MINISTRY OF SOCIAL DEVELOPMENT
TE MANATŪ WHAKAHIATO ORA

The effectiveness of the Youth Service NEET programme

A programme for young people, aged 15 — 17, who are Not in Education, Employment or Training (NEET)

July 2025

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Acknowledgements

I would like to thank the following people for their contributions and comments in preparing this report: the Youth Service team, Amanda Mainey, Sa Skipper King, Sara Passmore, Nicole Murray, Jelena Stojkov, Christian Opetaia, Colin Hewat, Catherine Harrow and Paul Merwood. Any errors or omissions in the report remain the responsibility of the author.

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Published December 2025

Ministry of Social Development

PO Box 1556

Wellington

www.msd.govt.nz

ISBN

978-1-991389-04-6

Summary

This report summarises our analysis of the effectiveness of Youth Service-NEET (YS-NEET) programme in improving the outcomes of participants between 2013 and 2022. A specific focus of this report is on whether the changes to the programme in 2020 altered its effectiveness.

Youth Service-NEET

In 2012 YS-NEET replaced the Youth Transitions Service. YS-NEET is a voluntary contracted case management service for 16 and 17-year-olds (with some 15-year-olds)[1] who are at risk of not being in education, employment, or training (NEET). The goals of YS-NEET are for participants to:

- be engaged or remain in education, training or work-based learning
- have obtained, or be working toward, at least NCEA level 2 or equivalent
- have an achievable plan for employment, further education, or training on exiting the Service
- not be in receipt of a main Work and Income benefit (excluding Jobseeker Support Student Hardship)
- have their well-being improved
- feel supported towards achieving their aspirations
- have a positive experience with the Youth Service.

Eligibility to participate in YS-NEET is in part based on the Service Level Intensity rating (SLI)[2] which is a statistical model tool that estimates the expected time that people leaving school would spend on a benefit while 18 and 19 years old. People with high SLI scores (likely to spend more time on benefit) are eligible for the programme.

[1] 15-year-olds are only eligible for the NEET service if (i) they have an Early Leaving Exemption from the Ministry of Education, (ii) the school year has finished, the young person will turn 16 before the next school year starts, and they have no intention of returning to school when they are 16.

[2] The SLI model was revised in 2020 and used information about school leavers such as; age, gender, qualification achievements, the Equity Index of their school, NCEA results, intergenerational benefit receipt, and involvement with Oranga Tamariki (when applicable). From 2025, Oranga Tamariki data was not longer available for the model.

2020 changes to the service

Prior to 2020, the YS-NEET programme focused primarily on re-engaging or keeping young people engaged in education. Each youth coach had an average caseload of 43 participants. Eligibility included those who had a risk rating (of coming onto benefit) of low to very high. In addition, some of the contract payments were linked to participant outcomes.

From 2020, the following changes were made.

Eligibility towards those at risk of NEET: eligibility was changed to target people at higher risk of coming onto main benefit at a young age. This included:

- introducing an updated model for identifying youth at risk of benefit dependency, the Service Level Intensity model (SLI)
- targeting the most vulnerable young people (those with a SLI rating of high or very high)
- focussing on 16-17-year-olds, with some 15-year-olds eligible with an early leaving exemption (ELX).

More intensive service: youth coaches were enabled to spend more time and effort with individual participants. This included:

- reducing the average caseload to 1:20
- including pastoral support and extending this for up to six months after an employment placement
- providing access to a discretionary fund to cover miscellaneous client costs and/or innovative projects (programme fund).

Changes to contracted outcomes and payments: This included:

- adding sustainable employment as an outcome (although education remained the core outcome to focus on)
- introducing milestone payments for sustained employment at 31 and 182 days
- introducing baseline funding based on FTE to caseload, replacing enrolment, administration, and some success fees.

Method

We undertook the analysis of the effectiveness of YS-NEET in Statistics New Zealand's Integrated Data Infrastructure (IDI). The IDI is a secure database that links anonymised person level administrative, census and survey data.

The IDI has the benefit of:

- covering the entire New Zealand population
- containing longitudinal information across a wide range of domains such as income, employment, education, justice, income support receipt, health care, care and protection, migration, and travel, as well as socio-demographic and geographic characteristics.

We estimated the impact of YS-NEET by comparing the outcomes of cohorts of participants (e.g. 2013-2016, 2017-2020, 2021-2022) to matched comparison groups (i.e. they have similar profile of characteristics to participants prior to starting the YS-NEET). A separate comparison group was identified for each cohort. We interpreted any observed difference in outcomes between participants and comparison groups as the causal impact of YS-NEET on the participants' outcome.

We selected the comparison groups using propensity score matching (PSM). Only groups that achieved a sufficient level of balance[3] were included in the analysis. The IDI was then used to track the impact of YS-NEET on a range of outcome domains from one year before participants started YS-NEET and up to 9 years afterwards.

Limitations

PSM requires us to assume that, when the characteristics of the participants and the matched comparison group are balanced, they are also equivalent on any unobserved characteristics as well. What this means is that in the absence of YS-NEET the participant and comparison groups would achieve statistically similar future outcomes. This assumption needs to hold so that any actual difference in outcomes between the two groups can be attributed to the participants having received YS-NEET.

We justify this assumption, first by the inclusion of a diverse range of observed characteristics to evaluate balance, and second, the small number of participants relative to the pool of people who could participate in YS-NEET. Nevertheless, we cannot rule out the possibility that differences remain between the two groups. If these unobserved differences do exist, then the results in this report will be biased[4] and do not reflect the true causal impact of YS-NEET on participant's outcomes. The best way to

[3] Balance is achieved when it is not possible to predict whether a person is a participant or a comparison group member based on their observed characteristics.
[4] Bias occurs because the observed difference in outcomes between the participant and the comparison group are caused by both unobserved prior differences (that lead to different future outcomes) as well as the intervention being evaluated. Moreover, it is not easy to disentangle these two influences on observed outcomes.

resolve this issue is to undertake a more robust study such as a Randomised Control Trial (RCT).

A further issue with this analysis is that we do not have good information on the level of alternative assistance that the comparison group might be receiving. In all likelihood, at least some of the comparison group are receiving assistance from NGOs or through other government agencies. Accordingly, the reported impacts reflect the difference YS-NEET makes relative to this unknown level of alternative assistance. If alternative levels of assistance are both sizable and effective, then the estimated impact of YS-NEET would be smaller than if the comparison group received limited assistance.

Our analysis looked at a subset of the expected outcomes of YS-NEET, such as: highest qualification, employment, education and training and welfare receipt. Aspects such as improved wellbeing, feeling supported to achieve their aspirations and having a positive experience with the Youth Service, were not covered.

Finally, we need to consider the impact of COVID-19 on the performance of the YS-NEET between 2020 to 2022. Lock-downs, especially with extended lockdowns in the Auckland region, affected the ability of providers to deliver the service (i.e. the ability to have face-to-face meetings was reduced).

Findings

After 2020, participants had more indicators of disadvantage

Over the period that YS-NEET has operated, the number of people starting the programme has decreased, from an average of 9,577 yearly starts between 2012 to 2016 to 2,584 from 2020. This reduction aligns with a strategic shift toward tighter targeting of the programme, focusing specifically on those who are most vulnerable and at risk of disengagement from education, employment, and work-based training.

In the period before the 2020 contract (2012-2019), the profile of participants in YS-NEET:

- largely 15 years old (41%)
- predominantly identify as European (54%) and Māori (44%)[5]
- evenly split between female (50%) and male (50%) gender identity
- mostly enrolled in education or training (64%)

[5] People can select more than one ethnic identity.

- mostly with at least New Zealand Qualifications and Credentials Framework (NZQCF or NQF) level 1 qualification (62%)
- over a third had at least one mental health service referral (33%)
- most lived in the most deprived areas of New Zealand (54% living in decile 8 and above).

The change to YS-NEET in 2020 saw a shift in the profile of participants, in particular we saw:

- a large reduction in 15-year-old participants (from 41% to 8%)
- an increase in the proportion who identify as Māori (from 44% to 57%)
- a reduction in those enrolled in education or training (from 64% to 49%)
- fewer having at least NZQCF level 1 qualification (from 62% to 37%)
- an increase in those with at least one mental health service referral (from 33% to 54%).

These changes are consistent with changes to the eligibility criteria and placing greater emphasis on identifying young people with higher Service Level Intensity (SLI) ratings, as well as focusing on those aged between 16 and 17 years old.

Programme duration

The median time on YS-NEET increased after 2015 (from 38.7 weeks between 2012 and 2015 to 43.3 weeks). There was a small reduction in median time on YS-NEET from 2020 onwards (42.1 weeks).

Programme cost

The per participant cost of YS-NEET was $2,154[6] between 2012 and 2019. From 2020, this increased to $5,195. From 2020, caseloads were reduced from 1:43 to 1:20, to meet the needs of a more vulnerable cohort of participants and allow youth coaches to dedicate more time to understanding the unique needs of each young person, facilitating individualised plans, and addressing specific barriers to education and employment. This led to an expected increase in the cost per participant.

[6] In this report expenditure is in nominal values (i.e. not adjusted for inflation).

YS-NEET participants showed a small increase in enrolment in education or training after programme start

A key objective for YS-NEET is for participants to enrol in education or training (study). Based on Ministry of Education enrolment data, the proportion of both the comparison group and YS-NEET participants enrolled in study fell steadily from one year before starting YS-NEET, through to the end of the follow up period (seven years).

For the YS-NEET participants, this downward trend in enrolment did briefly reduce after starting YS-NEET. But, within a couple of months, the downward trend continued. These findings contrast with provider reporting showing an increase in study after starting YS-NEET, with 41% of participants in education in the 30 days after starting YS-NEET, increasing to 54% in the following 30 days.[7]

One reason for the difference between IDI and provider results may be because participants have disengaged from school and started YS-NEET but remain enrolled with the school for a period. Such disengagement is likely to be reflected in provider reporting through direct contact with the participants, but not in the Ministry of Education enrolment data supplied to the IDI.

Impact on participant outcomes

Table 1 shows the number of weeks participants spent in education, employment, or training (EET) in the two years after starting YS-NEET. The matched comparison group outcomes are measured over the same period. Impacts are calculated as outcomes for each participant cohort minus the outcomes for the comparison group for that cohort on time spent in EET.

Overall, we found no evidence that YS-NEET increased the time participants spent in EET. For participants who started between 2017-2020 they spent -3.20±1.3 fewer weeks in EET than their matched comparison group. For the 2021-2022 participants, they experienced lower outcomes consistent with them being at higher risk of being NEET (see previous finding on the profile of participants). However, there was no improvement in YS-NEET's impact for this group, relative to their matched comparison group.

[7] Youth Service (ART) report, June 2024.

Table 1: Outcome and impact of YS-NEET on weeks in education, employment, or training at two years

Start year	Participant outcomes (wks)	Comparison outcomes (wks)	Impact (wks)
2013-2016	76.6	79.7	-3.0*
2017-2020	73.0	76.3	-3.2*
2021-2022	65.2	69.8	-4.0*

*: impact is significant at 95% confidence interval.

Additionally, we found that the 2017 to 2020 participants:

- were more likely to receive income support than their comparison group (2.80±0.89 weeks)
- had higher qualifications than their comparison group (0.11±0.03 nqf) after one year (the two-year results are not yet available).

Examining the impact trends for earlier participants (2013-2016) indicates that over time:

- the proportion of participants in EET remains below that of their comparison group over the seven-year follow up period
- participants continue to receive income support at a higher rate (around 4 percentage points higher) than their comparison group
- while participants initially had higher qualifications than their comparison group, this reverses for those who started between 2013-2016 over the long-term. At 6 years, 2013-2016 participants' highest NZQCF level was 0.1 points lower[8] than their comparison group and this difference was increasing with time. However, this was not the case for those starting after 2016, where the short-term impact is higher and does not appear to be trending down. Further research would be required to identify why this trend changed.

Change in impact from 2020 onwards

The changes to YS-NEET in 2020 has not altered the short-term trend in impacts from earlier cohorts (as shown in Table 1), except that participants are:

- less likely to enrol in study, relative to their comparison group in the first year

[8] Statistically significant at the 95% confidence interval.

- more likely to be employed in the first six months after starting YS-NEET than their comparison group.

This change aligns with the programme's enhanced focus on work readiness and tailored support from 2020 (e.g. personalised employability skills training and targeted pastoral support).

Impact by subgroup

In addition to evaluating the overall impact of YS-NEET, we also looked at whether there were differences in effectiveness by subgroup. Here we found that:

- YS-NEET had a larger negative impact on time in EET for people who identified as Pākehā (New Zealand European)
- for participants with low and very low risk SLI scores, YS-NEET had a larger negative impact on time in EET (these were excluded from the service in 2020)
- there was no difference in the impact of YS-NEET by gender identity.

YS-NEET compared to other MSD youth transition programmes

Comparing YS-NEET to the previous Youth Transitions Services, we found that the YS-NEET was more effective.

Reviews of wider youth mentoring programs

Based on the reviews summarised in this evaluation, youth mentoring programmes have been found to have small positive impacts over the short-term. Positive effects appear to be higher for more disadvantaged youth. However, there is also evidence from the international literature for negative longer-term effects, such as increased criminal offending for some youth mentoring programs.

Previous evaluations of YS-NEET

The findings in this report are broadly consistent with the previous impact evaluation of YS-NEET completed in 2016.

Conclusion

The change to YS-NEET in 2020 was successful in targeting the programme toward people who are at a higher risk of becoming NEET. Overall, the effectiveness of YS-NEET in the first year after participants started the programme has been maintained, with a different profile of participants, at a higher cost. After 2020, YS-NEET achieved similar results as previous

years, which had a different cohort that included less vulnerable clients with fewer indicators of disadvantage, as well as more vulnerable clients. The increase in cost after 2020 was expected and mainly due to the reduction in caseloads, which enabled more intensive support to meet the needs of more vulnerable participants.

The estimated impact of YS-NEET continues to show participants spending less time in EET and more time on benefit than the comparison group.

We temper this conclusion by mentioning some of the limitations in the methodology. It is likely the PSM could not fully control for any differences between the participants and the comparison group, as well as not being able to account for any assistance received by the comparison group. Finally, while not an issue with the method, the performance of the service would have been negatively affected by the COVID-19 restrictions over the period from 2020 to 2022.

To address the methodological limitations and to obtain a more robust impact estimate for YS-NEET would require running an RCT. As part of such a study, it would be useful to identify what supports those in the control group receive to inform the analysis of the relative costs and benefits of the YS-NEET programme.

Introduction

This report is an analysis of the impact of the YS-NEET programme on participants' outcomes. The impact analysis covers people who participated in YS-NEET between 2012 and 2022. The particular focus of this report is on whether changes to the programme in 2020 altered the programme's effectiveness in helping participants into employment.

Report structure

The report is divided into four sections.

Intervention description: describes the YS-NEET programme and its objectives. In addition, this section provides a timeline of design and eligibility changes to the programme, trends in the number and profile of participants and programme expenditure.

Existing evidence: summarises earlier research on YS-NEET and similar New Zealand programmes as well as international evidence on case management services targeted at people transitioning from school.

Impact analysis: examines the impact of YS-NEET on participants' outcomes and what might be driving the observed impacts.

Approach and method: provides more detail on the methods used in this report. In particular, the counterfactual approach to identifying the impact of YS-NEET on participant outcomes, describing the propensity score matching (PSM) methodology and outcome measures.

Employment Assistance Evidence Catalogue

The analysis in this report is based on the information available in the Employment Assistance (EA) Evidence Catalogue (https://ea.analytics.msd.govt.nz/). Please refer to the catalogue if you want more detailed information on other interventions referred to in this report. The catalogue covers:

- intervention information: description, status, and timeline of changes
- participants: trend in participant starts and profile of participants
- expenditure: overall cost and cost per start
- impact: impact estimates by selected outcome domains
- references: published reports and papers.

Note that the catalogue is updated on an annual basis so may not match exactly to the figures shown in this report.

Intervention description

This section provides more detail on YS-NEET's design and operation as well as any changes made since its inception. In addition, we look at participation trends, participant profile and the cost of YS-NEET.

Youth Service-NEET

Youth Service-NEET (YS-NEET) is a voluntary programme which focuses on actively identifying, engaging and supporting 16 and 17-year-olds (and some 15-year-olds) who are not in employment, education or training (NEET), or are at risk of becoming NEET, and who are not in receipt of a main benefit.[9] It aims to retain them in, or return them to education, training or employment.

MSD contracts community-based service providers[10] to work intensively with young people and provide a wrap-around service to support them into education, training, or work-based learning. Contracts were initially outcome-based, consisting of administration fees and milestone payments for achieving specific outcomes[11] (MSD, 2014). After 2020, contracts were changed to have baseline funding based on FTE and new performance measures.

Providers work with young people to enable them to:

- participate in education, training or work-based training
- achieve an NCEA Level 2 or an equivalent qualification
- plan for their future employment, education, or training after exiting the service.

YS-NEET allows for data sharing between MSD, Oranga Tamariki[12] and the Ministry of Education (MoE) to target the services to young people at risk of becoming NEET.

Before 2020, the contracting model focused on achieving education and training outcomes.

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[9] In New Zealand, a main benefit is designed to support the bulk of living costs for families who are not able to work. Main benefits are divided into unemployment, health condition or disability and caring, such as a sole parent.
[10] In addition to two MSD run services in Wellington and Whanganui.
[11] Milestone payments are paid for spending 31 and 182 days in employment or completing the Limited Service Volunteer (LSV) programme.
[12] New Zealand's child protection agency. From 2025, Oranga Tamariki data was no longer available for the model.

Expected outcomes

The expected outcomes of Youth Service are that participants:

- are engaged or remain in education, training or work-based learning
- have obtained or are working toward at least NCEA level 2 or equivalent
- have an achievable plan for employment, further education, or training on exiting the Service
- are not in receipt of a main Work and Income benefit (excluding Jobseeker Support Student Hardship)
- have their well-being improved
- feel supported towards achieving their aspirations
- have a positive experience with the Youth Service.

Referral to YS-NEET

There are two referral pathways to participate in the YS-NEET programme, the first is an automated referral and the second is through provider recruitment.

Automated referral

The first pathway involves an automated referral system to identify people who are eligible for the service. The referral system uses a statistical predictive modelling tool to predict which school leavers aged 16 to 17 years old are at risk of coming onto a main benefit before 19 years old.

The statistical model combines education history, notifications of concern from Oranga Tamariki,[13] and income support history of school leavers to predict whether an individual will spend more than three months on a main benefit by the time they turn 19. This target variable is used as a proxy for being NEET as MSD doesn't hold information on time spent in employment or education and training. The 2020 version of the model achieved an Area under the Receiver Operating Curve (AUC)[14] score of 0.79 (MSD, 2020).

The automated process involves receiving regular information on school leavers from the Ministry of Education and Oranga Tamariki. MSD matches the available information on these school leavers and runs the predictive

[13] From 2025, Oranga Tamariki data was no longer available for the model.
[14] AUC provides a measure of predictive accuracy. AUC is from 0.5 to 1, with 0.5 indicating no predicative accuracy and 1 perfect prediction. Assessment of sufficient accuracy depends on what the model is being used for as well as availability of alternative targeting options.

model. Contact details of those predicted to have the highest-level need, and who are eligible, are then passed onto the relevant local YS-NEET provider.

Provider recruitment

The second and most common referral pathway involves providers engaging with schools and the community to identify young people at risk of disengaging from education. This approach targets those with higher needs who may not be automatically referred but still require support.

Young people can also self-refer by approaching a YS-NEET provider when they recognise their need for assistance. These individuals may still be enrolled in school, may have declined participation previously, or might not have been able to be reached earlier.

To assess eligibility for YS-NEET, providers request a Service Level Intensity (SLI) rating from the Ministry of Social Development (MSD). This includes answering questions about the young person's school attendance, reasons for leaving school, NCEA achievement, involvement with Oranga Tamariki, and any other risk factors, such as health or mental health concerns. This thorough assessment ensures tailored support for young people in need.

Service participation

Participation in YS-NEET involves the following steps.

