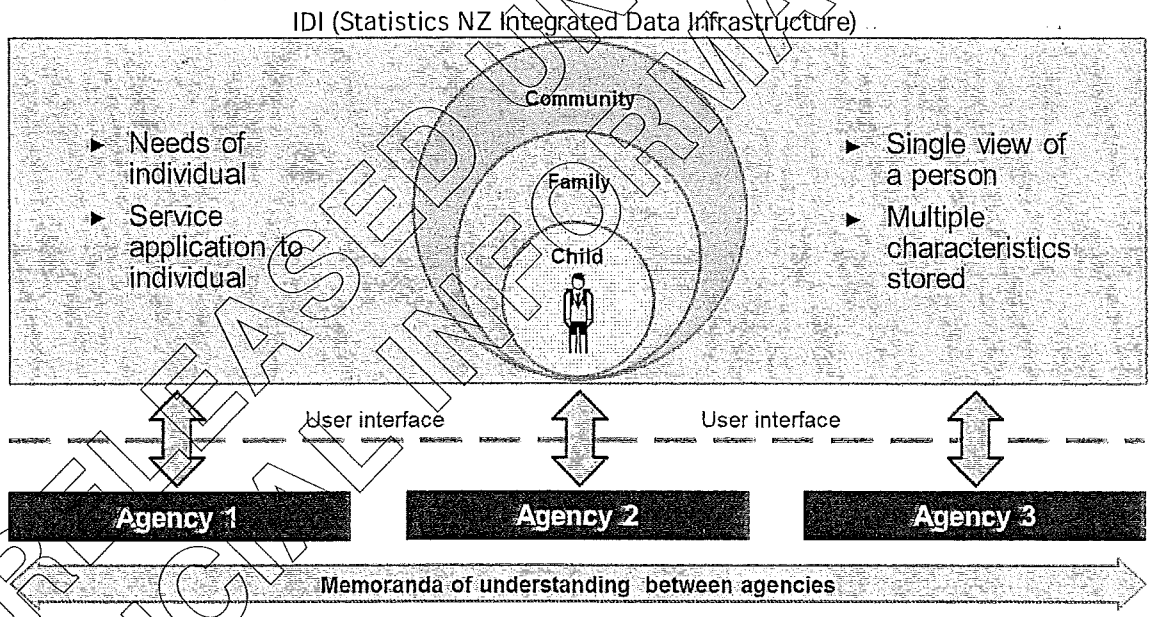
11.4 Long term goal for model architecture for the investment approach

Given that the investment approach for vulnerable children involves direct interaction with other models, existing or planned, and given the risks and overheads of the interim interoperability discussed above, we would strongly recommend moving to a single model in the long term.

All agencies should have that as their objective as their own models evolve.

No agency should take any action that prevents or slows down the eventual merging of models and all agencies should actively work towards a single model.

The following shows a high level view of how a model held within the IDI would allow a single view of each person in the system while still enabling an agency specific window onto the central model. This would mean that a consistent single view of a person, including their wellbeing and needs and use of these as predictors will be maintained. The risk of divergent views of individuals arising from separate models would therefore be avoided.



In order for agencies to operationalize the outputs of the investment approach at Level 4 in particular, that is in operations at the front line, we would envisage that they may continue to require access to their own administrative data as well as that from other agencies, which could continue to be enabled via the current system of specific memoranda of understanding.

One MoJ document that we received also discusses model architecture and considers both a more decentralized option and a more centralized option. It discusses some advantages and disadvantages of the two options but in our view it omits a discussion of a key risk with the decentralized option, that of model and output reconciliation. It seems impossible to have coherent outputs across like elements if they are projected separately in independent models. The paper does comment on this but does not acknowledge the seriousness of this as a barrier to coherent cross-agency implementation and usage.

From the perspective of this project it is also clearly desirable to work towards a single model to avoid issues of reconciliation or conflicting messages emerging from different installations of

models.

In the meantime however, we recommend that the implementation for vulnerable children proceed, as one purpose of the initial implementation is to fully test out the approach proposed here and find solutions to the challenges we have outlined in a pragmatic and functional way.

Building the initial vulnerable children's model to run in the IDI, along with other elements of partial interoperability with the existing model (e.g. Work and Income as described above) should mean that a minimum of redevelopment is required as the models gradually merge.

12. Process and capability

Key points:

- The actuarial control cycle producing periodic valuation and system performance reports with detailed monitoring and analysis of drivers of change in the liability is central to supporting the goals an investment approach for vulnerable children
- A baseline valuation report as at 31 December 2015 (or other appropriate date) will be the first forward looking view of the projected outcomes and liability for New Zealand's current population of vulnerable children.
- The baseline valuation report will form the foundation of ongoing measurement of the performance of the transformation of the system proposed by the Panel
- The need for effective governance and accountability requirements as part of implementing an investment approach are well understood in New Zealand. Cross-agency responsibility is anticipated by the Panel. The actuarial valuation will also require appropriate governance to maintain independence, oversight and credibility.
- Resourcing requirements are likely to require additional internal analytical resources in a number of agencies and the use of external actuaries to develop the actuarial valuation.

Recommendations:

- An annual cycle of valuation and reporting in the first instance, while the processes are bedded down. Active monitoring and management of the system should, however, be pursued on a continuous basis.
- That a control cycle be designed and implemented, with links to performance, outcome and benefits management strategies, frameworks and reporting.
- That the valuation and system performance reports be addressed to an appropriate cross-agency governance board/structure. This could be an existing mechanism such as the Vulnerable Children's Board.
- That the valuation and system performance reports should be subject to independent actuarial review by a role such as Chief Actuary for the Government as a whole
- That there be oversight by and interaction with actuarial resources from within the New Zealand government regarding the actuarial model, including mandated knowledge transfer from the external provider to the extent possible
- That there is a need for additional analytical resources to support the supporting analysis for, use and maintenance of an investment approach and associated management reporting. In addition, these resources would be required to build and manage the required assessment tools and provide ongoing program evaluation for services associated with vulnerable children

12.1 Control cycle, periodic valuations, analysis of change, monitoring and updates

We introduced a high level control cycle in Section 5.6.2.

If we adapt the goals of the investment approach for Work and Income to a framework for vulnerable children we find:

"A key tool in the investment approach to managing the system of services and care for vulnerable children is the development of an actuarial valuation and reporting framework. Its primary aims are to provide:

- An insight into what is driving children's risk of poor long term outcomes

- A financial assessment of the total cost of the system providing services and care to vulnerable children
- An understanding of what is driving the change in cost of the system providing services and care to vulnerable children
- A means of measuring performance in managing the system providing care and services to vulnerable children over time
- A means of analysing the **wellbeing and** financial impact of policy and operational changes.

This detailed understanding can be used to assist management to target services better to assist those most in need of support."

(Adapted from paragraphs 2.5 and 2.6 of the 2013 Work and Income benefit system performance report (Raubal & Judd, 2014))

These insights and understandings are made possible by the control cycle of periodic valuations, analysis of change, monitoring and ongoing revision to the underlying model. The ongoing cycle of measurement and update will allow for continuous improvement in the understanding of the investment approach for vulnerable children, including a refinement in the modelling and analysis of the sources of movement in the indicators, both financial and non-financial between valuation dates.

It is our understanding that a complete valuation of the welfare system in New Zealand is performed once a year. The external actuaries produce a valuation report and MSD actuaries produce a system performance report which further analyses and comments the valuation.

It is also often the case that quarterly or even monthly valuations of insurance portfolios are performed, usually on a somewhat simplified basis, where this is required by legislation or for management reporting.

Depending on the scope of the initial implementation, we recommend an annual cycle of valuation and reporting in the first instance, while the processes of data collection, assumption setting, running the valuation and analysing the output are bedded down. If the scope is relatively small, then a half yearly approach could be envisaged. More frequent reporting should be considered when processes are stable, resources allow and the information to be gained is considered to be sufficiently useful. This will enable more active management of the system and provide interim indicators of progress towards annual objectives.

A key to the use of the investment approach is not the valuation itself, but the analysis of its elements and in particular, once there are successive valuations, the analysis of the change between the two. This will describe in detail the sources of change between what was projected by the first valuation and what is actually observed by the subsequent one.

For example if the first valuation were performed as at 31 December 2015, the second will be as at 31 December 2016.

The first valuation will form an invaluable baseline of the circumstances of the system prior to the major transformation that is under consideration by the Panel currently. It will provide extended insight to that provided by existing analyses of historical experience and provide the first forward looking projection of the expected outcomes of the children currently in the system.

The valuation and system performance reports as at 31 December 2016 (or one year after the initial reports) will then be looking to analyse:

- How was the 31 December 2015 valuation expected to move to 31 December 2016
- What is the actual valuation as at 31 December 2016

The differences will be analysed along dimensions of:

- Changes in the underlying population demographics
- Changes in the exogenous environment (for example inflation, unemployment rates)
- Changes in model structure or granularity due to refinement over the year

- Changes during the year of experience being analysed – in particular with respect to service delivery and efficacy, especially if particular programs can be identified.
- Changes in the assumptions about the future (2017 and beyond)

It is only by breaking down the elements of change that the movement can be fairly understood and consideration given to attribution of changes realised.

12.2 Model governance and accountability

The Panel has indicated in its Interim Report that changes to sector governance will be considered in their Final Report. Further the Panel noted "While agencies may commit to better service delivery in the forthcoming agency Plan for Vulnerable Children, a more directive approach by Government through legislative and governance change is likely to be required." (Interim Report, p 83). The Panel anticipates that the actuarial valuation will be a key element in performance measurement and accountability for individual agencies and programs and we have demonstrated how that accountability can be achieved through the liability and ROI mechanism in Section 7.2 where financial measures are discussed and through the actuarial control cycle, reporting and monitoring mechanisms described above.

