Social Policy Evaluation and Research Unit

superu

Youth Mental Health Project

COST-BENEFIT ANALYSIS

DECEMBER 2016

pwc

Our purpose

The purpose of the Social Policy Evaluation and Research Unit (Superu) is to increase the use of evidence by people across the social sector so that they can make better decisions – about funding, policies or services – to improve the lives of New Zealanders and New Zealand's communities, families and whānau.

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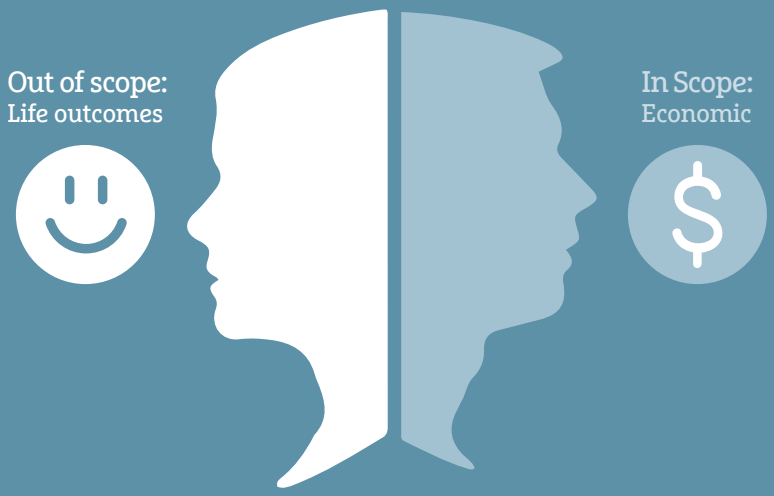
Executive summary

This report is one of three published as part of the Phase 2 strategic evaluation of the Prime Minister's Youth Mental Health Project. The Summative Evaluation Report synthesises the findings and recommendations from the Localities and National Perspectives Evaluation report and from this Cost-Benefit Analysis report, as well as from available evaluations of individual initiatives. The three reports can be downloaded from www.superu.govt.nz.



Investing in the mental health of New Zealand's youth has the potential to generate two very important 'avenues' of value: **economic** value and **life outcomes** value (which might be described in terms of individual or collective happiness).

As a cost-benefit analysis of the Youth Mental Health Project (YMHP), this report only presents detailed information on the economic value generated by the YMHP (including an evaluation of wellbeing in the form of DALYs – Disability Adjusted Life Years). It does not attempt to quantify the value generated by increasing youth happiness, nor does it provide any view on the relative value of the economic and life outcome 'avenues'.

Background

The YMHP was established in 2012 by the Department of the Prime Minister and Cabinet and is an extension of New Zealand's existing youth mental health system.

The YMHP involved funding of $56.6 million and consists of 26 initiatives aimed at improving the mental health and wellbeing of young people (12–19 year olds) who have, or are at risk of developing, mild to moderate mental illness.

In 2013, the Social Policy, Evaluation and Research Unit (Superu) was commissioned to deliver a two-phase evaluation of the YMHP. Superu engaged PricewaterhouseCoopers (PwC) to complete part of the second phase, a cost-benefit analysis of the YMHP. This report is that cost-benefit analysis. The analysis is of the YMHP only (as an extension of the existing youth mental health system) and assesses performance at a point in time.

Structure of the YMHP

For the purposes of cost-benefit analysis, the YMHP initiatives have been grouped into the following five core project 'components':

1. Strengthening systems and processes
2. Access to appropriate information
3. Supportive schools
4. Early identification and support
5. Treatment and follow-up.

Approach to cost-benefit analysis

The flow diagram in Figure 1 overleaf provides an abbreviated description of the process followed for the YMHP cost-benefit analysis. The second step in Figure 1 ('Select activity short- and long-term outcome measures') describes the framework that underpins the entire cost-benefit analysis. The framework uses 'causal chains' to understand how each of the YMHP components is able to contribute towards changes in youth mental health outcomes and thus economic outcomes. Figure 2 then shows the content of the causal chains and the linkage between initiative activities and long-term social and economic outcomes.

Figure 1 _ Summary of YMHP cost-benefit analysis process

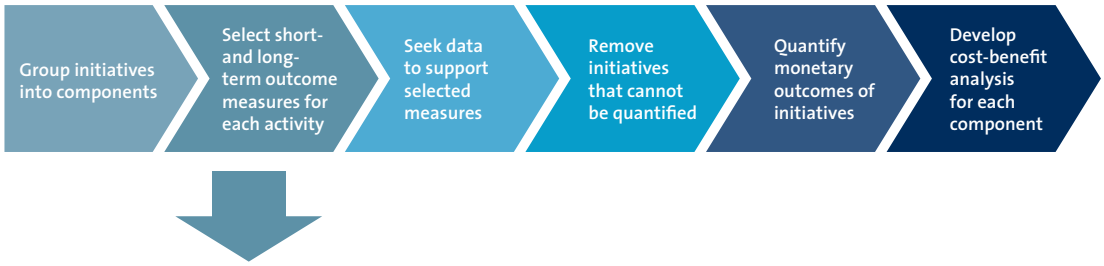
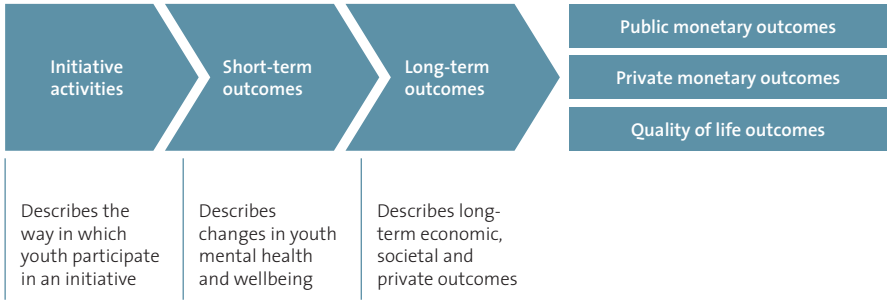


Figure 2 _ Summary of quantitative evaluation framework



When doing a cost-benefit analysis of social services such as those in the YMHP, there are three key drivers of the results. These are the cost of the programme, the number of individuals reached by the programme, and whether the programme successfully achieves its outcomes. The balance between these three factors is what drives the net benefit.

This cost-benefit analysis has been prepared at a time before many of the long-term outcomes and benefits have been realised for the individuals involved. We have used academic research to support our assessment of the likelihood of these occurring.

A framework has also been developed for qualitative evaluation – it includes consideration of initiative coverage, direction, impacts / outcomes, attributes, funding, implementation, and data / reporting. The qualitative evaluation involved a desktop review of documentation, interviews with initiative leads, and written questionnaires.

Scope of the evaluation

The original scope of this cost-benefit analysis included quantitative evaluation of all 26 YMHP initiatives. However, as a result of data and information limitations, Superu agreed that only 10 of the 26 initiatives could be evaluated quantitatively. The 10 initiatives that remain in scope for quantitative evaluation together represent 74% ($42.23 million) of the YMHP's total funding. The remaining 16 initiatives have been assessed qualitatively.

Of the 16 initiatives evaluated qualitatively, seven are categorised in the 'Strengthening systems and processes' component. These initiatives were evaluated qualitatively because they consist of primary research or reviews, which means it is difficult to identify clear causality between the activities of the initiative and youth mental health outcomes. The remaining nine initiatives were excluded from the scope of quantitative assessment because of limitations in data quality and availability.

Initiative #3, Primary Mental Health, is one of those initiatives excluded from the overall cost-benefit analysis because of limitations in data quality and availability. Due to the high proportional cost of that initiative (20% of total YMHP) and its associated ability to strongly skew the results of the overall analysis, we have prepared a stand-alone cost-benefit analysis as well as a qualitative evaluation for this initiative, rather than including it in the cost-benefit analysis of the YMHP as a whole. Overall, this decision was made on the basis that the resultant analysis and information would provide greater clarity and transparency.

Findings and recommendations

Findings

The YMHP cost-benefit analysis has resulted in the following eight key findings:

- Of the 181,357 youth participating in the YMHP, 1,764 were positively impacted (where 'positively impacted' refers to realised improvements in an individual's mental health or wellbeing).
- From an economic perspective, the YMHP generates gross economic benefit in the form of future savings of approximately $21,000 **per positively impacted youth** (over a 10-year timeframe, using a 7% 'real' discount rate and under a 'low' scenario). This dollar amount is a measure of the benefit of switching one youth from **having** mild to moderate mental illness to **not having** mild to moderate mental illness.
- In addition to the economic benefit, we estimate the YMHP will generate 30.6 Disability Adjusted Life Years (DALYs) per $1.0 million spent (over a 10-year timeframe and using a 'low' impact scenario), where a DALY describes the burden of disease or disability on quality and quantity of life (measured in years). These results can be compared against New Zealand's Pharmaceutical Management Agency's (PHARMAC) achievement of 28 Quality Adjusted Life Years (QALYs) per $1.0 million in 2014 (PHARMAC, 2014). QALYs and DALYs are considered to be comparable.
- Targeting youth with mild to moderate symptoms results in commensurate economic outcomes – that is, moderate economic outcomes are achieved.
- Across the entire YMHP, we estimate that benefit to cost ratios (BCR) of 1.01 (societal) and 0.32 (governmental) will be achieved (over a 10-year timeframe, using a 7% 'real' discount rate and under a 'low' scenario). Of the five YMHP components, we estimate that 'Early identification and support' will deliver the most economic value – with BCRs of 2.06 (societal) and 0.62 (governmental). We do however acknowledge that the effectiveness of early identification and support will depend, to some extent, on the availability of treatment and support for those youth who are identified as needing it and on the infrastructure through which that treatment and support is delivered.

- The YMHP provides greater private economic benefits than governmental economic benefits, which means that youth participating in the project will be personally better off in the long term, but that the financial position of the government / Crown does not receive the same benefit. This result occurs because mild to moderate mental illness does not tend to create significant governmental costs.
- Of the 16 initiatives evaluated qualitatively, the majority report wide coverage but variable levels of effectiveness. The initiatives in the 'Treatment and follow-up', 'Early identification and support' and 'Supportive schools' components report moderate levels of effectiveness; but it is not possible to draw conclusions about the impact or effectiveness of the initiatives in the 'Access to appropriate information' and 'Strengthening systems and processes' components.
- As a general observation, the availability and quality of data supporting the YMHP is low and the data tends to be focused on inputs rather than outputs. Further, the lack of defined quantitative performance measures (around initiative outcomes and reporting) leads us to assume that the release of initiative funding is not necessarily linked to the satisfactory achievement of performance targets.

In interpreting these eight key findings, it is important to highlight that the expenditure and the associated youth mental health benefits achieved relate only to the YMHP as an extension of New Zealand's existing youth mental health system.

Recommendations

This report makes the following recommendations, in the light of the eight key findings set out above:

- In the design and development of an initiative targeted at improving youth mental health (within the mild to moderate spectrum), a benchmark of $21,000 to $30,000 cost **per positively impacted youth** could be used to assess whether the initiative is able to generate future positive economic value.
- The design and development of an initiative targeted at improving youth mental health (within the mild to moderate spectrum) should take into account that initiatives that provide early identification and support are likely to provide the most economic value.
- While it is important to understand and articulate the short- and medium-term outputs of an initiative or intervention before investing in it, best practice is to also understand and articulate the expected long-term social and economic outcomes or benefits of the initiative. This information should then be used to develop meaningful performance measures, data quality standards and datasets. When these measures and datasets have been determined, baseline data should then be collected first so that there is a basis from which to measure improvement and change attributable to the initiative.
- For each initiative or intervention, a consistent approach should be used to collect data, including using standardised data collection tools and uniform initiative-wide performance measures. Further, the data should be collated by a single individual, team or organisation.
- Consider how information technology could be used to improve the timeliness, accuracy and completeness of mental health data that is collected.

- As the quality, completeness and volume of YMHP and New Zealand youth mental health data improves, consider whether this cost-benefit analysis should be repeated. The analysis should be repeated if there have been significant improvements in data availability and quality. In repeating this type of evaluation, consider also whether to include additional and deeper levels of analysis such as Monte Carlo simulation (which is a type of risk analysis that provides a range of possible outcomes and probabilities that may occur as a result of a specific course of action).

Evidence base

This cost-benefit analysis has a large research and evidence base, which focused on two distinct areas:

1. **Impact of the initiatives themselves:** Our research aimed to determine both the 'reach' (i.e. the number of youth reached or involved) and the 'effectiveness' (i.e. the ability to achieve long- and short-term outcomes for youth) of each YMHP initiative. To determine 'reach', we used initiative-specific data and evaluations. To determine 'effectiveness', we used both domestic and international research (see Appendix G of this report).
2. **Quantification of initiative outcomes into monetary values:** Our research aimed to assign monetary values to the outcomes generated by the YMHP initiatives. To quantify an initiative's outcomes, we used domestic longitudinal studies and publicly available statistics (see Appendix F).

We were able to link the short-term impacts of the initiatives with the long-term economic impacts using the available literature. The YMHP is a recent programme, so we could not assess the actual long-term economic benefits for these specific youth. Instead, we developed, in consultation with youth mental health experts, lists of expected short- and long-term outcomes. We reviewed the literature to find evidence that these mental health interventions had short-term impacts, such as completing secondary school. We then linked those short-term impacts to long-term benefits, such as increased earnings and employment.

Gaps in the evidence base

Through our work, we have identified a number of gaps in the evidence base:

- For many of the initiatives, we were unable to accurately quantify or estimate 'reach' – this represents a gap in the collection of basic count or usage data within the YMHP, as well as being a gap in evaluations of other New Zealand-based youth mental health initiatives. These gaps contributed strongly to our inability to perform quantitative evaluation on a number of the YMHP initiatives.
- In seeking to establish effectiveness, we found that initiative-specific and New Zealand-based research on the effectiveness of youth mental health interventions was limited. In response to this gap, we relied on comparable international research to estimate the effectiveness of the YMHP initiatives.

Alternative application

While the research for this evaluation was performed with the ultimate purpose of generating a cost-benefit analysis of the YMHP, the size and breadth of the research base means that it is also useful for decision-making and analysis outside the realm of finance and economics. For example, the research provides valuable information on both the 'reach' and 'effectiveness' of the YMHP initiatives. This information could be used to assess an initiative or intervention without necessarily considering its economic effectiveness. Similarly, the research used to assign monetary values to the youth mental health outcomes could have wider applications beyond the initiatives included in the YMHP.

Limitations

Several limitations apply to the cost-benefit analysis and this report – these are summarised below. Detailed information on limitations can be found on page 92.

- This cost-benefit analysis has been performed at a time when many of the YMHP initiatives are still in progress, and therefore many of the expected benefits are yet to occur.
- Meaningful monetary values cannot be assigned to qualitative outcomes such as life satisfaction, confidence, resilience, engagement and knowledge. Where quantitative assessment was not possible, we have performed qualitative assessment.
- The cost-benefit analysis cannot adjust for reduced initiative effectiveness rates, where effectiveness is reduced as a result of uncontrollable risk factors. Risk factors include childhood abuse, family history of mental illness, family conflict, neglectful parenting, poverty, social disadvantage, experiencing violence or drug-taking, and negative peer influence.
- The cost-benefit analysis approach has two inherent (but unavoidable) limitations:
  - It is necessary to make certain assumptions in order to link sections of the causal chains – the lower the quality of the data, the larger the number of assumptions required.
  - Certain factors cannot be captured or quantified by this evaluation. These include the portion of New Zealand's youth enjoying good mental health and wellbeing, and the 'ripple effects' of the intervention.
- Data 'gaps' and limitations have affected the accuracy and completeness of the conclusions and findings made through this evaluation.
- The report does not seek to present an exhaustive list of data, information and literature on youth mental health, or even a full list of documentation reviewed. Rather, we have selected the most relevant and applicable studies that can be best used in this cost-benefit analysis.
- The YMHP sought to expand and extend a pre-existing youth mental health system, and therefore the cost-benefit analysis is limited to the $56.6 million investment in the YMHP as an isolated project and the associated youth mental health benefits or outcomes that have occurred as a direct result.
- Because the New Zealand-specific data on youth mental health is limited, we have relied heavily on international evidence.

- While we recognise that differences in local implementation could impact the outcomes of the YMHP initiatives, we have assumed standard implementation in all locations.
- Our analysis has not taken into account youth 'justice outcomes'. This is due to conflicting evidence about the connections between youth mental health and offending, a lack of data about the offending outcomes of the YMHP, and a lack of data on the cost of youth crime in New Zealand.
- Our analysis has not taken into account long-term outcomes associated with youth self-harm, suicide, pregnancy and engagement. This is due to constraints in the scope of the YMHP, inconsistent definitions, and limitations in data or research.
- We recognise that there are numerous, and often inconsistent, definitions of 'mild to moderate' mental illness.
- In our analysis, one of the long-term economic outcomes of improved youth mental health is a reduction in the number of individuals collecting welfare benefits. The cost-benefit analysis does not adjust for the number of jobs available.
- Due to data and scope limitations, we have not taken into consideration any private costs (including opportunity costs) associated with participating in the YMHP initiatives.

Authors and acknowledgements

This report has been prepared by PricewaterhouseCoopers New Zealand for the Social Policy, Evaluation and Research Unit (Superu).

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Summary findings and recommendations

1.1_ Summary findings

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In interpreting these seven key findings, it is important to highlight that the expenditure and the associated youth mental health outcomes achieved relate only to the YMHP as an extension of New Zealand's existing youth mental health system. Each finding is discussed in detail on the following pages.

1.1.1 _ The YMHP will generate gross economic benefit of $21,000 per positively impacted youth

Across the entire YMHP and over a 10-year timeframe, we estimate that the gross economic benefit per positively impacted youth (where 'positively impacted' refers to realised improvements in an individual's mental health or wellbeing) will be approximately $21,000 at a 7% discount rate and $30,000 at a 3.5% discount rate. The implication of this finding is that any initiative or intervention that costs more than $21,000 to $30,000 per youth is unlikely to generate positive economic value.

If the timeframe is adjusted to 20 years, the gross economic benefit per positively impacted youth becomes approximately $32,000 at a 7% discount rate and $51,000 at a 3.5% discount rate.

These high-level financial indicators provide a valuable benchmark against which to assess the economic and financial viability of future investment decisions – where in an increasingly financial constrained environment, failure to demonstrate positive economic value is likely to result in an inability to attract government funding. In such circumstances, government agencies will be required to demonstrate that the proposed initiative will be able to reach a large target audience or achieve particularly high effect sizes. Alternatively, there may be compelling non-financial reasons to invest in an initiative that does not generate positive **economic** value – for example, the New Zealand Government had a moral obligation and duty of care to support and invest in those who were negatively impacted by the Canterbury earthquakes, despite any potential economic benefit of this investment.

1.1.2 _ The YMHP will generate 30.61 Disability Adjusted Life Years avoided per $1.0 million spent

In this analysis, one metric of the benefit of the YMHP is Disability Adjusted Life Years (DALYs). This is a common metric in the health sector for assessing the effectiveness of interventions (Guria and Yeabsley, 2014) and the key metric for cost-effectiveness analysis (Edwards, 2011). Basically, one DALY is one year of life for one person. It is a statistically constructed 'year', and takes into account both mortality (death) and morbidity (disease). That is, it is adjusted for the incidence of disability due to disease. The World Health Organisation (WHO) therefore concludes, 'one DALY can be thought of as one lost year of "healthy" life' (WHO, 2016). In this YMHP evaluation, DALYs avoided are treated as additional to any monetary benefits achieved.

Across the entire YMHP and over a 10-year timeframe, we estimate the project will generate 30.61 DALYs avoided per $1.0 million spent in a 'low' scenario and 35.14 DALYs per $1.0 million spent in a 'high' scenario.

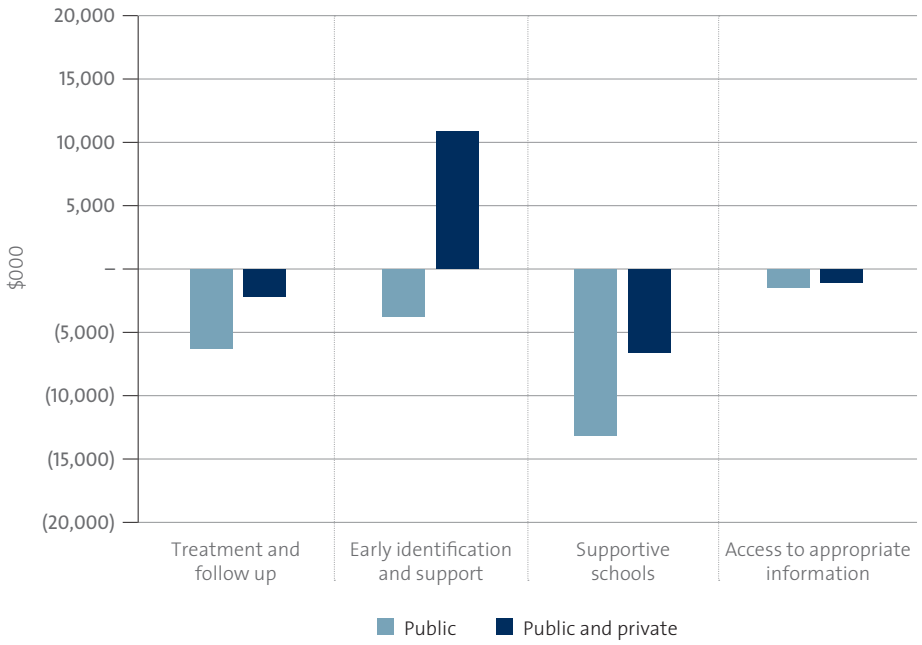
To understand these results, it is useful to make comparisons with other measures of the value of life or life-years. Unfortunately, direct comparison is difficult; DALYs are used to evaluate some interventions but not others. Another metric, similarly focused on understanding the value of a year of life, is Quality Adjusted Life Years (QALYs). QALYs are a measure of a person's gain in number of years of life and quality of life. New Zealand's Pharmaceutical Management Agency (PHARMAC) reports on the number of QALYs for their investments each year. In 2014 they reported that they achieved 28 QALYs per $1.0 million spend.[1] That is, every $1.0 million dollars supported an extra 28 years of life, adjusted for the quality of life for those years.

We can also compare these DALY results with international cost-utility results. In an Australian-based literature review of cost-utility studies, Dalziel et al. (2008) found the median cost per QALY / DALY of $30,000 in 2005 Australian Dollars. This is equivalent to 25.3 QALY / DALYs per $1.0 million spent when translated to equal terms (Dalziel et al., 2008; RBNZ, 2016a: RBNZ, 2016b).

1.1.3 _ By targeting youth with mild to moderate symptoms, commensurate economic outcomes will be achieved

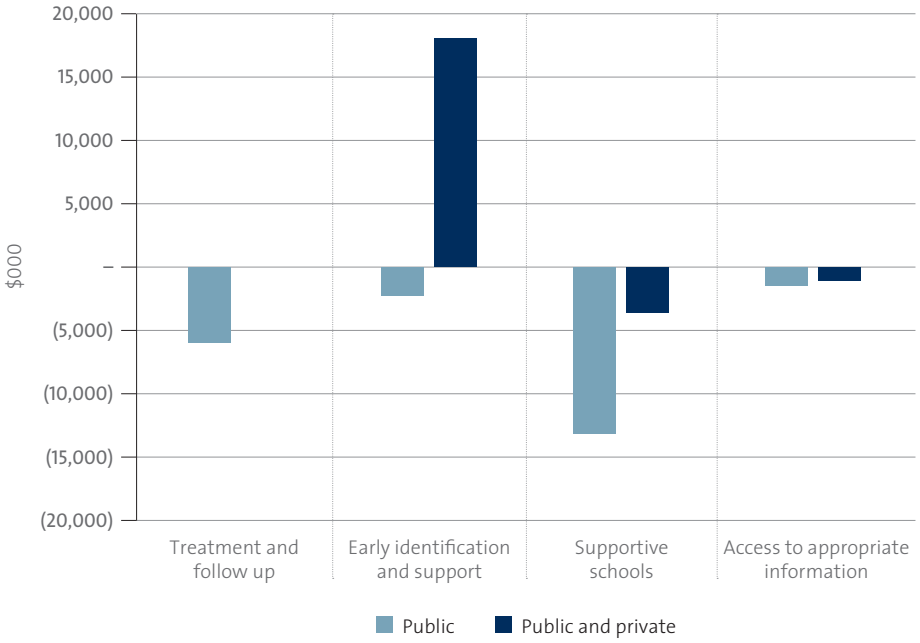
Figure 3 and Figure 4 show the net present values of each YMHP component under different scenarios and discount rates.

Figure 3 _ Net present values of the YMHP components using the low scenario and 7% discount rate



1 This measure represents a general measure used by PHARMAC – it does not relate specifically to pharmaceuticals related to mental illness.

Figure 4 _ Net present values of the YMHP components using the low scenario and 3.5% discount rate



While Figure 3 and Figure 4 above trend toward negative economic returns, it is important to note that the YMHP is targeted towards youth with or at risk of developing mild-to-moderate mental illness. The implication of this is commensurate or similarly modest economic benefits. This is because the governmental cost of mild-to-moderate mental illness is lower than the cost of severe mental illness, and as such the economic benefits achieved via investment in this area (mild to moderate) will be of comparative value.

1.1.4 _ Early identification and support delivers the most economic value

Economic benefits are driven by either reaching a large number of youth (i.e. high coverage) or achieving a high rate of positive mental health outcomes (i.e. high effect size), while minimising costs. The interaction between these three variables dictates the cost-effectiveness of a programme. Of the five 'YMHP components' (Strengthening systems & processes; Access to appropriate information; Supportive schools; Early identification & support; and Treatment & follow-up), the 'Early identification and support' component delivers the most economic value because it achieves moderate efficacy and particularly wide coverage for a comparatively moderate cost. This provides evidence that future investment in youth mental health initiatives may be best directed towards initiatives that provide early identification and support.

To understand this concept, Table 1 presents the 'core profiles' of each YMHP component – where the profile includes an assessment of the following aspects of each component:

- effect size, which describes the ability to achieve targeted outcomes effectively and is a measure of effectiveness between 0% and 100% (where a 'low' effect size would typically range between 0–5%, 'moderate' 5–15% and 'high' > 15%)

- coverage, which describes the number of youth reached (where 'low' coverage represents < 5,000 youth, 'moderate' 5,000–50,000 youth and 'high' > 50,000 youth)
- total cost, which describes the total amount of money spent (where 'low' cost represents < $2 million, 'moderate' $2–$10 million and 'high' > $10 million)
- economic value, which is a calculation derived from the cost-benefit analysis that describes the monetary value or amount of 'savings' generated (where 'low' represents any benefit to cost ratio below 1.0, 'moderate' 1.0–2.0, and 'high' > 2.0).

TABLE 01

Summary results of the cost-benefit analysis – by YMHP component, using a 7% discount rate and a low scenario

YMHP component	Initiatives included	Effect size (weighted average %)	Coverage (number of youth reached)	Total cost (present value)	Economic value (benefit to cost ratio)
YMHP (entire project)	All those detailed below	-	183,083 youth	$36.55m	Governmental 0.32 Societal 1.01
Access to appropriate information	#15 Social Media Innovation Fund	5.00%	526 youth	$1.75m	Governmental 0.10 Societal 0.32
Supportive schools	#8, 9, 10 PB4L School-Wide, Check and My FRIENDS Youth; and #14 YWiSS	0.34%	139,147 youth	$16.09m	Governmental 0.17 Societal 0.58
Early identification and support	#1 SBHS, #2 HEEEADSSS Wellness Checks; #18 Social Support for YOSSs	2.32%	41,861 youth	$10.08m	Governmental 0.62 Societal 2.06
Treatment and follow-up	#4 E-Therapy; #7 CAMHS and AOD Service Access	19.22%	1,548 youth	$8.63m	Governmental 0.26 Societal 0.73

Note: The strengthening systems and processes component is not included in the table above as all the initiatives within this component have been evaluated qualitatively.

The economic profile of each YMHP component is explained here:

- The profile of the YMHP **Access to appropriate information** component is low effect sizes, low coverage and low cost. The profile reflects the fact there is insufficient evidence to support the effectiveness of access to appropriate information (as it is inherently difficult to measure) and is only delivered directly to a limited youth population. A wider population could be secondarily impacted, but it is difficult to quantify these youth. As a consequence, the 'Access to appropriate information' component is estimated to deliver a low level of economic value.
- The profile of the YMHP **Supportive schools** component is low effect sizes, high coverage and high cost. This profile means that 'Supportive schools' does not currently appear to be overly effective and is expensive to deliver relative to the size of the youth population reached. As a consequence, the 'Supportive schools' component is estimated to deliver a low level of economic value.

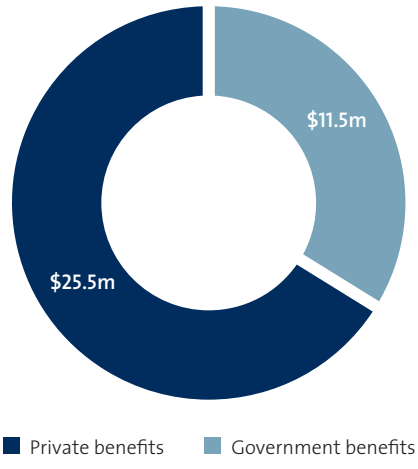
- The profile of the YMHP **Early identification and support** component is low effect sizes, moderate coverage and moderate cost. This profile means that, while 'Early identification and support' does not demonstrate high effect sizes, it can be delivered at a moderate cost relative to the size of the youth population reached. As a consequence, the 'Early identification and support' component is estimated to deliver a low-moderate level of economic value.
- The profile of the YMHP **Treatment and follow-up** component is high effect sizes, low coverage and moderate cost. This profile means that while 'Treatment and follow-up' appears to be an effective course of action, it is expensive to deliver relative to the number of youth reached. As a consequence, the 'Treatment and follow-up' component is estimated to deliver a low level of economic value but a high impact to those included.

1.1.5 _ The YMHP provides greater private economic benefits than governmental

As illustrated by Figure 5 below, the YMHP (and particularly the 'Early identification and support' component) delivers greater private economic benefits than governmental. As a general rule, this means that youth participating and benefiting from the project will be personally better off in the long term, but the future financial position of the government / Crown does not receive the same benefit. A similar relationship has been found in the United States where the Washington State Institute for Public Policy (2012) found larger impacts for the participants than the taxpayer in a cost-benefit analysis of cognitive behavioural therapy for children and adolescents with depression and anxiety.

It is important to note that the YMHP was designed to focus on achieving individual outcomes and improvements for this vulnerable population, rather than aiming to generate future Government / Crown savings. Further, as private income can be used as a proxy for wellbeing (as it is assumed that an individual generally has a higher level of wellbeing if they are able to adequately satisfy their basic lifestyle needs), one could reasonably conclude that **the YMHP has successfully contributed towards improving the wellbeing of youth**, in the case of those youth who have experienced improved private earning potential as a consequence of their participation in the project. In addition, all quality-of-life benefits measured in DALYs represent private increases in youth wellbeing.

Figure 5 _ Net present value of YMHP governmental and private benefits



1.1.6 _ 'Qualitative initiatives' generally report wide coverage but variable levels of effectiveness

Of the 16 YMHP initiatives evaluated qualitatively, the majority report wide coverage but variable levels of effectiveness. Table 2 below provides a summary of the qualitative evaluation results by YMHP component.

TABLE 02

Summary of qualitative evaluation results

YMHP component	Initiatives included**	Coverage size / direct or indirect impact	Types of initiatives	Impact / outcomes	Implement-ation
Strengthening systems and processes	#11, #12, #13, #19, #20, #24, #25	Moderate, indirect	Prevention	Small	Majority complete
Access to appropriate information	#16, #17, #23	Large, indirect	Prevention	Small	Ongoing
Supportive schools	#26	Moderate, direct	Prevention	Moderate	Ongoing
Early identification and support	#5, #21 and #22	Large, direct and indirect	Prevention and treatment	Moderate	Ongoing
Treatment and follow-up	#6	Moderate, direct	Prevention	Moderate	Ongoing
#3 Primary Mental Health*	#3	Large, direct	Prevention and treatment	Large	Ongoing

* *Initiative #3 has been assessed both qualitatively and quantitatively (on a stand-alone basis).*

** *See Table 5 for a description of each initiative.*

The 'Strengthening systems and processes' and 'Access to appropriate information' components share similar trends – both components have an indirect impact on youth, both target prevention of mild to moderate mental illness, and both have been assessed as having small impacts. The impacts have been assessed as being 'small' partly due to a lack of supporting evidence or information and partly due to the nature of the initiatives, which is research-based and focused on the dissemination of information.

The 'Supportive schools', 'Early identification and support' and 'Treatment and follow-up' components also share similar trends – all components have a large or moderate direct impact on youth ('Early identification and support' also demonstrates indirect impacts), all target prevention ('Early identification and support' also targets treatment) and all have been assessed as having moderate impact. The impacts have been assessed as being 'moderate' as there is some supporting qualitative evidence to this effect.

As a general rule, the initiatives in the 'qualitative evaluation category' are in this category as a result of poor data availability and quality. This theme is particularly prevalent when seeking data to evidence the direct impacts or outcomes of the initiatives on youth mental health outcomes.

1.1.7 _ Availability and quality of data supporting the YMHP is low

Data availability and quality challenges

In some cases, we were able to obtain data on the number of youth participating in a YMHP initiative. However, the availability and quality of data supporting impacts or outcomes of the initiatives was low.

As a general observation, we note that the highest-quality data or information is typically sourced from initiative-specific evaluations and / or peer-reviewed published literature that is specific to New Zealand, youth and mental health.

Conversely, the lowest-quality data or information (where available) is typically anecdotal or qualitative in nature, or sourced from manually collated reports and spreadsheets, where multiple parties send data to a central repository (such as DHBs reporting data to the Ministry of Health).

Throughout the course of the cost-benefit analysis, we have collected and analysed a large body of domestic and international research or data to support our conclusions. The references detailed in Appendix K detail the actual research or data used. However, it is important to highlight that the quantum of research or data reviewed and assessed was significantly wider. The design of the studies was highly variable in this body of research, and this reduced consistency and the overall quality of quantitative data supporting the YMHP initiatives.

The lack of uniformity and consistency of data collected across the YMHP initiatives resulted in the inability to perform specific analysis on different ethnic groups, specifically Māori and Pacific youth, as in the majority of cases this data did not exist in a form that could be used in cost-benefit analysis. Specifically, we were unable to source reliable and complete data to evidence the following:

- 'reach' (or number of youth participating in the YMHP initiatives)
- differential effect sizes among different ethnic groups
- differential cost profiles by ethnic group.

Data is focused on inputs rather than outcomes

The majority of quantitative initiative-specific data currently collected is based on input (youth involved) and activities rather than outcomes for youth. We recognise that long-term economic or social outcomes can take approximately 5 to 20 years to materialise, and systems do not currently have the tools or techniques to commence the collection of such data. Putting systems in place to track these outcomes now represents a significant opportunity to increase the quality of research on the mental health of New Zealand youth. At present, it creates an inability to assess the effectiveness of any particular intervention or initiative that may be creating positive outcomes for New Zealanders.

Funding is not linked to performance targets or reporting obligations

The release of initiative funding was not closely linked to the satisfactory achievement of performance targets nor to reporting obligations. As a consequence, the initiative evaluations tend not to be guided by specific performance measures and frameworks. Combined with systems that did not report on outcomes, the resulting evaluation reports therefore contain limited data on the outputs or outcomes of programmes or initiatives.

With respect to reporting obligations, we note that absent or poor-quality reporting sometimes seems to be accepted by government agencies. For example, it appears that DHBs are receiving funding regardless of whether or not they meet reporting obligations under the YMHP. From our perspective, the consequence is incomplete and poor-quality performance data, which limits the ability to: assess the effectiveness of the associated programme; determine whether providers have met minimum requirements; and / or inform prioritisation and future investment decisions.

1.2 Summary recommendations

The following recommendations have been made in response to the key observations detailed above:

- In the design and development of an initiative targeted towards the improvement of youth mental health (within the mild to moderate spectrum), a benchmark of $21,000 to $30,000 cost **per positively impacted youth** should be used to assess whether the initiative is able to generate future positive economic value.
- In the design and development of an initiative targeted towards the improvement of youth mental health (within the mild to moderate spectrum), consider that initiatives that provide early identification and support are likely to provide the most economic value.
- While it is important to understand and articulate the short- and medium-term outputs of an initiative or intervention before investing in it, best practice is to also understand and articulate the expected long-term social and economic outcomes or benefits of the initiative. This information should then be used to develop meaningful performance measures, data quality standards and datasets. When these measures and datasets have been determined, baseline data should then be collected first so that there is a basis from which to measure improvement and change attributable to the initiative.
- For each initiative, a consistent approach should be used to collect data – this includes use of standardised data collection tools and uniform initiative-wide performance measures. Further, the collation of data should be performed by a single individual, team or organisation.
- Consider how information technology could be used to improve the timeliness, accuracy and completeness of mental health data collected.
- As the quality, completeness and volume of YMHP and New Zealand youth mental health data improves, consideration should be given to whether this cost-benefit analysis should be repeated. The analysis should be repeated where there have been significant improvements in data availability and quality. In repeating this type of evaluation, consideration could also be given to including additional and deeper levels of analysis such as Monte Carlo simulation (which is a type of risk analysis that provides a range of possible outcomes and probabilities that may occur as a result of a specific choice of action).

02

Background

2.1_ Poor mental health has economic consequences over a person's lifetime

The costs associated with mental illness are less well-known than the costs associated with physical illness such as cancer, cardiovascular disease and diabetes. While it is recognised that the value of human health is not merely a financial issue, a calculation of the cost of mental illness for the national economy can be persuasive when making a case for investment (Mental Health Foundation, 2015).

The economic argument for investing in youth mental health interventions is based on the cost of the intervention as compared to the lifetime monetary value of the result. In particular, the economic argument for early intervention is based on the principle that, given scarce resources, investment in interventions should occur where they have the best chance of long-term success and best return for every dollar invested (Brainwave Trust Aotearoa, 2013). Given that the opportunity for successful intervention is greatest when the intervention occurs early in an individual's life, it is economically sensible to increase the level of investment in youth mental health interventions (Gluckman and Hayne, 2011).

In evaluating the economic case, it is important to be clear about what is being measured:

- Mental illness is a broad concept and includes both clinical and non-clinical aspects.
- The YMHP focuses on mild to moderate mental illness.
- The ability to improve is a key concern – it is not just the total cost of the illness, but the ability to shift those costs (i.e. to stop youth from developing acute mental illness).

2.2_ Some 20% of New Zealand youth are affected, but the cost is unknown

There are both direct and indirect economic costs of poor mental health. Examples of direct costs include the provision of medication and treatment as well as costs associated with managing and responding to behavioural problems such as substance abuse, crime, self-harm and sexual promiscuity. Indirect costs include those associated with poor adult productivity and function, which are primarily costs arising from increased welfare payments and forgone taxation revenue. In addition, individuals bear private costs in the form of decreased earnings.

Relative to other developed countries, adolescents in New Zealand have a high rate of social morbidity, with at least 20% of young New Zealanders having experienced or exhibiting behaviours and emotions that lead to poor outcomes. These include: risk-seeking behaviour such as substance abuse and bullying; teenage pregnancy and abortion; teenage crime; teenage suicide; and teenage mental disorders (Gluckman and Hayne, 2011). With specific reference to poor mental health, 29% of New Zealanders aged 16–24 years experienced some form of mental disorder within a 12-month period (Oakley Browne et al., 2006).

At present, there is a lack of complete research as to the actual economic burden of poor youth mental health in New Zealand. A 2011 report on the effectiveness of public investment in New Zealand children exposed to maltreatment provides an indication of the possible quantum, where the cost to the New Zealand economy of poor youth outcomes was estimated to be approximately 3% of gross domestic product (GDP) (Brainwave Trust Aotearoa, 2013). If this percentage is applied to the GDP for the year ended March 2015 ($239 billion), the cost would amount to approximately $7 billion per annum.

To understand how New Zealand compares to similar international locations, see the detailed discussion in Appendix J.

2.3_ The YMHP is designed to reach affected youth through a variety of channels

From the discussion above, we can see that the following common themes exist with respect to youth mental health:

- There is a high prevalence of mild to moderate mental illness among New Zealand's youth.
- The economic burden of youth mental illness, where it has been estimated, may be significant.
- There is a lack of consistent, accurate information and data to evidence the exact economic cost of youth mental illness.

As poor mental health and wellbeing among young people can result in significant personal, family and societal costs, there is growing recognition of the importance of prioritising the health and wellbeing of New Zealand's young people (Superu, 2015). The YMHP attempts to prioritise the mental health and wellbeing of New Zealand's youth by offering a package of initiatives designed to reach young people in several key settings: their families and communities, their schools, the health service, and online.

2.4_ Background of the YMHP

The YMHP was established in 2012 by the Department of the Prime Minister and Cabinet and involved funding of $56.6 million. The YMHP consists of 26 initiatives aimed at improving the mental health and wellbeing of young people (12–19 year olds) who have, or are at risk of developing, mild to moderate mental illness. These initiatives are implemented and managed by four partnering government agencies: the Ministry of Health, the Ministry of Education, the Ministry of Social Development and Te Puni Kōkiri.

2.5_ Purpose and scope of this report

2.5.1 _ Purpose

In 2013, Superu was commissioned to deliver a two-phase evaluation of the YMHP. Phase 1 was a formative evaluation, which included a literature review and 'value for money' assessment (the Phase 1 results were published in 2015 as the Formative Evaluation Report and the Research Review Report, both available from www.superu.govt.nz). Phase 2 comprises a case study-based outcome evaluation and a cost-benefit analysis of the YMHP.

This report is the cost-benefit analysis of the YMHP. It is expected to contribute significantly to improving understanding of the cost of youth mental illness in New Zealand.

Specifically, the purpose of this report is:

- to carry out, to the extent possible, a cost-benefit analysis of the YMHP
- to determine the overall economic benefit of the YMHP, which is the collective impact of the YMHP over the medium to long term
- to calculate the cost-effectiveness or economic value of 'YMHP components' (which are clusters of similar initiatives)
- to make recommendations for future investment based on which YMHP component appears to provide the greatest economic benefit
- to provide recommendations for future actions relating to the collection and collation of quantitative initiative data.

This report should be read in conjunction with the important restrictions presented in Appendix L.

2.5.2 _ Scope

The original scope of this cost-benefit analysis was intended to include all 26 YMHP initiatives. However, as a result of data and information limitations Superu agreed that only 10 of the 26 initiatives could be assessed quantitatively. The remaining 16 initiatives have been assessed qualitatively.

Although the 10 'quantitative initiatives' were assessed individually, the cost-benefit analysis is presented with reference to 'YMHP components' (clusters of similar initiatives). This assessment provides identification and valuation of both the costs and benefits and recommendations on anticipated benefits of future investment. Similarly, the 16 'qualitative initiatives' have been assessed individually and common themes of each YMHP component have been identified. This assessment provides qualitative information on costs and benefits.

Expressly excluded from the scope of this evaluation are the following:

- an evaluation of individuals, such as consumers of mental health services
- collecting information or primary data from consumers of youth mental health services

- primary data collection from 'front-line' providers of youth mental health services (this does not include liaising with the partnering agencies)
- an evaluation of the quality of service delivered by youth mental health service providers
- providing opinion on whether the current investment in the YMHP is correctly focused on the areas of greatest weakness or need
- consideration of any secondary outcomes or impacts or 'ripple effect' caused by the YMHP
- evaluating the economic impact of interactions between individual YMHP initiatives.

2.6_ Research principles of the cost-benefit analysis

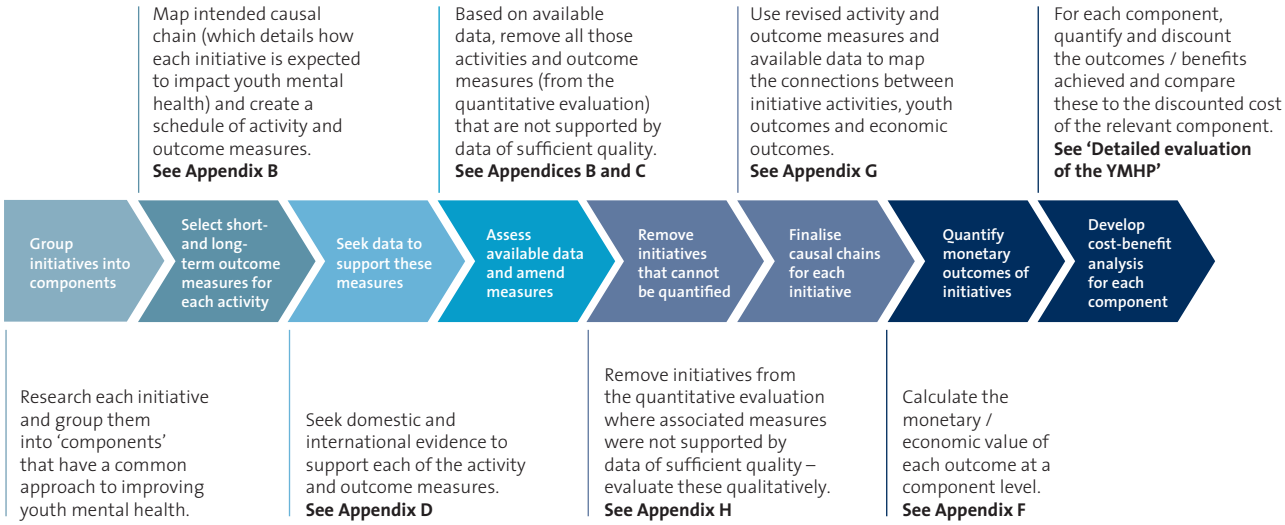
Figure 6 below provides detail about the six research principles used for the YMHP cost-benefit analysis. These principles have been applied consistently to all aspects of this evaluation.

Figure 6 _ Research principles used for the YMHP cost-benefit analysis

2.7_ High-level view of the cost-benefit analysis

Figure 7 below provides a summary of the process followed to complete the YMHP cost-benefit analysis. The descriptions of the steps also refer to more detailed information in the Appendices of this report. The 'framework for quantitative evaluation' section of this report provides a more detailed description of the first six steps below.

Figure 7 _ Flow diagram providing a high-level view of the YMHP cost-benefit analysis



2.8_ Framework for quantitative evaluation

The framework used to guide the YMHP cost-benefit analysis is illustrated in Figure 8 below. The framework shows how causal chains have been used to understand how each of the YMHP components is able to contribute toward changes in youth mental health outcomes and economic outcomes (excluding the 'Strengthening systems and processes' component, which has been evaluated qualitatively).

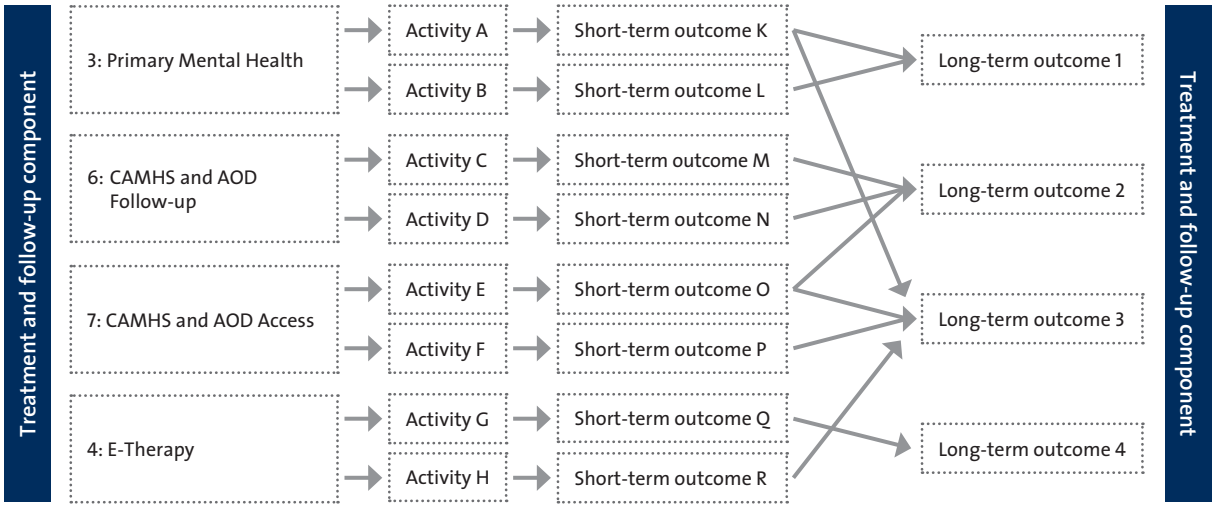
Using the 'Treatment and follow-up' component as an example, Figure 8 below shows how the five 'Treatment and follow-up' initiatives have been grouped into a single component. A causal chain is then prepared for each initiative – where the chain includes:

- Activities that are performed as part of the initiative, which are then converted to relevant activity measures (e.g. an activity measure applicable to initiative #4 E-Therapy is the number of youth registering on the SPARX website). Activity measures provide information on the quantum of youth participation in an initiative.

