

The Benefits of Improved Social Sector Performance

New Zealand Treasury

Background Paper for He Tirohanga Mokopuna:
2016 Statement on the Long-Term Fiscal Position

**BACKGROUND PAPER
FOR THE 2016
STATEMENT ON THE
LONG-TERM FISCAL
POSITION**

The Benefits of Improved Social Sector Performance

MONTH/YEAR

November 2016

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Executive Summary

This is the detailed background paper on social investment to *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016*. Improvements in data analytics have created an opportunity to improve the lives of New Zealanders by improving government services. This paper is a scenario analysis of the potential improvements for the most socially excluded families. The scenarios are based on non-fiscal outcomes, but suggest the fiscal impact could be similar in size to increasing the age of eligibility for superannuation to 67 years, but not as large as increasing superannuation to price inflation rather than average wages – both policies modelled in previous long-term fiscal statements (LTFS).

Social investment denotes the variety of policies that improve outcomes by applying evidence-based investment practices to social spending to improve the fiscal and non-fiscal returns from government's investment in social services. Greater availability of integrated data means that routinely-collected information can help Ministers better target services and manage their delivery. The key questions addressed by the analysis in this paper are:

- a. What might an improvement in the effectiveness and efficiency of state-funded services mean for people in New Zealand?
- b. Could an improvement in the effectiveness and efficiency of state services make a material difference to the long-term fiscal position?

The scenarios modelled are set out in Table 1.

Table 1: The scenarios modelled

Scenario	Summary
A. Benchmark	Assesses historical policy settings and identify a plausible range of return from social investment – with higher return requiring greater system changes to deliver the outcomes.
B. Expert case studies	Analyses case studies of specific interventions and evidence of outcomes based on the assessments of subject matter experts.
C. Broader investment in human capital	Estimates the impact of policies to improve the health and educational components of human capital.
D. Equitable Māori outcomes	Estimates benefits of bringing Māori outcomes to same level as rest of population within two generations (35 years).
E. Minimise childhood vulnerability	Estimate fiscal and non-fiscal benefits of improving the effectiveness of services for children and young people at highest risk of crime and long-term unemployment.
F. Regional convergence	Estimates the benefits of closing outcome gap between regions and Auckland, Wellington, and Christchurch.

The answer to a. above is the analysis of life outcomes modelled for scenarios C to F shown in Table 2 below. This table presents examples of the current rate of service use for the target populations in each of the investment scenarios (the “from” column) and rates we would be aiming to achieve through successful policy implementation (the “to” column).

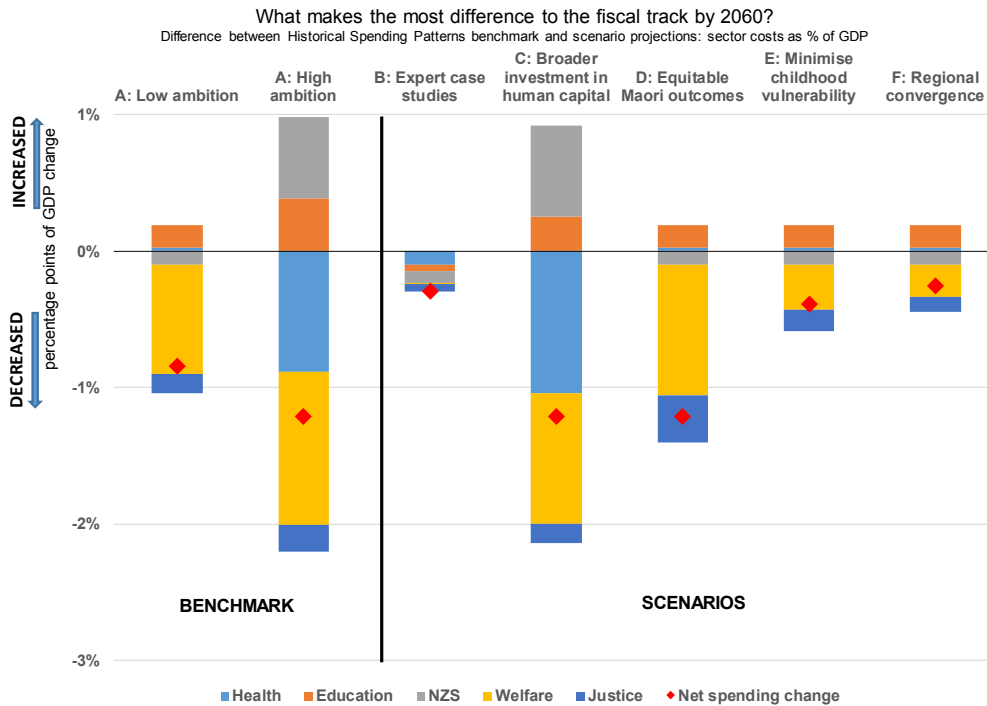
**Table 2: What does improved wellbeing under each scenario mean in practice?
Expected non-fiscal outcomes under each scenario (All numbers are percentages)**

Impact modelled in the scenario	C: Human capital		D: Māori outcomes		E: Minimise vulnerability		F: Regions converge	
	From	To	From	To	From	To	From	To
Pre-birth								
Caregiver corrections sentence	18	5	26	5	40	5	12	6
Family CYF contact pre-birth	4	1	5	1	12	1	3	1
Before school								
Family supported by benefit 25% of time	53	24	70	23	93	25	37	27
Caregiver corrections sentence	25	7	35	7	53	8	16	9
Primary school								
Family supported by benefit 25% of time	50	22	62	22	82	24	33	26
CYF contact	23	7	24	8	46	7	12	10
High school								
Suspensions, stand-downs and truancy	46	14	46	17	57	19	24	21
Hospital events	24	13	25	14	28	15	17	15
Young adult (before 21 years old)								
Supported by adult benefit for 2 or more years	20	3	18	5	25	5	9	6
Teen parent (includes under-18s)	18	4	20	5	24	6	9	6
Overall outcome								
On track at 21	45	84	51	79	41	77	70	77

Note: This table uses an IDI based analysis of a cohort of 56,300 New Zealanders born in 1993 (see Templeton (2016) for full description).

Figure 1 answers question b. It shows the modelled difference to health, education, superannuation, welfare, and justice expenditure by 2060 for each of the scenarios. This provides a kind of social thermometer for the state sector, with long-run fiscal outcomes providing a proxy for how well the system is delivering non-fiscal outcomes.

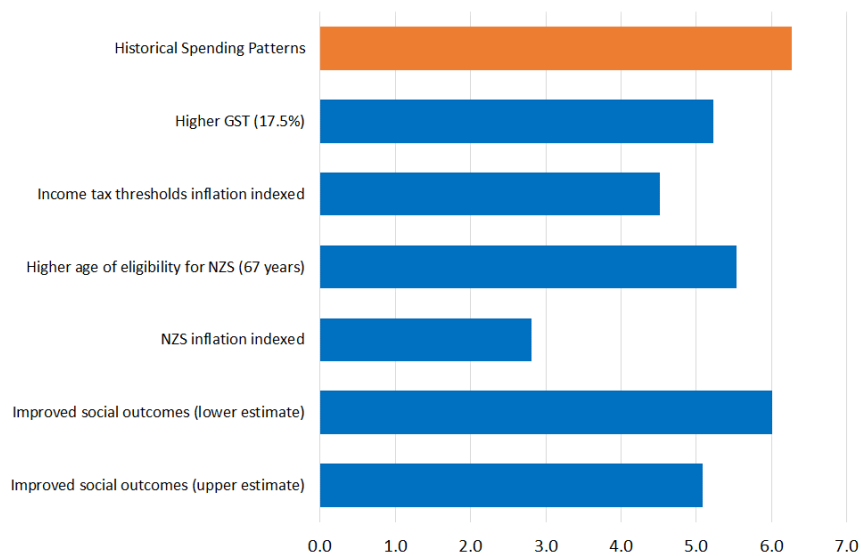
Figure 1: The fiscal impact of the modelled scenarios



Source: Adapted from *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016*

This reduction in primary fiscal spending is of the same order of size as changes to superannuation and health spending modelled in previous iterations of the LTFS, as set out in Figure 2. Note, the final two bars in Figure 2 set out our benchmark estimates of the impact of social investment.

Figure 2: The potential impact of social investment: Projected primary fiscal deficits in 2060 (per cent of GDP)



Source: *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016*

Note: The primary deficit is the shortfall between Core Crown revenue-to-GDP (excluding interest revenue and dividends) and Core Crown expenses-to-GDP (excluding debt-financing costs). The impact on net debt will reflect accumulated primary balances and debt financing costs. The GST increase is assumed to occur in 2024; and inflation indexation of income tax thresholds starts in 2021. For NZS, the increase in the age of eligibility is phased in between 2021 and 2024; and inflation indexation starts in 2021.

The key modelling assumption is that more highly educated people are more skilled and therefore more productive. Broadly, the more skills matter, the more plausible the estimated impacts.

The key policy assumption in the scenarios is that the state sector can make better use of resources saved by improved effectiveness, in particular:

- **Capability** – The balance of skills needed will change as outcomes and evidence of effectiveness change. The state sector will need to have the flexibility to switch the skill sets it employs, including by working more effectively with the broader community.
- **Redirecting funding** – It will need to be possible to redirect funding to where it will be more effective, including across government and outside of government. This is particularly true for early interventions when fiscal benefits can be years in the future.
- **Innovation** – For knowledge to make a difference the state sector needs to improve how it uses knowledge and be more prepared to adapt as our knowledge changes.

“The social object of skilled investment should be to defeat the dark forces of time and ignorance which envelope our future.”

John Maynard Keynes
The General Theory of Employment, Interest and Money

Table of Contents

Executive Summary	i
1 Introduction	1
1.1 Improving social outcomes to address fiscal challenges	1
1.2 Social investment in New Zealand today	2
1.3 Purpose of this paper	3
2 Improving effectiveness of social spending	4
2.1 Government as “social investor”	4
2.2 How technology helps government use information differently	5
2.3 Are there opportunities for improvement?	9
3 The social investment scenarios	12
3.1 Approach to modelling	12
3.2 Scenario A: Benchmark	15
3.3 Scenario B: Expert Case Studies	18
3.4 Scenario C: Broader investment in human capital	21
3.5 Scenario D: Equitable Māori Outcomes	23
3.6 Scenario E: Minimise childhood vulnerability	25
3.7 Scenario F: Regional convergence	25
4 Analysis	28
4.1 Scenario B – Expert Case Studies	28
4.2 Scenarios C to F	29
4.3 Could a social investment approach make a material difference to the long-term fiscal position?	31
5 Concluding Remarks	39
6 References	40

List of Tables

Table 1: The scenarios modelled	i
Table 2: What does improved wellbeing under each scenario mean in practice? Expected non-fiscal outcomes under each scenario	ii
Table 3: The levels of investment	9
Table 4: Historic Spending Patterns Scenario and Scenario A: Benchmark, low and high ambition projections	17
Table 5: Scenario B summary of case studies	18
Table 6: Scenario B process for choosing case studies and deriving assumptions for the Expert case studies scenario	20
Table 7: Scenario C process for choosing assumptions for broader investment in human capital scenario	22
Table 8: Scenario D: How we use Analytics and Insights work to derive assumptions for Equitable Māori outcomes	24
Table 9: Scenarios E and F assumptions	27
Table 10: The non-fiscal benefits of the expert case study interventions	29
Table 11: What does improved wellbeing under each scenario mean in practice? Expected non-fiscal outcomes under each scenario	30
Table 12: Summary of scenarios (nominal dollars)	35

List of Figures

Figure 1: The fiscal impact of the modelled scenarios	iii
Figure 2: The potential impact of social investment: Projected primary fiscal deficits in 2060	iii
Figure 3: Expenses-to-GDP ratio required to stabilise net debt in the long term	2
Figure 4: Different chances of being on track by age 21 – comparing those whose family was benefit-dependent at their birth with those who were not.....	6
Figure 5: Dashboard presentation of outcomes	7
Figure 6: The proportion of children and young people who stay on track at 21, by family benefit receipt.....	8
Figure 7: Studies on the impact of juvenile drugs courts.....	11
Figure 8: The six scenarios draw on a variety of information sources as a first step towards a more comprehensive assessment.....	13
Figure 9: Core Crown primary spending is lowered by about 1 percentage point of GDP	16
Figure 10: Core Crown primary spending is lowered by 0.3 percentage points of GDP by 2060.....	19
Figure 11: Changes in health and welfare reduce Core Crown spending by 0.9 percentage points of GDP	21
Figure 12: Core Crown spending is lowered in 2060 by 1.2 percentage points of GDP, largely through welfare and justice changes.....	23
Figure 13: Core Crown spending is lowered in 2060 by 0.25 percentage points of GDP, largely through welfare changes.....	25
Figure 14: Core Crown spending is lowered in 2060 by 0.25 percentage points of GDP, largely through welfare reductions.....	26
Figure 15: What should be focus of a policy approach?.....	31
Figure 16: Fiscal track under the social investment scenarios.....	32
Figure 17: Comparing policy options for reducing primary fiscal deficits in 2060	32
Figure 18: Spending impact of scenarios	33
Figure 19: Increase in revenue from modelled scenarios, compared to HSP.....	36

The Benefits of Improved Social Sector Performance

1 Introduction

1.1 Improving social outcomes to address fiscal challenges

This paper is the detailed background paper on social investment to chapters 4 and 6 of *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016*. While government finances remain relatively strong, fiscal pressures are projected to increase significantly over the next 40 years. As projected in all three previous Long Term Fiscal Statements (LTFS), population ageing is the key driver of these increased pressures. These additional pressures are expected to come through slower revenue growth (resulting from less participation) and increased expenses (primarily through healthcare and New Zealand Superannuation). This is the Historical Spending Patterns scenario shown by the orange line in Figure 3 below.¹

In *He Tirohanga Mokopuna* we describe a fiscal approach that stabilises long-term net government debt, represented by the blue line in Figure 3. This line shows that overall fiscal balance can be maintained by moderating cost pressures, but the fiscal approach does not address policy questions about the changes in services or trade-offs that would be needed as part of stabilising long-term debt. In the 2013 LTFS we considered a range of options that stabilised long-term debt, including changes to:²

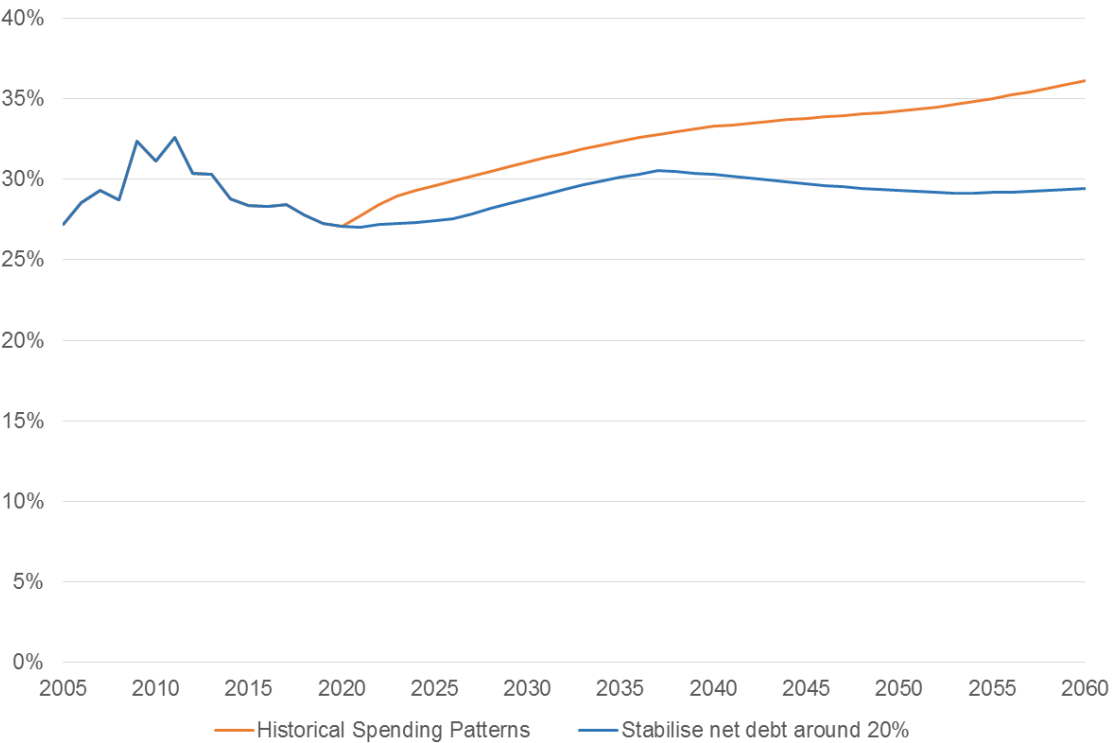
- Taxation – indexing inflation of income thresholds only so that fiscal drag is not fully compensated for and tax-to-Gross Domestic Product (GDP) rises; and raising the rate of GST
- Government spending – reducing growth in healthcare spending
- New Zealand Superannuation settings – raising the age of eligibility; and pegging payments to inflation rather than wages.