Initial engagement

Once the provider receives a referral they:

- contact the young person to tell them about the service and why they have been referred
- ask if the young person wants to participate.

If the young person agrees to participate, the provider invites them to meet with a youth coach who conducts a detailed needs assessment. This assessment helps determine the appropriate level of ongoing support. Together, the youth coach and the young person develop a comprehensive, individualised plan tailored to the young person's unique needs and aspirations. The service delivery follows a wrap-around model, providing intensive case management, coaching, mentoring, and service brokerage.

This holistic approach ensures that the support covers all aspects of youth development, empowering the young person to achieve sustainable education, training, or employment outcomes. The youth coach and the

young person then develop a comprehensive plan together. The young person can opt-out of the service at any time.

Ongoing support

YS-NEET providers, together with local community networks and resources enable a high level of engagement with youth. They work holistically with them and equip them with the tools to support them to achieve their goals and aspirations. These interventions and activities are tailored to the needs of the young person, and adopt a strengths-based approach. The needs of the young person are identified through a Youth Service plan.

The Youth Service plan helps identify the youth activities (for example, education, training, or employment) and any other activities that may address barriers preventing a young person from participating in education, training, or employment (e.g. mental health issues, or drug or alcohol dependency). The information recorded in the plan prompts discussions between the youth coach and the young person. The initial Youth Service plan is completed within the first 30 days of the young person enrolling, and reviewed every 90 days thereafter.

The Youth Service plan uses the Māori holistic model of health, te whare tapa whā, which reminds young people to take care of all the different aspects of their life to support their overall wellbeing. These are:

- taha tinana (physical wellbeing)
- taha hinengaro (mental wellbeing)
- taha wairua (spiritual wellbeing)
- taha whānau (family wellbeing).

Milestone payments

Before 2020, contracts with providers were based on a mix of fee for service and payments for outcomes, with payments for outcomes linked to the level of disadvantage of the participant. The goal is to encourage providers to focus on those participants at the highest risk of being NEET long-term.

What was included as a milestone payment changed in 2020, with payments made when YS-NEET participants completed Limited Service Volunteers or when they reached 31 days and 182 days in employment. In addition, the level of payment was no longer linked to the NEET risk score.

2020 changes

The New Zealand Treasury conducted an evaluation of the YS-NEET programme in 2016 and a 12-month trial was run in 2019 to assess whether more intensive support from providers could improve outcomes for higher-risk NEET young people (Malatest, 2019).

As a result of this work, the decision was made to continue the service with a primary focus on education, training, and work-based learning. However, the following changes were made to the service (MSD, 2019).

Re-targeting the NEET service

- The caseload was reduced to 1:20, to allow providers to work more intensively with young people and their whānau.
- Participation was limited to only those NEET with a high or very high Service Level Intensity (SLI) rating.
- A discretionary fund was established to support youth by addressing barriers to education, employment, or well-being, supporting youth in achieving their goals or maintaining progress.

Building work readiness and employability e.g. through support with drivers licensing and pastoral support

Youth providers were now required to support young people in building work readiness and employability through a suite of services. This included assistance with obtaining a driver's license, developing essential work skills, and providing pastoral support to young people for up to 6 months after an employment placement.

Incorporating well-being outcomes into contracts

Youth providers were now expected to demonstrate through their practice and delivery how they would positively contribute to young people's well-being. Youth well-being outcomes were to be included in tenders and contracts.

Timeline of changes

Table 2 summarises the main policy and design changes to YS-NEET since its inception.

Table 2: Timeline of policy and design changes to YS-NEET

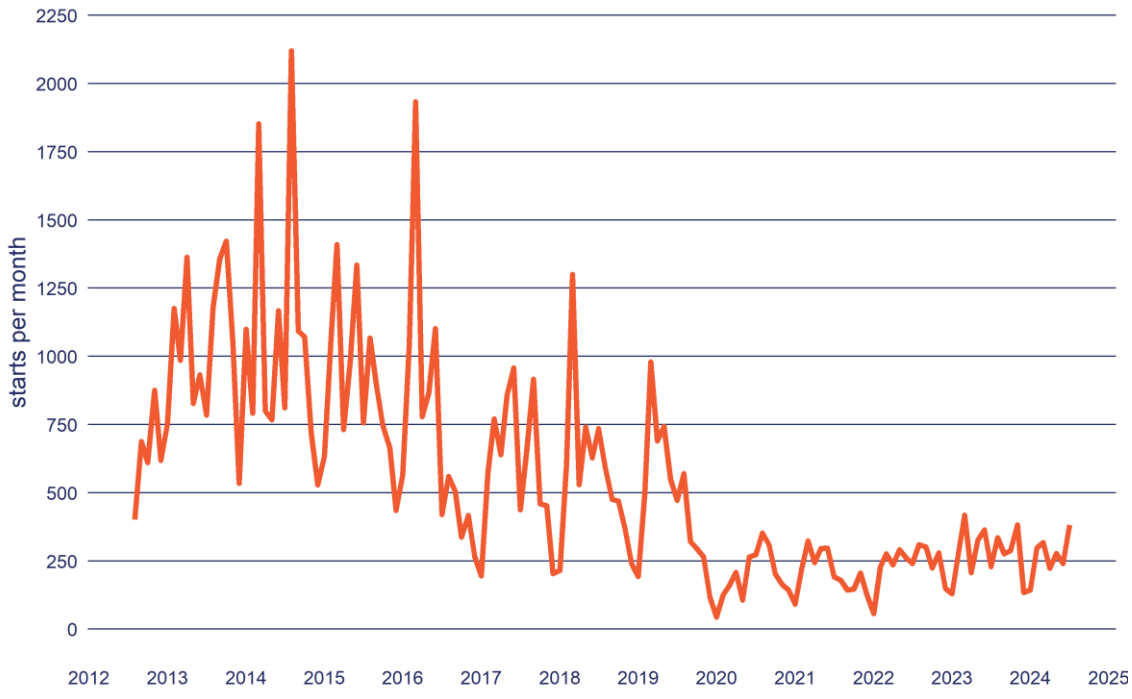
Date	Event Type	Description
20 August 2012	Start	YS-NEET replaced the Youth Transitions Service.
01 February 2016	Eligibility	Youth with a 'very high' risk rating were referred to specialist services. If there were no other services or support available, they could enrol in the NEET service.
01 July 2016	Eligibility	Youth with a 'very low' risk rating were no longer eligible for YS-NEET.
01 July 2016	Design	Provider contracts were tightened to ensure an increase in the quantity and quality of interactions with participants on the service.
01 July 2016	Design	Introduction of an improved referral and administration process to support young people participating in YS-NEET as well as strengthening operational guidelines and provider contracts.
01 July 2016	Design	Increase in payments made to providers for participants achieving NCEA level 2 qualifications.
25 October 2016	Design	Changed the exit date from the service if in education, training, or work-based learning to the day after the course end date or 31 March the following year they turned 18.
01 April 2017	Eligibility	The young people eligible for the YS-NEET were those with a Service Level Intensity (SLI) risk rating of low, medium, high, or very high, but from April 2017, 50% must have a SLI rating of medium, high or very high.
01 June 2017	Eligibility	YS-NEET trial with three providers: Kapiti Youth Services (KYS) on the Kapiti Coast, Vibe in the Hutt Valley and the 'In-house' Work and Income Youth Service provider in Wellington. The trial aimed to determine whether: (i) providers could attract and retain higher risk NEET young people by working differently, (ii) outcomes for higher risk NEET young people were improved through more intensive support by the provider. Only high or very-high risk young people were eligible for the Trial. It was intended to run the trial for 12 months, but it was extended to 18 months. (Malatest, 2019b)
01 April 2020	Eligibility	Following the trial new contracts were established with YS-NEET providers with new criteria to be eligible for YS-NEET. From 1 April a young person must be NEET, or at risk of becoming NEET, and have a high or very high Service Level Intensity (SLI) rating. Providers assess the level of need of youth accessing the services using the Ministry's risk calculator before enrolling them in the service.
01 April 2020	Eligibility	The term "risk ratings" changed to "Service Level Intensity" rating, to better align with the level of service required for the NEET young people. (MSD, 2019f)
01 April 2020	Eligibility	Between 1 January and 1 April 2020, Youth Service had transitioned 3,100 young people out of Youth Service as they didn't meet the new eligibility. (MSD, 2019f)

Date	Event Type	Description
01 May 2020	Design	Based on the Youth Service review findings, the following changes were made to the service: (i) restructuring to target young people most in need of intensive support - causing a reduction in the number of participants from 6,000 to 2,000, (ii) reduced case load ratio to 1:20, (iii) include pastoral care up to six months after starting employment, (iv) establish discretionary funding for targeted assistance.
01 June 2020	Design	YS-NEET service trial finished
01 August 2020	Design	The predictive model was changed to enhance the accuracy of the longer term predicted outcomes of the youngest group under the youth cohort.

YS-NEET participants

Figure 1 shows the number of people starting YS-NEET in each month. Note that starts are not a unique count of individuals as one person may participate in YS-NEET more than once. From the commencement of YS-NEET an average of 559 people commenced YS-NEET each month.

Figure 1: Monthly participation starts in YS-NEET



Source: Ministry of Social Development, June 2024.

Figure 1 shows that the number of participants in YS-NEET has decreased over time. After 2016 and based on the Treasury impact report (discussed below) the number of participants decreased from an average of 9,577

starts a year between 2012 and 2016, to 6,571 between 2017 and 2019 in line with eligibility changes from April 2017. The third step change commenced with both COVID as well as a change to target those at risk of NEET in 2020. Over this period, there was an average of 2,584 starts each year.

Participant profile

Here we compare the profile/characteristics of YS-NEET participants over the three phases of the programme (2012-2016, 2017-2018 and 2020-2022).

Age group

Table 3 shows the age profile of YS-NEET participants. Since 2020 we have seen a marked shift in participants from those age 15 to those aged 16 and 17 years old.

Table 3: Age profile of YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Age			
15 years	40%	43%	8%
16 years	37%	39%	60%
17 years	23%	18%	31%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Ethnicity

Table 4 shows participants by ethnicity. Because people can identify with more than one ethnic identity, the proportions in this table will exceed 100%. Over the 10 years from 2012, the proportion of Māori has increased from 43% in 2012-2016 to 57% by 2020-2022. However, this increase appears to be largely because of more people identifying with multiple ethnic identities as there wasn't a notable decrease in the proportion of participants with non-Māori identities.

Table 4: Ethnic profile of YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Ethnicity			
Māori	43%	45%	57%
Pacific	22%	28%	19%
Asian	5%	4%	3%
MELAA	2%	1%	1%
European	55%	52%	57%
Other	1%	1%	1%
Total	43,068	18,465	6,867

a. Ethnicity is total response (i.e. a person can select more than one ethnic identity) and therefore the sum of percentage values may exceed 100%.
b. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.
c. MELAA: Middle East, Latin America, and Africa.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Gender

Table 5 shows the profile of participants by gender identity. The division by gender identity was fairly even over the analysis period with a slightly higher proportion of participants identifying as female.

Table 5: Gender profile of YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Gender			
Female	50%	51%	54%
Male	50%	49%	46%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.
b. Category for people who identify as gender diverse is not currently available in the IDI.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Qualifications and study

Table 6 shows the study and highest qualification of participants prior to starting YS-NEET. We see a notable reduction in the proportion of participants in full-time study for the 2020-2022 participants (38%

compared to 61% in 2017-2019). Likewise, the proportion without any qualification increased from 38% to 63%. Together these results indicate a shift towards participants at higher risk of NEET from 2020 onwards.

Table 6: Qualifications and study status of YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Currently studying full or part time			
Full time	56%	61%	38%
Part time	7%	8%	11%
Not studying	38%	32%	51%
Total	43,068	18,465	6,867
Highest qualification			
None	38%	38%	63%
NZQCF 1 plus	62%	62%	37%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.

b. Study: this is based on enrolments and does not account for attendance.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

School disciplinary events

Table 7 shows the number of school disciplinary events experienced by YS-NEET participants. After 2019 we see increased levels of disciplinary events for participants compared to those who started before 2020.

Table 7: School disciplinary events for YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Number of stand-downs			
None	70%	72%	57%
One	14%	14%	18%
Two	7%	6%	10%
Three	4%	3%	6%
Four	2%	2%	3%
Five	1%	1%	2%

	2012-2016	2017-2019	2020-2022
Six	1%	1%	1%
Seven or more	1%	1%	1%
Total	43,068	18,465	6,867
Number of truancy events			
None	93%	81%	69%
One or more	7%	19%	31%
Total	43,068	18,465	6,867
Suspensions			
None	89%	90%	84%
One or more	11%	10%	16%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.

b. Suspensions: a student is formally removed from school for a period of time as decided by the school's Board. Number of stand-downs: a stand down is where a student is excluded from school for up to five days as decided by the Principal. Truancy: interventions for unjustified absence from school.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Justice interactions

Table 8 shows indicators of participants' interactions with the justice system. Unlike school interventions, we do not observe any trend in justice interactions over the 2013 to 2022 period

Table 8: Justice interactions for YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Number of offences			
None	72%	79%	72%
One	11%	9%	11%
Two	5%	4%	4%
Three	3%	2%	3%
Four	2%	1%	2%
Five to six	2%	2%	2%
Seven or more	5%	4%	6%

	2012-2016	2017-2019	2020-2022
Total	43,068	18,465	6,867
Time in Youth Justice placements			
No placement	98%	98%	97%
Under 75% of the period	2%	2%	3%
Total	43,068	18,465	6,867
Youth Justice referrals			
No referrals	91%	93%	89%
One referral	4%	3%	4%
Two to four referrals	4%	3%	4%
Five or more referrals	2%	2%	3%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.

b. Youth Justice referrals: number of times a person has been referred to the Youth Justice interventions such as a Family Group Conference. Time in Youth Justice placements: time spent in a Youth Justice residence. Number of offences: number of times arrested by police for one or more offence.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Mental health indicators

From the IDI we can obtain proxies for mental health through access to services. However, this will underestimate the true level of mental health where people have undiagnosed conditions or where they cannot access health care. Table 9 shows the proportion of participants who have either had a mental health diagnosis or have accessed mental health services. From 2020-2022 we have seen an increase in the proportion with a mental health diagnosis and a large increase in the proportion with a service referral from 38% in 2017-2019 to 54% in 2020-2022.

Table 9: Mental health status of YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
ADHD diagnosis			
Yes	4%	6%	9%
No	96%	94%	91%
Total	43,068	18,465	6,867

	2012-2016	2017-2019	2020-2022
Anxiety or mood disorder diagnosis			
Yes	13%	17%	24%
No	87%	83%	76%
Total	43,068	18,465	6,867
Mental health-related pharmaceutical prescribed			
Yes	10%	13%	23%
No	90%	87%	77%
Total	43,068	18,465	6,867
Mental health service referral			
Yes	31%	38%	54%
No	69%	62%	46%
Total	43,068	18,465	6,867
Substance abuse diagnosis			
Yes	16%	18%	22%
No	84%	82%	78%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Location and housing

Table 10 summarises the community where YS-NEET participants live and housing stability.

Because of issues with matching quality some participants appear to be overseas when starting YS-NEET. People with no address history may either have not had an address recorded against their name or have no fixed address at the time they started the programme (e.g. homeless).

In regard to housing stability, around half of YS – NEET participants had one or two address changes in the previous two years.

Decile is a measure of the level of deprivation of an area using census data. Decile 10 is the most deprived through to Decile 1 the least deprived. Overall, YS-NEET participants primarily live in the most deprived areas of New Zealand.

Table 10: Location and housing status of YS-NEET participants by start year

	2012-2016	2017-2019	2020-2022
Address changes in the last two years			
No change of address	1%	0%	s
1 address change	3%	1%	1%
2 address changes	46%	48%	48%
3 address changes	23%	23%	25%
4 address changes	12%	13%	13%
Over 4 address changes	10%	11%	10%
No address history	4%	3%	3%
Total	43,068	18,465	6,867
Deprivation index of current address			
Decile 1	3%	2%	3%
Decile 2	4%	3%	3%
Decile 3	5%	4%	4%
Decile 4	6%	5%	5%
Decile 5	7%	6%	6%
Decile 6	8%	7%	7%
Decile 7	9%	9%	9%
Decile 8	11%	12%	12%
Decile 9	16%	17%	17%
Decile 10	25%	30%	29%
Overseas	2%	1%	s
Unknown location	5%	4%	3%
Total	43,068	18,465	6,867
Level of urbanisation of current address			
Major urban area	47%	48%	39%
Large urban area	15%	16%	20%
Medium urban area	9%	9%	11%
Small urban area	12%	12%	15%

	2012-2016	2017-2019	2020-2022
Rural settlement	3%	2%	3%
Rural other	8%	8%	9%
Overseas	2%	1%	s
Unknown	5%	4%	3%
Total	43,068	18,465	6,867

a. Due to rounding and suppression, columns may not add up to 100%, 's' indicates the cell value has been suppressed for confidentiality.

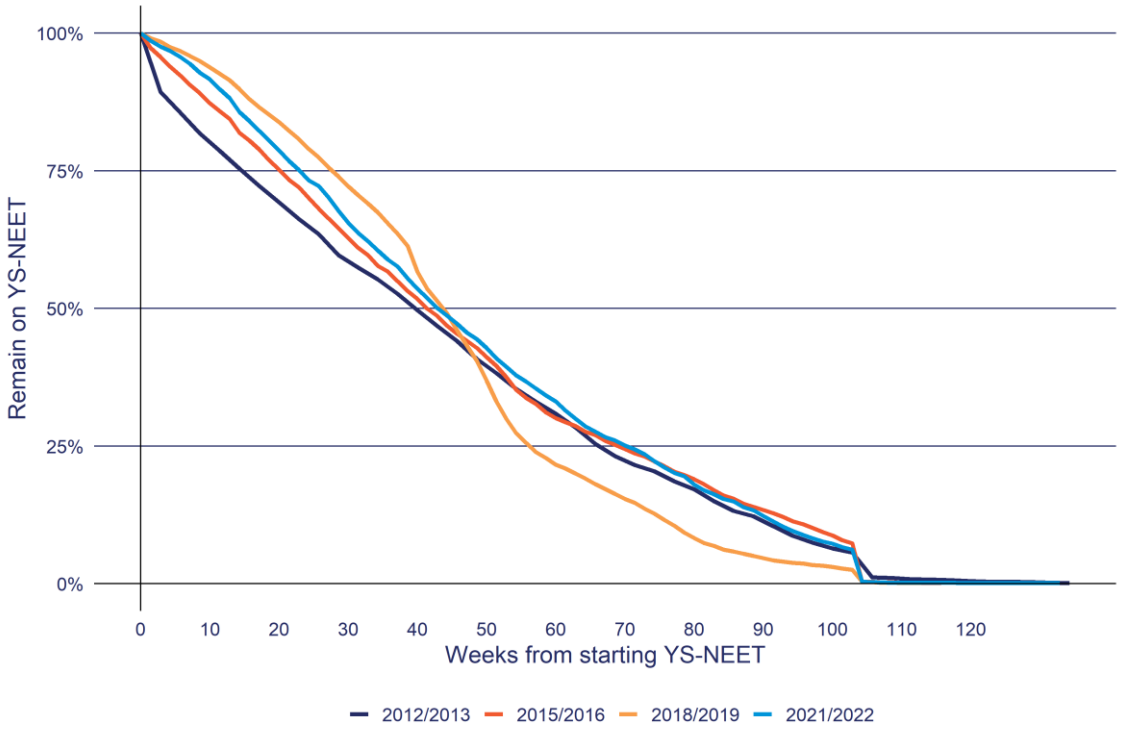
b. Deprivation index: is a small geographic area-based measure of socio-economic deprivation in Aotearoa New Zealand based on nine Census variables. The index is in deciles from 1 least deprived to 10 most deprived.

Source: Integrated Data Infrastructure, Statistics New Zealand, June 2024.

Duration of participation on YS-NEET

The duration on YS-NEET can be up to two years. Figure 2 shows the proportion of participants by how long they spend on YS-NEET by the financial year they started the programme.