- Short-term outcomes that occur as a result of the preceding activities, which are then converted to relevant short-term outcomes (e.g. a short-term outcome measure applicable to initiative #4 E-Therapy is the percentage of youth who complete four modules of SPARX and go into remission as a result). Short-term outcome measures provide information on changes in youth mental health and wellbeing as a result of their participation in the initiative.
- Long-term outcomes that occur as a result of the preceding short-term activities, which are then converted to relevant long-term outcomes (e.g. a long-term outcome measure applicable to initiative #4 E-Therapy is the percentage of youth who do not collect the unemployment benefit as a result of avoiding mental illness). The long-term outcome measures provide information on economic, societal and private life outcomes. The YMHP cost-benefit analysis includes a common set of quantifiable outcomes applicable to each YMHP component (these are described in detail in Appendix F) – these are:
  - governmental monetary outcomes
  - private monetary outcomes
  - quality of life outcomes.

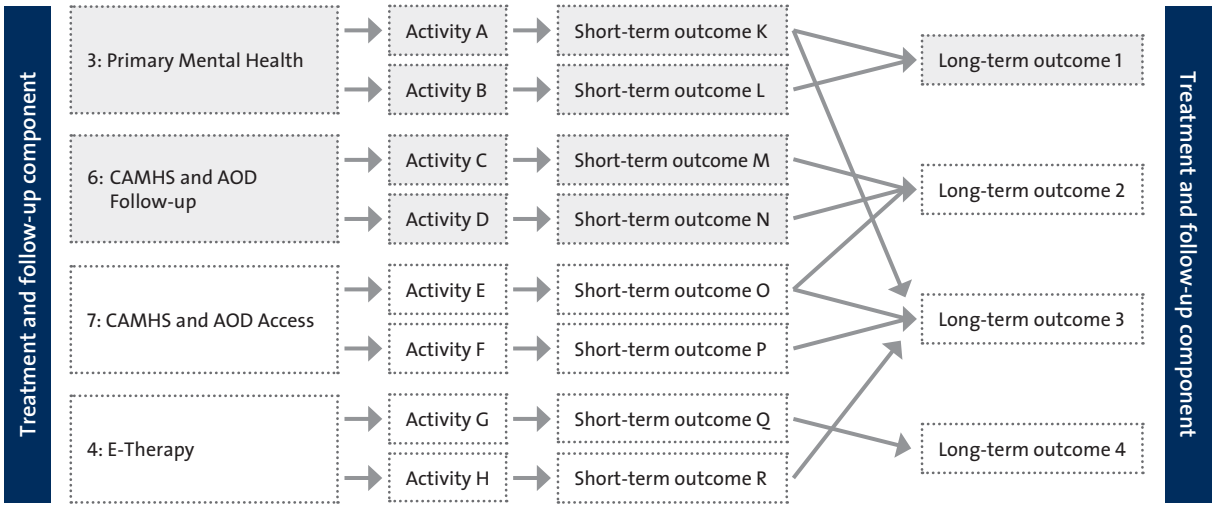
Within each YMHP component, causal chains must first be developed for each individual initiative – this is because each initiative has unique activities and short-term outcome measures. However, upon completion of the individual chains, the chains were linked up at the long-term outcome level.

Figure 8 _ Illustration of the framework used in the YMHP cost-benefit analysis



We have attempted to collect data to support each of the activities, short-term outcomes and long-term outcomes of each initiative. Where an initiative doesn't lend itself to quantitative evaluation (e.g. initiatives in the 'Strengthening systems and processes' component), or we have been unable to source data (or proxy data) of a sufficient quality, the relevant initiative has been removed from the quantitative evaluation and evaluated qualitatively. Figure 9 below provides an illustration of what the 'Treatment and follow-up' component looks like after adjusting for initiatives that are not supported by sufficient data (where the greyed out boxes represent initiatives to be evaluated qualitatively).

Figure 9 _ Illustration of the framework used in the YMHP cost-benefit analysis – adjusting for data limitations



A detailed schedule of outcome measures for the entire YMHP is provided in Appendix B.

2.9_ Framework for qualitative evaluation

Table 3 provides detail on the qualitative evaluation framework. Of the 26 YMHP initiatives, 16 have been evaluated qualitatively, where the qualitative evaluation involved desktop evaluation of documentation, interviews with initiative leads, and written questionnaires.

Summary evaluation results for each YMHP component are included in the 'Detailed evaluation of the YMHP' section of this report and individual initiative evaluations can be found in Appendix H.

TABLE 03

Framework for qualitative evaluation

Assessment criteria	Scale	Assessment questions
A. Coverage / size of the initiative	Large, moderate, small + direct, indirect	• How many youth aged 12–19 years did the initiative reach? (approximately) • Did the initiative have a direct or indirect impact on youth? • Is the initiative YMHP-specific – or was it pre-existing?
B. Type of initiative	Prevention or treatment	• Is the initiative focused on prevention or treatment?
C. Impacts or outcomes of the initiative (i.e. how effective was the initiative?)	Large, moderate, small	• What impacts or outcomes did the initiative have with respect to youth mental health? • How large were the impacts? • How would you describe the youth who benefited from the initiative? • Are the impacts or outcomes measurable? • If they were measurable, was **any** data collected? What is the quality and completeness of this data? • If no data was collected, would it have been useful to do so?
D. Attributes affecting initiative impacts or outcomes	No assessment scale	• What are the attributes that affected the impacts or outcomes of the initiative (e.g. funding available, need to be coupled with another initiative, timing, other socio-economic factors etc.)?
E. Funding allocated to the initiative	Dollar value ($)	• How much funding did the initiative receive through YMHP? If nil, where was the required funding sourced from and how much was required?
F. Implementation	Complete / Ongoing	• Is the initiative complete or still in progress? • Was the initiative implemented effectively?
G. Available information or data	Excellent, moderate, poor	• What is the quality of qualitative and / or quantitative information available to evidence the initiative's outcomes?

2.10_ Understanding youth mental health and wellbeing

The overarching aim of the YMHP is better mental health and wellbeing for New Zealand's young people – where good mental health is defined by the World Health Organisation as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community" (World Health Organisation, 2016). Similarly, mental wellbeing is described as being more than the absence of mental disorder, it also includes feeling good and functioning well (Aked el al., 2008).

As illustrated by the definitions above, achieving good mental health and wellbeing is strongly influenced by the promotion and development of 'protective factors' as well as the removal of 'risk factors'. Protective factors are characteristics associated with a lower likelihood of negative outcomes, and risk factors are variables or vulnerabilities that have been shown to be associated with undesirable outcomes (Institute of Medicine and Natural Research Council, 2009).

The risk and protective factors most strongly associated with adolescent mental disorders are detailed in Table 4 (Superu, 2015).

TABLE 04

Risk and protective factors associated with adolescent mental disorder

	Risk factors (vulnerabilities)	Protective factors
Individual	• Stressors, especially those associated with relationships • Aggressive social behaviour • Low educational achievement • Low commitment to school and disengagement from school • Times of change / transition • Use of drugs and / or alcohol • Previous history of mental illness	• High-quality interpersonal relationships, especially with parents but also with other adults, teachers and peers
Family	• Childhood maltreatment / abuse • Family history of mental illness • Family conflict or dysfunction • Controlling, harsh or neglectful parenting • Family poverty and / or social disadvantage • Witnessing or experiencing violence • Times of change / transition • Witnessing or experiencing misuse of drugs and / or alcohol	• Healthy attachment between parent and child in infancy and early childhood • Parenting, characterised by warmth, firm and consistent limit-setting, monitoring, and open communication patterns
School / neighbourhood	• Negative peer influence or bullying • Adverse neighbourhood conditions (e.g. fear, distrust) • Perceptions of relative disadvantage • Discrimination and racism • Lack of access to services	• Connectedness to school • Positive school ethos and environment

The following discussion provides information on the focus of each YMHP component with respect to risk and protective factors.

2.11_ Summary of the YMHP's structure, outcomes and funding

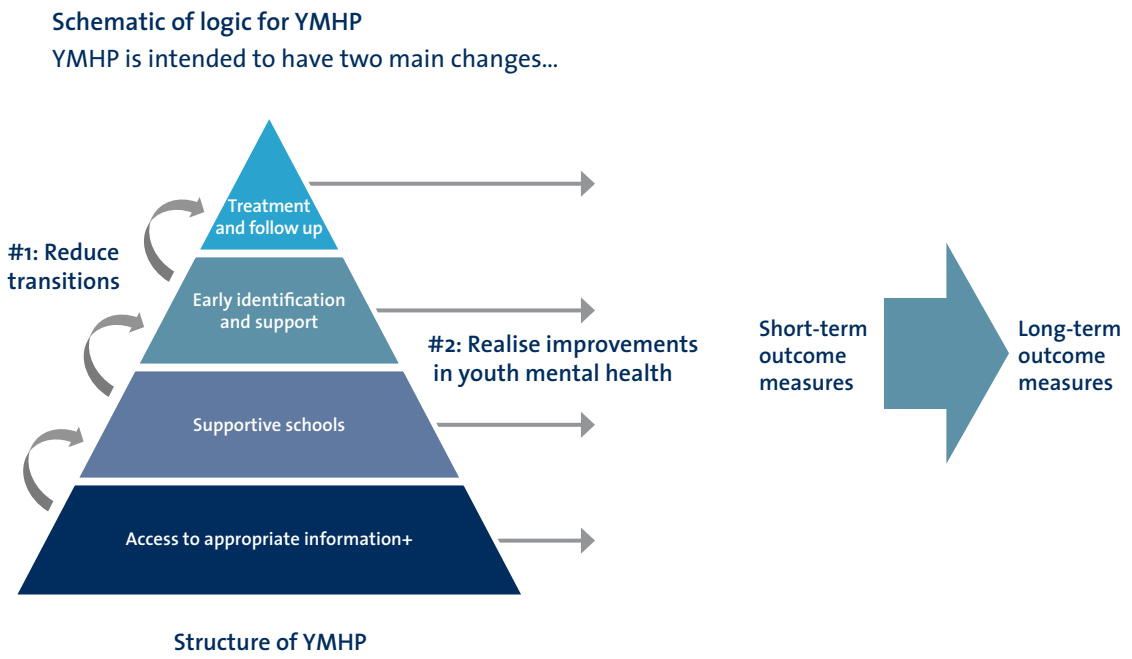
2.11.1 _ Structure and outcomes

For the purposes of cost-benefit analysis, the YMHP initiatives have been sorted into the following five core 'YMHP components' (as illustrated in Figure 10 below):

- Strengthening systems and processes – These initiatives are research-based and aim to improve knowledge of what works to strengthen systems and processes. (Note: This component is not pictured in Figure 10 as it is considered to provide indirect support to achieving improved youth mental health.)
- Access to appropriate information – These initiatives focus on improving access to information and providing guidance and support in innovative and 'youth friendly' ways; these initiatives tend to promote protective factors.
- Supportive schools – These initiatives are delivered by school teachers and youth workers, and focus on providing students with direct support and guidance; these initiatives strongly promote protective factors.
- Early identification and support – These initiatives are variable in nature, but aim to provide targeted groups of youth with direct support, guidance and assessment; these initiatives promote protective factors and address risk factors.
- Treatment and follow-up – These initiatives focus on improving access to timely treatment and follow-up; these initiatives address risk factors.

See Appendices A and B for more detailed information on the structure of YMHP, including the breakdown of initiatives into the 'YMHP components'.

Figure 10 _ Structure of the YMHP for the purposes of cost-benefit analysis



This structure recognises that there is a need for a level of universal support (where risk is low but a level of promotional support and information can act as a prevention strategy), progressing increasingly to more targeted support, intervention, treatment and follow-up for young people at risk (Superu, 2015). The pyramid shape represents the relative proportion of youth in each category and the increasing level of intervention intensity.

The YMHP's ultimate outcome of better mental health and wellbeing for young people can be achieved through two main changes:

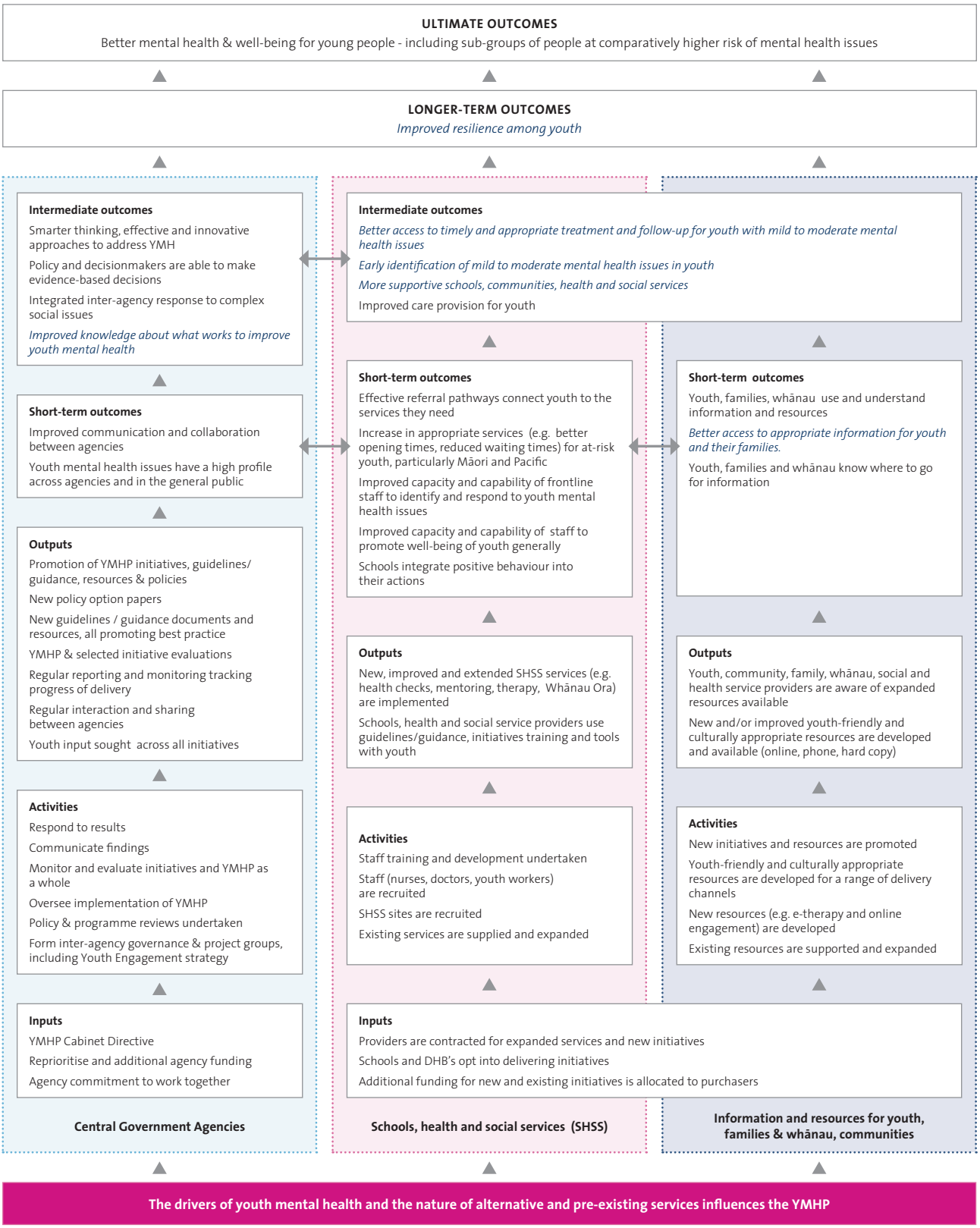
- first, reducing the number of youth transitioning 'up the pyramid', which would indicate continued deterioration of mental health and a corresponding need for more intensive types of intervention
- second, realising improvements in mental health for all youth, regardless of their current location on the pyramid.

Both changes seek to achieve positive short-term and long-term outcomes. Underpinning the YMHP's ultimate outcome are the following six specific outcomes:

- Increased resilience among youth
- Better access to timely and appropriate treatment and follow-up
- Early identification of mild to moderate mental health issues in youth
- More supportive schools, communities and health services
- Better access to appropriate information for youth and their families and whānau
- Improved knowledge of what works to improve youth mental health.

Figure 11 shows the YMHP 'logic model', which describes how inputs and activities drive immediate, short-, intermediate – and long-term outcomes.

Figure 11 _ YMHP logic model[2]



2 The YMHP logic model has been provided directly by Superu.

Table 5 below details the individual YMHP initiatives in each component and provides a high-level description of each initiative.

TABLE 05

YMHP components and high-level description of each initiative

#	Initiative name	Agency	Description
Treatment and follow-up			
3	Primary Mental Health*	MoH	Primary Mental Health refers to the assessment, treatment and ongoing management of mental illness and / or addiction in the primary care setting. It encompasses promotion, prevention, early intervention and ongoing treatment. This initiative aims to expand the current primary mental health service to all 12–19 year olds and their families.
4	E-Therapy	MoH	This initiative entails the development, implementation and delivery of 'SPARX' (Smart, Positive, Active, Realistic, X-factor thoughts), which is a fantasy-based computerised interactive treatment programme specifically developed for adolescents (aged 12–19 years) with mild to moderate depression / anxiety.
6	CAMHS and AOD Services Follow-up	MoH	The Child and Adolescent Mental Health Service (CAMHS) is a community mental health and addiction service provided by the DHBs to provide specialist mental health and addiction services for children and adolescents. Initiatives #6 and #7 aim to: (a) develop / implement a nationally consistent approach to follow-up care; (b) increase access by reducing wait times for assessment; and (c) develop / deliver a consistent and effective model of care for youth with drug / alcohol problems.
7	CAMHS and AOD Services Access	MoH	
Early identification and support			
1	School Based Health Services (SBHS)	MoH	The primary objective of SBHS is to provide young people with easy access to healthcare – including the diagnosis and treatment of mental illness. The initiative aims to maintain and expand SBHS offered to decile 3 secondary schools.
2	HEEADSSS Wellness Check	MoH	HEEADSSS is a methodology used to assess young people's psychosocial wellbeing, and for engaging with young people. As the objective of this initiative was to expand the use of HEEADSSS wellness checks in schools and primary-care settings, the initiative was focused on the development, promotion and delivery of HEEADSSS assessment training.
3	Primary Mental Health*	MoH	See above
18	Social Support for Youth One Stop Shops (YOSS)	MSD	A YOSS is a community-based facility that offers access to a range of health services using a holistic model of care. This model is specifically designed to provide youth-targeted services that are responsive to the needs of young people (Communio, 2009). This initiative provided $50,000 to 12 YOSS (totalling $600,000) in order to improve young people's access to mental health support.
5	Primary Care Responsiveness to Youth	MoH	This initiative aims to integrate elements of the primary care health system in order to reduce the barriers that young people experience when accessing primary care. This has been achieved via the development of youth-specific Service Level Alliance Teams (SLATs), the purpose of which is to enable DHBs, PHOs and youth health / education providers to plan, fund and implement integrated services.
21	Youth Mental Health Training for Social Services	MSD	This initiative aims to ensure new providers involved with youth receive relevant training in youth mental health. Face-to-face training was delivered via the 'MH101' programme.

#	Initiative name	Agency	Description
22	Whānau Ora for Youth Mental Health	TPK	This initiative aims to trial a 'whānau-centred' approach towards youth with mild to moderate mental illness, or those at risk of developing such illness.
Supportive schools			
8	Positive Behaviour for Learning (PB4L): Positive Behaviour School-Wide	MoE	PB4L School-Wide offers primary, intermediate and secondary schools a way of building a consistent and positive school-wide climate to support learning based around shared values and behaviour expectations.
9	PB4L Check and Connect	MoE	Check and Connect is a long-term educational mentoring programme for students at risk of disengaging from school. It aims to improve: engagement and retention rates; attitude towards learning; problem-solving skills; and academic performance. This programme is being run as a pilot through the YMHP.
10	PB4L My FRIENDS Youth	MoE	The My FRIENDS Youth programme aims to help students become confident life-long learners and it supports the key competencies of the New Zealand Curriculum. It is designed for students aged between 12–15 years and delivered by teachers in a 10-session format. This programme is being run as a pilot through the YMHP.
14	Youth Workers in Low Decile Secondary Schools (YWiSS)	MSD	By introducing 19 youth workers into identified schools and using the PB4L Check and Connect programme, the initiative provides formal and informal educational mentoring support to young people in low-decile secondary schools.
26	Addressing the Emerging Youth Mental Health Issues in Canterbury*	MoH	This initiative was introduced as a direct result of the 2010 and 2011 Canterbury earthquakes. The core aim of the initiative is to set up a local process of coordination and leadership that brings together the key government agencies of Health, Education, Social Development and Canterbury DHB to ensure oversight and implementation of the 'Canterbury Action Plan'.
Access to appropriate information			
15	Social Media Innovation Fund (SMIF)	MSD	The purpose of this initiative is to ensure young people can get support for their emotional wellbeing and mental health through the innovative use of social media technology. This has been achieved by providing funding to youth mental health-related technology projects and by holding idea generation workshops (called 'Lifehack').
16	Improving the Youth Friendliness of Mental Health Resources	MSD	This initiative involved the design and creation of a guidance document (*Youth Mental Health: Resource Guidelines*), which was uploaded onto the Ministry of Youth Development website. The guidance document is intended to assist government agencies to develop youth-friendly mental health resources via print, online or social media.
17	Information for Parents, Families and Friends (Common Ground)	MSD	This initiative involved the design and creation of 'Common Ground', which includes a website, phone line and information pack. Common Ground aims to ensure parents families, whānau and friends of young people have easy access to information that will help them support young people to manage difficult times, and enjoy positive mental health and wellbeing.
23	Referral Pathway Supports for Young People	MSD	This initiative responds to the first three findings of the review of youth referral pathways for young people with mild to moderate mental health issues (which is the review performed through initiative #19).

#	Initiative name	Agency	Description
Strengthening systems and processes			
11	Education Review Office: Review of Wellbeing in Schools	MoE	This initiative included two reviews: (a) an ERO national review of schools' practice in relation to the Evaluation Indicators for Student Wellbeing and Engagement; and (b) a national ERO good practice evaluation.
12	Improving the School Guidance System	MoE	The Improving the School Guidance System initiative involved an ERO review of guidance and counselling in schools and the design and implementation of an associated work programme.
13	Review of AOD Education Programme	MoE	This initiative involved a cross-agency review of government-funded AOD education programme activity targeting the 12–19 year old age group to determine the effectiveness of different interventions / activities.
19	Youth Referrals Pathway Review	MSD	This initiative involved a review to assess the integration, consistency and effectiveness of referral pathways for young people who have or are at risk of developing moderate mental health issues.
20	Youth Engagement	MSD	The objective of this initiative was to improve the relevance and applicability of future policies and programmes associated with youth and mental health. The initiative sought to achieve this by actively engaging with young people during the design phase of YMHP initiatives.
24	Developing Integrated Funding Models and Connected Service Delivery	MoH	This initiative has been wrapped into initiative #5. This decision was made on the basis that the core objective of initiative #5 (achieving integration across the elements of the primary care health system) will deliver the intention of initiative #24 (which is to identify further opportunities to develop more integrated funding models and connected service delivery, and explore opportunities for youth wellness hubs).
25	Co-locating Additional Social Services in Schools	MoE	The objective of this initiative was to investigate and report on the feasibility and value of co-locating social services in schools.

** Initiative #3 has both "Treatment & follow up' and 'Early identification & support' components.*

2.11.2 _ Funding

In total, $56.6 million was allocated to the YMHP. Table 6 below provides the details of initiatives that received funding.

Of the 26 YMHP initiatives, nine received 'nil' allocated funding through the YMHP (these have been omitted from Table 6 below). While we understand that these initiatives would have incurred expenditure in some form, we were unable to obtain reliable estimations of this cost as this information has not been tracked or monitored. This lack of information represents a data gap.

TABLE 06

List of initiatives with positive funding allocations

Funded initiatives		
#	Initiative name	Funding ($m) 2012/13 to 2015/16
1	School Based Health Services	10.87
2	HEEADSSS Wellness Check	0.20
3	Primary Mental Health	11.30
4	E-Therapy	2.68
5	Primary Care Responsiveness to Youth	0.50
6	CAMHS and AOD Services Follow-up	0.40
7	CAMHS and AOD Services Access	7.17
8	Positive Behaviour for Learning (PB4L): Positive Behaviour School-Wide	6.96
9	PB4L Check and Connect	1.67
10	PB4L My FRIENDS Youth	1.23
11	Education Review Office: Review of wellbeing in schools	0.67
12	Improving the School Guidance System	0.25
14	Youth Workers in Low Decile Secondary Schools	8.65
15	Social Media Innovation Fund	2.00
17	Information for parents, families and friends	1.00
18	Social Support for Youth One Stop Shops	0.60
22	Whānau Ora for Youth Mental Health	0.48
		56.63

03

Detailed evaluation of the YMHP

3.1_ Outcome-based evaluation approach

Traditionally, measuring the performance of social-sector interventions has been performed with reference to inputs and activities. As a consequence, the associated intervention reporting has also focused on these types of measures. In recent years, there has been a shift towards outcome-based performance measurement and reporting.

By focusing performance measurement and reporting on outcomes rather than activities and inputs, the government is better able to determine the effectiveness of different social interventions and thus make informed decisions about future interventions. An example of this paradigm shift is the Social Bonds pilot, where planning, objective setting, monitoring and reporting is almost entirely outcomes-focused.

As part of this change, the Treasury has introduced a 'Cost-Benefit Analysis Calculator for Social Investment' model (CBAx) to evaluate the economic benefit of different social interventions. It is now a requirement that all social service budget bids use the CBAx model to demonstrate the value and effectiveness of proposed interventions.

The cost-benefit analysis of the YMHP is outcome-based. Outcome-based evaluation has increasing importance as the public sector shifts towards this approach to understanding the true value of New Zealand's social services. This form of evaluation in some places provides reliable quantitative data and information on how projects impact New Zealand's youth individually and the impacts to the wider economy. In other places, the evaluation highlights data gaps and deficiencies and thus provides an opportunity to improve data collection practices, which can enhance the ability to perform reliable cost-benefit analysis in the future.

3.2_ Chosen evaluation approach

Once an intervention has been shown to be clinically effective, an economic evaluation assesses its fiscal value by measuring its costs and benefits. Both costs and benefits can be appraised from a number of perspectives, including those of the child / adolescent, the family, the service provider, society, and the government.

The chosen approach for the economic evaluation of the YMHP is cost-benefit analysis (CBA), which measures whether the financial benefits of the intervention exceed the costs (see Appendix A for detailed methodology).

In addition to cost-benefit analysis, the evaluation also includes cost-utility analysis, which measures the values and impact of interventions in improvements in preference-weighted, health-related quality of life. This has been captured using DALYs – Disability Adjusted Life Years – which measure the burden of disease or disability on quality and quantity of life (Children's Health Policy Centre, 2009). DALYs avoided by the YMHP should be thought of as additional benefits to those quantified in the CBA and are quality of life benefits gained by the individuals who have improved mental health outcomes. The cost-utility approach focuses on the number of DALYs that can be avoided for a certain amount of funding. When thinking of the policy or decision-making implications of the YMHP, the efficiency of DALY avoidance is a useful metric for comparison.

3.3_ Cost-benefit analysis of the YMHP

Rather than evaluating individual YMHP initiatives, the evaluation below has been performed with reference to the five YMHP components.

Table 7 below details the individual YMHP initiatives within each component, as well as information on the type of assessment performed.

TABLE 07

YMHP components and the type of evaluation performed

#	Initiative name	Quantitative	Qualitative
Treatment and follow-up			
3	Primary Mental Health*	✓ **	✓
4	E-Therapy	✓	
6	CAMHS and AOD Services Follow-up		✓
7	CAMHS and AOD Services Access	✓	
Early identification and support			
1	School Based Health Services (SBHS)	✓	
2	HEEADSSS Wellness Check	✓	
3	Primary Mental Health*	✓ **	✓
5	Primary Care Responsiveness to Youth		✓
18	Social Support for Youth One Stop Shops (YOSS)	✓	
21	Youth Mental Health Training for Social Services		✓
22	Whānau Ora for Youth Mental Health		✓
Supportive schools			
8	Positive Behaviour for Learning (PB4L): Positive Behaviour School-Wide	✓	
9	PB4L Check and Connect	✓	
10	PB4L My FRIENDS Youth	✓	
14	Youth Workers in Low Decile Secondary Schools (YWiSS)	✓	
26	Addressing the Emerging Youth Mental Health Issues in Canterbury		✓
Access to appropriate information			
15	Social Media Innovation Fund (SMIF)	✓	
16	Improving the Youth Friendliness of Mental Health Resources		✓
17	Information for Parents, Families and Friends (Common Ground)		✓
23	Referral Pathway Supports for Young People		✓
Strengthening systems and processes			
11	Education Review Office: Review of Wellbeing in Schools		✓
12	Improving the School Guidance System		✓
13	Review of AOD Education Programme		✓
19	Youth Referrals Pathway Review		✓
20	Youth Engagement		✓
24	Developing Integrated Funding Models and Connected Service Delivery		✓
25	Co-locating Additional Social Services in Schools		✓

** Initiative #3 has both 'Treatment and follow-up' and 'Early identification and support' components.*

*** Initiative #3 has been assessed both qualitatively and quantitatively (on a stand-alone basis).*

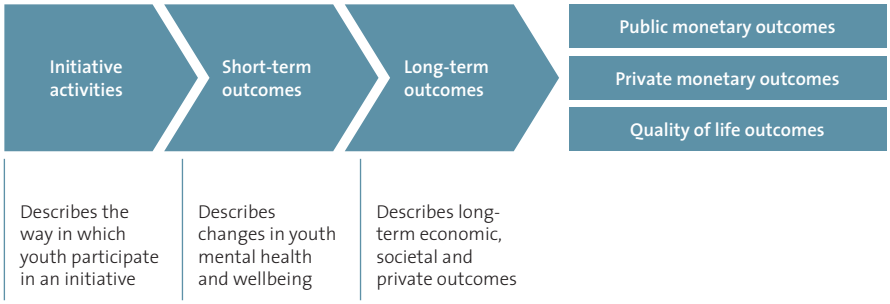
From the commencement of the cost-benefit analysis, the seven initiatives in the 'Strengthening systems and processes' component were selected for qualitative assessment. This selection was made on the basis of the initiatives' underlying nature, being initiatives for which causality between the activities of the initiative and youth mental health outcomes cannot be easily identified.

After exclusion of the seven initiatives in the 'Strengthening systems and processes' component, the remaining 19 initiatives were eligible for quantitative assessment. During the course of the cost-benefit analysis, an additional nine initiatives were excluded from the scope of quantitative assessment as a result of limitations in data quality and availability. These initiatives have been assessed qualitatively.

3.4_ Quantitative considerations

As previously discussed in section 2.9, the cost-benefit analysis has been guided by a quantitative evaluation framework. An abbreviated depiction of the framework is shown in Figure 12 below.

Figure 12 _ Summary of the quantitative evaluation framework



The discussion below provides detail on the long-term outcomes applicable to the cost-benefit analysis.

3.4.1 _ Economic value of outcomes

The YMHP cost-benefit analysis includes the following three types of quantifiable outcomes (these are discussed in detail below):

1. governmental monetary outcomes
2. private monetary outcomes
3. quality of life outcomes.

While there are many quantifiable long-term outcomes that can be achieved when youth mental health is improved (as detailed in Appendix E), the outcomes detailed below represent those that are supported by adequate data or information, are closely linked to the outcomes of the initiative, and have clear monetary benefits, both governmental and societal (where societal is governmental plus private). These outcomes have been discussed and agreed with relevant stakeholders.[3]

3 Stakeholders include Superu and the YMHP Steering Group.

See Appendix F for complete causal chains for the three types of quantified outcomes detailed above.

The figures detailed in the discussion below and in Table 8 below represent the **average** cost / saving per positively impacted youth with mild to moderate mental illness. We have not included a separate cost / saving for those youth who are expected to develop acute mental illness as we were unable to source reliable information or data to support this 'conversion rate'. Further, by consistently applying an annual average cost / saving for **every** positively impacted youth with mild to moderate mental illness, we assume inclusion of any additional costs associated with more intensive treatment. The values used have been determined using the best available research and statistics about the economic outcomes of youth mental health. See Appendix F for full discussions of the calculations used. In addition, calculations of the impact of improved mental health on income use the difference in private income and PAYE based on the average age for the 20–24 year old cohort. Therefore the analysis assumes that youth with poor mental health that is improved through the YMHP have an equal opportunity for employment (and equal wages) as the youth population as a whole. This is a noted caveat of our approach.

TABLE 08

Economic value of outcomes per person positively impacted per year

Nature of benefit	Value per person positively impacted per year
Welfare benefits avoided	$376
Healthcare savings	$248
Increased PAYE receipts due to improved mental health	$601
Increased PAYE receipts due to increased academic achievement and secondary school completion	$709
Reduced alcohol and drug harm	$1,713
Increased personal income from improved mental health	$3,022
Increased private income due to increased academic achievement and secondary school completion	$3,035
DALYs avoided	0.0732 DALYs

Governmental monetary outcomes

- **Welfare benefits avoided:** Fergusson et al. (2002) state that youth with mental illness are 1.34 times more likely to receive welfare benefits than those without mental illness. Combining this research with statistics on the average number of youth collecting welfare and the value of welfare payments to youth, we calculate the ability to avoid welfare benefit payments as being $376 per person positively impacted (via improved mental health) per year. We recognise that there is an argument for excluding welfare payments from a calculation of net societal benefit, on the basis that those payments represent 'transfer payments' within society. However, successful YMHP initiatives involve improving individuals or building human capital. Although individuals may 'lose' welfare payments, they gain the ability to pursue their lives without needing payments, which likely results in a net gain in social welfare. We have therefore included this benefit in our analysis as it acts as a proxy for wellbeing and provides a strong indication of improved life outcomes for affected individuals.

- **Healthcare savings:** It is difficult to accurately quantify the 'typical' amount of spending on youth mental healthcare in New Zealand. In response, we have utilised a 'top-down' approach to calculate an average amount of spending on healthcare. Starting with total government expenditure on mild to moderate mental health, and then dividing it by an estimate of the incidence of mild to moderate mental illness in New Zealand, yields an annual saving of $248 per youth via the avoidance of mild to moderate mental health issues.
- **Increased PAYE receipts due to improved mental health:** Gibb et al. (2010) found that those with mild mental illness are less likely to be employed than those without mental illness, and that those with mild mental illness who are employed are more likely to be employed on a part-time basis. Using New Zealand employment data, we calculate $601 in additional PAYE paid per young person per year when mental health is improved.
- **Increased PAYE receipts due to increased academic achievement and secondary school completion:** New Zealand income statistics reveal that additional PAYE of $709 is paid, per person per year, by those who hold a lower secondary school qualification when compared to those with no such qualification.[4]
- **Benefit attributable to reduced alcohol / drug harm:** Domestic research on costs attributed to alcohol and drug harm is divided. Crampton et al. (2012) state that including private costs without including private benefits (as in Slack et al. (2009)) will result in overstating the negative impact of alcohol and drug harm. The most conservative estimate, which only captures the governmental costs associated with alcohol and drug harm, has been used in this cost-benefit analysis. This results in governmental savings of $1,713 per person positively impacted per year when youth alcohol and drug harm is reduced.

Private monetary outcomes

- **Increased personal income from improved mental health:** Gibb et al. (2010) find that those with mild mental illness are less likely to be employed than those without mental illness, and that those with mild mental illness who are employed are more likely to be employed on a part-time basis. Using New Zealand employment data, we found that $3,022 in additional private income is earned, per person per year, when mental health is improved. It is important to note that the private income is used to measure the wider societal impact of increased employment, but it is not the only outcome. When a person is working, they create economic output and value to society that would not have otherwise been created.
- **Increased private income due to increased academic achievement and secondary school completion:** New Zealand income statistics reveal that additional private income of $3,035 is earned, per person per year, by those who hold a lower secondary school qualification when compared to those with no such qualification.

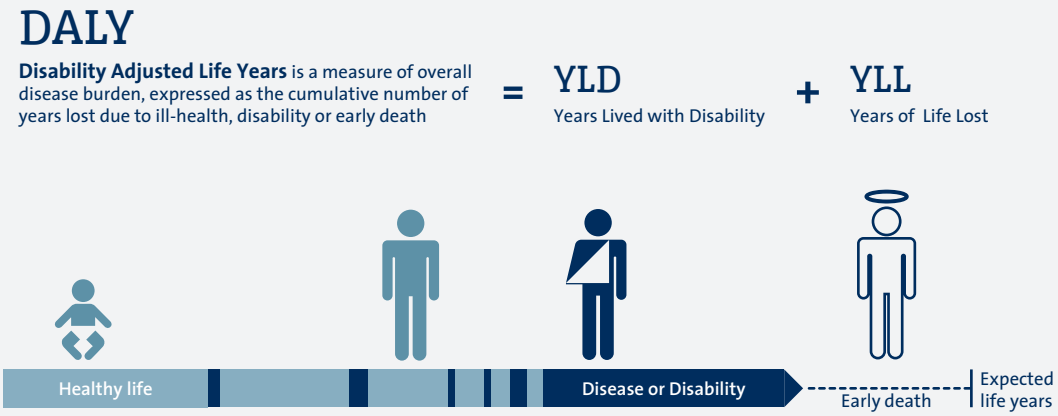
4 A lower secondary school qualification is assumed to be a qualification achieved in the first three or four years of secondary school – for example NCEA Levels 1 and 2 – before a final qualification achieved to complete secondary school.

Quality of life outcomes

- **DALYs avoided:** A DALY is a Disability Adjusted Life Year, which measures the burden of disease or disability on quality and quantity of life. The statistical annexe to the New Zealand Burden of Disease Report reveals that 0.0732 DALYs are lost per youth with anxiety and depressive disorders.[5] This loss can be avoided for those who are positively impacted by the YMHP. There is a possible element of double-counting, in that the DALYs avoided are improving individuals' ability to seek and maintain employment. The monetary gain from the employment is also a measure of these individuals' wellbeing. However, in our analysis we are counting both the DALYs and the increased earnings. Figure 13 provides an explanation of DALYs.

Figure 13 _ Explanation of DALYs

The Disability Adjusted Life Year (DALY) metric provide a common measure by which the health impact of different diseases, injuries and risk factors can be compared equally. *One DALY represents the loss of one year of healthy life*. For example the DALY can be used to compare health loss resulting from a wide range of diseases and injuries, from fatal car crashes in adolescence to falls in the elderly (World Health Organisation, 2015).



Source: Wren (2015).

3.4.2 _ Key drivers of quantitative results

Effectiveness rates

The effectiveness rate is a measure of improvement in mental health (or other outcome where applicable) that occurs as a direct result of the initiative or intervention. Effectiveness rates used in the quantitative analysis are derived from economic research wherever possible. In instances where New Zealand-specific peer-reviewed research was unavailable, we then referred to international literature and then to domestic non-peer-reviewed research and analysis. Citations are provided for all effectiveness rates used.

5 We have chosen the DALYs for the 20–24 year old age group as this is the age group in which we expect to see the largest portion of the long-term outcomes of the 12–19 year olds included in the programme. This measure has a 95% confidence interval of 0.0557–0.0907 (based on total DALYs of 4,564 and a standard error of 557).

Cohort sizes

Youth cohorts have different characteristics and outcomes – key cohorts discussed in this report are detailed in Table 9 below.

TABLE 09

Cohort used in the YMHP cost-benefit analysis

Measure	Description
New Zealand population (rounded)	4,600,000 in 2015 (Stats NZ, 2015a)
New Zealand youth population (aged 12–19, rounded)	490,000 in 2015 (Stats NZ, 2015)
Estimated New Zealand youth population with mild to moderate mental health issues (aged 12–19, rounded)	105,000 (Stats NZ, 2015a; Oakley Browne et al., 2006)
Cohort receiving services	Unique for each initiative / YMHP component
Cohort positively impacted as a result of the service received	Unique to each initiative

The most important cohort for the YMHP cost-benefit analysis is the cohort positively impacted as a result of service received. This is calculated by applying the effectiveness rate to the total number of individuals receiving the service.

Costs

We have obtained information on the cost of each initiative from the relevant government agencies – where total cost includes all direct costs that were incurred between the calendar years 2012 to 2016 (which was the timeframe of the original tranche of funding). These costs include, but are not limited to: direct funding from the Crown, direct co-funding from the partnership agencies, the cost of any full-time equivalents, additional direct operational costs and other direct costs. Indirect costs such as overheads will be excluded, as this information is not recorded on an 'initiative specific' basis.

3.4.3 _ Causal chains

We developed 'causal chains' to understand and articulate the link between participation in a YMHP initiative and the short- and long-term economic outcomes that occur as a result of participation (see Appendices F and I for detailed causal chains). The causal chains are then 'translated' into cost-benefit analysis by using quantitative data sourced from various reports and academic research.

The causal chains presented in this report provide detail on the research used. Each source of research is rated according to the data quality scale found in Appendix C. The figures detailed in the causal chains are raw inputs to the cost-benefit analysis; the final results cannot be accurately calculated by simply multiplying the inputs, as there are additional influencing factors to take in consideration, such as the time value of money and the timing of cohort effects.

3.4.4 _ Economic assumptions used

Discount rate

We have applied two different discount rates to the cost-benefit analysis of the YMHP – 3.5% and 7%.

As at May 2016, 7% is the 'default' rate, as it is the New Zealand Treasury's social sector real discount rate. This rate is prescribed for social and non-social investments alike; the Treasury considers the discount rate be the minimum percentage return to justify the use of government funds (The Treasury, 2015).

An alternative discount rate of 3.5% has also been applied to the YMHP cost-benefit analysis. There are two key reasons for this:

- Higher discount rates are often considered inappropriate for social investments as they drive heavy near-term-weighting, which essentially results in devaluation of the long-term benefits of the investment. This concern is of particular importance in the case of social programmes focused on early intervention, such as the YMHP, where up-front expenditure is intended to have long-term benefits (i.e. of approximately 10+ years).
- While the 7% discount rate is appropriate for commercial projects, there is an argument that the rate is not appropriate for social investment as it does not take into consideration the unquantifiable benefits realised by improving life outcomes (which is particularly pertinent for the YMHP).

The cost-benefit analysis commences in the year 2012, and all figures are discounted back to 2012 values.

Inflation adjustment

The cost-benefit analysis uses nominal data for the years 2012 to 2016. The analysis does not explicitly adjust for the impact of inflation during this period. We use nominal values for this period, but as it was a period of low inflation, the amounts are largely reflective of 2012 dollars. An accurate inflation adjustment would need to account for the actual timing of both costs and benefits during these years, and that was considered an unnecessary complication for the analysis.

Deadweight loss from taxation

When performing economic analysis, the Treasury (2015) recommends inclusion of the 'deadweight loss from taxation' (which is a loss of economic efficiency resulting from the distortions of taxation). Specifically, the Treasury (2015) recommends including an additional 20% of project costs.

Our analysis does not include the impact of deadweight loss from taxation. Rather, it includes both the costs of the YMHP and the benefits that result from smaller governmental outlays.

Consistent treatment of both the costs and benefits of the deadweight loss from taxation would suggest that any benefit from lower government payments (e.g. reduced welfare payments) should be grossed up by 20% to account for the increased economic efficiency gained via the avoidance of taxation. However, in an attempt to avoid over-complication, we have chosen not to include either aspect (cost or benefit) of the deadweight loss calculation.

Timeframe

For the purposes of this evaluation, 'timeframe' refers to the length of time each youth experiences benefit from their participation in the YMHP (commencing from the point when the youth experiences 'success' or a positive change in their mental health).

The 'base case' timeframe used for the analysis is 10 years. This timeframe is based on the assumption that the outcomes or benefits achieved by the YMHP are long-term in nature and as such, would be expected to accrue for approximately 10 years. As part of the sensitivity analysis, we have also evaluated the impact of using a 20-year timeframe. We have not used 20 years as the 'base case' for the analysis as it would not represent a conservative assumption. For modelling to attribute the economic benefit of a short-term intervention for 20 years after the intervention is completed would be an overstatement of the benefit of the intervention. None of the academic research that was cited illustrates benefits being sustained for this period of time. In addition, use of discounting also has the effect of diminishing the value of future monetary impacts, so that the additional value gained beyond 10 years has a marginal impact. We have not applied a discount factor to DALYs; we were unable to find consistent advice on discounting DALYs and chose to treat them in nominal terms.

Use of a shorter timeframe, such as five years, is considered inappropriate as the YMHP is an early intervention programme that is focused on changing the long-term life course of a youth prior to reaching adulthood.

3.4.5 _ Sensitivity analysis

The quantification of social outcomes is inherently challenging. In the case of the YMHP the challenge is even greater, as the overall availability, quality and comparability of supporting data is low, and this has required extensive use of assumptions and proxies. In any situation where assumptions and proxies are used, there is scope for interpretation and subjectivity. In response, we have performed sensitivity analysis that includes the following variables:

- 'high' and 'low' scenarios with respect to efficacy of individual initiatives– where 'high' utilises the upper limit of reasonable intervention effectiveness rates and 'low' utilises the lower limits of reasonable intervention effectiveness rates (Note: effectiveness rates vary by initiative)
- discount rates of 7% and 3.5% (Note: discount rates are discussed in more detail above)
- timeframes of 10 and 20 years (Note: timeframes are discussed in more detail above).

Our assumed 'base case' includes the following variables:

- low efficacy
- 7% discount rate
- 10-year timeframe.

We have not conducted sensitivity analysis around the values used for the long-term outcomes, such as earnings per youth or DALYs. The impact of variation in these outcomes is relatively straightforward; for example, the confidence interval for DALYs suggests that impacts could be 23.9% higher or lower than the central estimate provided.

3.4.6 _ Quantitative evaluation measures

Table 10 below provides a description of the quantitative evaluation measures used in this report. Only the costs associated with the quantified initiatives and not the cost of qualitative initiatives are included in the summary statistics shown in the following section of the report.

TABLE 10

Explanation of quantitative evaluation measures

Measure	Description
Present value of component cost	This measure is the discounted sum of all direct nominal costs incurred through providing the services.
Total youth participants	This is an estimate of the total number of youth who were involved in the initiative(s).
Total youth positively impacted	This is an estimate of the total number of youth involved in the initiative(s) that were positively impacted as a result of their participation.
Societal benefit to cost ratio	This is the ratio of the sum of estimated discounted governmental and private benefits to the sum of discounted costs. A favourable result is when the ratio exceeds 1.0, indicating that societal benefits exceed costs.
Governmental benefit to cost ratio	This is the ratio of the sum of estimated discounted governmental benefits to the sum of discounted costs. A favourable result is when the ratio exceeds 1.0, indicating that governmental benefits exceed costs.
Societal net present value	This measure is the sum of the estimated discounted governmental and private benefits less the sum of the discounted costs. A favourable result is when the dollar value exceeds zero, indicating that societal benefits exceed costs.
Governmental net present value	This measure is the sum of the estimated discounted governmental benefits less the sum of the discounted costs. A favourable result is when the dollar value exceeds zero, indicating that governmental benefits exceed costs.
DALYs	This is the sum of all DALYs avoided as a result of youth being positively impacted by the initiative(s).
DALYs per $1m in costs	This is the sum of all DALYs avoided as a result of youth being positively impacted by the initiative(s), divided by the nominal costs incurred through providing the services (measured in $ millions).
Weighted average effectiveness rates	This is the effectiveness of the component as a whole. It is equal to the total number of youth positively impacted in the component, divided by the total number of youth reached by the component.

3.5_ Structure of the evaluation

This section of the report provides an abbreviated version of the quantitative and qualitative evaluations. The results for YMHP as a whole are presented first, followed by the results for each of the five YMHP components.

The abbreviated results include the following:

- tabulated quantitative results, including a discussion on the cost, cohort, estimated benefit to cost ratio, estimated net present value, and DALY impacts
- individual initiative causal chains applicable to each YMHP component, with a brief discussion to illustrate the underlying logic. Causal chain sources are colour-coded based on the confidence we have in their validity, according to the scale shown in Appendix C
- summarised qualitative evaluation.

The detailed quantitative evaluation can be found in Appendix G. Detailed explanations and citations of the causal chains for the long-term outcomes can be found in Appendix F, and detailed qualitative evaluations can be found in Appendix H.