¹ See Bell, M. and M. Piscetek (2016) “Demographic, Economic and Fiscal Assumptions and Modelling Methods in the 2016 Long-Term Fiscal Model,” New Zealand Treasury.

² New Zealand Treasury (2013) *Affording Our Future - Statement of New Zealand's Long-term Fiscal Position*.

In 2016, we are building on these analyses to explore the potential impact on the long-term fiscal outlook if government improved the impact of social services on the outcomes of New Zealanders.

Figure 3: Expenses-to-GDP ratio required to stabilise net debt in the long term



Source: *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016*

For the remainder of this paper the term “social investment” denotes the variety of policies that improve outcomes by applying evidence-based investment practices to social spending to improve the fiscal and non-fiscal returns from government’s investment in social services.³ The fiscal impact of successfully implementing social investment would be equivalent to moving down the orange line in Figure 3.

1.2 Social investment in New Zealand today

Investing to lift outcomes and reduce the need for other interventions is a very old idea. In 1550, King Edward VI of England responded to the Bishop of London’s frustration with the justice system’s response to youth crime by converting an abandoned palace into a school that combined a less severe judicial approach with work training.⁴ This policy contains the main elements of what is now called social investment – better use of state resources, aligning interventions that had been siloed, and improving investment in human potential.

Explicit reference to “investment” originated with economists Alva and Gunnar Myrdal in the 1930s. Their argument for the Swedish welfare state was intended to justify “a wide range of policies that would invest in the nation’s human capital [including] quality day care education, health care, economic support to families, and policies to support women’s labour force

³ See “Social Investment” at: <http://www.treasury.govt.nz/statesector/socialinvestment>

⁴ Gloucester Ridley (1763) *The Life of Doctor Nicholas Ridley* Reprint Google Books, pp 376-7.

participation”.⁵ Interest in this idea expanded in the 1980s in response to economic reforms and the changed role of both economic and social policy. The work on labour markets by the OECD and the writings of Anthony Giddings were particularly influential. Social investment has become the mainstream approach throughout the European Union.⁶

New Zealand has considered variants of these policies since the turn of the century. This includes setting up a ministry of “social development” to replace a “social welfare” department and the use of budget policy themes like Families – Young and Old for cross-sector “investments ... [that continue] our progress toward a society where all families enjoy the security and opportunity they need to succeed.”⁷

The need for government agencies to work towards joint outcomes has become an increasingly strong theme in New Zealand through proposals for social sector reform. Both the 2011 report of the Welfare Working Group *Reducing Long-Term Benefit Dependency* and the 2016 Productivity Commission’s analysis of social sector contracting, *More Effective Social Services*, emphasise its importance.⁸ It has become clear that poor collaboration results in the state sector missing opportunities to improve outcomes through use of new technology.⁹

The purpose of social investment is to change social services so they make a positive difference to New Zealanders lives because:¹⁰

It is not enough to simply service misery with welfare payments or social houses or urgent health services. We want to help people make the changes they need to become independent. This ensures people lead better lives, but also saves taxpayer money in the long run.

1.3 Purpose of this paper

The scenario analysis in this paper analyses the potential impact of social investment. The intent is to support Ministers to achieve their priorities through a better understanding of how and where they can make a difference for New Zealanders to improve both outcomes and New Zealand’s broader fiscal position. To do this we hope to answer two questions in this paper:

- a. What might an improvement in the effectiveness and efficiency of state-funded services mean for people in New Zealand?
- b. Could an improvement in the effectiveness and efficiency of state services make a material difference to the long-term fiscal position?

⁵ Morel, N, B. Palier and J. Palme (2012) (eds) “Beyond the welfare state as we knew it?” in *Towards a social investment welfare state? Ideas, policies and challenges*, p 4.

⁶ *Ibid* p 42 and *passim*.

⁷ New Zealand Treasury (2008) “Budget 2008 Minister’s Executive Summary”, p8.

⁸ Welfare Working Group (2011) “Reducing Long Term Benefit Dependency: Recommendations” at <http://igps.victoria.ac.nz/WelfareWorkingGroup/Downloads/Final%20Report/WWG-Final-Recommendations-Report-22-February-2011.pdf> and Productivity Commission (2015) “More effective social services” at <http://www.productivity.govt.nz/sites/default/files/social-services-final-report-main.pdf>.

⁹ Mansell, J. (2015) “Handing Back the Social Commons” at www.productivity.govt.nz/sites/default/files/social-services-draft-james-mansell.pdf

¹⁰ English, B (2016) *Speech to the Institute of Public Administration New Zealand* at <https://www.beehive.govt.nz/speech/speech-institute-public-administration-new-zealand-2>

2 Improving effectiveness of social spending

2.1 Government as “social investor”

When government makes spending decisions in welfare, education, health or law and order it is acting as a “social investor” in the sense of choosing where spending is most likely to improve lives, most importantly for society’s most vulnerable people. A little over three-quarters of New Zealand government spend is in these sectors.¹¹

This expenditure is intended to improve outcomes, including for the most vulnerable people in society. In this chapter we consider how the social investor can identify opportunities to improve outcomes. The focus is on the non-fiscal outcomes social investment is intended to improve.

The fiscal outcomes of scenarios that model improved decision-making by government in its social investor role are described in Chapter 3. The modelling identifies that addressing the underlying problems and improving the quality of life of a large minority of New Zealanders would also help government to shift the balance of its spending to more productive areas. For example, rather than having income transfers, barriers to employment would be removed; instead of care and protection services, children would have nurturing families; instead of spending on dealing with the consequences of crime, the incidence of crime would be reduced.

This paper does not consider the impact of increasing resources for improving outcomes. In part this is because the driver for the work is addressing costs that will increase even if service levels remain the same. In addition, the scale of current spending means small improvements in how spending is used have the potential to radically improve outcomes.

For example, even if superannuation and law and order spending are excluded, current spending on health, education and welfare is about \$42 billion (54 per cent of government spending). If we found a better use for one per cent of that expenditure, it would be equivalent to the total spending in 2016/17 on Child Youth and Family care and protection services.¹² A policy focus on improved outcomes, with or without more resources, would have the improved use of current spending as one of its key objectives.

¹¹ See “What we spend”, New Zealand Treasury (2016a) “Budget at a Glance”, p 6.

¹² See *Ibid* and New Zealand Treasury (2016b) “Social Development and Housing Sector - The Estimates of Appropriations for the Government of New Zealand for the Year Ending 30 June 2017”. P46 of the latter shows \$406m for “Care and Protection Services in 2016/17.

2.2 How technology helps government use information differently

One challenge this chapter is intended to address is why, if social investment approaches have been tried before, we expect them to make a bigger difference now? In brief the answer is that new technology has transformed our ability to use the data we have always routinely collected when administering government systems. The new capability includes easier and cheaper storage, new and more widely available analytical tools and the ability to link data with the appropriate protection of privacy. This technology is already routinely used in the private sector and could now be used in the public sector to support those in greatest need earlier with services tailored to their needs.¹³

As an example, over the last two years the Treasury has analysed the Integrated Data Infrastructure (IDI) that links anonymised New Zealand administrative data, some from as far back as the early 1990s.¹⁴ This data can be used to provide insights into outcomes for individuals and families receiving services.¹⁵

To understand how government can support people to succeed, this paper uses a strengths-based measure of the cumulative impact of individual, family, community and government support that helps young people to be “on track” for success in adulthood. This helps to illustrate how our new data capacity can identify opportunities to intervene more effectively to improve people’s lives.

For the purpose of this analysis, “on track” is defined as:¹⁶

- having attained or enrolled in a course at level 4 or above (training for skilled employment) or
- being employed and earning more than two-thirds of median wage for most of their 21st year (approximately the “living wage”) or
- being self-employed.

This is a minimum measure of the effectiveness of the range of social, educational and health services to help young people attain adult independence. A child “on track” by this definition may still have needed family intervention, have had unmet health needs, have been in trouble with the justice system or have been pregnant as a teenager. There will also be people whose lives change for better or worse later in life.

A range of factors affect a child’s chances of being on track at age 21. For example, Figure 4 shows the outcomes for children born into families supported by benefits.

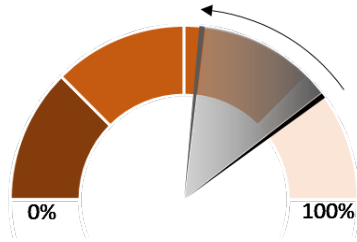
¹³ Data Futures Forum (2015) “New Zealand’s Data Future Explored”, <https://www.nzdatafutures.org.nz/discussion-documents>, p8.

¹⁴ See <http://www.treasury.govt.nz/statesector/socialinvestment/data> for papers and the analytical tool to further explore the data. More on the IDI can be found at http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure.aspx. Access to the data presented was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistics Act 1975. These findings are not Official Statistics. The opinions, findings, recommendations and conclusions expressed are not those of Statistics New Zealand.

¹⁵ See Templeton, R. (2016) “Note on using IDI data to estimate fiscal impacts of better social sector performance,” Treasury.

¹⁶ Cf New Zealand Qualifications Authority (2016) “The New Zealand Qualifications Framework” at www.nzqa.govt.nz/assets/Studying-in-NZ/New-Zealand-Qualification-Framework/requirements-nzqf.pdf and King, P. and C. Waldegrave (2012) Report of an investigation into defining a living wage for New Zealand at www.familycentre.org.nz/Publications.

Figure 4: Different chances of being on track by age 21 – comparing those whose family was benefit-dependent at their birth with those who were not



This dial compares the outcomes for young people who turned 21 in 2014 who were born into a benefit-dependent family with those of the same age who were not. In total, 21 per cent of children were born to families on benefit, and slightly over half of these children were on track at age 21. By comparison, just under 80 per cent of the other young people in this category were on track at 21. There is no simple causal relationship between benefit receipt and a reduced likelihood of being on track because families on benefit have other sources of resilience and face other challenges that affect children’s outcomes.¹⁷

Dashboards like those at Figure 5 illustrate the sort of information we need to dig deeper so resources can be targeted where they make the most difference. Movement along the dials (shown by the grey segments) shows the change in likelihood of being on track at age 21 if the event listed on the left hand side of the diagram has occurred.

The grey area shows the difference in outcomes between children whose caregiver receives a corrections sentence (42 per cent are on track) and those who do not (60 per cent on track). The right hand dial on the same row shows the same information for a child born into a family not in receipt of benefit.

The fact that children from families in contact with both the corrections and benefit systems are more likely to have poorer outcomes is not surprising. But the dashboard shows how we can start to understand how this compares with other experiences. For instance it shows we can examine hospital data alongside education data. Ultimately this data will allow us to better prioritise interventions and understand how they impact on outcomes across different domains.

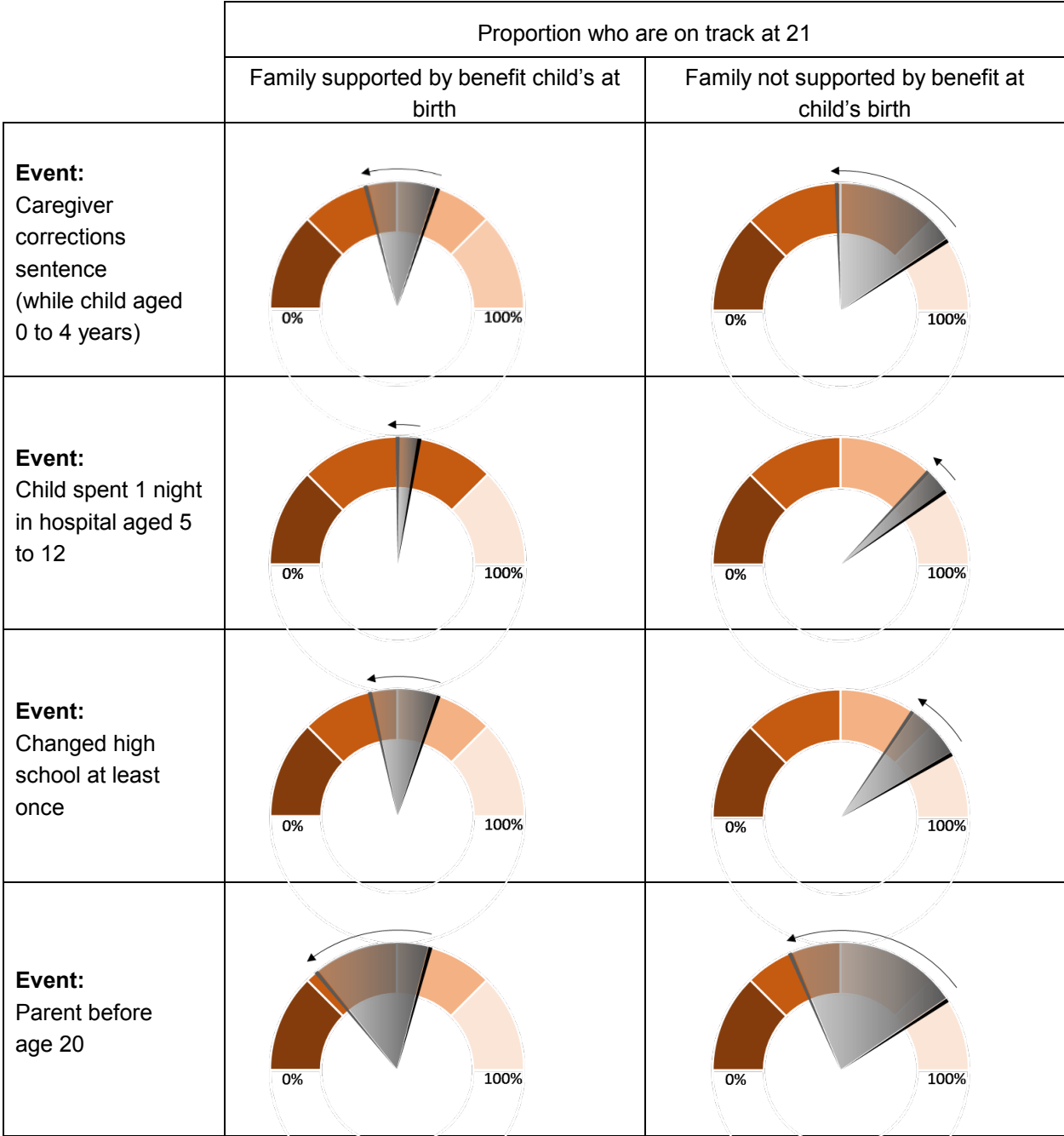
The data in this dashboard has been drawn from the anonymised data in the IDI. This protects individual privacy when analyses of this sort are done by government departments. However the source data is not anonymous. The impact of decisions informed by this analysis can be used by those making decisions about who needs help to improve targeting of services. Further data then provides a basis for measuring progress and intervening early to promote better adult outcomes, for example by minimising the difference between those children born in families on benefit and other children or by reducing the impact of specific adverse events early in the child’s life.