Figure 2: Proportion remaining on YS-NEET (survival curve)



a. Financial year the person started YS-NEET; financial year starts on 1 July.

Source: Ministry of Social Development, June 2024.

Over the selected start years, the trend is broadly similar, with less than half of participants still on the programme one year after starting. One change since 2012/2013 is that more participants remain on YS-NEET over the initial nine months, and this is most notable for those starting in 2018/2019.

Cost of YS-NEET

MSD maintains an individualised Cost Allocation Model (iCAM) that estimates the individual cost of participating in its employment programmes and services. See the method section later in the report for an outline of how the iCAM operates.

Breakdown of YS-NEET expenditure by component

Table 11 breaks the total cost of YS-NEET into the main cost components by financial year. For YS-NEET the bulk of the cost is from contract payments, with small additional costs for contract administration.

Table 11: Breakdown of total cost by component for YS-NEET by financial year

Component	2019/2020	2020/2021	2021/2022	2022/2023
Grant Administration	$3	$4	$4	$3
Contract Payment	$14,935	$11,244	$12,507	$15,652
Contract Administration	$257	$166	$171	$216
Case management	$1	$2	$2	$2
Indirect Costs	$503	$283	$259	$373
Total	**$15,698**	**$11,698**	**$12,943**	**$16,246**

a. Showing the 4 most recent years of expenditure.

b. Expenditure is in ,000s and in nominal values (i.e. not adjusted for inflation).

c. Contract Payment: payments to contracted providers, Contract Administration: cost of administering the contract, Case management: staff costs in case managing participants while on YS-NEET, Indirect Costs: non-work front-line staff costs (eg. leave), support staff, property, ICT, and other general MSD costs.

Source: individual Cost Allocation Model (iCAM), Ministry of Social Development, June 2024.

Average cost per participant start

Table 12 shows the cost for each participant start by financial year. These results differ from Table 11 which shows the expenditure within each financial year and align with published financial accounts. Table 12 on the other hand, allocates participant costs that fall across financial years to the

year the participant started YS-NEET. Combining individual participant costs over financial years is important for programmes such as YS-NEET since participants can spend up to two years on the programme.

Finally, because costs are spread over the duration of the participation spell, the results for the most recent years are an underestimate as many of these participants have not yet completed YS-NEET.

Table 12: Average cost per participant start for YS-NEET by financial year

phase	Financial year	Total expenditure	Participant starts	Cost per start
2012-2019	2012/2013	$28,605	9,230	$3,099
	2013/2014	$21,918	12,813	$1,711
	2014/2015	$23,066	12,516	$1,843
	2015/2016	$20,698	10,862	$1,906
	2016/2017	$13,579	6,514	$2,085
	2017/2018	$17,442	7,146	$2,441
	2018/2019	$15,682	6,532	$2,401
	2019/2020	$4,737	2,041	$2,321
2020-2024	2019/2020	$3,975	906	$4,387
	2020/2021	$15,544	2,917	$5,329
	2021/2022	$12,792	2,343	$5,460
	2022/2023	$14,138	3,230	$4,377
	2023/2024	$6,729	840	$8,010

a. Total expenditure is in ,000s and in nominal values (i.e. not adjusted for inflation).
b. Excludes participants who started after September 2023.
c. Financial year is from July to June.

Source: individual Cost Allocation Model (iCAM), Ministry of Social Development, June 2024.

Table 12 shows a notable increase in cost per participant from the 2020/2021 financial year onwards. This increase is consistent with the reduction in the caseloads for YS providers in the 2020 to 2024 contract period, to meet the needs of a more vulnerable cohort of participants and enable more intensive support to be provided.

Existing evidence

This section provides a summary of the international and New Zealand evidence on case management services targeted at people transitioning from school.

Previous evaluations of MSD funded youth transition services

MSD has had a national youth transition service since 2004 with the introduction of the Youth Transition Service (YTS), which was replaced by the Youth Service-NEET in 2012.

2005 Youth Transition Services: Lessons for service development

This report presented key development and operational lessons from three local youth transition services - Taranaki Connections in Waitara, The Pulse in Whangarei, and Actionworks in Christchurch (MSD, 2005). The study involved interviews with staff at each of the three services. The analysis identified seven operational issues:

- **Connecting with youth:** services need to be accessible, visible, and in youth-friendly environments.
- **Targeting youth:** services need to have clear definitions of its target groups, methods of outreach, and models of delivery.
- **Building links and developing collaborative relationships:** services need strong relationships with the local community, key agencies, schools, educational and training providers, and employers. These are critical for connecting youth to education, training, and employment opportunities.
- **Management of caseloads:** services should ensure caseloads are small enough to allow staff time to spend with youth in crisis situations, and time to understand and address the complex needs of the young people they are engaging with.
- **Staffing the transition service:** services should ensure that staff have high levels of interpersonal and professional skills, able to build and maintain relationships. Services also need to provide adequate training, supervision and well-developed protocols for effective staff secondment.

- **A strengths-based practice model:** services should use a strengths-based model that appreciates, supports, and draws on the existing skills and experiences of participants.
- **Data collection:** services need to ensure they collect relevant data to help understand whether outcomes are being met and to support future funding applications.

2006 Youth Transition Services Implementation: Formative evaluation

Howard & Sutherland (2006) completed a formative evaluation of the YTS to identify key lessons learned from implementing the first stage of the programme's roll out. It had five core findings:

- **Project planning:** planning was affected by high turnover of project staff as well as delays in the service design, and tools to enable adequate community consultation.
- **Implementation Timeframes:** the timeframes were considered too tight to enable effective implementation and good community consultation.
- **Establishing Partnerships:** staff found establishing partnerships to be challenging, especially where there was difference in culture and ways of working between partners.
- **Encouraging Community Support and Buy-in:** delays in the availability of accurate information about the design and operation of service undermined the ability of staff to engage with the community.
- **Sharing Information and Resources:** allowing regional variation in the implementation of the service was seen as a strength. But informants wanted more opportunities to share information and experiences.

2008 Youth Transition Services process and outcome evaluation

This report examined the operation of the Youth Transition Service (YTS) based on interviews with staff, providers, and participants at the first 10 sites where YTS was introduced. The analysis also examined reported outcomes from the YTS administrative system (MSD 2008).

The evaluation found that of the 10,286 participants who started between January 2005 and March 2008, 61% left with a positive outcome, including:

- employment (either full or part-time)

- enrolment in tertiary education, return to school or enrolment in a private training establishment
- enrolment in alternative education, another type of training, apprenticeship or referred to another agency that continued to provide them with assistance or support.

The process evaluation found that:

- schools were the most common referral source for youths using YTS, at around one third, with slightly fewer making a self-referral
- the service was well received by participants who appreciated the flexible approach of the service, and many indicated that they had developed a rapport with YTS coaches
- participants agreed that the one-on-one mentoring and support of YTS coaches was the key to achieving successful outcomes for young people
- following up with young people once they engaged with YTS was an important aspect of the service and was integral to maintaining relationships between youth and their coaches.

The evaluation concluded that stakeholders were positive about YTS and that the service effectively networked and co-ordinated with key stakeholders in providing high-quality services to youth.

2014 Youth Service evaluation report

This report examined the operation of the Youth Service, including the NEETs as well as the YP/YPP arms of the service (MSD, 2014). The analysis included qualitative interviews with participants, analysis of reported activities undertaken by participants and initial estimates of the impact of the service on outcomes.

For participants receiving YP/YPP, the evaluation found that:

- Participants had increased the number of NCEA credits required to gain a qualification. After 12 months on the service, 14% of YP and 7% of YPP had gained NQF level 2 qualifications. There were issues with the comparison group and the evaluation concluded that the results were not reliable.
- Transition onto a working-age benefit appeared to be lower for YP when compared to young people who had been on the Independent Youth Benefit (IYB) which was replaced the YP/YPP benefits in 2012. However, because the comparison was a group at a different point in time, the evaluation could not rule out the influence of differences in labour market conditions or other policy settings as an explanation

for difference in outcomes between the YS participants and the earlier comparison group.

- Reported engagement in full-time or part-time education, training or work-based learning activities in March 2014 was 72% for YP and 79% for YPP.

The evaluation did not attempt to estimate the effectiveness of the Youth Service for the NEET participants. The primary reason for this was the lack of information on these participants and the inability to construct a comparison group using only MSD data. Instead, the evaluation reported that in March 2014, 64% of NEET participants were engaged in either full-time or part-time education, training, or work-based learning activities.

The evaluation found that it often took several months to enrol a participant in an education or training activity. Reasons for this delay included:

- limited access to transport prevented young people from attending their preferred course
- set enrolment periods (e.g. February and March intakes) meant that young people who started the service outside of the enrolment period were unable to enrol in a specific education or training programme.

Correspondingly, engagement in education, training, or workplace learning increased with the length of time a young person was enrolled in the Youth Service. After two months in the service, only 54% of YP, 43% of YPP and 63% of NEET participants were participating (either full-time or part-time) in education, training, or work-based learning activities, compared to 83%, 74% and 87% respectively after 10 months.

2016 Treasury Youth Service-NEET and Youth Transition Service impact evaluation

Crichton & Dixon (2016) estimated the impact of Youth Service-NEET and the prior Youth Transition Service (YTS) using Statistics New Zealand's Integrated Data Infrastructure (IDI). The impact of each service was estimated by comparing participant outcomes with those of comparison groups that were constructed using propensity score matching. In addition, the study examined how well YS-NEET was targeted at those youth who were at risk of becoming NEET. This analysis used a statistical risk profiling tool that measured how likely it was that an individual would experience a period of more than six months of NEET when 18 years old.

Their analysis found that YS-NEET raised the educational retention of participants in the first year, by up to 9 percentage points at peak. The proportion who completed a level 2 qualification was slightly raised, by around 2 percentage points. The programme appeared to raise rather than

lower participants' subsequent benefit receipt rates, and there was no improvement in their likelihood of being employed. Looking at the risk of becoming NEET, the proportion of participants assessed at high risk made up most participants initially, but this fell over 2013 and 2014 to stabilize at around 50% of new starts. When splitting impacts between low and high-risk youth, the researchers found that the low risk group gained little from participating in YS-NEET. Only the highest risk group appeared to benefit from the programme as intended.

For the YTS impacts, Crichton & Dixon (2016) found insignificant or slightly negative impacts. Participants were 1-3 percentage points less likely to be studying in the follow-up period than the matched comparison group, about 2 percentage points more likely to be on a benefit, 1-2 percentage points more likely to be NEET, and 1 percentage point less likely to be employed. There was no significant impact on qualification achievement. In addition, there was little change in the estimated impacts from one year after YTS enrolment to five years later. Using a longer follow-up period (5 years) did not materially alter the size or pattern of results.

Reviews of youth mentoring programmes

There have been two recent international reviews and one New Zealand review of youth mentoring programmes. Overall, youth mentoring programmes have been found to have small positive impacts over the short-term. Positive effects are higher for more disadvantaged youth. However, there is also evidence for negative longer-term effects such as in the form of increased criminal offending.

2011 Review of mentoring programmes for youth

DuBois *et al* (2011) undertook a comprehensive and systematic review of studies of the effects of youth mentoring programmes published between 1999 and 2010. The review included 73 independent impact evaluations directed towards either children or adolescents.

The overall trend was for positive gains for participants in domains such as attitudes, interpersonal relationships, various indicators of psychological well-being, conduct problems, academic performance at school, and physical health. The effect sizes were found to be modest (equivalent to a difference of 9 percentile points from the scores of non-mentored youth on the same measures).

Looking across the types of mentoring programmes included in the review, the authors found no differences in effectiveness by age of participants. Likewise, no differences emerged by delivery mode. In particular, no

differences were identified between adult volunteers or older peers or between a one-on-one compared to group-based format.

One common limitation of many of the studies in the review was their relatively short follow-up period. For this reason, there was limited evidence on whether the short-term impacts were sustained or what impact these programmes have on later outcomes such as offending.

2011 Review of New Zealand youth mentoring programmes

Farruggia *et al* (2011) undertook a review of studies of New Zealand youth mentoring programmes. The review included 26 studies that met their criteria, which included both qualitative and quantitative studies. The level of robustness for inclusion was low, "For qualitative studies to be included they needed an indicator of effectiveness reflecting change; post-test only was acceptable if a change [in outcomes] was discussed. For quantitative studies to be included, there needed to be an indicator of effectiveness including an indication of change or difference (e.g., pre-test/post-test change or the use of a comparison group; post-test only with an indicator of effect). (p 54)". For this reason, the authors regard the results as tentative rather than conclusive.

Of the programmes included in the review, the majority were school-based (65%), located in urban areas (80%) and 70% were established (e.g. operating for over two years). The majority of programmes combined mentoring with educational and life-skill components. For mentors, 95% screened and 91% trained their mentors and had on-going support from weekly (22%) to quarterly or less (33%). For the mentoring relationship itself, most programmes expected weekly contact with participants, with the mentoring relationship lasting for between two to 48 months, with 12 months the most common expected duration.

Most studies identified the programmes as effective (88%), with 35% showing modest impacts through to 27% showing strong positive effects across all the domains covered. However, the authors also note that 26% of programmes had at least one adverse impact. Looking at outcome domains, programmes tended to be more successful in psychological and interpersonal areas and less so in so in academic, behavioural, vocational, and cultural areas. Some differences in programme effectiveness identified in the review included:

- programmes based on international best practice were more likely to be effective, especially with respect to psychological and interpersonal areas

- combining mentoring with other components was associated with more effective programmes, but it was not possible to identify the effects of the other components from mentoring
- group-only programmes were less successful than those that included at least some one-to-one mentoring
- programmes aimed at lower socio-economic groups had larger impacts.

2014 Do youth mentoring programmes improve life outcomes for at-risk youth?

A review by Rodriguez-Planas (2014) examined the effectiveness of formal youth mentoring programmes in developed countries. The author notes that this type of intervention is relatively new and there is limited evidence on their effectiveness.

The main conclusions from the review were:

- programmes tend to show positive but modest impacts; however, these impacts dissipate quickly over time and can backfire (see below)
- positive effects tend to occur for participant's non-cognitive and social skills rather than their academic performance
- interventions appear to benefit disadvantaged youth most.

A common finding was for positive effects to occur while receiving mentoring, but these are not sustained after the programme ends. Of greater concern were studies that find longer-term negative effects of several mentoring programmes. An RCT of one programme in the United States called the Quantum Opportunity Program, found modest short-term effects and found participants were more likely to offend in their mid-20s.

Rodriguez-Planas gives the following reasons for these long-term negative effects:

- the deterrence hypothesis argues that over-protection by mentors reduces the ability of participants to fully internalize the cost of risky behaviours
- the displacement hypothesis suggests mentors displace caregivers and other family members and undermine important long-term social connections beyond the time of the programme
- stigmatization of being on the programme may make participants more aware of their relative disadvantage

- peer effects from interactions between participants could result in lower risk youth being negatively influenced by higher risk youth
- the time-limited relationship of a mentoring programme can mean participants feel a sense of betrayal because the relationship with the mentor ends for purely bureaucratic reasons.

Impact analysis

In this section of the report, we examine the impact of YS-NEET on participants' subsequent outcomes.

Interval impacts

The following section examines the impact of the YS-NEET in each month before and after starting the programme.

YS-NEET decreased participants' time in employment, education or training

Our analysis begins with those people who started YS-NEET between 2013 and 2016. Figure 3 shows the proportion of participants who are in Employment, Education or Training (EET) in each month from one year before the participants started YS-NEET to 7 years afterwards. Alongside the participants, the chart also shows the same outcome for the matched comparison group.

Showing interval outcomes is a useful way of understanding how outcomes change in the period before and after starting the intervention. In the pre-participation period, the proportion of participants in EET is high, averaging at 89%. For YS-NEET, we can see Ashenfelter's dip[15] as the proportion of participants in EET steadily falls until just before they start the programme.

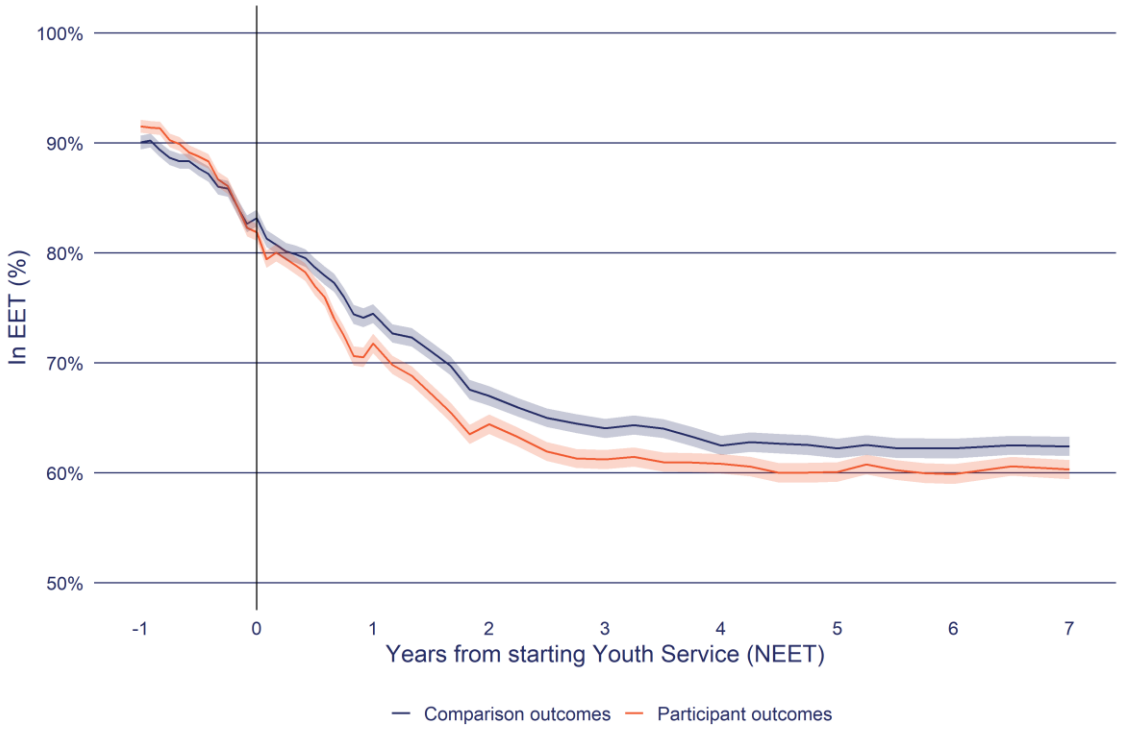
The proportion of participants in EET continues to fall after starting YS-NEET at 79±1.0% reaching 61±1.0% at four years after starting YS-NEET. From this point, the proportion in EET remains steady.

For the comparison group, the proportion in EET before the start of YS-NEET is slightly higher than for the participants (e.g. at 12 months before starting YS-NEET, 92±1.0% are EET compared to 90±1.0% for the comparison group).[16]

[15] Ashenfelter's dip is the observation that many participants experience a fall in employment and training in the period before to starting a programme. This downward trend (the dip) in earnings needs to be accounted for when selecting a comparison group who have experienced a similar dip in outcomes.

[16] To select the comparison group, potential comparison group members are given a pseudo start date (this date is randomly selected over the same calendar period as when the participants started the programme). In the above charts the zero-lapse period corresponds to this pseudo start date for the comparison group and the programme start date for the participants.