A cross-agency governance board should oversee the scoping and implementation of an investment approach given the cross-agency coverage of the approach. This could be through an existing mechanism, such as the Vulnerable Children's Board.

It is vital however that the actuarial model component of the investment approach for vulnerable children be produced to the standards for independence required by the actuarial profession to give all agencies confidence in the outcomes for which they are to be held accountable. It should be clear to whom the actuarial valuation and system performance reports will be addressed.

Further it is highly recommended that the valuation and system performance reports should be subject to independent actuarial review by a role such as Chief Actuary for the Government as a whole. An analogy for consideration is the use of actuaries in quarterly reporting for the National Disability Insurance Scheme in Australia – there is a Scheme Actuary who is responsible for, among other things, assessing the financial sustainability of the Scheme and a Reviewing Actuary, a role currently performed by the Australian Government Actuary who sits in the Commonwealth Treasury.

The need for independence can be achieved in a number of ways, the key is for any role to be defined appropriately.

The specific scope of accountability that it will be possible to implement will need to be defined step-by-step in conjunction with the build of elements of the model, such that the agencies involved in each element have a clear understanding of how the actuarial valuation will be used to support performance measurement.

Similarly changes to funding arrangements such as the use of Multi-Category Appropriations for cross-agency investment in programs aimed at improving outcomes should better enable cross-agency investment and accountability for performance.

There are likely legislative changes required to enable this and other decisions related to the implementation of the investment approach. The specific changes required to the legislation need to be considered in relation to the overall Final Report of the Panel and subsequent decisions made by Cabinet and are outside the scope of this feasibility assessment.

12.3 Implementation governance

To support any implementation of the Investment Model as part of frontline operational practices and other decision levels, it will be important to have some robust governance arrangements in place to guide and support this change.

Once decisions are made in regard to best application of the model as part of practice decision making a Design Authority should be established to manage the use and utility of the model across CYF service delivery. The Design Authority would create the process by which all potential use of

the model would need to be approved. This would mean that any internal policy or practice change, resource or financial allocation or new projects / initiatives would be tested against the model prior to any change being approved to provide that all decisions are in line with the intent and findings of the model.

The use of and improper use of the model should be captured within the CYF Risk management Framework and potential actions be identified to mitigate any chance that the model is not appropriately used when required or improperly used in areas that have not been approved by the design authority.

Development of a briefing and training plan will be imperative to the success of operationalising the model. Staff will need to understand the purpose for, design of and use of the model as part of practice. Policy, Operations and Corporate Services should be fully briefed prior to use to enable all areas to understand the benefits and limitations for each of their areas.

Particularly for field staff it will be vital to understand how analyses or outputs from the model can support the work they do rather than tell them what they need to do. The balancing of critical thinking and professional judgement with sound information and data system to inform this thinking is critical in the human service space. Every family is different and every situation is different. You cannot predict how individuals will react in any situation with such variable options however you can better inform the system by knowing the likelihood or probability of the risk being too high and needs to be acted upon. By briefing and training staff this should assist to ameliorate any professional or ethical concerns they may have.

All of these actions will assist in being able to maintain the intent and integrity of the Investment model and Child Wellbeing Framework within the sector.

12.4 Actuarial/modelling/analytical - internal/external

MSD currently employs 6 actuaries. MSD used external actuaries for the development of the Work and Income model and continues to use them for the principal updating of the valuation. MSD has capability to run the valuation themselves and prepares their own system performance reporting based on the core valuation report.

The Justice Sector intends to contract external actuaries to construct the Level 2 implementation of the Investment approach (i.e. the element focused on risk segmentation and event prediction).

MSD has a central analytical team in insights MSD (iMSD) where the majority of staff are dedicated to Work and Income with a number who perform analytical services for CYF, approximately 2 for Youth Justice and 6 for Care and Protection and the current intake trial. The Work and Income team has quite an advanced program evaluation capability, this is less well developed in the CYF resources who have been principally performing reporting and ad hoc analyses, although more detailed analyses (for example of the rise in Youth Justice recipients being held on remand in residential facilities) are being requested and responded to.

Work and Income also has its own analytical unit. CYF does not have such a unit.

It is likely that the contract for constructing an investment approach for vulnerable children would need to be put out to market. We recommend oversight by and interaction with actuarial resources from within the New Zealand government (whether they are located in MSD or another area). To the extent that internal actuarial resources allow for knowledge transfer from the external provider this should be mandated.

We recommend that the Expert Advisory Panel consider the need for additional analytical resources for high quality usage of assessment tools and ongoing program evaluation to support a fully effective implementation of the investment approach for vulnerable children.

12.5 Agency interactions to support actuarial valuation

With respect to the actuarial valuation itself, the key requirements with respect to agencies are:

- access to data, covering the items outlined in Section 10 Data, supported by
- access to knowledge of administrations systems and
- access to knowledge of processes and interventions

As long as the valuation team has open access to the relevant persons in agencies, then this should enable the valuation to develop efficiently and with reduced risk of incorrect interpretation of data and processes. Given the openness and availability of agency resources demonstrated during the course of this engagement, we are confident that this is likely to continue during implementation.

It is possible that other agencies would also benefit from deeper internal analytical capability regarding both the assessment of need and in terms of evaluating service efficacy in their respective domains. From the perspective of this feasibility study we are neutral as to where the capability is housed as long as it exists, that it is functional and has capacity. Recommendations regarding specific resourcing or agencies are outside the scope of this study.

13. Feasibility and next steps

Key points:

- An investment approach for vulnerable children is feasible
- The long term objective should be a comprehensive model of all children across the full scope of service interactions for the most coherent understanding of the effectiveness of government services for those children
- A staged build for selected cohorts that are the focus of transformation of the system will best support that transformation and provide extended proof of concept of this complex model
- High level risks and mitigation identified to date are provided
- The next step is a detailed scoping study for the priority areas for implementation linked to the key areas of transformation in the care of vulnerable children

Recommendations:

- That the medium term goal be a comprehensive "one model" that generates different agency views but preserves the one view of the individual
- That the investment approach be built in a staged implementation that matches the transformation pathway intended by government (and therefore provides maximum use and value as it is built)
- That a scoping study be undertaken to detail the form of the models, with a minimum coverage of the priority areas for transformation

13.1 Feasibility

We find that an investment approach for vulnerable children is not only feasible, but is an essential element in supporting the anticipated transformation of government services for vulnerable children.

13.2 Broad model with full interactions across all dimensions

We have identified that this is the long term objective for the investment approach. It will be essential to create a coherent picture of the population and their interactions with government services. Ultimately it is also highly desirable for more efficient modelling and lower total cost of implementation.

Further it is clearly the direction the government is committed to, as referenced in Justice Sector materials, in particular in respect of the Social Sector Board's Social Sector Investment Change Program (SSICP) aims.

But this will take time.

We have found that work can start now for the investment approach for vulnerable children that will:

- Not be wasted when models merge
- Will not slow down any other agency
- Will take into consideration the long term goal as far as possible
- And will realise benefits as it supports the transformation of services for vulnerable children in New Zealand

13.3 Focused on top priorities for transformation

Our study concludes that building an investment approach for vulnerable children should start with development focused on the main areas of transformation of the system to be enacted following the Panel's Final Report. This allows those transformations to be supported by an investment approach to enable comprehensive assessment for effectiveness going forward while at the same time allowing for an advanced proof of concept of the investment approach for vulnerable children.

While this study has concluded that an investment approach is feasible in spite of the complexity across many dimensions that needs to be addressed, an implementation would prove that and also resolve many of the details that cannot be addressed in a high level study such as this one.

13.4 Implementation roadmap and next steps

We have explained why the preferred long term approach is 'one model'. In the interim, in order to effectively advance a proof of concept, three areas for early implementation are identified:

- CYF population only, with CYF interactions plus other services (proof of effectiveness across agencies). This will support the capture of accurate risk assessment information in the tertiary admin system
- Support for transition ages as the operating model is developed and implemented, in order to enable effective change
- Secondary service implementation – proof of identification of sub-tertiary population and support for implementation of effective interventions

The priority and order of these should be that of the actual transformation of the system.

13.5 Risks and Mitigations

In this section we briefly discuss risks specific to the successful implementation and uptake of an investment approach to vulnerable children, along with mitigation we have identified to date as part of this study.

Risk	Mitigation
Complexity An investment approach for vulnerable children is inherently complex for a number of reasons outlined in our report	We have described the complexity and assessed ways of capturing and modelling this. Our recommended approach to proceed incrementally will help to deal with the complexity in a modular way
Constraints on data and modelling While the IDI contains the richest linked dataset available and has available processing power (both SAS to some extent and for other languages to a greater extent), there are constraints on reporting from the IDI.	We have considered the reporting constraints on "disclosive" information and found that they should not restrict reporting as is required from an investment approach at any level other than individually identifiable. We have recommended options that will allow maximum development and analysis to take place outside the IDI to reduce requirement for exclusively NZ based resourcing Ongoing interaction with the Data Futures Forum and Partnership should provide that any emerging issues can be dealt with promptly
Analytic and modelling risk Including model risk, parameter risk, risk of error and instability, and residual risk	We have outlined the high level requirements for good model governance to enable robust development. Actuarial professional practice has established process to manage and minimise these risks.