It should be emphasised that none of the analysis requires new data to be collected. It is about making better use of data that is already routinely collected. Clearly the potential for improved outcomes will need to be managed to minimise the potential for abuse and protect individuals from invasion of privacy.¹⁸ But part of that balance will be understanding when better management of current resources could ensure the services people receive are more relevant to their needs.

¹⁷ Templeton (2016), Section 5

¹⁸ See discussion in Data Futures Forum (2015)

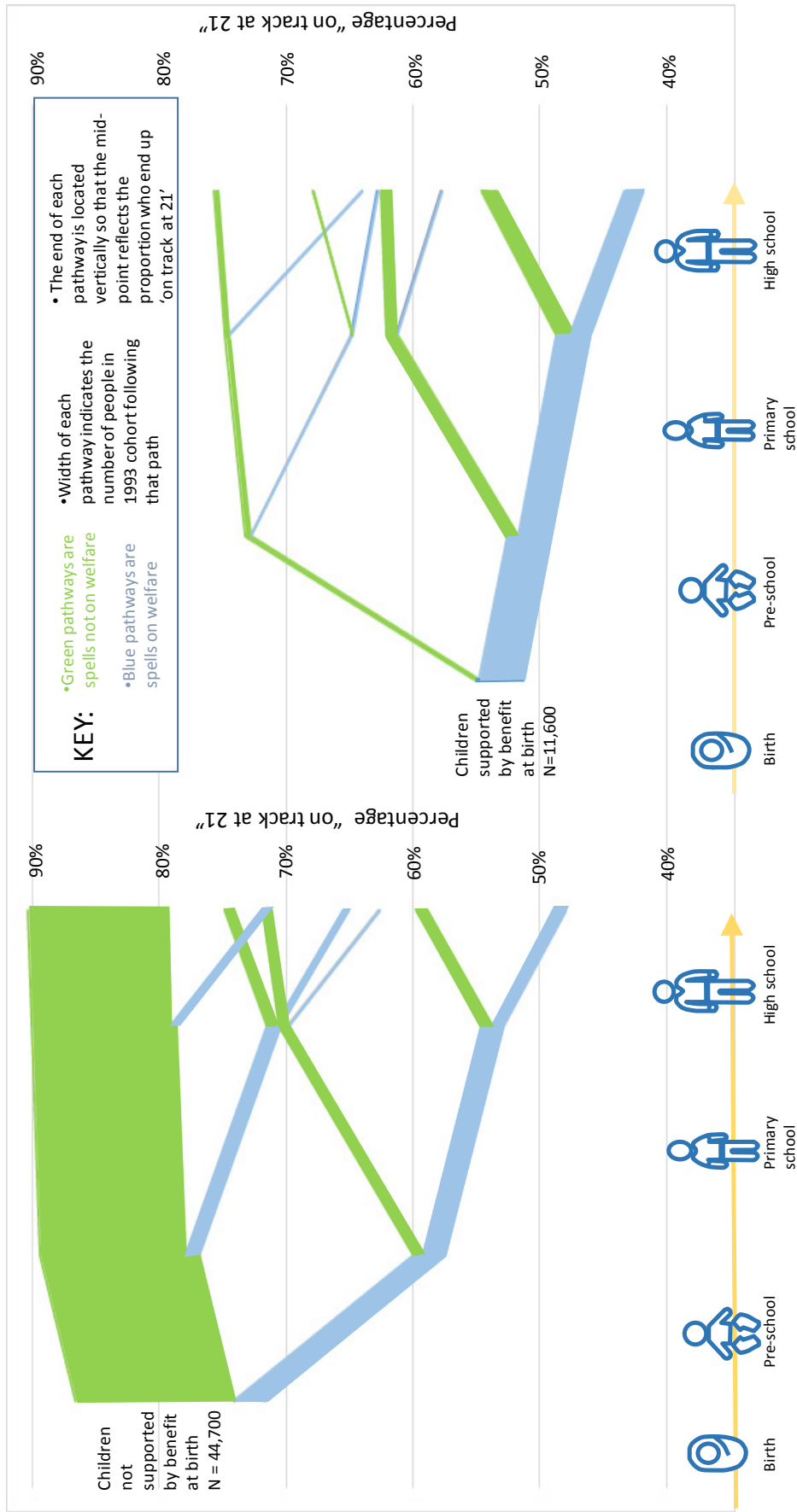
Figure 5: Dashboard presentation of outcomes



For example Figure 6 below expands on Figure 4 to map the likelihood of being on track at different points in childhood. The left hand “tree” is for those children whose families were not supported by welfare at the child’s birth and the right hand tree is for those whose families were receiving benefit at the time of their birth. Each of these groups is then split successively into branches according to whether families were supported by welfare at least 25 per cent of the time when the child was age 0 to 4, 5 to 12, and 13 to 17 respectively. The location of each grouping illustrates the percentage who are on track at 21.

While this diagram may seem complex, it simplifies significantly what we know about children growing up. For instance the ages used for branches of the tree have been chosen because they map to points in a child’s school career. The same data could be mapped to a wide range of other events, including health, educational and social service access.

Figure 6: The proportion of children and young people who stay on track at 21, by family benefit receipt



Source: Templeton, R. (2016) "Note on using IDI data to estimate fiscal impacts of better social sector performance," Treasury

2.3 Are there opportunities for improvement?

The previous section described the significance of improved information on outcomes but did not address whether or not improved information could improve outcomes for people. This is important because if it is assumed that opportunities for improved performance do not exist then it is difficult to understand what an investment approach can achieve other than possibly reducing costs by using fiscal measures.¹⁹

A social investment approach does not need fiscal measures. They are a useful and readily available example of how a focus on clear outcomes can improve effectiveness. At least as important is framing the objectives of the investment approach appropriately for understanding improvements in performance, for example through an actuarial approach. Table 3 below is derived from actuarial analysis but uses non-fiscal measures of outcomes.²⁰

Table 3: The levels of investment

	Measures	Use
Level 1: System	High level indicator of outcomes eg, population health outcomes	Track system performance Performance management of organisations
Level 2: Cohorts	Outcomes for populations eg, rates of preventable disease among Māori	Understand drivers of system performance Target resources
Level 3: Programs	Outcomes of interventions and programs eg, rheumatic fever rates after adding housing insulation	Assess effectiveness and efficiency of interventions Decisions whether or not to continue an intervention

Source: Adapted from Taylor Fry (2011)

Below examples of opportunities to improve performance are considered for each level. The success of the social investment approach depends on the extent to which broad changes can be made that replicate the extent of improvements represented by the examples outlined below.

Level I analysis measures the effectiveness of the system as a whole. For instance it can be applied to the challenge of coordinating services to improve outcomes, as identified recently by the Productivity Commission.²¹

¹⁹ Eg, Chapple, S. (2013) "Forward Liability and Welfare Reform in New Zealand," in Policy Quarterly Volume 9, Issue 2

²⁰ Table adapted from Taylor Fry (2011) "Actuarial Advice of Feasibility: a long-term investment approach to improving employment, social and financial outcomes from welfare benefits and services", Report to the Ministry of Social Development and the Treasury pp17-18. Private sector applications of an actuarial approach have both fiscal and non-fiscal objectives. For example insurance companies use it to assess compliance with legal obligations and quality of management, for example to assess whether a company has enough money to cover the promises it has made and has understood the income it needed to maintain the scheme.

²¹ Productivity Commission (2015)

Auckland City Mission's description of the experience of poverty, based on interviews with regular users of the Mission's foodbank, illustrates how poor service coordination undermines services.²² Participants described turning to fringe lenders, pawnshops and clothing shops as easier and faster sources of money than having to "tell and re-tell their stories of despair to many different agents to 'prove' they were poor, truly desperate and deserving of help".²³

This situation is not about people being "hard to reach" or a lack of government resources, because these are stories of people having many interactions with the system. An interesting indicator of the problem can be found in a recent review by Gulliver and Fanslow on Intimate Partner Violence (IPV). They noted that "[c]omprehensive, multipronged approaches ... are required to address IPV, aligned with a long-term investment in policy, infrastructure and communities". The best example they could find of this approach did not come from the social sector, but from the strategy to reduce road deaths. There it had been possible to successfully co-ordinate approaches as varied as legislation to improve road and car design, social marketing campaigns, targeted policing and rapid sentencing.²⁴

Children's dentistry provides a good example of the population outcomes identified by a Level II analysis.²⁵ Since the late 1960s, children's dentistry has been provided as a universal service. For dentists and dental therapists:

...knowing the timing and sequence of permanent teeth emergence is also useful in (a) assessing whether the dental development of a child is within the normal range, and (b) to guide oral health preventive and therapeutic interventions...²⁶

More colloquially, whether or not, and how, a young child with damaged teeth should be treated depends on when baby teeth are likely to be replaced by adult teeth. It has been known since the 1960s that there are ethnic differences in the age at which adult teeth emerge, including a difference between Pacific Island and European children. Over the last ten years this has been further quantified with differences of more than a year for New Zealand Pasifika, Māori, European and Asian populations.²⁷

It is unclear if dentists and dental therapists are acting on this evidence. The routinely-used reference for New Zealand dentists and dental therapists was produced in the 1940s based on Western populations, and a 1950s study of children in Dunedin had shown this to be inaccurate even for a mostly New Zealand European population.²⁸ The potential practical consequences include over-treatment and unnecessary interventions, particularly for Māori and Pacific Island children. These interventions would incur costs to the system with no benefit to the health of children.

Level III information can evaluate the effectiveness of specific interventions. Most importantly it can improve how evidence is applied. For instance Figure 7 below is taken from a systematic review into the effectiveness of special courts in reducing general recidivism for

²² The Family 100 Project (2014) *Demonstrating the complexities of being poor; an empathy tool* at <http://www.aucklandcitymission.org.nz/wp-content/uploads/2015/12/Demonstrating-the-Complexities-of-Being-Poor-An-Empathy-Tool.pdf>, p12.

²³ *Ibid*, p 18.

²⁴ Gulliver, P., and Fanslow, J. (2016). "Understanding research on risk and protective factors for intimate partner violence," Auckland, New Zealand: New Zealand Family Violence Clearinghouse, University of Auckland, p 20.

²⁵ Our thanks to Dr Liz Hitchings, Clinical Lead in Dental and Oral Health, Wellington Hospital for this example.

²⁶ Kanagaratnam, S. and P. Schluter (2012) "The age of permanent tooth emergence in children of different ethnic origin in the Auckland region: a cross-sectional study," *New Zealand Dental Journal* 108, No 2:55-61, p55.

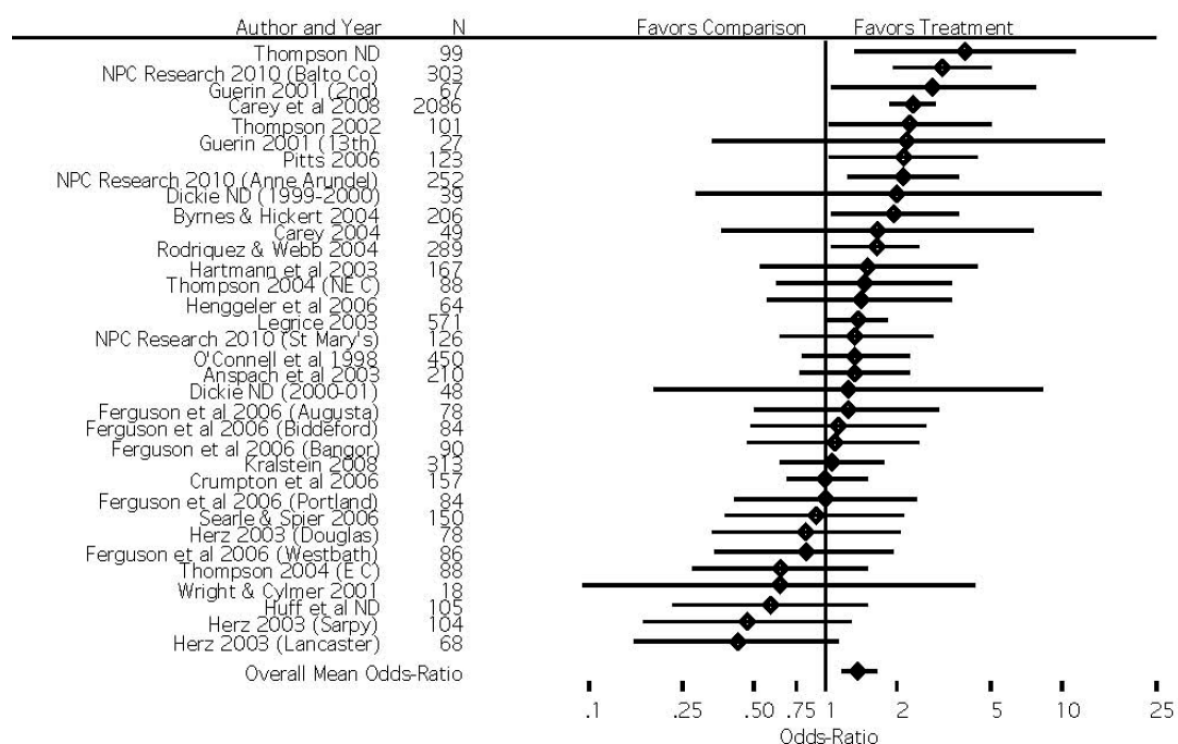
²⁷ *ibid*, pp 58-9.

²⁸ *ibid*, p60.

juvenile drug offenders.²⁹ In the “forest plot” below, each line is a study that met rigorous standards for inclusion in a meta-analysis of evidence. On the right is the estimated average improvement in the likelihood of recidivism shown as a diamond and the line through it is the 95 per cent confidence interval for that estimate. Where the mean is “favors treatment” then “on average” the drugs court is estimated to reduce recidivism of juvenile drug offenders.