Figure 3: Interval outcomes of YS-NEET (2013-2016) participants and comparison group on time in education, employment, or training

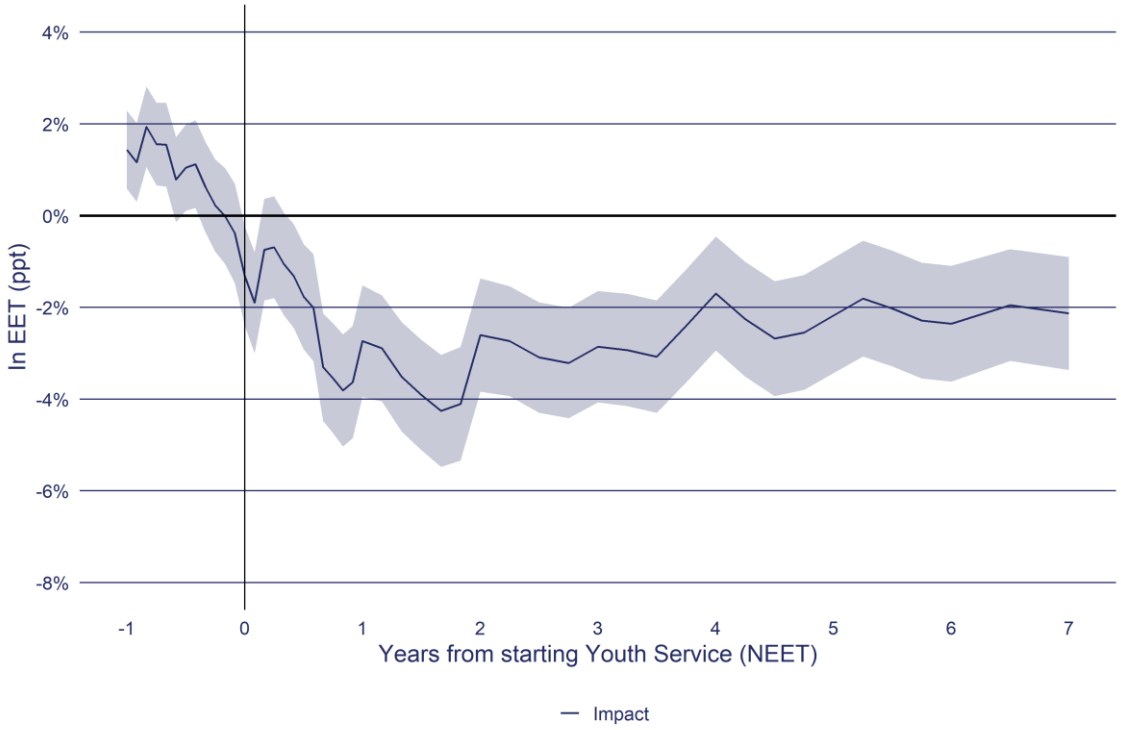


a. The shaded area around each line indicates the 95% confidence interval of the estimate.
b. In Education Employment or Training: EET is in time spent in either education, employment, or training. A person enrolled in education or training may not be attending (ie they have dropped out of the course). Employment of more than $100 per month is included. Annual returns are left censored to lapse period 0 if they start before the lapse period 0 calendar date.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Figure 4 shows the impact of YS-NEET on EET outcomes. Here impact is calculated as the percentage point (ppt) difference in the proportion of time in EET between the participant and the matched comparison group from Figure 3 above. At two months after starting YS-NEET, the proportion of participants in EET was below that of the comparison group by -1.0±1.0 ppt. This value continuous to fall to -3.0±1.0 ppt after one year.

Figure 4: Interval impact of YS-NEET (2013-2016) on time in employment, education, or training



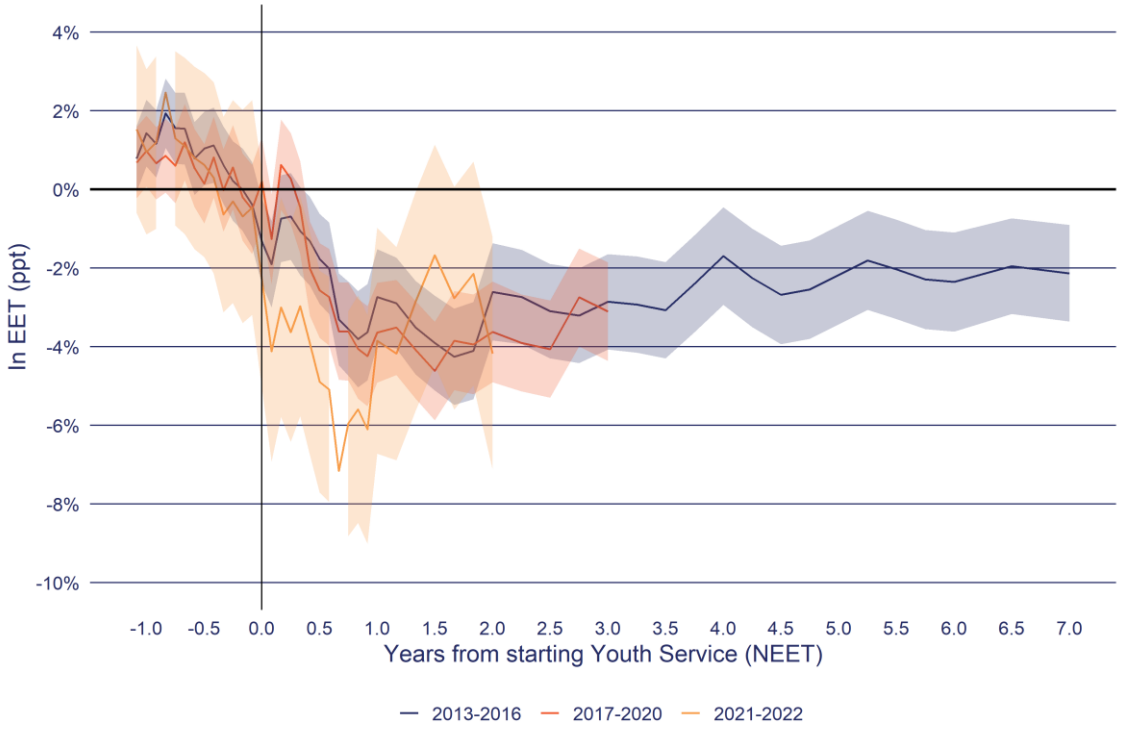
a. The shaded area around each line indicates the 95% confidence interval of the estimate.
b. In Education Employment or Training: EET is in time spent in either education, employment, or training. A person enrolled in education or training may not be attending (ie they have dropped out of the course). Employment of more than $100 per month is included. Annual returns are left censored to lapse period 0 if they start before the lapse period 0 calendar date.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Impact by year

Here we examine if YS-NEET effectiveness has changed over time. Figure 5 tests this by comparing the impact trends of different cohorts of YS-NEET participants. If the short-term trend for newer participants is similar to earlier cohorts, we can assume the long-term trend will also be similar.

Figure 5: Interval impact of YS-NEET on time in employment by start year



a. The shaded area around each line indicates the 95% confidence interval of the estimate.

b. In Education Employment or Training: EET is in time spent in either education, employment, or training. A person enrolled in education or training may not be attending (ie they have dropped out of the course). Employment of more than $100 per month is included. Annual returns are left censored to lapse period 0 if they start before the lapse period 0 calendar date.

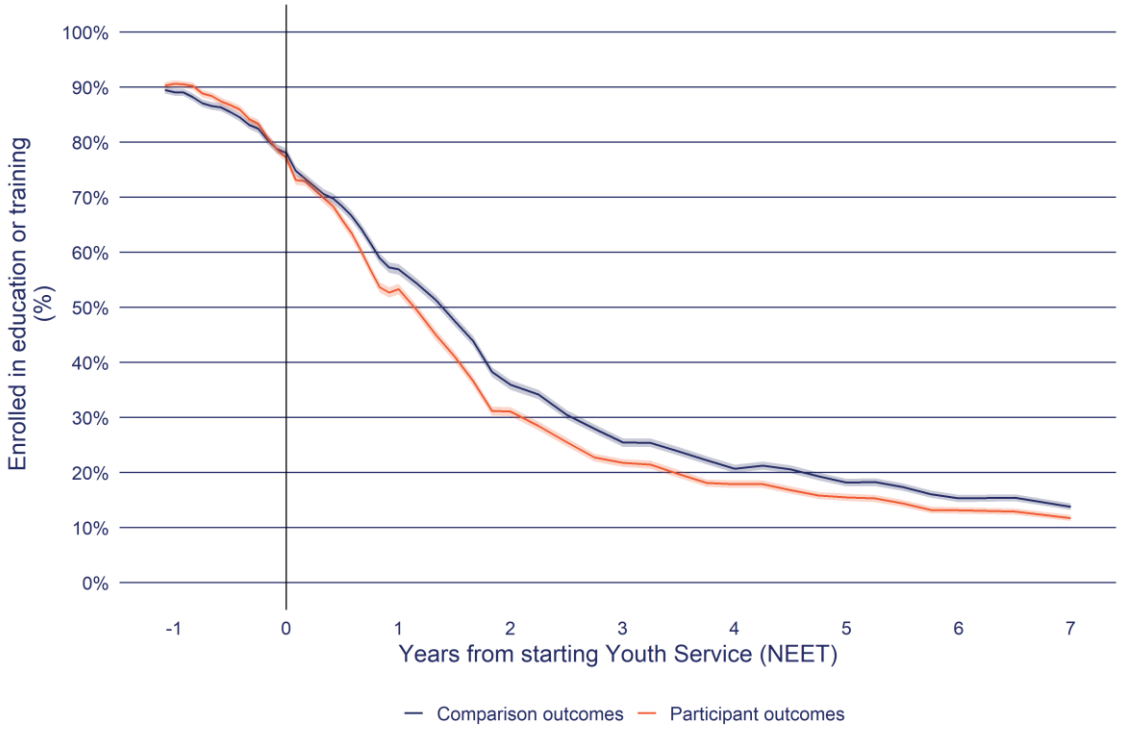
Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Figure 5 shows broadly similar trends for each YS-NEET cohort. However, the most recent cohort (those starting between 2021 and 2022) shows a lower initial impact. However, as these outcomes are measured most recently (occurring in 2023 and 2024) they are more likely to be revised through updates to the data in the IDI.

Education and study

We breakdown the EET measure to investigate enrolment in study and training. Figure 6 shows the proportion of 2013-2016 YS-NEET participants who were enrolled in education or training. In the period before starting YS-NEET the proportion in study is high as most are still in school. Because enrolment in education and training is a key outcome for YS-NEET we would expect to see an increase in study by participants once they had started YS-NEET. In Figure 6, we can see a small increase in study immediately after enrolment in YS-NEET. However, this decreases quickly and remains lower than the comparison group over the follow-up period.

Figure 6: Interval outcomes of YS-NEET (2013-2016) participants and comparison group on time in study

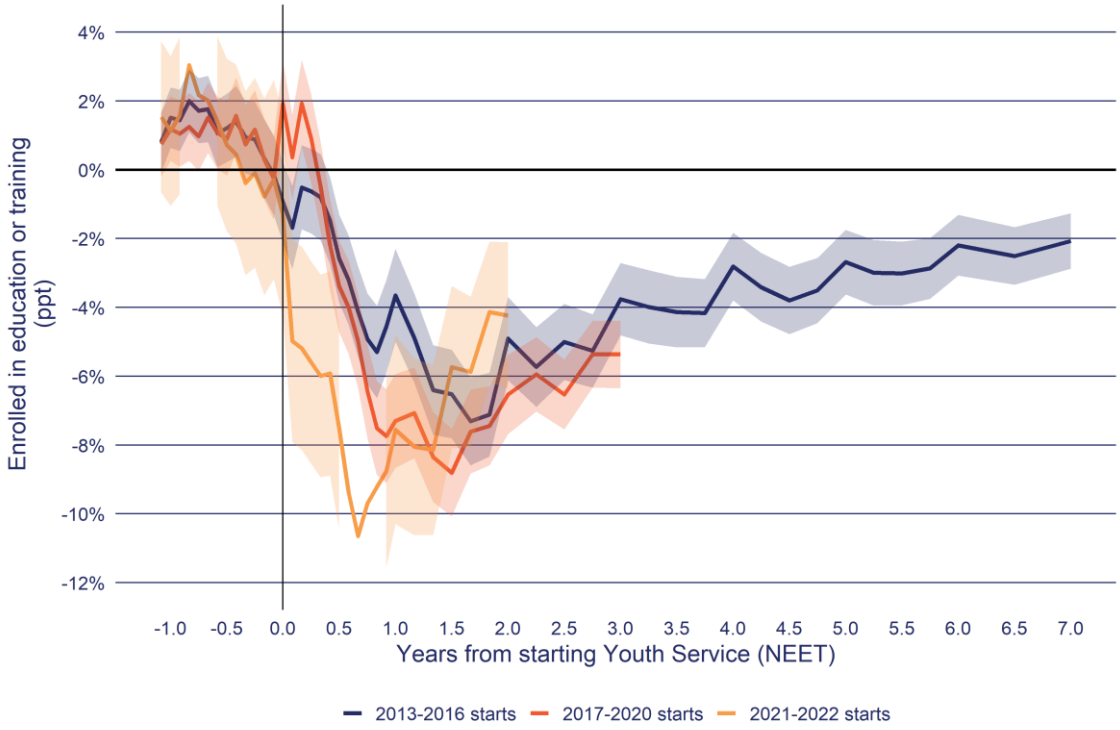


a. The shaded area around each line indicates the 95% confidence interval of the estimate.
b. Enrolled in education or training: Education and training includes school, tertiary institutions, and private training organisations. Enrolled does not always mean the person is attending.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Examining the trend across cohorts, we can see a shift in the impact of YS-NEET on time enrolled in education or training. Figure 7 compares the impact trend for selected participation years. For those who started YS-NEET between 2017 and 2020 we can see an initial positive impact on the time enrolled in education or training. For the cohort starting between 2021 and 2022 there is a noticeable decrease in enrolment in study over the initial six months after starting YS-NEET. However, because this is the most recent period, these results may change with subsequent updates to the IDI.

Figure 7: Interval impact of YS-NEET on time enrolled in study by start year



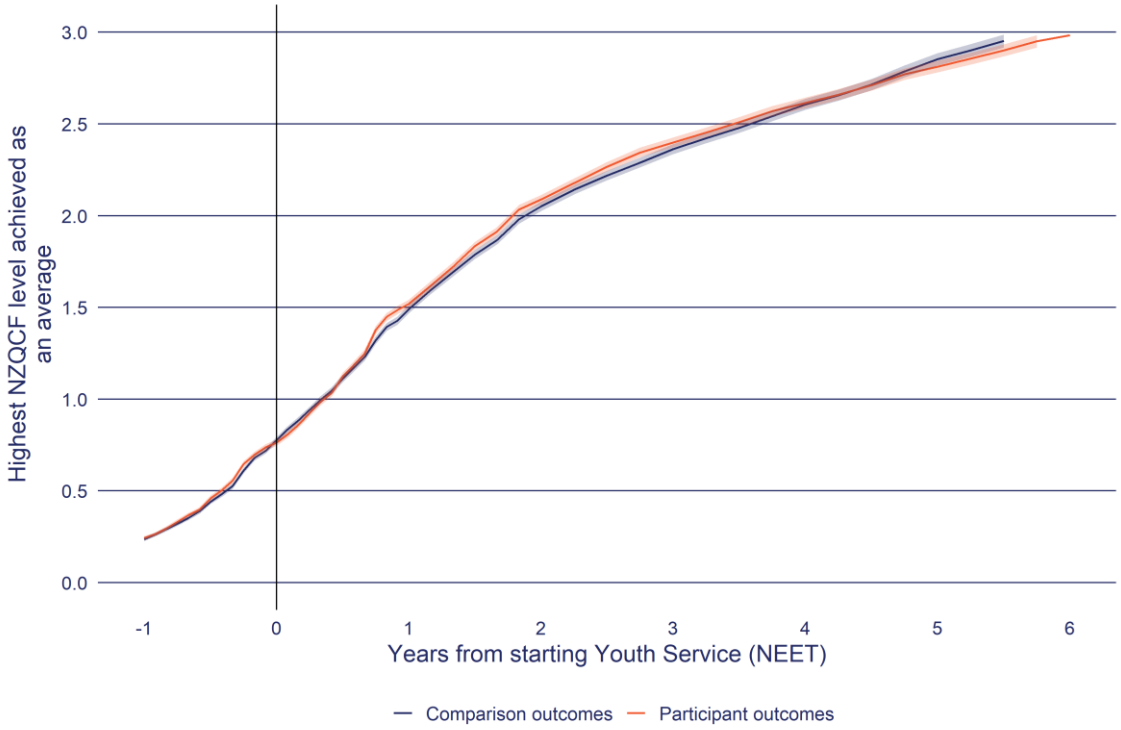
a. Enrolled in education or training: Education and training includes school, tertiary institutions, and private training organisations. Enrolled does not always mean the person is attending.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Highest qualification

Figure 8 shows the average New Zealand Qualifications and Credentials Framework (NZQCF) level held by participants and comparison group. The NZQCF is from 1 to 10, with 1 being the base level school qualifications (usually completed in year 11 of school) through to 10 for post-doctorate. Figure 8 shows a steady upward trend in the highest qualification held as participants move through the education system.

Figure 8: Interval outcomes of YS-NEET (2013-2016) participants and comparison group on highest qualification held



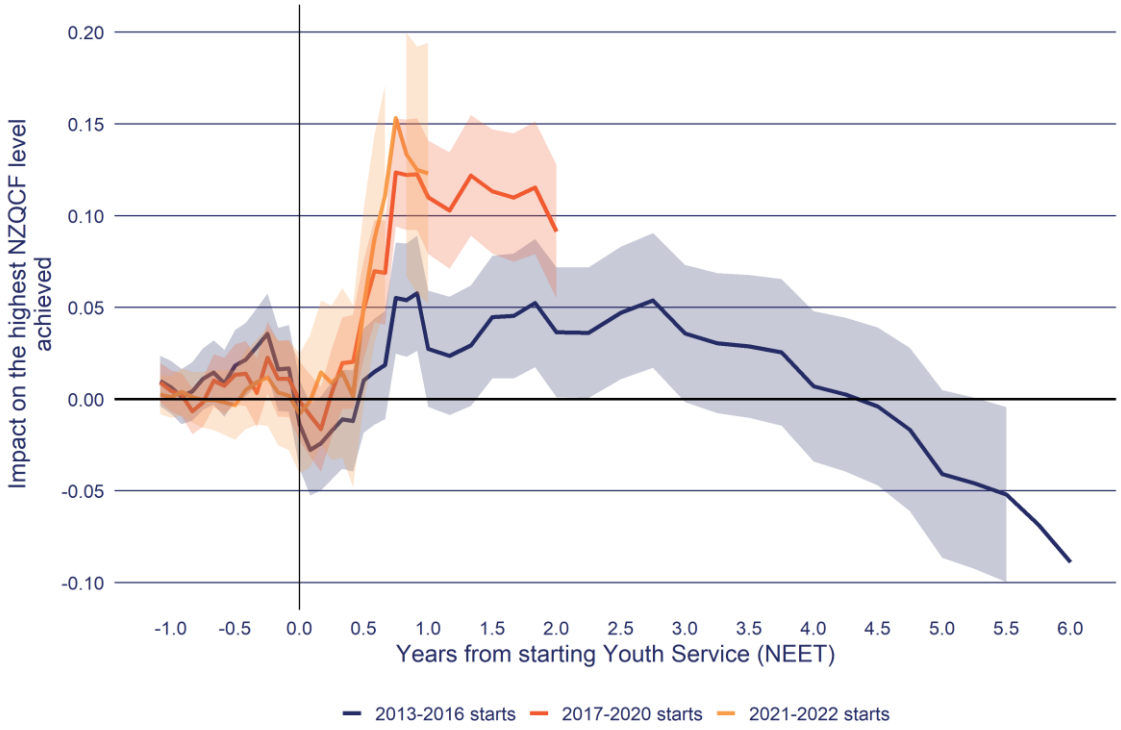
a. The shaded area around each line indicates the 95% confidence interval of the estimate.
b. Average of highest NQF level achieved: For each person identify the highest NZQCF level awarded and calculate the average for the group. NZQCF levels start from 1 (year 11) through to 10 (post-PhD).

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Examining the impact of YS-NEET on highest qualification held, participants tend to have higher qualifications than the comparison group over the first six years after starting the programme.

Figure 9 shows the impact of YS-NEET by participation start year. Here YS-NEET was more successful in increasing the highest qualification held for those starting after 2016.