3.6_ Evaluation: YMHP (as a whole)

3.6.1 _ Quantitative evaluation

Results

Table 11 below provides a summary of the cost-benefit analysis results for YMHP as a whole. The results include low and high scenarios and variable discount rates (7% and 3.5%).

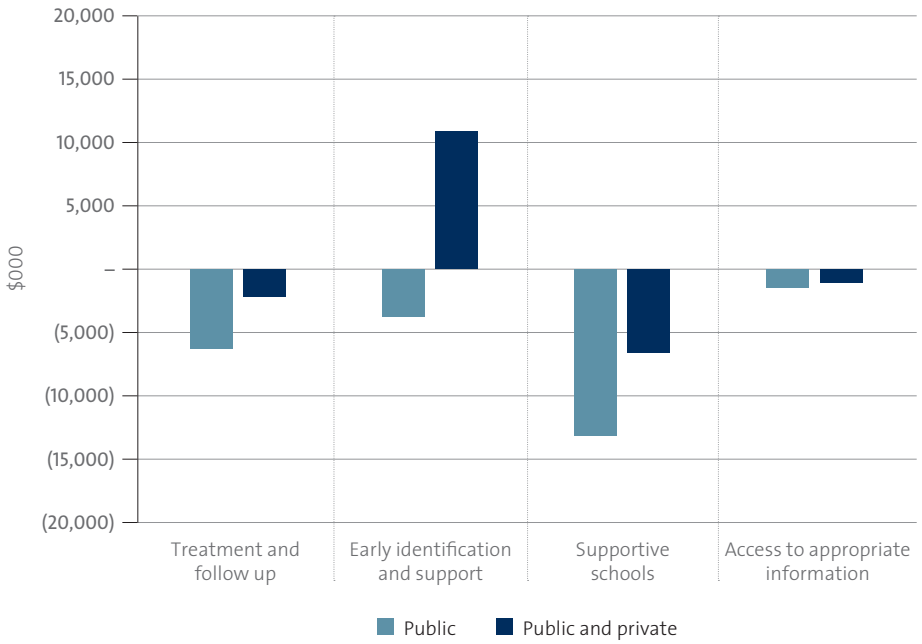
TABLE 11

Cost-benefit analysis results for YMHP as a whole

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of total cost	$36.55m	$36.55m	$39.12m	$39.12m
Total youth participants	183,083	183,083	183,083	183,083
Total youth positively impacted	1,766	2,026	1,766	2,026
Societal benefit to cost ratio	1.01	1.17	1.34	1.55
Governmental benefit to cost ratio	0.32	0.37	0.41	0.47
Societal net present value	$0.50m	$6.37m	$13.24m	$21.37m
Governmental net present value	-$25.03m	-$23.06m	-$23.23m	-$20.58m
Weighted average effectiveness rates	0.96%	1.11%	0.96%	1.11%
Gross economic benefit per youth positively affected	$20,978	$21,184	$29,653	$29,857

As detailed in Table 11, the gross economic benefit **per positively impacted youth** is approximately $21,000 when applying a discount rate of 7%, and $30,000 when applying a discount rate of 3.5%. The implication of this finding is that any initiative or intervention that costs more than $21,000 to $30,000 per **positively impacted youth** is unlikely to generate positive economic value.

Figure 14 _ Net present values of the YMHP components using the low scenario and 7% discount rate



By using a 7% discount rate and the 'low' scenario, Figure 14 above illustrates that societal benefits are expected to be significantly larger than governmental benefits for all YMHP components, because of larger private benefits. 'Early identification and support' is the only component expected to have a positive net present value (NPV) when both governmental and private benefits are combined. This provides evidence that, of the four YMHP components included in the quantitative evaluation, Early identification and support is expected to deliver the most economic value because it achieves wide coverage for a comparatively moderate cost.

While the above analysis provides evidence that future investment in youth mental health initiatives may be best directed toward initiatives that provide early identification and support, our analysis does not consider impacts of the wider 'mental health system'.

Figure 15 _ Net present values of the YMHP components using the low scenario and 3.5% discount rate

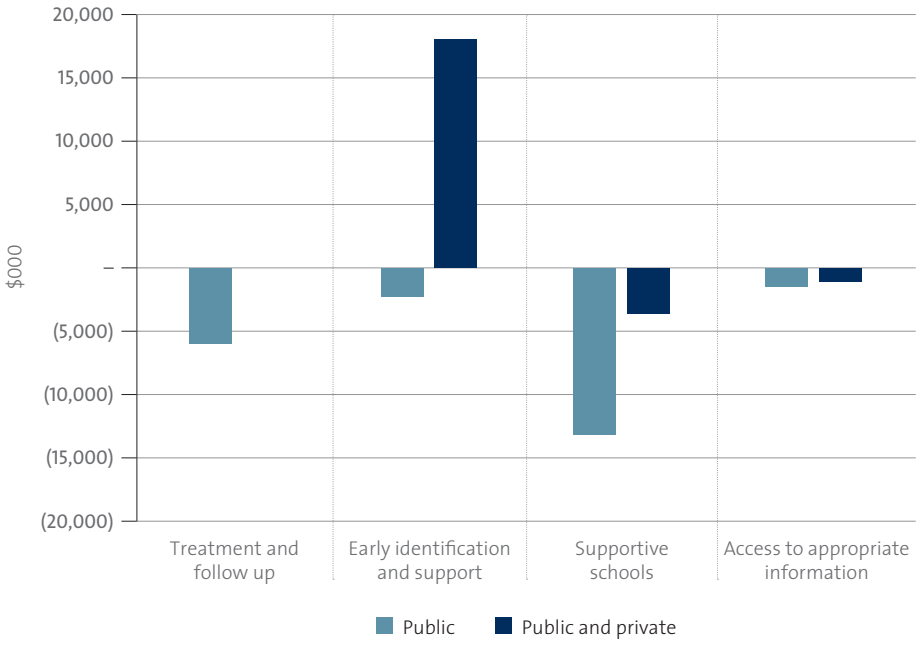


Figure 15 shows the same trends as above, but with slightly more positive economic results as a 3.5% discount rate was applied.

Figure 16 _ Cumulative undiscounted net benefit of YMHP as a whole using the low scenario

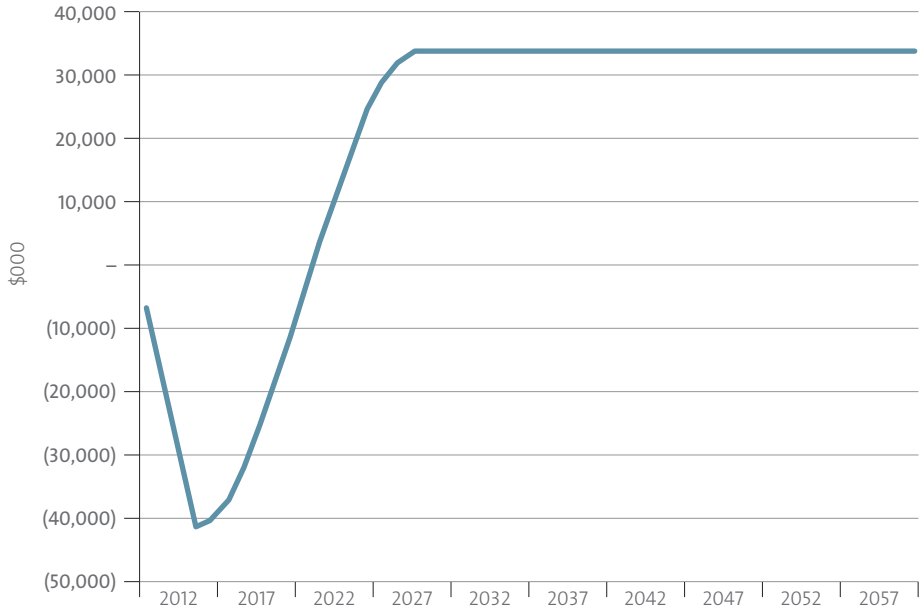


Figure 16 illustrates the expected long-term cumulative undiscounted net benefit (total benefits less total costs) of YMHP. The trend line shows an initial negative undiscounted net benefit at the time of upfront investment in the YMHP. From approximately 2017, the undiscounted net benefit is expected to increase. By approximately 2022 the project is in a break-even position, and by approximately 2027 the undiscounted net benefit will be in excess of $30 million.

With respect to the present year of 2016, Figure 16 provides evidence that the anticipated future economic benefits of the YMHP are still yet to occur. This aligns with the assumption that economic benefits are most likely to occur as a youth (aged 12–19) transitions into adulthood (aged 20+ years).

Costs

The present value of cost for the YMHP, as a whole, ranges between $36.55 million and $39.12 million, depending on the discount rate used.

Cohort

Nearly 200,000 youth have been reached by the YMHP and approximately 2,000 of those youth have or will have realised improved mental health outcomes (over a 10-year timeframe).

Benefit to cost ratio (BCR)

We estimate the societal BCR to range between 1.01 and 1.55 depending on the discount rate and scenario applied. The 3.5% discount rate scenarios show that $1.34 to $1.55 of economic value will be generated for every dollar spent.

The governmental BCR is estimated to range between 0.32 and 0.47 depending on the discount rate and scenario applied. As the BCR will not exceed 1.0 in any of the scenarios, there is no evidence to support the generation of governmental economic value by the YMHP.

Net present value (NPV)

We estimate the societal NPV to range between $0.50 million and $21.37 million. This is a wide range that could indicate a positive economic value. The NPV from a governmental spending perspective illustrates a net economic loss, as it will be consistently below zero.

Impact of 20-year timeframe

Table 12 illustrates the cost-benefit outcomes with the timeframe extended from 10 years to 20 years. This means that for each youth successfully impacted by the YMHP initiatives, benefits accrue for 10 years rather than 20. This demonstrates the impact of a longer-term view on the potential benefits of the programme on individuals.

TABLE 12

Cost-benefit analysis results for YMHP as a whole with a 20-year timeframe

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of component cost	$36.55m	$36.55m	$39.12m	$39.12m
Total youth participants	183,083	183,083	183,083	183,083
Total youth positively impacted	1,766	2,026	1,766	2,026
Societal benefit to cost ratio	1.53	1.77	2.29	2.64
Governmental benefit to cost ratio	0.48	0.56	0.69	0.81
Societal net present value	$19.34m	$28.19m	$50.37m	$64.26m
Governmental net present value	-$19.17m	-$16.20m	-$11.97m	-$7.43m
Weighted average effectiveness rates	0.96%	1.11%	0.96%	1.11%
Gross economic benefit per youth positively affected	$31,645	$31,953	$50,675	$51,023

All societal BCR measures are estimated to be more than 1.0 and all societal NPVs will be above zero. This shows that with a 20-year timeframe the YMHP will create a positive net economic benefit. The governmental BCR will be less than 1.0 for all scenarios, illustrating that, from a governmental perspective, net benefits will remain negative. The gross economic benefit per youth positively affected is notably higher than the 10-year scenario, at $31,645 to $51,023 per positively impacted youth. The remaining metrics are unchanged.

DALY impacts

As described in the 'Economic value of outcomes' section of this report (see section 3.4.1), our evaluation includes consideration of the DALYs avoided as a result of the YMHP – this information is detailed in Table 13 below.

TABLE 13

DALYs avoided, per YMHP component

Measure	Total DALYs avoided		DALYs avoided per $1m spent	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Treatment and follow-up	218.02	238.52	22.13	24.22
Early identification and support	710.50	802.47	60.90	68.79
Supportive schools	338.72	397.46	18.29	21.46
Access to appropriate information	19.26	38.53	9.63	19.26
Total	1,286.50	1,476.98	30.61	35.14

Of the four YMHP components evaluated quantitatively, 'Early identification and support' is estimated to generate the largest amount of total DALYs avoided, with a result of 60.90–68.79 DALYs per $1.0 million spent. A smaller amount of DALYs will be avoided by the 'Access to appropriate information', 'Supportive schools' and 'Treatment and follow-up' components.

As a whole, the YMHP will gain 30.61 and 35.14 DALYs per $1.0 million spent.

DALY comparators

To understand these results, it is useful to make comparisons to other measures of the value of life or life-years. Unfortunately, direct comparison is difficult; DALYs are used to evaluate some interventions but not others. Another metric, similarly focused on understanding the value of a year of life, is Quality Adjusted Life Years (QALYs). QALYs are a measure of a person's gain in number of years of life and quality of life. New Zealand's Pharmaceutical Management Agency (PHARMAC) reports on the number of QALYs for their investments each year. In 2014 they reported that they achieved 28 QALYs per $1.0 million spent.[6] The estimated results from the YMHP are therefore similar to the level of impact that PHARMAC would fund.

We can also compare these DALY results with international cost-utility results. In an Australian-based literature review of cost-utility studies, Dalziel et al. (2008) found the median cost per QALY / DALY to be $30,000 in 2005 Australian Dollars. This is equivalent to 25.3 QALY / DALYs per $1.0 million spent when translated to equivalent terms (Dalziel et al., 2008; RBNZ, 2016a: RBNZ, 2016b).

3.7_ Evaluation: The 'Treatment and follow-up' component

3.7.1 _ Quantitative

Of the five initiatives within the 'Treatment and follow-up' component, only initiatives #4 E-Therapy and #7 CAMHS and AOD Services Access have been evaluated quantitatively. Due to data limitations, initiatives #6 CAMHS and AOD Services Follow-up and #26 Addressing the Emerging Youth Mental Health Issues in Canterbury have been evaluated qualitatively. Initiative #3 Primary Mental Health has been evaluated both quantitatively and qualitatively – but on a stand-alone basis (presented in section 3.8).

The profile of the 'Treatment and follow-up' component is high effect sizes, low coverage and moderate cost. This profile means that while treatment and follow up appears to be an effective course of action, it is expensive to deliver relative to the number of youth treated. As a result, the 'Treatment and follow-up' component delivers a low level of economic value. We estimate the societal BCR will range from 0.73 to 1.12 and the governmental BCR will range from 0.26 to 0.41. A deeper discussion of the key drivers of net economic value for this component can be found in Appendix I.

6 This measure represents a general benchmark used by PHARMAC – it does not relate specifically to pharmaceuticals related to mental illness.

Results

TABLE 14

Cost-benefit analysis results for the 'Treatment and follow-up' component

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of component cost	$8.63m	$8.63m	$9.20m	$9.20m
Total youth participants	1,548	1,548	1,548	1,548
Total youth positively impacted	298	326	298	326
Societal benefit to cost ratio	0.73	0.83	0.99	1.12
Governmental benefit to cost ratio	0.26	0.32	0.35	0.41
Societal net present value	-$2.31m	-$1.47m	-$0.08m	$1.10m
Governmental net present value	-$6.34m	-$5.89m	-$6.02m	-$5.42m
DALYs avoided	218.02	238.52	218.02	238.52
DALYs avoided per $1m in costs	22.13	24.22	22.13	24.22
Weighted average effectiveness rates	19.22%	21.03%	19.22%	21.03%

Costs

The present value of the cost ranges between $8.63 million and $9.20 million depending on the discount rate used; this is primarily due to the cost of initiative #7 CAMHS and AOD Service Access.

Cohort

Just over 1,500 youth have been reached by the 'Treatment and follow-up' component and approximately 298–326 of those youth have or will have realised improved mental health outcomes (over a 10-year timeframe). These coverage results are low when compared to the 'Early identification and support' and 'Supportive schools' components.

Benefit to cost ratio

We estimate the societal BCR ranges between 0.73 and 1.12. When applying a 3.5% discount rate in the high scenario, the 'Treatment and follow-up' component will generate $1.12 of societal benefits for every dollar spent. All governmental BCRs are expected to be below 1.0, which means that the component will return less than $1 to the government for each $1 spent.

Net present value

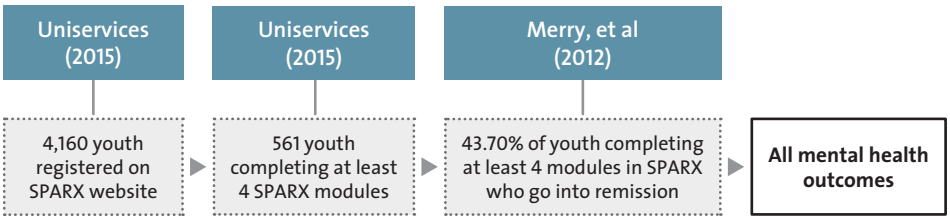
We estimate that the societal NPV ranges between – $2.31m and $1.10m, which provides further evidence for a potential net gain to society as a result of this component. We estimate that all governmental NPVs are below zero.

DALY impacts

The total estimated amount of DALYs avoided per every $1.0 million spent ranges between 22.13 and 24.22.

E-Therapy

Figure 17 _ Causal chain for initiative #4 E-Therapy



The E-Therapy initiative entails the development, implementation and delivery of 'SPARX', an online mental health therapy tool for young people. SPARX is a self-directed tool that uses cognitive behavioural therapy (CBT) techniques to directly treat mental illness.

With reference to the framework for evaluation, the causal chain above (Figure 17) shows:

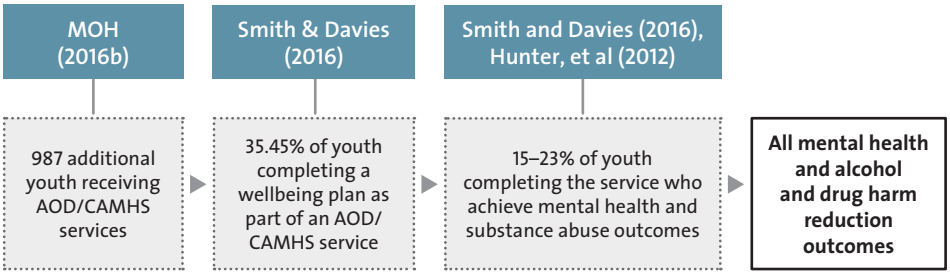
- **Activities:** number of youth registered on the SPARX website and number of youth completing at least four SPARX modules (these measures have been chosen because research indicates that mental health improvements are only achieved for those who complete at least four modules of the programme)
- **Short-term outcomes:** percentage of youth completing at least four SPARX modules and going into remission
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

We have "excellent" quality data to support the activities and short-term outcome measures. Further, a New Zealand-based randomised controlled trial of the efficacy of SPARX has provided a statistically significant moderate to large programme-specific effectiveness rate.

As the SPARX tool is now fully operational, it offers a unique advantage from a cost-benefit perspective, in that youth can continue to receive treatment without the need for further monetary investment. To capture this benefit in the cost-benefit analysis, we have included two additional future youth cohorts.

CAMHS and AOD Services Access

Figure 18 _ Causal chain for initiative #7 CAMHS and AOD Services Access



The Child and Adolescent Mental Health Service (CAMHS) is a community mental health and addiction service provided by the DHBs to provide specialist mental health and addiction services for children and adolescents. The key outcomes of initiative #7 are: to increase access by reducing wait times for assessment; and to develop and deliver a consistent and effective model of care for youth with drug or alcohol problems (this involved designing an exemplar trial service).

With reference to the framework for evaluation, the causal chain above (Figure 18) shows:

- **Activities:** number of additional youth receiving AOD / CAMHS services and percentage of youth completing a wellbeing plan
- **Short-term outcomes:** percentage of youth completing the service who achieve mental health and reduced substance abuse. Research has indicated that through youth-specific, targeted clinical treatment and support, youth are better able to control substance abuse and improve their mental health.
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

Data on the number of youth treated was incomplete, which is the reason for a poor data-quality rating.

In order to assign an effectiveness rate, an evaluation of one of the exemplar service providers has been used as a proxy. The evaluation includes information on the proportion of youth who achieved improved mental health and reduced substance abuse as a result of the treatment. To determine an effectiveness rate range (for the low and high scenarios of the cost-benefit analysis), we have used the effectiveness rate from the exemplar service as well as rates obtained from international literature on the efficacy of youth alcohol and drug treatment programmes. The lack of comparability of the international research and the lower quality of the New Zealand evaluation has led to a low data-quality rating.

3.7.2 _ Qualitative

From the perspective of qualitative evaluation, the 'Treatment and follow-up' component only contains initiative #6 CAHMS and AOD Services Follow-up. This initiative has achieved moderate direct coverage and contributed towards improved access to services, greater service capacity and range, and stronger links and collaboration between the government agencies involved and youth mental health providers.

The information in Table 15 relates to initiative #6 CAHMS and AOD Services Follow-up.

TABLE 15

Qualitative evaluation of the 'Treatment and follow-up' component (initiative #6 CAHMS and AOD Services Follow-up)

Assessment criteria	Scale	Description
A. Coverage	Moderate (direct)	• The specific number of youth participating in this initiative has not been recorded. However, the potential target audience is all youth aged 12–19 years who have utilised the CAMHS and AOD services. As this is a specialist service, the overall coverage of this initiative is considered to be moderate. • Initiative #6 has a direct impact on youth by delivering treatment follow-up plans to youth themselves. • The CAMHS and AOD services are pre-existing. Initiative #6, which is focused on the provision of follow-up plans, is YMHP-specific.
B. Type of initiative	Prevention	• This initiative aims to prevent relapse by the provision of follow-up plans.
C. Impacts / outcomes	Moderate	• Four DHBs were included in a pilot for the implementation of the AOD discharge planning best-practice guidelines. This pilot began in 2014. Through the pilot, all four DHBs started delivering improved discharge planning. • From July 2014, 15 DHBs had transition plan reporting in place. Of these 15, 5 DHBs had transition plans in place for 95% of more of children and youth exiting from specialist services (YMHP Quarterly Report, 2015). • It should be noted that while some of the DHBs are reporting delivery of follow-up plans for 95% of children and youth, there is no baseline data against which to compare this, and so it is very difficult to assess the additional number of youth receiving follow-up care plans as a direct result of YMHP.
D. Attributes	N/A	• The timing of implementation was contingent on completion of the DHB pilot programme (as discussed above). • With the available funding, the scope of initiative #6 was somewhat limited.
E. Funding	$0.4m	• Initiative #6 received funding of $0.4 million via YMHP.
F. Implementation	Ongoing	• Initiative #6 is ongoing. To date, the initiative has been implemented successfully through the pilot programme and 33% of the DHBs are reporting that the follow-up plan target of 95% has been met. The Ministry of Health is following up with those DHBs who were unable to provide transition plan data or were not yet meeting the 95% target.
G. Data / information	Poor	• Through the course of the initiative, a number of documents / reports have been created: – a stocktake on post-discharge follow-ups for youth accessing CAMHS and AOD services – best practice guidelines and a toolkit – new service specifications for CAMHS and AOD follow-up. • To date, we have been unable to obtain any quantitative data / reporting to evidence the number of follow-up plans issued to youth – nor the effectiveness of those plans on preventing relapse.

3.8_ Evaluation: Primary Mental Health

3.8.1 _ Primary Mental Health

Evaluation approach

Due to the reasons detailed below, initiative #3 Primary Mental Health has been removed from the overall YMHP cost-benefit analysis (see section 3.6) as well as that of the 'Treatment and follow-up' component (see section 3.7). Instead, this initiative has been evaluated using a stand-alone cost-benefit analysis and qualitative evaluation (see below). Overall, this decision was made on the basis that the resultant analysis and information would provide greater clarity and transparency.

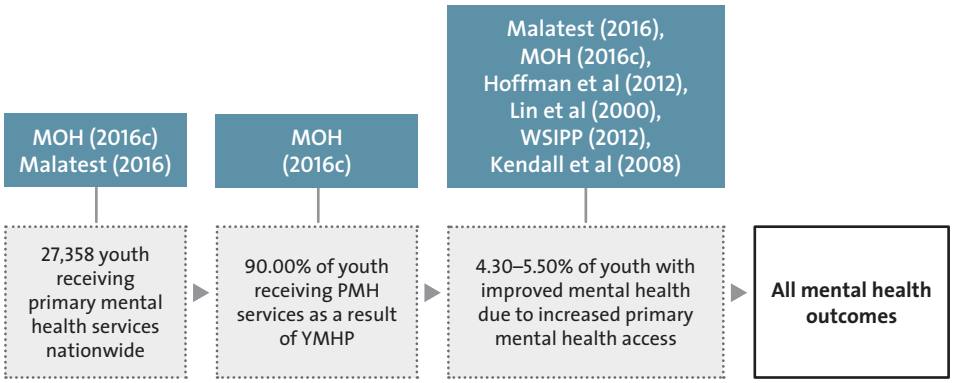
Reasons for preparing a stand-alone cost-benefit analysis and qualitative evaluation:

- There is significant uncertainty surrounding the completeness and accuracy of the data and evidence supporting the 'reach' (the total number of youth seen / treated) of the YMHP Primary Mental Health initiative. We have received information from stakeholders about the number of youth seen by Primary Mental Health services in the final quarter of 2014 (financial year) and 2015. However, we have not received the equivalent information about the number of youth seen prior to this period and as such, have no basis against which to measure or determine the counterfactual (which is important for an initiative that pre-exists the YMHP). Further, the information provided did not include unique identifiers for the youth involved, which means that youth may be double-counted if they return in different reporting quarters (however, we have been informed by stakeholders that the likelihood of this event is low). As a result of these data limitations, the figures used in our analysis to evidence 'reach' are an extrapolation of the available data, which has been calculated using a number of high-level assumptions.
- The effect size of the Primary Mental Health initiative is unknown. None of the research collected in our extensive literature review nor any of that provided by stakeholders was New Zealand-specific, nor was it directly comparable to the type of services offered through Primary Mental Health. The inability to source research that was comparable to the Primary Mental Health service offering was in part due to the inability to define or identify a 'standard' type of service, as participating DHBs used the YMHP funding in different ways (for consistency, we have assumed that the 'standard service' is something of a 'light touch' intervention given the average expenditure per youth served ranges between approximately $300 and $400 over the duration of the youth's participation). As a result of this limitation, the effect sizes used in our analysis are estimates or proxies for the possible impacts of Primary Mental Health.
- Primary Mental Health is large in terms of scope and budget (the budget for this initiative is $11.3 million, which makes up 20% of the total YMHP funding). As such, this initiative will have significant influence on the overall results of any quantitative analysis of the YMHP. This is particularly important in light of the data limitations described above; including Primary Mental Health in the overall YMHP cost-benefit analysis will overshadow the better quality information and data of the other initiatives and reduce the reliability of the project-level results.

While the preferred approach of this report is to evaluate Primary Mental Health on a stand-alone basis, Table 17 below provides indicative results of what the YMHP cost-benefit analysis would be if Primary Mental Health were included.

Stand-alone evaluation

Figure 19 _ Causal chain for initiative #3 Primary Mental Health



The core outcomes of initiative #3 Primary Mental Health was to: improve access to primary mental health services; expand the range of services offered; and make services more 'youth friendly'.

With reference to the framework for evaluation, the causal chain in Figure 19 above shows:

- **Activities:** number of youth receiving primary mental health services and percentage of youth receiving services as a direct result of the YMHP.
- **Short-term outcomes:** percentage of youth with improved mental health due to increased access to primary mental health services
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

The effect size in the causal chain is driven by research that links the receipt of primary mental health treatment to improvements in mental health. As there is limited information about the outcomes for youth receiving these services in New Zealand, international research has been used. This research has a lower quality rating as it is not New Zealand-specific.

TABLE 16

Cost-benefit analysis results for initiative #3 Primary Mental Health

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of component cost	$9.48m	$9.48m	$10.33m	$10.33m
Total youth participants	24,623	24,623	24,623	24,623
Total youth positively impacted	1,059	1,354	1.059	1,354
Societal benefit to cost ratio	2.34	3.00	3.03	3.87
Governmental benefit to cost ratio	0.71	0.90	0.89	1.14
Societal net present value	$12.75m	$18.94m	$20.92m	$29.63m
Governmental net present value	-$2.78m	-$0.90m	-$1.12m	$1.45m
DALYs avoided	775.48	991.58	775.48	991.58
DALYs avoided per $1m in costs	68.63	87.75	68.63	87.75

Costs

The present value of the cost for Primary Mental Health ranges between $9.48 million and $10.33 million, depending on the discount rate used.

Cohort

Approximately 24,623 youth have been reached by Primary Mental Health and 1,059–1,354 of those youth have or will have realised improved mental health outcomes (over a 10-year timeframe).

Benefit to cost ratio

We estimate the societal BCR will range between 2.34 and 3.87 depending on the discount rate and scenario applied. The 3.5% discount rate scenarios show that $3.03 to $3.87 of economic value will be generated for every dollar spent.

We estimate that the governmental BCR will range between 0.71 and 1.14 depending on the discount rate and scenario applied. The only situation that is expected to generate net governmental economic value (BCR > 1.0) is the combination of the 'high' scenario and the 3.5% discount rate.

Net present value

The societal NPV is expected to range between $12.75 million and $39.63 million and the governmental NPV between – $2.78 million and $1.45 million. The societal NPV will have a wide range, which could indicate potentially large positive economic value. From a governmental perspective, the NPV will be marginal, meaning there is potential for either net economic gain or loss.

DALY impacts

The total amount of DALYs avoided per every $1.0 million spent is expected to range between 68.63 and 87.75. This is relatively high when compared with the other YMHP components.

Including Primary Mental Health in the overall YMHP cost-benefit analysis

Table 17 provides indicative results of what the YMHP cost-benefit analysis would be if Primary Mental Health were included.

TABLE 17

Indicative cost-benefit analysis results for YMHP as a whole, including initiative #3 Primary Mental Health

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of total cost	$46.02m	$46.02m	$49.45m	$49.45m
Total youth participants	207,705	207,705	207,705	207,705
Total youth positively impacted	2,825	3,380	2,825	3,380
Societal benefit to cost ratio	1.29	1.55	1.69	2.03
Governmental benefit to cost ratio	0.40	0.48	0.51	0.61
Societal net present value	$13.25m	$25.31m	$34.17m	$51.00m
Governmental net present value	-$27.81m	-$23.97m	-$24.35m	-$19.13m
Weighted average effectiveness rates	1.36%	1.63%	1.36%	1.63%
Gross economic benefit per youth positively affected	$20,983	$21,106	$29,602	$29,721

By including Primary Mental Health (using the low scenario and 7% discount rate), the total number of positively impacted youth increases from 1,766 to 2,825; the estimated societal BCR increases from 1.01 to 1.29; the estimated governmental BCR increases from 0.32 to 0.40; the estimated societal NPV increases from $0.50 million to $13.25 million; and the estimated governmental NPV decreases from $25.03 million to $27.81 million.

3.8.2 _ Qualitative

Overall, the Primary Mental Health initiative achieved large direct coverage and contributed strongly towards youth mental health outcomes such as improved resilience, youth staying in school for longer, and youth being helped to obtain employment. A detailed qualitative evaluation can be found in Appendix H.

The information in Table 18 relates to initiative #3 Primary Mental Health only.

TABLE 18

Qualitative evaluation of initiative #3 Primary Mental Health

Assessment criteria	Scale	Description
A. Coverage	**Large (direct)**	• Initiative #3 is delivered via DHBs and PHOs. As such, there is potential for the initiative to reach a very wide audience. as all New Zealand youth have access to a DHB and associated PHO. • Initiative #3 has a direct impact on youth via the provision of youth mental health services (such as packages of care, brief intervention counselling, group therapy). • Services offered through Primary Mental Health existed prior to the commencement of the YMHP but were primarily only for adults. The YMHP provided an extra source of funding to extend more services to youth. In addition, YMHP was able to improve the effectiveness and extend the scope and capacity of the few existing services for youth.
B. Type of initiative	**Prevention and treatment**	• While initiative #3 aims to achieve both prevention and treatment, the initiative is aimed primarily at patients with mild to moderate mental health and / or substance abuse problems that are of recent onset and that are amenable to treatment in a primary care setting.
C. Impacts / outcomes	**Large**	• The DHBs were given discretion as to the way in which allocated funding was utilised. There were four broad approaches (Malatest International, 2016): – expansion of the age range of existing primary mental health services – this was achieved by increasing funding available to PHOs and other providers for packages of care and brief interventions – adapting existing primary mental health services for youth – expanding existing NGOs or community-based initiatives e.g. funding new roles or programmes – developing new initiatives e.g. youth psychologists co-located in schools and NGO youth services, and / or funding youth-specific services ranging from resilience building to treatment. • Overall, the recorded short-term outcomes of this initiative are (Malatest International, 2016): – increased capacity of services to support youth mental health and wellbeing – increased range of provider and service options available to youth

Assessment criteria	Scale	Description
		– improved access to youth mental health services – improved effectiveness of services by sharing information on what is effective – supporting innovation to contribute to the development of efficient and cohesive services – developing the youth workforce. • It should be noted that while there is data available that provides some indication of how many additional youth received services, this is not the full picture of the reach of the service, and estimates must be made to understand how many received services as a direct result of YMHP. This represents a data limitation. • While there is information and data to support the short-term outcomes of the initiative itself, there is a lack of information and data to support the actual short- and long-term outcomes for youth (e.g. reduced depression / anxiety). The lack of information about outcomes along with reach data unavailability is why this initiative was removed from the overall cost-benefit analysis and evaluated separately. However, assumptions have been made that the initiative will result in (Malatest International, 2016): – improved mental health outcomes – improved resilience – youth staying in school for longer – youth being helped to obtain employment. • The estimated quantum of impacts / outcomes has been rated as large due to the potential coverage of this initiative.
D. Attributes	**N/A**	• The effectiveness of initiative #3 has been impacted primarily by the following attributes: – Funding limitations – when the total funding is split among New Zealand's 20 DHBs, the amount available per individual was less significant. As such, some DHBs have used the funding to increase the scope of existing services, but most used it to increase the capacity of existing services. – DHB discretion – the variability of initiative outcomes is impacted heavily by DHBs having discretion as to how the YMHP funding was to be used.
E. Funding	**$11.3m**	• Initiative #3 was allocated $11.3 million of funding via the YMHP (to be used over a four-year period). Of this $11.3 million, $8.9 million came from within DHB / Ministry of Health baselines and a further $1.9 million was allocated across the 20 DHBs from 1 July 2015 (Malatest, 2016).
F. Implementation	**Ongoing**	• Initiative #3 is ongoing as the YMHP funding for this initiative covers the period 2012/13 to 2015/16. • Qualitative evidence suggests that this initiative has been implemented effectively as there has been an overall uplift in the total number of youth receiving services.
G. Data / information	**Poor**	• Qualitative reporting is available via the YMHP Quarterly Reports and the Malatest International Evaluation Report: The Youth Primary Mental Health Service, January 2016 and communications with MoH (2016c). • Quantitative reporting on the total number of youth receiving services is available (which is the collation of individual DHB reports). However, the completeness, consistency and accuracy of this reporting is poor.

3.9_ Evaluation: The 'Early identification and support' component

3.9.1 _ Quantitative

Of the eight initiatives within the 'Early identification and support' component, only initiatives #1 School Based Health Services, #2 HEEADSSS Wellness Check and #18 Social Support for YOSS have been evaluated quantitatively. Due to data limitations, the following initiatives have been evaluated qualitatively: #5 Primary Care Responsiveness to Youth, #21 Youth Mental Health Training for Social Services, #22 Whānau Ora for Youth Mental Health, and #26 Addressing the Emerging Youth Mental Health Issues in Canterbury. Initiative #3 Primary Mental Health has been evaluated both quantitatively and qualitatively – but on a stand-alone basis (presented in section 3.8).

The profile of the 'Early identification and support' component is low effect sizes, moderate coverage and moderate cost. This profile means that while early identification and support does not demonstrate high effect sizes, it can be delivered at a moderate cost (as compared to other types of interventions) for the large youth population that it is able to reach. As a consequence, the 'Early identification and support' component delivers a moderate level of economic value with societal BCR ranging from 2.06 to 3.03 and the governmental BCR ranging from 0.62 to 0.89. A deeper discussion of the key drivers of net economic value for this component can be found in Appendix I.

Results

TABLE 19

Cost-benefit analysis results for the 'Early identification and support' component

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of component cost	$10.08m	$10.08m	$10.82m	$10.82m
Total youth participants	41,861	41,681	41,681	41,681
Total youth positively impacted	970	1,096	970	1,096
Societal benefit to cost ratio	2.06	2.35	2.67	3.03
Governmental benefit to cost ratio	0.62	0.71	0.79	0.89
Societal net present value	$10.70m	$13.61m	$18.10m	$21.99m
Governmental net present value	-$3.82m	-$2.94m	-$2.30m	-$1.16m
DALYs avoided	710.50	802.47	710.50	802.47
DALYs avoided per $1m in costs	60.90	68.79	60.90	68.79
Weighted average effectiveness rates	2.32%	2.62%	2.32%	2.62%

Costs

The present value of cost for early identification and support ranges between $10.08 million and $10.82 million depending on the discount rate used; this is primarily due to the cost of initiative #1 School Based Health Services.

Cohort

More than 40,000 youth have been reached by the 'Early identification and support' component and approximately 1,000 of those youth have or will have realised improved mental health outcomes (over a 10-year timeframe).

Benefit to cost ratio

We estimate that the societal BCR will be greater than 1.0 in all scenarios, which provides strong evidence of a positive societal impact. Results indicate that for every dollar spent on early identification and support, the returns to society range between $2.06 and $3.03 and returns to the government between $0.62 and $0.89. The majority of benefits are expected to accrue to the individual and wider society rather than to the government.

Net present value

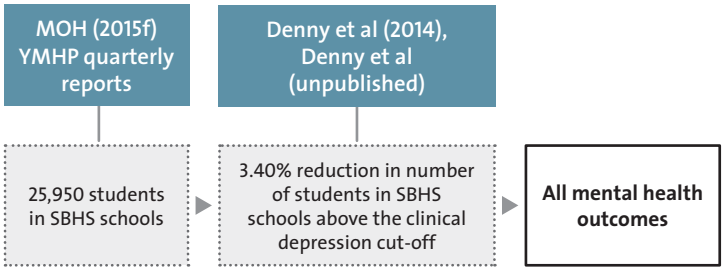
The estimated societal NPV ranges between $10.70 million and $21.99 million, which provides strong evidence of positive economic value to society. The estimated NPV from a governmental spending perspective illustrates a net economic loss.

DALY impacts

The total amount of DALYs avoided per every $1.0 million spent is expected to range between 60.90 and 68.79. This is the most cost-effective component for DALYs.

School Based Health Services

Figure 20 _ Causal chain for initiative #1 School Based Health Services



Prior to the commencement of YMHP, SBHS were provided in decile 1 and 2 schools. The additional funding from YMHP allowed the initiative to be extended into decile 3 secondary schools.

With reference to the framework for evaluation, the causal chain above (Figure 20) shows:

- **Activities:** number of students in SBHS schools
- **Short-term outcomes:** percentage reduction in the number of students in SBHS schools who report clinical depression
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

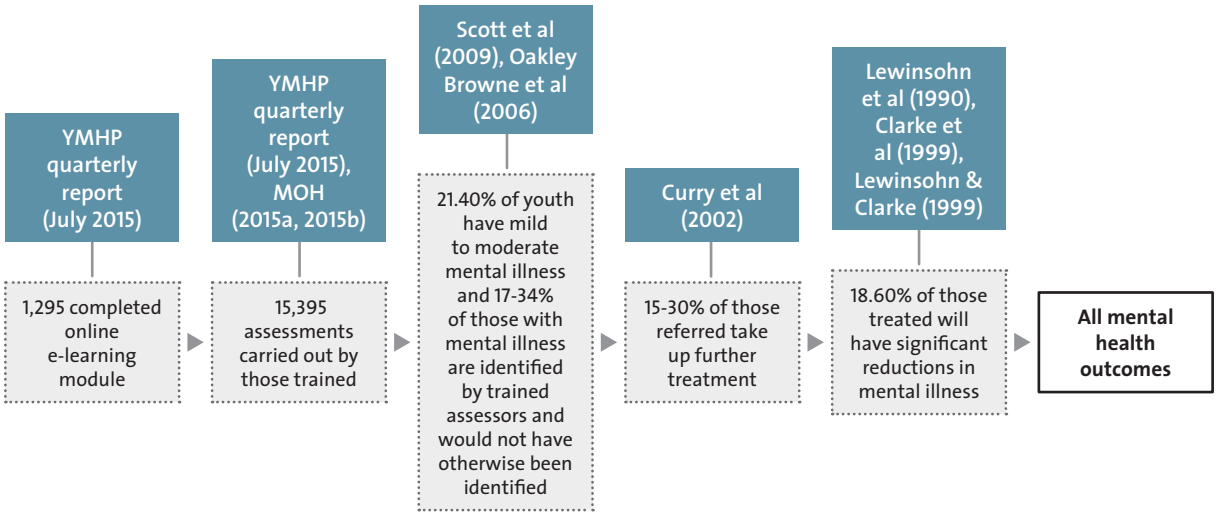
SBHSs include a variety of physical and mental health services delivered by trained nurses and doctors. One such service was the delivery of HEEADSSS Wellness Checks (a screening methodology used to assess young people's psychosocial wellbeing), which were performed on all Year 9 students in SBHS schools. This screening allowed for the identification of students requiring mental health treatment, which drives the short-term outcome in the causal chain above.

The Ministry of Health provided high-quality input data on the number of students in decile 3 SBHS schools. This data was used as a basis for making assumptions on the approximate size of the total impacted cohort (as a direct result of YMHP).

New Zealand-specific research has been carried out using the secondary school survey, Youth 2000. This research (both published and unpublished) identified a moderate and direct impact of SBHS on mental health outcomes, which drives the long-term outcomes in the causal chain above.

HEEADSSS Wellness Check

Figure 21 _ Causal chain for initiative #2 HEEADSSS Wellness Check



The objective of the HEEADSSS Wellness Check initiative was to expand the use of HEEADSSS checks in schools and primary care settings by delivering HEEADSSS assessment training (through workshops and an online training module).

We recognise that the short-term objective of initiative #2 was to train health professionals to deliver HEEADSSS checks. However, in order to evaluate the economic impact of this initiative it is necessary to follow the entire causal chain from the delivery of training to youth mental health outcomes (as reflected in the causal chain above).

With reference to the framework for evaluation, the causal chain above (Figure 21) shows:

- **Activities:** number of providers who completed the online training module and number of HEEADSSS assessments performed by trained providers

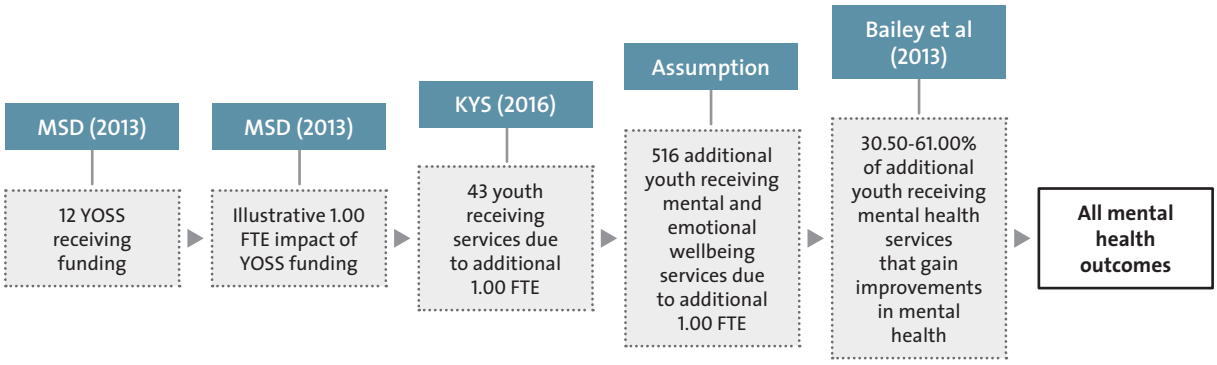
- **Short-term outcomes:** percentage of youth with mild to moderate mental illness who are identified as requiring further treatment; percentage of youth who take up a referral for treatment; and percentage of those treated who experienced reduced mental illness
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

We received robust data to support the number of providers who completed training. However, we were unable to source reliable or consistent data to evidence the number of youth who have received a HEEADSSS assessment. In response, we have made assumptions based on the following 'proxy datasets': the number of students in SBHS schools who are eligible for HEEADSSS checks; and the capacity of providers (primarily nurses) delivering HEEADSSS checks.

To support the short-term outcomes (percentage of youth who take up a referral for treatment; and percentage of those treated who experienced reduced mental illness), we have made use of international literature on referral uptake and the efficacy of mental health treatments. As this is not New Zealand – or initiative-specific, we have used a range of effect sizes.

Social Support for Youth One Stop Shops

Figure 22 _ Causal chain for initiative #18 Social Support for Youth One Stop Shops



The primary outcomes of this initiative were to source long-term funding for YOSSs while providing interim funding to maintain existing youth mental health offerings. Twelve YOSSs were given $50,000 in 2012, which has been included in the cost-benefit analysis. Funding for the 12 YOSSs of $8.62 million was secured for financial years 2015–2018 through Budget 2014. We have not included the funding in the cost-benefit analysis as it is outside the scope of YMHP, but we note its importance in the long-term sustainability of these facilities.

The 12 YOSSs were given discretion as to how to use the $50,000. For simplicity, we have assumed that all YOSSs hired one extra full-time equivalent (FTE) staff member with the funds, which was the most common use of the funding.

With reference to the framework for evaluation, the causal chain above (Figure 22) shows:

- **Activities:** number of YOSS receiving funding (which we know was 12)
- **Short-term outcomes:** FTE impact of YOSS funding; additional youth receiving services due to additional FTE; additional youth receiving mental health / wellbeing services due to additional FTE; and percentage of additional youth who experience improvements in their mental health as a result of receiving services
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

We have used data from an 'exemplar YOSS' to estimate an average FTE workload and the efficacy of the services provided. This information has then been extrapolated across the other 11 YOSS that received funding from the YMHP.

3.9.2 _ Qualitative

Overall, the 'Early identification and support' component achieved large direct and indirect coverage and has contributed to: improved wellbeing and better educational and employment outcomes for children and youth; greater collaboration between government agencies; greater consistency and quality of youth mental health services; improved access to services; and improved financial stability of YOSSs. A detailed qualitative evaluation can be found in Appendix H.

The information in Table 20 relates to initiatives #5 Primary Care Responsiveness to Youth, #21 Youth Mental Health Training for Social Services, and #22 Whānau Ora for Youth Mental Health.

TABLE 20

Qualitative evaluation of the 'Early identification and support' component

Assessment criteria	Scale	Description
A. Coverage	**Large (direct and indirect)**	Collectively, the 'Early identification and support' component achieves large direct and indirect coverage. This is primarily the result of initiative #5, as it targets all youth reached by DHBs, youth accessing YOSS, and youth accessing AOD services.
B. Type of initiative	**Prevention and treatment**	While initiative #5 includes aspects of treatment, the component as a whole primarily aims to achieve prevention of mental illness.
C. Impacts / outcomes	**Moderate**	The target audience is New Zealand children and youth. As a general rule, information / data has not been collected to evidence the direct impacts of the initiatives on youth mental health outcomes. However, assumed and confirmed impacts / outcomes include: **Short-term:** • increased capacity of services to support youth mental health and wellbeing • increased range and quality of provider and service options available to youth • improved access to services for children and young people (via school and primary mental health) • improved cross-agency relationships and collaboration • consolidated and better coordinated services for young people at school and their school communities

Assessment criteria	Scale	Description
		• use of SLATs to lead and deliver youth services across the health sector • improved financial stability of the YOSS • delivery of a consistent youth mental health training programme to all providers – assume improved knowledge as a result. **Long-term:** • improved mental health outcomes • improved resilience • youth staying in school and moving on to part-time employment or study.
D. Attributes	**N/A**	The qualitative impacts / outcomes of this component were influenced by the following: • time constraints • funding constraints • different uses of the available funding • the skill and cultural awareness of programme facilitators • confounding factors – the ability to achieve specific initiative outcomes (related to youth mental health) were affected by confounding factors such as trauma and intergenerational issues, as well as basic practical issues such as housing, financial resources and employment.
E. Funding	**$0.98m**	Collective funding of $0.98 million was received via the YMHP.
F. Implementation	**Ongoing**	The 'Early identification and support' component is ongoing.
G. Data / information	**Moderate – Poor**	While the 'Early identification and support' component has delivered project management / financial reporting and initiative evaluations, there is a lack of reporting, information and data on the impact of the initiatives on youth mental health outcomes.

3.10_ Evaluation: The 'Supportive schools' component

3.10.1 _ Quantitative

All four initiatives within the 'Supportive schools' component have been evaluated quantitatively (these include #8 PB4L School-Wide, #9 PB4L Check and Connect, #10 PB4L My FRIENDS Youth, and #14 Youth Workers in Low Decile Secondary Schools).