The review concludes that juvenile drugs courts reduce general recidivism.³⁰ However of the 34 studies, only nine unambiguously demonstrated a reduction in recidivism. Half of the studies showed improvements “on average”, but could not reject the hypothesis of no impact at the 95 per cent confidence interval. The remaining eight studies saw a potential increase in recidivism from juvenile drugs courts, though these results could not reject the hypothesis that the courts had no impact. Of note is that the one New Zealand study (Searle & Spier 2006) was in the last group, which saw a potential increase in recidivism.³¹

Figure 7: Studies on the impact of juvenile drugs courts



Source: Reproduced from Mitchell *et al* (2012)

What this suggests is that juvenile drugs courts may help reduce recidivism, but the impact will vary depending on the specific context of their intervention. The primary issue is not resources, nor the policy as understood at a high level, but how the policy is applied and how the available resources are used to ensure the intervention is effective. Similar examples can be found, for instance, for the effectiveness of counselling and different teaching strategies.³²

²⁹ Mitchell, O., D. Wilson, A. Eggers, and D. MacKenzie (2012) “Drug courts’ effects on criminal offending for juveniles and adults” *Campbell Systematic Reviews* 2012: 4, p72. General recidivism is crimes other than drugs offences. Our thanks to Tim Hughes for this example.

³⁰ *Ibid*, p24.

³¹ *Ibid*, p32.

³² Lambert, M. J. (2013). “The efficacy and effectiveness of psychotherapy.” In M. J. Lambert (Ed.), *Bergin and Garfield’s handbook of psychotherapy and behavior change* (6th ed., pp. 169–218). Hoboken, NJ: Wiley. cited in Duncan, B. (2016) “The Partners for

3 The social investment scenarios

The scenarios discussed here project over 40 years the potential fiscal benefits of improvements in the effectiveness of the social sector. The challenge of modelling how services might change over the next 40 years is best understood by considering our equivalents doing an LTFS in 1976. Many of the economic, social and fiscal drivers of later policy reforms were already present, but what actually happened in the 1980s would probably have seemed infeasible in the mid-1970s.

There will always be a substantial element of judgement in such work, but it is more than guesswork. Section 3.1 summarises the kinds of evidence we used to model the fiscal outcomes and Sections 3.2 to 3.7 describe the models and results in more detail. For each scenario we:

- summarise the policy behind the scenario
- discuss the aggregate impacts and the main drivers, and
- tabulate the detailed assumptions.

Together the results provide insights into the potential impact of different policy scenarios, quantify the change needed so the plausibility of policy approaches can be tested and draw out the assumptions required for a policy to deliver. This is discussed in more detail in Chapter 4.

3.1 Approach to modelling

Ideally, modelling the impact of improved effectiveness and efficiency in *He Tirohanga Mokopuna* would involve comparing systematic evidence of what worked internationally with an evidence-based assessment of the quality of services in New Zealand and individual and family outcomes. Linking this to demographic and fiscal judgements would inform the financial decisions needed to make the system sustainable.

We are a long way from this ideal state. Many of the elements are present, such as Treasury's fiscal models, cost-benefit analysis tool for the social sector (CBAX) and our Analytics and Insights team's analysis of the IDI.³³ In addition, organisations around the world, inside and outside government, have been systematically reviewing evidence of best practice.³⁴ But the ambition of bringing these elements together has not been realised and there are many practical obstacles to overcome before systems are in place to achieve it.³⁵

The scenario approach in this paper has six scenarios that use the Long-term Fiscal Model (LTFM) to draw together information sources as a step towards a more comprehensive

Change Outcome Management System: Evidence Based Practice One Client at a Time." Presentation to the New Zealand Treasury Guest Lecture Series 22, February 2016 and Hattie, J. (2008) "Visible Learning" Routledge.

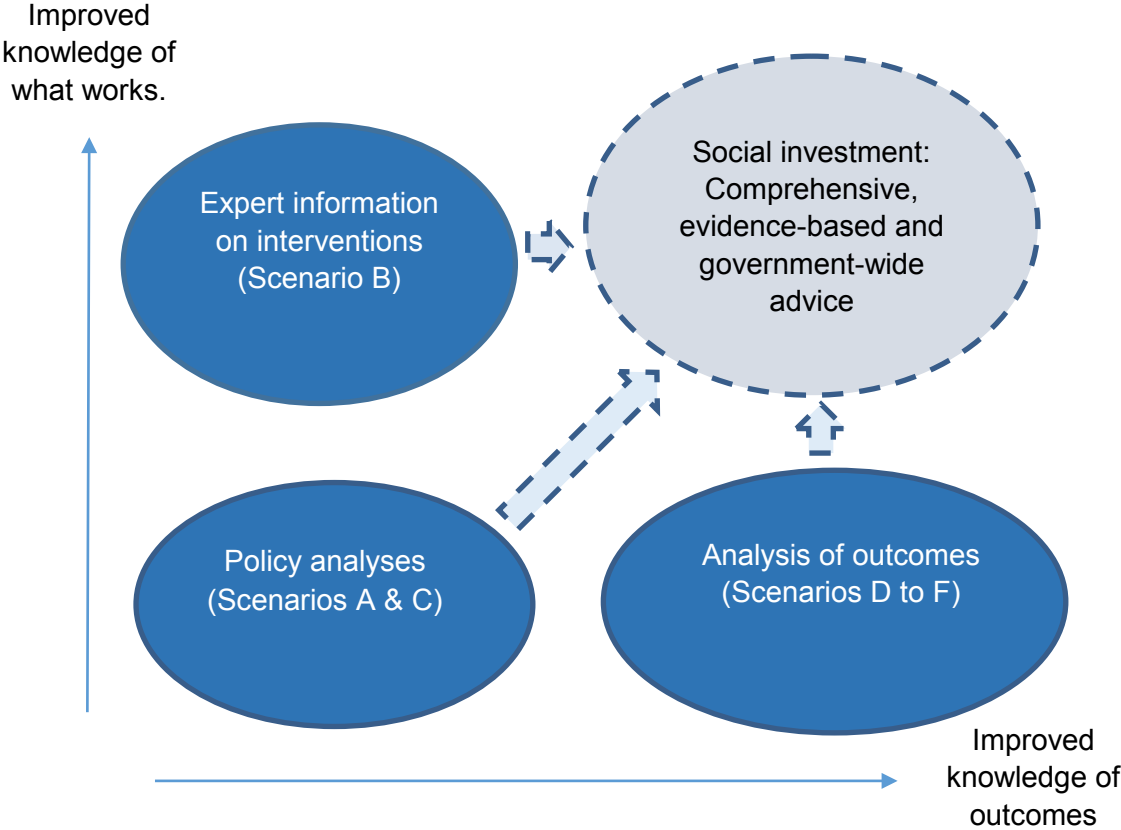
³³ For the Treasury fiscal model used in the Budget, see www.treasury.govt.nz/government/fiscalstrategy/model; for the CBAX model, see www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/cbax and for accessible analysis of the IDI data, see <https://shinyapps.stats.govt.nz/sii/>

³⁴ For example, the Washington State Institute for Public Policy Research (www.wsipp.wa.gov/BenefitCost), the UK's National Institute for Health and Care Excellence (www.nice.org.uk/) and Justice Data lab service (www.gov.uk/government/publications/justice-data-lab) and New Zealand's evidence-based practice reviews at SuPERU (www.superu.govt.nz/research-evidence)

³⁵ Mansell, J (2015)

assessment. Together, they are a step towards a more comprehensive approach to evidence (see Figure 8 below).

Figure 8: The six scenarios draw on a variety of information sources as a first step towards a more comprehensive assessment



Each scenario models the impact of changing outcomes and then estimates the “before and after” changes to variables in the Long-Term Fiscal Model. Some of the changes reduce spending, others raise it. Depending on the size of the changes, assumptions had to be made on how long it might take for these changes to happen, ranging from five to 40 years. The model adds up all changes to spending and ultimately derives the debt tracks. This gives us an indication of how much these social investment scenarios could offset some of the spending pressures of an ageing population.

Given the state of our knowledge and the 40-year time horizon, there is no central scenario. The scenarios use different sources of information that have their own strengths and weaknesses, and modelling the scenarios requires judgements that are not consistent for all the scenarios.

Modelling at its most useful includes simplifications that draw out what is important, but also lend themselves to multiple real-world interpretations and an oversimplification of policy conclusions. Whether or not the risks have been properly balanced is a judgement that is likely to differ for different readers. We hope to address this by being as transparent as possible in the modelling and drawing out where assumptions have policy implications.

3.1.1 Could improved effectiveness and efficiency make a material difference to the long-term fiscal position?

Our starting point is the Historical Spending Patterns (HSP) scenario, analysed in detail in Bell and Piscetek (2016) and used as the central scenario in *He Tirohanga Mokopuna*. From there, we develop six social investment scenarios, discussed below.

Scenario A: The benchmark supplements the HSP with two projections. The low ambition projection for social investment is an assessment of what might be achieved if the Better Public Service targets for the next five years are met and then there is little further improvement until 2060. The high ambition projection is an “unreasonable upper bound” that feels overly ambitious and Treasury officials are sceptical it is feasible. The closer estimates in Scenarios B to F get to the high ambition projection, the greater the system changes required to deliver the outcomes.

This approach assumes experienced officials have a public sector version of the “body of very important, but unorganized . . . knowledge of the particular circumstances of time and place”³⁶ gained through interactions with the people, organisations and systems in New Zealand government agencies. It is a variant of the advice routinely provided in Treasury Reports and the “Treasury view” of papers from other government agencies. Where the approach is stronger than more formal sources of knowledge is that it is based on practical day-to-day interactions with the system as it works at the moment.

The weaknesses of this approach are twofold. Most obviously, Treasury officials do not necessarily have direct knowledge of the interventions and the people they are intended to help. Secondly, the expertise of Treasury officials is primarily providing short- to medium-term advice. The estimates are likely to be on the low side because the radical shifts possible over 40 years are not part of normal advice.

3.1.2 What might an improvement in effectiveness and efficiency mean for people in New Zealand?

To give a better sense of the policy approaches to delivering improved effectiveness, we have considered five further policy scenarios. Like Scenario A, these are “what if” projections that estimate the fiscal impact of social investment if it delivered on its objectives.

Scenario B: The expert case studies provide fiscal estimates based on case studies of specific interventions. Unlike the other scenarios, Scenario B has a clear intervention logic and the evidence of outcomes is based on an assessment of non-fiscal outcomes by subject matter experts. Developing these cases is part of Treasury’s wider remit to encourage debate about policy. Together they indicate an order of size of what is possible, if we implemented policy based on the consensus advice of subject matter experts.

The interventions in Scenario B are not Treasury’s advice to ministers on policy interventions to be implemented in New Zealand. Partly this is because any actual proposal is likely to have important detailed differences to the case studies, not the least of which would be cost. More importantly, the analysis is at an intervention, not a system level. The Treasury assessment of proposed programmes includes wider system information about, for instance, the capability in the current workforce, the alignment with other policies and the disruption of implementation.

³⁶ Hayek, F.A. (1948) *Individualism and economic order*, University of Chicago Press, Chicago, p80.

The remaining scenarios are estimated by replacing some assumptions in the low ambition projection in Scenario A and projecting the outcomes as follows.

Scenario C: The broader investment in human capital uses the same approach as high and low ambition projections for Scenario A, but estimates the impact of policies to improve the health and educational components of human capital. Its results assume improved health and educational services could increase labour market participation without reducing overall productivity.

Scenario D: The equitable Māori outcomes uses analysis of outcomes in New Zealand over the last two decades to estimate the fiscal and non-fiscal benefits of improving the effectiveness of services so that within two generations (35 years) distribution of Māori outcomes is the same as the rest of the population. Like Scenarios E and F below, Scenario D does not identify interventions.

Scenario E: The minimise childhood vulnerability uses analysis of outcomes in New Zealand over the last two decades to estimate the fiscal and non-fiscal benefits of targeting services to those children and young people at highest risk of long-term unemployment and poor criminal justice outcomes over 35 years.

Scenario F: The regional convergence uses analysis of outcomes in New Zealand over the last two decades to estimate the fiscal and non-fiscal benefits of closing the gap in outcomes over 35 years between people living in the metropolitan areas of Auckland, Canterbury and Wellington, and those living in the other regions of New Zealand.

The discussion of the scenarios in this chapter concentrates on the fiscal effects of spending changes, leaving other effects to Chapter 4.

3.2 Scenario A: Benchmark

This scenario consists of low and high ambition projections. The assumptions behind these scenarios are outlined in Table 4 at the end of this section.

The low ambition projection is estimated with social investment interventions in health and education reducing welfare and justice liabilities and boosting employment. It is similar to the current BPS targets.

These interventions invest in health services that keep people out of the criminal justice system and reduce long-term unemployment. Educational investment is focused on students leaving school with no or low qualifications who are most at risk of entering the criminal justice system or experiencing long-term unemployment. Participation in early childhood education (ECE) at ages 3 and 4 increases to 98 per cent between 2021 and 2035 through targeting children who otherwise would not attend ECE and balancing this with lower subsidies to families who can self-fund their children's ECE.

In the projection the number leaving school with no qualifications is halved and the NCEA level 2 attainment rate increases to 95 per cent by 2026. This is modelled by raising school participation of 16 and 17 year olds so that participation is up by 5.5 per cent by 2025. This flows on to a 5 per cent increase in full-time equivalent places in tertiary institutions by 2027.

The changes to health and education outcomes is expected to lead to a 25 per cent reduction in people taking up the main benefits by 2026, but no change to those using Working for Family tax credits and supplementary benefits. Finally, these changes mean that more people through time are working so that the labour force is 40,000 larger by 2060.

The high ambition projection combines the maximum potential gains of social investment interventions: higher health sector productivity growth, higher NCEA attainment levels, and greater participation in tertiary programmes. Over time, average spending on healthcare by age and gender groups for Māori and Pasifika converges downwards towards that of the rest of the population. These interventions reduce reliance on main and supplementary benefits and see a rise in labour market participation, higher and longer-lasting than the lower bound. Taken together, these changes support people to have longer and healthier lives, which adds to the cost of health and NZ Superannuation.

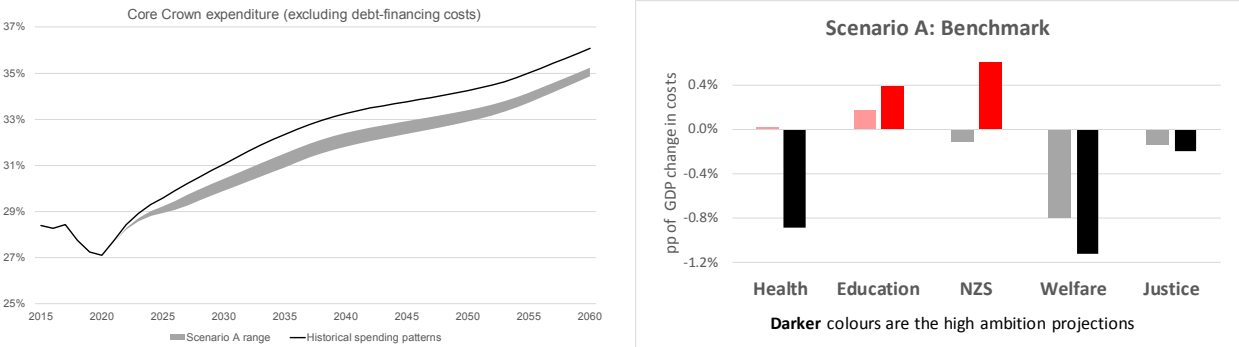
Both low and high ambition projections assume changes will be made within existing spending or through a stronger focus on mental health when prioritising new expenditure.

3.2.1 Fiscal impact of scenario

In these projections core Crown expenditure (excluding debt-financing costs) is reduced from 36 per cent of GDP in the HSP to around 35 per cent by 2060.

The second chart below shows the difference in spending (in percentage points of GDP) between the social investment scenarios and HSP in 2060.