Figure 9: Interval impact of YS-NEET on highest qualification held by start year



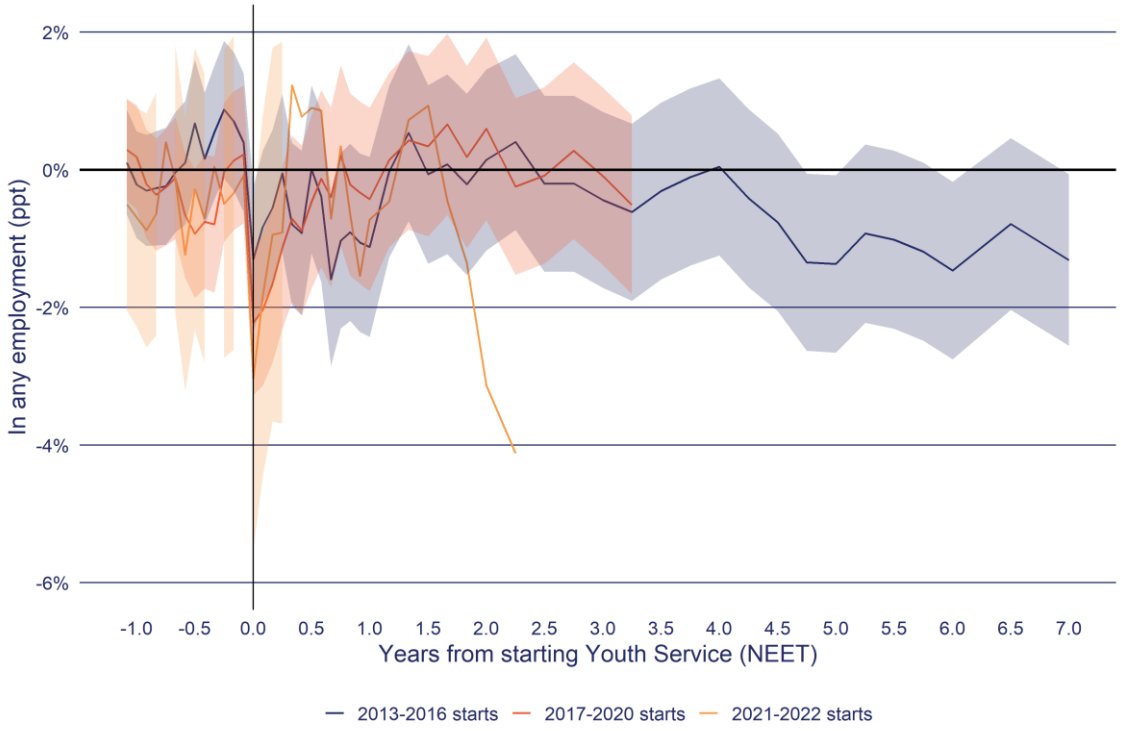
a. Average of highest NQF level achieved: For each person identify the highest NZQCF level awarded and calculate the average for the group. NZQCF levels start from 1 (year 11) through to 10 (post-PhD).

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Employment outcomes

Figure 10 shows the impact of YS-NEET on time spent in employment by participation year. Of interest is the change in initial impact for 2021-2022 participants compared to those who had started YS-NEET earlier. This result indicates that after 2021, there was a shift by participants from enrolling in study (see Figure 7) towards moving into employment. For the participants in the 2021-2022 cohort, the results shown here may change with subsequent updates of data in the IDI.

Figure 10: Interval impact of YS-NEET on time in employment by start year



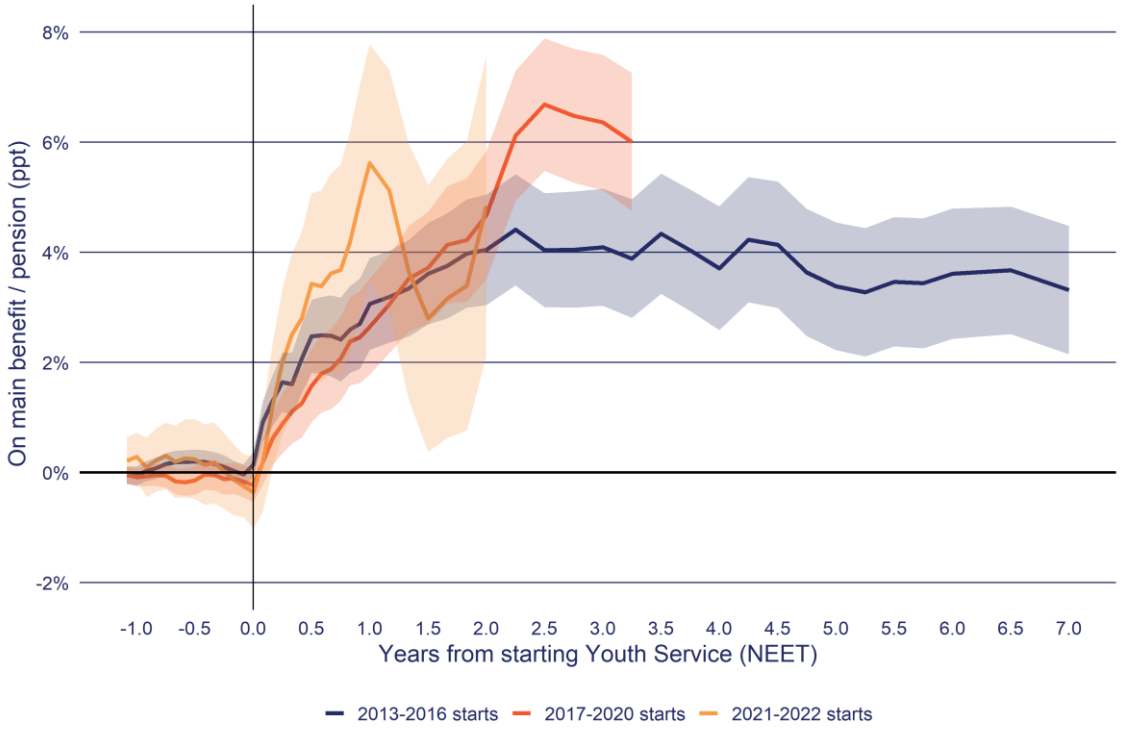
a. In any employment: Employment is based on tax data (pay as you earn - PAYE and annual tax returns). Periods with less than $100 of real (at report year) employment income per month are excluded. Annual returns are left censored to lapse period 0 if they start before the lapse period 0 calendar date.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Income support

The last outcome we examine is the proportion of participants receiving a main benefit. Figure 11 tracks the impact of YS-NEET on the proportion of participants on a main benefit. The consistent trend is for participants to be on main benefit at a higher rate than the comparison group.

Figure 11: Interval impact of YS-NEET on time on main benefit by start year



a. On main benefit: A person is receiving a main benefit or pension based on IR PAYE records, value of less than $100 in a month are excluded.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Cumulative impacts

So far, we have looked at how impacts changed in each month before and after YS-NEET start. Such interval impact charts are useful for understanding how the effect of the programme changes over time but are difficult to make a summary statement of the overall impact of YS-NEET from. For the overall impact assessment, we need to measure the cumulative impact of YS-NEET from when participants started the programme as shown in Table 13.

In Education, Training or Employment

Table 13 splits participants by the calendar year that they started YS-NEET in. At selected years after starting YS-NEET, the Table shows the additional number of weeks in EET by participants relative to the comparison group. For example, for participants who started between 2013 to 2016, we estimate that after six years, participants spent -5.90±2.50 fewer weeks in EET than the comparison group. The table also breaks down the EET into time spent in employment and the time in education or training.

The trend in Table 13 is for participants to spend less time in EET than the comparison group. By start year the trends are similar, except for the 2021-2022 participants where the negative impact on EET was larger driven by less time in study relative to the comparison group.

Table 13: Cumulative impact of YS-NEET on time in employment, education, or training

	Years from participation start				
Participation year	0.5	1	2	4	6
Impact on the time spent EET (weeks)					
2013-2016 starts	-0.40*	-1.20*	-3.00*	-5.90*	-8.20*
2017-2020 starts	-0.20	-1.20*	-3.20*		
2021-2022 starts	-1.10*	-2.50*	-4.00*		
Impact on time enrolled in education and training in weeks					
2013-2016 starts	-0.40	-1.50*	-4.70*	-9.20*	-12.0*
2017-2020 starts	-0.00	-1.70*	-5.60*		
2021-2022 starts	-1.60*	-3.90*	-7.00*		
Impact on time in employment (weeks)					
2013-2016 starts	-0.20	-0.50	-0.40	-0.60	-1.70
2017-2020 starts	-0.40*	-0.40	-0.20		
2021-2022 starts	-0.20	-0.30	-0.60		

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Highest qualification

Table 14 shows the impact of YS-NEET on the highest qualification based on the New Zealand Qualifications and Certification Framework which has a scale from 1 (year 11 at school) to 10 (PhD). The impact on highest qualification is small. For people starting from 2017 onwards the impact on highest qualification is positive and significant after one year.

Table 14: Cumulative impact of YS-NEET on highest qualification held

	Years from participation start				
Participation year	0.5	1	2	4	6
Impact on the highest NZQCF level achieved					
2013-2016 starts	0.01	0.03	0.04*	0.01	-0.09*
2017-2020 starts	0.05*	0.11*	0.09*		
2021-2022 starts	0.05	0.12*			

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Income support

Table 15 shows YS-NEET impact on both the time on main benefit as well as the income support payments. On both measures we estimate that participants spend longer on main benefit and receive more income support than the comparison group.

Table 15: Cumulative impact of YS-NEET on income support

	Years from participation start				
Participation year	0.5	1	2	4	6
Impact on time spent on main benefit or pension in weeks					
2013-2016 starts	0.43*	1.11*	2.99*	7.23*	11.0*
2017-2020 starts	0.23*	0.80*	2.80*		
2021-2022 starts	0.50*	1.60*	3.57*		

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Impact by 2020 contract

Table 16 compares the impact of YS-NEET for the new contract period (2020-2025) to the prior period (2018-2019). Overall, the differences between the two are small with the 2020 contract period showing a small positive impact on highest qualification, but lower impact for EET.

Table 16: Cumulative impact of YS-NEET on weeks in employment by ethnicity

	Years from participation start			
Contract	0.5	1	2	4
Impact on the highest NZQCF level achieved				
2018 to 2019	-0.02	0.11*	0.13*	0.01
2020 to 2022	0.23*	0.17*	0.00	
Impact on the time spent EET (weeks)				
2018 to 2019	0.00	-1.10*	-4.20*	-10.0*
2020 to 2022	-2.30*	-3.90*	-6.40*	
Impact on time enrolled in education and training in weeks				
2018 to 2019	0.30	-1.50*	-5.70*	-13.0*
2020 to 2022	-2.80*	-5.90*	-12.0*	
Impact on time in employment (weeks)				
2018 to 2019	-0.80*	-1.30*	-2.30*	-5.20*
2020 to 2022	-0.50	-0.20	-0.20	
Impact on time spent on main benefit or pension in weeks				
2018 to 2019	0.15	0.69*	3.07*	11.8*
2020 to 2022	0.62*	1.61*	4.97*	

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Impact by sub-group

In addition to the impact of YS-NEET on all participants, we also analysed the impact of YS-NEET on a number of sub-groups. Note that the following tables show the differences in impact of YS-NEET between sub-groups. While indicative, it is important to remember that any observed trends may be correlations only. It is possible that other factors related to the profile variable could explain any differences in impact.

For the subgroup analysis, we group starts into four-year periods to enable comparison between large and small subgroups over the same analysis period. However, even using a four-year participation window, it is not always possible to have enough participants of a particular group to estimate the impact of YS-NEET on their outcomes.

Ethnicity

Table 17 shows the cumulative impact on EET by ethnicity. In general, there was no large or consistent differences in the impact of YS-NEET by ethnic identity. Participants who identified as Pacific or Asian tended to have better results, while Pākehā (New Zealand European) had lower impacts.

Table 17: Cumulative impact of YS-NEET on weeks in EET by ethnicity

	Years from participation start				
Ethnicity	0.5	1	2	4	6
Period: 2013-2016 starts					
Māori	0.10	-0.40	-1.80*	-4.60*	-7.30*
Pacific	0.10	-0.00	-0.60	-1.20	-2.20
Asian	-0.20	-0.60	-1.50	-2.40	-2.50
Pākehā	-0.60*	-1.50*	-3.70*	-8.10*	-12.0*
MELAA	-1.00	-3.10*	-6.40*	-9.50	-14.0
Period: 2017-2020 starts					
Māori	0.00	-0.80*	-2.80*		
Pacific	-0.10	-0.40	-1.50		
Asian	-0.50	-1.20	-3.20		
Pākehā	-0.90*	-2.50*	-5.60*		
Period: 2021-2022 starts					
Māori	-0.50	-1.00			
Pacific	-1.40*	-2.30			
Pākehā	-0.60	-1.60*			

a. estimate: Impact on the time spent EET (weeks)

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

NEET risk group

As part of the targeting of YS-NEET, all participants have a score that estimates their likelihood of coming into main benefit after they turn 18 years old. In Table 18 we have grouped participants by their assigned NEET

risk score. The trend is not strong, but it appears that the impact of NEET is lower for people with lower risk rating ('Low' and 'Very Low').

Table 18: Cumulative impact of YS-NEET on weeks in EET by age group

	Years from participation start				
NEET risk	0.5	1	2	4	6
Period: 2013-2016 starts					
High	0.20	-0.30	-1.50	-4.90*	-8.00*
Medium	0.20	-0.00	-2.40	-6.80*	-10.00*
Low	-0.00	-1.00	-2.80*	-5.20*	-7.20*
Very Low	0.10	-1.00	-3.50*	-8.60*	-14.0*
Missing	-0.70*	-1.30*	-2.50*	-4.10*	-5.80*
Period: 2017-2020 starts					
High	-0.50	-1.10	-2.60		
Medium	0.20	-0.50	-2.90		
Low	-0.00	-1.50*	-4.60*		
Very Low	0.00	-1.20	-4.60*		
Missing	-0.60*	-1.80*	-4.30*	-9.00*	
Period: 2021-2022 starts					
High	-0.20	-0.30			
Medium	0.30	-0.80			
Low	-1.00	-2.00			
Missing	-0.90*	-2.00*			

a. estimate: Impact on the time spent EET (weeks)

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Gender

Currently we can only report on Male and Female gender identities, this occurs because Statistics New Zealand has not yet included other gender identities in the IDI. However, even when non-binary identities are included, the number of people who identify in this group may be too small to estimate the effectiveness of YS-NEET for these people. Between Male

and Female participants, there is little difference in the impact of YS-NEET on time in EET.

Table 19: Cumulative impact of YS-NEET on weeks in EET by gender

	Years from participation start				
Gender	0.5	1	2	4	6
Period: 2013-2016 starts					
Female	-0.20	-0.80*	-2.30*	-5.80*	-9.90*
Male	-0.20	-1.00*	-2.50*	-4.70*	-5.80*
Period: 2017-2020 starts					
Female	-0.20	-1.20*	-3.70*		
Male	-0.60*	-1.80*	-4.30*		
Period: 2021-2022 starts					
Female	-0.20	-0.60			
Male	-1.10*	-2.30*			

a. estimate: Impact on the time spent EET (weeks)

*: the 95% confidence interval of the impact estimate excludes zero.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Impact compared to other youth case management programmes

YS-NEET is not the only youth case management programme administered by MSD. In this section we look at the effectiveness of YS-NEET compared to similar programmes either running currently or that have operated in the past. The method used to estimate the effectiveness of these other programmes is the same as for YS-NEET.

Table 20 shows the two-year cumulative impacts for youth case management programmes that have operated between 2009 and 2020. For each participant cohort (period) the table shows the impact on time in employment and study. Compared to Youth Transitions Service, YS-NEET shows better results. On the other hand, the impact of Youth Service for NEET (under 18-year-old participants) is lower than for participants who were on a main benefit (Youth Payment - YP and Young Parent Payment - YPP). Youth Service YP and YPP is currently operating, but because all YP and YPP are required to participate it is not possible to update the impact analysis for more recent participant cohorts.

Table 20: Four-year cumulative impacts for youth case management interventions

Programme	Period	Employment	Study
Youth Transitions Services	2009-2012	-4.3 (1.3)	-6.5 (1.4)
Youth Service (YPP)	2012-2014	5.5 (3.5)	9 (4.2)
Youth Service (YP)	2012-2014	4.3 (2.9)	6.7 (3.1)
Youth Service (NEET)	2013-2016	-0.4 (1.3)	-4.7 (1.4)
	2017-2020	-0.2 (1.4)	-5.6 (1.4)

a. estimate: Impact on time enrolled in education and training in weeks, Impact on time in employment (weeks)
Impact is measured over the four years after starting the programme.

b. The bracketed figure gives 95% confidence interval of the impact estimate.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Impact summary tables

The following tables provide summaries of the participant and comparison group outcomes and impacts estimates of YS-NEET reported in the impact analysis section. Table 21 shows the outcomes of the participants and comparison groups and the impact in the month for each lapse period after participation start date.

Table 21: Interval impact of YS-NEET on selected outcomes

		Years from participation start					
Period	Measure	0.5	1	2	3	4	6
Average of highest NQF level achieved							
2013-2016 starts	Participant	1.12 (0.02 nqf)	1.52 (0.02 nqf)	2.09 (0.03 nqf)	2.40 (0.03 nqf)	2.62 (0.03 nqf)	2.98 (0.03 nqf)
	Comparison	1.11 (0.02 nqf)	1.49 (0.02 nqf)	2.05 (0.03 nqf)	2.36 (0.03 nqf)	2.61 (0.03 nqf)	3.07 (0.04 nqf)
	Impact	0.01 (0.03 nqf)	0.03 (0.03 nqf)	0.04 (0.04 nqf)	0.04 (0.04 nqf)	0.01 (0.04 nqf)	-0.09 (0.05 nqf)
2017-2020 starts	Participant	0.94 (0.02 nqf)	1.32 (0.02 nqf)	1.85 (0.03 nqf)			
	Comparison	0.89 (0.02 nqf)	1.20 (0.02 nqf)	1.76 (0.03 nqf)			
	Impact	0.05 (0.03 nqf)	0.11 (0.03 nqf)	0.09 (0.04 nqf)			
2021-2022 starts	Participant	0.46 (0.04 nqf)	0.84 (0.05 nqf)				
	Comparison	0.40 (0.04 nqf)	0.71 (0.05 nqf)				
	Impact	0.05 (0.05 nqf)	0.12 (0.07 nqf)				
Enrolled in education or training							
2013-2016 starts	Participant	66% (1.0 ppt)	53% (1.0 ppt)	31% (1.0 ppt)	22% (1.0 ppt)	18% (1.0 ppt)	13% (1.0 ppt)

Period	Measure	Years from participation start 0.5	1	2	3	4	6
	Comparison	68% (1.0 ppt)	57% (1.0 ppt)	36% (1.0 ppt)	25% (1.0 ppt)	21% (1.0 ppt)	15% (1.0 ppt)
	Impact	-3.0% (1.0 ppt)	-4.0% (1.0 ppt)	-5.0% (1.0 ppt)	-4.0% (1.0 ppt)	-3.0% (1.0 ppt)	-2.0% (1.0 ppt)
2017-2020 starts	Participant	59% (1.0 ppt)	45% (1.0 ppt)	23% (1.0 ppt)	16% (1.0 ppt)		
	Comparison	63% (1.0 ppt)	53% (1.0 ppt)	30% (1.0 ppt)	21% (1.0 ppt)		
	Impact	-3.0% (1.0 ppt)	-7.0% (1.0 ppt)	-7.0% (1.0 ppt)	-5.0% (1.0 ppt)		
2021-2022 starts	Participant	42% (2.0 ppt)	28% (2.0 ppt)	13% (1.0 ppt)			
	Comparison	49% (2.0 ppt)	36% (2.0 ppt)	17% (2.0 ppt)			
	Impact	-8.0% (3.0 ppt)	-8.0% (3.0 ppt)	-4.0% (2.0 ppt)			
In any employment							
2013-2016 starts	Participant	26% (1.0 ppt)	33% (1.0 ppt)	46% (1.0 ppt)	51% (1.0 ppt)	54% (1.0 ppt)	56% (1.0 ppt)
	Comparison	26% (1.0 ppt)	34% (1.0 ppt)	45% (1.0 ppt)	51% (1.0 ppt)	54% (1.0 ppt)	57% (1.0 ppt)
	Impact	0.0% (1.0 ppt)	-1.0% (1.0 ppt)	0.0% (1.0 ppt)	-0.0% (1.0 ppt)	0.0% (1.0 ppt)	-1.0% (1.0 ppt)
2017-2020 starts	Participant	28% (1.0 ppt)	35% (1.0 ppt)	47% (1.0 ppt)	51% (1.0 ppt)		
	Comparison	29% (1.0 ppt)	36% (1.0 ppt)	46% (1.0 ppt)	52% (1.0 ppt)		
	Impact	-0.0% (1.0 ppt)	-0.0% (1.0 ppt)	1.0% (1.0 ppt)	-0.0% (1.0 ppt)		
2021-2022 starts	Participant	37% (2.0 ppt)	47% (2.0 ppt)	46% (2.0 ppt)			
	Comparison	36% (2.0 ppt)	48% (2.0 ppt)	49% (2.0 ppt)			
	Impact	1.0% (3.0 ppt)	-1.0% (3.0 ppt)	-3.0% (3.0 ppt)			
In Education Employment or Training							
2013-2016 starts	Participant	77% (1.0 ppt)	72% (1.0 ppt)	64% (1.0 ppt)	61% (1.0 ppt)	61% (1.0 ppt)	60% (1.0 ppt)