The profile of the YMHP 'Supportive schools' component is low effect sizes, high coverage (reaching almost 140,000 youth through the PB4L School-Wide and My FRIENDS Youth programmes) and high cost. This profile means that the 'Supportive schools' component is expensive to deliver relative to the number of youth reached and the small effect size. As a consequence, the 'Supportive schools' component is estimated to deliver only a low level of economic value, with the societal BCR ranging 0.58 to 0.92 and the governmental BCR ranging 0.17 to 0.27. Among these results, it is useful to understand that School-Wide and My FRIENDS Youth are lower intensity / cost, high volume programmes, which deliver lower effect sizes. Conversely, Check and Connect is a high intensity / cost, low volume programme, which delivers a low to moderate effect size (as evidenced by international research).

As no peer-reviewed New Zealand-specific quantitative research on the long-term outcomes of PB4L initiatives is available, we have relied on international literature. Although the international literature is statistically reliable, it may be limited in its applicability to the New Zealand environment. Overall, the international literature provides some evidence to support short- to medium-term outcomes – but provides weak evidence to support any long-term economic outcomes. As the available reports did not provide a range of effectiveness rates, there is little variability between the low and high scenarios of the cost-benefit analysis (as presented in Table 21 below). A deeper discussion of the key drivers of net economic value for this component can be found in Appendix I.

Results

TABLE 21

Cost-benefit analysis results for the 'Supportive schools' component

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of component cost	$16.09m	$16.09m	$17.23m	$17.23m
Total youth participants	139,147	139,147	139,147	139,147
Total youth positively impacted	472	552	472	552
Societal benefit to cost ratio	0.58	0.68	0.79	0.92
Governmental benefit to cost ratio	0.17	0.20	0.23	0.27
Societal net present value	-$6.70m	-$5.14m	-$3.69m	-$1.42m
Governmental net present value	-$13.28m	-$12.81m	-$13.27m	-$12.60m
DALYs avoided	338.72	397.46	338.72	397.46
DALYs avoided per $1m in costs	18.29	21.46	18.29	21.46
Weighted average effectiveness rates	0.34%	0.40%	0.34%	0.40%

Costs

The present value of cost for the 'Supportive schools' component ranges between $16.09 million and $17.23 million, depending on the discount rate used. This is the largest cost allocation of the YMHP components that were quantitatively assessed.

Cohort

Based on the school rolls received, nearly 140,000 youth have been reached by the 'Supportive schools' component and approximately 472–552 of those youth have or will have realised improved mental health outcomes (over a 10-year timeframe).

Benefit to cost ratio

We estimate the societal BCR will range between 0.58 and 0.92 depending on the discount rate and scenario applied. The estimated governmental BCR ranges between 0.17 and 0.27 depending on the discount rate and scenario applied. As the BCR does not exceed 1.0 in any of the scenarios, there is no evidence to support the generation of societal or governmental net economic value by the 'Supportive schools' component.

Net present value

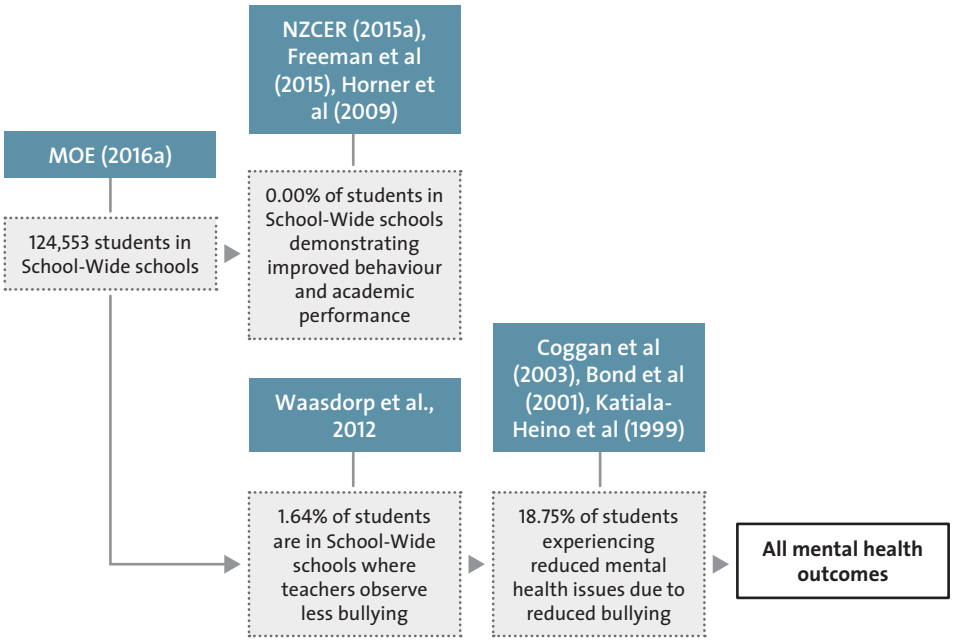
The societal NPV is expected to range between – $6.70 million and – $1.42 million, which provides evidence that no societal economic value has been generated. Similarly, the NPV from a governmental spending perspective also illustrates an estimated net economic loss.

DALY impacts

The total amount of DALYs expected to be avoided per every $1.0 million spent ranges between 18.29 and 21.46.

Positive Behaviour for Learning (PB4L): School-Wide

Figure 23 _ Causal chain for initiative #8 PB4L School-Wide



PB4L School-Wide is a programme in New Zealand schools that focuses on building a positive whole-of-school behavioural culture. The goal of this initiative was to expand School-Wide into all secondary schools in New Zealand.

With reference to the framework for evaluation, the causal chain above (Figure 23) shows:

- **Activities:** number of students in School-Wide schools
- **Short-term outcomes:** percentage of students in School-Wide schools who demonstrate improved behaviour and academic performance; percentage of students in School-Wide schools where reduced bullying was observed; and percentage of students experiencing reduced mental illness due to reduced bullying
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

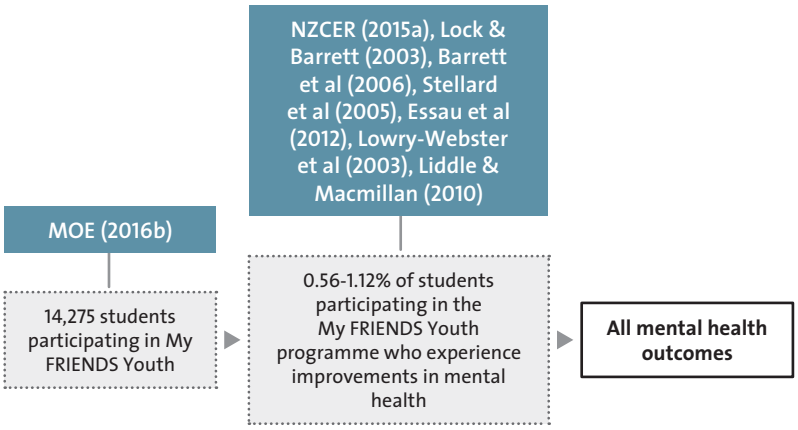
The Ministry of Education provided the data to support the activity measure. It was then necessary to make assumptions about the size of the total impacted cohort over the life of the project. Due to the large number of schools involved in School-Wide, there are over 120,000 youth in this cohort.

Domestic evaluations of School-Wide provide evidence that the programme is being implemented well in New Zealand. However, we have been unable to source domestic data that indicates the impact of the programme on measures of student performance, particularly on the difference between academic performance with and without the programme.[7] As such, the cost-benefit analysis relies on international evidence on the effectiveness of overseas iterations of School-Wide in achieving outcomes.

As School-Wide is about the behaviour of students in a learning environment, the key outcomes highlighted in the literature are disciplinary referrals, academic achievement, bullying, and secondary school completion. Research was unable to find any conclusive evidence that linked School-Wide to increased secondary school completion or academic achievement. As a consequence, we were unable to link the initiative to economic outcomes related to finishing school. Some studies however illustrated a small impact of School-Wide on teacher-reported bullying in schools; we have used this research to link the initiative to reduced bullying and resultant reductions in mental illness. This has created some benefit in the cost-benefit analysis. However, as mental health improvements are not the key outcome of this initiative, there may be alternative ways to generate these mental health benefits that would be more cost-effective.

Positive Behaviour for Learning: My FRIENDS Youth

Figure 24 _ Causal chain for initiative #10 PB4L My FRIENDS Youth



My FRIENDS Youth is a PB4L programme that focuses on building resilience among youth by providing strategies to cope with life challenges. It is delivered by teachers to Year 9 students as a part of the Physical Education curriculum.

With reference to the framework for evaluation, the causal chain above (Figure 24) shows:

- **Activities:** number of students participating in My FRIENDS Youth

7 School-Wide has been adopted by a large majority of schools in New Zealand, which would make developing a control group very difficult.

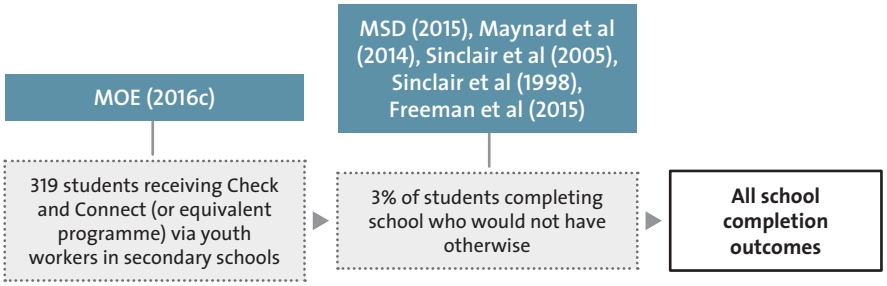
- **Short-term outcomes:** percentage of students participating in My FRIENDS Youth who experience improvements in mental health
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

The Ministry of Education provided accurate annual figures for the number of New Zealand students who have participated in the My FRIENDS Youth programme. An evaluation of My FRIENDS Youth in New Zealand found a short-term increase in intermediate outcomes such as knowledge of coping strategies – however, the evaluation did not attempt to consider or evaluate long-term outcomes. As such, we relied on international literature to provide evidence on the long-term mental health outcomes of the My FRIENDS Youth programme.

Research from Australia found no universal impact of My FRIENDS Youth on mental health outcomes (Lock & Barrett, 2003). Some research shows a potential for small positive effects when the programme is targeted towards females and those who are most at risk of developing mental illness (Lock & Barrett, 2003; Lowry-Webster et al., 2003). Research from Europe indicates a potential positive impact of My FRIENDS Youth if the programme was delivered intensively and by experienced facilitators (which is not the model followed in New Zealand) (Essau et al., 2012). By following the research principle of conservatism, we have assumed that the programme results in a small positive effect size.

Positive Behaviour for Learning: Check and Connect and Youth Workers in Low Decile Secondary Schools (YWiSS)

Figure 25 _ Causal chain for initiatives #9 PB4L Check and Connect and #14 YWiSS



Check and Connect is also part of the PB4L suite of programmes; it is an intensive mentoring programme targeted towards disengaged students. Check and Connect is delivered by youth workers as part of initiative #14 Youth Workers in Low Decile Secondary Schools.[8] As such, we have combined initiatives #9 and #14 for the purposes of cost-benefit analysis.

8 Nineteen youth workers have been employed as part of the YWiSS initiative. Of these 19, 15 deliver Check and Connect and the remaining four provide the Multi-Agency Support Services in Secondary Schools (MASSiSS) programme, which we have assumed to have similar workload and outcomes.

With reference to the framework for evaluation, the causal chain above (Figure 25) shows:

- **Activities:** number of students receiving Check and Connect support via youth workers in secondary schools
- **Short-term outcomes:** percentage of students completing school who would otherwise have not
- **Long-term outcomes:** all school completion outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

The Ministry of Education provided data on the age and date of entry into the programme for all participants of Check and Connect, which is information required to estimate the year in which the students would be expected to complete secondary school. The resultant cohort was 319 students, which is relatively small.

The key outcome targeted by Check and Connect is for students to achieve secondary school qualifications that they may not have otherwise achieved; this outcome is expected to generate long-term private and governmental monetary benefits as well as non-monetary benefits for individuals. An evaluation of Check and Connect was completed in 2016, and this indicated some positive early results from the programme. As the results are for a small group of students and do not include a control group, we have relied on international evidence about the ability of the programme to support youth to complete secondary school. None of the international studies provided evidence to support the assertion that Check and Connect increases the probability or rates of school completion. Some research provided evidence to support improved academic achievement, but results were mixed with respect to school attendance.

Comparisons between the American and New Zealand school systems are problematic, as school completion in America is assessed once at the end of secondary school, whereas the New Zealand NCEA system allows for achievement across levels 1, 2 and 3. As such, we have assumed that the increase in academic achievement observed internationally is equivalent to achievement of a lower secondary school qualification in New Zealand (i.e. NCEA 1 or 2).

3.10.2 _ Qualitative

Overall, initiative #26, Addressing the Emerging Youth Mental Health Issues in Canterbury, has achieved moderate direct coverage and has contributed strongly towards: psychosocial recovery of children and youth impacted by the Canterbury earthquakes; improved cross-agency relationships; and improved access to support services.

The information in Table 22 relates to initiative #26 Addressing the Emerging Youth Mental Health Issues in Canterbury.

TABLE 22

Qualitative evaluation of initiative #26, Addressing the Emerging Youth Mental Health Issues in Canterbury

Assessment criteria	Scale	Description
A. Coverage	Moderate (direct)	• The specific number of youth participating in this initiative has not been recorded. However, it is known that over 100 schools (primary, intermediate and secondary) have participated in the initiative to at least some extent. This information could be used to calculate a very high-level approximation (with reference to the school rolls). • While the coverage among Canterbury schools is extremely high, this initiative does not provide national coverage. • Initiative #26 is thought to have had both direct and indirect impacts on children and young people. The direct impact was achieved by psychosocial recovery among children and youth. Conversely, indirect impact was achieved by focusing on school communities, so that benefit was realised by parents and teachers as well as children and youth. • Initiative #26 is specific to the YMHP.
B. Type of initiative	Prevention	• The initiative targets psychosocial recovery (of Canterbury children and youth), which is considered to be primarily a preventative intervention. A small number of children / youth have also been referred for treatment.
C. Impacts / outcomes	Moderate	• No information or data has been collected on the direct outcomes or impacts on youth as a result of this initiative. As such, it is not possible to determine the quantum of any possible direct impacts / outcomes. However, it is assumed that the initiative did achieve (at least to some extent) psychosocial recovery of children and youth impacted by the Canterbury earthquakes. • Agencies involved have reported improved cross-agency relationships and collaboration as a direct result of the initiative. The initiative has also reported improved access to support services for children and young people attending school, and consolidated and better coordinated services for young people at school and their school communities. • With respect to the youth who benefited, initiative #26 is somewhat unique as it includes children of all ages, so had a wider scope than the YMHP, which focuses on youth aged 12–19 years.
D. Attributes	N/A	• The timing of the initiative was driven by concerns about the mental health of children and young people following the Canterbury earthquakes, and in particular an increased demand for child and youth mental health services.
E. Funding	Nil	• Initiative #26 was not allocated any specific YMHP funding as it relies on a number of existing funded initiatives. As such, any additional funding required has been sourced from the existing baselines of the government agencies involved.
F. Implementation	Ongoing	• The Canterbury DHB provides overall leadership for the implementation of the Christchurch 'Youth Mental Health Action Plan' and is supported by the Ministries of Education and Social Development. Governance of the Plan is provided by a joint Canterbury DHB and Education oversight group. This group has provided a framework for joint work in planning, monitoring and resolving issues and is considered to have facilitated closing service and communication gaps between agencies. • The initiative is still in progress and continues to adapt to meet needs identified by schools and their communities.
G. Data / information	Poor	• With the exception of the number of participating schools, no data has been collected. The only available reporting is progress reports prepared by the Canterbury DHB.

With respect to initiatives #8 PB4L School-Wide, #9 PB4L Check and Connect, #10 PB4L My FRIENDS Youth and #14 Youth Workers in Low Decile Secondary Schools, which were evaluated quantitatively, there are some important qualitative considerations that should also be considered.

Improved wellbeing from reduced behavioural problems in schools

Maynard et al. (2014) find positive impacts of the PB4L Check and Connect programme on disciplinary referrals and Horner et al. (2009) find statistical evidence that PB4L School-Wide was associated with perceived safer environments.

Where students feel safe and there are fewer behavioural disruptions in class, an overall lift in wellbeing is expected. A more collegial and supportive environment can also help foster self-esteem and friendship. Improved wellbeing, self-esteem and friendship are unquantifiable benefits that have the potential to strongly influence youth wellbeing and mental health outcomes. There is some New Zealand research that found that adolescents with low self-esteem grew up to have more criminal convictions in adulthood than those with high self-esteem (Trzesniewski et al., 2006).

Increased awareness of mental health issues

The New Zealand PB4L My FRIENDS Youth programme is designed to be delivered to youth as they enter secondary school. The programme empowers youth by providing them with knowledge and tools to identify and cope with mental illness. Further, the suite of PB4L programmes can also help to remove the stigma associated with mental health problems. This increase in awareness and understanding is key to creating a school environment where students feel comfortable discussing and seeking help for mental health problems. Awareness, knowledge and understanding are unquantifiable benefits that have the potential to strongly influence youth wellbeing and mental health outcomes.

3.11_ Evaluation: The 'Access to appropriate information' component

3.11.1 _ Quantitative

Of the three initiatives within the 'Access to appropriate information' component, only initiative #15 Social Media Innovation Fund has been evaluated quantitatively. Due to data limitations, initiatives #16 Improving the Youth Friendliness of Mental Health Resources and #17 Information for Parents, Families and Friends have been evaluated qualitatively.

As the 'Access to appropriate information' is focused on ensuring young people and their families know where to turn to find help and information, it is most difficult to link the activities of the initiative to long-term mental health outcomes as it is difficult to know who is receiving the information and if they sought help as a result. As such, the cost-benefit analysis only includes youth directly involved in initiative #15 Social Media Innovation Fund. The cohort in the quantitative analysis is therefore the least representative of the total cohort potentially impacted when compared with other YMHP components. We expected that a much larger cohort may have been impacted by this component, but have been unable to obtain quantitative information to support this expectation.

The profile of the YMHP 'Access to appropriate information' component is low effect sizes, low coverage and low cost. The profile reflects the fact there is insufficient evidence to support the effectiveness of access to appropriate information (as it is inherently difficult to measure) and is only directly delivered to a limited youth population. A wider population could be secondarily impacted, but it is difficult to quantify these youth. As a consequence, we estimate that the 'Access to appropriate information' component delivers a low level of economic value, with societal BCR ranging from 0.32 to 0.84 and the governmental BCR ranging from 0.10 to 0.25.

Results

TABLE 23

Cost-benefit analysis results for the 'Access to appropriate information' component

Measure	7% discount rate		3.5% discount rate	
	Low scenario	*High scenario*	*Low scenario*	*High scenario*
Present value of component cost	$1.75m	$1.75m	$1.87m	$1.87m
Total youth participants	526	526	526	526
Total youth positively impacted	26	53	26	53
Societal benefit to cost ratio	0.32	0.64	0.42	0.84
Governmental benefit to cost ratio	0.10	0.19	0.12	0.25
Societal net present value	-$1.19m	-$0.63m	-$1.09m	-$0.30m
Governmental net present value	-$1.58m	-$1.41m	-$1.64m	-$1.41m
DALYs avoided	19.26	38.53	19.26	38.53
DALYs avoided per $1m in costs	9.63	19.26	9.63	19.26
Weighted average effectiveness rates	5.00%	10.00%	5.00%	10.00%

Costs

The present value of the 'Access to appropriate information' component ranges between $1.75 million and $1.87 million, depending on the discount rate used.

Cohort

Approximately 526 youth have been directly reached by the 'Access to appropriate information' component and approximately 26–53 of those youth have or will have realised improved mental health outcomes (over a 10-year timeframe).

Benefit to cost ratio

We estimate the societal BCR will range between 0.32 and 0.84 depending on the discount rate and scenario applied. The governmental BCR is expected to range between 0.10 and 0.25 depending on the discount rate and scenario applied. As the BCR does not exceed 1.0 in any of the scenarios, there is no evidence to support the generation of societal or governmental economic value by the 'Access to appropriate information' component.

Net present value

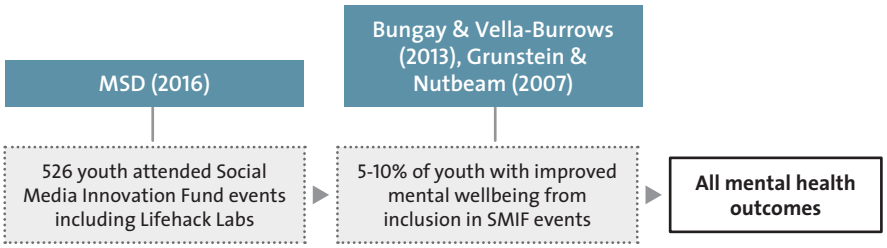
We estimate the societal NPV will range between – $1.19 million and – $0.30 million, which provides evidence that no societal net economic value has been generated. Similarly, the NPV from a governmental spending perspective also illustrates an estimated net economic loss.

DALY impacts

The total amount of DALYs expected to be avoided per every $1.0 million spent ranges between 9.63 and 19.26.

Social Media Innovation Fund

Figure 26 _ Causal chain for initiative #15 Social Media Innovation Fund



The only initiative included in the quantitative evaluation of the 'Access to appropriate information' component is initiative #15 Social Media Innovation Fund. The purpose of this initiative is to ensure that young people can get support for their emotional wellbeing and mental health through the innovative use of social media technology. This has been achieved by providing funding to youth mental health-related technology projects and by holding idea generation workshops (called 'Lifehack Labs').

With reference to the framework for evaluation, the causal chain above (Figure 26) shows:

- **Activities:** number of youth attending social media innovation events – including Lifehack Labs
- **Short-term outcomes:** percentage of youth with improved mental wellbeing as a result of participation in social media innovation events
- **Long-term outcomes:** all mental health outcomes (which include governmental monetary outcomes, private monetary outcomes, and quality of life outcomes, as detailed in Appendix F).

The Ministry of Social Development has provided data on the number of youth attending social media innovation events since the inception of the initiative.

As we have been unable to source evidence to support the assertion that social media innovation events result in improve mental health outcomes, we have relied on international literature that provides evidence of positive mental health and wellbeing impacts and outcomes (via feelings of inclusion, success and teamwork) as a result of being involved in creative endeavours (Bungay & Vella-Burrows, 2013; Grunstein & Nutbeam, 2007). As this research is international, not initiative-specific, and mainly qualitative in nature, we have made conservative assumptions with respect to effectiveness.

3.11.2 _ Qualitative

Overall, the 'Access to appropriate information' component achieved large indirect coverage and has contributed to: mental health agencies being better informed (with respect to developing 'youth friendly' mental health resources); mental health resources being more 'youth friendly'; improved access to high-quality youth mental health resources; improved support for youth; and improved wellbeing of youth. A detailed qualitative evaluation can be found in Appendix H.

The information in Table 24 relates to initiatives #16 Improving the Youth Friendliness of Metal Health Resources, #17 Information for Parents, Families and Friends (Common Ground) and #23 Referral Pathway Supports for Young People.

TABLE 24

Qualitative evaluation of the 'Access to appropriate information' component

Assessment criteria	Scale	Description
A. Coverage	**Large (indirect)**	Collectively, the 'Access to appropriate information' component achieves large coverage. This is primarily the result of initiative #17, which has a wide 'reach' via the Common Ground website. As both initiatives in this component are primarily designed to impart information, the component is considered to have an indirect impact on youth.
B. Type of initiative	**Prevention**	The 'Access to appropriate information' component aims to achieve prevention (via the provision of information and guidelines).
C. Impacts / outcomes	**Small**	The target audience is mental health agencies, youth aged 12–19, and family and friends of youth. As a general rule, information / data has not been collected to evidence the direct impacts of the initiatives on youth mental health outcomes. However, assumed and confirmed impacts / outcomes include: **Short-term:** • Mental health agencies are better informed (to develop 'youth friendly' mental health resources) • Mental health resources are more 'youth friendly' • Mental health providers and family / friends of youth have better access to high-quality mental health resources • Youth have improved access to mental health resources as a result of improvement to the referral process. **Long-term:** • Youth are more supported and have greater wellbeing.
D. Attributes	**N/A**	No specific attributes that affected the impacts / outcomes of this component have been recorded.
E. Funding	**$1.0m**	The only initiative contributing to this total funding of $1.0 million is #17 Information for Parents, Families and Friends.
F. Implementation	**Ongoing**	The 'Access to appropriate information' component is ongoing.
G. Data / information	**Poor**	While the 'Access to appropriate information' component has delivered reporting on user volume (via the Common Ground website), there is a lack of reporting, information and data on the impact of the initiatives on youth mental health outcomes.

3.12_ Evaluation: The 'Strengthening systems and processes' component

3.12.1 _ Qualitative

Overall, the 'Strengthening systems and processes' component achieved moderate indirect coverage and has contributed to: improved understanding of how youth wellbeing is achieved; the quality of future investment decisions; improvements in the design of youth mental health initiatives; and possible changes to policy and practice regarding the co-location of social services in schools. There is however limited evidence to support practical use or implementation of new information gained. A detailed qualitative evaluation can be found in Appendix H.

The information in Table 25 relates to initiatives #11 ERO: Review of Wellbeing in Schools, #12 Improving the Schools Guidance System, #13 Review of AOD Education Programme, #19 Youth Referrals Pathway Review, #20 Youth Engagement, #24 Developing Integrated Funding Models and Connected Service Delivery, and #25 Co-locating Additional Social Services in Schools.

TABLE 25

Qualitative evaluation of the 'Strengthening systems and processes' component

Assessment criteria	Scale	Description
A. Coverage	**Moderate (indirect)**	Collectively, the 'Strengthening systems and processes' component achieves moderate coverage. This is primarily the result of initiative #11, which has a moderate reach via the inclusion of 227 schools in a review of wellbeing. All other initiatives are considered to have small coverage. As all initiatives are research – or review-based, this component is considered to have an indirect impact on youth.
B. Type of initiative	**Prevention**	The 'Strengthening systems and processes' component aims to achieve prevention (via the provision of information and guidelines).
C. Impacts / outcomes	**Small**	The target audience is primary and secondary school students and youth aged 12–19 years. As a general rule, information / data has not been collected to evidence the direct impacts of the initiatives on youth mental health outcomes. However, assumed and confirmed impacts / outcomes include: • Schools are able to improve the wellbeing of students via the application of best practice • Future youth mental health investment decisions are more robust and better informed • The design and development of AOD educational programmes has improved • Youth mental health initiatives are more 'youth friendly' and 'fit for purpose', as youth were included in design and development • Possible changes have been identified to policy and practice regarding the co-location of social services in schools.

Assessment criteria	Scale	Description
D. Attributes	**N/A**	The qualitative impacts / outcomes of this component were influenced by the following: • Funding constraints – the majority of initiatives received no funding through YMHP • There are numerous factors that can affect the perceived wellbeing of an individual. As such, there is a high level of complexity associated with attempts to evaluate wellbeing. This could have impacted the outcomes and findings of the reviews.
E. Funding	**$0.92m**	Collective funding of $0.92 million was received via the YMHP. The initiatives contributing to this total are #11 ERO: Review of Wellbeing in Schools, and #12 Improving the School Guidance System.
F. Implementation	**Majority complete**	The majority of the initiatives within the 'Strengthening systems and processes' component are complete.
G. Data / information	**Poor**	While the 'Strengthening systems and processes' component has delivered specific research documents and reviews, there is a lack of reporting and data on the impact of the initiatives on youth mental health outcomes.

04

Data and information sources

Throughout the course of the cost-benefit analysis, we have collected and analysed a large body of research and data to support our conclusions. The references detailed in Appendix K detail the actual research and data used.

However, it is important to highlight that the quantum of research and data reviewed and assessed was significantly wider. Of this body of research and data, the comparability (to the New Zealand environment and YMHP) and design of the studies was highly variable. As a consequence of this variability, lack of uniformity and consistency with respect to the type of data collected, and significant data 'gaps', the overall quality of quantitative data supporting the YMHP initiatives is low.

The discussion below includes detail on the source, availability and quality of YMHP initiative, mental health and economic data. Each type of data is discussed separately. Following those discussions, we present in-depth reviews of two examples of source material, to demonstrate the challenges faced during this project. The final section includes recommendations for the future.

4.1 Data from initiatives

Initiative data refers to data that directly supports the activities and outcomes of the YMHP initiatives. The majority of initiative data was sourced from the government agencies (in the form of initiative evaluation reports, internal spreadsheets and documents, anecdotal discussion, and YMHP Quarterly Reports).

Overall, the availability and quality of this data is low – we note four possible reasons for this:

1. Data was not collected because there was no instruction or expectation that collection should occur.
2. There was an instruction and / or expectation for data to be collected, but the responsible party did not comply.
3. There was an instruction and / or expectation for data to be collected, and data was collected, but this was done in an inconsistent manner or the type of data collected was not informative.
4. There was an instruction and / or expectation for data to be collected, and the correct data was collected, but the data was not adequately shared or communicated to relevant stakeholders.

Other specific observations around initiative data include the following:

- Generally, we note that the highest-quality data and information is typically sourced from initiative-specific evaluations that have been performed by an independent party and / or from peer-reviewed published literature that is specific to New Zealand, youth and mental health. However, despite this data and information being the highest quality, it does not necessarily represent a 'gold standard' and as a consequence, may not provide a good enough evidence base to inform the design of governmental policy.

- Conversely, the lowest-quality data and information (where it is available) is typically anecdotal or qualitative in nature, or sourced from manually collated reports and spreadsheets, where multiple parties send data to a central repository (such as the DHBs providing data to the Ministry of Health).
- One issue raised several times is age. The YMHP is focused on ages 12 to 19. However, various initiatives focus on different age groups, and this affects the ability to compare like with like. The widest age range is probably 10 to 24 years of age; programmes tend to work with some sub-set of that range.
- The majority of quantitative 'initiative-specific data' currently collected is based on inputs and activities as opposed to outcomes. While we recognise that long-term economic or social outcomes can take approximately 5–20 years to be realised, the initiatives of the YMHP do not appear to have implemented tools or techniques to collect such data. This represents a significant gap in the causal chain and impedes the ability to assess the effectiveness of any particular initiative both now and in the future.
- The lack of uniformity and consistency of data collected across the YMHP initiatives resulted in the inability to perform specific analysis on different ethnic groups, specifically Māori and Pacific, as in the majority of cases this data did not exist in a form that could be used in cost-benefit analysis. Specifically, we were unable to source reliable and complete data to evidence the following:
  - 'reach' (or number of youth participating in the YMHP initiatives)
  - differential effect sizes among different ethnic groups
  - differential cost profiles by ethnic group.
- We are aware of significant data gaps in the counterfactual / baseline data for the majority of the YMHP initiatives. To overcome this challenge, we have used YMHP initiative-specific data (where available) rather than population data. Except for programmes that existed prior to the commencement of the YMHP, we assumed the baseline was nil with respect to activities and outcomes that arise as a consequence of implementing the initiative. This allowed approximation of the counterfactual by quantifying the total impact or change resulting from a new YMHP initiative.
- One particular gap in short-term outcome measures should be highlighted. Gluckman and Hayne (2011) recommended "that priority be given to ... raising public awareness of the particularities of adolescent depression". However, we have not been able to identify data being collected on this priority area, which raises issues for valuing the whole 'Access to appropriate information' component of YMHP.
- Of the total 26 initiatives, nine received 'nil' allocated funding through the YMHP. While we understand that these initiatives would have incurred expenditure in some form, we were unable to obtain reliable estimations of this cost as this information has not been tracked or monitored.
- The reporting to support initiative #3 Primary Mental Health is inconsistent and incomplete. As a consequence, there is no reliable baseline / counterfactual data or data that will allow us to reasonably estimate the additional number of youth seen or treated through Primary Mental Health as a direct result of the YMHP (for any of the years from 2012 to the present). Some of the reasons contributing to the poor quality of data include:
  - Changes to the DHB reporting template – while we understand that the revised DHB reporting templates are an improvement on the previous versions, changes to the template have resulted in differences in the type and depth of data collected, and this has impacted on our ability to compare data across different reporting periods

- DHBs using the YMHP funding in different ways (which was allowable) – many allocated the additional YHHP funding to their associated PHOs, some extended the capacity of their existing youth mental health services, and others used the funding to develop new youth mental health services or offerings
- Inconsistencies in the type and depth of data collected (by both DHBs and PHOs)
- Lack of unique identifiers – there are no unique identifiers for the youth seen, which means that double-counting may occur where the same youth accesses services in different reporting quarters (although we have been informed that the likelihood of this eventuality is low).

4.2_ Mental health data

Mental health data refers to data that supports the short- and long-term outcomes of mental illness as well as the effectiveness of mental health interventions. The majority of mental health data was sourced from published reports (including initiative evaluations) and peer-reviewed literature.

In particular, the longitudinal mental health outcome studies performed by the University of Otago have been used extensively throughout this evaluation. Additional research has also been carried out where initiative-specific data was insufficient to provide an estimate of the number of youth successfully impacted as a result of participation in YMHP. Favour was given to research that displayed the following characteristics:

- New Zealand-specific
- specific to mild to moderate mental illness
- youth-specific
- peer-reviewed academic journal articles
- peer-reviewed evaluations of international comparators of YMHP initiatives
- initiative-specific evaluation reports.

Where we were unable to source research that met the criteria detailed above, we referred to the broader body of academic literature.

The quality of the research that met those favoured criteria is high. However, where we were required to refer to broader literature, the quality was lower, as applicability and reliability were reduced. As such, the overall quality of mental health data used in this evaluation is considered to be moderate.

4.3 Economic data

Economic data refers to the data that can provide quantitative monetary values for short- and long-term social outcomes such as welfare dependency and employment outcomes. The majority of economic data was sourced from public statistical repositories such as Statistics New Zealand.

The economic data used in this report is all New Zealand-specific. In particular, we relied heavily on three datasets sourced from Statistics New Zealand:

- New Zealand population statistics
- the New Zealand quarterly benefit summary
- the New Zealand income survey.[9]

We have also used New Zealand-based research on the cost of alcohol and drug problems.

The quality of data obtained from Statistics New Zealand is considered to be high as it is New Zealand-specific and reliable. However, other data sources were less relevant and reliable, thus reducing the overall quality of economic data to moderate.

4.4 Assessing the evidence

A major part of this evaluation project has been assembling and assessing evidence of potential impacts from YMHP. We have combed the international literature in order to find evidence that interventions similar to the YMHP initiatives have produced effects on the target youth population. We examined many journal articles from the academic literature, as well as reports from the 'grey' literature. As we read them, we asked several questions:

- Was the intervention being studied similar to the intervention in YMHP?
- How have the effects of the intervention been characterised?
- How are the impacts measured? For example, are they self-reports or administered tests, and are there any clinical guidelines associated with the kind of impact reporting used?
- What was the experience of a control group?
- Over what period were the impacts reported? Is there evidence of ongoing differences?
- How robust are the results? What is the sample size? What are the potential biases? How large are the effect sizes? Is there testing for multiple hypotheses?

9 The most recent Inland Revenue tax rates have been used to assess the tax component of income.

We are aware that there are controversies about measuring the impacts of interventions. There is continued investigation of replicability in psychology and other disciplines. There is also ongoing debate about randomised controlled trials for work in the social sciences, and the extent to which they are helpful and meaningful. There continues to be debate about statistical significance, what it actually means, how it can be used, and what thresholds are appropriate. All these issues are relevant to the evaluation of the YMHP and introduce more uncertainty into the results. Nevertheless, we have had to set them aside in order to do this evaluation.

To do our analysis – to quantify the impacts of YMHP initiatives – it was necessary to find quantitative evidence of impacts. To achieve this, we read the literature and made judgements about each article, paper or report. Our judgements are summarised in Appendix D and Appendix E, but a much more extensive account would include not just the positive findings but also the negative findings. That is, we found many examples of research that was not helpful for our analysis or not informative for this evaluation.

To illustrate the difficulties involved in our review, we present a close examination of two sources. While they are good examples of the issues we faced, they are not unusual.

4.4.1 _ Example A. Lock and Barrett (2003)

Lock and Barrett (2003) is an article that is frequently cited to demonstrate the effectiveness of school-based interventions in reducing youth anxiety. We therefore referred to it to understand the potential impact of the initiative My FRIENDS Youth. Lock and Barrett (2003) studied the effectiveness of the Coping Koala programme in Australia in grade 6 and grade 9. The abstract presents a hopeful view of the programme: "Findings showed universal intervention as potentially successful in reducing symptoms of anxiety and increasing coping skills in children" (p. 183). The discussion section, likewise, presents a supportive picture: "Overall, results are encouraging in that a preventative effect was found indicating the FRIENDS program has the potential to reduce the number of children at risk of developing an anxiety disorder" (p. 195).

Our task in reading this article was to find a number that we could use as a measure of the effectiveness of My FRIENDS Youth on students who participated. The study assessed students on three scales, and measured the extent of anxiety as the proportion of students who had results over the clinical cut-off for anxiety / depression on those scales. Table 2 in the article presents a full-page table of means and standard deviations on three metrics by grade and gender. The table presents the average score and the variability around that score for pupils at the two grade levels, further disaggregated by female, male and total. Moreover, the table provides these figures for both the intervention group and the control group. Performance is measured by the three different metrics, which were gathered before the intervention, at the end of the intervention, and 12 months later.

The data is a model of the type of information that would allow us to calculate the effectiveness of an intervention.

The article reports extensively on the results of a multivariate analysis of variance (MANOVA). The focus is on the significance of various tests, as opposed to the size of the effects from the intervention. However, the data in Table 2 would allow us to calculate the effects sizes. Before we calculate the effect size, we first need to answer the question: *Did the intervention ('Group' in the article) produce a change over time in pupils' mental health scores, with some consistency across the two grades and two genders?*

A closer look at the numbers in Table 2 explains the difficulty. The overall total score on the Spence Child Anxiety Scale (SCAS) for the intervention group was 22.06 before the programme and 17.64 afterward, a change of 4.42. For the monitoring (control) group, the comparable figures were 24.40 and 21.26, a change of 3.14. However, the standard deviation for the scores is between 11.12 and 12.95, so it is not clear that a difference of 1.28 is meaningful. For example, the grade 6 intervention group had an improvement on the SCAS of 4.75, while the monitoring group's improvement was greater at 5.40.

The reason to use a MANOVA is to determine the impact of Group, Grade, Gender and Time on scores.

- The Groups (intervention and monitoring) may have different means, but that may be because they are statistically different from each other to start with, which confounds the impact of the intervention.
- The Grades (6 and 9) represent children at different stages and facing different pressures, so they are likely to have different scores.
- The Genders (male and female) may have different levels of anxiety or mental health (or score differently on the metrics).
- Over Time (pre, post, 12-month), there will be changes in mental health and performance on these metrics.

In order to use this study to support an analysis of the impact of the YMHP, it was necessary to determine what we could reliably and consistently say about the intervention. Our question was: *Controlling for background differences and changes, what impact did Coping Koalas have?* Statistically, the question is whether the Time x Group interaction is significant, because that will tell us whether, on average, the pupils in the two different groups changed differently over time.

The authors do report that many differences in mean scores are significant. They report that the MANOVA found statistically significant differences in mean scores for Group, Grade and Gender. Time had a significant interaction with Grade and Gender: pupils changed differently over time depending on their grade and gender. Group (treatment vs control) interacted with Time, but only in combination with Gender and Grade. That is, the grades were affected differently by the intervention, and the genders were also affected differently. Importantly for our analysis, **no significant interaction was reported for Time x Group**, which means that there was **no significant and consistent effect found for the intervention in this group of pupils**.

Despite the article suggesting that "findings showed universal intervention as potentially successful in reducing symptoms of anxiety and increasing coping skills in children" (p. 183), and despite the article being cited frequently as evidence of the effectiveness of this kind of intervention, the data did not provide evidence of significant and consistent improvements.

4.4.2 _ Example B. Barrett, Eber and Weist (2013)

During our engagement with stakeholders for this project, we were referred to a report by the Center for Positive Behavioral Interventions and Supports in Oregon, US. In our earlier reporting, we expressed difficulties in finding evidence about the effectiveness of universal, school-based interventions. The paper by Barrett, Eber and Weist (2013) was presented as support for the effectiveness of interventions. We were referred specifically to the following text (p. 143):

> One methodology to determine effectiveness of evidenced based interventions is a meta-analysis which is a research study that combines the results of several studies to examine the overall effectiveness of interventions. A large recent meta-analysis study (Weisz, Sandler, Durlak & Anton, 2005), found that averaging across the various outcome measures used, the average child who received evidenced based interventions was functioning better after treatment than more than 75% of children in the control group. These changes often were found to sustain after treatment termination. There were found larger impacts on those problems particularly addressed in treatment.

As a blanket statement, the text seems to provide good support for interventions and suggests that there is quantitative information that we could use for our analysis:

- It compares treatment and control groups.
- It expresses the impact quantitatively – the median outcome of the treatment group is equivalent to an outcome in the top quartile of the control group.
- The results are from a published meta-analysis.

To understand better the impact that was being measured, we reviewed Weisz et al. (2005). It is an article in *American Psychologist* entitled 'Promoting and protecting youth mental health through evidence-based prevention and treatment'. The statement about the relative experience of treatment and control group is on p. 630: 'One way to summarize the findings is to note that in all four meta-analyses, averaging across the various outcome measures used, the average treated child was functioning better after treatment than more than 75% of control group children.'

Importantly, the types of interventions that were evaluated are not universal programmes and are not school-based interventions. They are about psychotherapy with children and adolescents. The paragraph in Weisz et al. (2005) describes the results of six different studies. The titles of those studies are as follows:

- Analysis of selected methodological issues in child psychotherapy research
- Psychotherapy for children and adolescents: Directions for research and practice
- The outcome of psychotherapy with children
- Effectiveness of psychotherapy with children and adolescents: A meta-analysis for clinicians
- Empirical and clinical focus of child and adolescent psychotherapy research
- Effects of psychotherapy with children and adolescents revisited: A meta-analysis of treatment outcome studies.

Our conclusion was that the study by Weisz et al. (2005) contains evidence that is not useful for evaluating YMHP initiatives as they were designed and implemented, despite the general statement in Barrett et al. (2013). This is one example of the in-depth work we did to find evidence for our evaluation. In this report, however, we have not described or presented each case in which we found information that we could not use.

4.5_ Recommendations for future improvement

In response to the observations detailed above, we make the following recommendations to improve the availability and quality of data and information collected in the future:

- Prior to investing in and commencing a programme of work (e.g. the YMHP), develop uniform and consistent data standards to be applied by all initiatives and providers – for example: set a standard that all data collected should be identifiable by different ethnic or cultural categories.
- Prior to investing in and commencing an initiative or intervention, best practice is to understand and articulate the expected social and economic outcomes or benefits. This information should then be used to develop meaningful performance measures and to determine the datasets required to adequately inform or calculate those measures. When these measures and datasets are determined, baseline data should then be collected so that there is a basis from which to measure improvement or change that is attributable to the intervention.
- For each initiative or intervention, a singular and consistent approach should be used to collect data – this includes use of standardised data collection tools and uniform initiative-wide performance measures. Further, the collation of data should be performed by a single individual, team or organisation.
- Better use of available technology would allow more timely, accurate and complete data collection. Further, access to user-friendly technology is likely to encourage providers to improve their compliance with reporting obligations. For individual initiatives and interventions, use of electronic applications could be considered. In the long-term, data collection and quality could be vastly improved by improving the system used to track the health (and associated treatments, interventions etc.) of individuals throughout their lifetime.
- To improve data quality and completeness and compliance with reporting obligations, use of performance-based incentives, such as linking the provision of initiative funding to the satisfactory achievement of performance targets and measures and reporting obligations, should be considered.

05

Limitations of the cost-benefit analysis

The following limitations apply to the cost-benefit analysis and this report:

- This cost-benefit analysis has been performed at a point in time when many of the YMHP initiatives are still in progress. As the long-term outcomes or benefits of the YMHP are expected to be observed or realised in a timeframe ranging from five to 20 years, many of the expected benefits are yet to occur.
- As qualitative outcomes such as life satisfaction, confidence, resilience, engagement and knowledge are often not measured, it is extremely challenging to assign meaningful monetary values to these outcomes. A further difficulty is the lack of quality data supporting these types of measures, where the majority of data and information is anecdotal in nature. The implication of these challenges is that the cost-benefit analysis cannot effectively integrate these 'softer' qualitative outcomes. Where quantitative assessment was not possible, we have performed qualitative assessment.
- The cost-benefit analysis cannot adjust for reduced initiative effectiveness rates, where effectiveness is reduced as a result of uncontrollable risk factors. Risk factors include (but are not limited to) childhood abuse, family history of mental illness, family conflict, neglectful parenting, poverty, social disadvantage, experiencing violence or drug-taking, and negative peer influence (risk factors are described in more detail under 'Understanding youth mental health and wellbeing' in section 2.10).
- The cost-benefit approach has two inherent (but unavoidable) limitations:
  - Regardless of the availability and quality of data, it is necessary to make a certain number of assumptions in order to link sections of the causal chain – the lower the quality of the data, the larger the number of assumptions that are required. In an attempt to lessen the subjectivity (generated through the use of assumptions and proxy data) of the quantitative analysis, we have applied two different discount rates (7% and 3.5%) and performed sensitivity analysis (to calculate 'high' and 'low' scenarios).
  - Certain factors cannot be captured or quantified by this evaluation. These include the portion of New Zealand's youth enjoying good mental health and wellbeing (this is however taken into consideration to some extent by the counterfactual – though, due to the lack of reliable baseline data, the counterfactual itself is somewhat of an approximation), and 'ripple effects' of the intervention where changes occur to individuals other than the specific youth impacted by the initiative or intervention.
- Throughout this evaluation, we have collected and analysed a large body of research and data to support our conclusions. Of this research and data, the comparability and design of the studies was highly variable. As a consequence of this variability, and the lack of uniformity and consistency with respect to the type of data collected and significant data 'gaps', the overall quality of quantitative data supporting the YMHP initiatives is low (for example: data limitations did not allow specific analysis of the impact of the YMHP on different ethnic groups – including Māori and Pacific youth). These data limitations have impacted the accuracy and completeness of the conclusions and findings made through this evaluation.
- We are aware of significant data gaps in the counterfactual or baseline data for the majority of the YMHP initiatives. To overcome this challenge, we have used YMHP initiative-specific data (where available) rather than population data. Except for programmes that existed prior to the commencement of the YMHP (e.g. CAMHS and AOD Follow-up and Access), we will assume the baseline to be nil with respect to activities and outcomes that arise as a consequence of implementing the initiative. This will allow approximation of the counterfactual by quantifying the total impact or change resulting from a new YMHP initiative.

- The report does not seek to present an exhaustive list of data, information and literature on youth mental health, or even a full list of documentation reviewed. Rather, we have selected the most relevant and applicable studies that can be best utilised in a cost-benefit analysis.
- Data for this cost-benefit analysis was, in the first instance, collected without making direct contact with DHBs, PHOs and NGO service providers. We have therefore relied on the information received while accepting that the level of accuracy varies markedly between initiatives.
- Our cost-benefit analysis is not designed to take a 'system'-level view of youth mental health. Instead, we have evaluated the YMHP in isolation.
- As a result of limited New Zealand-specific data on youth mental health, we have relied heavily on international evidence. While the international evidence is robust, it is not always directly comparable to the New Zealand environment and has reduced comparability across initiatives.
- While we recognise that differences in local implementation could impact the outcomes and results of the YMHP initiatives, we have assumed standard implementation in all locations.
- Our analysis has not taken into account youth 'justice outcomes' – the key reasons for this are:
  - Evidence of the connection between youth mental health and youth offending is conflicting. Many studies find a link between youth mental health and offending only before confounding factors were included in the specification. After these factors were included, the impact of mental health on offending was no longer significant (Chatterji & Cuellar, 2006; Hirschfield et al., 2006). Some New Zealand evidence shows that low self-esteem in adolescence leads to increased adult offending (Trzesniewski et al., 2006). However, without self-esteem data for baselines or programme impact, this research cannot be used in our analysis. See Appendix E for more detail on the research used throughout this analysis.
  - None of the YMHP initiatives collected data on youth offending, and data outlining the costs of youth crime in New Zealand is very limited. The most frequently cited research on the cost of crime in New Zealand is Roper & Thompson (2006). This report, however, uses 2003 data and is based on the adult justice system. New Zealand has a diversionary youth justice system whereby youth offenders rarely present at adult courts and do not receive extensive prison sentences (these two factors are the key drivers of the cost of adult crime in New Zealand), and therefore it is not necessarily appropriate to include any of the known adult costs of crime into an analysis relating to youth.