Figure 9: Core Crown primary spending is lowered by about 1 percentage point of GDP



Source: Treasury

Most of the reduction shown in Figure 9 comes from smaller health (high ambition only) and welfare spending.

In the low ambition projection, extra expenditure in education (higher than HSP in 2060 by 4.3 per cent) lowers spending on welfare and law and order so that overall spending (excluding debt-financing costs) is lower throughout the projection (so an overall reduction of “liabilities”).

In the high ambition projection, more people find work so that GDP is higher than HSP by four per cent in 2060. Spending (excluding debt-financing costs) is down on average by two per cent over the projection period and the primary deficit is pushed out by four years. The savings in the health, welfare and justice sector expenditure offset the rise in education and superannuation spending.

Table 4: Historic Spending Patterns Scenario and Scenario A: Benchmark, low and high ambition projections

Demographic

Historic Spending Patterns	Benchmark: Low ambition	Benchmark: High ambition
<p>Statistics New Zealand median population projection:</p> <ul style="list-style-type: none"> • long-term total fertility rate falling to 1.9 children per woman • life expectancy at birth rising to around 90 years by 2060, and • net migration settling at 12,000 per year. 	As in HSP	<p>As in low ambition case, but uses Statistics New Zealand’s very low mortality (very high life expectancy) population projection:</p> <ul style="list-style-type: none"> • life expectancy at birth in 2060 is around 94 years, up from about 90 in the median projection, and from 82 in 2015).

Economic

Historic Spending Patterns	Low ambition	High ambition
<ul style="list-style-type: none"> • long-term inflation at 2% • annual labour productivity growth of 1.5% • an unemployment rate of 4.5%, and • a 10-year government bond rate of 5.3%. <p>Results in annual average wage growth of 3.53% in the long term.</p>	As in HSP, but labour market participation increases by 40,000 by 2040 (a 1.3% rise on the reference labour force). After that, labour force growth tracks HSP growth. This produces a larger GDP through time and hence more revenue.	As in low ambition case, but with 100,000 extra workers by 2040, which grows to 130,000 by 2060.

Policy

Historic Spending Patterns	Low ambition	High ambition
<p>Use the BEFU 2016 forecasts to 2020 as a base for the projections. Tax revenue grows with nominal GDP. The aggregate impact of long-term cost trends shows functional spending for most areas is at a constant ratio of nominal GDP derived from history. The exceptions are:</p> <ul style="list-style-type: none"> • Health and education spending: <ul style="list-style-type: none"> ○ up to 2025, as other functional spending (reaching an historical average ratio to GDP), and ○ after 2025, population and wage growth increase costs at a higher rate. • New Zealand Superannuation follows the legislated formula based on average wage growth and increases with the number of people 65 and over. <p>For other welfare costs, we have changed the indexation assumption from the last LTFS. Main benefits eventually grow with nominal GDP, as do supplementary benefits (primarily accommodation supplement) and family tax credits.</p>	<p>As HSP, but:</p> <ul style="list-style-type: none"> • Education participation increases: <ul style="list-style-type: none"> ○ Demand and cost increases by 1.8% more places in ECE (based on Education Counts) than the baseline by 2035. ○ Secondary school participation increases between 2021-25, modelled by the age-16 rate rising to the current age-15 rate (96%) and age-17 rate rising to the age 16 rate (89%). Equivalent-to-full-time (EFT) places increase to 5.5% by 2025. ○ Higher secondary participation flows on to tertiary with a two-year lag. Growth over five years from 2023-28 reaching 5%. ○ Changes in these three levels lift core Crown education spending by about 3% by 2028. • These changes feed through to a reduction in demand for welfare benefits growing to a 25% drop in the mains by 2026, but this is assumed to result in no change to the take-up of other benefits. <p>Justice, Corrections, Courts, and Police cost reductions rise to 10% in 2021-26 as a result of health and education interventions.</p>	<p>As in the low ambition projection, but:</p> <ul style="list-style-type: none"> • Health – Increase health sector productivity growth by 0.3% a year above that of the reference scenario. • Education – Only 2% of students leave secondary school with no qualifications by 2026. As a result, over the period 2023-37, the number of EFT students in tertiary institutions increases to 15% higher than the baseline by mid-2030s. • Welfare – <ul style="list-style-type: none"> ○ Main welfare benefits gradually drop below the reference projection by 25% in 2026 (as in scenario A). ○ By 2031, only 50% of the people coming off the main benefits take up supplementary benefits (lagged by a year) (here we are testing a feasible limit for savings in getting people off welfare). <p>Justice – A reduction in the use of the justice sector so that costs gradually fall to 14% below HSP scenario levels in 2026 as a result of the rise in NCEA attainment.</p>

3.3 Scenario B: Expert Case Studies

The Treasury asked subject matter experts to suggest case studies on specific programmes they believed were backed by strong evidence. The case studies were developed with support from Treasury sector teams, SuPERU and consultants Leo Shen and Chris Holland. The experts contributing case studies were:

- Professor Richie Poulton, Chief Scientist, Ministry of Social Development
- Dr Ian Lambie, Chief Scientist, Ministry of Justice
- Professor John Potter, Ministry of Health
- Professor Stuart McNaughton, Ministry of Education
- Dr Andrea Menclova, University of Canterbury
- Dr Nevil Pierce, University of Otago
- Principal Advisors from New Zealand

The case studies consisted of a summary of evidence, limitations and key references designed so that a non-expert could follow up on the advice. The LTFM case study fiscal calculator estimates the potential fiscal impacts of these initiatives by working back from available cost-benefit evaluations to allow these to be comparable to the figures in the LTFM. They are summarised in Table 5 below.

Table 5: Scenario B summary of case studies

	The case study	Description
Category one – existing initiatives	Youth mental health	Extending the existing youth mental health services with an additional 26 initiatives aimed at improving the mental health and wellbeing of young people (12-19 year olds) with, or at risk of developing, mild to moderate mental illness.
	Housing quality – heating, insulation, lead exposure	Interventions to improve the quality of dwellings through regulation and subsidies. This includes reducing lead contaminations.
Category two – possible interventions	Educational focus on critical thinking and social skills	Lifting capability in schools to increase levels of critical thinking and social skills over the school years leading to higher levels in secondary school graduates.
	Preschool interventions	Preschool interventions aimed at improving cognitive and non-cognitive skills.
	Expanded provision of functional family therapy	Expanding the provision of functional family therapy to reduce conduct problems and juvenile offending in a variety of settings within the juvenile justice system.
	Family violence prevention	Developing a nationwide, community-based family violence prevention strategy drawing on overseas best practice.
	Nurse visitation	Implementing intensive home visiting programmes for families facing stress. These programmes are delivered by home visitors who aim to provide advice, assistance, support and mentoring to families around parenting and child behaviour.
	Subsidised fruit and vegetables	Introducing subsidies to reduce the cost of fruit and vegetables for lower-socio-economic status populations.
	Increased tax on sugary drinks	Introducing a 20% tax on carbonated sugary drinks to help reduce intake.

The interventions in Scenario B are not part of Treasury’s wider advice to ministers on policy interventions to be implemented in New Zealand. The Treasury advice on proposed programmes includes wider system information about, for instance, the capability in the current workforce, the alignment with other policies and the disruption of implementation.

The process and assumptions behind this scenario are outlined in Table 6 at the end of this section.³⁷

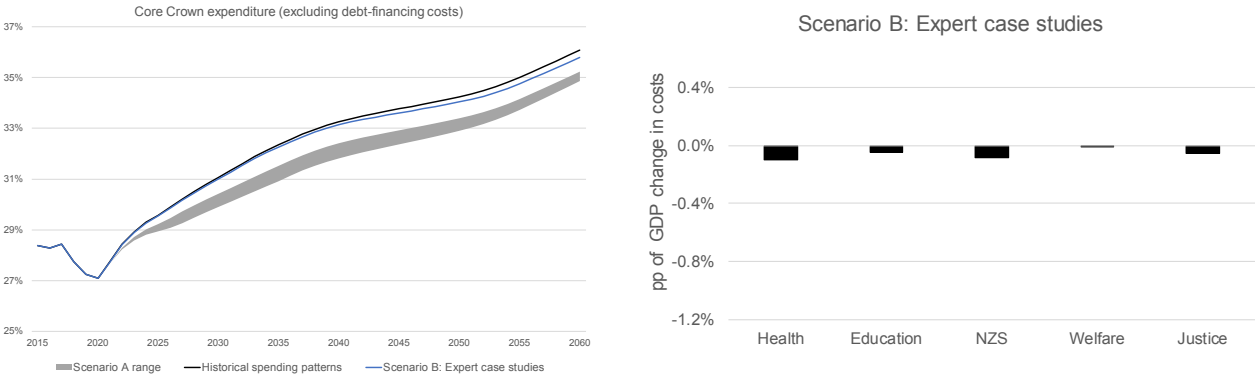
3.3.1 Fiscal impact of scenario

The core Crown expenses (excluding debt servicing) is reduced by 0.3 per cent of GDP by 2060.

The reduced spending in education, of approximately 0.05 percentage points of nominal GDP, reduces the justice spending, as a percentage of nominal GDP, by approximately 0.05 percentage points. Furthermore, core Crown welfare expenditure (non-New Zealand Superannuation) is anticipated to fall as a percentage of nominal GDP in 2060 (slightly, by 0.01 percentage points).

We anticipate higher health spending in the first three years of the projection period, which is associated with the costs of policy implementation. It is, however, expected that health costs will reduce by 2060 to a slightly lower percentage of nominal GDP (again – slightly – by 0.01 percentage points). The projected larger labour force (1.04 per cent larger in 2060) produces more income and more tax revenue.

Figure 10: Core Crown primary spending is lowered by 0.3 percentage points of GDP by 2060



Source: Treasury

³⁷ The Treasury will shortly be publishing a more detailed paper on the case study approach.

Table 6: Scenario B process for choosing case studies and deriving assumptions for the Expert case studies scenario

Process – The case studies consisted of a summary of evidence, limitations and key references designed so that a non-expert could follow up on the advice and are based on reviews of interventions that subject matter experts believe are exhaustively researched and where a consensus-quantified range of effects exists.

We made it clear that the experts were not to be limited by perceived political or organisational constraints on what might be implemented. In addition the evidence had to be on quantified outcomes. For example, evidence that “greater confidence leads to x% of people on benefits getting a job” supported by evidence an approach “builds the confidence of y% of people” was potentially in; but evidence that “x% of teachers enjoy their jobs more” and a claim “students benefited” was excluded.

The evidence was converted into impacts that could be used in the LTFM by using an LTFM case study fiscal calculator to estimate the potential fiscal impacts of these initiatives by working back from available cost-benefit evaluations to make the impacts comparable to the figures in the LTFM.

Demographic – As in the HSP scenario

Economic – We estimate an additional 34,000 workers (full-time equivalents) by 2060. The number of additional workers comes from the welfare cost savings in the LTFM case study fiscal calculator, as follows. For each initiative:

1. We start with the estimated welfare cost saving for each year as found in the LTFM case study fiscal calculator.
2. The present value of estimated welfare cost savings for each year is estimated using a 3% discount rate.
3. Judgments are made on:
 - Timing from implementation of the initiative to labour force impacts.
 - The proportion of welfare cost savings that could be attributed to a reduction in Jobseeker Support payments and applied to the present value of welfare cost savings each year.
4. We estimate the number of full-time equivalent (FTE) workers that move into the labour force each year.

Once steps 1 to 4 are carried out for each initiative, the labour force results each year for each initiative are collated for the total additional FTEs per year and included in the scenario.

Policy – The LTFM case study fiscal calculator estimates the fiscal impacts for health, education, welfare, justice, as well as additional tax revenue. These results are included in the summary by spending category section of the model. With the exception of tax revenue, the net fiscal impacts calculated in the LTFM case study fiscal calculator have been added to the relevant fiscal costs in the LTFM.

The model’s estimated tax benefits from productivity gains are already accounted for in the general trend of productivity that is assumed in the LTFM, but additional taxes generated as a result of the initiatives are included because they are not productivity-linked.

Note that unlike other scenarios outlined in this paper, the implementation costs of some initiatives are included in the fiscal costs. This suggests the fiscal benefits may be marginally understated relative to other scenarios.

As with other scenarios, impacts are deferred until the projection period (starting in 2021).

3.4 Scenario C: Broader investment in human capital

This scenario focuses on social investment in health and education that raises labour force participation over 40 years from 2021 through increased human capital. As a result of the reduced morbidity this scenario generates, New Zealanders live and work longer.

3.4.1 Fiscal impact of scenario

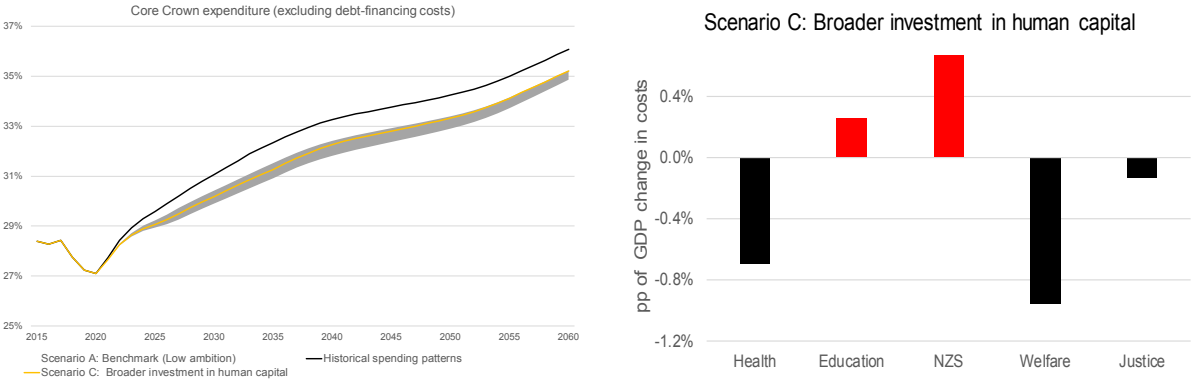
In the model increased qualifications leads to an increasing number of people finding work so that GDP is higher than the reference case by 3.2 per cent in 2060. The reduced demand for health care resulting from the healthy ageing assumption³⁸ roughly offsets extra demand from longer lives.

Lower spending comes from:

- higher health sector productivity growth and reduced demand from high users, particularly Māori and Pasifika
- reduced crime and reduced demand for welfare benefits.

A small part of these changes is offset by higher education spending to raise human capital (about five per cent higher on average) and higher spending on superannuation because of longer, healthier lives.

Figure 11: Changes in health and welfare reduce Core Crown spending by 0.9 percentage points of GDP



Source: Treasury

³⁸ This is an assumption in the LTFM that reduces demand for health services resulting from longer lives.

Table 7: Scenario C process for choosing assumptions for broader investment in human capital scenario

<p>Process – The modelling starts with the low ambition settings of Scenario A and makes the following changes.</p>
<p>Demographic – Statistics New Zealand’s median population projection is replaced by the very low mortality population projection (where life expectancy at birth in 2060 is around 94 years, up from about 90 in the baseline, and from 82 in 2015).</p>
<p>Economic – By 2060, we assume an additional 100,000 people in the labour force, as a result of social investment initiatives, boosting nominal GDP (and tax revenue).</p>
<p>Policy – Health sector productivity grows by 0.15% a year above the HSP Scenario. We also assume a convergence of average spending by age and gender groups for Māori and Pasifika towards those of the rest of the population (which drop a little as well). This convergence of ethnic health costs takes place between 2021 and 2035 and reduces overall health costs by 5% by 2035.</p> <p>Education – Higher participation in secondary school is modelled as in scenario A, but:</p> <ul style="list-style-type: none"> ○ increasing participation of 16 and 17 year olds means that only 3% leave school with no NCEA achievement, and ○ greater participation in tertiary courses is modelled by assuming EFTS places grow by 10% by the end of the decade 2023 to 2032. <p>Welfare – The rise in health and skills produces a further fall in the take-up of benefits:</p> <ul style="list-style-type: none"> ○ Main benefit spending falls by 25% between 2021 and 2026 ○ Use of supplementary benefits by people coming off the main benefits falls by 25% beginning a year after reduction in main benefit spending.