Risk	Mitigation
Effective cross-agency buy in and operationalisation of the investment approach	We have outlined governance arrangements that should enable this. Further consideration should be given to training and active incorporation into operating models for frontline staff.
Sensitive nature of dealing with vulnerable children	Working with data in an appropriate way, for example within the IDI. Reporting in a way that is sensitive to this group. Governance around reporting and disclosure of information should form a part of the overall communication strategy for government during the transition. New ways of working that will be enabled by the investment approach should be incorporated into agencies' risk management frameworks to provide that impact is well understood before changes are made in the field.

Further risks should be considered as part of detailed plans for implementation, both of the actuarial model and of the broader investment approach, as it supports the transformation of the operating model.

13.6 Scoping study

Whichever option is chosen, the next step is a more detailed scoping study of the exact requirements. Following this detailed specification, implementation, testing and productionising can follow.

14. Bibliography

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15. Reliance and limitations

This report has been prepared pursuant to the terms of our engagement letter dated 15 October 2015 and using the methodology outlined in section 4 of this report.

The statements and opinions given in this report are given in good faith and in the belief that such statements and opinions are not false or misleading.

Our conclusions are based on the assumptions stated, the documents received and the information provided by the various stakeholders interviewed across agencies and ministries in New Zealand. Neither Ernst & Young nor any member or employee thereof undertakes responsibility in any way whatsoever to any person in respect of errors in this report arising from incorrect information provided by management and/or stakeholders.

In the preparation of this report we have relied upon and considered information believed after due enquiry to be reliable and accurate. We have no reason to believe that any information supplied to us was false or that any material information has been withheld from us.

Appendix A Reference guide for RFP questions

The following table provides references to guide the reader as to the specific sections of this document that respond to the questions posed in the Request for Proposal.

Question(s)	Section
1. A broad overview of how a cross-agency valuation(s) could be set up for vulnerable children	This is summarised in the Executive Summary. It is described in conceptual terms in Sections 5 to 8, and explored in practical terms in Sections 9 to 12.
2. What benefits/support it would provide for managing the social system and improving outcomes for vulnerable children 3. How could it be used to measure performance, support decision making 4. How can it be used to support accountability structures	These issues are specifically addressed in Section 8 on how the measures would be used across all levels of the system. Further discussion around governance and accountability is provided in Section 12.
5. A brief review of available data and what limitations (if any) this might impose on determining a forward liability.	The specific discussion regarding data is contained in Section 10. Data is discussed to some extent in other sections.

Appendix B List of documents received

This lists only those documents that are publically available. Many more documents and drafts were shared with us by officials which cannot be referenced as they are confidential and/or draft, however they were made available to inform our background thinking.

Title	Date	Author(s)
Effects of early prevention programs on adult criminal offending: A meta-analysis	23 December 2010	Maja Deković, Meike I. Slagt, Jessica J. Asscher, Leonieke Boendermaker, Veroni I. Eichelsheim, Peter Prinzie Published: Clinical Psychology Review 31 (2011) 532–544
Puao-te-ata-tu: Māori perspective on the department of social welfare	September 1988	The Māori perspective advisory committee (chair: John Te Rangi-Aniwaniwa Rangihau)
Scaling Criminal Offending	23 December 2011	Gary Sweeten Published: J Quant Criminol (2012) 28:533–557

Appendix C List of meetings conducted

Date	Topic	Attendee organisations
14/10/2015, 15/10/2015	Induction for EY: ► Interim Report ► Investment approach in NZ	Members of the secretariat

Date	Topic	Attendee organisations
	▶ Wall walk of the current CYF system ▶ Investment approach to vulnerable children ▶ Process/next steps ▶ Wider system context	
20/10/2015 (9:15-10:15)	Investment approach: high-level system mapping	Members of the secretariat
20/10/2015 (14:30-16:30)	Investment approach: definition of vulnerability	Members of the secretariat
21/10/2015 (9:00-11:00)	Investment approach workshop	Members of the secretariat
28/10/2015 (9:00-11:00)	Inter-agency working group: workshop 1 system mapping and outcomes/vulnerability	Members of the secretariat and representatives from MoJ, Treasury, the OCC, MoE, MoH, EY Tahi and ACC
29/10/2015 (8:30-10:00)	Inter-agency working group: workshop 2 system mapping and outcomes/vulnerability	Members of the secretariat and representatives from MoJ, Treasury, the OCC, MoE, MoH, EY Tahi, the Police and ACC
29/10/2015 (12:00-14:30)	Data/modelling workshop	Members of the secretariat and representatives from MSD and Treasury
03/11/2015 (11:00-12:00)	Child, Youth and Family system expert workshop	Members of the secretariat
03/11/2015 (13:00-14:00)	Data experts: MSD	Representatives from MSD
03/11/2015 (14:00-15:00)	Data experts: Education	Representatives from MoE
04/11/2015 (12:30-13:30)	Report structure walkthrough	Members of the secretariat
04/11/2015 (14:30-15:30)	Data experts: Statistics NZ	Representatives from Stats NZ
04/11/2015 (15:30-16:30)	Data experts: Health	Representatives from MoH
04/11/2015 (21:00-22:00)	EAP presentation	Paula Rebstock, Mike Bush, Peter Douglas, Duncan Dunlop, Helen Leahy, Professor Richie Poulton
05/11/2015 (10:00-11:00)	Data experts: Care and Protection, Youth Justice	Representatives from MSD
05/11/2015 (11:00-12:00)	Data experts: Justice	N/A
05/11/2015 (13:00-15:00)	Data/modelling summary	Members of the secretariat
10/11/2015 (13:00-13:45)	Data experts: Justice	Representatives from MoJ
11/11/2015 (9:00-11:00)	Inter-agency working group: update	Members of the secretariat and representatives from MoJ, Treasury, the OCC, MoH, the Police and ACC
11/11/2015 (13:00-13:45)	DPMC, Treasury	Representatives from DPMC, Treasury
11/11/2015 (14:00-16:00)	Data/modelling workshop	Members of the secretariat and representatives from MSD and Treasury

Appendix D Wellbeing framework alignment

Publically available frameworks only are discussed here. Other documents and drafts were shared with us by officials which cannot be referenced as they are confidential and/or draft, however they were made available to inform our background thinking.

Source	Elements/indicators of wellbeing			
	Safety	Foundations	Development	Resilience
Vulnerability themes from RFP	► Involvement of child protective services ► Carer issues (e.g. substance abuse, mental health issues) ► Family violence ► Abuse and neglect	► Below poverty line ► Welfare recipience ► Educational level (?) ► Social housing ► Health and lifestyle issues ► Food insecurity	► Health ► Education ► Culture and Identity ► Emotional and behavioural development ► Family and peer relationships ► Living skills and self-care	► Family structure ► Values and belief system ► Extended family support ► Secure early attachments ► Confidence of being loved and valued by one's family and friends ► Clear sense of self-identity (personal, cultural and spiritual) ► Sense of self-efficacy (being able to make decisions and act independently) ► Confidence to set goals and attempt to achieve them ► Access to support networks ► Participation in community groups
Tuituia framework	Safe ► Safety and basic care	► Resources available Belong ► Attachments ► Relationship with parents	Healthy Achieving ► Health ► Learning and achieving ► Education	Belong Participate ► Identity and culture ► Behaviour ► Friendships ► Parenting skills and knowledge ► Guidance and supervision ► Networks of support ► Family/whānau/hapū/iwi

Source	Elements/indicators of wellbeing			
	Safety	Foundations	Development	Resilience
Social report (2010)	Safety ► Assault mortality ► Criminal victimisation ► Fear of crime ► Road casualties	Economic Standard of Living ► Market income per person ► Income inequality ► Population with low incomes ► Housing affordability ► Household crowding	Health ► Health expectancy ► Life expectancy ► Suicide ► Cigarette smoking ► Obesity ► Potentially hazardous drinking Knowledge and Skills ► Participation in early childhood education ► School leavers with higher qualifications ► Participation in tertiary education ► Educational attainment of the adult population ► Adult literacy skills in English	Paid Work ► Unemployment ► Employment ► Median hourly earnings ► Work-related injury claims ► Satisfaction with work-life balance Cultural Identity ► Language retention ► Māori language speakers ► Local content programming on New Zealand television Leisure and Recreation ► Satisfaction with leisure time ► Participation in physical activity ► Participation in cultural and arts activities Social Connectedness ► Telephone and internet access in the home ► Contact with family and friends ► Contact between young people and their parents ► Trust in others ► Loneliness ► Voluntary work Life Satisfaction ► Overall life satisfaction

Source	Elements/indicators of wellbeing			
	Safety	Foundations	Development	Resilience
				Civil and Political Rights ► Voter turnout ► Representation of women in government ► Perceived discrimination ► Representation of ethnic groups in government ► Perceived corruption
Children and Young People: Indicators of Wellbeing in New Zealand (2008)	Safety ► Unintentional injury mortality ► Assault mortality ► Bullying at school ► Criminal victimization ► Fear of crime ► Road casualties	Economic Security ► Children without a parent in paid work Environment ► Household crowding Care and support ► Positive relationships with parents	Health ► Low birth weight births ► Infant mortality ► Immunisation ► Hearing test failure at school entry ► Oral health ► Obesity ► Physical activity ► Cigarette smoking at 14–15 years ► Youth suicide Environment ► Children living with a parent who smokes Education ► Children of parents without educational qualifications ► Participation in early childhood education ► School truancy ► Reading literacy at age 15 ► Mathematical literacy at age 15	Care and support ► Witnessing violence in the home ► Early childbearing Economic Security ► Children and young people with low incomes ► Unemployment ► Employment ► Median hourly earnings Culture & Identity ► Te reo Māori speakers ► Language retention Social Connectedness ► Telephone/mobile access in the home ► Internet access in the home Civil and Political Rights ► Voter turnout Justice ► Police apprehensions of 14–16 year olds