Period	Measure	Years from participation start					
		0.5	1	2	3	4	6
	Comparison	79% (1.0 ppt)	74% (1.0 ppt)	67% (1.0 ppt)	64% (1.0 ppt)	63% (1.0 ppt)	62% (1.0 ppt)
	Impact	-2.0% (1.0 ppt)	-3.0% (1.0 ppt)	-3.0% (1.0 ppt)	-3.0% (1.0 ppt)	-2.0% (1.0 ppt)	-2.0% (1.0 ppt)
2017-2020 starts	Participant	73% (1.0 ppt)	68% (1.0 ppt)	60% (1.0 ppt)	58% (1.0 ppt)		
	Comparison	76% (1.0 ppt)	72% (1.0 ppt)	63% (1.0 ppt)	61% (1.0 ppt)		
	Impact	-3.0% (1.0 ppt)	-4.0% (1.0 ppt)	-4.0% (1.0 ppt)	-3.0% (1.0 ppt)		
2021-2022 starts	Participant	65% (2.0 ppt)	63% (2.0 ppt)	53% (2.0 ppt)			
	Comparison	69% (2.0 ppt)	67% (2.0 ppt)	57% (2.0 ppt)			
	Impact	-5.0% (3.0 ppt)	-4.0% (3.0 ppt)	-4.0% (3.0 ppt)			
On main benefit							
2013-2016 starts	Participant	8.0% (1.0 ppt)	12% (1.0 ppt)	20% (1.0 ppt)	24% (1.0 ppt)	26% (1.0 ppt)	30% (1.0 ppt)
	Comparison	5.0% (0.0 ppt)	9.0% (1.0 ppt)	16% (1.0 ppt)	20% (1.0 ppt)	22% (1.0 ppt)	26% (1.0 ppt)
	Impact	2.5% (0.7 ppt)	3.1% (0.8 ppt)	4.0% (1.0 ppt)	4.1% (1.1 ppt)	3.7% (1.1 ppt)	3.6% (1.2 ppt)
2017-2020 starts	Participant	7.0% (0.0 ppt)	13% (1.0 ppt)	28% (1.0 ppt)	36% (1.0 ppt)		
	Comparison	6.0% (0.0 ppt)	10% (1.0 ppt)	23% (1.0 ppt)	30% (1.0 ppt)		
	Impact	1.6% (0.7 ppt)	2.6% (0.9 ppt)	4.7% (1.2 ppt)	6.4% (1.2 ppt)		
2021-2022 starts	Participant	10% (1.0 ppt)	19% (2.0 ppt)	35% (2.0 ppt)			
	Comparison	7.0% (1.0 ppt)	13% (1.0 ppt)	31% (2.0 ppt)			
	Impact	3.4% (1.6 ppt)	5.6% (2.2 ppt)	4.8% (2.7 ppt)			

a. A person is receiving a main benefit or pension based on IR PAYE records, value of less than $100 in a month are excluded.

b. Outcomes and impacts are measured at the lapse period from participants started the programme (ie 1 year is the outcome at the 12th months after starting the programme).

Period	Measure	Years from participation start 0.5	1	2	3	4	6

c. The bracketed figure gives 95% confidence interval of the outcome estimate.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Table 22 shows the cumulative outcomes of the participants and comparison and the impact as measure from participation start to the end of each lapse period after participation start date.

Table 22: Cumulative impact of YS-NEET on selected outcomes

Period	Measure	Years from participation start 0.5	1	2	3	4	6
Average of highest NQF level achieved							
2013-2016 starts	Participant	1.12 (0.02 nqf)	1.52 (0.02 nqf)	2.09 (0.03 nqf)	2.40 (0.03 nqf)	2.62 (0.03 nqf)	2.98 (0.03 nqf)
	Comparison	1.11 (0.01 nqf)	1.49 (0.02 nqf)	2.05 (0.03 nqf)	2.36 (0.03 nqf)	2.61 (0.03 nqf)	3.07 (0.04 nqf)
	Impact	0.01 (0.03 nqf)	0.03 (0.03 nqf)	0.04 (0.04 nqf)	0.04 (0.04 nqf)	0.01 (0.04 nqf)	-0.09 (0.05 nqf)
2017-2020 starts	Participant	0.94 (0.02 nqf)	1.32 (0.02 nqf)	1.85 (0.03 nqf)			
	Comparison	0.89 (0.01 nqf)	1.20 (0.02 nqf)	1.76 (0.03 nqf)			
	Impact	0.05 (0.03 nqf)	0.11 (0.03 nqf)	0.09 (0.04 nqf)			
2021-2022 starts	Participant	0.46 (0.04 nqf)	0.84 (0.05 nqf)				
	Comparison	0.40 (0.02 nqf)	0.71 (0.05 nqf)				
	Impact	0.05 (0.05 nqf)	0.12 (0.07 nqf)				

Period	Measure	Years from participation start 0.5	1	2	3	4	6
Enrolled in education or training							
2013-2016 starts	Participant	5.00 (0.10 mths)	8.30 (0.10 mths)	13.0 (0.20 mths)	16.0 (0.20 mths)	18.0 (0.20 mths)	22.0 (0.30 mths)
	Comparison	5.10 (0.00 mths)	8.70 (0.10 mths)	14.0 (0.20 mths)	18.0 (0.20 mths)	21.0 (0.30 mths)	25.0 (0.40 mths)
	Impact	-0.40 (0.40 wks)	-1.50 (0.70 wks)	-4.70 (1.40 wks)	-7.20 (1.90 wks)	-9.20 (2.50 wks)	-12.0 (3.40 wks)
2017-2020 starts	Participant	4.80 (0.10 mths)	7.70 (0.10 mths)	11.0 (0.20 mths)	14.0 (0.20 mths)		
	Comparison	4.80 (0.00 mths)	8.10 (0.10 mths)	13.0 (0.20 mths)	16.0 (0.20 mths)		
	Impact	-0.00 (0.40 wks)	-1.70 (0.70 wks)	-5.60 (1.40 wks)	-8.60 (1.90 wks)		
2021-2022 starts	Participant	3.60 (0.10 mths)	5.40 (0.20 mths)	7.60 (0.30 mths)			
	Comparison	3.90 (0.10 mths)	6.40 (0.20 mths)	9.40 (0.40 mths)			
	Impact	-1.60 (0.90 wks)	-3.90 (1.60 wks)	-7.00 (2.80 wks)			
In any employment							
2013-2016 starts	Participant	1.50 (0.10 mths)	3.40 (0.10 mths)	8.30 (0.20 mths)	14.0 (0.20 mths)	21.0 (0.30 mths)	34.0 (0.40 mths)
	Comparison	1.60 (0.00 mths)	3.50 (0.10 mths)	8.40 (0.20 mths)	14.0 (0.20 mths)	21.0 (0.30 mths)	34.0 (0.50 mths)
	Impact	-0.20 (0.30 wks)	-0.50 (0.70 wks)	-0.40 (1.30 wks)	-0.50 (2.00 wks)	-0.60 (2.70 wks)	-1.70 (4.00 wks)
2017-2020 starts	Participant	1.60 (0.10 mths)	3.60 (0.10 mths)	8.70 (0.20 mths)	15.0 (0.20 mths)		

Period	Measure	Years from participation start 0.5	1	2	3	4	6
	Comparison	1.70 (0.00 mths)	3.70 (0.10 mths)	8.70 (0.20 mths)	15.0 (0.20 mths)		
	Impact	-0.40 (0.40 wks)	-0.40 (0.70 wks)	-0.20 (1.40 wks)	-0.30 (2.00 wks)		
2021-2022 starts	Participant	2.00 (0.10 mths)	4.60 (0.20 mths)	10.0 (0.30 mths)			
	Comparison	2.10 (0.10 mths)	4.70 (0.20 mths)	11.0 (0.40 mths)			
	Impact	-0.20 (0.80 wks)	-0.30 (1.60 wks)	-0.60 (3.10 wks)			
In Education Employment or Training							
2013-2016 starts	Participant	5.50 (0.10 mths)	9.90 (0.10 mths)	18.0 (0.10 mths)	25.0 (0.20 mths)	33.0 (0.30 mths)	47.0 (0.40 mths)
	Comparison	5.60 (0.00 mths)	10.0 (0.10 mths)	19.0 (0.20 mths)	26.0 (0.20 mths)	34.0 (0.30 mths)	49.0 (0.40 mths)
	Impact	-0.40 (0.30 wks)	-1.20 (0.60 wks)	-3.00 (1.30 wks)	-4.60 (1.90 wks)	-5.90 (2.50 wks)	-8.20 (3.80 wks)
2017-2020 starts	Participant	5.40 (0.10 mths)	9.50 (0.10 mths)	17.0 (0.10 mths)	24.0 (0.20 mths)		
	Comparison	5.50 (0.00 mths)	9.80 (0.10 mths)	18.0 (0.20 mths)	25.0 (0.20 mths)		
	Impact	-0.20 (0.30 wks)	-1.20 (0.70 wks)	-3.20 (1.30 wks)	-5.00 (2.00 wks)		
2021-2022 starts	Participant	4.70 (0.10 mths)	8.30 (0.20 mths)	15.0 (0.30 mths)			
	Comparison	4.90 (0.10 mths)	8.90 (0.20 mths)	16.0 (0.40 mths)			
	Impact	-1.10 (0.80 wks)	-2.50 (1.60 wks)	-4.00 (3.00 wks)			

Period	Measure	Years from participation start 0.5	1	2	3	4	6
On main benefit							
2013-2016 starts	Participant	0.30 (0.00 mths)	0.90 (0.10 mths)	2.90 (0.10 mths)	5.70 (0.20 mths)	8.70 (0.20 mths)	16.0 (0.40 mths)
	Comparison	0.20 (0.00 mths)	0.70 (0.00 mths)	2.20 (0.10 mths)	4.50 (0.20 mths)	7.00 (0.20 mths)	13.0 (0.40 mths)
	Impact	0.43 (0.15 wks)	1.11 (0.35 wks)	2.99 (0.83 wks)	5.15 (1.37 wks)	7.23 (1.94 wks)	11.0 (3.15 wks)
2017-2020 starts	Participant	0.30 (0.00 mths)	0.90 (0.10 mths)	3.50 (0.10 mths)	7.60 (0.20 mths)		
	Comparison	0.30 (0.00 mths)	0.70 (0.00 mths)	2.80 (0.10 mths)	6.20 (0.20 mths)		
	Impact	0.23 (0.15 wks)	0.80 (0.36 wks)	2.80 (0.89 wks)	6.14 (1.52 wks)		
2021-2022 starts	Participant	0.40 (0.10 mths)	1.30 (0.10 mths)	4.50 (0.30 mths)			
	Comparison	0.30 (0.00 mths)	0.90 (0.10 mths)	3.60 (0.30 mths)			
	Impact	0.50 (0.37 wks)	1.60 (0.88 wks)	3.57 (2.15 wks)			

a. Education and training includes school, tertiary institutions, and private training organisations. Enrolled does not always mean the person is attending.

b. Outcomes and impacts are measured from when participants started the programme (ie 1 year is the 12 months from starting the programme).

c. The bracketed figure gives 95% confidence interval of the outcome estimate.

Source: Statistics New Zealand, Integrated Data Infrastructure, June 2024.

Method

This section provides a high-level summary of the methods used in this report.

Individualised Cost Allocation Model

We use the individual Cost Allocation Model (iCAM) to estimate the cost of Employment Assistance (EA) interventions for each financial year (MSD, 2017). Insights MSD created iCAM to provide a view of how spending to date has been allocated to outputs at the individual level. Here we define outputs as activities that MSD does to assist people such as a face-to-face meeting, a main benefit application, or an EA intervention.

Principles behind the cost allocation model

The cost allocation model works on the following principles:

- **Include all financial costs for Service Delivery (the operational arm of MSD)**: the model starts with appropriation[17] expenditure for all outputs delivered by Service Delivery. The reason behind this principle is to make sure we do not exclude any costs that are already recorded in the Ministry's financial systems. Having said this, income support payments designed to reduce income inadequacy are currently excluded, but we plan to include this information in later updates.
- **Reconcile allocated expenditure to financial totals**: for each appropriation, the model reconciles (as far possible) the allocated expenditure back to the appropriation amount in each financial year. At the very least, the sum of the allocated expenditure in each financial year should not exceed the appropriation amount.
- **Disaggregate costs down to the individual output level**: to provide the highest level of accuracy and flexibility, the model disaggregates costs down to outputs (see the 'Cost allocation framework' section below) at the person-event level. By doing so, we can accurately assess the amount of expenditure for individuals as well as retain the flexibility to summarise costs for any group of people. By building the model this way, we can also estimate the variability in the cost of delivering specific types of outputs.

[17] We use the term here to refer to how public money is spent, see: https://treasury.govt.nz/publications/guide/guide-appropriations-html#section-1

- **Apply the same approach over all financial years**: by applying the same approach across financial years (from 2001/2002 onwards) it is possible to identify trends in the cost of Service Delivery outputs across groups of people. However, this also means that it is not possible to compare results across different versions of reports or updates to the model.

Cost allocation framework

In this report, we briefly describe how the cost model works by using an example of an in-house seminar delivered by MSD. For a more detailed description, please refer to the iCAM technical report (MSD, 2017).

We breakdown the cost of an output into components as listed in Table 23. For example, for a seminar, one component would be the time taken to book an appointment, alongside the seminar cost itself in the form of staff running the seminar. On the other hand, a hiring wage subsidy would include referral, placement opportunity, subsidy administration as well as the subsidy payment itself.

The next step is to calculate the component cost for each output by financial year, starting with determining total expenditure (see the 'Financial inputs' section below) for each of these components.

Table 23: Cost components and their metrics

Component	Definition	Metric
Appointment	Scheduling an appointment	Staff time
Benefit administration	Assessing and maintaining entitlement to income support assistance	Staff time
Benefit payments	Bank fees for payment of income support benefits	Pay weeks
Client contact	Contact with individuals to help them plan and move into employment or time spent updating their records	Staff time
Contract Administration	Administration of contracts, including tendering, negotiation, payment and managing the performance of contracted providers	Contract amount
Contract payment	Payment of contracts	Contract amount
Grant	Financial transfer to people to assist them with further training or with transitioning into employment	Grant amount
Grant Administration	Assessing and administering grant applications	Staff time
Integrity (fraud and debt)	Identification of benefit fraud and the collection of outstanding debt	Staff time

Component	Definition	Metric
Placement opportunity	Time spent by contact centre staff and work brokers to identify and establish vacancies with employers	Starts
Referral	Time spent by case managers in referring people to employment vacancies, employment programmes, or training programmes	Staff time
Seminar	Staff time in administering and running seminars	Staff time
Study Assistance	Time in assessing and maintaining entitlement to student loans and allowances	Staff time
Wage Subsidy	Payments made to employers or sponsors in relation to wage subsidy, work experience, or self-employment programmes	Subsidy payments
Wage Subsidy Administration	Cost of administering wage subsidy assistance	Starts
Provider management	Staff time in managing service provider information and relationships.	Staff time
Unallocated Service Delivery	Unallocated frontline staff time costs for Service Delivery	Duration on income support or student allowance

The next step is to find a metric related to each component so that we can assign a dollar value to that component. We define metrics as quantitative information about each component of an output. For example, for the appointment component, we can use the number of minutes that staff spent booking participants for each seminar. Multiplying the number of minutes spent by the staff cost-per-minute rate will give us the appointment cost for each seminar attendee.

Finally, we add the cost of each component to arrive at a total cost for the seminar. The variation in the cost of each output for the financial year will depend on the variability in the cost of each of its components.

Financial inputs

Having identified the outputs, their cost components, and how to assign costs to them, the next question is where we source the financial costs for Service Delivery. We can access records of Service Delivery expenditure through the Ministry's financial accounting system. These records capture expenditure information down to the cost centre and general ledger (GL) nominal/natural account level.

With monthly financial data the next step is to link expenditure to cost components. For some cost components there is a relatively straightforward link to the financial inputs. For example, the wage subsidy payments for a

wage subsidy programme have their own GL nominal code. For others, the relationship is less clear. For those cost components that involve staff time, the component costs are a subset of the overall expenditure on staff costs recorded in the financial systems. In these instances, we need to apportion staff costs to components based on the estimated time it took to undertake each component task.

How do we estimate staff time?

Table 23 above shows that staff time is a commonly used metric in the model. However, obtaining this data is not straightforward. In this section, we summarise how we estimate the time spent on different activities. The source of this information is system transactions on MSD's various IT administrative systems combined with appointments, seminars, and task management data. The key information for these transactions is:

- a unique ID for a staff member
- a unique ID for an individual
- a start time
- an end time
- what the action was.

This allows us to construct a transaction-based view of a staff member's day. Table 24 below shows an example for a staff member from the start of their day. For each period, the model identifies the type of action they are undertaking and measures the time until the next action based on the Time (end) value. If there is more than one action, then the elapsed time is split evenly between each action as shown in the Minutes column. Where client ID is missing, these represent periods where either the staff member is undertaken action unrelated to a client (e.g. a lunch break) or the action exceeded the expected time it would have taken to complete the action. The threshold of excessively long tasks is the 90th percentile for that activity over all staff on the same day. In cases whether the activity exceeds the 90th percentile, the activity is split into two records, with the excess time is allocated to non-contact time in the model.

Table 24: Example of a staff member's actions from the start of their day

Time (end)	Action type	Action	Client id	Minutes
9:12:00	Case management	Search for client	10	5.52
9:16:00	Case management	Case Management	25	2.00

Time (end)	Action type	Action	Client id	Minutes
9:16:00	Case management	Scan Document	25	2.00
9:19:00	Income Support Administration	Third tier assistance	6	3.00
9:20:00	Income Support Administration	Third tier assistance	6	0.50
9:20:00	Case management	Case Management	33	0.50
9:21:00	Case management	Search for client	33	1.00
9:22:00	Income Support Administration	Maintenance	33	0.50
9:22:00	Income Support Administration	Third tier assistance	33	0.50
9:23:00	Income Support Administration	Third tier assistance	33	1.00
9:24:00	Case management	Scan Document	33	1.00
9:29:00	Income Support Administration	Maintenance	33	3.50
9:29:00	Non-contact time	Non-contact time	-	1.50
9:30:00	Income Support Administration	Third tier assistance	33	1.00
9:31:00	Case management	Case Management	14	1.00
9:37:00	Case management	Search for client	14	6.00
9:38:00	Case management	Search for client	14	1.00
9:47:00	Case management	Case Management	14	3.50
9:47:00	Non-contact time	Non-contact time	-	5.50
9:48:00	Case management	Search for client	14	1.00

We then link transactions to outputs that have components with staff time as a metric. These transactions should occur around the start date of the output, or within the start date and end date of the output, depending on the type of cost component. Also, staff transactions need to be of the same type. For example, staff time spent on income support administration is not linked to the management or delivery of employment programmes or services.