3.5 Scenario D: Equitable Māori Outcomes

This scenario illustrates what might happen if we were to address Māori economic and social disadvantage over the two generations to 2055 so that employment and criminal justice outcomes for Māori and non-Māori are similar. In Scenarios D to F the modelling starts with the low ambition settings of Scenario A and reduces spending in welfare and on criminal justice based on analysis of administrative data from the past few decades. This process is outlined in Table 8.

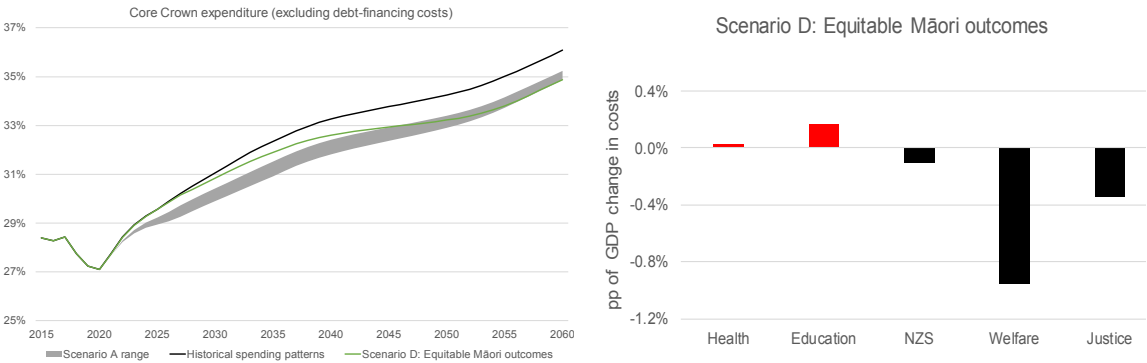
Analysis of population data in the IDI has enabled us to understand which sub-groups of the population are more at risk of poorer education, welfare, health and corrections outcomes. Using statistical matching techniques, this analysis was applied to the current population of children (aged 0 to 14) and outcomes were projected to age 34. This work helps us understand what might be the impact of social investment strategies to improve outcomes for these population groups and the impact across several spending areas.³⁹

3.5.1 Fiscal impacts of scenario

Equitable Māori outcomes have an impact on core Crown expenditure that is at the upper bound of impacts (more than one percentage point of GDP reduction).

Reduction in core Crown welfare expenditure (non-New Zealand Superannuation) grows to \$13 billion in 2060. This means spending reduces to 3.7 per cent of nominal GDP compared with 4.7 per cent for the historical scenario. Core Crown law and order has savings of \$4.8 billion compared with the HSP. This translates to lower spending as a percentage of nominal GDP of 1.1 per cent compared to the HSP spending of 1.4 per cent.

Figure 12: Core Crown spending is lowered in 2060 by 1.2 percentage points of GDP, largely through welfare and justice changes



Source: Treasury

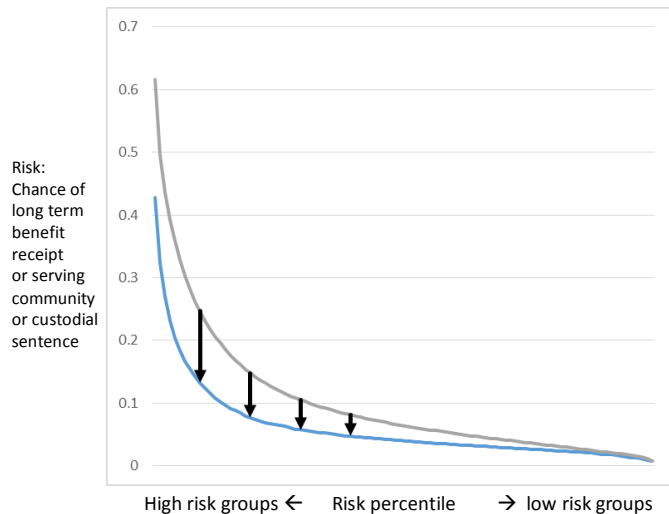
³⁹ See <http://www.treasury.govt.nz/publications/research-policy/ap/2015/15-02> and <http://www.treasury.govt.nz/publications/research-policy/ap/2016/16-01>

Table 8: Scenario D: How we use Analytics and Insights work to derive assumptions for Equitable Māori outcomes

Under the assumption that social investment interventions can be implemented to deliver better services for Māori, this analysis estimates how the better service delivery might translate into reductions in welfare and corrections spending. The analytical approach was:

1. For this scenario, we compared average welfare and corrections outcomes for Māori and non-Māori in our IDI population dataset of children aged 0 to 14 (see Templeton, (2016)). We then re-weighted the population so that the risk profile of Māori children was similar to that for non-Māori and created adjusted future welfare and corrections costs reflecting this different weighting of the overall population profile.
2. The ratios between the original estimates of future costs and the “re-estimates” were then applied to the LTFM.

One of the most important advantages of this approach is that it is based on data about the distribution of outcomes for New Zealanders. Thus the scenario is that Māori individuals and families have a distribution of outcomes we know is possible because that is the distribution of outcomes for all other New Zealanders. The graph below summarises that analysis. The vertical axis is the estimated risk of a poor outcome for the current population of New Zealand children (under the age of 15). The horizontal axis shows what the distribution of that risk would look ordered by that estimated risk, with those least likely to have a poor outcome on the right-hand side. The scenario is that the distribution of risk for Māori (the grey curve) becomes the same as the distribution of risk for the rest of the population (the blue curve).



Demographic – As Scenario A (low ambition)

Economic – As Scenario A (low ambition)

Policy – As Scenario A (low ambition), except:

Welfare – Costs of main benefits shrink to 65% of HSP levels over a 35-year period (generations).

Risks of court appearances and imprisonment are at the same level for Māori as for remainder of the population and this change reduces these costs to 52% of HSP amounts by 2055.

3.6 Scenario E: Minimise childhood vulnerability

In this scenario, social investment is targeted at interventions that succeed in improving the lives of those most vulnerable as children to poor economic and social outcomes (see Table 9).

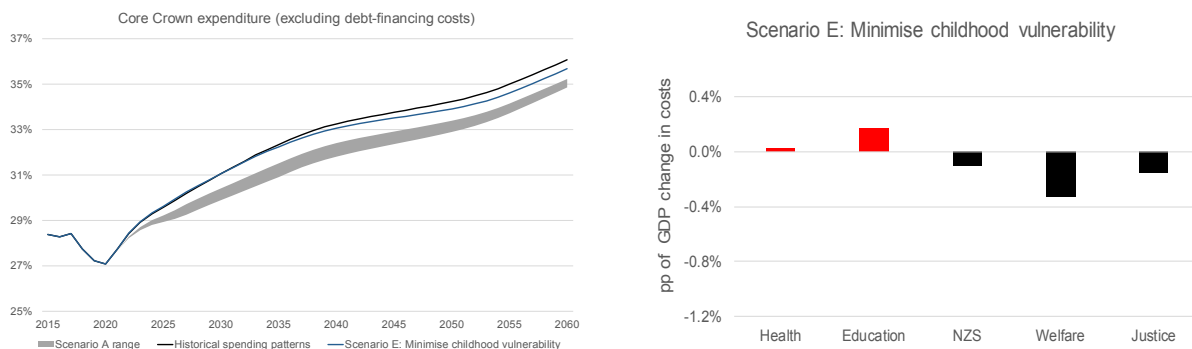
3.6.1 Fiscal impacts of scenario

The aggregate results of this scenario are similar to the previous one with lower changes to welfare and corrections spending putting core Crown expenditure about halfway between Scenario A (high ambition) from 2055 onwards.

Changes to the risk profiles for welfare and corrections reduce core Crown welfare expenditure (non-New Zealand Superannuation) by \$3.9 billion in 2060 and reduce to 4.37 per cent of nominal GDP compared with 4.7 per cent of nominal GDP for the HSP scenario.

Core Crown law and order has savings of \$2 billion compared with the HSP scenario in 2060. This translates to lower spending as a percentage of nominal GDP: 1.25 per cent compared to the baseline spend of 1.4 per cent of nominal GDP.

Figure 13: Core Crown spending is lowered in 2060 by 0.25 percentage points of GDP, largely through welfare changes



Source: Treasury

3.7 Scenario F: Regional convergence

In this scenario, social investment is targeted at interventions that succeed in closing the gaps between people living in regions with greater social disadvantage and those living in the Auckland, Canterbury and Wellington regions over two generations. (See Table 9 at the end of this section.)

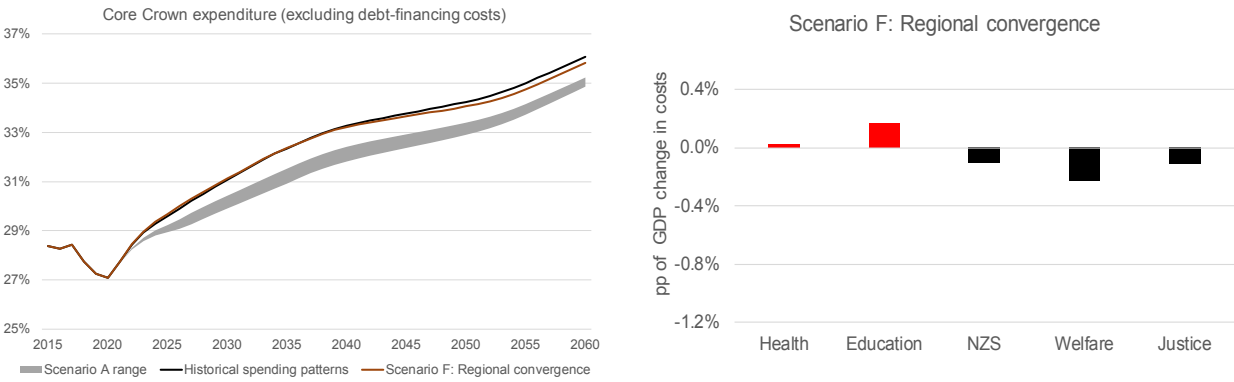
3.7.1 Fiscal impacts of scenario

The aggregate results of this scenario are similar to the previous one with slight differences in the changes to welfare and corrections spending. In 2060, the core Crown expenditure is at the lower bound of impacts, despite the strong equity assumptions needed to generate this result.

By 2055, the costs of main benefits, and as a flow-through supplementary benefits, reduce to 87 per cent of the HSP reference level; while corrections and courts costs reduce by 82 per cent of the HSP. Core Crown welfare (non-New Zealand Superannuation) has reduced spending of \$2.5 billion in 2060 and reduces to 4.5 per cent of nominal GDP compared to 4.7 per cent for the HSP scenario.

Core Crown justice has savings of \$1.4 billion compared with HSP in 2060. This translates to lower spending as a percentage of nominal GDP of 1.3 per cent compared with 1.4 per cent in HSP.

Figure 14: Core Crown spending is lowered in 2060 by 0.25 percentage points of GDP, largely through welfare reductions



Source: Treasury

Table 9: Scenarios E and F assumptions

Scenario E: Minimise childhood vulnerability

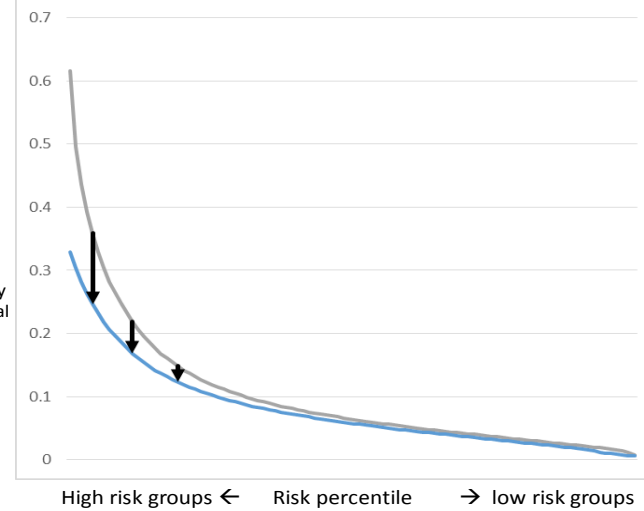
Demographic – As Scenario A (low ambition)

Economic – As Scenario A (low ambition)

Policy – Similar to Scenario D, except the reduced risk of poor outcomes is for those with the highest level of risk in their childhood.

Treasury analysis indicates that main benefits and corrections/courts costs reduce to 88% and 79% of the HSP reference case levels respectively by 2055.

Risk:
Chance of long term benefit receipt or serving community or custodial sentence



Scenario F: Regional convergence

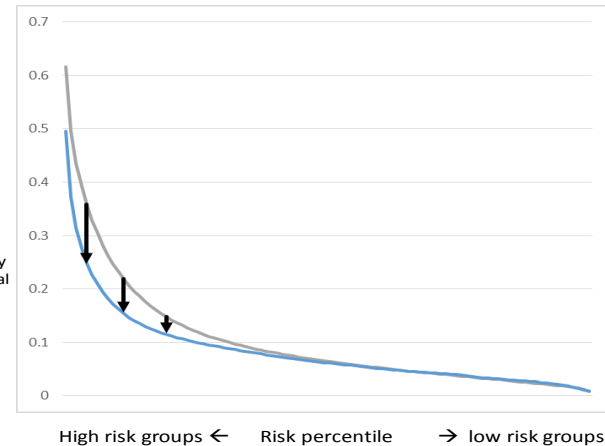
Demographic – As Scenario A (low ambition)

Economic – As Scenario A (low ambition)

Policy – Similar to Scenario D and E except the reduced risk of poor outcomes is for those living in regions with the highest level of risk. The social interventions are assumed to lower the risk of poor outcomes between 2021 and 2055 to reflect the average lower risks of the highest performing three regions.

The main benefits (with a reduced flow-through to the other benefits) and corrections/courts costs reduce to 87% and 82% of the HSP levels respectively by 2055.

Risk:
Chance of long term benefit receipt or serving community or custodial sentence



4 Analysis

This chapter considers what the scenario results in Chapter 3 imply for the key questions of this analysis:

- a. What might an improvement in the effectiveness and efficiency of state-funded services mean for people in New Zealand?
- b. Could an improvement in the effectiveness and efficiency of state services make a material difference to the long-term fiscal position?

The answer to a. for Scenario B and Scenarios C to F respectively are in sections 4.1 and 4.2. Section 4.2 uses visual presentations to provide examples of how policy-makers might use the non-fiscal results to help assess the likely impact and effectiveness of different policy options.

Section 4.3 considers the fiscal outcomes. This paper and *He Tirohanga Mokopuna* have stretched the long-term fiscal model, by considering policies it was not designed to model. A full discussion of the model is in Bell and Piscetek (2016), but section 4.3 considers what some of these modelling limitations mean for the scenario results.