Source	Elements/indicators of wellbeing			
	Safety	Foundations	Development	Resilience
			► Scientific literacy at age 15 ► Retention of students in senior secondary schools ► School leavers with higher qualifications ► Participation in tertiary education ► Tertiary qualification completion	► Cases proved in the Youth Court
Vulnerable Children Outcomes Framework	Children are Safe ► Referral to CYF at triage ► Escalation to CYF from CT ► FARs/substantiated findings ► Caregiver guidance and supervision provided ► Patient stress ► Child and caregiver relationship ► Suspected child abuse hospital admissions ► Death from suspected abuse or neglect ► Repeat abuse ► Abuse while in CYF custody	Children are Safe ► Child's basic physical needs are met (i.e. adequate housing, food, warmth, clothing) Children Belong ► Whānau/family relationships ► Stability of placement ► Child achieves permanency i.e. return home or Home for Life	Children are Healthy ► Well Child Tamariki Ora – B4 school check complete ► Sudden, unexplained infant death rate ► Eight-month old has had their primary course of immunisations ► Health needs identified and referred to services ► Rheumatic fever (incl. secondary cases) ► Access rates and wait times for children and young people who receive mental health and AOD services ► Risk of self-harm ► Number of children with a disability requiring out-of-home placement Children are Achieving ► Identified education needs addressed ► Child achieving expected educational standards	Children are Safe ► Child feels safe and happy; expresses needs, feelings, hopes, goals Children are Healthy ► Caregiver physically and mentally well ► Caregiver has relevant skills and knowledge for positive parenting Children Belong ► Adequate extended family networks and support ► Understanding of identity and culture (for Māori, hapū, iwi, whakapapa, turangawaewae, taonga) ► Child placed with siblings in care Children Participate ► Access to community services e.g. Libraries ► Child's views on decision-making sought and heard ► Child has positive relationships with others (inc. peers) ► Child pro-social behaviours

Source	Elements/indicators of wellbeing			
	Safety	Foundations	Development	Resilience
			► Family engagement with child's learning ► Child involved in ECE ► Child/ young person enrolled in school ► Stand-downs, suspensions, exclusions, expulsions ► Young person achieves NCEA level 1,2,3 ► Young person in education, training or employment at 16-20yrs	► Child in extra-curricular activities (sports, music, arts) including Tikanga Māori ► Young person successfully transitions to independent living ► Young offenders in education, training or employment ► Child offender becomes/does not become youth offender ► Young person has a repeat Youth Justice referral ► Families and victims involved in addressing offender behaviour <u>Children have improved life outcomes</u> ► Main benefit receipt ► Child/young person flows to the adult Corrections system
MSD Community Investment Strategy (high-level outcomes) Linked to BPS targets, Children's Action Plan Vulnerable Children Outcomes Framework; Supporting Vulnerable Children, Reducing Crime and Boosting Skills and Employment BPS targets; Youth Crime Action Plan; and Ministerial Family Violence and Sexual Violence Program.	► Reduction in assaults on children (fewer children are maltreated) ► Reduction in rates of violent crime; reduction in violent reoffending; fewer people are the victims/survivors of family violence and sexual violence;	► Fewer children are in material hardship	► Increased participation in early childhood education (ECE) ► Increased infant immunisation and reduction in incidence of rheumatic fever ► Children experience positive educational outcomes. ► increased proportion of 18-year-olds with NCEA level 2 or equivalent ► More young people are in employment, education and training	► Children are resilient, experience positive parenting (supporting child development) ► Reduction in rates of youth crime ► Reduction in youth reoffending ► Fewer young people misuse drugs and alcohol/have alcohol and drug addiction ► Perpetrators are held to account for their behaviour and are supported to change ► Fewer older people are abused and neglected. ► victims/survivors needs are addressed

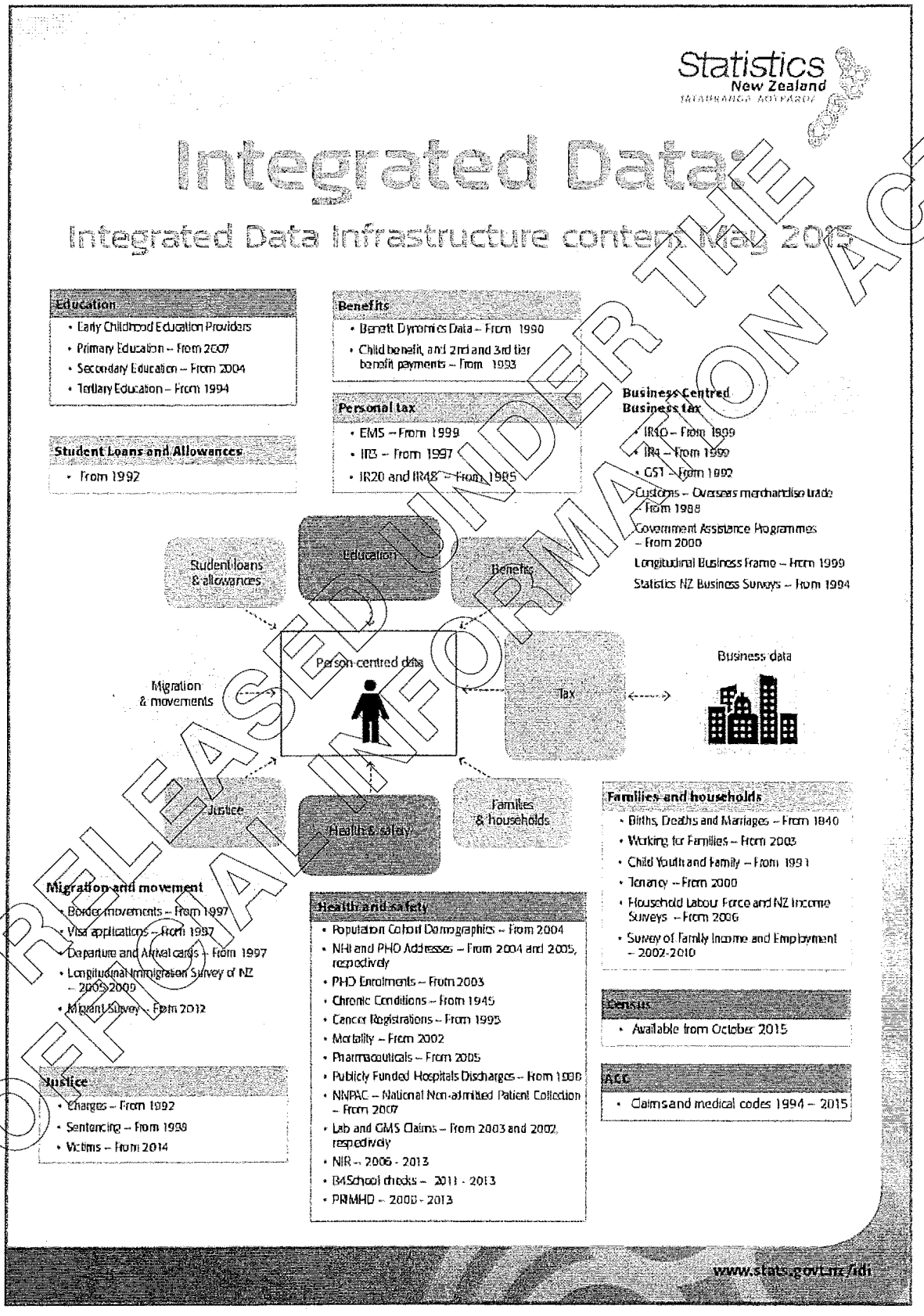
Appendix E High-level map of services (indicative)

Agency	Primary (Universal)	Secondary	Tertiary
Care and Protection	► Child safety education programs	► Partnered response/ strengthening families (voluntary links to community services) ► Early intervention programs (e.g. DV, parenting skills, relationship skills) ► NGOs / charities (e.g. food banks) ► Children's Teams	► Statutory care ► Supported (non-statutory) care ► Removals / adoption ► Family group conferences (link to health, education) ► Gateway assessment (link to health, education)
Community Investment		► Partnered response/ strengthening families ► Family start ► Children's teams (through MSD) ► Whānau Ora (through TPK) ► See link below for community services relating to domestic abuse	► Iwi/NGO initiatives (separate intervention initiatives, fulfil statutory function)
Youth Justice		► Police alternative actions ► Police in schools, education officers in court (in conjunction with Education)	► Custody orders ► Non custody orders ► Treatment / therapy programs ► Transition programs ► Family group conferences, planning and monitoring
Justice (corrections, police, courts incl. family court)		► Family court: separate from CYF but have info exchange (RFI from CYF: is child known/ concern?), can make referrals to CYF and can order FGC	
Te Puni Kokiri (TPK)		► Whānau Ora (services delivered by NGOs, MSD and MoH also involved)	
Health	► DHB and national providers ► Prenatal and postnatal care ► Immunisation	► Early intervention programs (e.g. DV, obesity, nutrition) ► High needs oral health	► Smoking cessation programs (pregnancy / postnatal)