Counterfactual Approach and Method

This section provides an overview of the approach used to estimate the difference YS-NEET makes to participants' outcomes. Also described are outcome domains covered in this analysis and the specific outcome measures used.

Approach: a quantitative counterfactual framework

In this report, effectiveness is analysed using a quantitative counterfactual framework. The counterfactual framework can be summarised by the question 'what outcomes would have occurred if the participants had not participated in YS-NEET?' Any quantitative difference in outcomes between these two scenarios is interpreted as the causal impact of YS-NEET on participant's outcomes.

The obvious challenge is that we cannot observe both scenarios for the participants. Instead, we need a suitable non-participant group whose outcomes can represent the counterfactual scenario (i.e. the outcomes of participants if they had not participated in YS-NEET).

Controlling for participant selection

Central to the selection of a comparison group is to be certain their expected future outcomes are the same as the participants. Discussion on comparison group selection often focuses on how to account for the process by which people become participants (i.e. selection effects).

For most employment interventions, the number of places available is less than the number of people eligible to participate. Accordingly, there needs to be some process of allocating people to different interventions. How this allocation process varies by intervention as well as over time and across local offices. What this means is that participants usually differ in important ways from those who do not participate. Of these differences, we are most concerned with those that are also important in determining future outcomes. For this reason, we cannot simply use the outcomes of non-participants to represent the counterfactual outcomes of participants (Bryson, Dorsett, & Purdon, 2002).

Selection bias is the term used to refer to difference in the expected outcomes of participants and non-participants **before** the participants receive the intervention. The challenge for counterfactual designs is to control for selection bias as far as possible. If selection bias is not adequately controlled for, then we cannot be sure how much of the difference in observed outcomes between participants and counterfactual are because of the programme or selection effects or, most likely, a combination of the two.

How selection effects occur depend on the intervention being evaluated. However, there are several common sources.

Participant motivation

For voluntary interventions, the motivation of people participating in the intervention is a key factor. The common concerned raised with the

counterfactual approach is that more motivated and able people participate. Conversely, some people participate for ulterior reasons, such as re-qualifying for financial entitlements or to avoid looking for work. Participant motivation is the most difficult selection effect to account for because evaluators usually have limited insight into individual's motivation to participate.

Case manager judgement

For many interventions we must also look at the motivation of staff referring people to interventions. Here, staff may be making their own judgements on the suitability of individuals for interventions; either consciously or unconsciously (Bryson, Dorsett, & Purdon, 2002).

Alternatively, staff may have performance targets that lead to perverse behaviour. For example, intervention performance is often based on post-participation outcomes. In this case, the motivation is to refer highly employable people to maximise the post-participation outcomes (creaming) and discourage those who appear to face considerable barriers to employment from participating (parking).

Again, evaluators do not have direct knowledge of the motivation of those staff making referrals. However, we may not need to be as concerned over staff motivation as compared with participant motivation. We base this judgement on four observations:

- Statistical risk assessment approaches have been shown to be as good or better than front-line or clinical staff in predicting future outcomes for an individual, see Grove, Zald, Lebow, Snitz, & Nelson (2000), Hanson & Morton-Bourgon (2009). In the context of Public Employment Services, Swiss and Swedish analysis found risk profiling models achieved higher accuracy than caseworkers (Arni and Schiprowski, 2015, and Arbetsförmedlingen, 2014, cited Desiere, Langenbucher and Struyven, 2019). Consequently, if there is a sufficiently rich profile information, it is possible to account for any targeting based on staff assessment of potential outcomes.
- Similarly, there is no evidence to show that front line staff can predict how beneficial an intervention will be for a given individual (Lechner & Smith, 2007; Frölich, 2001; Huber, Lechner, Wunsch, & Walter, 2009; Bell and Orr, 2002). All these studies concluded that case manager referrals are close to random in terms of referring those most likely to benefit.
- While case managers have access to information about potential participants unobserved by the evaluators, it is also true evaluators have information unobserved by case managers. In the context of the

Stats NZ IDI, the evaluators have information about people from many different agencies and the census. Such information is not available to case managers, nor could a case manager be able to process this amount of information sensibly.

- Finally, of observable characteristics, the most important is the actual outcomes of individuals. In the context of employment programmes, meaningful changes in outcomes such as employment occur over months or years. It is rare for a case manager to be able to systematically observe the outcomes of all the people they worked with or made a referral decision about.[18] Therefore, any heuristic models case managers may have about the of expected outcomes of individuals or expected impacts of specific interventions suffer from high levels of missing data.

Explicit eligibility criteria

To target interventions, organisations often have explicit eligibility criteria on who can participate and who cannot. In addition, there can be rules about the priority for individuals in receiving the service. For evaluators this type of selection effect can be controlled for since the eligibility criteria are often based on information available for all potential participants. Examples include whether a person is on a main benefit, or if they are under a certain age.

Intervention availability

The availability of interventions can often vary in time and space. Therefore, evaluators need to account for when and where people participate in the intervention.

Method: propensity score matching

Within the counterfactual framework, randomly allocating people into a treatment (who participate) or control group (who do not) is the most robust method to estimate the impact of an intervention. The reason is that other than participating in the service, the treatment and control groups are equivalent in all other respects.[19] This method is referred to as a randomised control trial or RCT.

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[18] Consistent tracking of outcomes is hampered by both changes in the roles of case managers themselves as well as geographic movement of individuals. In addition, there are no performance measure of how good case managers are at judging client future outcomes largely because case manager judgement of how likely a person is to be employed or become long term beneficiary is not recorded.

[19] Note this statement holds for the two groups on average and does not mean that each treatment has an identical control.

However, because an RCT was not set up for YS-NEET, we need to use a less robust method called propensity score matching (PSM). PSM constructs a comparison group who have the same average observed profile as the participants. PSM is more credible if a rich profile is used, and for this reason, the analysis was done using the Stats NZ IDI (discussed next) as it has information on many varied aspects of people's lives.

The reason PSM is less robust than RCT is that it is still possible that, after matching, unobserved differences remain in the make-up of the participant and matched comparison group. The implication of these prior differences is that they may also result in differences in future outcomes, irrespective of participating in YS-NEET or not. Consequently, any actual difference in observed outcomes will be a combination of the effect of participating in YS-NEET and the effect of prior unobserved differences. It is not possible to;

- know whether unobserved differences exist, and
- disentangle the two effects in the analysis.

Instead, we assume that there are no unobserved differences between the matched comparison and the participant group. This assumption is referred to as the Conditional Independence Assumption (CIA).

Integrated Data Infrastructure (IDI)

The PSM analysis was undertaken in the Statistics New Zealand (Stats NZ) Integrated Data Infrastructure (IDI), which is a data platform for researchers that links anonymised individual-level information across several domains ranging from health care through to driver licence status. While researchers have access to individual-level data, all outputs are aggregated with measures in place to protect the privacy of individuals, firms, and institutions. Statistics New Zealand reviews all IDI output to ensure that these measures have been implemented.[20]

PSM is well suited to evaluate the impact of YS-NEET

PSM using the Stats NZ IDI is well suited to evaluating the impact of YS-NEET for the following reasons:

- participants make up a small proportion of the potential participant population, and therefore we have a large non-participant population to draw a comparison group from

[20] For more detail on the Stats NZ IDI, please visit https://www.stats.govt.nz/integrated-data/integrated-data-infrastructure/

- the IDI has information on the entire New Zealand population, allowing the selection of a potential comparison group from the largest pool of potential matches possible
- the IDI enables us to build a comprehensive set of profile variables to ensure the matched comparison group is similar to the participants on a large number of socio-demographic domains
- MSD has individual-level information on all individuals who have had contact with its services as well as access to information on these people from other government agencies through the Stats NZ IDI.

In addition, examining the referral process for YS-NEET we have not identified significant issues with confounding. Confounding often occurs when referral is made in anticipation of a future event. Examples include transition to work interventions where it is difficult to identify a comparison group in a similar transition state independent of programme referral.

How good is PSM in estimating counterfactual outcomes?

There have been a number of studies that have compared impacts between RCT and non-RCT studies (including PSM). These can be divided into cross study and within study comparisons.

Cross study comparisons

Cross study comparisons such as meta-analysis can examine if there is any systematic bias between study methods. In particular, whether non-RCT studies tend to produce more positive results than RCTs for the same types of programmes. An important study of this type was by Card, Kluve & Weber (2017) who undertook a meta-analysis of the impact of 857 employment or training programmes. As part of the analysis, they examined whether the method used influenced the direction or size of reported impacts and found no substantive differences.

Within study comparisons

Within study comparisons provide a more robust comparison of alternative methods. LaLonde (1986) is one of the first studies of this kind and concluded that non-experimental approaches did a poor job of replicating the experimental findings for employment programmes. However, later analysis identified that in many instances these studies suffered from the problem that the non-experimental methods were constrained by the data available within the RCT study (Smith, 2000). Orr, Bell, and Klerman (2009) likewise point to the need to have good quality information on programme participants' prior employment and earnings trends to account for aspects such as Ashenfelter's dip as pre-conditions to undertake robust non-

experimental studies. These recommendations have been incorporated into the current analysis.

A recent study in the health setting by Wang, Schneeweiss *et al* (2023) point to a similar conclusion. When comparing PSM using US based health insurance data with 32 RCTs, they found a moderate correlation in findings between RCT and PSM (Pearson correlation of 0.82 (95% CI, 0.64-0.91)). But when they limited the analysis to the 16 where PSM was able to emulate the RCT more closely than the correlation increased to 0.93.

These results suggest that with access to comprehensive data, such as through the IDI, non-experimental methods such as PSM can produce similar conclusions as experimental methods. But the literature also confirms that experimental methods will always provide more robust evidence on effectiveness.

Profile variables

Central to conducting a robust PSM is having a rich set of profile variables of participants and non-participants to ensure the matched comparison group has:

- the same expected future outcomes as the participants, and
- a similar probability of participating in YS-NEET.

We have built a standard set of profile variables that are designed to help ensure that participants and matched comparison group are similar in these two respects.

Table 25 summarises the domains of the variables included in the PSM for EA interventions. Appendix 1 Table 26 shows, as an example, the participant and matched comparison group profiles for YS-NEET who started between 2013-2016 starts. For more detailed results refer to the EA evidence catalogue.

Table 25: Summary of profile variables used in propensity matching

Area	Description
Demographics	
Age	Age group
Gender	Gender identity, only includes male and female.
Ethnicity	Total response, Stats NZ level one ethnic identity.
Education	
School	Information on the type of school (state or private), the decile of the school, the number of schools attended,

Area	Description
	suspensions, standdowns, truancy and special education support.
Tertiary study	Time enrolled in tertiary study by NZQCF level and enrolled in study at set months before participation profile date.
Qualifications	Highest qualification based on education, census, or MSD data sources. Highest qualification is measured a set lapse periods before profile date to account for any changes in qualification status before starting a programme. This control is most important for younger people whose qualification level can change over relatively short periods.
Health and disability	
Incapacity information	Recorded incapacity information for people who have applied for Health Condition or Disability related benefits. A person can have up to four recorded incapacities at any one time. There are two measures, one for current incapacity status and one for incapacity in the last 5 years.
Mental health	Indicators of mental health care access including use of pharmaceuticals.
Location	
Deprivation index decile	The NZDep is an area-based measure of socioeconomic deprivation in Aotearoa New Zealand, it measures deprivation at SA2 level with decile 1 representing least deprived areas and 10 the most deprived. SA2 geographies aim to reflect communities that interact together socially and economically (e.g. at the level of a suburb or small town).
Urbanisation of location	Stats NZ classification of the person's location from major urban area through to rural as well as overseas.
Local labour market	Labour market information on the location a person lives (Stats NZ SA2 geographies), including average income, employment or study rate, average qualification level, working age population on main benefit and the dependency ratio.
Housing	
Number of address changes	Number of changes in recorded address over the last two years.
Employment	
Duration in employment	If currently employed the duration in their current spell of employment.
Duration since last employment	If not employed, the time since last employment.
Working life in employment	Proportion of working life (16-64) spent in employment, excluding time living outside New Zealand or before the year 2000.
Employment history	Employment status at set months before profile date.

Area	Description
Income Support	
Current benefit status	Current main benefit information.
Benefit duration	Duration on current main benefit.
Recent benefit history	Previous main benefit received.
Total benefit contact	Proportion of adult life spent on different types of main benefit.
First benefit information	Age and which benefit a person was first granted.
Childhood benefit receipt	Time that care givers where receiving a main benefit split by age group.
Income support history	Total income support payments at set months before profile date.
Justice	
Police offences	Includes number of offences, the time since last offence, the most serious offence and age of first arrest.
Corrections spells	Total time spent in different Corrections services, age of first Correction contact and time since last Correction involvement.
Youth Justice	Number of youth justice referrals and time spent in youth justice placements.
Corrections history	If in a correction service at set months before profile date. Correction service is split between prison and non-prison service.
Income	
Income history	Total net income from all sources, labour market income and child support payments at set months before profile date.
Residency	
Migrant status	Identifies time spent living in New Zealand, age of first arrival in New Zealand, Migrant's first arrival visa, including if arrived as a refugee, region of origin.
Overseas	
Overseas history	Whether a person is overseas at set lapse periods before profile date.
Employment assistance	
Participation in employment assistance	Expenditure on MSD funded employment assistance programmes and services at set months before profile date.
Care and Protection	
Care notifications	Notifications to child protection agencies, split by age group.

Area	Description
Care placements in childhood	Time spent in child protection placements, split by age group.
Transport	
Private driver licence	Private motor vehicle status at set lapse periods before profile date.
Commercial driver licence	Commercial driver licence status.

One strategy to ensure participants and the matched comparison group have similar expected future outcomes is to include key measures of those outcomes in the profile. In particular a number of profile variables related to outcomes such as employment and education and training are measured at set periods before the profile date. The current periods are 1 to 12, 15, 18, 21, 24, 30, 36 and 42 months before profile date. The purpose of measuring profile variables at set periods before profile date is to account for any trends in outcomes leading up to participation in an intervention. For example, it is important to account for the often-observed downward trend in employment and increased benefit receipt by participants in the months before starting an intervention.

Selection of matched comparison group

Here we outline the steps in conducting PSM for YS-NEET. We run a standard PSM matching process across approximately 70 employment programmes, including YS-NEET. Using a standardised PSM process both increases efficiency and coverage but also ensures that results can be compared across programmes without needing to consider methodological differences. However, such standardisation does reduce some flexibility in the analysis for specific interventions. As far as possible for specific programme questions, such as particular sub-groups of interest are incorporated into the standard matching procedure.

Participant selection: depending on the number of starts, YS-NEET participants are split into one-, two- or four-year cohorts. For smaller programmes and subgroups, these are grouped into longer periods to ensure there are a sufficient number of participants for each PSM cohort (target is more than 2,000). In instances where participants repeat the programme within six months, the second spell and subsequent spells are excluded from the analysis. In instances where the number of starts exceed 5,000, then a sample of 5,000 is taken.

Non-participant selection: the IDI person table is used to identify anyone who was aged between 16 and 64 in the same PSM cohort period (e.g. if

PSM cohort covers starts between 2018 to 2020, then select all non-participants aged 16 to 64 between 2018 and 2020). Of this population, for each month we select a random date to represent the equivalent of the participation start date (i.e. if the PSM cohort is 12 months long then 12 dates are selected for each non-participant). The profile date is set to the end of the prior month to reduce the risk of confounding through including profile information from after the participation start date. For example, employee tax data is recorded by calendar month and therefore the income in the month a participant starts a programme may include income earned after participation start. At this stage, the non-participants sample can be in the tens of millions (e.g. individual non-participants x n-months). To reduce computation, a maximum ratio of 1 participant to 500 non-participants is selected using a propensity score using a reduced number of profile variables, as well as the variables used for exact matching in the final matching stage (discussed below). The selected profile variables are those which have tended to have the largest differences between participants and non-participants. The objective is to select a potential comparison group that is as similar to the participants.

Exclude participants: excluded from the non-participant sample are any participants who started over the same period (i.e. for sub-groups and samples of larger programmes the PSM cohort will not contain all programme participants). Note that we do not exclude non-participants who had participated in YS-NEET in the past (this is controlled for in the matching). Also, we do not exclude any non-participants who participate in YS-NEET after the selection period.

Common support: based on the profile of participants, non-participants are removed from the initial sample where there is no common support. For example, if participants in a given intervention are all under the age of 25, then people who are older than 25 are removed. This step is applied to all categorical profile variables.

Low participant counts: PSM is based on a logistic model that may not converge if the number of observations in a categorical variable is less than 2. This issue tends to affect participant profile because of the smaller number of participants than non-participants. To address this issue the affected participant profile variable level response is randomly allocated to another level for the variable. We choose to do this as the number of affected records are small and the random reallocation to another level only increases the noise in the model. The alternative of dropping the entire affected participation record introduces a bias as well as increase the probability that other variables have low counts (i.e. a level value drops from 2 to 1 participant). This can set up a cascading cycle that can result in

the removal of a large proportion of the participant group. As a result, the participant sample is no longer representative of programme participants.

Model stability: PSM requires a stable logistic regression model for calculating propensity score. Because of the large number of variables included in the profile, there is a high chance the model is not stable because of multi-collinearity. To ensure a stable model a sample of non-participants and participants are selected, and the logistic model is fitted with all profile variables. If the model has a negative Hessian matrix or is singular, then we drop the variable with the highest standard error and the model is re-estimated. This process is repeated until the model is stable. However, there is a check to limit the number of variables dropped to no more than 10% of the initial number of variables.

Calculation of the propensity score: once a non-participant group with broad common support with the participant profile is selected and a stable logistic model is achieved, the next step is to estimate the propensity score. We take a 10 to 1 sample of non-participants to participants and calculate the propensity score using a logistic model, all profile variables are retained in the model. The propensity score is then calculated for all non-sampled non-participants. Because non-participants can be included more than once in the sample (on different month dates) we select for each non-participant the record date with the highest propensity score.

Matching: we use nearest neighbour matching with replacement and no calliper restriction. We apply exact matching on calendar period. In the first match round we restrict matches where participant and non-participant start dates are in the same month. If balance is not achieved (discussed below), then the exact match period is extended; first to a quarter, then to six months and finally to a calendar year. If balance is still not achieved, then we remove 5% of participants in the region of the propensity distribution with the lowest common support. This is done by identifying the matched comparison group members with the highest weight (i.e. matched to multiple participants) and removing the corresponding matched participants ranked by highest propensity score. Once removed, the matching process is repeated. If balance is still not achieved, then matching completes and the cohort is excluded from subsequent impact analysis.

Quality of the matching, the balance test

While we cannot test if the conditional independence assumption (CIA) has been violated, we can check to see if the comparison group has a similar average profile to the participants. This is referred to as the balance test, with balance referring to whether the profiles of the participants and

comparison group are similar to each other. The balance condition can be expressed as,

$$P(D) \perp X$$

where $P(D)$ is the probability of participating in the programme, X is a set of observable characteristics, the '⊥' indicates that $P(D)$ is independent of X. One way to test this condition is to predict D based on X, using a logistic model,

$$\frac{D}{1-D} = exp(\alpha + x_1\beta_1 + x_2\beta_2 + \cdots + x_n\beta_n)$$

where, the target is membership of the participant group (D=1) or the matched comparison group (D=0), and X is the set of all the profile variables available for matching (see Table 26). Balance is achieved when the logistic model cannot predict D and the model fit is poor. In other words, the regression model cannot identify if a given individual is in the participant or matched comparison group based on the available observed characteristics.

To test model fit, we use the area under a receiver operating characteristic (ROC) curve, abbreviated as AUC. The closer the AUC is to 1 the better the model is at predicting whether a given observation is in the participant or comparison group (i.e. a low false prediction rate). The lower bound of the AUC scale is 0.5, where the model cannot predict whether a given observation belongs to the participant or matched comparison group.