- Our analysis has not taken into account long-term outcomes associated with youth self-harm / suicide, pregnancy and engagement, for the following key reasons:
  - Youth self-harm and suicide: The majority of research on youth self-harm and suicide provides evidence to support a strong correlation between **severe** mental illness and youth suicide. As severe mental illness is outside the scope of the YMHP, we have excluded avoidance of self-harm and suicide as a long-term outcome in this cost-benefit analysis. An additional reason for this exclusion was the inability to source reliable evidence to support the monetary impact associated with avoiding youth self-harm and suicide in New Zealand.
  - Youth pregnancy: As the impact of avoiding youth pregnancy would likely be measured using the same monetary values as those used to measure mental health (i.e. welfare benefits, income and healthcare), we have excluded it from the cost-benefit analysis to avoid double-counting.

- Engagement: 'Engagement' does not appear to be a well-defined measure of youth attitude, behaviour, experience or mental health. From our review of the available literature, we were unable to find a single and consistent definition for the term 'youth engagement', and initiatives that sought to improve engagement did not appear to have ways to measure levels or changes in it. We also note that the majority of research relied on self-reports, rather than tests with validated scales or observed changes in behaviour. As such, we have excluded improved youth engagement as a long-term outcome of this cost-benefit analysis.

- We recognise that there are numerous, and often inconsistent, definitions of 'mild to moderate' mental illness. This has the potential to affect the scope of our analysis.
- In our analysis, one of the long-term economic outcomes of improved youth mental health is a reduction in the number of individuals collecting welfare benefits. The cost-benefit analysis does not adjust for the number of jobs available.
- Due to data and scope limitations, we have not taken into consideration any private costs associated with participating in the YMHP initiatives. Those costs would include the opportunity cost of people's time (for both those participating in and those delivering or implementing the initiatives).

06

Lessons learned

During the course of the engagement, a number of lessons were learned. These fall into the following three broad categories:

- impacts and outcomes of the YMHP
- cost-benefit analysis inputs
- data, information and reporting.

Each category and the individual lessons are detailed and discussed below.

6.1_ Impacts and outcomes of the YMHP

The following lessons relate to the impacts and outcomes of the YMHP. These lessons were learned during the early stages of the engagement:

- The matrix of outcome measures (found in Appendix B) produced an important learning. It is important to communicate what the outcome measures are for and where the information will come from. One of the initial reactions was that it was too early to be claiming that specific YMHP programmes were having long-term impacts. It was important to explain that the YMHP initiatives would contribute data on short-term impacts, while the longer-term impacts would be sourced from other programmes and the literature.
- From our discussions with key partner agency contacts, we have come to understand that there appears to be a limited linkage made between the expected qualitative benefits of a youth mental health initiative and the long-term economic impacts (meaning that economic impacts do not appear to be a key 'driving force' behind the design and implementation of many of the YMHP initiatives). This is likely to represent somewhat of a 'disconnect', with respect to underlying motivation or purpose, between central government / Treasury and the partner agencies responsible for designing and implementing the initiatives.
- In developing the quantitative evaluation framework, we have found causal chains to be the most effective method for linking initiative activities, short-term outcomes and long-term outcomes. In many instances the draft or complete chain is different from what was originally anticipated.

6.2_ Cost-benefit analysis inputs

The following lessons relate to the inputs of the cost-benefit analysis itself. Specifically, these lessons centre around the target audience of the YMHP (being New Zealand youth aged 12–19 who have or are at risk of developing mild to moderate mental illness) and the numerical parameters of the cost-benefit analysis (being discount rates and timeframes):

- One issue raised several times is age. The YMHP is focused on ages 12 to 19. However, the PwC expert panel has noted that people into their early 20s may face similar issues to teenagers. In addition, various programmes focus on different age groups, which will affect the ability to compare like with like. The widest age range is probably 10 to 24 years of age; programmes tend to work with some sub-set of that range.

- The YMHP Steering Group are sensitive to the proposed assessment timeframe and discount rates. During the Steering Group meeting held on 10 December 2015, we agreed to use a timeframe that provides a sufficient representation of the long-term impacts and benefits of the YMHP. To achieve this, we have applied an assumption that each cohort of youth experience continual benefit from their participation in YMHP for a 10-year period of time. As individuals have been involved in the programme over a four-year period and some impacts contain delays, for example avoided welfare benefits, the model includes benefits over a longer period than 10 years. For example, costs for initiatives started in 2012, but a youth may have entered as a 14 year old in 2015, and they could not then qualify for welfare benefits until age 18 in 2019, and the relevant period would then extend until 2029. As a result benefits are modelled until 2030. We also agreed to include a discussion on the discount rates used and the appropriateness of such rates for social investment projects (which typically use lower rates e.g. 3.5%).

6.3 Data, information and reporting

The following lessons relate to data, information and reporting that supports the YMHP initiatives. It should be noted that a specific discussion on data and information sources is presented in section 4. Much of that information is repeated in the lessons below.

- From our research, we have discovered that a lack of high-quality quantitative data on the effectiveness of youth mental health initiatives is a common problem experienced worldwide.
- The majority of quantitative 'initiative-specific data' currently collected is based on inputs and activities as opposed to outcomes. While we recognise that long-term economic or social outcomes or benefits can take approximately 5–20 years to materialise or crystallise, the initiatives of the YMHP do not appear to have implemented tools or techniques to collect such data. This represents a significant gap in the causal chain and impedes the ability (now and in the future) to assess and determine the effectiveness of any particular programme, intervention or initiative. As the YMHP is still in its early stages, now would be the ideal time to set up tools and techniques for collecting outcomes data.
- As a general observation, we note that the highest-quality data and information is typically sourced from initiative-specific evaluations that have been performed by an independent party and / or from peer-reviewed published literature that is specific to New Zealand, youth and mental health. Conversely, the lowest quality data and information (where it is available) is typically anecdotal or qualitative in nature, or sourced from manually collated reports and spreadsheets (where multiple parties send data to a central repository, such as the DHBs reporting data to the Ministry of Health).
- Our current assessment of initiative data is that funding does not appear to be linked to clear performance targets and measures against which to monitor progress or success. As a consequence, the initiative evaluations tend not to be guided by specific performance measures and frameworks. The resulting evaluation reports therefore contain limited data on the outputs or outcomes of programmes or initiatives. In these cases, they may provide insufficient data for informing prioritisation and future investment decisions.

- Further, we note that the absence of reporting or poor-quality reporting seems to be accepted by government agencies. For example, it appears that DHBs are receiving funding regardless of whether or not they meet reporting obligations under the YMHP. From our perspective, the consequence is incomplete and poor-quality performance data, which limits the ability to: assess the effectiveness of the associated programme; determine whether providers have met minimum requirements; and / or inform prioritisation and future investment decisions.
- Due to the reasons detailed below, initiative #3 Primary Mental Health has been evaluated on a stand-alone basis:
  - There is significant uncertainty surrounding the completeness and accuracy of the data / evidence supporting the 'reach' (the total number of youth seen or treated) of the YMHP Primary Mental Health initiative. We have received information from stakeholders about the number of youth seen by Primary Mental Health services in the final quarter of 2014 (financial year) and 2015. However, we have not received the equivalent information about the number of youth seen prior to this period and as such, have no basis against which to measure or determine the counterfactual (which is important for an initiative that pre-exists the YMHP). Further, the information provided did not include unique identifiers for the youth involved, which means that youth may be double-counted if they return in different reporting quarters (however, we have been informed by stakeholders that the likelihood of this event is low). As a result of these data limitations, the figures used in our analysis to evidence 'reach' are an extrapolation of the available data, which has been calculated using a number of high-level assumptions.
  - The effect size of the Primary Mental Health initiative is unknown. None of the research collected in our extensive literature review nor that provided by stakeholders was New Zealand-specific, nor was it directly comparable to the type of services offered through Primary Mental Health. The inability to source research that was comparable to the Primary Mental Health service offering was in part due to the inability to define or identify a 'standard' type of service, as participating DHBs used the YMHP funding in different ways (for consistency, we have assumed that the 'standard service' is something of a 'light touch' intervention given that the average expenditure per youth served ranges between approximately $300 and $400 over the duration of the youth's participation). As a result of this limitation, the effect sizes used in our analysis are estimates or proxies for the possible impacts of Primary Mental Health.
  - Primary Mental Health is large in terms of scope and budget (the budget for this initiative is $11.3 million, which makes up 20% of the total YMHP funding). As such, this initiative will have significant influence on the overall results of any quantitative analysis of the YMHP. This is particularly important in light of the data limitations described above, as including Primary Mental Health in the overall YMHP cost-benefit analysis will overshadow the better quality information and data of the other initiatives and reduce the reliability of the project-level results.

Appendix A

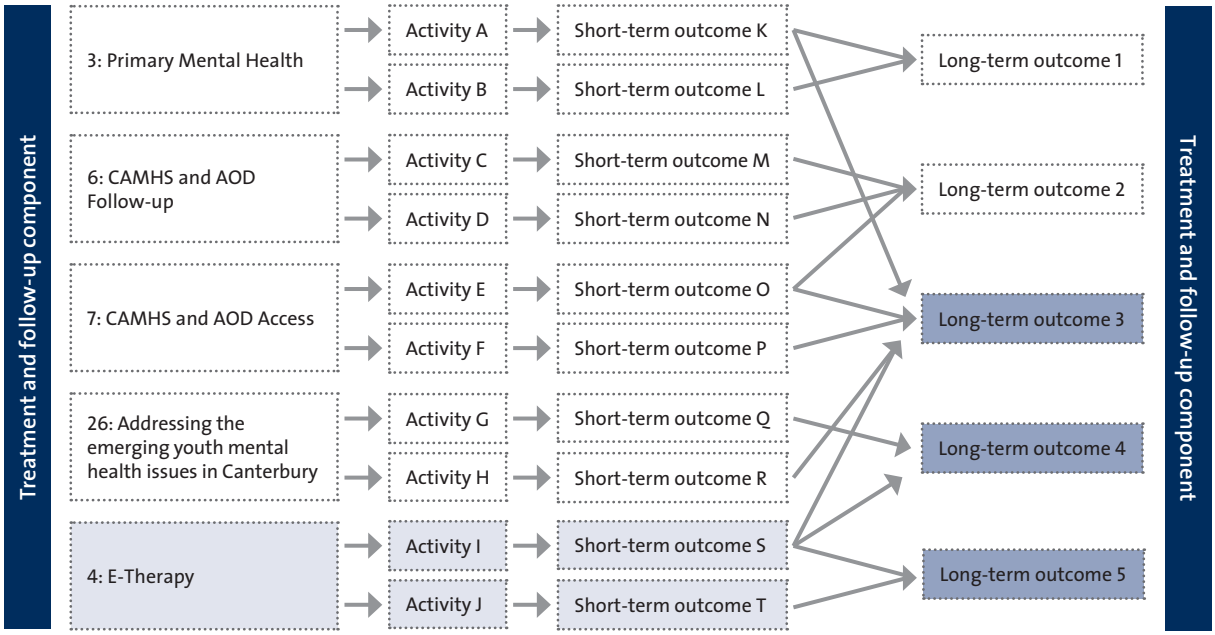
Detailed description of the cost-benefit analysis methodology

Detailed cost-benefit analysis (CBA) methodology

The six steps used to complete the CBA for the YMHP are listed and explained in detail below.

It is important to note that within a common YMHP core component (e.g. Treatment and follow-up) the causal chains attributable to each initiative must initially be built individually – this is because each initiative has unique activities and short-term outcome measures. However, upon completion of the individual chains, the chains were linked up at the long-term outcome level (this concept is illustrated in Figure 27, which uses the 'Treatment and follow-up' component as an example).

Figure 27 _ Demonstration of how a single causal chain feeds into a single YMHP core component



Steps 1 to 3, describe the approach taken to build individual causal chains within a single YMHP core component (e.g. Treatment and follow-up). Step 4 describes the combination of individual causal chains into a single core component. Steps 4 and 5 are applied to a complete single core component (which encapsulates the relevant individual initiatives).

The entire methodology (steps 1 to 6) was completed separately for each of the four YMHP components before quantitative evaluation was performed.

Step 1: Identify, name, describe and link the costs and economic benefits (outcomes) of the YMHP initiatives within scope

Costs

With respect to costs, the evaluation only includes direct costs (associated with each of the initiatives in scope) that were incurred between 2012 and 2016 (the timeframe of the original tranche of funding). All cost information modelled has been source from key contacts for each initiative.

Economic benefits (or outcomes)

For the purposes of CBA, it was necessary to identify quantifiable and measurable outcomes that are specific to each of the initiatives included in the scope of the evaluation. The process followed for determining initiative outcomes is described below. A condensed version of the outcome measures for the entire YMHP is presented in Appendix B. These outcome measures were distilled from the literature on youth mental health and agreed with Superu.

Process used to devise appropriate outcomes measures:

1. In accordance with the primary purpose of each initiative, sort the initiatives into the four core components of the YMHP: (1) access to appropriate information, (2) supportive schools, (3) early identification and support, and (4) treatment and follow-up. Where a single initiative contributes directly to more than one component, it is included in both categories.
2. With reference to initiative specific reports and information, identify the activities expected to occur as a direct result of putting the initiative into practice. Then the appropriate measures for each activity are determined.
3. With reference to initiative specific reports and information, identify short-term outcomes that are expected to occur as a direct result of putting the initiative into practice. Then the appropriate measures for each short-term outcome are determined.
4. With reference to domestic and international academic literature, identify long-term economic outcomes that are expected to occur as a direct result of putting the initiative into practice. Then the appropriate measures for each long-term outcome are determined.

Step 2: Quantify the counterfactual for YMHP components (or specific initiatives)

The counterfactual aspect of the CBA involves comparing what happened as a result of accessing the YMHP against what might have happened without access.

In this particular case, there are significant data gaps in the baseline data for the majority of the YMHP initiatives. To overcome this challenge, we used YMHP initiative-specific data (where available) and drew on initiative-specific service specifications where available, rather than population data.

Step 3: Quantify activities and outcomes; develop a causal chain; and compare to the counterfactual

This step involves quantifying activities and outcomes, during which it is necessary to develop a causal chain. The step outlines how the intervention connects youth seen with the long-term outcomes expected from the service, and this can then be compared to the counterfactual. Where available, we used 'actual' data for the period from 2012 to 2016. Beyond this date, data was extrapolated as appropriate.

- To quantify activities, it was necessary to refer to YMHP initiative-specific 'count data' – this provided data to evidence the coverage or reach of the particular initiative or component.
- To quantify short-term outcomes, it was also necessary to refer to YMHP initiative-specific 'count data' – this provided data to evidence the level of uptake or usage of the particular initiative or component.
- To quantify long-term outcomes, it was necessary to refer to domestic and international literature – this provided data to evidence the effectiveness of the particular initiative or component in achieving economic benefits.

By seeking evidence and data to quantify activities, short-term outcomes and long-term outcomes, a causal chain was formed.

Quantified costs, activities and outcomes of the YMHP were then compared to the counterfactual where possible. This allows for calculation of the change or delta that has occurred as a result of implementing the YMHP.

Quality of Life outcomes

Disability Adjusted Life Years (DALYs) were used to measure quality of life of individuals with mild to moderate mental illness. The New Zealand Burden of Disease Report outlines the number of years of life disabled and years of life lost from a range of diseases. These two measures combined yields DALYs. The analysis took the total DALYs lost through anxiety and depression of 20–24 year olds in New Zealand and distributed them over the population of 20–24 years olds estimated to have anxiety and depression. This generated an approximation of the DALYs lost by one individual with anxiety / depression that can be avoided through successful treatment and support.

Step 4: Link individual initiative causal chains into a single YMHP core component

This step involves linking individual initiative causal chains into a single YMHP core component. This involves assessing the number of youth successfully generating each long-term outcome in each component and aggregating them to a component-level.

Step 5: Apply a Net Present Value calculation to the costs and benefits (outcomes)

This is a mechanical step in the analysis in which we assembled the information from Steps 1, 2 and 3 and put all the values in the same terms. The process included adjusting values and discounting. Two discount rates were applied – 7%, which is the Treasury's default public sector discount rate, and 3.5%, which allows for sensitivity testing.

This step accounts for the difference between a dollar of cost or benefit now, versus a dollar of impact at some time in the future. We applied a net present value (NPV) calculation to the values obtained in order to put values over time in the same terms. The chosen time-scale for this evaluation is 10 years for each individual, but the whole YMHP programme was measured over a longer period to account for those expected to achieve long-term outcomes further into the future. We have chosen this timeframe for the following reasons:

- It is a commonly used timeframe for CBA.
- The annual impacts of the initiatives fall to approximately 50% after 10 years.
- Due to the NPV calculations (which reduce the value of a dollar in the future), lengthening the timeframe greatly has an increasingly negligible impact on the outcome of the CBA.

Step 6: Summarise the values of the costs and benefits to calculate key CBA metrics

The final step of a CBA is to produce summary statistics. We have included CBA and cost-utility analysis metrics and measures.

Cost-benefit

With respect to CBA metrics, we summarised outcomes for each of the four core components of the YMHP and for the project as a whole. The analysis yields a gross economic benefit figure that represents the total benefits generated by the programme, not including the costs incurred to generate them. The two key statistics used are the benefit to cost ratio (BCR) and net benefit. The BCR divides benefits by costs to produce a single number that expresses the extent of value relative to the size of the investment. Values over 1.0 indicate that interventions produce more benefits than they cost. The net benefit calculation subtracts the total costs from gross economic benefits. It produces a dollar value for the net benefit from the intervention after accounting for costs.

Cost-utility

With respect to cost-utility analysis metrics, we present Disability Adjusted Life Years (DALYs). A DALY measures the burden of disease or disability on quality and quantity of life.

The full table of metrics presented are described in Table 10.

Appendix B

Outcome measures for the YMHP

TABLE 26

Outcome measures for the YMHP

	#	Initiative name	Measures resulting from initiative activities	Short-term outcome measures	Long-term outcome measures
Treatment and follow-up	3	**Primary Mental Health**	Average waiting time from referral to treatment – youth Number of redeemed referrals by youth DHB / PHO funding per head Number of youth specific services established by DHBs – using YMHP funding	Number of 'packages of care' issued to youth Number of youth who received brief intervention counselling Number of youth who completed group therapy Number of youth accessing treatment services (CAMHS, AOD) Number of youth completing treatment Rate of youth discharged from care with follow-up plan Number of youth returning to care post-discharge	Reduced prevalence of clinically diagnosed youth mental illnesses (depression, anxiety etc.) [per K10 / SF36] Reduced number of self-harm incidents – youth (self-reported) Reduced number of youth suicides Reduced cases of alcohol and substance abuse (incl. smoking) – youth Reduced youth offending (arrest, conviction, charges) Reduced youth re-offending Increased overall life satisfaction rating – youth Increased social contact with family and friends in another household Reduced numbers of youth who feel lonely Increased earnings per youth (and PAYE) and lower rate of youth unemployment Lower number of youth not in employment, education or training (NEET) Reduced amount of spending on welfare benefits – youth
	6	**CAMHS and AOD Services Follow-up**			
	7	**CAMHS and AOD Services Access**			
	4	**E-Therapy**	Number of 'hits' on the E-Therapy website The amount of time spent on the SPARX website	Number of youth aged 12–19 registered for treatment on SPARX Number of activities / modules completed on SPARX Number of youth aged 12–19 who have an improved 'mood quiz' score on SPARX	
Early identification and support	1	**School Based Health Services (SBHS)**	Number of schools with SBHS offering Number of nurses (or nurse hours) in schools (FTE) Number of GPs in schools / learning organisations (FTE) Number of providers – completed HEEADSSS training Number of providers – completed awareness training (e.g. MH101) Number of providers using YMHP HEEADSSS DHB / PHO funding per head Number of youth-specific services established by DHBs – using YMHP funding	**Improved access:** Number of youth that consulted with a nurse Number of youth that consulted with a GP Number of referrals issued to youth Number of redeemed referrals – by youth **Other:** Number of youth – received a HEEADSSS check Number of 'packages of care' issued to youth Number of youth who received brief intervention counselling Number of youth who completed group therapy Increased capacity of YOSS to service youth (20 hours / week) Number of youth accessing the services of a YOSS	Reduced prevalence of clinically diagnosed youth mental illnesses Reduced number of self-harm incidents – youth (self-reported) Reduced number of youth suicides Reduced number of youth pregnancies Reduced cases of alcohol and substance abuse (incl. smoking) – youth Reduced youth offending (arrest, conviction, charges) Reduced youth re-offending Increased overall life satisfaction rating – youth Increased social contact with family and friends in another household Reduced numbers of youth who feel lonely Increased earnings per youth (and PAYE) and lower rate of youth unemployment Lower number of youth NEET Reduced amount of spending on welfare benefits – youth
	2	**HEEADSSS Wellness Check**			
	3	**Primary Mental Health**			
	5	**Primary Care Responsiveness to Youth**			
	18	**Social Support for Youth One Stop Shops (YOSS)**			
	21	**Youth mental health training for social services**			
	22	**Whānau Ora for Youth Mental Health**			

Supportive schools	8	**Positive Behaviour for Learning (PB4L): Positive Behaviour School-Wide**	Number of schools participating in PB4L by programme Number of youth participating in PB4L CC and MFY Number of youth workers in secondary schools Number of Canterbury schools engaged with the school-based mental health team Number of new / additional initiatives (by type) in Canterbury schools	Truancy rates at school SSEE rates (stand-down, suspension, exclusion and expulsion) Number of referrals issued to youth Rate of office disruptive referrals Number of youth completing PB4L CC – through: (a) youth workers (b) other providers Greater engagement from family / whānau Number of youth participating in sport / cultural activities Number of Canterbury youths accessing YMHP initiatives	Reduced prevalence of clinically diagnosed youth mental illnesses Increased overall life satisfaction rating – youth Increased social contact with family and friends in another household Reduced numbers of youth who feel lonely Increased youth engagement at school Reduced bullying at school Increased percentage of youth achieving NCEA 2 or higher Increased number of youth undertaking tertiary education and training Increased earnings per youth (and PAYE) and lower rate of youth unemployment Lower number of youth NEET Reduced amount of spending on welfare benefits – youth
	9	**PB4L Check and Connect (CC)**			
	10	**PB4L My FRIENDS Youth (MFY)**			
	14	**Youth Workers in Low Decile Secondary Schools (YWiSS)**			
	26	**Addressing the emerging youth mental health issues in Canterbury**			
Access to appropriate information	15	**Social Media Innovation Fund (SMIF)**	Number of social media services developed (Lifehack) Number of youth involved in Lifehack events Number of promotional campaigns run – YMHP Availability of up-to-date and easy-to-access information	Number of youth accessing the social media service (Lifehack) Number of youth / family accessing Common Ground website Number of youth / family accessing YMHP information Number of youth with improved awareness of mental health resources Number of times mental health resources are recommended (by youth)	Reduced prevalence of clinically diagnosed youth mental illnesses Increased overall life satisfaction rating – youth Increased social contact with family and friends in another household Reduced numbers of youth who feel lonely Youth have better access to information of mental health Increased earnings per youth (and PAYE) and lower rate of youth unemployment Lower number of youth NEET Reduced amount of spending on welfare benefits – youth
	16	**Improving the youth-friendliness of mental health resources**			
	17	**Information for parents, families and friends**			
	23	**Referral Pathway Supports for Young People**			
Strengthening systems and processes	11	**Education Review Office: Review of wellbeing in schools**			
	12	**Improving the School Guidance System**			
	13	**Review of AOD Education Programmes**			
	19	**Youth Referrals Pathway Review**			
	20	**Youth Engagement**			
	24	**Developing integrated funding models and connected service delivery**			
	25	**Co-locating additional social services in schools**			

Appendix C

Data quality rating scale

Figure 28 below details the 'rating scale' used to assess the quality of data used in the YMHP cost-benefit analysis. The scale applies to both quantitative and qualitative data alike.

Figure 28 _ Data quality rating scale

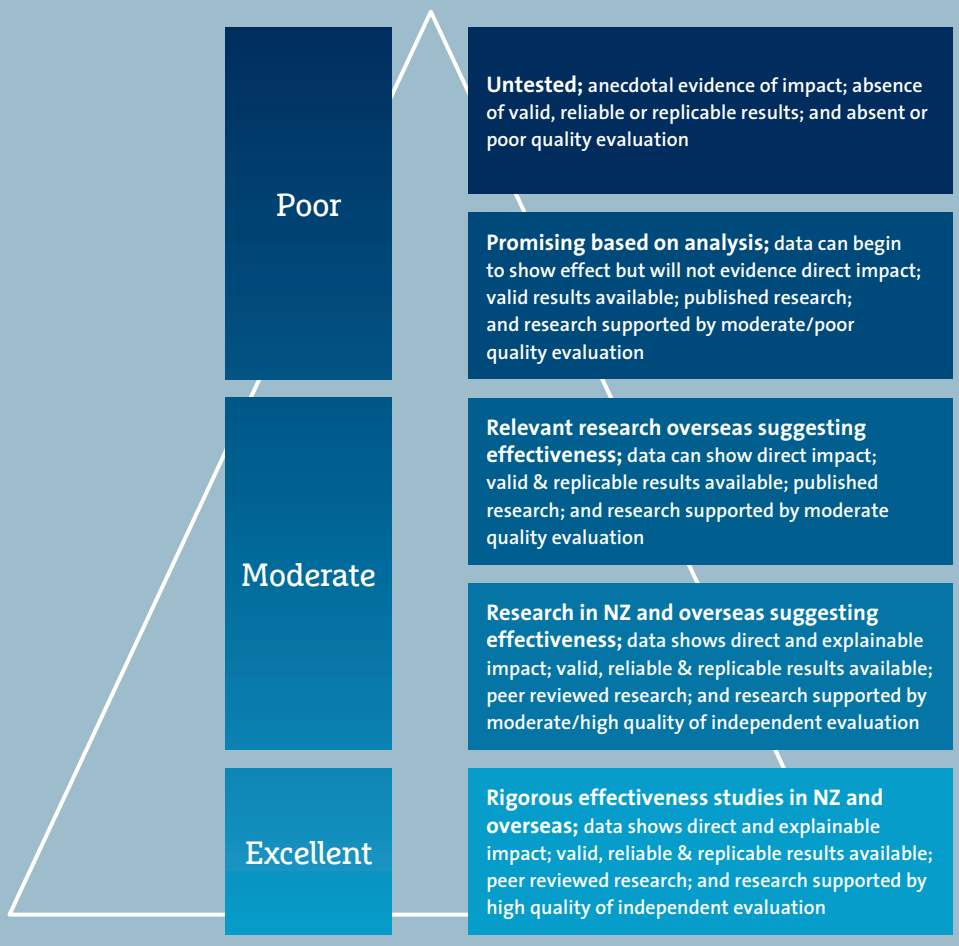


Figure adapted from the Superu and NESTA Standards of Evidence (Puttick and Ludlow, 2013)

Appendix D

Evidence supporting activity and short-term outcome measures

Activity data and information

Table 27 to Table 30 describe the information and data sources supporting the activity measures that describe the services and interventions in each initiative. The content of columns 1 to 6 is as follows:

- **Column 1** is an 'A1' – 'A25' categorisation of each activity measure.
- **Column 2** describes each activity measure per the Schedule of YMHP Outcome Measures / Indicators (refer to Appendix B).
- **Column 3** provides detail on whether the activity measure is linked to an initiative that is being quantitatively or qualitatively assessed.
- **Column 4** provides detail on information and data (including source) that supports each activity measure.
- **Column 5** provides a single data-quality rating applicable to all data and information identified for each activity measure. The rating has been made with reference to the quality, relevance and specificity (youth and New Zealand) of data and information. The quality rating is based on the scale presented in Appendix C.
- **Column 6** details our approach to mitigate poor quality or absent data and information.

TABLE 27

Data and information supporting activity measures – 'Treatment and follow-up' component

#	Activity	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
A1	Average waiting time from referral to treatment – youth	Quantitative	Per the Ministry of Health Waiting Time Report Dashboard spreadsheet dated 6 December 2012, figures from the year to date ending September 2012 are as follows: • 63% of mental health clients aged 0–19 were seen within 3 weeks and 88% within 8 weeks • 67% of AOD clients aged 0–19 were seen within 3 weeks and 84% within 8 weeks. Per the Ministry of Health Waiting Time Report Dashboard spreadsheet dated 17/9/15, figures from the year to date ending June 2015 are as follows: • 77% of mental health clients aged 12–19 were seen within 3 weeks and 93% within 8 weeks • 86% of AOD clients aged 12–19 were seen within 3 weeks and 96% within 8 weeks.	**Moderate** The information from YMHP Quarterly Report is drawn from reports submitted by the DHBs. The data does not align directly with the original activity measure, rather it only gives an indication of the % of patients who fall within targeted ranges.	**Substitute** the measure by using activity measure A4.
A2	Number of redeemed referrals by youth	Quantitative	Health providers do not record referrals to primary health care and CAMHS / AOD facilities in a universally consistent manner. As such, this information is not currently available.	**Poor** There is no data available.	**Substitute** the measure by commencing the causal chain from short-term outcome measures S1 to S4.
A3	DHB / PHO funding per head	Quantitative / Qualitative	As different services are purchased in different ways and with varying intensities, we have been unable to establish a useful figure for the funding per head.	**Poor** There is no data available.	**Substitute** the measure by commencing the causal chain from short-term outcome measures S1 to S4.
A4	Number of youth-specific services established by DHBs – using YMHP funding	Quantitative / Qualitative	From our discussions and research to date, we understand the DHBs have utilised YMHP funding in a variety of different ways: some have used the funding to establish new services while others have simply extended existing services. As such, activity measure A4 does not provide a meaningful benchmark to determine the impact of YMHP.	**Moderate / Poor** The available data does not support activity measure A4. However, we have sourced data that supports the total number of youth treated.	**Amend** the activity measure to: *Number of youth who have received mental health treatment*. With data issues, this measure is used in the stand-alone CBA for initiative #3 and not in the full YMHP CBA.
A5	Number of Canterbury schools engaged with the school-based mental health team	Qualitative	This measure relates directly to initiative #26 Addressing the Emerging Youth Mental Health Issues in Canterbury. This initiative will be assessed qualitatively	**Poor** The only available information is anecdotal in nature.	**Remove** this activity measure and perform a qualitative assessment of initiative #26.

#	Activity	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
A6	Number of new / additional initiatives (by type) in Canterbury schools	Qualitative	Refer to A5	Refer to A5	Refer to A5
A7	Number of 'hits' on the E-Therapy website	Quantitative	Per the Uniservices Evaluation Report: SPARX Online Version Establishment (SOLVE) Evaluation Findings dated 10 October 2015 shows the number of youth visiting and registering for the website.	**Excellent** The available data directly supports the activity measure and is from a reputable source.	While the available data is of excellent quality, modelling suggests this particular measure did not provide valuation information as to the actual usage / uptake of the SPARX programme. As a result, we will **substitute** this measure by starting the causal chain from short-term outcome measure S10.
A8	The amount of time spent on the SPARX website	Quantitative	Per the Uniservices Evaluation Report: SPARX Online Version Establishment (SOLVE) Evaluation Findings dated 10 October 2015, the tracked measures include: • the number of visits to the SPARX website • the number of visits to the SPARX E-Therapy website • the use of other resources on the website • the number of users registered on the website • the number of contacts to Youthline and Lifeline made by SPARX users • the number of SPARX E-Therapy modules completed • the time lapse from start to completion of each module • effect sizes in terms of improvements in depression symptoms With regards to the original activity measure, the most appropriate available substitute measure is 'the number of SPARX e-therapy modules completed'.	**Excellent** The available data directly supports the activity measure and is from a reputable source.	While the available data is of excellent quality, modelling suggests this particular measure did not provide valuation information as to the actual usage / uptake of the SPARX programme. As a result, we will **substitute** this measure by starting the causal chain from short-term outcome measure S10 (number of modules completed on SPARX).

TABLE 28

Data and information supporting activity measures – 'Early identification and support' component

#	Activity	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
A9	Number of schools with SBHS offering	Quantitative	According to the SBHS Master List provided by the Ministry of Health, 49 schools with a total roll of 22,088 students have SBHS offerings.	**Moderate** The available data directly supports the activity measure, but the number of students involved in the SBHS programme over the full life of YMHP requires some assumptions to be made.	**Confirm** measure – no mitigation required
A10	Number of nurses (or nurse hours) in schools (FTE)	Quantitative	Reliable data to support this measure is not currently available. **Alternative:** National Ministry of Health service specifications recommend the following minimum ratios regarding nurse FTE (for schools participating in the SBHS programme): • 1 FTE registered nurse to every 750 students in decile 1, 2 and 3 secondary schools • 1 FTE registered nurse to every 200 students in Alternative Education facilities (AE) and Teen Parent Units (TPUs) • nurse leaders at a ratio of 1 nurse leader to every 10 registered nurses. Using this information and school roll information (for all schools participating in the SBHS programme), estimates can be calculated for the minimum amount of nurse FTE.	**Moderate / Poor** Estimates based on the FTE requirements enable an adequate estimate of the number of nurse in schools.	**Confirm** measure and use national service specifications and SBHS school roll data to estimate the minimum number of nurse FTE. This figure is used in the causal chain of initiative #2 and can be replaced with activity measure A9 for the causal chain in initiative #1.
A11	Number of GPs in schools / learning organisations (FTE)	Quantitative	This information is not recorded and thus unavailable.	**Poor** There is no data available.	**Remove** the measure and use activity measure A10 in the causal chain of initiative #2 and replace it with activity measure A9 for the causal chain in initiative #1.

#	Activity	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
A12	Number of providers – completed HEEADSSS training	Quantitative	Per the July 2015 YMHP Quarterly Report, 1,295 people completed the HEEADSSS online training – 220 of these individuals also attended physical training workshops.	**Moderate** The available data directly supports the activity measure and can be verified with reference to 'web count data'.	**Confirm** measure – no mitigation required.
A13	Number of providers – completed awareness training (e.g. MH101)	Qualitative	This measure relates directly to initiative #21 – Youth Mental Health Training for Social Services. This initiative will be assessed qualitatively.	**Moderate / Poor** The only available information is client satisfaction surveys.	**Remove** this activity measure and perform a qualitative assessment of initiative #21.
A14	Number of providers using YMHP HEEADSSS	Quantitative	This information is not recorded and thus is unavailable.	**Poor** There is no data available.	**Substitute** the measure by commencing the causal chain from short-term outcome measure S16.
A15	DHB / PHO funding per head	Quantitative	We have received a calculation from the Ministry of Health that indicates that SBHS DHB funding per student is based on assumptions and information originating from various Ministry of Health data sources, Education Counts data and the Ministry of Health national service specification for nurse FTE per student (in SBHS schools).	**Moderate / Poor** The calculation (and underlying data) is supported by some verifiable external information sources.	**Remove** – modelling uses the total spending on YMHP initiatives rather than being derived from a per student basis.
A16	Number of youth specific services established by DHBs – using YMHP funding	Quantitative / Qualitative	Refer to A4	Refer to A4	Refer to A4
A17	Number of new / additional initiatives (by type) in Canterbury schools	Qualitative	Refer to A5	Refer to A5	Refer to A5
A18	Number of new / additional initiatives (by type) in Canterbury schools	Qualitative	Refer to A5	Refer to A5	Refer to A5

TABLE 29

Data and information supporting activity measures – 'Supportive schools' component

#	Activity	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
A19	Number of schools participating in PB4L by programme	Quantitative	• School-Wide (SW): Per data provided by the Ministry of Education's Evidence, Data and Knowledge division, the total number of secondary schools being actively supported by YMHP is 179. • Check and Connect (CC): Per data provided by the Ministry of Education, there are currently 20 schools piloting the CC programme (all of which are a direct result of YMHP funding). • My FRIENDS Youth (MFY): Per data provided by the Ministry of Education, there are currently 40 schools piloting the MFY programme (all of which are a direct result of YMHP funding).	**Moderate** The available data directly supports the activity measure.	**Confirm** measure – no mitigation required
A20	Number of youth participating in PB4L SW, CC and MFY	Quantitative	• Per data provided by the Ministry of Education's Evidence, Data and Knowledge division, the number of youth participating in each PB4L programme can be calculated with reference to the school rolls (for each participating school) as well as the lists of specific students in the CC and MFY programmes.	**Moderate** The available data directly supports the activity measure but the number of specific students involved in the School-Wide programme over the full life of YMHP requires some assumptions to be made.	**Confirm** measure – no mitigation required.
A21	Number of youth workers in secondary schools	Quantitative	According to the July 2015 YMHP Quarterly Report, there are 19 youth workers who are working with 335 young people.	**Moderate** The available data directly supports the activity.	**Confirm** measure – no mitigation required.

TABLE 30

Data and information supporting activity measures – 'Access to appropriate information' component

#	Activity	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
A22	Number of social media services developed (Lifehack)	Quantitative	Per the Lifehack Report dated June 2014, there are 45 Lifehack projects currently in development.	**Moderate** The available data directly supports the activity measure.	**Substitute** the measure with activity measure A23.
A23	Number of youth involved in Lifehack events	Quantitative	Data received from MSD showed the number of youth involved in wider SMIF events such as Lifehack Labs, retreat weekends and design challenges.	**Moderate** The available data directly supports the activity measure.	**Amend** the activity measure to: Number of youth involved in SMIF events such as Lifehack Labs, retreat weekends and design challenges.
A24	Number of promotional campaigns run – YMHP	Qualitative	This information is not recorded and thus is unavailable.	**Poor** The only information available is anecdotal in nature.	**Remove** this activity measure and perform a qualitative assessment of initiatives #16 and #17.
A25	Availability of up-to-date and easy-to-access information	Qualitative	This information is not recorded and thus is unavailable.	**Poor** The only information available is anecdotal in nature.	**Remove** this activity measure and perform a qualitative assessment of initiatives #16 and #17.

Short-term outcome data and information

Table 31 to Table 34 describe the information and data sources supporting the short-term outcome measures. The content of the columns is as follows:

- **Column 1** is an 'S1' – 'S34' categorisation of each short-term outcome measure.
- **Column 2** describes each short-term outcome measure per the Schedule of YMHP Outcome Measures / Indicators (refer to Appendix B).
- **Column 3** provides detail on whether the short-term outcome measure is linked to an initiative that is being quantitatively or qualitatively assessed.
- **Column 4** provides detail on information and data (including source) that supports each short-term outcome measure.
- **Column 5** provides a single data-quality rating applicable to all data and information identified for each short-term outcome measure. The rating has been made with reference to the quality, relevance and specificity (youth and New Zealand) of data and information. The quality rating is based on the scale presented in Appendix C.
- **Column 6** details our approach to mitigate poor quality or absent data and information.

TABLE 31

Data and information supporting short-term outcomes – 'Treatment and follow up' component

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S1	Number of 'packages of care' issued to youth	Quantitative / Qualitative	Per the Ministry of Health Primary Mental Health Care Report dated 2014/2015, 6,131 packages of care have been issued to youth.	**Moderate / Poor** The report details the total number of packages of care issued, but it does not detail the portion directly attributable to YMHP funding. Further, the report has 'gaps', as only 16 of 20 DHBs reported.	**Estimate** the number of youth receiving services to inform a stand-alone CBA for Primary Mental Health separate from the YMHP CBA.
S2	Number of youth who received brief intervention counselling	Quantitative / Qualitative	Per the Ministry of Health Primary Mental Health Care Report dated 2014/2015, 6,045 youth received brief intervention counselling.	**Moderate / Poor** The report details the total number of youth who received treatment, but it does not detail the portion directly attributable to YMHP funding. Further, the report has 'gaps', as only 17 of 20 DHBs reported.	**Estimate** the number of youth receiving services to inform a stand-alone CBA for Primary Mental Health separate from the YMHP CBA.

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S3	Number of youth who completed group therapy	Quantitative	Per the Ministry of Health Primary Mental Health Care Report dated 2014/2015, 2,730 youth participated in group therapy.	**Moderate / Poor** The report details the total number of youth who received treatment, but it does not detail the portion directly attributable to YMHP funding. Further, the report has 'gaps', as only 15 of 20 DHBs reported.	**Estimate** the number of youth receiving services to inform a stand-alone CBA for Primary Mental Health separate from the YMHP CBA.
S4	Number of youth accessing treatment services (CAMHS, AOD)	Quantitative	Various datasets from the Ministry of Health have been received that show the number of youth receiving services from certain providers.	**Moderate / Poor** The dataset received is accurate but not complete. It does not show all youth from all DHBs receiving services, and therefore assumptions and estimations are required.	**Confirm** the measure on the basis that data is available.
S5	Number of youth completing treatment	Quantitative	This data is not recorded and thus is unavailable.	**Poor** There is no available data.	**Substitute** with measure S4.
S6	Rate of youth discharged from care with follow-up plan	Qualitative	Per the Quarter 1 2015/2016 Transition Plan Reporting Data, 61% of child and youth clients were discharged with a follow-up care plan.	**Moderate / Poor** Only 11 out of 20 DHBs have reported. Further, the data does not provide an indication as to what proportion of youth discharged with a follow-up plan is directly attributable to YMHP funding.	**Remove** as the initiative is being assessed qualitatively.

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S7	Number of youth returning to care post-discharge	Qualitative	Per the Ministry of Health Primary Mental Health Care Report dated 2014/2015, 581 youth returned to care post-discharge during the year.	**Moderate / Poor** The data is incomplete as many of the DHBs have not reported. Further, the data does not provide an indication as to what proportion of youth discharged with a follow-up plan is directly attributable to YMHP funding.	**Remove** as the initiative is being assessed qualitatively.
S8	Number of Canterbury youth accessing YMHP initiatives	Qualitative	Refer to A5	Refer to A5	Refer to A5
S9	Number of youth aged 12–19 registered for treatment on SPARX	Quantitative	Per the Uniservices Evaluation Report: SPARX Online Version Establishment (SOLVE) Evaluation Findings dated 10 October 2015, by 30 September 2015, 5,928 users – including 3,812 youth, 502 family, 1,139 health professionals and 475 other users registered to use SPARX e-therapy.	**Excellent** The available data directly supports the short-term outcome measure and is from a reputable source.	**Confirm** measure – no mitigation required.
S10	Number of activities / modules completed on SPARX	Qualitative	Per the Uniservices Evaluation Report: SPARX Online Version Establishment (SOLVE) Evaluation Findings dated 10 October 2015, by 30 September 2015: • 1,254 youth completed at least 1 SPARX module • 296 youth completed 4 or more modules • 122 youth completed all 7 modules	**Excellent** The available data directly supports the short-term outcome measure and is from a reputable source.	**Confirm** measure – no mitigation required.
S11	Number of youth aged 12–19 who have an improved 'mood quiz' score on SPARX	Quantitative	The Uniservices Evaluation Report: SPARX Online Version Establishment (SOLVE) Evaluation Findings dated 10 October 2015, between 1 July 2015 and 30 September 2015 outlines the mood quiz results.	**Excellent** The available data directly supports the short-term outcome measure and is from a reputable source.	While the available data is of excellent quality, modelling suggests this particular measure did not provide valuation information as to the actual usage / uptake of the SPARX programme. As a result, we will **substitute** the short-term outcome measure S10.

TABLE 32

Data and information supporting short-term outcomes – 'Early identification and support' component

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S12	Number of youth that consulted with a nurse	Quantitative	Per the newly developed Ministry of Health DHB School Based Health Services Report dated 2015/16 (MoH, 2016a), 67,231 students have visited a SBHS nurse in Quarter 1.	**Moderate / Poor** We have been informed that the reporting is not complete.	**Substitute.** Research has been found that shows the impact of SBHS at a school level and therefore activity measure A9 is sufficient to connect to long-term outcome measures for initiative #1.
S13	Number of youth that consulted with a GP	Quantitative	Per the Primary Care Quarterly Report dated 2014/2015, 1,940 youth consulted with a GP during the year.	**Poor** We have been informed that the reporting is not complete.	**Substitute.** Research has been found that shows the impact of SBHS at a school level and therefore activity measure A9 is sufficient to connect to long-term outcome measures for initiative #1.
S14	Number of referrals issued to youth	Quantitative	Per the Primary Care Quarterly Report dated 2014/2015, 4,027 referrals were issued to youth during the year.	**Poor** We have been informed that the reporting is not complete.	**Substitute.** Research has been found that shows the impact of SBHS at a school level and therefore activity measure A9 is sufficient to connect to long-term outcome measures for initiative #1.
S15	Number of redeemed referrals – by youth	Quantitative	This information is not recorded and thus is unavailable.	**Poor** There is no data available.	**Substitute.** Research has been found that shows the impact of SBHS at a school level and therefore activity measure A9 is sufficient to connect to long-term outcome measures for initiative #1.
S16	Number of youth – received a HEEADSSS check	Quantitative	Per the newly developed Ministry of Health DHB School Based Health Services Report dated 2015/16, 6,481 HEEADSSS checks have been performed in Quarter 1.	**Moderate / Poor** We have been informed that the reporting is not complete.	**Remove.** Activity measures A9 and A11 have been used from initiative #2 to estimate the number of HEEADSSS checks. Research has been found that shows the impact of SBHS at a whole-of-school level and therefore activity measure A9 is sufficient to connect to long-term outcome measures for initiative #1.
S17	Number of 'packages of care' issued to youth	Quantitative	Refer to S1	Refer to S1	Refer to S1

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S18	Number of youth who received brief intervention counselling	Quantitative	Refer to S2	Refer to S2	Refer to S2
S19	Number of youth who completed group therapy	Quantitative	Refer to S3	Refer to S3	Refer to S3
S20	Increased capacity of YOSS to service youth (20 hours / week)	Quantitative	Per discussion with Dibs Patel of Ministry of Youth Development, all YOSS are open at least 20 hours per week as this is a core requirement of the Ministry of Health's definition of a YOSS. Per the Communio Evaluation of Youth One Stop Shops – Final Report Version 1.1 dated 23 November 2009, six of the YOSS are open between 39–44 hours per week while others range from 27–32 hours per week. The total range of opening hours across all the YOSS is 432–487 hours per week.	**Moderate** The available data directly supports the short-term outcome measure and is from a reputable source – however, the information is slightly dated.	**Remove.** This initiative has been assessed with an indicative estimate of short-term outcome measure S21.
S21	Number of youth accessing the services of a YOSS	Quantitative	Per the Communio Evaluation of Youth One Stop Shops – Final Report Version 1.1 dated 23 November 2009, 137,163 youth accessed the services of a YOSS.	**Moderate / Poor** The available data directly supports the short-term outcome measure and is from a reputable source – however due to the age of the report, the data relates to youth visits prior to the commencement of YMHP and as such cannot be directly attributed to the project.	**Confirm** the measure and use details from one YOSS and extrapolate the visitation figures across all 12 YOSS.

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S22	Number of Canterbury youths accessing YMHP initiatives	Qualitative	Refer to A5	Refer to A5	Refer to A5

TABLE 33

Data and information supporting short-term outcomes – 'Supportive schools' component

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S23	Truancy rates at school	Quantitative	Per Education Counts data (www.educationcounts.govt.nz), the 2014 total unjustified annual absence rate for year 9–13 students was 7.7%.	**Moderate / Poor** The data is not YMHP-specific.	**Remove.** International literature has been used in lieu of YMHP-specific figures that can be relied on statistically.
S24	SSEE rates (stand-down, suspension, exclusion and expulsion)	Quantitative	The Final Report from the Evaluation of PB4L School-Wide dated 2015, in 2013 reports these figures for SW and non-SW schools. The SSEE rates are however not solely reflective of the SW initiative. The SW and non-SW schools are not similar, so the SSEE rates reflect both the initiative and differences across the schools.	**Moderate / Poor** The available data does not have enough statistical power to be used for this evaluation, due to New Zealand being too small to effectively establish a robust counterfactual.	**Remove.** International literature has been used in lieu of YMHP-specific figures that can be relied on statistically.
S25	Number of referrals issued to youth	Quantitative	Refer to S14	Refer to S14	Refer to S14
S26	Rate of office disruptive referrals (ODR)	Quantitative	The Ministry of Education Positive Behaviour for Learning School-Wide Evaluation Report dated 2015, reports the ODR rates in SW schools. The rates are however not solely reflective of the SW initiative. The SW and non-SW schools are not similar, so the SSEE rates reflect both the initiative and differences across the schools.	**Moderate / Poor** The available data does not have enough statistical power to be used for this evaluation, due to New Zealand being too small to effectively establish a robust counterfactual.	**Remove.** International literature has been used in lieu of YMHP specific figures that can be relied on statistically.