Agency	Primary (Universal)	Secondary	Tertiary
	► Oral Health ► Free home / clinic visits (0 – 5 years) ► Well Child Tamariki Ora ► Shaken baby prevention ► Public health programs ► Violence intervention program ► COPMIA programs ► Parenting and other programs	► Immunisation outreach ► Mental Health services (CAMHS) ► Medical warning system linked to CYF ► CYF DHB liaison Social worker (link to CYF) ► Forensic CP services	► Treatment programs; e.g. for mental health, alcohol / substance abuse ► Child disability support services ► Obstetrics, paediatrics, surgery and emergency services ► Long term conditions program, secondary mental health services, forensic mental health services, AoD services ► FGC, Gateway assessment
ACC	► Shaken baby prevention ► Sensitive claims	► ACC counsellors for children who have been sexually abused	
Education	► Early childhood education (ECE) ► Primary, secondary education ► Higher / vocational education	► Special education ► Education support for children with CALD backgrounds ► Counselling and student wellbeing services ► Youth Guarantee ► Scholarships and financial support ► Resource Teacher: Learning and Behaviour ► Interim response fund ► Incredible Years: Parent and Teacher ► Wellbeing@School, Inclusive practice tools	► FGC, Gateway assessment
Work and Income		► Youth (employment) services	► Financial support: family assistance, study (including means-tested student allowance and student loans), childcare subsidies, unsupported child benefit etc. See link below for A-Z of benefits. These will be considered both as future liabilities (adult benefits) and investments (benefits to support children).
Housing NZ			► Social housing ► Emergency housing

- A-Z of benefits (Work and Income): http://www.workandincome.govt.nz/individuals/a-z-benefits/index.html
- Domestic abuse services: http://www.kidshealth.org.nz/child-abuse-information-and-support
- Births register operated by Department of Internal Affairs
- Need better understanding of Housing, Family Court, Work and Income, Corrections, Police

Appendix F Integrated Data Infrastructure Overview



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Young women with a history of involvement with Child, Youth and Family during childhood have higher rates of early parenting and subsequent involvement with child protection as young parents[1]

Robert Templeton (Treasury) and David Rea (Ministry of Social Development)

(1) Summary

1 This report presents new findings about the extent to which prior childhood involvement with Child, Youth and Family is a risk factor for having a child notified to the agency.

2 The analysis focuses on women born in the 12 months to 30 June 1991. Administrative data is used to measure births and any subsequent contact with Child, Youth and Family until the end of 2014 when individuals in the cohort turned 23 years of age.

3 Overall, almost 6% of women in the cohort had a child notified to Child Youth and Family before they turned 23 years of age.

4 Among women who had some involvement with Child, Youth and Family during their own childhood, 20% had children who were the subject of a notification to Child, Youth and Family.

5 Depending on the ethnic group, this rate was between four and ten times larger than those women in the cohort with no childhood contact.

6 The increased rate of child notifications among those in the cohort with a childhood history of contact reflects both higher rates of having children, as well as higher rates of care and protection notifications for the children.

7 The study points to the need for services to reduce unintended pregnancies, as well as parenting support for young people who have been themselves been involved with Child, Youth and Family.

[1]The results in this report are not official statistics and have been created for research purposes from the Integrated Data Infrastructure (IDI) managed by Statistics New Zealand. The opinions, findings, recommendations and conclusions expressed in this report are those of the author(s) not Statistics NZ, Treasury or the Ministry of Social Development. Access to the anonymised data used in this study was provided by Statistics NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation and the results in this paper have been confidentialised to protect these groups from identification. Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from www.stats.govt.nz.

(2) Description of the data used in the study

8 The data for this study is drawn from the Statistics New Zealand Integrated Data Infrastructure (IDI). The dataset is based on government administrative data for 30,606 women who were born over the 12 months to 30 June 1991 and who were permanent residents during the 2003 to 2007 period.[2] Outcomes for each individual were measured until they turned 23 years of age.

9 The dataset uses information from a range of data sources including Department of Internal Affairs (births and deaths), Immigration, Inland Revenue, Education, Health and Child, Youth and Family. Matching of records within the IDI uses name and date of birth. The matching process gives rise to some level of error in relation to both false matches and non matches, and is complicated by multiple identities and also migration.

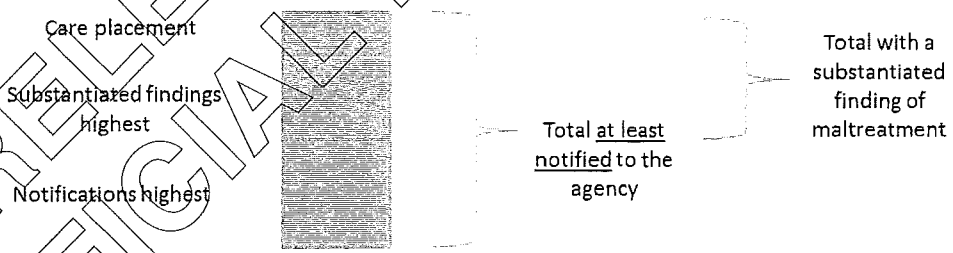
10 The study uses health records of ethnicity and we report these in a non-prioritised total counts form.

11 A key focus of the study is a child or young person's contact with Child, Youth and Family. This is recorded for care and protection as well as youth justice reasons.

12 Care and protection contact is described by variables that record the highest level of care and protection contact prior to 17 years of age. These variables are:

- notification highest
- substantiated finding of abuse or neglect highest
- care placement highest.

13 The hierarchal nature of this variable is represented diagrammatically below.



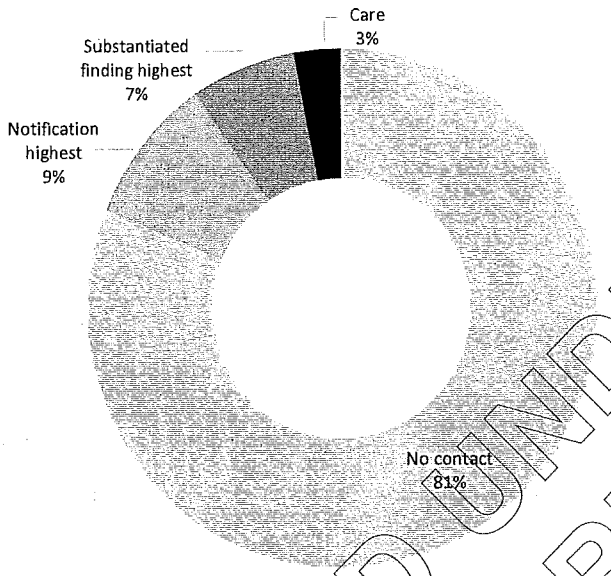
14 It is important to note that measures of involvement with Child, Youth and Family are missing at young ages for this cohort. Comprehensive data exists from 2001 from the CYRASS computer system, although this study draws on some information from early

[2] An individual in the cohort was defined as being a permanent resident if they met at least one of the following criteria: (i) they were enrolled at a NZ school as a domestic student for some or all of the years from 2003 to 2007, or had an income tax payment record in 2005-08, or had a benefit paid to them or on their behalf in 2005-07, or were part of the National Health Index population in 2006-07. In addition, they had to be: in NZ for at least three years of the period from 1 Jan 2003 to 31 Dec 2007 (in total, rather than continuously); and be born in NZ or have permanent residence entitlement through some other means (those with temporary residence visas were excluded). We included some people who were overseas for a substantial part of their childhood or young adulthood. These individuals will be missing from the administrative datasets in earlier and/or subsequent years, and will appear to have had no contact with the welfare, child protection or corrections systems.

records. The practical impact of the missing data is that there is a level of underestimation and imprecision for the measures of childhood contact.

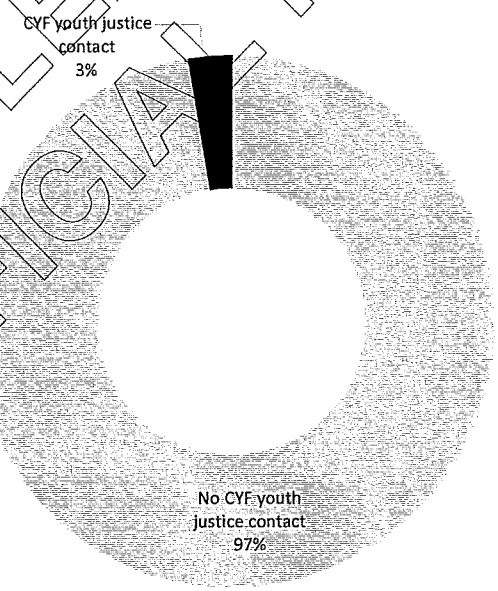
15 As is shown in graph 1, almost 19% of the cohort had some form of care and protection contact prior to turning 17 years of age.

Graph 1: Highest level of 'care and protection' contact for women born in 12 months to 30 June 1991 (n=30,606)



16 Approximately 3% of the cohort were referred to the agency for youth justice reasons.

Graph 2: Child, Youth and Family 'youth justice' contact for women born in 12 months to 30 June 1991 (n=30,606)



17 The majority of women with a youth justice referral had previously been referred to the agency for care and protection reasons. This meant that overall slightly less than 20% of women in the cohort had either care and protection or youth justice contact with Child, Youth and Family.

18 Importantly, Maori and to a lesser extent Pacific women had higher rates of contact with Child, Youth and Family than other ethnic groups. This pattern occurred both across care and protection as well as youth justice.

(3) The extent to which women in the cohort had a child notified to Child, Youth and Family by age 23

19 Slightly more than 6% of women in the entire cohort had a child notified to Child Youth and Family before they turned 23 years of age. These rates differed by ethnicity. As can be seen, rates were significantly higher for Maori (and to a lesser extent Pacific) women compared to other women in the cohort.