4.1 Scenario B – Expert Case Studies

Scenario B is based on evidence of intervention impacts. Table 10 below lists the non-fiscal benefits identified for each case study. Applying academic evidence to practice is not simple. The analysis is based on a strong assumption that the context of observed improvements can be replicated in New Zealand.

Just as important is that only nine case studies were included. They covered a wide sample of interventions but were in no sense comprehensive. This means the potential benefits identified are likely to be a fraction of the improvements possible with better use of evidence. To get some idea of the potential benefits of applying the social investment approach more broadly, a sensitivity analysis was conducted to estimate the improvements if those found in the case studies were applied to one per cent of the health, education and law and order spending. The impact would be equivalent to 0.5 per cent of GDP.⁴⁰

⁴⁰ The Treasury will shortly be publishing a more detailed paper on the case study approach.

Table 10: The non-fiscal benefits of the expert case study interventions

Case Study	Non-Fiscal outcomes
Youth mental health	<ul style="list-style-type: none"> • Non-fiscal monetary outcomes include higher personal income due to improved mental health and increased academic achievement • Private benefits, measured as disability-adjusted life year (DALYs - one extra year of healthy life) Estimated to generate 30.6 DALYs / \$1 million spent (over ten years)
Housing quality – heating, insulation, lead exposure	<ul style="list-style-type: none"> • Reduction in mortality • Reduction in pharmaceutical costs • Improvement in self-reported wellbeing • Fewer days off work and school; and • Fewer General Practitioner visits
Educational focus on critical thinking and social skills	<ul style="list-style-type: none"> • A 10% increase in attainment of tertiary qualifications with increased employment and earnings • Greater impact on disadvantaged students
Preschool interventions	<ul style="list-style-type: none"> • Lower crime rates • Education savings • Increased employment
Expanded provision of functional family therapy (FFT)	<ul style="list-style-type: none"> • Teenagers whose families received FFT committed fewer than half as many offences as the teenagers in control conditions • 40% of the FFT youth had avoided further offending at a 15 month follow-up compared to 7% of the comparison group • When followed up in young adulthood, 90% of the FFT group had avoided further convictions compared to 60% of the comparison group
Intimate Partner Violence (IPV) prevention	<ul style="list-style-type: none"> • The studies break down administrative costs of dealing with IPV, including policing, victim support, court costs, healthcare costs • Lost productivity to both victims and perpetrators from IPV
Nurse visitation	<ul style="list-style-type: none"> • Children in Nurse-Family Partnership programmes had fewer arrests, convictions and probation violations
Subsidised fruit and vegetables	<ul style="list-style-type: none"> • Increase in number eating recommended minimum intake leading to reduced morbidity of around 1.7%, with larger impact on Māori and Pacific Island populations
Increased tax on sugary drinks	<ul style="list-style-type: none"> • Obesity reduced by 1.3% (n~14,000) and overweight by a further 0.9% (n~11,000) • 60 deaths from cardiovascular disease, diabetes, and diet-related cancers. (0.2% of NZ deaths per year) averted or postponed.

4.2 Scenarios C to F

Table 11 presents the non-fiscal scenario. They are derived using detailed data from the IDI about the New Zealand population. The figures in the table indicate what improved wellbeing means in practice under each scenario. In the table these results show the change in rate of service use for the nominated target population in each of the investment scenarios. These are examples of the change in rate of service use for the nominated target population in each of the investment scenarios (the “from” column) and rates we would be aiming to achieve through successful policy implementation (the “to” column).

Neither the data analysis behind Table 11, nor the LTFM includes feedback loops. For example, if increased parental education were proven to lead to increased educational attainment in children, a parent who stayed at school until 18 years old could be more likely to have children who go to university. This is an example of a positive feedback loop not included. This suggests that the wider benefits may be understated in the numbers below.

**Table 11: What does improved wellbeing under each scenario mean in practice?
Expected non-fiscal outcomes under each scenario (All numbers are percentages)**

Impact modelled in the scenario	C: Human capital		D: Māori outcomes		E: Minimise Vulnerability		F: Regions converge	
	From	To	From	To	From	To	From	To
Pre-birth								
Caregiver corrections sentence	18	5	26	5	40	5	12	6
Family CYF contact pre-birth	4	1	5	1	12	1	3	1
Before school								
Family supported by benefit 25% of time	53	24	70	23	93	25	37	27
Caregiver corrections sentence	25	7	35	7	53	8	16	9
Primary school								
Family supported by benefit 25% of time	50	22	62	22	82	24	33	26
CYF contact	23	7	24	8	46	7	12	10
High school								
Suspensions, stand-downs and truancy	46	14	46	17	57	19	24	21
Hospital events	24	13	25	14	28	15	17	15
Young adult (before 21 years old)								
Supported by adult benefit for 2 or more years	20	3	18	5	25	5	9	6
Teen parent (includes under-18s)	18	4	20	5	24	6	9	6
Overall outcome								
On track at 21	45	84	51	79	41	77	70	77

Note: This table uses an IDI based analysis of a cohort of 56,300 New Zealanders born in 1993 (see Templeton (2016) for full description).

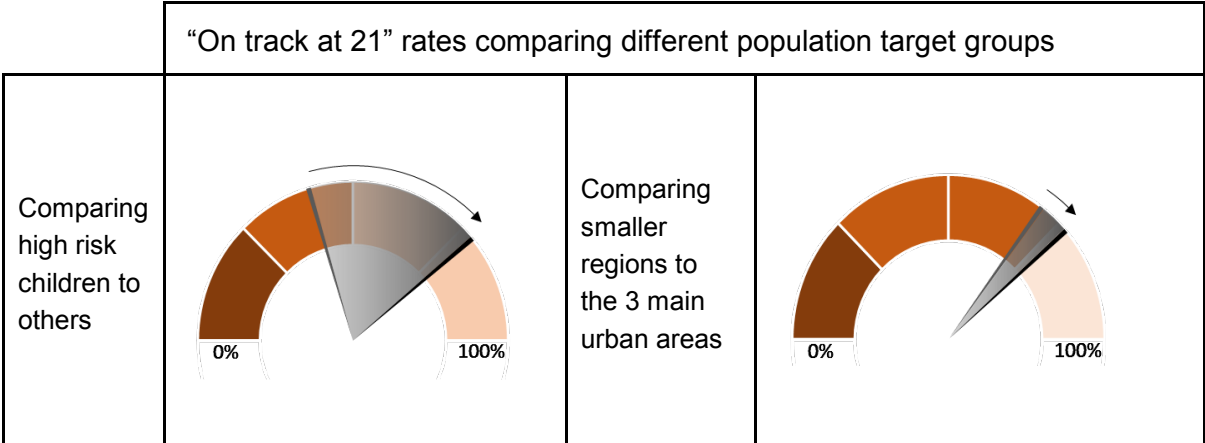
For modelling purposes, the table above is a list of assumptions behind fiscal scenarios. It also shows what the scenario would mean for wellbeing of New Zealanders and thus explains why policy-makers might wish to make the real world changes whose outcomes are described in the scenario. What makes the data so useful is that its application is not limited to a description of what is desirable. Because the data used in the modelling is the same data used in the day to day running of the government sector, its application is not limited to describing a desirable outcome. It can also provide a practical means to improve policy approaches.

One way to think of the scenarios is as potential approaches to policy problems. For instance if a policy maker wishes to have the most impact on reducing long-term unemployment among families with primary school age children, what would be the best way to target interventions? Typically targeting is a means of focusing effort and resources, so finding the right criteria for targeting is crucial because having the wrong target leads to resource and focus being wasted.

Might the greatest impact come from successful interventions to help those with little educational attainment, or would successfully directing resources to Māori make more of a difference? Or is there another approach?

The dashboard below illustrates the size of the potential population cohorts identified in the scenarios. The width of the grey wedge in the left dial shows how much more common it is to see good outcomes for children who are identified as low risk at birth compared to those who are higher risk. In the right dial, we see that in comparing different regions, the rates of good outcomes are much less different (the grey wedge is narrower). This suggests that policies which focus on evening out regional effects would have less variation to work with, and so even if fully successful, they might not have the same impacts as a successful program targeted at high-risk children.

Figure 15: What should be focus of a policy approach?

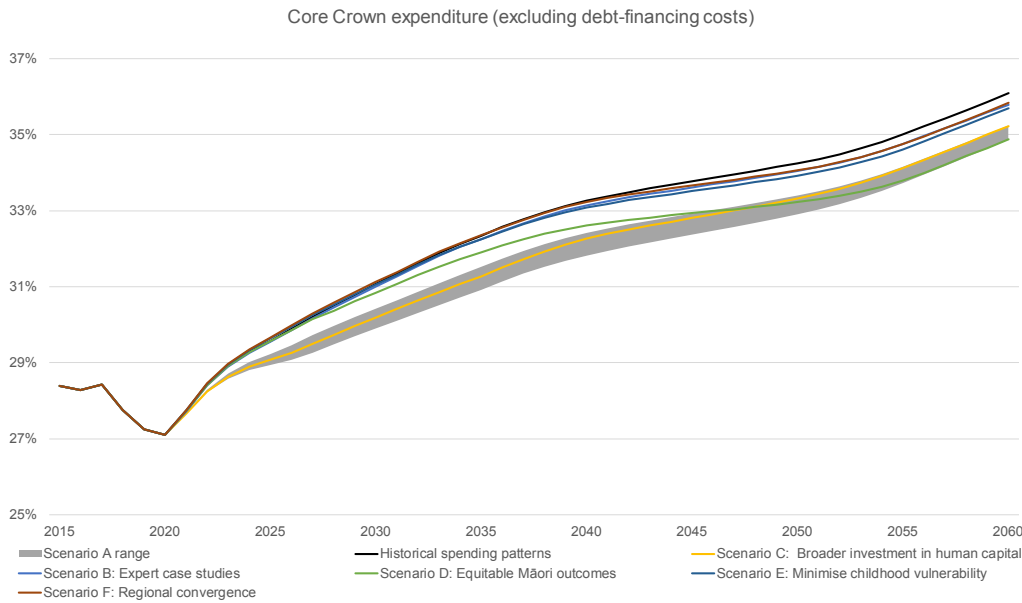


Similarly the analysis could be used to identify different indicators, or to identify when the timing of interventions might be most likely to reach the relevant population.

4.3 Could a social investment approach make a material difference to the long-term fiscal position?

The social outcome scenarios in Chapter 3 project the impact of long-term changes in the organisation, practice and culture of the state sector using data on current non-fiscal outcomes. Figure 16 shows the track of core Crown expenditure excluding debt financing costs in relation to the scenarios set out in Chapter 3. The grey range is Scenario A, which provides an assessment of the ambition of the scenarios. Broadly, the lower the scenario line, the more state sector change would be needed to deliver the scenario.

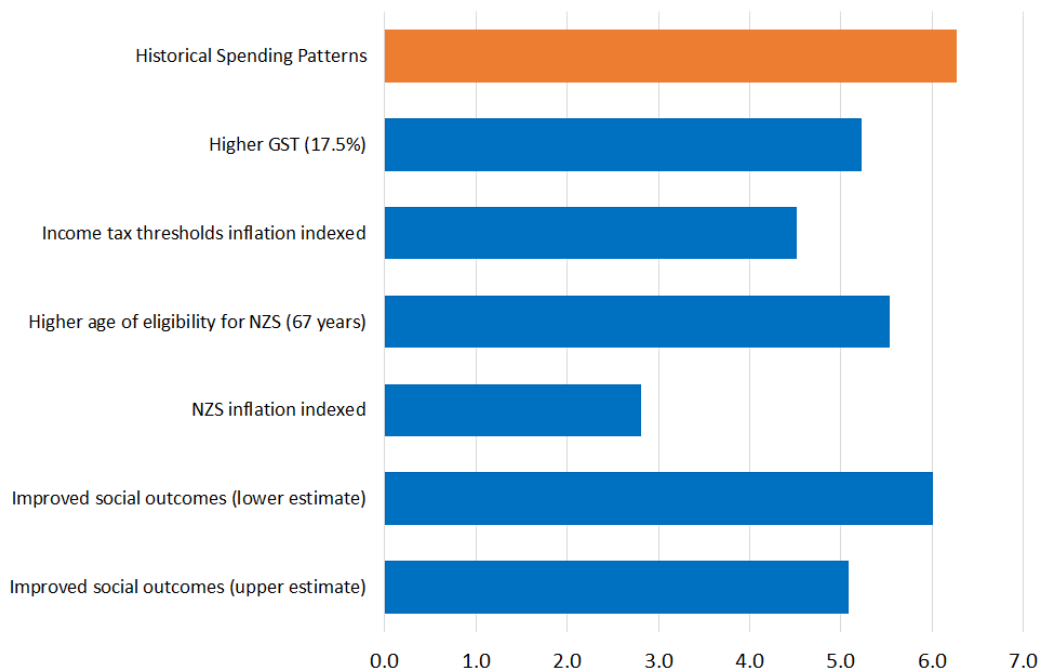
Figure 16: Fiscal track under the social investment scenarios



Source: Treasury

Figure 17 shows the reduction of primary fiscal spending that results from the modelled scenarios is of the same order of size as proposed changes to superannuation and health spending discussed in previous iterations of the LTFS.

Figure 17: Comparing policy options for reducing primary fiscal deficits in 2060 (percent of GDP)



Source: *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016*

Note: The primary deficit is the shortfall between Core Crown revenue-to-GDP (excluding interest revenue and dividends) and Core Crown expenses-to-GDP (excluding debt-financing costs). The impact on net debt will reflect accumulated primary balances and debt financing costs. The GST increase is assumed to occur in 2024; and inflation indexation of income tax thresholds starts in 2021. For NZS, the increase in the age of eligibility is phased in between 2021 and 2024; and inflation indexation starts in 2021.

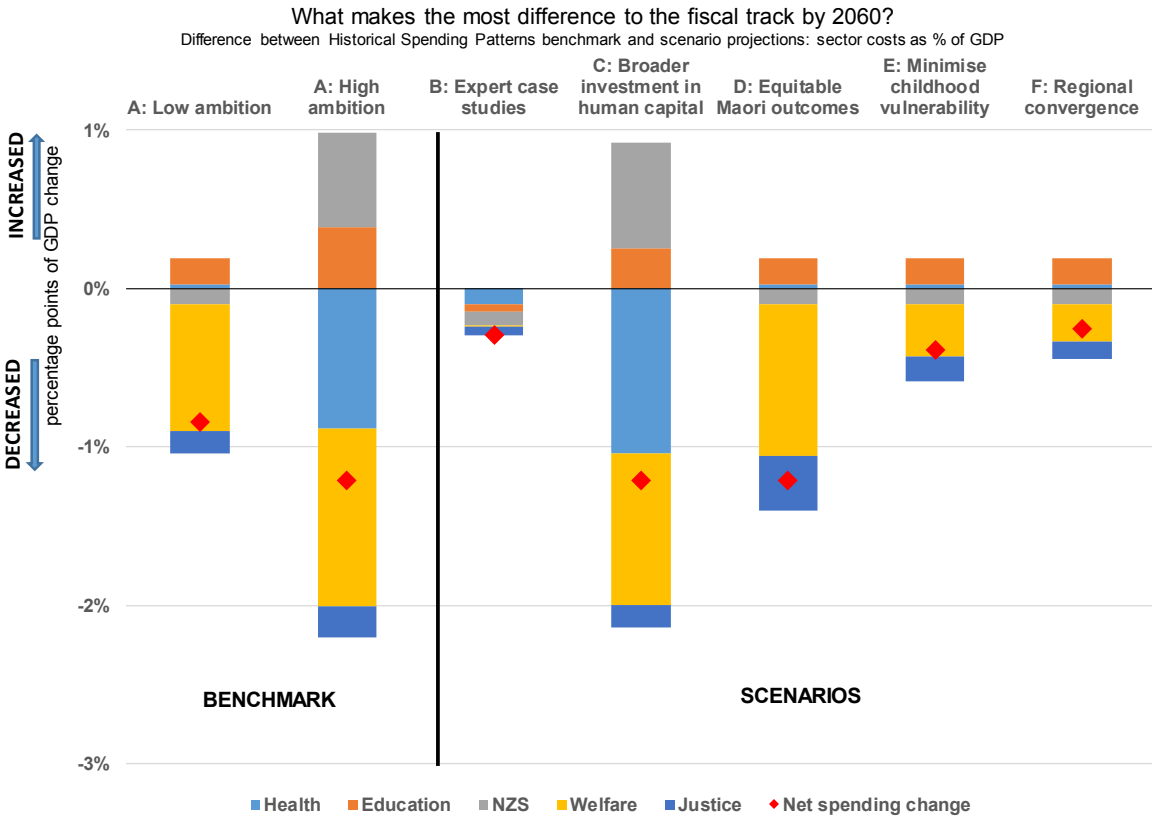
Social investment and changing the eligibility age for superannuation might individually make a material difference to fiscal outcomes, but neither is enough by itself. Policy-makers therefore should see them as complementary approaches, or alternatives, depending on priorities.