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S27	Number of youth completing PB4L CC – through: • youth workers • other providers	Quantitative	The Ministry of Education has provided details of the youth involved in the Check and Connect programme.	**Moderate** The available data directly supports the short-term outcome measure.	**Confirm** measure – no mitigation required.
S28	Greater engagement from family / whānau	Qualitative	This information has not been found.	**Poor** The only information available is anecdotal in nature.	**Remove** this short-term outcome measure and assess initiative #22 qualitatively.
S29	Number of youth participating in sport / cultural activities	Qualitative	Refer to S28	Refer to S28	Refer to S28

TABLE 34

Data and information supporting short-term outcomes - `Access to appropriate information' component

#	Short-term outcome	Linked to quantitative or qualitative assessment	Supporting data and information	Data-quality rating	Mitigation for poor quality or absent data
S30	Number of youth accessing the social media service (Lifehack)	Quantitative	Data received from MSD showed the number of youth involved in wider SMIF events such as Lifehack Labs, retreat weekends and design challenges.	**Moderate** The available data directly supports the short-term outcome measure.	**Confirm** measure – no mitigation required.
S31	Number of youth / family accessing Common Ground website	Qualitative	Per the Common Ground Dashboard dated August 2015, 25,449 unique users visited the Common Ground website since launching and 1,308 individuals subscribed to receive youth support emails.	**Moderate** The available data directly supports the short-term outcome measure but the initiative was assessed qualitatively.	**Remove** this measure and assess initiative #17 qualitatively.
S32	Number of youth / family accessing YMHP information	Qualitative	With respect to initiatives #15 and #16, the information / data from S30 and S31 can be used. There is no data available to support this measure for initiative #17.	**Poor** The data available to support initiative #15 and #16 has been rated as being moderate / poor quality and the data available to support initiative #17 as poor.	**Remove** this measure and assess initiatives #16 and #17 qualitatively.
S33	Number of youth with improved awareness of mental health resources	Qualitative	This information is not recorded and thus is unavailable.	**Poor** There is no data available.	**Remove** this measure and assess initiative #16 qualitatively.
S34	Number of times mental health resources are recommended (by youth)	Qualitative	This information is not recorded and thus is unavailable.	**Poor** There is no data available.	**Remove** this measure and assess initiative #16 qualitatively.

Appendix E

Evidence supporting long-term outcome measures

With reference to Table 35, the content of columns 1 to 8 is as follows:

- **Column 1** is an 'A' – 'T' categorisation of each long-term outcome measure.
- **Column 2** describes each long-term outcome measure per the Schedule of YMHP Outcome Measures / Indicators (refer to Appendix B).
- **Column 3** provides detail on information and data (including source) that supports a causal connection between mental health and each long-term outcome measure. We have also included brief discussion on the availability and relevance of the information and data identified.
- **Column 4** provides a single data-quality rating applicable to all information and data identified for each individual long-term outcome measure. The rating has been made with reference to the quality, relevance and specificity (youth and New Zealand) of data rather than the strength of the relationship (between youth mental health and the applicable long-term outcome measure). The quality rating is based on the scale presented in Appendix C.
- **Columns 5 to 8** identify the YMHP core components relevant to each long-term outcome measure (per the Schedule of YMHP Outcome Measures / Indicators). The following acronyms are used to describe each YMHP core component:
  - TM = Treatment and follow up
  - TS = Early identification and support
  - SS = Supportive schools
  - AI = Access to appropriate information

TABLE 35

Evidence supporting long-term outcome measures

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
A	Reduced prevalence of clinically diagnosed youth mental illnesses	Note: while this measure is included in the causal chains, the perspective of this report is considering the long-term outcomes of youth mental illness. As such, the 'reduced prevalence of clinically diagnosed youth mental illnesses' is an interim step to economic outcomes.	N/A				
B	Reduced number of self-harm incidents – youth (self-reported)	It should be noted that some definitions of self-harm include suicide attempts. As such, the research applicable to long-term outcome 'C' (below) is also of relevance to the number of self-harm incidents. Specific evidence about non-suicide-related self-harm is limited – identified sources are detailed below. Madge et al. (2011) assessed the link between adolescent mental health and self-harm. The study found that: 1. A one-point increase in depression score on a 21 point Hospital, Anxiety and Depression Scale (HADS) meant someone was, in the past year: a. 1.02 times as likely to have thoughts of self-harm b. 1.04 times as likely to have had a single self-harm episode c. 1.10 times as likely to have had multiple self-harm episodes. 2. A one-point increase in anxiety score on a 21 point HADS scale meant someone was, in the past year: a. 1.11 times as likely to have had thoughts of self-harm b. 1.10 times as likely to have had a single self-harm episode c. 1.13 times as likely to have had multiple self-harm episodes. These effect sizes of this study are small but significant.	**Moderate** Madge et al. (2011) is youth-specific but not NZ-specific. The data is from a large, multinational longitudinal study.				
C	Reduced number of youth suicides	Research shows strong links between mental illness and suicide both in New Zealand and overseas. 1. Fergusson et al. (2007) report that those who experience 1–4 depressive episodes between the ages of 16 and 21 are 2.12 times as likely to have attempted suicide during ages 21–25. 2. Fergusson et al. (2000) state that the risks of suicidal ideation and suicide attempts are higher among youth with mental health problems including depression, anxiety disorders and substance abuse disorders. Risk ratio for depression is 6.49 for suicide attempt and 3.71 for suicidal ideation. 3. Marttunen et al. (1993) provide evidence in a meta-analysis study that 67%-95% of adolescents dying by suicide have a diagnosable mental disorder. 4. Andrews & Lewinsohn (1992) found that mental disorders were a statistically significant risk factor for suicide attempts.	**Moderate / Excellent** Both Fergusson articles are NZ-, youth- and severity-specific. The study used longitudinal data with good sample properties. The other three articles are international but strengthen the case for this link.				

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
D	Reduced cases of alcohol and substance abuse (including smoking) – youth	Research has shown a clear link between poor youth mental health and substance abuse, but the research is divided on the direction of causation. We take from this that programmes to improve mental health could reduce substance abuse and vice versa. 1. O'Neil et al. (2011) examined empirical literature about poor youth mental health and substance abuse. The research that was assessed included studies showing causation in both directions. The authors cite eight separate studies that have found information to indicate that poor youth mental health increases the risk of developing a substance abuse disorder and five studies indicating the reverse. 2. Kaplow et al. (2001) found that, when controlling for confounding factors, those reporting depressive symptoms at an initial interview are 1.56 times as likely to have begun drinking alcohol at follow-up. 3. Morrell et al. (2010) found that, in female university students, self-reported history of depression vulnerability was associated with a 1.8 times higher likelihood of being a current smoker.	**Moderate** O'Neil et al. (2011) is meta-analysis of peer-reviewed international research from 1985 to 2010. Kaplow et al. (2001) is youth- but not NZ-specific. Morrell et al. (2010) is not NZ-specific and is centred on university students not youth. Depression measures were self-reported in the study.				
E	Reduced youth offending / re-offending (arrest, conviction, charges)	We have found limited and conflicting research on the connections between poor mental health and youth offending. 1. Chatterji & Cuellar (2006) tested the treatment of adolescent mental health issues in the criminal justice system in a variety of models. One model found that adolescents with depression were significantly more likely to be arrested or convicted than those without. After controlling for additional confounding factors including delinquency, the effect was no longer significant. However, mental illness can impact criminality through delinquency and therefore, in the context of our analysis, including delinquency is an over-specification and we see the model without it as more appropriate. 2. Hirschfield et al. (2006) found a small association between conduct problems and criminality even when including factors such as delinquency and substance abuse (but not when including peer delinquency or time with friends). However, there was no relationship found for anxiety or internalising problems. 3. Coker et al. (2014) found a positive relationship between dysthymia and arrests for theft / burglary and violent crime, with very large effect sizes. The authors highlight potential issues with effect sizes resulting from very low crime rates for the comparison group. 4. Yampolskaya & Chuang (2012) assess the impact of mental health problems on time taken to first involvement with the justice system for youth in 'out of home' care. The study found those with mental health problems first interact with the justice system statistically significantly earlier than those without. 5. Trzesniewski et al. (2006) is New Zealand research that found that adolescents with low self-esteem grew up to have more convictions in adulthood than those with high self-esteem. This research is however for self-esteem rather than mental illness directly, and we have no ability to establish any baseline level of self-esteem, nor any measures of changes within YMHP initiatives.	**Moderate** Chatterji & Cuellar (2006) and Hirschfield et al. (2006) are youth- but not NZ-specific. Both studies include a high number of factors controlled, which could represent an over-specification. Hirschfield et al. (2006) and Coker et al. (2014) are youth- but not NZ-specific. Yampolskaya & Chuang (2012) is focused on youth in 'out of home' care who are not representative of the New Zealand youth population and face a more complex set of issues, including post-traumatic stress disorder after abuse. Trzesniewski et al. (2006) is youth- and NZ-specific but related to self-esteem rather than mild to moderate mental illness directly.				

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
F	Increased overall life satisfaction rating – youth	Research has found evidence to suggest that mental illness impacts life satisfaction in adults but we have found limited youth-specific research. 1. Fergusson et al. (2015) report that those with mental health problems have an average life satisfaction score of 96.2, while those without have an average life satisfaction score of 101.5. The difference is statistically significant, and robust to potential confounding factors. 2. Fleche & Layard (2013) in Layard et al. (2013) found that mental health was the most important predictor variable of life satisfaction. 3. Wong & Lim (2009) find a significant relationship between depression and life satisfaction in Singaporean secondary school students.	**Moderate** Fergusson et al. (2015) present NZ longitudinal data using a structural equation model. Results reported are from a bi-directional model and therefore are not strict evidence of one-way causation. Layard et al. (2013) is not NZ-specific and uses self-reported mental health measures. Wong & Lim (2009) is not NZ-specific but is youth-specific. The study does not assess causality and only reports a correlation.				
G	Increased social contact with family and friends in another household	We have found no studies to support this long-term outcome as described. However, we have identified some research to proxy the impact of poor mental health on social contact. 1. Zimmer-Gembeck et al. (2009) found that pre-adolescents with more initial depressive symptoms had less positive self-perceptions of peer relations at a follow-up interview. 2. Cheadle & Goosby (2012) indicate that distressed youth are more likely to be socially excluded, though depressive symptoms are also a basis for friendship formation in some cases.	**Moderate / Poor** Zimmer-Gembeck et al. (2009) is a youth-specific, Australian study with moderate / small sample sizes. Cheadle & Goosby (2012) is youth-specific, not NZ-specific, and has a good sample size.				
H	Reduced numbers of youth who feel lonely	Research has not shown a definitive causal relationship between poor youth mental health and loneliness. Research has illustrated the causality in reverse, and some reports a bivariate correlation between the two. 1. Ladd & Ettekal (2013) report that for youth aged 12–18 years initial levels of loneliness correlated moderately and positively with initial depressive symptom scores as indexed by parents, teachers and adolescents. Changes in loneliness also correlated positively and strongly with changes in depression as indexed by teachers. Research states depression could be causing loneliness or the reverse, and state that their research cannot give a causal direction. 2. Brage & Meredith (1994) report that loneliness has a statistically significant impact on depression in youth aged 11–19 years after controlling for confounding factors. 3. Weeks et al. (1980) report that loneliness and depression are correlated but do not have a causal relationship in either direction after various models were tested.	**Moderate / Poor** Both Brage & Meredith (1994) and Weeks et al. (1980) had small sample sizes and short studies. All research cited is from the US. Weeks et al. (1980) is not recent and is a study of undergraduate students, not 12–19 year olds.				

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
I	Reduced number of youth pregnancies	Some research has indicated that poor mental health impacts youth pregnancy directly. We have also identified additional research relating to risky sexual behaviour, as a precursor to potential youth pregnancy. 1. Kessler et al. (1997) report a positive relationship between psychiatric disorders and premarital teenage parenthood in a sample of 11–19 year olds. 2. James-Hawkins et al. (2014) report, after controlling for background characteristics, that a one-point increase in average depressive symptoms on the Centre for Epidemiologic Studies Depression Scale (CES-D) in adolescence resulted in an individual being 1.28 times as likely to have an unintended first birth between the ages of 18–24 years. 3. Woodward et al. (2001) state that an individual is: a. 3.5 times as likely to become pregnant in teenage years if they had high levels of conduct problems at age 13[10] b. 2.7 times as likely if they had high levels of attention problems at age 13.[11] 4. Lehrer et al. (2006) and Rubin et al. (2009) find an association between depressive symptoms and risky sexual behaviour including condom and birth control non-use and increased number of sexual partners in adolescents.	**Moderate / Excellent** Kessler et al. (1997) is US-based research that is youth-specific. James-Hawkins et al. (2014) has a robust sample size but is not NZ-specific. Woodward et al. (2001) is NZ- and youth-specific but isn't specific to mild to moderate mental health. Lehrer et al. (2006) and Rubin et al. (2009) are not NZ-specific and assess risky sexual behaviour rather than pregnancy.				

10 Disobedience and defiance of authority, fits of temper and irritability, aggression or cruelty to others, destruction of property, lying, stealing, and similar behaviours.

11 These include inattention, poor concentration, short attention span, distractibility, restlessness, and hyperactivity.

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
J	Increased youth engagement at school	Research was limited for 'school engagement' as a search term. We have found some research into 'school connectedness' and 'youth functioning' that we see as applying in this case. *School connectedness:* 1. Shochet et al. (2006) found that school connectedness, as defined as students feeling accepted, valued, respected and included in school, was correlated with mental health outcomes for adolescents. However they found mental health had no causal impact on school connectedness one year later. 2. Lin et al. (2008) assessed school connectedness within a large study of Taiwanese adolescents. School connectedness was defined as attendance, relationships with classmates and teachers, and a preference for school. The study found that adolescents with depression were statistically significantly less connected to school than those without. *Youth functioning:* We found some studies assessing a comprehensive model of youth functioning, which includes school engagement-related measures and therefore provides some useful insight. 1. Antaramian et al. (2010) report significantly higher behavioural, emotional, and cognitive engagement in school students with positive mental health compared to those defined as 'troubled' (high psychopathology). 2. Suldo & Shaffer (2008) report that youth with complete mental health reported better school attendance, higher perceptions of academic ability, and more efforts directed towards self-regulation of academic behaviours than those with poor mental health.	**Moderate** Shochet et al. (2006) is youth- but not NZ-specific. The study used hierarchical linear modelling and had good sample properties. Lin et al. (2008) is youth- but not NZ-specific. The study used a logistic regression to assess correlations and not causations. Antaramian et al. (2010) and Suldo & Shaffer (2008) are youth- but not NZ-specific. The studies use self-reported engagement and have robust sample sizes.			■	
K	Reduced bullying at school	There is conflicting research on the impact of mental illness on both being a bully and being a victim of bullying. We found some evidence to support the assertion that mental illness impacts females as a victim of bullying. 1. Benedict et al. (2015) report that children aged 6–17 years with depression and anxiety are 3.31 times and 2.89 times as likely, respectively, to bully others than children without. 2. Kaltiala-Heino et al. (2010) find small, marginal evidence that for females, having depression at age 15 was a predictor of being a victim of bullying at age 17, but find no link between mental illness and being a bully. 3. In a New Zealand context, Coggan et al. (2003) found a relationship between being a victim of bullying and mental illness for youth. However, the study does not show causation.	**Moderate** Benedict et al. (2015) is based on parent-reported evidence (of bullying and mental health status). It has a robust sample size and is not NZ-specific. Kaltiala-Heino et al. (2010) utilises self-reported measures of mental health and bullying. Coggan et al. (2003) is NZ-specific but assesses causation in the opposite direction.			■	

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
L	Youth have better access to information on mental health	For YMHP initiatives designed to provide information, this outcome measure could be thought of as a long-term measure. However, in the context of the YMHP cost-benefit analysis, it is difficult to develop a causal chain in which 'improving youth mental health' causes 'youth having better access to information'. We have therefore reversed the causality and assessed the impact of better mental health information on mental health. For that linkage, we have found some limited and varied information. As part of a review of empirical literature, Wei et al. (2013) highlight that research into the impacts of improved knowledge of mental health is in its infancy. The review indicates that some studies have found significant increases in mental health knowledge but only three studies showed increased help-seeking behaviour. Of these three, Wei et al. (2013) state that none used a validated measure to assess this outcome. In light of this research, we will reclassify this measure to a **short**-term outcome. Assessing the ability of programmes to increase the number of youth who have better access to information on mental health will be incorporated into the final report.	**Moderate / Poor** (to support the measure as a short-term outcome) Wei et al. (2013) is meta-analysis of peer-reviewed international research of school-based mental health literacy programmes for those aged 12–25 years.				
M	Increased percentage of youth achieving NCEA 2 or higher	As research on secondary school completion in New Zealand is limited, we have drawn on international evidence, which did not provide strong evidence that mental health has impacts on secondary school completion. In addition, as the New Zealand and international schools systems differ, this research has a lower level of direct applicability. 1. McLeod & Fettes (2007) tracked the trajectories of those with adolescent (and childhood) mental illness. They found that youth with high levels of anxiety and depression in adolescence were 37.4% as likely to complete high school as those with low / stable anxiety and depression. 2. Veldman et al. (2015) report that 'externalising behaviour' (aggressive and delinquent behaviour) at age 16 rather than 'internalising behaviour' (anxious / depressed behaviour) impacted educational attainment / employment status at age 19.	**Moderate** McLeod & Fettes (2007) is an American study and is based around more severe mental illness in comparison with mild to moderate. Veldman et al. (2015) is a Dutch study with good sample properties and is youth-specific, but it is not severity-specific.				
N	Increased number of youth undertaking tertiary education and training	We have found relevant New Zealand youth-specific evidence on the impact of poor youth mental health on tertiary education. Neither study found a significant impact after controlling for confounding factors. 1. Gibb et al. (2010) report no significant difference in the tertiary education achievement of those with and without mental illness. 2. Fergusson et al. (2007) found a statistically significant negative relationship between mental health and tertiary education outcomes. However, after controlling for family and individual confounding factors, educational outcomes no longer had a significant relationship with youth mental health. Although the authors warn against generalising their findings, they are the closest results to what we were seeking and we have not found any evidence with an opposing view.	**Moderate / Excellent** Gibb et al. (2010) is NZ-specific, but the study is of a slightly older cohort. Fergusson et al. (2007) is youth-, NZ- and severity-specific.				

#	Long-term outcome measure	Supporting measurements / data per research	Data-quality rating	TM	TS	SS	AI
O	Lower youth unemployment rate (increased employment)	Research on the effect of poor mental health on employment outcomes provides conflicting views on the magnitude of impact. 1. Gibb et al. (2010) found that if an individual does not have a moderate mental disability (2–3 psychiatric disorders), they have a 78.8% chance of working full-time and 9% chance of working part-time. By comparison, the probabilities are 69.5% and 9.6% for those with moderate mental health issues. 2. Fergusson et al. (2007) found a statistically significant positive relationship between mental illness for those aged 16–21 years and unemployment for those aged 21–25 (even after adjusting for family and individual confounding factors). The research found no significant evidence that individuals with mental illness earn a lower wage, after controlling for confounding factors. 3. MSD (2005) highlight that if an individual does not have moderate mental illness they have a 63% chance of working full-time and an 8% chance of working part-time. By comparison, the probabilities are 19% and 32% for those with moderate mental illness.	**Moderate** Gibb et al. (2010) and Fergusson et al. (2007) use data from the same NZ longitudinal study. Fergusson et al. (2007) assess outcomes at ages 21–25 and Gibb et al. (2010) to age 30. Effect sizes from MSD (2005) are the largest, but the study is not youth-specific and is not from a peer-reviewed journal.				
P	Lower number of youth not in employment, education or training (NEET)	As a measure, NEET combines the educational and employment outcomes described in measures M, N and O (above).[12] Research specific to NEET includes the following: 1. According to Baggio et al. (2015), depression at baseline in young Swiss men of approximately 20 years of age meant they were 1.11 times as likely to be NEET at follow-up in a year's time. 2. Goldman-Mellor et al. (2015) report that, when compared to non-NEET youth at age 18, youth who were NEET at age 18 were: a. 2.36 times as likely to have had a conduct disorder at ages 5–12 years b. 2.57 times as likely to have had depression at age 12 years.	**Moderate** Baggio et al. (2015) and Goldman-Mellor et al. (2015) are Swiss and American respectively but use good quality longitudinal data. Goldman Mellor et al. (2015) report associations not causation. Therefore if we were to use these in the final report, further calculation would be required.				
Q	Reduced amount of spending on welfare benefits – youth	There is strong domestic evidence that mental health has a small impact on receiving welfare benefits. 1. Fergusson et al. (2007) indicate that youth in New Zealand with mild to moderate mental illness (1–4 mental health episodes) between the ages of 16 and 21 years are 1.34 times more likely to be welfare dependent between the ages of 21 and 25 years. 2. Bardone et al. (1996) find a small, marginally positive difference in the welfare dependence of New Zealand females with poor mental health before the age of 21, compared with those without. The study also found a significant difference in whether or not they received welfare assistance from multiple sources.	**Moderate / Excellent** Fergusson (2007) and Bardone et al. (1996) are youth-, NZ- and severity-specific. The studies used longitudinal data with good sample properties. Fergusson (2007) tracks outcomes over a longer period than Bardone et al. (1996).				

12 Economic outcomes for those who are NEET can be found in the New Zealand-based research: Samoilenko & Carter (2015).

Appendix F

Detailed causal chains for quantified outcomes

This appendix details the causal chains of the quantified long-term outcomes of the YMHP. Each chain and its associated table includes information on the relevant data source, quality of the data (colour-coded with reference to the data rating scale in Appendix C), and assumptions and calculations used. The figures detailed in the causal chains are raw inputs to the cost-benefit analysis; the final results cannot be accurately calculated by simply multiplying the inputs as there are additional influencing factors to take in consideration, such as the time value of money.

The chains are organised into the following categories:

- governmental monetary outcomes
- private monetary outcomes
- quality of life outcomes.

Governmental monetary outcomes

Mental health outcomes

Figure 29 _ Causal chain for mental health outcomes

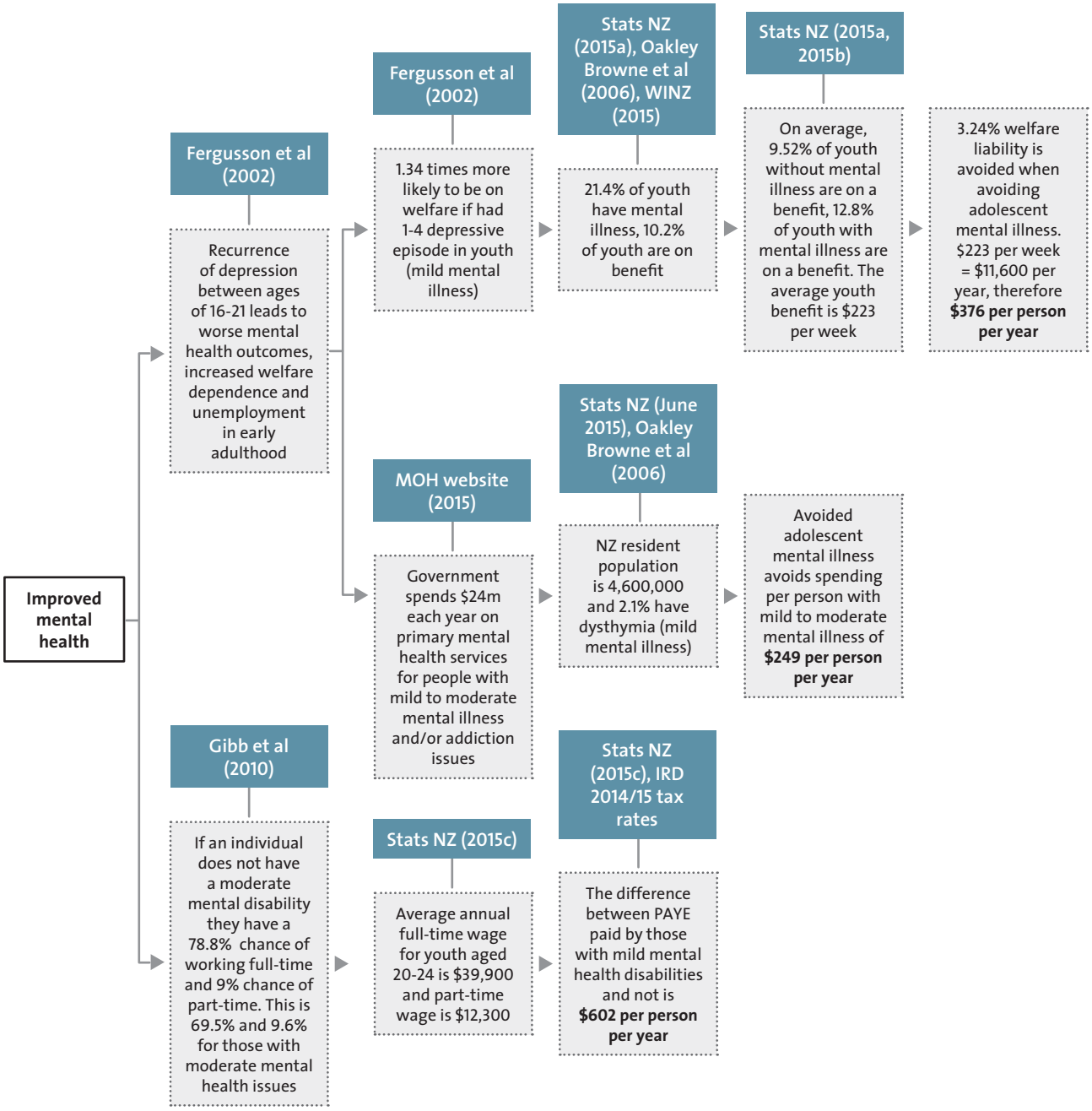


TABLE 36

Assumptions relating to the causal chain for governmental monetary mental health outcomes

Causal chain step	Reference	Discussion and assumptions
Recurrence of depression between ages of 16–21 leads to worse mental health outcomes, increased welfare dependence and unemployment in early adulthood	Fergusson et al., 2002	• Fergusson et al. (2002) relies on New Zealand-based longitudinal data focusing on youth. The study is in line with other New Zealand and international research around welfare and healthcare use of those with mental illness (Gibb et al., 2010; Colman et al., 2007). Results relating to future mental health issues and welfare receipts were robust to confounding factors such as familial deprivation.
Benefit receipt connections	Stats NZ, 2015a Oakley Browne et al., 2006 WINZ, 2015 Stats NZ, 2015b	**Inputs from sources:** • Those who suffer depression in their youth are 1.34 times more likely to be on welfare than those without (Fergusson et al., 2002); and 21.4% of youth have mental illness (Oakley Browne et al., 2006). These statistics are based on information collected by a trained 'lay interviewer' using the Composite International Diagnostic Interview (CIDI 3.0) and not self-reported. • 10.2% of youth are on a benefit. This was calculated by comparing the incidence of benefit receipt with youth population statistics (Stats NZ, 2015a; 2015b). **Equation used:** (1.34 × x × 0.214) = (x ×(1 - 0,214)) = 0.1020 x = 0.0952 • Solving for x gives us a 9.52% probability that those who do not have depression are on a benefit and 1.34 × 9.52% = 12.76%. This tells us that there is a 12.76% probability that those who have depression are on a benefit. The difference between these probabilities gives us 3.24%, the decreased probability of being on a benefit when depression is avoided. • The weekly benefit payment used is the weighted average of all benefits received by youth, excluding study-related allowances (Stats NZ, 2015b).
Healthcare cost connections	MoH website, 2015 Stats NZ June, 2015 Oakley Browne et al., 2006	• We have assumed that for those who go into remission, the government no longer incurs the costs associated with the treatment of their mild to moderate mental illness. • The Ministry of Health (MoH) outlines spend of $24 million on mild to moderate mental illness. We could not find a youth-specific figure or a breakdown of services purchased with these funds (MoH may have a better indication of this). • We have used a population-wide incidence dysthymia as the denominator to calculate the spending per person from Oakley Browne et al. (2006). These statistics are based on information collected by a trained 'lay interviewer' using the Composite International Diagnostic Interview (CIDI 3.0) and not self-reported.
Employment connections	Gibb et al., 2010 Stats NZ, 2015c IRD 2014/15 tax rates	• Gibb et al. (2010) found that psychiatric disorders between ages 18–25 lead to reduced employment and hours worked at age 30. Findings of reduced labour force participation and hours worked are in line with research that mental health issues reduce employment (Lerner & Henke, 2008). • Gibb et al. (2010) give the incidence of full-time and part-time work of those with and without mild to moderate mental illness.[13] Stats NZ (2015c) was used to find the average full – and part-time wage rates of those 20–24, and tax paid for these groups was calculated as $601.49.

13 3-4 psychiatric disorders rather than 4+.

School completion outcomes

Figure 30 _ Causal chain for school completion outcomes

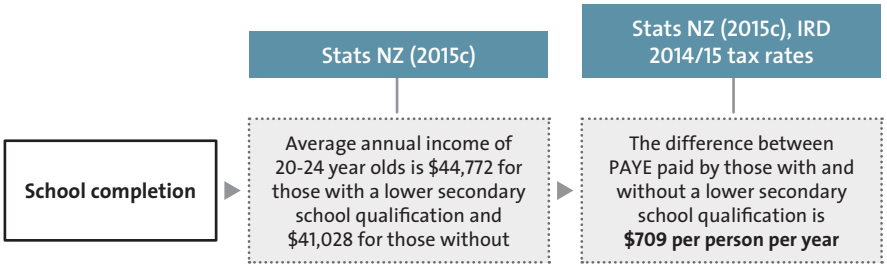


TABLE 37

Assumptions relating to the causal chain for governmental monetary school completion outcomes

Causal chain step	Reference	Discussion and assumptions
Increased PAYE for the government from increased lower secondary school qualifications	Statistics NZ, 2015c IRD 2014/15 tax rates	• By annualising the weekly income details found in Statistics NZ (2015c), we have generated an average annual income for those with a lower secondary school qualification and those without ($44,772 and $41, 028 respectively). Modelling then breaks this down into a personal income component and a PAYE component. • Additional annual PAYE paid by those with a lower secondary school qualification is $709.49.

Alcohol and drug outcomes

Figure 31 _ Causal chain for drug and alcohol outcomes

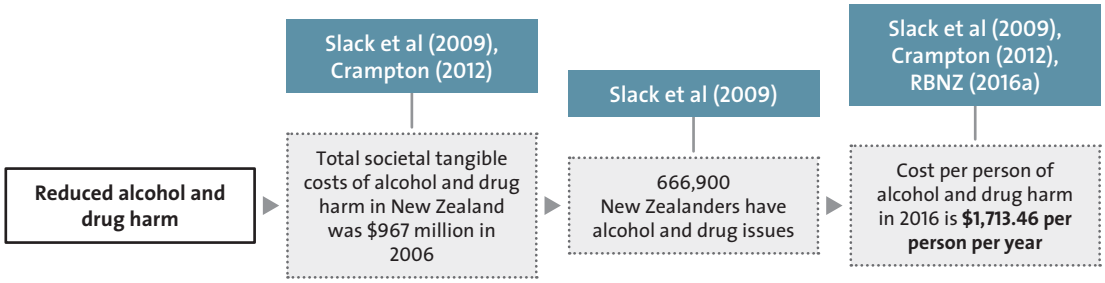


TABLE 38

Assumptions relating to the causal chain for governmental monetary alcohol and drug outcomes

Causal chain step	Reference	Discussion and assumptions
Total societal cost of alcohol and drug harm in New Zealand	Slack et al., 2009 Crampton et al., 2012	• Slack et al. (2009) outline the cost of alcohol and drug use on society in New Zealand. This was performed by summing all governmental, private and intangible costs of harmful alcohol and drug use. The report found that the tangible cost of harmful alcohol and drug use in New Zealand was $4.5615 billion in 2005/06. • A report by Crampton et al. (2012) highlights potential methodological issues in the approach of Slack et al. (2009). The report highlights that an approach that ignores the private benefits experienced by the consumer leads to an over-estimation of the costs of alcohol and drug harm. The report states that $967 million of the above $4.5615 billion is relevant for the social cost of alcohol and drug use.
Number of people engaged in harmful alcohol and drug use in New Zealand	Slack et al., 2009	• The report highlights that there were 666,900 people engaged in harmful alcohol and drug use in New Zealand in 2006.
Cost per person of alcohol and drug harm in New Zealand	Slack et al., 2009 Crampton et al., 2012 RBNZ, 2016a	• Using $967 million as the total cost would generate a rough average of $1,449.99 per user in 2006. We have used this measure to capture the governmental external impact of alcohol and drug harm only. In 2016 dollars this is $1,713 when inflated using Reserve Bank data.

Private monetary outcomes

Mental health outcomes

Figure 32 _ Causal chain for private monetary outcomes

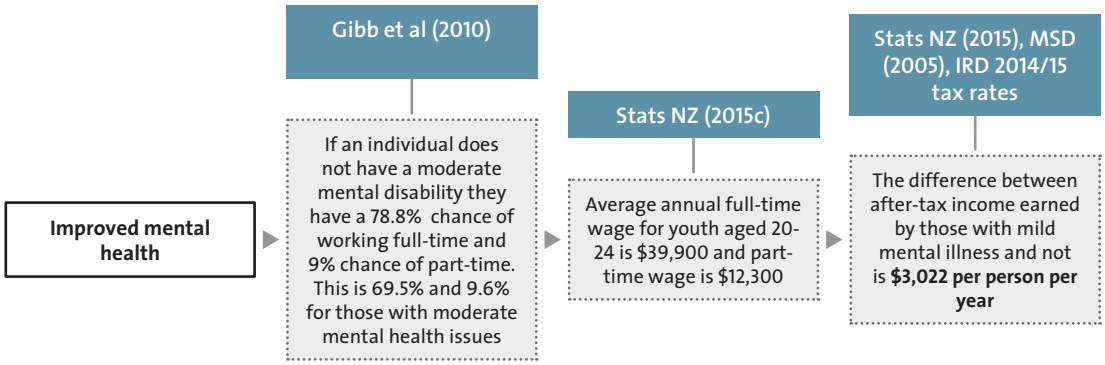


TABLE 39

Assumptions relating to the causal chain for private monetary mental health outcomes

Causal chain step	Reference	Discussion and assumptions
Increased private income from improved mental health	Gibb et al., 2010 Stats NZ, 2015c IRD 2014/15 tax rates	• Gibb et al. (2010) found that psychiatric disorders between ages 18–25 lead to reduced employment and hours worked at age 30. Findings of reduced labour force participation and hours worked are in line with research that mental health issues reduce employment (Lerner & Henke, 2008). • Gibb et al. (2010) gives the incidence of full-time and part-time work of those with and without mild to moderate mental illness.[14] Stats NZ (2015c) was used to find the average full – and part-time wage rates of those 20–24 yielding an after-tax private income difference of $3,022.

School completion

Figure 33 _ Causal chain for school completion

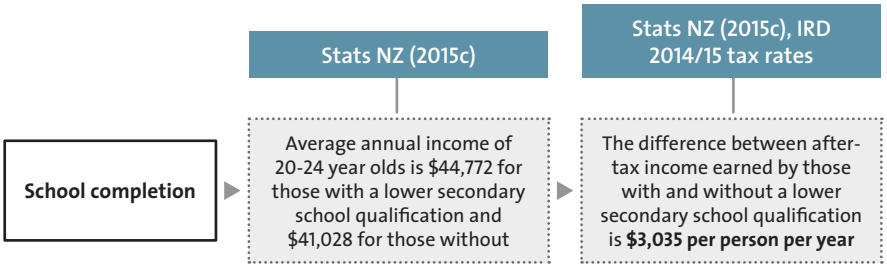


TABLE 40

Assumptions relating to the causal chain for private monetary school completion outcomes

Causal chain step	Reference	Discussion and assumptions
Increased private income from increased lower secondary school qualifications	Statistics NZ, 2015c IRD 2014/15 tax rates	• By annualising the weekly income details found in Statistics NZ (2015c), we have calculated an average annual income for those with a lower secondary school qualification and those without ($44,772 and $41,028 respectively).[15] Modelling then breaks this down into a personal income component and a PAYE component. • Additional annual private income earned for those with a lower secondary school qualification is $3,034.

Quality of life outcomes

Figure 34 _ Causal chain for quality of life outcomes

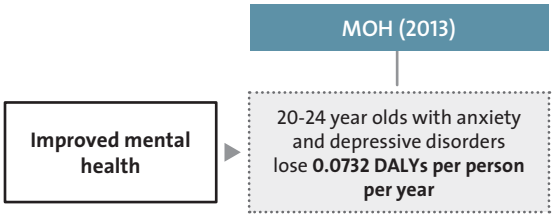


TABLE 41

Assumptions relating to the causal chain for quality of life outcomes

Causal chain step	Reference	Discussion and assumptions
20–24 year olds with anxiety and depressive disorders lose 0.0732 DALYs per year	MoH, 2013	• The New Zealand statistical annexe to the NZ Burden of Disease Report shows that the years of life disabled for those with anxiety and depressive disorders is 4,564 for the 291,180 20–24 year olds in New Zealand. Therefore the DALYs lost each year to those 21.4% youth who have anxiety and depressive disorders are 0.0732. We have chosen the DALYs for the 20–24 age group as this is the age group in which we expect to see the largest portion of the long-term outcomes of the 12–19 year olds included in the programme. Of the 11 categories of mental health impacts available in the Burden of Disease report, the one that was most similar to mild to moderate mental health issues was 'anxiety and depressive disorders'. The other categories reflected more serious mental health conditions such as psychotic disorders or more specific mental illnesses such as eating disorders and drug use.

14 A lower secondary school qualification is assumed to be a qualification achieved in the first three to four years of secondary school (for example NCEA levels 1 and 2), before a final qualification achieved to complete secondary school.

Appendix G

Detailed quantitative assessment

This appendix details the causal chains used for the quantitative evaluation (from activities to short-term outcomes). Each chain and its associated table includes information on the relevant data source, quality of the data (colour coded with reference to the data rating scale in Appendix C), effectiveness rates and assumptions / calculations used. The figures detailed in the causal chains are raw inputs to the cost-benefit analysis; the final result/s cannot be accurately calculated by simply multiplying the inputs as there are additional influencing factors to take in consideration, such as the time value of money.

Treatment and follow-up

E-Therapy

Figure 35 _ Causal chain for E-Therapy

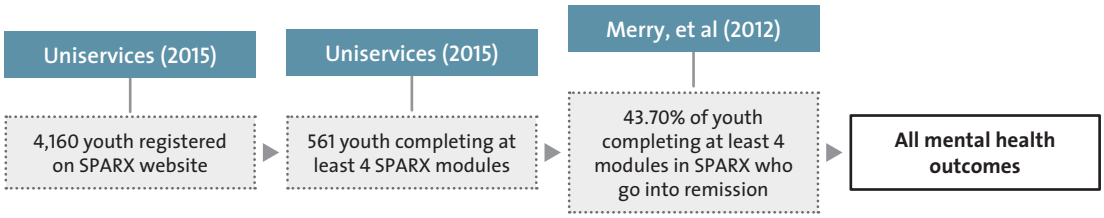


TABLE 42

Assumptions relating to the causal chains for E-Therapy

Causal chain step	Reference	Discussion and assumptions
Number of youth registered on SPARX website	Uniservices, 2015	• We obtained initiative-specific count data for 2014 and 2015 from the Uniservices Quarterly reports. We have extrapolated the 2015 figures to calculate an estimate of 2016 and 2017 figures. This is based on the assumption that the website will not require additional YMHP or ministerial investment and will remain available to youth.
Number of youth completing at least 4 SPARX modules	Uniservices, 2015	• Initiative-specific count data was obtained from the Uniservices Quarterly reports.
43.7% of youth completing at least 4 modules in SPARX who go into remission	Merry et al., 2012	• Merry et al. (2012) is a randomised control trial (RCT) on the New Zealand SPARX tool. Study participants were first screened to confirm clinically significant depression (we note that individuals accessing SPARX in a non-controlled environment may not necessarily be clinically depressed). While we recognise that some of the youth accessing SPARX are likely to be receiving other forms of therapy or treatment, for simplicity we have assumed that all youth accessing SPARX are not receiving other therapies and have therefore used the effect size of SPARX alone. The National Collaborating Centre for Mental Health (2014) indicated that while the sample size in this study was able to generate interpretable results, it may not be of a sufficient size.

CAMHS and AOD Service Access

Figure 36 _ Causal chain for CAMHS and AOD Service Access

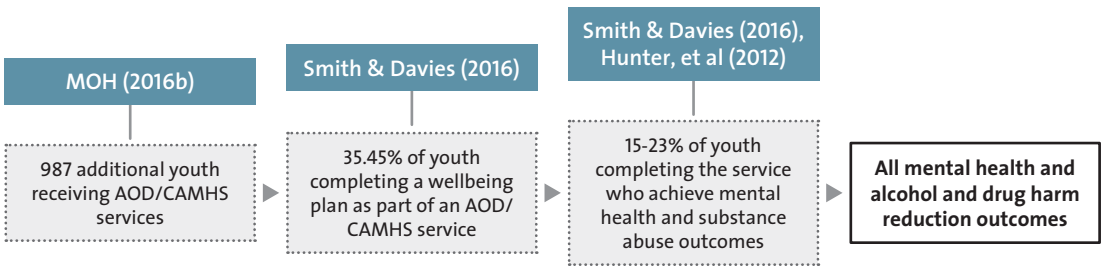


TABLE 43

Assumptions relating to the causal chain for CAMHS/AOD Service Access

Causal chain step	Reference	Discussion and assumptions
Number of additional youth receiving AOD/ CAMHS services	MoH, 2016b	• MoH contracted two DHBs to provide their newly designed 'exemplar service delivery model'. The exemplar approach included 'youth friendly' services for both AOD issues and CEP (coexisting problems). Southern DHB contracted Mirror Services and Northern DHB contracted Rubicon. Publicly available performance data details the number of youth seen by each service provider between October 2013 and September 2015. We have used averages to extrapolate to June 2016, which is the date when the service providers' contracts ceased. • Whanganui and Bay of Plenty (BOP) DHBs were also given funding to provide additional services. We have received data on the volume of youth seen by Whanganui DHB; however, the data was collected part-way through the contracted period.[16] As such, we have extrapolated a six-month average to cover the full term of service. We have not received performance reporting information from the BOP DHB and have therefore assumed they have the seen the same volume of youth as the Whanganui DHB. • As funding for the exemplar services was provided until the second year of the YMHP, this initiative had surplus funds in the first year. These surplus funds were allocated to six additional DHBs and used for service planning and change management. We have excluded these costs from the CBA as they were not used to deliver additional services to youth.
% of youth completing a wellbeing plan as part of an AOD/ CAMHS service	Smith & Davies, 2016	• Smith & Davies (2016) reviewed the 'exemplar service' delivered by Mirror Services. The report found strong alignment with many key features of an AOD/CEP service. These include: – a 'youth friendly' CEP service – an evidence-based intervention – developing a regional and national workforce. • Smith & Davies (2016) report the proportion of youth referred to the service who go on to create a wellbeing treatment plan (35.45%). We have used this data as an indicator for commitment to treatment.
% of youth completing the service who achieve mental health and substance abuse outcomes	Smith & Davies, 2016 Hunter et al., 2012	• Smith & Davies (2016) detail the proportion of youth in AOD/CAMHS services who have created wellbeing treatment plans and who have successfully achieved their wellbeing goals. The wellbeing goals relevant to this cost-benefit analysis include: 'reduced psychological disturbance', 'reduced substance abuse' and 'employment'. The proportion of these outcomes as compared to others range from 15% to 33%. For modelling purposes we have used 15% as our 'low' scenario. • Hunter et al. (2012) evaluate an American community-based intervention focused on youth substance abuse. The study found that 50% of those who received motivation enhancement / cognitive behavioural therapy recovered[17] after 12 months – which can be compared to 27% of those in the control group who also recovered after 12 months. This indicates a 23% success rate. As this is a slightly more intensive programme than that of the YMHP, we have used a 23% effectiveness rate for the 'high' scenario.

15 The figures used were the 'Number of first face-to-face contact with individuals and families'.

16 Recovery was defined as living in the community, abstinent from all substances and reporting no substance problems.

Primary Mental Health

Due to the reasons detailed below, initiative #3 Primary Mental Health has been removed from the overall YMHP cost-benefit analysis as well as the CBA of the 'Treatment and follow-up' component. Instead, this initiative has been evaluated using a stand-alone cost-benefit analysis and qualitative evaluation (the basis for this evaluation is described in Figure 36 and Table 44 below). Overall, this decision was made on the basis that the resultant analysis and information would provide greater clarity and transparency.

Reasons for preparing a standalone cost-benefit analysis and qualitative evaluation:

- There is significant uncertainty surrounding the completeness and accuracy of the data and evidence supporting the 'reach' (the total number of youth seen / treated) of the YMHP Primary Mental Health initiative. We have received information from stakeholders about the number of youth seen by Primary Mental Health services in the final quarter of 2014 (financial year) and 2015. However, we have not received the equivalent information about the number of youth seen prior to this period and as such, have no basis against which to measure or determine the counterfactual (which is important for an initiative that pre-exists the YMHP). Further, the information provided did not include unique identifiers for the youth involved, which means that youth may be double-counted if they return in different reporting quarters (however, we have been informed by stakeholders that the likelihood of this event is low). As a result of these data limitations, the figures used in our analysis to evidence 'reach' are an extrapolation of the available data, which has been calculated using a number of high-level assumptions.
- The effect size of the Primary Mental Health initiative is unknown. None of the research collected in our extensive literature review nor that provided by stakeholders was New Zealand-specific, nor was it directly comparable to the type of services offered through Primary Mental Health. The inability to source research that was comparable to the Primary Mental Health service offering was in part due to the inability to define or identify a 'standard' type of service, as participating DHBs used the YMHP funding in different ways (for consistency, we have assumed that the 'standard service' is something of a 'light touch' intervention given the average expenditure per youth served ranges between approximately $300 and $400 over the duration of the youth's participation). As a result of this limitation, the effect sizes used in our analysis are estimates / proxies for the possible impacts of Primary Mental Health.
- Primary Mental Health is large in terms of scope and budget (the budget for this initiative is $11.3 million, which makes up 20% of the total YMHP funding). As such, this initiative will have significant influence on the overall results of any quantitative analysis of the YMHP. This is particularly important in light of the data limitations described above; including Primary Mental Health in the overall YMHP cost-benefit analysis will overshadow the better-quality information and data of the other initiatives and reduce reliability of the project-level results.

While the preferred approach of this report is to evaluate Primary Mental Health on a stand-alone basis, Table 17 below provides indicative results of what the YMHP cost-benefit analysis would be if Primary Mental Health were included.

Figure 37 _ Causal chain for Primary Mental Health

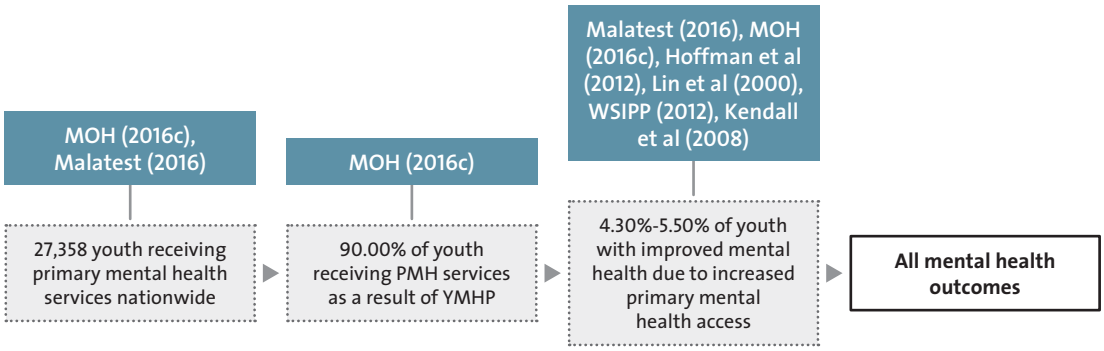


TABLE 44

Assumptions relating to the causal chain for Primary Mental Healths

Causal chain step	Reference	Discussion and assumptions
Number of youth receiving primary health services nationwide	MoH, 2016c Malatest, 2016	• Ministry of Health (2016c) and Malatest (2016) have reported that approximately 13,400 youth were seen in financial year 2015 with similar levels over the final quarter of the 2014 financial year. We have also been informed by the Ministry of Health (MoH) that the first DHBs began providing services in January 2013 and the last by April 2013. Using this information as a basis, we have modelled a linear 'ramp up' beginning in January 2013 and ending in January 2015. This totals 27,358 youth seen by PMH services in the period 2013 to 2015. • However, it is also important to note that not all services are included in the reported 13,400 and some youth may be double-counted if they return in different reporting quarters (although we understand the likelihood of this is low). We have not attempted to verify the 13,400 figure.
% of youth receiving PMH services as a result of YMHP	MoH, 2016c	• MoH have reported that only a few youth-specific services were operational before 2012 and therefore around 90% of youth seen during the 2012 to 2016 period were seen as a direct result of YMHP funding.