Table 1: Percentage of women in the 1990/1991 birth cohort with children referred to Child, Youth and Family before age 23 years (by ethnicity)

	Ethnicity	Percentage with a child at least notified to Child, Youth and Family
Women in 1990/1991 cohort	Maori	14
	Pacific	7
	Not Maori or Pacific	3
	Total	6

20 Rates also differed by the extent of childhood Child, Youth and Family contact of women in the cohort.

21 Among women who had no involvement with Child, Youth and Family over their own childhood, just over 2% had children who were the subject of a notification to Child, Youth and Family. This compares with 20% of those with any childhood contact with the agency who had a child at least notified to the agency.

22 Among women who had a childhood care experience, just over 34% had a child who was at least notified to the agency. For those with a youth justice referral, 36% had a child at least notified to the agency.

Table 2: Percentage of women in the 1990/1991 birth cohort with children referred to Child, Youth and Family before age 23 years (by prior contact)

	Prior contact	Percentage with a child at least notified to Child, Youth and Family
Women in 1990/1991 cohort	No care and protection contact	3
	Notification highest	15
	Finding highest	19
	Care highest	34
	No youth justice referral	5
	Youth justice referral	36
	No contact with CYF	2
	Contact with CYF	20
	Total cohort	6

23 Some of the increased risk of having children at least notified to the agency by age 25 years reflects differences in the ethnic composition of those with childhood contact with the agency.

24 However importantly, depending on the ethnic group, young adults with a history of any contact with Child, Youth and Family were four to ten times more at risk of having a child at least notified to the agency.

25 In what follows we show that among each ethnic group the increased risk reflects the combined effect of two underlying drivers:

- increased rates of early parenting for women with prior childhood contact with Child, Youth and Family; and
- higher rates of notification to Child, Youth and Family for mothers with a history of childhood contact with Child, Youth and Family

(4) Early parenting

26 Early parenting was more prevalent in Maori and Pacific women in the cohort.

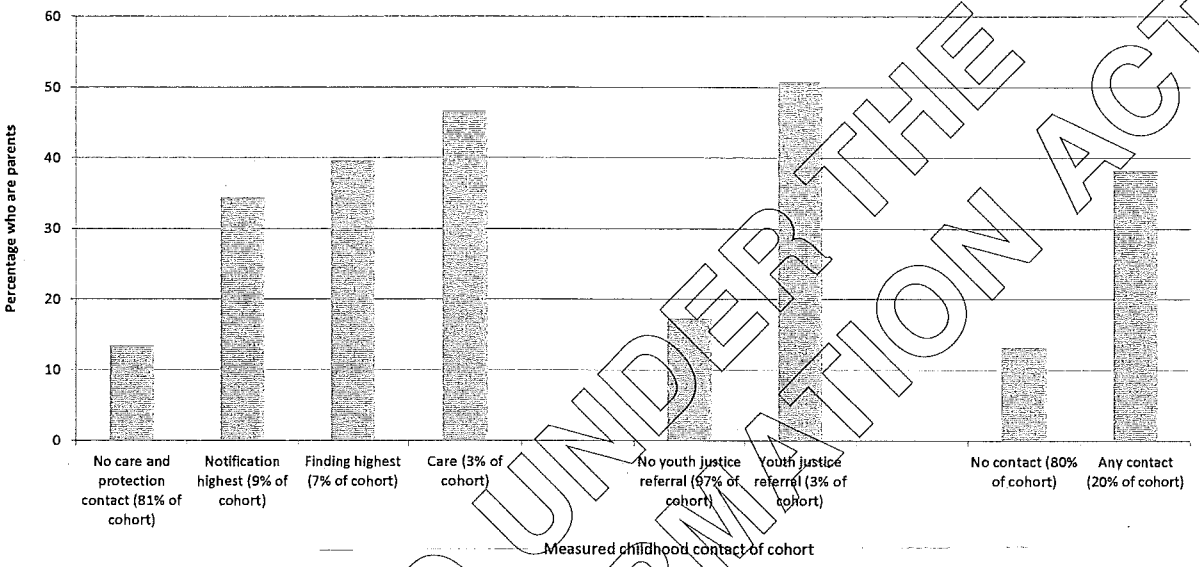
27 Early parenting was also highly correlated with prior childhood contact with the agency. For example, women with some level of childhood contact with the agency were nearly three times more likely to be parents before the age of 23. On average just over 13% of women with no measured childhood contact with the agency became a parent before the age of 23. By way of comparison, just over 38% of women in the cohort who had some level of childhood contact with Child, Youth and Family (either care and protection or youth justice) were parents before the age of 23.

28 As shown in the graph, there was a marked gradient in parenting rates depending on the level of childhood involvement with Child, Youth and Family. The highest rates of

parenting occurred among women with an experience of care or a youth justice referral.

29 Importantly, there was a strong association between childhood contact with Child, Youth and Family and parenting across all ethnic groups.

Graph 3: Percentage of women who had children before age 23, by contact with Child, Youth and Family (1990/1991 birth cohort)



Source: Statistics New Zealand IDI.

30 Women with a childhood history of involvement with Child, Youth and Family were both more likely to be parents, but also have more children before the age of 23 years. Amongst women who were mothers before age 23 years, those with no childhood involvement with Child, Youth and Family had on average 1.4 children. By way of comparison, mothers with any care and protection involvement with Child, Youth and Family during their own childhood had on average 1.6 children before the age of 23 years.

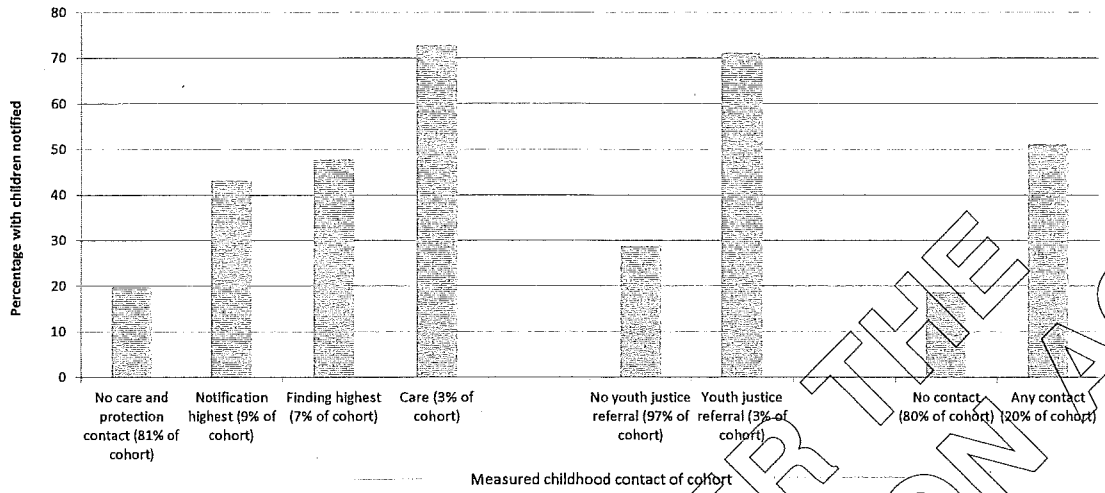
(5) Percentage of mothers whose child was at least notified to Child, Youth and Family

31 For women in the cohort who had a child before the age of 23 years, those with childhood contact with the agency were nearly three times more likely to have a child referred to Child, Youth and Family.

32 There was a marked gradient in the extent to which the subsequent generation of children were at least notified to the agency, with mothers with a prior care or youth justice experience having the highest rates of contact with Child, Youth and Family.

33 Importantly, the same graded association between parental and childhood contact was present for all ethnic groups.

Graph 4: Percentage of mothers who have a child at least referred to Child, Youth and Family: 1990/1991 birth cohort before age 23 years



Source: Statistics New Zealand IDI.

(6) What proportion of mothers with children notified to the agency had prior childhood contact?

34 A different perspective is to focus on mothers in the 1990/91 cohort who had a child notified to the agency, and to then consider what proportion of these mothers had any form of prior childhood contact with Child, Youth and Family.

35 For the mothers in the 1990/1991 birth cohort who had a child at least notified to the agency, 66% had a history of contact with the agency during their own childhood.

(7) Discussion

36 The analysis in this study shows that young women with a history of contact with the agency are associated with a substantial proportion of all referrals to the agency.

37 Internationally there are few high quality studies on this topic, and until recently the research had suggested only a modest association (Thornberry, 2014).

38 This study provides important new evidence as it provides analysis of both parenting rates and also subsequent care and protection notifications measured over a substantial number of years.

39 The finding of high rates of early parenting among women with prior contact with Child, Youth and Family is consistent with the existing literature that has mainly focused on care experienced young people (Mendes, 2009).

40 The finding of increased rates of notifications of parents with prior contact with Child, Youth and Family mirrors the significant new research of Putnam-Hornstein et al., (2015).

41 The Putnam-Hornstein research focuses on all children born to first time teen mothers in 2006 or 2007 in California. For each child, child protection services records were

used to document (1) whether the teen mother had a history of reported or substantiated maternal maltreatment at or after age 10 years and before the estimated date of conception and (2) whether the child was reported or substantiated for maltreatment before age 5 years.

42 The Putnam-Hornstein research finds significantly heightened rates of abuse and neglect for children of mothers who had been reported to child protection during childhood. After adjustment for other risk factors, a maternal history of either unsubstantiated or substantiated maltreatment emerged as a strong predictor of maltreatment and child protection involvement in the next generation.

43 The results presented is this study show a strong association between history of involvement with Child, Youth and family and subsequent involvement of the next generation.

44 It is important to note that there is a range of plausible and competing explanations about why these associations occur, including the causal impact of maltreatment, the impact of experiencing care, or surveillance effects.