Note that the models of different policies require different assumptions. For instance, social investment policies require changes in behaviour or rely on the continuing effectiveness of policies that worked in other circumstances, whereas changes in superannuation costs are mechanical consequences of policy changes, if implemented.

4.3.1 What makes the most difference to spending?

Figure 18 shows the variation in the fiscal outcomes of scenarios. The components of the bars are the difference between the HSP cost and scenario cost in each sector as a per cent of nominal GDP (eg, the orange area is how much education affects the costs in each scenario). Generally, it is changes in welfare expenditure that have the largest impact. Note the proportion of each bar above the bold line represent costs that offset the reduction in spending represented by the proportion of the bar below the bold line. The fiscal benefit of each scenario is the amount of benefit remaining once the costs have been netted out (represented by the proportion of the bar between bold line and the diamond).

Figure 18: Spending impact of scenarios



Source: Adapted from He Tirohanga Mokoopuna: Statement on the Long-Term Fiscal Position 2016

This analysis can easily be translated into the levels of analysis for an investment approach. Thus Figure 18 combines level I information, overall change in system performance, and level II information on educational, health and employment outcomes. As such it is a kind of social thermometer, with long-run fiscal outcomes analysed as a proxy for how well the system is delivering non-fiscal outcomes in each sector.

In a physical thermometer, a change in the volume of liquid is a good-enough-for-the-purpose proxy for a change in temperature. Likewise, when we spend money on “servicing misery” rather than preventing it, spending is a proxy for how well resources are being used to improve the lives of New Zealanders.

Fiscal measures are not a replacement for judgements about spending. Just as physical thermometers respond to breaking the seal on the glass tube, a fiscal measure of outcomes will be more difficult to interpret if the objectives of spending are not properly understood.

Another policy-relevant assumption is the rate of change in the scenarios. All the scenarios are “long term” as ordinarily understood in policy. The Scenario C projection implies half a decade of additional time before other policy changes are required for fiscal sustainability. It makes clear the opportunity costs of not pushing the system and how relatively small, sustained improvements in performance could significantly improve outcomes for disadvantaged New Zealanders.

4.3.2 The size of the overall impact

In the discussion above on fiscal outcomes, we have concentrated on changes to spending with only brief references to labour market effects that might increase revenue. Similarly, the scenario discussion in *He Tirohanga Mokopuna* does not include the fiscal gains from increased labour market participation.

The largest economic growth benefit in the six scenarios is from increased labour market participation, which would increase GDP and hence increase nominal tax revenue. We have downplayed this because the modelling in HSP assumes that a larger economy also leads to increases in government expenditure, which offset the effect of higher participation.

There are two reasons for this assumption:

- The key role of long-term fiscal statements is to draw out the fiscal challenges facing New Zealand. Our social investment modelling suggests there may be approaches that both reduce spending and improve social outcomes. However, this cannot be achieved if government organisations continue to operate as they have in the past.
- The estimated labour market impacts are uncertain. No model can capture everything, so our pragmatic approach is to be conservative in our estimates of potential benefits where there is substantial uncertainty.

With these cautions in mind, we present some broader fiscal indicators below.

Table 12: Summary of scenarios (nominal dollars)

Scenario	Revenue by 2060 (\$b)	Expenditure by 2060 (\$b)^	Enter structural deficit^ (year)	Deficit^ by 2060 (% GDP)	Debt by 2060 (% GDP)
Historical spending patterns	450	522	2026	-6.3%	206%
A. Benchmark range	456 to 468	516 to 524	2028 to 30	-5.4% to -5.0%	142% to 168%
B. Expert case studies	455	523	2026	-6.0%	198%
C. Broader investment in human capital	464	520	2029	-5.1%	148%
D. Equitable Māori outcomes	456	511	2026	-5.1%	174%
E. Minimise childhood vulnerability	456	516	2026	-5.4%	183%
F. Regional convergence	456	521	2026	-5.8%	194%

^Excludes debt-financing costs

Source: Treasury

The scenarios illustrate there is potential to use social investment to reduce the primary fiscal imbalance, the underlying annual difference between revenue received and expenditure, by around five to 20 per cent by 2060. This accumulates from a relatively small proportion to about a third of the HSP net debt ratio to GDP. The extra time this permits before the imbalance becomes a structural deficit is less predictable. Social investment is a process of change that accumulates and its impact is dependent on two main variables – when it starts and the rate of change. Even successful implementation may not affect timeframes.

Achieving the outcomes set out in Figure 18 and Table 12 would require the state sector to change its approach in a number of areas, as outlined below.

Capability

It is not clear if the skills of those working in the state sector can be switched to deliver new services. Different skills are needed because switching costs from, for example, welfare and corrections, to education is primarily about employing more people to provide educational services and fewer people to provide corrections services. It is unclear how easy that transition would be, though the time scale of 20 to 40 years makes the assumption that skills can be switched more plausible.

Redirecting funding

The pessimism in the LTFM about the ability of government organisations to respond to improved effectiveness is based on historical data. This raises the question of whether the LTFM overestimates the possibilities of switching funds between departments in the interests of cross-government effectiveness. This is particularly relevant for early interventions when fiscal benefits can be years in the future.

Innovation

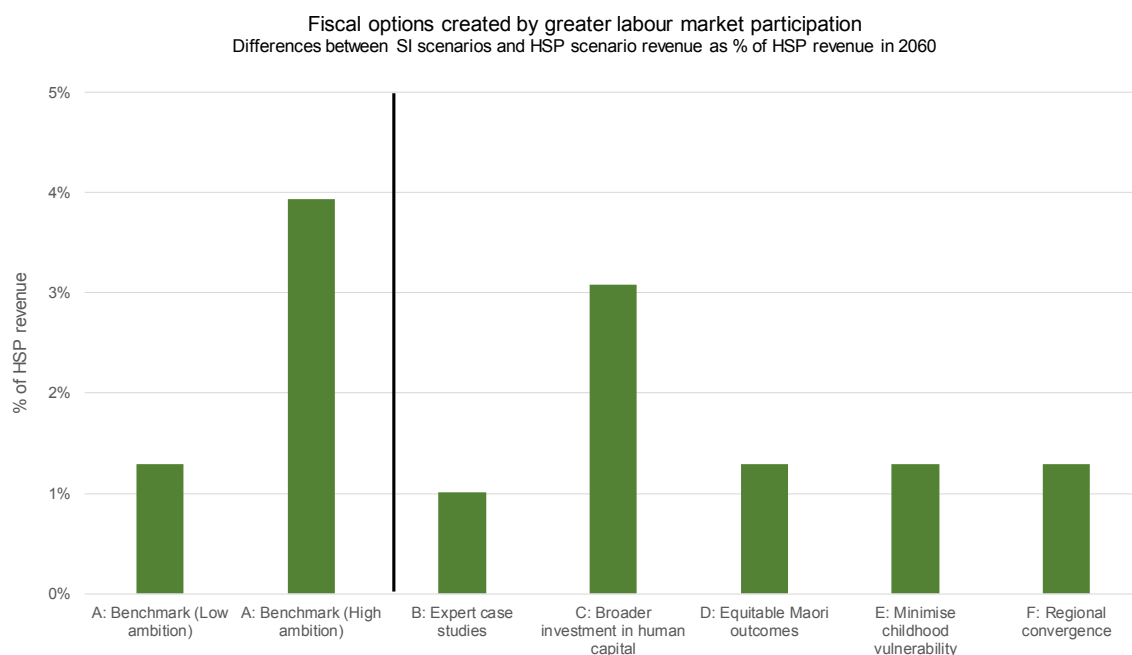
Greater availability of knowledge does not itself improve performance. For knowledge to make a difference the state sector needs to improve how it uses that knowledge and be more prepared to adapt the way it operates.

4.3.3 Labour market assumptions

There are limitations in the LTFM that affect analysis of policy settings. This is particularly evident when considering the impact of increased labour market participation. For example, the costs of retirement are reflected in the model by decreased GDP only. By comparison, entering or re-entering the labour market is modelled on the assumption that while some costs are reduced and GDP increases, other government costs net out the potential fiscal benefit.

Figure 19 shows that there is potential to materially increase revenue through improved labour market participation. There is nothing counter-intuitive about the strength of the result. The underlying fiscal problem is an increased dependency ratio (number of workers supporting non-workers) driven by a reduction in labour market participation of seven per cent of the population.⁴¹ Note that these are the differences between the social investment scenario and the HSP scenario expressed as a percentage of the HSP revenue. Relatively small increases in participation will have a sizeable fiscal impact.

Figure 19: Increase in revenue from modelled scenarios, compared to HSP



Source: Treasury

The modelled increase in revenue is substantial enough to provide additional fiscal options. However the model does not allow a projected increase in economic growth to lead to fiscal benefits. This modelling assumption is consistent with the discussion at the end of 4.3.2.

The constraints in the model also reflect the complexity of the underlying economics and the uncertainty created by a lack of New Zealand-specific evidence. In the model, a simplified proxy was used. Social investment was assumed to lead to increased labour market participation of 40,000 to 100,000 workers paid at the average wage over either 20 or 40 years.

⁴¹ Bell and Piscetek (2016), Section 3.

The plausibility of the assumption that social investment will increase labour market participation depends on two main factors. These are the link between educational attainment and improved skills for those people marginal to the labour market and the long-term responsiveness of the economy to having a more highly skilled workforce.

The information outlined below sets out in more detail the approach taken to the modelling, including limitations.

Overall numbers

Currently a little over 2.4 million people are employed in New Zealand. This means that 100,000 is an increase of four per cent in the workforce or 5,000 (roughly 0.2 per cent of the workforce) each year for 20 years. This is not inconsistent with typical quarterly changes, given the timescale and the normal churn in the workforce.⁴²

Alternatively, we can compare this to the number of people not working. The current benefit population is a little under 284,000 and the Better Public Services target is to reduce this to 220,000 by 2018.⁴³ That is a reduction of 64,000 in two years. The modelling assumption is considerably more conservative.

Labour market engagement

More challenging is that the model assumes additional people in the workforce work full-time and at the average wage. The assumption is consistent with increased participation being driven by higher skills that improve wages and therefore incentivise work.

Nevertheless, the average wage assumption probably overstates the fiscal benefits. Currently workers who would otherwise have been in the welfare system, or re-enter the labour market after looking after a family are more likely to be part-time and have lower wages. Around one in eight people work part-time, with those aged under 25 and over 60 more likely to be part-time workers.⁴⁴

Displacement

Even if it is easier to get some work, the overall number of jobs may not increase. Mare (2005) found evidence that wage subsidies bring new people into the workplace but displace 90 to 95 per cent of existing workers, resulting in net job gains of up to 10 per cent. This would mean 100,000 extra people in work could only be achieved if more than a million people received wage subsidies. It is not clear how relevant the findings in this example are to wider social investment policy.

The scenarios assume more people have work relevant skills when they enter the labour market, so if lack of skills is a constraint on employers then displacement is likely to be

⁴² Statistics New Zealand (2016) Labour Market Statistics: June 2016 quarter at http://www.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/LabourMarketStatistics_HOTPJun16qtr-incl-HLFS.aspx

⁴³ Ministry of Social Development (2016) "All Main Benefits – September 2016 Quarter" at <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/latest-quarterly-results/all-main-benefits.html>, and States Service Commission (2016), State Services Commission (2016) "Better Public Services: Snapshot of results at 14 Mar 2016" at <http://www.ssc.govt.nz/bps-snapshot>.

⁴⁴ Statistics New Zealand (2015) "Work and labour force status of adults in New Zealand" in 2013 Census QuickStats about work and unpaid activities at http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-work-unpaid/work_and_labour_force_status.aspx

considerably less than Mare found. While the scale is unclear, any displacement would reduce fiscal benefits.

In-work payments

Some benefit payments, such as Accommodation Supplement and the In-Work Tax Credit, are available to people in work. Potential fiscal gains from more people being in work and paying tax will be partly offset by these payments, particularly for part-time workers or those on low wages. This issue interacts with the wage assumption because, higher earners generally receive less government assistance, two “low hours” jobs are likely to attract a higher tax burden for low-paid individuals than a single job.

As noted above, the model assumes people enter the labour market because they have higher skills and therefore higher wages. This suggests in-work payments will reduce, though that may be offset by increased numbers of part-time workers.

Other effects

There is a range of more subtle labour market effects about which it is difficult to draw general conclusions. These include:

- a larger workforce putting downward pressure on all wages, reducing fiscal benefits
- increased human capital increasing the productivity of all workers, increasing wages
- qualifications introducing greater rigidity into the labour market through occupational licensing regimes and less flexibility of wages, reducing productivity.⁴⁵

⁴⁵ Greenwood, S. and A. Menclova (2016) “Analysing the extent and effects of occupational regulation in New Zealand,” New Zealand Economic Papers, DOI: 10.1080/00779954.2016.1247291.

5 Concluding Remarks

In this background paper to *He Tirohanga Mokopuna: Statement on the Long-Term Fiscal Position 2016* (LTFS) we have provided a scenario analysis of the potential benefits from social investment. The analysis expands previous Treasury long-term fiscal work by using client-level data about state sector interventions as the basis of our projections. It is an example of how improvements in data analytics capability have created an opportunity to improve advice and through that the lives of New Zealanders.

Fundamentally social investment is a strategy for improving the effectiveness of social interventions through better use of available resources. Our analysis has detailed the potential outcomes of different social investment scenarios, in particular improvements in wellbeing.

The fiscal benefits are a benign consequence of policy that more effectively delivers improvements in wellbeing. The analysis in this paper suggests the fiscal impact of social investment could be similar in size to increasing the age of eligibility for superannuation to 67 years, but not as large as indexing superannuation to price inflation rather than average wages. This suggests that a social investment approach could contribute to a fiscal strategy to deal with demographic pressures, alongside other policies to either increase revenue or reduce costs.

To get the greatest benefit from social investment the state sector would need to be more flexible in response to evidence, better at redirecting resources to where they make the greatest difference and more innovative in response to the opportunities created by improved technology.

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