Causal chain step	Reference	Discussion and assumptions
% of youth with improved mental health due to increased primary mental health access	Malatest, 2016 Hofman et al., 2012 The Washington State Institute for Public Policy, 2012 Kendall et al., 2008 Lin et al., 2000	• The first key step in establishing the effectiveness of the services is understanding the nature of the service. Malatest (2016) state that a common use of the YMHP funding was to increase the number of 'packages of care' and brief intervention counselling sessions available to youth, which was achieved by hiring additional staff. These interventions were approximately 3–6 sessions. MoH highlight that a 'stepped care model' is frequently used, which typically starts with the lowest intensity service and progresses to greater intensity where required. The more intensive treatment is assumed to be analogous to cognitive behavioural therapy (CBT), a common treatment for poor mental health. • Based on our assumptions on the number of youth reached and the cost to reach them, we have estimated a maximum of $460 was spent per youth. This is broadly in line with a lower intensity service of 3–6 sessions per youth. • Lin et al. (2000) studied a stepped care model of treatment for depression in adults in primary care. The intervention involved a psychiatrist collaborating with the general practitioner to provide patient education, adjustments to pharmacotherapy, and proactive monitoring. The study found that the treatment group had a 5.50% higher rate of social functioning one month after treatment than the control group. • Hofman et al. (2012) is a meta-analysis outlining the efficacy of CBT for adults in treating different mental health issues including anxiety and depression. The analysis highlights a medium effect of CBT on depression and dysthymia when compared with a wait-list control. • The Washington State Institute for Public Policy (2012) carried out extensive literature reviews to establish effect sizes for individual and group CBT for both anxiety and depression in children and youth. The analysis indicates some small impact of individual CBT on adolescents with depression in an initial measurement and no impact after a second follow-up. The study found positive results in a second follow-up for individual CBT for children with anxiety. The results show a 4.30% improvement in global functioning of youth. • Kendall et al. (2008) study the impacts of CBT on youth mental health in the United States. The study found that CBT has greater impacts on youth anxiety than on active control. • Based on the quantitative results reported by the Washington Institute for Public Policy (2012) and Lin et al. 2000, we have modelled low and high effect sizes of 4.30% and 5.50% respectively. We acknowledge the limitations of this assumption: some research cited has found there is no impact of this type of treatment on youth; and other research relates only to adult outcomes. Further, the majority of available research: – relates to CBT, which may or may not be comparable to the type of treatment received by youth through Primary Mental Health – relates to intensive services, which are likely to be more intensive than those delivered to youth through Primary Mental Health.

Early identification and support

School Based Health Services

Figure 38 _ Causal chain for School Based Health Services

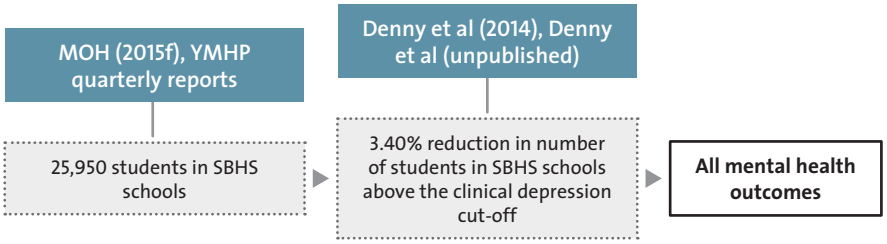


TABLE 45

Assumptions relating to the causal chain for School Based Health Services

Causal chain step	Reference	Discussion and assumptions
Number of students in SBHS schools	MoH, 2015f YMHP Quarterly Reports, 2013–2015	• While MoH provided roll counts for all SBHS schools in 2014 and 2015, the data did not detail the year in which each school joined the SBHS programme. YMHP Quarterly Reports stated that 36 of the 44 schools had SBHS in place by the end of 2013 (82%) and the remainder by 2014. To capture the additional students receiving SBHS since inception, we have added three additional 'average sized' year group cohorts for the 82% of schools joining in 2013 and two additional cohorts for the 18% of schools joining in 2014. • We have obtained data on the number of students and the amount of funding received for those schools that become decile 3 as a consequence of a decile rating review. As these schools were outside the original scope and mandate of the YMHP, we have removed them from the analysis.

Causal chain step	Reference	Discussion and assumptions
3.4% reduction in number of students in SBHS schools above the clinical depression cut off	Denny et al., 2014 Denny et al. (unpublished, personal communication)	• Denny et al. (2014) used the Youth 2000 Survey results to assess the impact of SBHS on youth health outcomes. The results were then compared against schools that do not have SBHS (but do offer first aid). The study found "less overall depression and suicide risk among students attending schools with any level of school health services compared with schools with first aid health services only" (p 25). The study also found that higher levels of SBHS resulted in stronger mental health improvement impacts. • Denny et al. (unpublished) is a forthcoming research paper using the same data as Denny et al. (2014). Based on personal communication with one of the authors, we have established the percentage reduction in the number of students suffering clinical depression for each of the three types of SBHS; these are schools with: – a visiting health professional (-3.1%) – an on-site health professional (-2.9%) – a health team on-site (-5.4%). • It is noted that the 'clinical depression cut-off' is used as a proxy, rather than a less accurate measure of mild to moderate mental illness. • To weight the different effectiveness rates, Denny et al. (unpublished) report the proportion of schools with each type of service offering. Of the schools that have SBHS: – 13.92% of schools have a health team on-site – 22.78% of schools have a health professional on-site – 63.29% of schools have a visiting health professional. • As this data presents averages on a school-level rather than a student-level, it is less accurate when applied to an individual student-level. • After multiplying each effectiveness rate by the weighting, we calculate an overall effectiveness rate of – 3.4%.

HEEADSSS Wellness Checks

Figure 39 _ Causal chain for HEEADSSS Wellness Checks

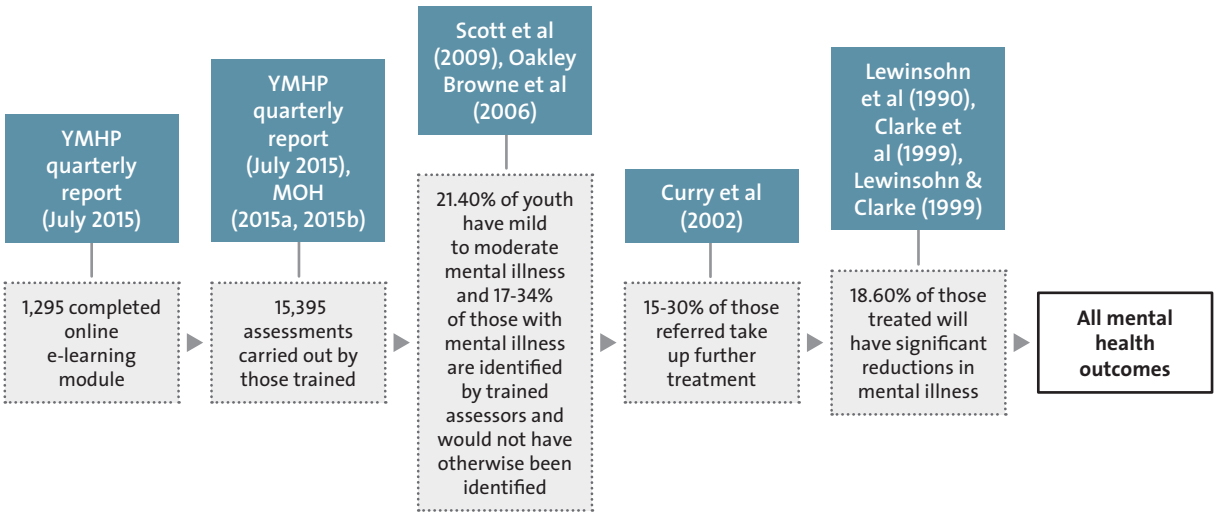


TABLE 46

Assumptions relating to the causal chain for HEEADSSS Wellness Checks

Causal chain step	Reference	Discussion and assumptions
Number completing the online e-learning module and number completing training workshops	YMHP Quarterly Report, July 2015	• 1,295 completed the online learning module. Some of these individuals also attended the workshops held around the country.
Assessments completed by those trained	YMHP Quarterly Report, July 2015 MoH, 2015a MoH, 2015e MoH, 2016a	• The number of assessments completed by those trained to perform HEEADSSS assessment is unknown and as such, we have made estimations based on available data. These are detailed below. • From SBHS reports, we know that 170 schools deliver SBHS and that for these schools, there is a minimum requirement of 1 full-time equivalent (FTE) nurse per 750 students (MoH, 2015a; 2015e). This gives us a minimum of 192 school nurses who are delivering HEEADSSS nationwide. • YMHP Quarterly Reports state that the 'majority' of those trained were nurses – as such, we have assumed 50% of nurses are trained, which yields 646 nurses. As this is much larger than the estimated number of nurses delivering HEEADSSS in schools (as above), we have assumed that all nurses delivering HEEADSSS in schools have received this training. • There are 50,000 students in SBHS schools between Years 9–13; we assume one fifth are Year 9 students, totalling 10,000 students who are required to receive a HEEADSSS check. On average 76.25% of eligible Year 9 students are receiving HEEADSSS checks (MoH, 2016). Therefore, we estimate 7,625 HEEADSSS checks performed per year. • Some of those accessing the HEEADSSS training are from overseas (researchers or administrative staff); we have assumed this cohort to take up 25% of the total and removed it from the evaluation. The remaining 75% consists primarily of social workers, youth workers and counsellors, and also some doctors. For this cohort of 324 people, we have assumed that each trained individual performs two HEEADSSS checks per month, which totals 24 checks per year per person. We then calculate an annual total of 7,770 school checks. • We have therefore estimated that 15,395 HEEADSSS checks are completed.
21.4% of youth have mental illness and 20% of these individuals are identified by trained assessors	Scott et al., 2009 Oakley Browne et al., 2006	• HEEADSSS is a useful interview framework for obtaining data about youth wellbeing. There is no research on the connection between HEEADSSS and health outcomes. The remainder of the causal chain assumes that HEEADSSS checks can generate the same benefit as clinical screening tools (although we note it is not designed as such). • There is very limited research on the connection between the screening of adolescent depression and health outcomes (Williams et al., 2009). Scott et al. (2009) studied a suicide screening tool in American schools. The research found that screening identified 34% of those classified as having mental illness. To be conservative, we have used a range of 17–34% as a proxy for those who attended HEEADSSS training. As such, we assume that a HEEADSSS check, performed by a trained professional, results in identifying 17–34% of those youth who suffer mental illness (21.4% of total youth). We then assumed that these identified youth were referred to receive further treatment.

Causal chain step	Reference	Discussion and assumptions
15–30% of those who are referred take up treatment	Willis et al., 2014 Curry et al., 2002	• There is limited research on the uptake of referrals following a 'disease screening' activity; this is particularly the case for mental illness. For other illnesses such as diabetes, research shows that the uptake of referrals could be between 18–83% (Willis et al., 2014). • Curry et al (2002) assessed uptake of referrals for psychosocial support for cancer patients in an outpatient setting. Research showed that 22% accepted the services offered. This has anchored the range we are testing, which is from 15%–30%.
18.6% of those treated will have significant reductions in mental illness	Lewinsohn et al., 1990 Clarke et al., 1999 Lewinsohn & Clarke, 1999	• There is a large body of research into the effectiveness of cognitive behavioural therapy (CBT) as a type of psychosocial support given to treat mental illnesses. Research using randomised control trials (RCTs) finds that CBT is successful in reducing depressive symptoms in adolescents (Lewinsohn et al., 1990). Other research shows that the percentage having significant reductions in mental illness can be anywhere between 18.6% and 63% (Clarke et al., 1999, Lewinsohn & Clarke, 1999). We have modelled 18.6%.

Social support for Youth One Stop Shops

Figure 40 _ Causal chain for Social Support for Youth One Stop Shops

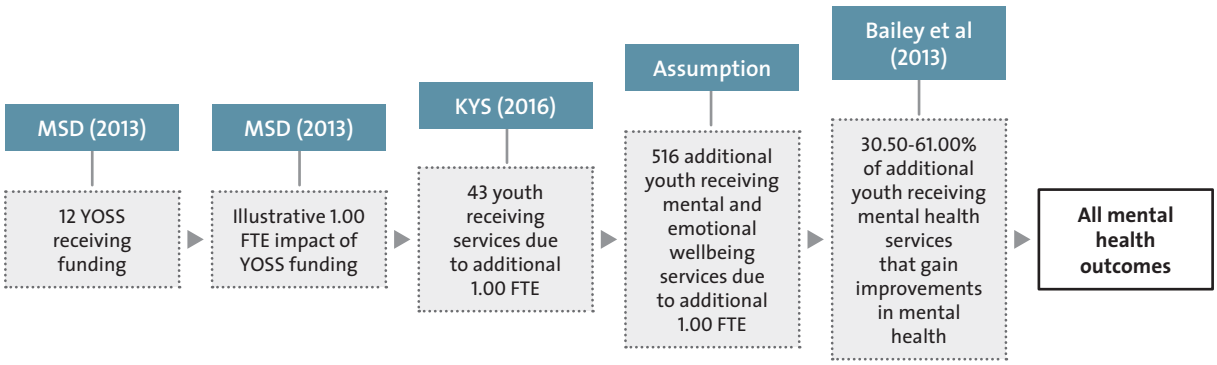


TABLE 47

Assumptions pertaining to the causal chain for social support for YOSS

Causal chain step	Reference	Discussion and assumptions
Number of YOSS funded	MSD, 2013	• 12 YOSSs received $50,000 each in 2012 (totalling $600,000).
Illustrative FTE impact of YOSS funding	MSD, 2013	• MSD (2013) reports how each of the 12 YOSSs used the $50,000 in funding. Each YOSS spent the money in a manner that was deemed most beneficial to their organisation. The most common use of the money (5 of the 12 YOSSs) was to hire an extra full-time equivalent (FTE) staff member. For simplicity, we have assumed all 12 YOSSs hired an additional FTE and scaled the associated impacts or outcomes across all 12 YOSSs accordingly.
Additional youth receiving services due to additional FTE	KYS, 2016	• A New Zealand YOSS has informed us that the average workload of a YOSS social worker in New Zealand is approximately 40–45 hours per week, but can vary hugely depending on the complexity of the issues faced by the individual.
Additional youth receiving mental and emotional wellbeing services due to additional FTE		• Although we have some information on the total number of youth who accessed the services of a YOSS, we are unable to quantify the number that attended for mental health reasons (other than anecdotal evidence from the Kapiti Youth Support (KYS) YOSS that suggests that mental health is one of the top four reasons for accessing their services). For this reason we have assumed half of 'additional' youth are receiving mental health services.
% of additional youth receiving mental health services that gain improvements in mental health	Bailey et al., 2013	• Bailey et al. (2013) is an impact evaluation quantifying the impact of KYS on participating youth. They found that 61% of those with mental and emotional wellbeing issues have short-term improvements in this outcome (p 36). As such, we modelled 61.00% as the 'high' scenario and 30.50% for the 'low'.

Supportive schools

Positive Behaviour for Learning: School-Wide

Figure 41 _ Causal chain for PB4L School-Wide

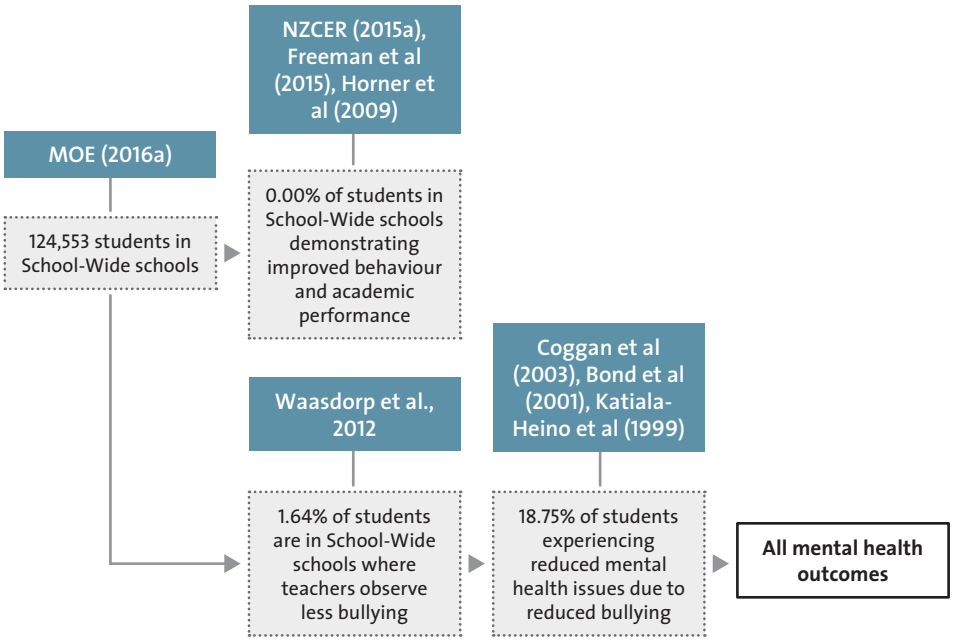


TABLE 48

Assumptions relating to the causal chain for PB4L School-Wide

Causal chain step	Reference	Discussion and assumptions
Number of students in School-Wide schools	MoE, 2016a	• MoE provided data on the roll counts of each School-Wide school. However, as the schools have been part of the programme for longer than a year, a larger number than each roll has been involved in the programme. Using the assumption that all year-groups are equal and one additional year-group joins each year, we have estimated the number of students involved in School-Wide by referring to: – student rolls – length of time the school has been in School-Wide – number of year-groups in the schools. • The effectiveness research tracked cohorts over approximately four years (Horner et al., 2009; Bradshaw et al., 2012). We have made a simplifying assumption that any student who only participates in the first year that their school has the School-Wide programme will not be included in the analysis i.e. the Year 13 cohort will be excluded from the analysis in year one. This assumption has been made on the basis that the programme requires time to implement and imbed the 'positive culture for learning' from which individuals gain benefits.
% of students in School-Wide schools demonstrating improved behaviour and academic performance	NZCER, 2015a Freeman et al., 2015 Horner et al., 2009	• NZCER (2015a) evaluates School-Wide in New Zealand through teacher and student surveys and interviews. It states that the majority of teachers surveyed believed that School-Wide was effective in "improving school culture and supporting increased consistency in approaches to behaviour" (p 5). The report also states that the majority of teachers observed lower instances of disruption, increased 'on-task' behaviour, and reduced tardiness. Data for stand-down, suspension, expulsion and exclusion (SSEE) in the evaluation was posited to support this view, but the SSEE rates are not solely reflective of the SW initiative. The SW and non-SW schools are not similar, so the SSEE rates reflect both the initiative and differences across the schools. This is true also of the Office Discipline Referral data. Through Wellbeing@School Surveys administered at the outset of School-Wide and one year later, Year 9/10 students reported feeling safe at school and having a more consultative and inclusive learning environment, although they reported no change in the aggressive behaviour items including bullying. Quantitative evidence in this report is largely indicative only (e.g. stand-down, suspension, expulsion and exclusion (SSEE) rates and Office Discipline Referral data), and therefore the report relies heavily on self-reported data as evidence of change within School-Wide schools. This is partly due to School-Wide being a relatively new programme (the evaluation occurred after 1–2 years of School-Wide being implemented in a school), which proponents indicate requires 3–5 years to bed in. The report does however state that New Zealand schools appear to be implementing the programme in accordance with the international model. As such, we rely on international academic literature to provide evidence on the effectiveness and long-term outcomes of School-Wide. • Horner et al. (2009) is an American study that found nil direct impact of School-Wide on academic performance. The study found significant post-treatment academic outcomes for both the treatment and control groups, but it did not find a significant time and condition effect that would link School-Wide to this effect. • Freeman et al. (2015) is an American study that used very large sample sizes and structural equation modelling to assess the effectiveness of School-Wide. The study found no impact of School-Wide on school completion nor academic performance. It did however find a small impact on attendance, which the authors highlight as having an indirect impact on school completion through the connection between attending school and passing classes. • It is important to note that the studies above are based on the US school system, which is quite different from NCEA here in New Zealand. NCEA allows students to gain different levels of qualification each year, by contrast with the one final qualification needed to 'complete' school in the US. Therefore an increase in attendance could have a greater impact on outcomes for an individual in New Zealand as they may achieve NCEA Level 1 through staying in school even if they do not achieve Level 2 or 3. However, without any evidence of increased academic achievement from the articles cited above, we are unable to make this connection.

Causal chain step	Reference	Discussion and assumptions
% of students in School-Wide schools where teachers observe less bullying	Waasdorp et al., 2012	• Waasdorp et al. (2012) studied School-Wide using a large sample of primary schools in the United States. The study reports a coefficient of – 0.023, which can be translated to a 1.64% reduction in bullying. This figure is derived from self-reported data (using a Likert Scale) and is therefore potentially subject to bias. It is however consistent with early outcomes seen in New Zealand schools participating in the School-Wide programme (NZCER, 2015a).
% of students experiencing reduced mental health issues due to reduced bullying	Coggan et al., 2003 Bond et al., 2001 Katiala-Heino et al., 1999	• Coggan et al. (2003) studied the relationship between self-reported chronic bullying and mental health issues in New Zealand secondary school students. The study found that those who reported chronic bullying had an 18.75% higher score on a depression scale than those who were not bullied. This difference was statistically significant. • In Australia, Bond et al. (2001), and in Finland Katiala-Heino et al. (1999), report a statistically significant relationship between self-reported bullying and depression. Katiala-Heino et al. (1999) found that this relationship held for both bullying victims and bullies themselves. Bond et al. (2001) report a one-year delay between the incidence of bullying and the emergence of mental illness. In response, we have modelled a one year delay between cohorts in School-Wide and reduced mental illness resulting from reduced bullying in the school. • We also note that the degree of bullying outlined in Waasdorp et al. (2012) may differ from that described in Coggan et al. (2003) and Katiala-Heino et al. (1999). • Through the bullying and mental health arm of this chain we have been able to reach an economic impact for School-Wide. However, this was not the key outcome expected from School-Wide in New Zealand.

Positive Behaviour for Learning: My FRIENDS Youth

Figure 42 _ Causal chain for PB4L My FRIENDS Youth

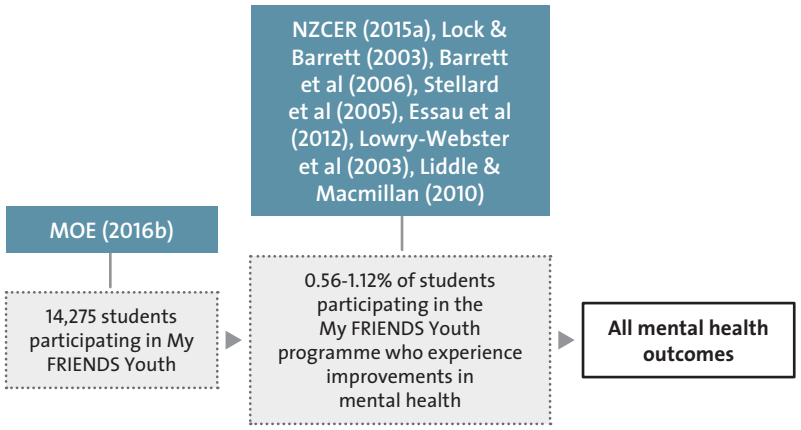


TABLE 49

Assumptions relating to the causal chain for My FRIENDS Youth

Causal chain step	Reference	Discussion and assumptions
Number of students participating in My FRIENDS Youth	MoE, 2016b	• We have received data from MoE describing the number of students who have participated in the My FRIENDS Youth programme between the years 2014 to 2016.
% of students participating in the My FRIENDS Youth programme who experience improvements in mental health	NZCER, 2016a Lock & Barrett, 2003 Barrett et al., 2006 Stellard et al., 2005 Essau et al., 2012 Lowry-Webster et al., 2003 Liddle & Macmillan, 2010	• NZCER (2016a) carried out case studies in five schools delivering the My FRIENDS Youth programme. As part of this, students completed a sub-section of the Wellbeing@School student survey before the programme, immediately after, and again as a post-programme follow-up. Results indicated a small increase in knowledge about coping strategies and knowing where to go when feeling upset. However, students had reverted to pre-programme levels at the second follow-up survey. These results are for intermediate outcomes, show only moderate effects, and are not produced using a control group. Therefore they are difficult to interpret. NZCER (2016a) states that the New Zealand programme has been implemented in a manner that is consistent with its international comparatives. As such, we will rely on international academic literature of the effectiveness of the programme's precursors. The international comparatives include the FRIENDS programme, Coping Cat, and Coping Koala. • Lock & Barrett (2003) studied the effectiveness of the Coping Koala programme in Australia in grade 6 (year 7) and grade 9 (year 10). The study measured the proportion of students who presented results over the clinical cut-off for anxiety/depression in three adolescent metrics. The study states that the intervention is "potentially successful in reducing symptoms of anxiety and increasing coping skills" (p 183). However, when examining statistical evidence, there is no consistent significant impact across grades, genders and metrics. The study found only significant impacts of the Coping Koala on anxiety for females post-treatment (but not at the 12-month follow-up and only in one of three metrics used). The effect size for females post-treatment is 0.56%. • Barrett et al. (2006) use the Lock & Barrett (2003) data to track the same group of students at 24 – and 36-month intervals following treatment. The metric used to define 'at risk' (of mental illness) is a relative cut-off score "above which 10% of the normative sample recorded" (p 407). The study found a significant difference in the number of 'at risk' students between the treatment and control groups only at the 36-month interval. However, there was large-scale attrition from the study by month 36, which was inconsistent across the treatment and control. There was a significant difference between the treatment group and the control for females at 24 months but not 36 months. The evidence supports the results seen in Lock & Barrett (2003) for females post-treatment; however, use of the universal impact results should be treated with caution. • Lowry-Webster et al. (2003) assessed the changes in student outcomes of those receiving the FRIENDS programme directly post-intervention and at a one-year follow-up. The study found no direct impact of the intervention over this time period. The study did find statistically significant differences between the proportion of youth who were at risk of mental illness in the treatment and control at the 12-month follow-up. This indicates that the study found some benefit for the most at-risk students but not a universal benefit. • Liddle & Macmillan (2010) studied the FRIENDS programme in Scotland for 9–14 year olds. The study found a positive impact of the FRIENDS programme on youth depression, anxiety and self-reported social skills. However, the analysis had no control group and it is not clear how the second wave of the total cohort was affected by the programme. In addition, the programme was targeted at those with identified need, in contrast with the untargeted approach in New Zealand.

Causal chain step	Reference	Discussion and assumptions
		• Essau et al. (2012) studied the effectiveness of the international FRIENDS programme for 9 to 12 year olds in Germany. The study found significant differences between the intervention and control groups at 12 months following treatment in both a total anxiety measure (32% reduction in score) and depressive symptoms (38% reduction). However, the results of this study have limited applicability to the New Zealand My FRIENDS Youth programme as the service was delivered more intensively. The service in Germany was delivered by skilled facilitators with post-graduate qualifications in child psychology and at least two years of experience with children with anxiety and depressive disorders. In New Zealand, the service is delivered by teachers as part of the physical education curriculum. In addition, the German programme has a student-to-facilitator ratio of 5:1, considerably lower than the average student-to-teacher ratio in New Zealand schools. For these reasons we do not see these large effect sizes as appropriate in this case. • Stellard et al. (2005) evaluated the international FRIENDS programme for 9–10 year olds in the UK. The study showed reductions in the mean scores on the Spence Children's Anxiety scale post-intervention. However, the study had no control group and therefore the research cannot infer if the changes observed were directly attributable to the FRIENDS intervention. • On balance, for the programme delivered in Australia some of the evidence suggests a zero or small universal effect size (0.56%) and a potential positive effect for those most at risk. Research from Europe indicates a potential impact when the programme is delivered more intensively, by more experienced facilitators. We have modelled an effect size of 0.56% in the low case and doubled this for the high case.

Positive Behaviour for Learning: Check and Connect; Youth Workers in Low Decile Secondary Schools (YWiSS)

Figure 43 _ Causal chain for PB4L Check and Connect, and YWiSS

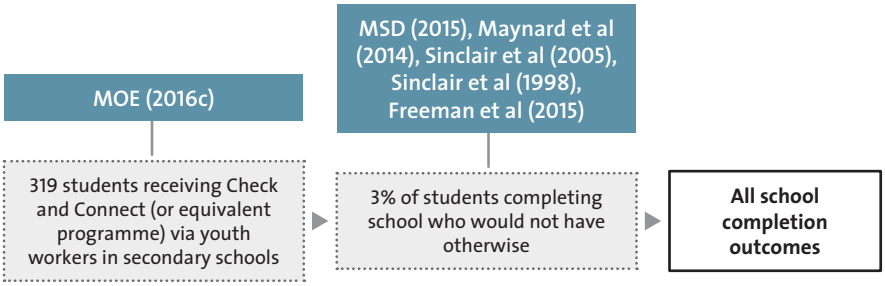


TABLE 50

Assumptions relating to the causal chain for Check and Connect, and YWiSS

Causal chain step	Reference	Discussion and assumptions
Number of students receiving Check and Connect (or equivalent programme) via youth workers in secondary schools	MoE, 2016c	• Per discussions with the MSD and MoE, we have established that 19 youth workers have been employed as part of the Youth Workers in Low Decile Secondary Schools (YWiSS) initiative. Fifteen youth workers provide the Check and Connect programme and four provide the Multi-Agency Support Services in Secondary Schools (MASSiSS) programme (which is a similar programme delivering support to students who are at risk of dropping out of school). While both Check and Connect and MASSiSS are part of the YMiSS initiative, we have only received information on the effectiveness and service recipients of Check and Connect. As such, we have assumed the results of MASSiSS are materially consistent with those of Check and Connect and extrapolated accordingly. • The MoE has provided data on the number of students currently participating in Check and Connect. The data does not include the number of students who dropped out of the programme prior to completion nor the number of students who successfully completed and exited the programme. From discussions with MoE, we understand that only a small percentage of students left the programme early and of these 'early exits', only a small proportion successfully completed and exited the programme. Due to significant uncertainty and the immateriality of these 'early exits', we have not included these students in our analysis.
% of students completing school who would not have otherwise	MSD, 2015 NZCER (2016b) Maynard et al., 2014 Sinclair et al., 2005 Sinclair et al., 1998 Freeman et al., 2015	• MSD (2015) outlines early evidence of the Auckland trial of youth workers delivering Check and Connect. It highlights anecdotes of students successfully re-engaging and evidence of 10 of 18 students completing NCEA Level 2. However, without a control group for comparison, this evidence should be interpreted and used with caution. • NZCER (2016b) evaluated the Check and Connect programme in New Zealand. The report uses survey and interview data from some Check and Connect sites around the country. The report compared self-reported expectations of academic performance with performance at the end of the year. The evaluation (n=88 students; no control group) found 73% of students reported getting better results, and improvements in self-management, communication and confidence, as well as more support from school, home and friends; of 48 students where records were available, 57% gained Level 1 NCEA and 84% gained Level 1 literacy and numeracy, where ~85% had been 'struggling to perform' or only achieving in some areas. However, with a small sample size and without a comparison group of at-risk students, this evidence should be interpreted and used with caution. • Maynard et al. (2014) investigated the impact of the Check and Connect programme on academic performance and discipline among 11–16 year olds in the United States. The study found a marginally significant impact of Check and Connect on both academic performance and discipline. The study converts effect sizes into an 'improvement index', which indicates that Check and Connect resulted in a 3% improvement in academic performance and an 11% reduction in disciplinary referrals (when compared to the control group). Maynard et al. (2014) also assessed the impact of Check and Connect on attendance and found no significant impact. • Sinclair et al. (1998) found that students with emotional and behavioural disabilities who received Check and Connect were more likely to be enrolled in school at the end of the year (when compared to the control group). However, there was no significant difference in the self-reported expectation to graduate from school. • Sinclair et al. (2005) found that students with emotional and behavioural disabilities who received Check and Connect were more likely to be enrolled in school after four years but found no significant impact on school completion rates after four years. The sample size was too small to find an impact after five years. • Overall, evidence supporting the effectiveness of the Check and Connect programme is weak and conflicting. There is evidence supporting both positive and nil impacts of the programme on attendance, and no evidence to support a reduction in school drop-outs. Freeman et al. (2015) describe four different types of school dropouts: – disrupting school (low achievement and behaviour problems) – chronically struggling (low achievement and fewer behaviour problems) – bored with the process (higher achievement but low commitment) – quiet drop-outs (acceptable achievement, but lacking the support system to handle disruptive life events).

Causal chain step	Reference	Discussion and assumptions
		Of the four types of school drop-outs, Check and Connect is most likely to reach the 'disrupting school' type. However, keeping this type in school may simply result in converting them to `bored with the process' and therefore not increase school completion. Further, it is likely that those students in the `chronically struggling' category would require a more intensive type of intervention than Check and Connect to increase the likelihood of school completion. As such, there are potential limitations on the effectiveness of Check and Connect in increasing school completion. • It is important to note the differences between the US and the New Zealand school systems. Maynard et al. (2014), Sinclair et al. (2005) and Sinclair et al. (1998) study students in the US school system, where you must complete all years of school to receive a secondary school qualification, whereas in New Zealand a student can gain different levels of qualification each year. Therefore an increase in attendance, as seen in Sinclair et al. (2005) and Sinclair et al. (1998), and an increase in academic achievement, as found in Maynard et al. (2014), could lead to a student receiving a lower secondary school qualification, even if they do not achieve an upper secondary school qualification. We have modelled a 3.00% increase in lower secondary school qualifications using the effect size found in Maynard et al. (2014).

Access to appropriate information

Social Media Innovation Fund

Figure 44 _ Causal chain for Social Media Innovation Fund

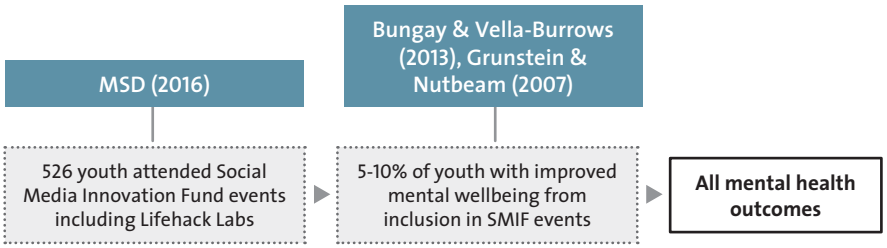


TABLE 51

Assumptions relating to the causal chain for the Social Media Innovation Fund

Causal chain step	Reference	Discussion and assumptions
Number of youth who attended SMIF events e.g. Lifehack Labs	MSD, 2016	• Data received from MSD details the number of youth involved in co-creation / innovation events such as Lifehack Labs, retreat weekends and design challenges.
% of youth with improved mental wellbeing from inclusion in the SMIF events	Bungay & Vella-Burrows, 2013 Grunstein & Nutbeam, 2007	• Bungay & Vella-Burrows (2013) present a meta-analysis of how participation in creative activities affects the wellbeing of youth. The study states that these types of programmes often lead to improved self-esteem and confidence, and positive behavioural change. The studies cited were mostly based on dance, drama and musical activities, which are not directly comparable to the Lifehack Labs, provide a useful proxy. • Grunstein and Nutbeam (2007) find positive impacts of participation in a dance / drama competition on the resilience of Australian girls. The findings are qualitative in nature and do not include an effect size for quantitative benefit. For evaluation purposes, we have assumed that 5.0% and 10.0% of all participants will experience positive mental health benefits. This aligns with effectiveness rates assigned to other initiatives.

Appendix H

Detailed qualitative assessment

Initiatives being assessed qualitatively due to their nature

From the commencement of the cost-benefit analysis, the seven initiatives in the 'Strengthening systems and processes' component (detailed in Table 52 below) were selected for qualitative assessment. This selection was made on the basis of the initiatives' underlying nature, being initiatives for which causality between the activities of the initiative and youth mental health outcomes cannot be easily identified.

This classification is consistent with the agreed schedule of outcome indicators / measures (Appendix B).

TABLE 52

List of YMHP initiatives being assessed qualitatively due to their nature – 'Strengthening systems and processes' component

#	Initiative name
Strengthening systems and processes	
11	Education Review Office: Review of Wellbeing in Schools
12	Improving the School Guidance System
13	Review of AOD Education Programme
19	Youth Referrals Pathway Review
20	Youth Engagement
24	Developing Integrated Funding Models and Connected Service Delivery
25	Co-locating Additional Social Services in Schools

Initiative profiles

TABLE 53

#11 – Education Review Office: Review of Wellbeing in Schools

Assessment criteria	Scale	Description
A. Coverage	**Moderate (indirect)**	• The initiative includes the development and publication of a set of evaluative reports on the wellbeing of New Zealand school students (listed below). Data for these evaluation reports was gathered from 227 primary and secondary schools and as such, the scope of this initiative is considered to be moderate. – Wellbeing for Children's Success at Primary School (February 2015) – Wellbeing for Young People's Success at Secondary School (February 2015) – Wellbeing for Success Effective Practice (March 2016) – Wellbeing for Success: A Resource for Schools (March 2016). • As the initiative is a review and evaluation, it is considered to have an indirect impact on youth (i.e. has not directly reached youth or impacted on their mental health outcomes). As such, no attempts have been made to collect information on the coverage of the initiative with respect to reaching young people aged 12–19 years. • It should be noted that this initiative was targeted at a wider audience than the YMHP target audience (of 12–19 year olds) as it included both primary and secondary schools. • The initiative was developed as part of the YMHP.

Assessment criteria	Scale	Description
B. Type of initiative	**Prevention**	• The initiative is preventative in nature as it aims to help schools improve student wellbeing through promotion, responding to mental health matters effectively, and sharing effective practice.
C. Impacts / outcomes	**Small**	• The outcomes of the initiative are as follows: – Boards and school leaders will be informed about how they can identify and improve their students' wellbeing. – Boards will use wellbeing indicators to monitor and improve school environments over time. – Schools will take a lead role in supporting student and whānau wellbeing. – Improved integration between schools and the healthcare providers. • The initiative did not set out to assess whether those outcomes were effectively achieved. Instead, an evaluation was undertaken in primary and secondary schools to determine the extent to which schools promoted and responded to student wellbeing. • The majority of the information collected was qualitative data relating to student wellbeing in primary and secondary schools. Some quantitative data was collected about the judgements ERO made about the extent to which schools promoted and responded to student wellbeing – this data was unable to be utilised in the cost-benefit analysis.
D. Attributes	**N/A**	• There are numerous factors that can affect or determine the perceived wellbeing of an individual (including the promotion and response of schools). As such, there is a high level of complexity associated with attempts to evaluate which factors and drivers contributed most to youth wellbeing.
E. Funding	**$0.67m**	• The initiative received $0.67 million from the YMHP (sought through the Ministry of Education baseline).
F. Implementation	**Complete**	• This initiative is now complete. • Anecdotal evidence suggests that the initiative was implemented effectively and the impact of the work was positive.
G. Data / information	**Poor**	• The direct output of this initiative was the four evaluation reports detailed above. Additional qualitative reporting was prepared via the YMHP Quarterly Reports. • Some quantitative data was collected for this initiative – however, this data was unable to be utilised for the cost-benefit analysis.

TABLE 54

#12 – Improving the School Guidance System

Assessment criteria	Scale	Description
A. Coverage	Small (indirect)	• Initiative #12 involved an Education Review Office (ERO) evaluation of the provision of guidance and counselling in secondary schools followed by the Ministry of Education (MoE) designing and implementing a work programme that responds to the recommendations of ERO's evaluation. To date, the MoE has not responded to the recommendations made in the report. As such, the current level of coverage of initiative #12 is considered to be small (as it has not yet moved into an implementation phase). • As initiative #12 is an evaluation, it is considered indirect in nature (i.e. has not directly reached youth or impacted on their mental health outcomes). • Guidance counselling in schools predates YMHP. However, the work being carried out to optimise the provision of guidance counselling is YMHP-specific.
B. Type of initiative	Prevention	• The objective of initiative #12 is to provide information on how schools currently deliver guidance and support, with a view to informing policy advice for system improvement. As system improvement is a preventative action, this initiative is considered to be preventative in nature. There is however also a negative (treatment-based) element to this initiative, as guidance counselling tends to be responsive in nature.
C. Impacts / outcomes	Small	• The target audience of this initiative is youth aged 12–19 years, but also school guidance counsellors, principals, deans, and heads of departments. • To date, an evaluation has been undertaken by ERO, but the associated recommendations have not yet been operationalised by the MoE (i.e. translated into policy or practice). As such, it has not yet been possible to observe or measure any impacts or outcomes of this initiative.
D. Attributes	N/A	• None noted – the two evaluation reports were completed per contracted timeframes (July 2013 and December 2013).
E. Funding	$0.25m	• The MoE received $1.5m in Budget 2012 for 'Support for Mental Health Services – System Development'. At the time of writing, the MoE has also tendered for a consultant to create Guidelines for Schools at an estimated cost of $25,000.
F. Implementation	Ongoing	• Initiative #12 is ongoing. Per the October 2015 YMHP Quarterly Report, progress on the initiative remains behind schedule due to delays in the MoE responding to and addressing the recommendations made in the ERO's guidance and counselling report. • Literature review work is in progress – this will be used to establish and understand the status quo of New Zealand's school guidance and counselling. This process includes the consideration of ERO's reports on guidance and counselling and is highlighting key issues in this area. • Following this work, policy options will be considered to address any issues and improve the access to supports if necessary, including the guidance system, for schools in New Zealand.
G. Data / information	Poor	• Qualitative information is available in the form of the ERO review reports – these include: – Guidance Counselling in Schools: Survey Findings (July 2013) – Improving Guidance and Counselling for Students in Secondary Schools (December 2013) • Updates on the status of the initiative are also reported in the YMHP Quarterly Reports. • Some quantitative information has been collected for this initiative (we were unable to utilise this data in the cost-benefit analysis).

TABLE 55

#13 – Review of AOD Education Programme

Assessment criteria	Scale	Description
A. Coverage	**Small (indirect)**	• The Ministry of Education and Ministry of Health led a cross-agency review of government-funded AOD programmes and interventions. To date, the review has been completed and an associated guide for schools on AOD education programmes published on the Te Kete Ipurangi website. As the scope of this initiative is limited to AOD programmes, the current level of coverage of initiative #13 is considered to be small. • As initiative #13 is research / review-based, it is considered indirect in nature (i.e. has not directly reached youth or impacted on their mental health outcomes). • This initiative was developed as part of the YMHP.
B. Type of initiative	**Prevention**	• As initiative #13 includes the review of AOD preventative and educative programmes, it is considered to be primarily preventative in nature.
C. Impacts / outcomes	**Small**	• The long-term change anticipated as a result of the review is that findings will be used to determine how future funding could be best allocated to AOD education programmes. To date, there is limited evidence to suggest that this outcome has been achieved. • Per the YMHP Project Definition document dated June 2014, key findings of the review include: – Engaging students in learning needs to be emphasised and promoted. – School-based AOD programmes are unlikely to cause any change in behaviour, although they will probably increase young people's knowledge and awareness of the risks around AOD use. – Effective AOD programmes seek to reduce demand, control supply, and limit the damage caused to individuals who are harmed by alcohol or drugs. – Comprehensive community-based approaches that are responsive to local community needs, and that meet best practice principles, show most promise. – Collaborative partnerships between sectors for community programmes are essential. Provider training and appropriateness is important. – Actions that seek to minimise risk and build protective factors are an integral feature of effective AOD programmes.
D. Attributes	**N/A**	• No specific attributes that affected the impacts / outcomes of this initiative have been recorded.
E. Funding	**Nil**	• Initiative #13 received no funding through YMHP. All required funding was sought through the Ministry of Education baseline.
F. Implementation	**Complete**	• Initiative #13 is now complete. A guide for schools on AOD education programmes was published on the Te Kete Ipurangi website in December 2013.
G. Data / information	**Poor**	• Qualitative information is available via the YMHP Quarterly Reports. • No specific quantitative information has been collected on the effectiveness of this initiative.

TABLE 56

#19 – Youth Referrals Pathway Review

Assessment criteria	Scale	Description
A. Coverage	**Small (indirect)**	• Initiative #19 was focused on assessing the integration, consistency and effectiveness of youth referral pathways – with a view to recommending practice changes where existing referral pathways are deemed to be ineffective. As the scope of this initiative is limited to referral pathways, the current level of coverage of initiative #19 is considered to be small. • As initiative #19 is research / review-based, it is considered indirect in nature (i.e. has not directly reached youth or impacted on their mental health outcomes). • This initiative was developed as part of the YMHP.
B. Type of initiative	**Prevention and treatment**	• Referral pathways incorporate the prevention of mental illness as well as treatment.
C. Impacts / outcomes	**Small**	• The review was a cross-agency response and identified cross-sector options, which will contribute to an integrated referral pathway to increase young people's access to support.
D. Attributes	**N/A**	• No specific attributes that affected the impacts / outcomes of this initiative have been recorded.
E. Funding	**Nil**	• Initiative #19 received no funding through the YMHP. All required funding was sought through the Ministry of Health baselines.
F. Implementation	**Complete**	• This was completed in March 2013 when the Review of Youth Referral Pathways report was provided to the Ministers of Health, Education, and Social Development.
G. Data / information	**Poor**	• Qualitative information is available in the form of the review report. Updates on the status of the initiative are also reported in the YMHP Quarterly Reports. • No quantitative information has been collected for this initiative.

TABLE 57

#20 – Youth Engagement

Assessment criteria	Scale	Description
A. Coverage	Small (indirect)	• Initiative #20 was an 'enabler' to ensure all the other YMHP initiatives involved youth as much as possible during the design and development phase. As such, the initiative is considered to have limited coverage and an indirect impact on youth mental health outcomes. • While initiative #20 is itself YMHP-specific, the Ministry of Youth Development resources and expertise were pre-existing.
B. Type of initiative	Prevention and treatment	• Initiative #20 aims to involve youth in the design and development of all YMHP initiatives, which cover both prevention and treatment.
C. Impacts / outcomes	Small	• Initiative #20 has achieved the following outcomes: – inclusion of young people in the advisory groups providing information and recommendations to the YMHP initiatives for initiatives #7 and #16 – consultation of young people (face-to-face, online surveys, focus groups etc.) during the design and development of initiatives #1, #16 and #19 – inclusion of youth input and advice on funding and assessment panels for initiatives #15 and #17 – one-on-one interviews with youth to inform initiative #17. • The outcomes detailed above are measurable to the extent that confirmation can be provided of youth involvement. However, no additional data or information has been collected to evidence how programme design was different as a consequence of including youth (or how any changes to programme design would result in different outcomes for youth mental health).
D. Attributes	N/A	• No specific attributes that affected the impacts / outcomes of this initiative have been recorded.
E. Funding	Nil	• Initiative #20 received no funding through YMHP. All required funding was sought through the Ministry of Youth Development baseline.
F. Implementation	Complete	• Initiative #20 is now complete.
G. Data / information	Poor	• No quantitative reporting has been prepared for this initiative (with the exception of reporting the number of youth who have participated in the design and development of YMHP initiatives). • Qualitative reporting includes survey, interview and focus group outcomes and findings, and the quarterly YMHP Status Reports.

#24 – Developing Integrated Funding Models and Connected Service Delivery

It should be noted that since April 2014, approval was given by the YMHP Steering Group to fold all future work associated with initiative #24, Developing Integrated Funding Models and Connected Services, into initiative #5, Primary Care Responsiveness to Youth. This decision was made on the basis that the core objective of initiative #5 (achieving integration across the elements of the primary care health system) will deliver the intention of initiative #24 (which is to identify further opportunities to develop more integrated funding models and connected service delivery, and explore opportunities for youth wellness hubs).

See page 168 for the qualitative assessment of initiative #5.

TABLE 58

#25 – Co-Locating Additional Social Services in Schools

Assessment criteria	Scale	Description
A. Coverage	**Small (indirect)**	• The objective of this initiative was to investigate and report on the feasibility and value of co-locating social services in schools (this was in response to a joint recommendation made by the Ministers of Health, Education and Social Development). • As initiative #25 is research / review-based, it is considered indirect in nature (i.e. has not directly reached youth or impacted on their mental health outcomes). • This initiative was developed as part of the YMHP.
B. Type of initiative	**Prevention**	• Co-location of social services in schools is a preventative measure.
C. Impacts / outcomes	**Small**	• The report, Youth Mental Health Project Initiative 25, Feasibility and Value of Co-locating Social Services in Schools, found that the greatest benefit of providing school-based services is improved educational outcomes. The contributing factors are improved attendance, wellbeing and academic achievement. • The findings of the investigation and associated report informed the YMHP Steering Group on the implications for policy and practice. • While individual schools may have made changes in response to the findings of this review, this information is not currently being tracked or recorded.
D. Attributes	**N/A**	• While there are attributes affecting the impact / outcome of providing social services in schools, there is no evidence that this initiative has resulted in additional co-location of social services in New Zealand. As such, no specific attributes that affected the impacts / outcomes of this initiative have been recorded.
E. Funding	**Nil**	• Initiative #25 was not allocated any specific YMHP funding. As such, any funding required has been sourced from the Ministry of Education's existing baseline.
F. Implementation	**Complete**	• The Ministry of Education's report on the feasibility and value of co-locating additional social services on schools sites has been approved. • The MoE continues to investigate ways to encourage schools to co-locate additional social services, or have services provided at the school.
G. Data / information	**Poor**	• Qualitative information is available in the form of the investigative report. Updates on the status of the initiative are also reported in the YMHP Quarterly Reports. • No qualitative information has been collected for this initiative.