45 Despite not being able to discriminate between different explanations, the findings do however clearly suggest that prevention activities should have a significant focus on individuals with a history of contact with Child Youth and Family. This could involve measures to reduce early parenting as well as parenting support.

46 In terms of early parenting, an important context is that it is likely that a considerable proportion of the pregnancies were unplanned. The Growing Up in New Zealand data found that overall around 54% of births to women under 30 years were the result of an unplanned pregnancy. For women under 20 years, 88% of births were the result of an unplanned pregnancy.

47 There is considerable evidence about the effectiveness of multiple component strategies to prevent unintended pregnancies among higher risk groups and care leavers (Mendes, 2009; Office of Adolescent Health, 2015; Nice, 2015). The components of such approaches include information about sexual health and relationships, affordable youth friendly health services, targeted education programs, and employment support.

48 To our knowledge there is no specific evidence about the effectives of parenting programs for young people who have themselves been maltreated. However there are parenting programs (eg PCIT, Safecare) that have been shown to be effective with highly vulnerable populations (Chaffin et al., 2011).

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Emily Putnam-Hornstein, Julie A. Cederbaum, Bryn King, Andrea L. Eastman, and Penelope K. Trickett (2015) 'A Population-Level and Longitudinal Study of Adolescent Mothers and Intergenerational Maltreatment' American Journal of Epidemiology 181 (7): 496-503

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Chaffin, M., Funderburk, B., Bard, D., Valle, L.A., & Gurwitch, R. (2011). A combined motivation and parent-child interaction therapy package reduces child welfare recidivism in a randomized dismantling field trial. *Journal of Consulting and Clinical Psychology, 79* (1),84-95. https://www.oumedicine.com/docs/ad-pediatrics-workfiles/chaffin-et-al-2011.pdf?sfvrsn=2

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NICE (2014) Contraceptive services with a focus on young people up to the age of 25 https://www.nice.org.uk/guidance/ph51/resources/guidance-contraceptive-services-with-a-focus-on-young-people-up-to-the-age-of25-pdf

Office of Adolescent Health (2015): Evidence-Based Teen Pregnancy Prevention Programs at a Glance
http://www.hhs.gov/ash/oah/oah-initiatives/teen_pregnancy/training/Assests/ebp-table.pdf

Abuse and neglect is associated with an increased risk of mortality during teenage years[1]

Robert Templeton (Treasury) and David Rea (Ministry of Social Development)

(1) Summary

1 This note presents new findings from administrative data on mortality for cohorts of children born in New Zealand during 1990 to 1993. The analysis focuses on mortality over the ages of 10 to 22 years for these birth cohorts, with a specific focus on differences depending on the highest level of care and protection contact with Child, Youth and Family.

2 Overall, children and young people who had any level of care and protection contact with Child, Youth and Family had a disproportionately higher rate of mortality, and made up almost a third of all the deaths within the birth cohorts over the ages 10-22 years.

3 After controlling for a limited number of other risk factors, the level of contact with Child Youth and Family was associated with a mortality risk that was 1.7 to 2 times higher than the rest of the cohort. The majority of the deaths in this group occurred in late adolescent and early adulthood.

4 The level of contact with Child, Youth and Family provides a measure of the extent of child maltreatment, and the findings are suggestive of a causal link between child maltreatment and youth mortality.

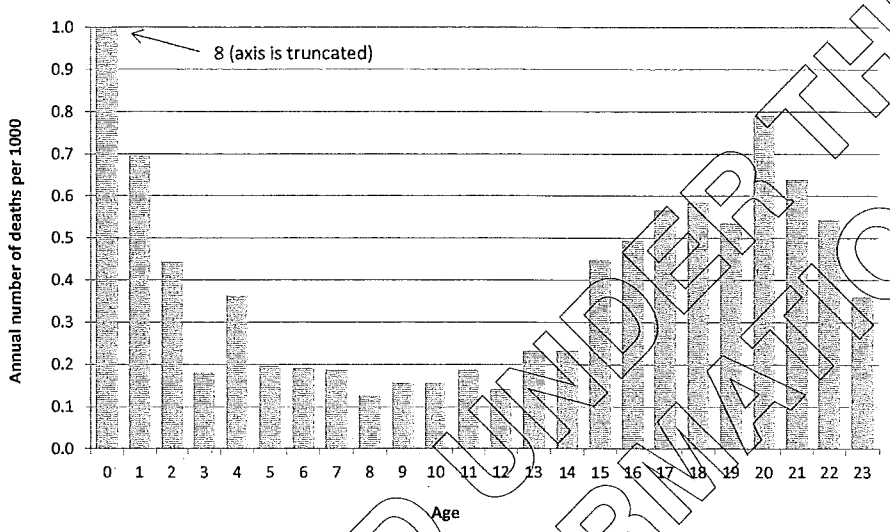
5 The study has important implications for policy, particularly as New Zealand has one of the higher rates of youth mortality among OECD countries. High rates of mortality of children involved with Child, Youth and Family provide a clear rationale for the provision of therapeutic and other services to help children and young people recover from childhood maltreatment. These services are likely to be particularly important in late adolescence and at ages older than the current care leaving age of 17 years.

[1]The results in this report are not official statistics and have been created for research purposes from the Integrated Data Infrastructure (IDI) managed by Statistics New Zealand. The opinions, findings, recommendations and conclusions expressed in this report are those of the author(s) not Statistics NZ, Treasury or the Ministry of Social Development. Access to the anonymised data used in this study was provided by Statistics NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation and the results in this paper have been confidentialised to protect these groups from identification. Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from www.stats.govt.nz.

(2) Background on adolescent mortality

6 Graph 1 shows mortality of the 1990 birth cohort using data from the Statistics New Zealand cohort mortality study. This shows the typical pattern of mortality increasing during adolescence. For this cohort, almost five in every thousand died between the ages of 10-22 years.

Graph 1: Deaths per 1000 for cohort born in 1990

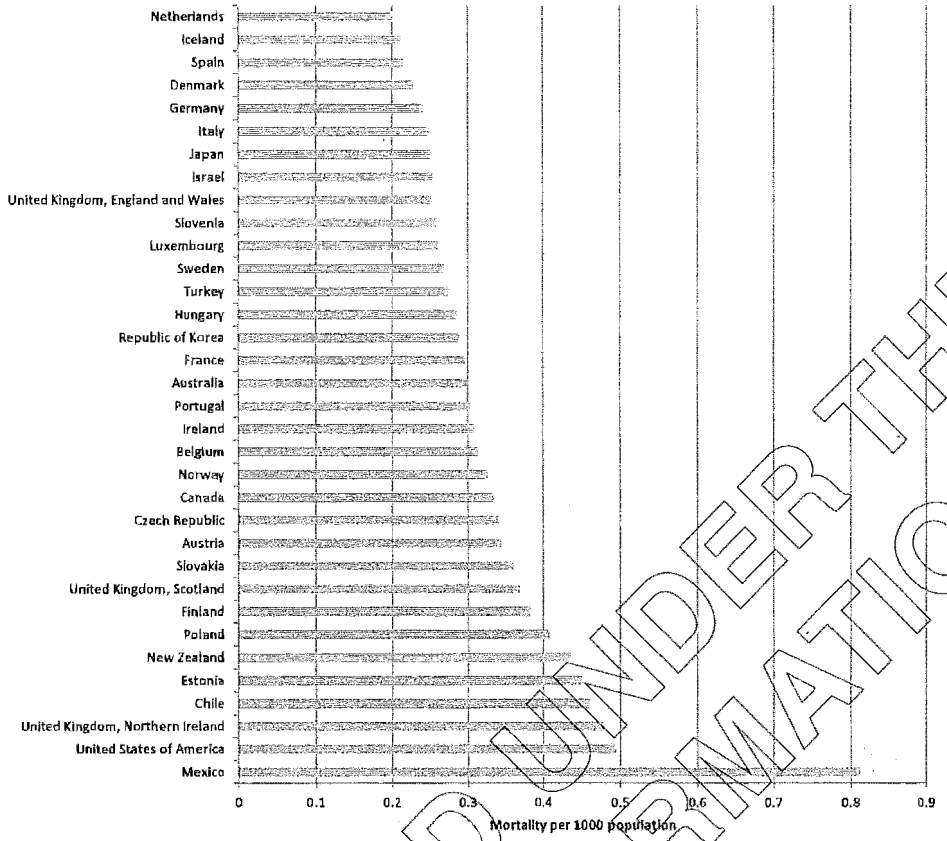


Source: Statistics New Zealand cohort mortality tables. Note: Population resident in New Zealand

7 Major causes of deaths among young people are suicide, medical events, transport, drowning's, and assaults (New Zealand Mortality Review Data Group, 2013).

8 Based on the most recent available data, New Zealand has one of the higher rates of adolescent mortality in the OECD.

Graph 2: Annual number of deaths per 1000 young people 10-24 years (2010)



Source: WHO mortality database with additional population information from OECD.Stat. Rates are adjusted using WHO population benchmarks.

(3) Research on the links between child maltreatment as a risk factor for adolescent mortality

9 There is increasing evidence that various forms of maltreatment have a significant impact on health and life expectancy.

10 The Adverse Child Experiences study shows a relationship between adverse childhood experiences and a range of health and mortality risks including alcoholism and alcohol abuse, chronic obstructive pulmonary disease, depression, liver disease and suicide attempts (Felitti et al., 1998). Similarly, the Dunedin longitudinal study also shows a relationship between the extent of early childhood adverse experiences and adult disease (Danese et al., 2009)

11 Prospective longitudinal studies in New Zealand and other countries also provide clear evidence of a link between various forms of maltreatment and suicidal ideation (Fergusson et al., 2000; Miller et al., 2013).