Initiatives being assessed qualitatively due to data limitations

After the exclusion of the eight initiatives detailed in Table 59, the remaining 18 initiatives were eligible for quantitative assessment. During the course of the cost-benefit analysis, an additional six initiatives were excluded from the scope of quantitative assessment as a result of limitations in data quality and availability. These initiatives have been assessed qualitatively below.

TABLE 59

List of YMHP initiatives being assessed qualitatively due to data limitations

#	Initiative name
Treatment and follow-up	
3	Primary Mental Health*
6	CAMHS and AOD Services Follow-up
Early identification and support	
3	Primary Mental Health*
5	Primary Care Responsiveness to Youth
21	Youth Mental Health Training for Social Services
22	Whānau Ora for Youth Mental Health
Supportive schools	
26	Addressing the Emerging Youth Mental Health Issues in Canterbury*
Access to appropriate information	
16	Improving the Youth-Friendliness of Mental Health Resources
17	Information for Parents, Families and Friends
23	Referral Pathway Supports for Young People

** Initiative #3 has both 'Treatment & follow up' and 'Early identification & support' components.*

Initiative profiles

TABLE 60
#3 – Primary Mental Health

Assessment criteria	Scale	Description
A. Coverage	**Large (direct)**	• Initiative #3 is delivered via DHBs and PHOs. As such, there is potential for the initiative to reach a very wide audience as all New Zealand youth have access to a DHB and associated PHO. • Initiative #3 has a direct impact on youth via the provision of youth mental health services (such as packages of care, brief intervention counselling, group therapy etc.). • Services offered through Primary Mental Health existed prior to the commencement of the YMHP. The YMHP provided an extra source of funding to improve the effectiveness and extend the scope and capacity of existing services.
B. Type of initiative	**Prevention and treatment**	• While initiative #3 has preventative aspects, it is aimed primarily at patients with mild to moderate mental health and / or substance abuse problems that are of recent onset and are amenable to treatment in a primary care setting.
C. Impacts / outcomes	**Large**	• The DHBs were given discretion as to the way in which allocated funding was utilised. There were four broad approaches (Malatest International, 2016): – expansion of the age range of existing primary mental health services – this was achieved by increasing funding available to PHOs and other providers for packages of care and brief interventions – adapting existing primary mental health services for youth – expanding existing NGO or community-based initiatives e.g. funding new roles or programmes – developing new initiatives (e.g. youth psychologists co-located in schools and NGO youth services) and / or funding youth-specific services ranging from resilience building to treatment. • Overall, the recorded short-term outcomes of this initiative are (Malatest International, 2016): – increased capacity of services to support youth mental health and wellbeing – increased range of provider and service options available to youth – improved access to youth mental health services – improved effectiveness of services by sharing information on what is effective – supporting innovation to contribute to the development of efficient and cohesive services – developing the youth workforce. • It should be noted that while there is evidence to suggest that more youth are receiving primary mental health services in recent years, the available data does not provide an indication of how many additional youth received services as a direct result of the YMHP. This represents a significant data limitation and is ultimately the reason why this initiative was removed from the overall cost-benefit analysis and evaluated separately.

Assessment criteria	Scale	Description
		While there is information and data to support the short-term outcomes of the initiative itself, there is a lack of information and data to support the actual short- and long-term outcomes for youth (e.g. reduced depression / anxiety). However, assumptions have been made that the initiative will result in (Malatest International, 2016): – improved mental health outcomes – improved resilience – youth staying in school for longer – youth being helped to obtain employment. • The estimated quantum of impacts / outcomes has been rated as large due to the potential coverage of this initiative.
D. Attributes	**N/A**	• The effectiveness of initiative #3 has been impacted primarily by the following attributes: – Funding limitations – when the total funding is split among New Zealand's 20 DHBs, the amount allocated to each DHB is not significant. As such, the majority of DHBs have used the funding to simply increase the capacity of existing services. – Funding discretion – the variability of initiative outcomes is impacted heavily by DHBs having discretion as to how the YMHP funding was to be used.
E. Funding	**$11.3m**	• Initiative #3 was allocated $11.3 million of funding via the YMHP (to be used over a four-year period). Of this $11.3 million, $8.9 million came from within DHB / Ministry of Health baselines and a further $1.9 million was allocated across the 20 DHBs from 1 July 2015 (Malatest, 2016).
F. Implementation	**Ongoing**	• Initiative #3 is ongoing as the YMHP funding for this initiative covers the period 2012/13 to 2015/16. • Qualitative evidence suggests that this initiative has been implemented effectively as there has been an overall uplift in the total number of youth receiving services.
G. Data / information	**Poor**	• Qualitative reporting is available via the YMHP Quarterly Reports and the Malatest International Evaluation Report: The Youth Primary Mental Health Service, January 2016. • Quantitative reporting on the total number of youth receiving services is available (which is the collation of individual DHB reports). However, the completeness, consistency and accuracy of this reporting is poor.

TABLE 61

#6 – CAMHS and AOD Services Follow-up

Assessment criteria	Scale	Description
A. Coverage	**Moderate (direct)**	• The specific number of youth participating in this initiative has not been recorded. However, the potential target audience is all youth aged 12–19 years who have utilised the CAMHS and AOD services. As this is a specialist service, the overall coverage of this initiative is considered to be moderate. • Initiative #6 has a direct impact on youth by delivering treatment follow-up plans to youth themselves. • While the CAMHS and AOD services are pre-existing, initiative #6, which is focused on the provision of follow-up plans, is YMHP-specific.
B. Type of initiative	**Prevention**	• This initiative aims to prevent relapse by the provision of follow-up plans.
C. Impacts / outcomes	**Moderate**	• Four DHBs were included in a pilot for the implementation of the AOD discharge planning best-practice guidelines. This pilot began in 2014. Through the pilot, all four DHBs started delivering improved discharge planning. • From July 2014, 15 DHBs had transition plan reporting in place. Of these 15, 5 DHBs had transition plans in place for 95% of more of children and youth exiting from specialist services (YMHP Quarterly Report, 2015). • It should be noted that while some of the DHBs are reporting delivery of follow-up plans for 95% of children and youth, without any baseline data against which to compare it is very difficult to assess the additional number of youth receiving follow-up care plans as a direct result of the YMHP.
D. Attributes	**N/A**	• The timing of implementation was contingent on completion of the DHB pilot programme (as discussed above). • With the available funding, the scope of initiative #6 was somewhat limited.
E. Funding	**$0.4m**	• Initiative #6 received funding of $0.4 million via YMHP.
F. Implementation	**Ongoing**	• Initiative #6 is ongoing. To date, the initiative has been implemented successfully through the pilot programme and 33% of the DHBs are reporting that the follow-up plan target of 95% has been met. The Ministry of Health is following up with the DHBs who were unable to provide transition plan data or those not yet meeting the 95% target.
G. Data / information	**Poor**	• Through the course of the initiative, a number of documents / reports have been created: – a stocktake on post-discharge follow-ups for youth accessing CAMHS and AOD services – best practice guidelines and a toolkit – new service specifications for CAMHS and AOD follow-up. • To date, we have been unable to obtain any quantitative data / reporting to evidence the number of follow-up plans issued to youth, nor the effectiveness of those plans on preventing relapse.

#5 – Primary Care Responsiveness to Youth

The Primary Care Responsiveness to Youth initiative includes a number of diverse components:

- financial sustainability of the Youth One Stop Shops (YOSS)
- DHB stocktake and actions to improve youth health and wellbeing services
- establishment and monitoring of DHB youth Service Level Alliance Teams (Youth SLATs)
- one-off funding to DHBs, YOSSs and Social Sector Trials for youth alcohol and other drug (AOD) programmes
- draft national standards for youth health service delivery.

Each component of the initiative is included in the assessment table below.

It should be noted that since April 2014, approval was given by the YMHP Steering Group to fold all future work associated with initiative #24, Developing Integrated Funding Models and Connected Services, into initiative #5. This decision was made on the basis that the core objective of initiative #5 (achieving integration across the elements of the primary care health system) will deliver the intention of initiative #24 (which is to identify further opportunities to develop more integrated funding models and connected service delivery, and explore opportunities for youth wellness hubs).

TABLE 62

#5 – Primary care responsiveness to Youth

Assessment criteria	Scale	Description
A. Coverage	**Large (indirect)**	• **Youth SLATs:** 19 of 20 DHBs have a youth Service Level Alliance Team (SLAT). The Youth SLATs make recommendations to their Alliance Leadership Team on improving integration and delivery of youth health services. The one remaining DHB is being supported to set up a Youth SLAT. As DHBs cover all youth across New Zealand, the Youth SLATs are considered to achieve large indirect coverage. • **YOSS:** the specific work performed as part of this initiative was focussed on improving the financial stability of the YOSSs. As the YOSSs have a collective client base of approximately 40,000 (12–24 year olds), this component of initiative #5 is considered to achieve moderate indirect coverage. • **One-off AOD funding:** the funding was used in a range of different ways, some of which were directly with young people, while others were focused on systems, workforce development, development of resources etc. The coverage of this component of initiative #5 is considered to be small. • Overall, initiative #5 has an indirect impact on youth as it focused primarily on developing mechanisms for change in DHBs and ensuring financial sustainability of YOSSs. • Initiative #5 is YMHP-specific. However, the DHBs and YOSSs were already providing youth services before the YMHP was established.
B. Type of initiative	**Prevention and treatment**	• While initiative #5 includes aspects of treatment, it is primarily focused on prevention, given most adolescent health issues (mental health, sexual health, health issues arising from risk-taking behaviours) are related to developmental, behavioural and lifestyle factors.

Assessment criteria	Scale	Description
C. Impacts / outcomes	**Moderate**	• The impacts / outcomes of initiative #5 include: – **Youth SLATs:** DHBs have implemented funding and planning mechanisms to drive improvements in youth services (via the Youth SLATs). Although the maturity and effectiveness of Youth SLATs is variable, a number of DHBs now use their Youth SLAT to lead planning and delivery of all youth services across the health sector. – **Youth SLATs:** DHBs have investigated and improved the accessibility and youth-friendliness of services (e.g. established drop-in or mobile youth clinics, improved delivery of SBHS, co-located youth services). – **YOSS:** Improved financial sustainability of the YOSS has ensured continued ability to provide youth friendly mental health services and holistic health and wellbeing support. – **One-off AOD funding:** the impact of one-off AOD funding was variable, but resulted in improved relationships and links between Social Sector Trials and DHBs, increased knowledge about service requirements and availability, and increased workforce capacity in AOD services. • The direct outputs of the initiative (e.g. establishment of Youth Service Level Alliance Teams, DHB actions to improve youth services) can be measured. However, it is not possible to directly measure or attribute the impact of the initiative on youth mental health outcomes. • All DHBs provide the Ministry of Health with quarterly qualitative reporting on actions to establish Youth SLATs and improve the responsiveness of primary care to youth. Quantitative data has not been collected on the impact of the initiative on youth health and wellbeing outcomes.
D. Attributes	**N/A**	• The key attribute that affected the impact or outcome of initiative #5 was the time required to establish relationships (e.g. relationships between DHBs and other agencies involved in Youth SLATs and relationships between DHBs and Social Sector Trials to implement one-off AOD projects).
E. Funding	**$0.5m**	• Initiative #5 received funding of $0.5 million (2012/13 to 2017/18) from Vote Health. This funding covered the YOSS financial sustainability component of the initiative and one-off funding for youth AOD initiatives.

Assessment criteria	Scale	Description
F. Implementation	**Ongoing**	• Initiative #5 is ongoing. The Ministry of Health is currently in the process of procuring a supplier to establish a national quality improvement collaborative for youth health. The collaborative is being established to support the performance of the Youth SLATs. This work will involve finalising draft good-practice expectations for youth health service delivery (initiative #24) and supporting quality improvement in youth services. • Overall, the components of initiative #5 have been implemented effectively: – **Youth SLATs:** 19 of 20 DHBs now have a Youth SLAT (or equivalent) and all DHBs are undertaking a range of actions to improve youth service delivery, health and wellbeing. – **Youth SLATs:** draft 2016/17 Annual Plans show increased SLAT maturity (e.g. the Youth SLAT as the primary planning and commissioning mechanism for youth services and delivery of DHB's youth work programme), more innovative initiatives (e.g. integrated models of school-based health services), and increased DHB-led wellbeing initiatives. – **Youth SLATs:** continued variability in Youth SLAT maturity and change in youth services is to be expected, particularly because building the relationships required to make collective funding and planning decisions takes time, and DHBs started at different points. – **YOSS:** the Youth One Stop Shop sector is now more financially stable. – **One-off AOD funding:** some DHB / Social Sector Trial sites took longer than anticipated to change planned projects delivered under one-off AOD funding, but most implemented planned actions.
G. Data / information	**Moderate**	• Initiative #5 has resulted in the development of a large amount of reporting and documentation, including: DHB youth stocktakes, DHB quarterly reporting and annual plans, one-off AOD funding reports, financial assessments of YOSS, and draft national standards for youth health service delivery. • While there is a significant amount of 'project type' and financial reporting associated with initiative #5, none of the reporting provides detail on the effectiveness of the initiative in achieving youth outcomes. As such, the available information and data has been assessed as moderate.

TABLE 63

#21 – Youth Mental Health Training for Social Services

Assessment criteria	Scale	Description
A. Coverage	**Small (indirect)**	• 18 MH101 sessions have been delivered to 246 frontline Youth Services and Attendance Service staff. • As initiative #21 is focused on training frontline staff, it is considered to have indirect impacts on youth mental health outcomes. • Initiative #22 is YMHP-specific. However, the MH101 material was adapted from an existing mental health workshop (Blueprint with the assistance of Wise Group) to be more 'youth specific'.
B. Type of initiative	**Prevention**	• MH101 training courses aim to teach attendees how to recognise, relate to and respond to mental health issues and teaches when and how to refer young people to appropriate services. As such, initiative #21 is primarily preventative in nature.
C. Impacts / outcomes	**Small**	• Initiative #21 did not set out to measure direct impacts on youth mental health outcomes as a result of providing MH101 training. • Measurable outcomes include delivery of a consistent youth mental health training program to all Attendance Service, Youth Service, Social Workers in Schools (SWiS) and Youth Workers in Low Decile Secondary Schools (YWiSS) front-line staff. • MH101 was incorporated into the training recommendations as part of initiatives #19 (Youth Referrals Pathway Review) and #23 (Referral Pathway Supports for Young People).
D. Attributes	**N/A**	• With the available funding, only a limited number of MH101 workshops were offered. Affected agencies (Ministry of Education and Child, Youth and Family) were able to work around this constraint by purchasing additional workshops out of their baseline training budgets.
E. Funding	**Nil**	• Initiative #22 received nil funding via YMHP. All funding was sought from existing baselines. • Adaptation of the MH101 to a 'youth specific version' was undertaken gratis by Wise Group. Blueprint delivered workshops as part of the Ministry of Health contract, which allows a certain number of workshops per year from non-Health agencies. Additional workshops were purchased by Ministry of Education and Child, Youth and Family.
F. Implementation	**Complete**	• Initiative #22 is now complete. • The initiative was implemented effectively and workshop attendee surveys indicated a high level of satisfaction.
G. Data / information	**Poor**	• No quantitative reporting has been prepared for this initiative (with the exception of reporting the number of workshop attendees). Qualitative reporting is prepared via the quarterly YMHP Status Reports.

TABLE 64

#22 – Whānau Ora for Youth Mental Health

Assessment criteria	Scale	Description
A. Coverage	**Small (direct)**	• Initiative #22 was delivered to approximately 40 youth and their whānau / aiga. • Initiative #22 has a direct impact on youth mental health outcomes as it was focused on providing a Whānau Ora approach to working with families and young people, developing and implementing a holistic culturally responsive approach, and providing wrap-around support (Goodwin et al., 2014). • Initiative #22 is YMHP-specific.
B. Type of initiative	**Prevention**	• Initiative #22 is primarily focused on preventing 'at risk' youth from developing mild to moderate mental illness.
C. Impacts / outcomes	**Moderate**	• Evaluation and provider reports identified positive impacts for the rangatahi in Hawke's Bay and South Auckland and their whānau who were involved – for example, young people staying in school, or moving on to part-time employment or other study. Critical elements of the approach included well-developed networks across schools, government and non-government agencies, providing holistic approaches to services, and youth-centric processes facilitated by culturally competent staff. • Information collected on the impacts / outcomes was largely qualitative and self-reported in nature.
D. Attributes	**N/A**	• Achievement of positive outcomes was heavily dependent on the skill and cultural awareness of the staff delivering the programmes. The final evaluation report states that the staff were skilful in providing a range of culturally based interventions, mentoring, advocacy and support (Goodwin et al., 2014). • The ability of some families and young people to make changes were impeded by multiple issues, including trauma, intergenerational issues, mental health, and navigating through health, justice and social systems as well as basic practical issues such as housing, financial resource and employment (Goodwin et al., 2014). • The impacts and outcomes of the initiative were impacted heavily by funding constraints.
E. Funding	**$0.48m**	• Initiative #22 received total funding of $0.48 million from the YMHP.
F. Implementation	**Complete**	• Initiative #22 was implemented effectively by two providers: Central Health (Hawke's Bay) and Pacific Island and Prevention Project (South Auckland). The providers were effective, within one year of service delivery, in supporting many families and young people in their service to make important changes for the wellbeing of their whānau and young people. Some of the wider goals of Whānau Ora were achieved – for example, whānau were empowered toward self-determining goals, and whānau and young people's aspirations and goals were achieved, in particular housing, educational and employment goals (Goodwin et al., 2014). • Those young people who were deemed to be at an earlier intervention stage were able to progress and make greater changes (e.g. staying in school, moving on to part-time employment or other study) compared to young people with higher mental health needs and complex social and environmental issues impacting on their families (Goodwin et al., 2014). • The providers also successfully developed and utilised specific cultural approaches, frameworks and ways of working that were highly effective in engaging Māori and Pacific families and young people (Goodwin et al., 2014). • Initiative #22 was completed by Te Puni Kōkiri on 30 June 2015.
G. Data / information	**Poor**	• Qualitative reporting includes the final initiative evaluation report and the quarterly YMHP Status Reports. • No quantitative reporting has been prepared for this initiative.

TABLE 65

#25 – Addressing the Emerging Youth Mental Health Issues in Canterbury

Assessment criteria	Scale	Description
A. Coverage	**Moderate (direct)**	• The specific number of youth participating in this initiative has not been recorded. However, it is known that over 90 schools (primary, intermediate and secondary) have participated in the initiative to at least some extent. This information could be used to calculate a very high-level approximation (with reference to the school rolls). • While the coverage among Canterbury schools is extremely high, this initiative does not provide national coverage. • Initiative #26 is thought to have had both direct and indirect impacts on children and young people. The direct impact was achieved by psychosocial recovery among children and youth. Conversely, indirect impact was achieved by focusing on school communities, so that benefits were realised by parents and teachers as well as children and youth. • Initiative #26 is specific to the YMHP.
B. Type of initiative	**Prevention**	• The initiative targets psychosocial recovery (of Canterbury children and youth), which is considered to be primarily a preventative intervention. A small number of children and youth have also been referred for treatment.
C. Impacts / outcomes	**Moderate**	• No information or data has been collected on the direct outcomes or impacts on youth as a result of this initiative. As such, it is not possible to conclude on the quantum of any possible direct outcomes and impacts. However, it is assumed that the initiative did achieve (at least to some extent) psychosocial recovery of children and youth impacted by the Canterbury earthquakes. • Agencies involved have reported improved cross-agency relationships and collaboration as a direct result of the initiative. The initiative has also reported improved access to support services for children and young people attending school, and consolidated and better coordinated services for young people at school and their school communities. • With respect to the youth who benefited, initiative #26 is somewhat unique as it includes children of all ages, and so it had a wider scope than YMHP, which focuses on youth aged 12–19 years.
D. Attributes	**N/A**	• The timing of the initiative was driven by concerns about the mental health of children and young people following the Canterbury earthquakes, and in particular, an increased demand for child and youth mental health services.
E. Funding	**Nil**	• Initiative #26 was not allocated any specific YMHP funding as it relies on a number of existing funded initiatives. As such, any additional funding required has been sourced from the existing baselines of the government agencies involved.
F. Implementation	**Ongoing**	• The Canterbury DHB provides overall leadership for the implementation of the Christchurch 'Youth Mental Health Action Plan' and is supported by the Ministries of Education and Social Development. Governance of the Plan is provided by a joint Canterbury DHB and Education oversight group. This group has provided a framework for joint work in planning, monitoring and resolving issues and is considered to have facilitated closing service and communication gaps between agencies. • The initiative is still in progress and continues to adapt to meet needs identified by schools and their communities.
G. Data / information	**Poor**	• With the exception of the number of participating schools, no data has been collected. The only available reporting is progress reports prepared by the Canterbury DHB.

TABLE 66

#16 – Improving the Youth-Friendliness of Mental Health Resources

Assessment criteria	Scale	Description
A. Coverage	**Small (indirect)**	• No information has been collected to evidence the type or number of users who have accessed the Youth Mental Health Resource Guidelines. As such, it is not possible to estimate the coverage or 'reach' of the initiative. • As this initiative is focused on the provision of information (via the guideline document), it is considered to have an • indirect impact on youth mental health outcomes. • This initiative is YMHP-specific.
B. Type of initiative	**Prevention**	• The initiative targets prevention by providing information and guidelines to assist mental health agencies to improve the youth-friendliness of their resources.
C. Impacts / outcomes	**N/A**	• The primary objective of the initiative was to aid mental health agencies in producing mental health resources that are effective in reaching youth. However, no information has been collected to determine whether the initiative was effective and as such, it is not possible to conclude whether the initiative had any impact on youth mental health outcomes.
D. Attributes	**N/A**	• No specific attributes that affected the impacts / outcomes of this initiative have been recorded.
E. Funding	**Nil**	• Initiative #16 was not allocated any specific YMHP funding. As such, any funding required has been sourced from the Ministry of Social Development's existing baseline.
F. Implementation	**Complete**	• Youthline has completed a set of guidelines to assist mental health agencies to improve the youth-friendliness of their resources. The guidelines are now on the Ministry of Youth Development's website and have been disseminated to the wider youth mental health sector.
G. Data / information	**Poor**	• No quantitative reporting has been prepared for this initiative. Qualitative reporting is prepared via the quarterly YMHP Status Reports.

TABLE 67

#17 – Information for Parents, Families and Friends (Common Ground)

Assessment criteria	Scale	Description
A. Coverage	**Large (indirect)**	• The Common Ground website has been accessed 37,543 times by 28,577 unique users since it was launched. The associated Facebook page has a following of 11,623 people. • Common Ground commissioned an evaluation of their work to better understand reach and impact. An online survey provided evidence that the website was reaching the intended audience (parents, friends or family members of 12–19 year old New Zealanders) as well as young people and professionals supporting them. The survey indicated that 52% of respondents were either a parent, friend or family member and 23% were young people aged 12–19 years. The evaluation concluded that the site was a high-quality resource that was valued by its users. • Although Common Ground was not directly targeted to youth, the initiative: – provides resources, input, advice and information to ensure informal networks are more effective in supporting youth – delivers content that is relevant to young people experiencing mental health issues, as well as to their peers – provides a resource to 'front line' service providers working directly with youth – for example, Youth One Stop Shops, youth counsellors and other mental health organisations. • As this initiative is focused on the provision of information (via the guideline document), it is considered to have an indirect impact on youth mental health outcomes. • Common Ground (Information for Parents and Friends) is an initiative specifically linked to the YMHP.
B. Type of initiative	**Prevention**	• The initiative targets prevention by providing timely information to people who have not yet accessed other services. It does however also offer secondary elements of treatment by providing advice to parents, friends and family members.
C. Impacts / outcomes	**N/A**	• The interim evaluation stated that Common Ground provided tailored and individualised responses to young people and their whānau, which assisted with their understanding of issues, resources and support. Families and professionals alike agreed that Common Ground was a trusted and quality way of accessing informative, advice and support (Dommett & Coker, 2016). • While data has been collected on the usage of the Common Ground website, no information has been collected to support the impacts or outcomes of the website on youth mental health outcomes. As such, it is not possible to assign a qualitative rating to the level of impacts and outcomes achieved. • There is a view that collecting data on impacts and outcomes would be useful to assess the effectiveness of the website. As such, there is an intention to engage an independent evaluator to establish an appropriate process and approach for collecting data, and capturing user feedback.

Assessment criteria	Scale	Description
D. Attributes	**N/A**	• No specific attributes that affected the impacts / outcomes of this initiative have been recorded.
E. Funding	**$1.0m**	• The initiative received $1.0 million ($250,000 per year for four years) of funding through the YMHP.
F. Implementation	**Ongoing**	• The Common Ground website has been completed and launched. However, the initiative is ongoing as the site requires regular maintenance and update. • The interim evaluation report suggests that Common Ground was implemented effectively, provides useful information through the website, and acts as a portal for individualised responses (which are specific to need and location) (Dommett & Coker, 2016).
G. Data / information	**Poor**	• The Common Ground interim evaluation report includes some statistical analysis around use of the Common Ground website. We were unable to use this information in the cost-benefit analysis. • Additional qualitative reporting is prepared via the quarterly YMHP Status Reports.

TABLE 68

#23 – Referral Pathway Supports for Young People

Assessment criteria	Scale	Description
A. Coverage	**Small (indirect)**	• As this initiative is research-based, it was not practical to attempt to collect information on coverage. • Due to the nature of the initiative, it is considered to have had an indirect impact on youth mental health outcomes. • This initiative was developed as part of the YMHP.
B. Type of initiative	**Prevention**	• This initiative is focused on preventing escalation of mental health concerns such as stress, anxiety or depression. Specifically, the Navigator Support Guidelines document promotes social connectedness and development of 'good and trusting' relationships with young people.
C. Impacts / outcomes	**Small**	• The development of the Navigator Support Guidelines was recognised in the gap analysis undertaken as part of initiative #19, Youth Referrals Pathway Review. The other gaps identified in the review became initiatives #24 (Developing Integrated Funding Models and Connected Service Delivery) and #25 (Co-locating Additional Social Services in Schools). It was not considered practical to attempt to record the outcomes or impacts of the Navigator Support Guidelines. However, some of the findings and material developed for the Guidelines document is being used to drive best practice when working with youth (e.g. development of the New Zealand Mentoring Guidelines). • With respect to future data collection, an abbreviated version of the Navigator Support Guidelines is likely to be available via social media. There is an option to collect data on the usage and access of this abbreviated document.
D. Attributes	**N/A**	• The scope of this initiative was limited by the fact that it received no specific funding through the YMHP.
E. Funding	**Nil**	• Initiative #23 was not allocated any specific YMHP funding. As such, any funding required has been sourced from the Ministry of Social Development's existing baseline.
F. Implementation	**Ongoing**	• The initiative is close to being complete in that the Navigator Support Guidelines document is complete. However, as previously discussed, there is a possibility of publishing an abbreviated version of the document on social media. • Regarding the efficacy of implementation, the recommendations made from initiative #19 (Youth Referrals Pathway Review) were adopted and they informed the development of initiatives #23, #24 (Developing Integrated Funding Models and Connected Service Delivery) and #25 (Co-locating Additional Social Services in Schools). Anecdotal evidence suggests that the Navigator Support Guidelines document was well-received across the sector. Further, there is potential for extending the scope and 'reach' of the document by publishing an abbreviated version on social media.
G. Data / information	**Poor**	• To date, there is no data available to support the usage or application of the Navigator Support Guidelines.

Appendix I

Analysis of component key drivers

The following appendix outlines the key quantitative drivers of the net economic benefit and DALY benefits of each component and the contribution of each initiative to these key drivers.

Treatment and follow-up

The following discussion describes the key drivers of the quantitatively assessed initiatives in the 'Treatment and follow-up' component (excluding initiative #3 Primary Mental Health).

Costs

The costs for the 'Treatment and follow-up' component are driven primarily by the $7.17 million cost of AOD Service Access rather than the $2.68 million cost of the E-Therapy initiative.

Reach

The component as a whole has a low reach. The primary driver of reach was the AOD Service Access initiative, which reached just under 1,000 youth.

Effectiveness

The component as a whole has a high rate of effectiveness, which is expected for an intensive treatment-based cluster of initiatives. The main driver of effectiveness in this component is the E Therapy initiative. This high effectiveness combined with the lower cost of E-Therapy has resulted in E-Therapy being the main driver of the net economic benefits generated by this component. AOD Service Access had a wider reach than E-Therapy – however, the effectiveness rate of this initiative was too low relative to its cost to positively contribute to the net economic benefit of the component.

DALY benefits

While both initiatives positively contributed to the DALY benefits gained by this component, E Therapy is the primary driver (which is due to its comparatively high effectiveness rate).

Early identification and support

The following discussion describes the key drivers of the quantitatively assessed initiatives in the 'Early identification and support' component (excluding initiative #3 Primary Mental Health).

Costs

The cost of the 'Early identification and support' component is driven heavily by the $10.87 million cost of SBHS. The two remaining initiatives total $1.0 million combined.

Reach

This component has a moderate reach, which is driven by SBHS schools reaching approximately 26,000 youth and HEEADSSS Wellness Checks reaching approximately 14,000 youth. The Social Support for YOSS had a comparatively smaller reach.

Effectiveness

The overall effectiveness of the 'Early identification and support' component is low. The HEEADSSS Wellness Checks initiative has a wide reach but relies on referrals to further services to achieve outcomes, which means the initiative has commensurately lower levels of effectiveness. The SBHS initiative has higher effectiveness than HEEADSSS Wellness Checks and a lower relative cost. As such, SBHS has a larger positive impact on the component as a whole. The YOSS initiative has a high enough effectiveness rate, relative to its reach and cost, to make a positive contribution to the overall net economic benefit – however, this contribution is smaller than that of SBHS as the scale of the initiative is much lower.

DALY benefits

While all initiatives positively contributed to the DALY benefits gained by this component, the SBHS initiative is the primary driver. Strong benefits are also evident for the Social Support for YOSS initiative (which is due to low cost relative to the mental health benefits generated).

Supportive schools

The following discussion describes the key drivers of all initiatives in the 'Supportive schools' component and includes an analysis of what the results would be if YWiSS costs were excluded.

Costs

The costs for the 'Supportive schools' component are driven primarily by the $8.65 million cost of YWiSS and the $6.96 million cost of PB4L School-Wide. The large costs involved in the YWiSS initiative may be due to the initiative being a pilot that required set-up costs as well as full salaries for all youth workers delivering the service.

Reach

The 'Supportive schools' component, as a whole, reached a large number of youth. The reach is driven by over 120,000 youth in schools around New Zealand with the School-Wide programme, and more than 14,000 Year 9 students in the My FRIENDS Youth programme. The Check and Connect programme, delivered by YWiSS, involved a much smaller group of students.

Effectiveness

All initiatives in this component have low rates of effectiveness on mental health outcomes, as documented in the international literature on these interventions.[17] As School-Wide and My FRIENDS Youth have a wide reach relative to cost, this low effectiveness is expected and therefore still results in low / moderate net economic outcomes. However, the large cost and low reach of Check and Connect and YWiSS imply that a commensurately high effectiveness would have been required to achieve a positive net economic benefit.

DALY benefits

As Check and Connect / YWiSS had school completion as its primary outcome rather than mental health improvements, the analysis did not attribute any DALY benefits to the component. The DALY outcomes of School-Wide and My FRIENDS Youth are above the YMHP average and appear to represent value for money.

Assessing ongoing costs

In assessing some initiatives, it could be suggested that using a 'business as usual' cost of these new initiatives may be more representative of the likely future net benefit of the component. However, we have no indication what these costs are and how many youth could be served by such programmes. As discussed, the cost of YWiSS was high relative to the number of students reached by the programme. If the cost of youth workers is removed from the analysis of the 'Supportive schools' component, the net present value of the governmental and private benefits combined outweigh the costs. For Check and Connect the initial cost of the initiative may not be representative of ongoing costs. However, the governmental net benefit remains negative if YWiSS costs are removed and the positive benefits are driven by School-Wide and My FRIENDS Youth, not Check and Connect.

17 We have looked at the effectiveness of these initiatives only from the perspective of youth mental health outcomes. The research on these interventions includes wider discussion on their effectiveness at achieving broader outcomes and objectives.

Appendix J

International comparatives

The global view

A recent global index of 301 diseases found mental illness to be one of the main causes of the overall disease burden worldwide. Anxiety disorders are the most common disorders in general population surveys (32%), followed by behavioural disorders (19%), mood disorders (14%) and substance use disorders (11%). The median age at onset of anxiety is 6, while it is 11 for behavioural disorders, 13 for mood disorders, and 15 for substance use disorders (Clayton and Illback, 2013).

With respect to cost, mental health problems constitute a large source of world economic burden, with an estimated global cost of £1.6 trillion (or US$2.5 trillion) (Mental Health Foundation, 2015). This is a measure of total cost, rather than a cost of mild to moderate mental health issues, or a measure of potential improvements.

Australia

Australian youth mental health statistics

As a culturally similar country with an equal prevalence of youth mental illness, Australia provides a useful comparison: nearly 24% of Australian youth aged 12–25 reported some form of mental illness (Access Economics, 2009).

Per a 2009 report written by Access Economics, the annual financial burden associated with youth mental illness was AUD$11 billion, or AUD$11,000 per youth per year. Of this total:

- 71% can be attributed to lost productivity through unemployment, absenteeism and premature death
- 16% to welfare payments and forgone taxation revenue
- 13% to direct health system expenditure
- 1% to other indirect expenditure.

With respect to primary cost bearers, the Australian Government bears 51% of these costs (mainly through forgone taxation revenue and welfare payments) and society 18%.

If the financial value of lost wellbeing (via disability and / or premature death) is also taken into consideration, the overall cost increases by an additional AUD$21 billion, which pushes the annual cost per youth up to AUD$31,000. In this scenario, the Australian Government bears 17% of the cost and society 6% (Access Economics, 2009).

Example intervention: Headspace

The Australian Government has introduced numerous programmes to respond to this social and economic burden. 'Headspace' is one such programme; it was designed by the National Youth Mental Health Foundation and launched in 2006 as part of the Australian Government's Youth Mental Health Initiative (YMHI). Headspace was established to promote and facilitate improvements in the mental health, social wellbeing, and economic participation of youth aged 12–25 years (Muir et al., 2009). Headspace centres are located across urban, regional and rural areas of Australia and provide help with mental health, physical health (including sexual health), alcohol / drugs-related issues and work / study-related issues. Per the Headspace annual reports, the programme received approximately AU$290 million from government grants between the years 30 June 2010 to 2014. To date, no specific cost-benefit analysis has been performed on the Headspace programme.

Ireland

Irish youth mental health statistics

Results from the 2012 Irish National Study of Youth Mental Health (Clayton and Illback, 2013) reveal that:

- 22% of youth experienced severe depressive symptoms and an additional 48% mild to moderate depression
- 25% experienced severe anxiety symptoms and an additional 45% mild to moderate anxiety
- 26% were classified as hazardous or dependent drinkers
- 21% deliberately hurt themselves
- 7% had attempted to take their own life.

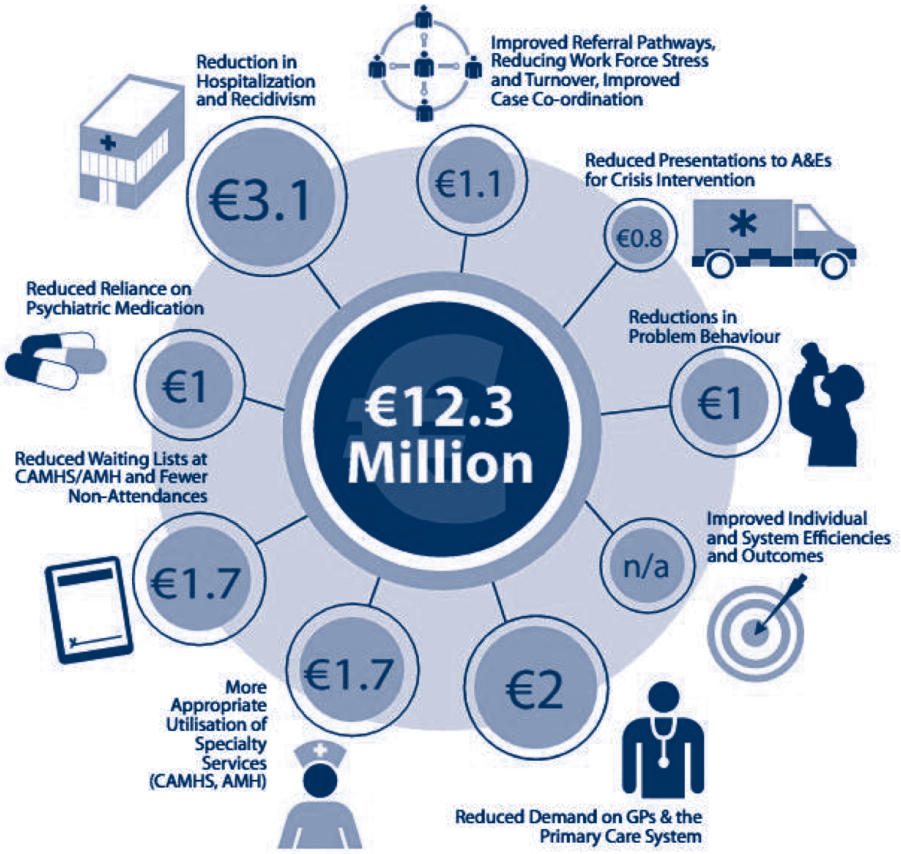
In 2011, direct government expenditure on youth mental health in Ireland was estimated to be approximately EUR€308 million (Clayton and Illback, 2013).

Example intervention: Jigsaw

One of the programmes designed to address this national problem is Jigsaw, which is a multi-systematic early intervention and prevention model. The programme targets Irish youth aged 12–25 years and aims to achieve the following four key objectives (Clayton and Illback, 2013):

- to promote positive mental health for young people by using strategies that target the whole population
- to utilise universal prevention strategies designed to address risk factors in the whole population
- to target groups of young people at risk of developing mental illness through selective prevention strategies
- to provide support and services to young people with mild / emerging mental illness.

Figure 45 _ Jigsaw model



The designers of the Jigsaw programme have performed a high-level estimation of the possible savings available to the Irish Government as a result of nationwide implementation of the programme. This high-level CBA has been performed with reference to the following assumed outcomes:

- improved utilisation of speciality services
- reduced hospitalisation
- lower presentations at accident and emergency departments
- reduced demand on the primary care system
- less reliance on psychiatric medication
- shorter waiting lists for specialist treatment
- lower instances of problem behaviour.

The total direct savings are estimated to be EUR€12 million per annum (without taking into account the benefit of improved long-term outcomes). The image on the right details the quantum of estimated direct savings from each outcome achieved.

The targeted long-term direct outcomes of the New Zealand YMHP are similar to those of the Jigsaw programme (described above). However, unlike the Jigsaw programme, there is very little visibility as to the expected direct and indirect savings that are expected to eventuate as a result of the YMHP. Performing cost-benefit analysis will help to improve the visibility of monetary costs and benefits or savings.

United Kingdom

United Kingdom youth mental health statistics

In the United Kingdom (UK), mental illness represents the largest burden of disease across the general population (28% of the total burden). With respect to youth, 10% of children and young people (aged 5–16 years) have a clinically diagnosable mental illness (Mental Health Foundation, 2015).

The economic cost of mental illness in the UK is estimated to be between £70 billion and £100 billion each year and to account for 4.5% of GDP. It is estimated that 20% of this cost is attributed to health and social care, 30% to lost productivity, and the remaining 50% to human suffering (Mental Health Foundation, 2015).

Economic evaluation of various UK interventions

In order to support and assess the case for investment, the British Department of Health was commissioned to identify and analyse the costs and economic pay-offs of a range of interventions in the area of mental health promotion, prevention and early intervention. This analysis, as presented in Table 69 below, applies to the general population but includes initiatives that are generally applicable or targeted towards youth (Knapp, McDaid and Parsonage, 2011). The analysis does not include detailed information regarding the economic evaluation methodology; rather, the approach is described as being designed to "produce a breakdown of costs and pay-offs, year by year and by individual sector and budget type. Interventions can therefore be examined from two distinct perspectives: first, pay-offs to society as a whole and second, budgetary impacts in the NHS and other public sector agencies" (Knapp, McDaid and Parsonage, 2011).

TABLE 69

Comparative UK interventions

Type of intervention	Prevalence	Source of cost	Potential savings
School-based social and emotional learning programmes to prevent conduct problems in childhood	Conduct problems in childhood cover a range of oppositional or antisocial forms of behaviour such as disobedience, lying, fighting and stealing. Such problems are very common: 6% of children aged 5–10 years have severe conduct problems (SCP) and 19% have mild conduct problems (MCP), rising to 9% and 29% respectively in adolescence.	Conduct problems are associated with a range of poor outcomes including: increased criminal activity, fewer school qualifications, teen pregnancy, unemployment, divorce / separation, substance abuse, and psychiatric disorders. The annual cost of crime in England attributable to people who have early conduct problems may be as high as £60 billion.	Potential savings from each case prevented through early intervention are estimated at £150,000 for SCP and £75,000 for MCP. The major contributors are crime, costs of mental illness in adulthood, and lower lifetime earnings.
School-based interventions to reduce bullying	According to a recent Ofsted survey, 39% of children report being bullied in the previous 12 months.	Being bullied has adverse effects on psychological wellbeing and educational attainment. This has a negative long-term impact on employability and earnings; on average, lifetime earnings of a victim of bullying are reduced by circa £50,000.	Averaged across all children, whether bullied or not, the benefit of intervention is £1,080 per school pupil.
Early detection of psychosis	The first symptoms of psychosis typically present in the late teenage and early adult years. It is estimated that each year 15,763 people in the UK exhibit early symptoms before the onset of psychosis.	Progression of the disease is associated with higher costs to public services, lost employment, and diminished quality of life. Total costs for these conditions (schizophrenia and bipolar disorder) were estimated at £4 billion for services and £9 billion for services and lost employment.	The savings associated with early detection are driven by reduced numbers of people making a transition to psychosis. Using an assumed success rate of 15%, savings of £48 million could be achieved in years 2–5 and £41 million in years 6–10.
Population-level suicide awareness training and intervention	There were 4,722 suicides in England during 2013 – of these, 123 were aged 15–19 years. There were 6,703 suicides in the United Kingdom during 2013 – of these, 170 were aged 15–19 (Samaritans, 2013).	It is estimated that the average cost per completed suicide for those of working age in England is £2 million (which includes intangible costs, lost output, police time, and funerals).	It is estimated that costs of circa £66,797 are averted per year per person of working age where suicide is delayed.

Appendix K

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Appendix L

Restrictions

This Report has been prepared solely for the Families Commission (Superu) for the purposes stated herein and should not be relied upon by any other party and for any other purpose. We accept no liability to any party should it be used for any purpose other than that for which it was prepared.

This report is strictly confidential and (save to the extent required by applicable law and / or regulation) must not be released to any third party without our express written consent which is at our sole discretion.

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The statements expressed herein have been made in good faith, and on the basis that all information relied upon is true and accurate in all material respects, and not misleading by reason of omission or otherwise.

The statements expressed in this report are based on information available as at the date of the report.

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We reserve the right, but will be under no obligation, to review or amend our Report, if any additional information, which was in existence on the date of this report, was not brought to our attention, or subsequently comes to light.

This Report is issued pursuant to the terms and conditions set out in the Contract for Services with the Families Commission (Superu) dated 17 July 2015.

Abbreviations

AOD	Alcohol and Other Drug
BCR	Benefit to cost ratio
CAMHS	Child and Adolescent Mental Health Services
CBA	Cost-benefit analysis
CBT	Cognitive behavioural therapy
DALY	Disability Adjusted Life Years – used to measure the burden of disease or disability on quality and quantity of life
ERO	Education Review Office
DHB	District Health Board
FTE	Full-time equivalent
GDP	Gross domestic product
HADS	Hospital, Anxiety and Depression Scale
HEEADSSS	Home, Education / Employment, Eating, Activities, Drugs and Alcohol, Sexuality, Suicide and Depression and Safety
MANOVA	Multivariate analysis of variance
MoE	Ministry of Education
MoH	Ministry of Health
MSD	Ministry of Social Development
NEET	Not in employment, education or training
NGO	Non-governmental organisations
NZ	New Zealand
PAYE	Pay As You Earn taxation
PB4L	Positive Behaviour for Learning
PBIS	Positive Behavioural Intervention and Support
PHARMAC	Pharmaceutical Management Agency
PHOs	Primary health organisations
PwC	PricewaterhouseCoopers
QALY	Quality-Adjusted Life Years = the number of years in which an individual would be expected to be completely free of symptoms or disability
RCT	Randomised control trial
SBHS	School Based Health Services

SLAT	Service Level Alliance Team
SCAS	Spence Child Anxiety Scale
Superu	Social Policy, Evaluation and Research Unit
SSEE	Stand-down, suspension, exclusion and expulsion
TPK	Te Puni Kōkiri
YMHP	Youth Mental Health Project
YOSS	Youth One Stop Shops
YWiSS	Youth Workers in Low Decile Secondary Schools

Glossary

The definitions detailed below are specific to the YMHP cost-benefit analysis.

Term	Definition
Benefit to cost ratio (BCR)	The BCR divides benefits by costs to produce a single number that expresses the extent of value relative to the size of the investment. Values over 1.0 indicate that interventions produce more benefits than they cost.
Causal chains	Causal chains are used throughout this report to understand and articulate the link between participation in a YMHP initiative and the short- and long-term economic outcomes that occur as a result of participation.
Cost-benefit analysis	This measures whether the financial benefits of a mental health initiative or intervention exceed the costs.
DALYs	Disability Adjusted Life Years – used to measure the burden of disease or disability on quality and quantity of life. This is the sum of all DALYs avoided as a result of youth being positively impacted by the initiative(s).
DALYs per $1m in costs	This is the sum of all DALYs avoided as a result of youth being positively impacted by the initiative(s), divided by the nominal costs of providing the services (measured in $ millions).
Discount rate	An interest rate used to determine the present value of future cash flows (this takes into account the time value of money as well as risk and uncertainty associated with future cash flows).
Economic benefit	An amount of money that will be saved or generated as the result of an action.
Effectiveness rate	A measure of improvement in mental health (or other outcome where applicable) that occurs as a direct result of the initiative or intervention.
Governmental benefit to cost ratio	This is the ratio of the sum of estimated discounted governmental benefits to the sum of discounted costs.
Governmental costs / benefits	Costs and benefits associated with the New Zealand Government.
Governmental net present value	This measure is the sum of the estimated discounted governmental benefits less the sum of the discounted costs.
Gross economic benefit	The total amount of money that will be saved or generated as the result of an action; from a youth mental health perspective, this is a monetary measure of the benefit of switching one youth from **having** mild to moderate mental illness to **not having** mild to moderate mental illness.

Term	Definition
Interventions	Also referred to as 'initiatives'. These are actions taken to address or treat mental disorders by modifying an individual's behaviour, emotional state or feelings (Ballou, 1995).
Net benefit	The net benefit calculation subtracts the total costs from gross economic benefits. It produces a dollar value for the net benefit from the intervention after accounting for costs.
Net present value	The difference between the present value of cash inflows and the present value of cash outflows.
Present value of component cost	This measure is the discounted sum of all direct nominal costs incurred through providing the services.
Real discount rate	The nominal discount rate adjusted for inflation.
Societal costs / benefits	Governmental + private costs / benefits.
Societal benefit to cost ratio	Sometimes called the 'social' benefit to cost ratio. This is the ratio of the sum of estimated discounted governmental and private benefits to the sum of discounted governmental and private costs.
Societal net present value	This measure is the sum of the estimated discounted governmental and private benefits less the sum of the discounted governmental and private costs.
Total youth participants	This is an estimate of the total number of youth who were involved in the initiative(s).
Total youth positively impacted	This is an estimate of the total number of youth involved in the initiative(s) who were positively impacted as a result of their participation.
Weighted average effectiveness rates	Average efficacy of an initiative or intervention (expressed as a rate). This measure is the total number of youth positively impacted, divided by the total number of youth reached.

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superu

Families Commission Kōmihana ā Whānau

The Families Commission operates under the name Social Policy Evaluation and Research Unit (Superu)