12 The aim of this study is to provide some evidence at a population level of the extent to which early childhood experiences of maltreatment are associated with an increased risk of youth mortality.

13 Important context for this study is that it is likely that these are high levels of unmet mental and physical health needs among the children and young people referred to Child, Youth and Family.

14 Analysis of the health needs of children and young people entering a care placement in 2010 found that 88% had unmet health conditions, with 65% having an emotional or behavioural problem and 41% having a mental health disorder. Other conditions requiring treatment included dental conditions hearing, vision and general development (Rankin, 2011).

15 A survey of the health and wellbeing of young people in residences found similarly high levels of unmet health, education and social needs (McKay and Bagshaw, 2010).

(4) Description of the data used in this study

16 The data for this study is drawn from the Statistics New Zealand Integrated Data Infrastructure (IDI) which provides anonymised matched data on individuals drawn from a range of government agencies.

17 The study uses information on individuals who were born in New Zealand over the period 1990-1993. The underlying data is drawn from the Department of Internal Affairs (births and death records), the Ministry of Health, Work and Income, and Child, Youth and Family. It is important to note that the matching of identities across these different data collections gives rise to some level of error.

18 A child or young person's care and protection involvement with Child, Youth and Family is measured by their highest levels of contact. These are:

- a notification only
- a substantiated finding of abuse or neglect is the highest level of contact
- a placement in care is the highest level of contact.

19 Child, Youth and Family data is censored with limited reliable data in the early 1990s. The result of this missing information is that the extent and highest level of contact with the agency is underestimated for the cohorts studied.

20 We interpret the measure of highest level of care and protection contact with Child, Youth and Family variable as a proxy for the intensity of abuse and neglect.

21 Other variables in the dataset include:

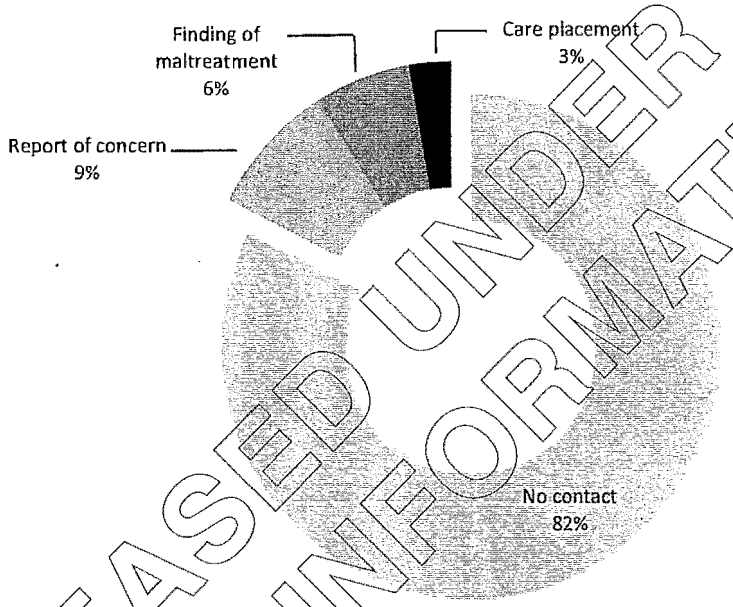
- sex and age derived from birth records
- multiple response ethnicity from birth records
- NZDEP from address at birth
- benefit receipt before age 10 years from Work and Income records.

22 For the analysis we focus on differences in mortality over the ages of 10-22 years depending on the level of prior contact with Child, Youth and Family.[2] The focus of the study are the ages 10-22 years as at earlier there is missing information about contact with Child, Youth and Family. We exclude individuals who either did not survive or left New Zealand before their 10th birthday.

(5) Analysis

23 For the cohorts studied, approximately 18% had some form of care and protection related contact with the agency by their 17th birthday.

Graph 3: Highest level of care and protection contact with Child, Youth and Family for cohorts born 1990 to 1993



Source: IDI

24 Graph 4 shows that individuals in the cohort who had contact with Child, Youth and Family had higher unadjusted rates of mortality that those with no recorded involvement. In particular:

- the unadjusted rate of mortality for those with a report of concern were twice the rate of mortality for those with no contact
- those with a substantiated finding of maltreatment had an unadjusted rate of mortality that was just over twice the rate of those with no contact
- unadjusted mortality rates for children and young people with an experience of care were 2.6 times the rate for those with no contact.

25 The higher rates of mortality among those with prior involvement with Child, Youth and Family reflect elevated risks relating to self-harm, accidents, as well as other causes of death.

[2] Some of the youngest members of the cohort are not quite 21 years of age at the end of the measurement period.

26 Overall the deaths of those with prior contact with Child, Youth and Family represented a third of all the deaths in the birth cohorts over the ages 10 to 22 years.

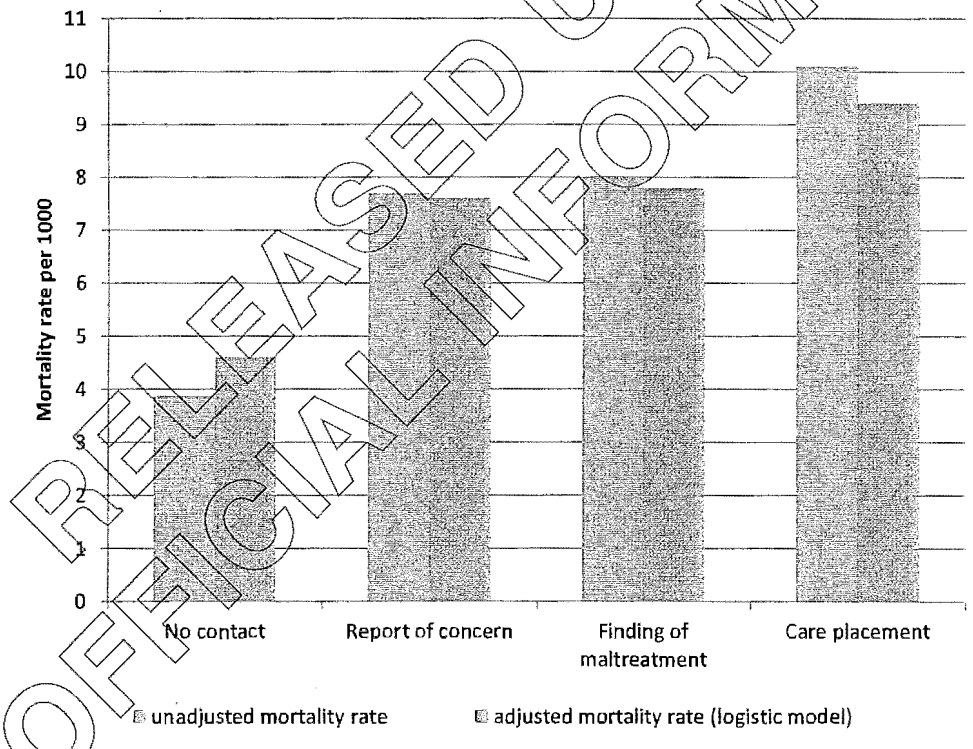
27 The descriptive results do not necessarily reflect a causal relationship as there are many other confounding risk factors (for example poverty and health status) that have not been accounted for.

28 In an attempt to assess the strength of evidence of a causal relationship, we controlled for a number of confounders available in the administrative data. These were sex, age, ethnicity, community deprivation (NZDEP), and benefit receipt of the child caregiver before 10 years of age.

29 Using a range of modelling techniques (linear probability model, logistic and Cox proportional hazards), the level of contact with Child, Youth and Family continued to be a statistically significant predictor of increased mortality.

30 The relationship between the level of involvement with Child, Youth and Family, controlling for these other factors is also shown in Graph 4.

Graph 4: Deaths per 1000 young people between the ages of 10-22 years by highest level of care and protection contact with Child, Youth and Family (cohorts born 1990 to 1993 unadjusted and adjusted)



Source: Statistics New Zealand IDI.

31 Our interpretation of the finding of a mortality gradient across notifications, findings and care placements are that the levels of contact reflect the extent of maltreatment experienced by the child, and that these experiences have adverse long term consequences for health and behaviour.

32 As well as more extensive levels of maltreatment, the higher mortality among young people with a placement experience will also reflect the impact of a care placement on mortality. It is important to note that this could be either a positive or negative impact.

(7) Implications of the findings

33 In an analysis of the early determinants of lifelong health the US National Scientific Council on the Developing Child identifies an important shift that is necessary in regards to child protection.

> *'For more than a century, child protective services have focused on issues related to physical safety, reduction of repeated injury, and child custody. Now, recent scientific advances are increasing our understanding of the extent to which the toxic stress of abuse, neglect, or exposure to family or community violence can produce physiological changes in young children that increase the likelihood of mental health problems and physical disease throughout their lives. Based on this heightened risk of stress-related illness, science suggests that all investigations of suspected child abuse or neglect should include a comprehensive assessment of the child's cognitive, language, emotional, social, and physical development, followed by the provision of effective therapeutic services as needed.'*
> ***National Scientific Council on the Developing Child (2010)***

34 The high rate of mortality among young people who have had contact with Child, Youth and Family has important implications for child protection and other services. A key issue is that the child protection response should not just focus on physical safety of children, but it should also provide services to help children and young people recover from the trauma of abuse and neglect.

35 There are also important implications for continuing services for young people into adulthood, particularly as mortality peaks ages 16-25. Supporting young people in the transition from the care and protection system.

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