The next question is determining how high an AUC would need to be before we consider the profiles are unbalanced (i.e. the profiles of the participant and matched comparison group are not the same). To set this cut-off, we determine the expected AUC based on randomising an equivalent set of individuals into a control and treatment group. We achieve this by combining the participant and matched comparison group into a pooled sample. From this pooled sample, we randomly allocate half to treatment and the other half to a control group. In other words, we replicate an RCT where membership to the control or treatment is, by definition, independent of X (ie $P(D) \perp X$) and then proceed to calculate the AUC.

We repeated this process 100 times to generate an expected distribution of AUC for randomly allocated control and treatments drawn from the same population and observed profile as the original matched participant and comparison group.[21] Figure 12 shows the results for randomised, matched

[21] Ideally we would use more simulations, such as a 1,000, but because of the computation involved and the number of PSM cohorts that are generated (in the 1,000s) we have used 100 instead.

and eligible AUC for all YS-NEET matched cohorts. The Matched line shows the AUC for PSM matched, while the Randomised line shows the AUC distribution if these PSM had been randomly assigned to a treatment and control instead. The Eligible line shows the AUC for a sample non-participant group with a greater than zero probability of participating in the intervention.

Figure 12: AUC distribution for randomised, matched, and eligible groups for YS-NEET

From Figure 12 we can make the following observations:

- The average AUC for Eligible is 0.89, in other words, a regression model can identify to a high degree of accuracy whether a person is a participant or non-participant based on their observed characteristics. This result provides compelling evidence that participants differ in important ways from the eligible population. Such differences will be driven by a combination of institutional practices and guidelines, case manager preferences and assessments as well as self-selection decisions by participants themselves.
- The Randomised AUC, by contrast, is close to, but not centred on 0.5. Instead, the AUC of the randomised simulations averages to 0.54 and 95 percentile value of 0.57. This distribution simply reflects that, for any given random draw, there will be spurious associations between X and D and therefore even when $P(D) \perp X$ is known to be true, the AUC is normally greater than 0.5.

- Of most importance is the Matched AUC that represents the performance of the PSM in selecting a comparison group that is observationally the same as the participant group. Reassuringly, the distribution of Matched AUC closely matches that of the Randomised baseline, with the Matched AUC mean being similar to the RCT AUC at 0.53.

For each PSM cohort, we define that the balance test fails if the PSM AUC is greater than the 95th percentile of the equivalent RCT AUC distribution. In other words, if the PSM AUC is less than the 95th percentile, we conclude it lies within the expected distribution of AUC where $P(D) \perp X$ is true. In the analysis section of this report, we only show the impacts for cohorts that have passed this balance test.

This is also the reason why the distribution of Matched AUC is to the left of the RCT AUC since we exclude any PSM where the Matched AUC exceeds the 95th percentile of the corresponding RCT. Accordingly the distribution of Matched AUC excludes those results where the balance test was poor and had a high AUC.

IDI standard outcomes

Alongside the construction of credible comparison groups, the IDI also enables the tracking of meaningful outcomes. In this analysis we focus on the following outcome domains, with the specific outcome measure and its definition:

- **EET** - In Education Employment or Training: EET is in time spent in either education, employment, or training. A person enrolled in education or training may not be attending (i.e. they have dropped out of the course). Employment of more than $100 per month is included. Annual returns are left censored to lapse period 0 if they start before the lapse period 0 calendar date.
- **Employment** - In any employment: Employment is based on tax data (PAYE and annual tax returns). Periods with less than $100 of real (at report year) employment income per month are excluded. Annual returns are left censored to lapse period 0 if they start before the lapse period 0 calendar date.
- **Income** - Gross all transfer payments: Income includes taxable and non-taxable transfer payments including tax credits, income support, pensions, and study assistance. Amount is before tax. Real values based on Stats NZ general Consumers Price Index (CPI).
- **Qualifications** - Average of highest NQF level achieved: For each person identify the highest NZQCF level awarded and calculate the

average for the group. NZQCF levels start from 1 (year 11) through to 10 (post-PhD).

- **Justice** - Time in any corrections service: Corrections services include prison, community sentence, and home detention.
- **Study** - Enrolled in education or training: Education and training includes school, tertiary institutions, and private training organisations. Enrolled does not always mean the person is attending.
- **Welfare** - On main benefit: A person is receiving a main benefit or pension based on IR PAYE records, value of less than $100 in a month are excluded.

Outcome follow up period

The above outcomes can be tracked over the period before starting YS-NEET through to a maximum of 9.9 years. The follow-up period is based on when the first cohort of participants started in YS-NEET (2013)[22] through to the most recent supply of administrative data to the IDI at the time the evaluation analysis was initiated (October 2023).

Because of the different ways agencies manage their administrative data, there are also considerable differences in how up to date administrative data is in the IDI. In particular, qualifications information is usually delayed by 18 months (e.g. information on qualifications gained in 2022 will be available in 2024).

It also follows that that follow-up periods will be longest for the initial cohort of participants who started YS-NEET in 2013 and shortest for the most recent cohort who started in 2024.

Interpretation of counterfactual impact estimates

It is important to keep in mind that the comparison group can and do receive other services and assistance. For most impact evaluations, the comparison is not between a service or programme and no assistance, but instead, it compares a service, such as YS-NEET, against some level of alternative assistance. The level and type of alternative assistance has a bearing on how an impact estimate should be interpreted. For example, if a large proportion of the comparison group receives alternative assistance (such as in a drug trial) then a 'no-impact' finding does not mean the new

[22] Because of how interventions are grouped for the standard PSM process, there were too few participants in 2018 to include them in the analysis.

intervention was ineffective, but instead, that it was as effective as current standard treatment.

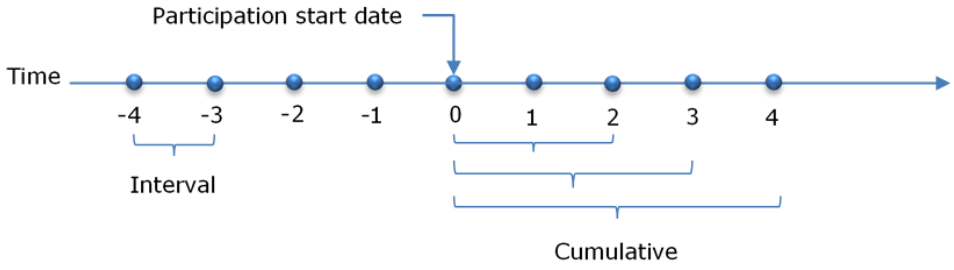
In the context of YS-NEET, we can measure the level and amount of employment and related assistance from MSD that both participants and the comparison group receive. Likewise, we can also measure the level of education and training both groups receive through Ministry of Education (MoE) and Tertiary Education Commission (TEC) data. These differences were covered in the results section. On the other hand, assistance through other agencies and NGOs that is not captured through the IDI will be missed in this analysis.

Interval and cumulative impacts

It is useful at this point to explain how we analyse the outcomes relative to participation in EA interventions. The outcomes described above are all longitudinal in nature. Therefore, we can measure outcomes at multiple points in time rather than being limited to a small number of measurement periods as would be the case for survey-based outcome measures.

This flexibility allows us to track outcomes relative to participation start dates as shown in Figure 13. The first point to make is that we measure outcomes from when people start an intervention, and this is defined as zero on our timeline. Why we choose the start date as the zero point is explained below. From the zero point, we can then create a series of lapse periods that represent the periods before and after the participation start date. Based on this timeline, we can measure outcomes in two ways: interval and cumulative.

Figure 13: Tracking EA intervention outcomes using administrative data



Interval outcomes

Interval outcomes are measured within a discrete lapse period, say the amount of income a person earned in the 12th month after starting an intervention. These intervals can vary in duration from one day to any period, but for EA interventions we usually use 30-day intervals.

Tracking interval outcomes is most useful in understanding the dynamic relationship between the intervention and the outcome in question. The purpose of EA interventions is to change the outcome trajectories of participants. Looking at how outcomes change in each lapse interval before and after commencing an intervention provides important information on the likely behavioural responses to the intervention.

Cumulative outcomes

While interval outcomes are useful to understand how outcomes and impacts change relative to when people start an intervention, they do not allow us to quantify the overall impact of an intervention. To make summary judgements we use cumulative outcomes. Cumulative outcomes are measured from participation start through to the end of each lapse period. Therefore, a cumulative 12-month outcome is for the entire 12 months from participation start.

Why measure outcomes from participation start?

A common question is why we measure outcomes from when people start an intervention, rather than when they finish. There are two reasons. The first is practical, namely that when people finish an intervention is often poorly recorded. Therefore, the date when people actually finish participating in an intervention is much less certain than the date they started.

The second reason is the importance of capturing the full impact of an intervention. The period while a person is on a programme can have an impact on their outcomes. The most common impact is referred to as the lock-in effect. As the name suggests, while people are participating in an intervention, they are less likely to achieve an outcome, such as moving into employment. This can occur for a number of reasons. One is simply the reduction in time participants have to look for work. Another is the incentive to complete the programme. This effect is common for training programmes, where the need to complete the course to gain a qualification provides an incentive to turn down job opportunities if they do arise. If we did not include these effects, we run the risk of overstating the effectiveness of interventions.

Appendix 1: Example balance test results

Table 26 shows the balance test for YS-NEET 2013-2016 starts. The * against comparison value indicates the simple difference is means is statistically significant.

Table 26: Summary of the profile of participants and matched comparison group for YS-NEET

Variable	Level	Participant	Comparison	Difference
Demographics: Age				
Age	15 to 15.24 years	8.7%	8.1%	0.6ppt
	16 to 16.24 years	64.5%	65.3%	0.8ppt
	17 to 17.24 years	26.8%	26.7%	0.2ppt
Demographics: Gender				
Gender	Female	50.1%	48.6%	1.5ppt
	Male	49.9%	51.4%	1.5ppt
Demographics: Ethnicity				
Ethnicity	Māori	44.4%	44.8%	0.4ppt
	Pacific	27.7%	28.2%	0.5ppt
	Asian	4.0%	3.6%	0.4ppt
	European	52.5%	53.4%	1.0ppt
Education: School				
Current school decile	Decile 1	13.6%	14.5%	0.9ppt
	Decile 2	12.2%	11.4%	0.8ppt
	Decile 3	9.0%	9.4%	0.4ppt
	Decile 4	10.7%	10.7%	0.0ppt
	Decile 5	8.5%	8.0%	0.5ppt
	Decile 6	10.0%	10.0%	0.1ppt
	Decile 7	6.3%	5.8%	0.5ppt
	Decile 8	7.3%	7.2%	0.1ppt
	Decile 9 to 10	5.6%	7.8%	2.2ppt

Variable	Level	Participant	Comparison	Difference
	No school last 5 years	16.6%	15.4%	1.2ppt
School authority for most recent school attended	State	78.6%	78.9%	0.2ppt
	State Integrated	8.5%	8.5%	0.1ppt
	Other	5.3%	5.0%	0.3ppt
	No school record	7.6%	7.6%	0.0ppt
Schools attended		5.63	5.59	0.05
Suspensions	-0.01 to 0.01	89.9%	90.1%	0.2ppt
	0.02 to 7	10.1%	10.0%	0.1ppt
Number of stand-downs		0.64	0.64	0.00
Number of truancy events	-0.01 to 0.01	81.0%	80.8%	0.2ppt
	0.02 to 10	19.0%	19.3%	0.2ppt
Number of special education events		0.55	0.51	0.04
Education: Tertiary study				
Currently studying full or part time	Full time	56.3%	57.6%	1.3ppt
	Part time	12.9%	12.5%	0.4ppt
	Not studying	30.8%	30.0%	0.8ppt
Enrolled in study at 0 months before profile date		74.9%	75.5%	0.5ppt
Enrolled in study at 1 month before profile date		76.4%	77.1%	0.8ppt
Enrolled in study at 2 months before profile date		78.9%	80.1%	1.1ppt
Enrolled in study at 3 months before profile date		80.0%	81.2%	1.3ppt
Enrolled in study at 4 months before profile date		80.9%	82.2%	1.3ppt
Enrolled in study at 5 months before profile date		82.1%	82.9%	0.8ppt
Enrolled in study at 6 months before profile date		82.7%	83.1%	0.4ppt
Enrolled in study at 7 months before profile date		83.4%	83.9%	0.5ppt
Enrolled in study at 8 months before profile date		83.9%	84.7%	0.8ppt

Variable	Level	Participant	Comparison	Difference
Enrolled in study at 9 months before profile date		84.3%	85.3%	1.0ppt
Enrolled in study at 10 months before profile date		85.3%	86.6%	1.3ppt
Enrolled in study at 11 months before profile date		85.7%	87.3%	1.6ppt
Enrolled in study at 12 months before profile date		85.7%	87.0%	1.3ppt
Enrolled in study at 15 months before profile date		85.5%	86.5%	1.0ppt
Enrolled in study at 18 months before profile date		86.3%	87.0%	0.7ppt
Enrolled in study at 21 months before profile date		86.9%	87.2%	0.2ppt
Enrolled in study at 24 months before profile date		86.9%	87.2%	0.4ppt
Enrolled in study at 30 months before profile date		87.3%	88.4%	1.0ppt
Enrolled in study at 36 months before profile date		87.5%	88.1%	0.6ppt
Enrolled in study at 42 months before profile date		87.6%	88.4%	0.8ppt
Education: Qualifications				
Highest qualification	None	37.3%	37.5%	0.2ppt
	NZQCF 1 to 3	26.8%	26.9%	0.1ppt
	School pre NZQCF	9.0%	10.0%	1.0ppt
	NZQCF 4 to 6	10.0%	10.4%	0.4ppt
	Unknown	16.9%	15.4%	1.5ppt
Highest qualification at 0 months before profile date	None	38.3%	38.5%	0.2ppt
	School pre NZQCF	9.2%	10.1%	0.9ppt
	NZQCF 1 to 3	27.0%	27.1%	0.1ppt
	NZQCF 4 to 6	10.1%	10.4%	0.3ppt
	Unknown	15.5%	13.9%	1.6ppt
Highest qualification at 1 month before profile date	None	41.8%	42.2%	0.4ppt
	School pre NZQCF	7.3%	8.3%	1.0ppt
	NZQCF 1 to 3	26.0%	26.2%	0.2ppt

Variable	Level	Participant	Comparison	Difference
	NZQCF 4 to 6	8.6%	8.7%	0.1ppt
	Unknown	16.3%	14.6%	1.7ppt
Highest qualification at 2 months before profile date	None	46.4%	47.4%	1.0ppt
	School pre NZQCF	5.2%	5.6%	0.4ppt
	NZQCF 1 to 3	23.6%	23.8%	0.2ppt
	NZQCF 4 to 6	7.3%	7.4%	0.2ppt
	Unknown	17.5%	15.8%	1.6ppt
Highest qualification at 3 months before profile date	None	49.6%	50.4%	0.8ppt
	School pre NZQCF 3	26.1%	27.0%	1.0ppt
	NZQCF 4 to 6	6.3%	6.2%	0.1ppt
	Unknown	18.0%	16.3%	1.7ppt
Highest qualification at 4 months before profile date	None	53.4%	54.5%	1.1ppt
	School pre NZQCF 3	22.4%	23.6%	1.2ppt
	NZQCF 4 plus	5.3%	4.9%	0.5ppt
	Unknown	19.0%	17.0%	1.9ppt
Highest qualification at 5 months before profile date	None	57.7%	58.7%	1.0ppt
	School pre NZQCF 3	18.6%	19.9%	1.3ppt
	NZQCF 4 to 6	3.8%	3.4%	0.4ppt
	Unknown	19.9%	18.0%	1.9ppt
Highest qualification at 6 months before profile date	None	59.0%	60.0%	1.0ppt
	School pre NZQCF 3	17.4%	18.6%	1.2ppt
	NZQCF 4 to 6	3.3%	2.8%	0.5ppt
	Unknown	20.3%	18.5%	1.8ppt
Highest qualification at 7 months before profile date	None	62.6%	64.0%	1.4ppt
	School pre NZQCF 3	16.7%	17.2%	0.5ppt
	Unknown	20.7%	18.8%	1.9ppt
Highest qualification at 8 months before profile date	None	65.5%	66.9%	1.4ppt
	School pre NZQCF 3	13.1%	13.4%	0.2ppt
	Unknown	21.4%	19.6%	1.8ppt
	None	66.4%	68.2%	1.9ppt

Variable	Level	Participant	Comparison	Difference
Highest qualification at 9 months before profile date	School pre NZQCF 3	11.9%	11.9%	0.0ppt
	Unknown	21.7%	19.9%	1.7ppt
Highest qualification at 10 months before profile date	None	67.3%	69.0%	1.7ppt
	School pre NZQCF 3	10.7%	10.7%	0.0ppt
	Unknown	22.0%	20.2%	1.7ppt
Highest qualification at 11 months before profile date	None	67.7%	69.6%	1.9ppt
	School pre NZQCF 3	10.1%	10.1%	0.0ppt
	Unknown	22.1%	20.3%	1.7ppt
Highest qualification at 12 months before profile date	None	68.2%	70.0%	1.8ppt
	School pre NZQCF 3	9.6%	9.6%	0.0ppt
	Unknown	22.1%	20.3%	1.8ppt
Highest qualification at 15 months before profile date	None	70.9%	72.9%	2.0ppt
	School pre NZQCF 3	6.2%	6.1%	0.2ppt
	Unknown	22.8%	21.1%	1.7ppt
Highest qualification at 18 months before profile date	None	76.6%	78.5%	1.9ppt
	Unknown	23.3%	21.5%	1.8ppt
Highest qualification at 30 months before profile date	None	76.2%	78.5%	2.2ppt
	Unknown	23.8%	21.5%	2.2ppt
Health and disability: Mental health				
Mental health care		46.5%	46.6%	0.1ppt
Mental health-related pharmaceutical prescribed		13.0%	12.0%	1.0ppt
Mental health service referral		38.2%	38.8%	0.7ppt
Mental health hospital discharge		16.1%	15.8%	0.2ppt
ADHD diagnosis		5.3%	5.3%	0.1ppt
Anxiety or mood disorder diagnosis		16.8%	16.4%	0.4ppt
Substance abuse diagnosis		17.5%	16.9%	0.7ppt
Location: Deprivation index decile				
Deprivation index of current address	Decile 1 to 2	6.2%	5.9%	0.2ppt
	Decile 3 to 4	8.9%	9.4%	0.4ppt
	Decile 5	6.1%	6.1%	0.0ppt

Variable	Level	Participant	Comparison	Difference
	Decile 6	7.9%	8.1%	0.2ppt
	Decile 7	9.1%	7.7%	1.4ppt
	Decile 8	11.9%	11.8%	0.1ppt
	Decile 9	16.7%	17.2%	0.5ppt
	Decile 10	26.9%	26.7%	0.2ppt
	Unknown location	6.2%	7.3%	1.1ppt
Location: Urbanisation of location				
Level of urbanisation of current address	Major urban area	47.8%	48.3%	0.4ppt
	Large urban area	16.7%	16.1%	0.7ppt
	Medium urban area	9.1%	9.2%	0.1ppt
	Small urban area	12.3%	11.1%	1.2ppt
	Rural other	7.9%	8.0%	0.1ppt
	Unknown	6.1%	7.3%	1.2ppt
Housing: Number of address changes				
Address changes in the last two years	No change of address	52.5%	55.4%	2.9ppt
	1 address change	23.8%	22.1%	1.7ppt
	2 address changes	13.0%	12.8%	0.2ppt
	3 address changes	6.3%	5.6%	0.7ppt
	4 to 5 address changes	4.4%	4.0%	0.4ppt
Employment: Employment history				
Employed at 0 months before profile date		14.9%	15.5%	0.7ppt
Employed at 1 month before profile date		14.3%	15.3%	1.0ppt
Employed at 2 months before profile date		14.0%	14.9%	0.8ppt
Employed at 3 months before profile date		13.2%	13.6%	0.4ppt
Employed at 4 months before profile date		12.4%	12.2%	0.1ppt
Employed at 5 months before profile date		11.4%	13.2%	1.8ppt
Employed at 6 months before profile date		10.8%	12.7%	1.9ppt
Employed at 7 months before profile date		10.6%	12.6%	2.0ppt
Employed at 8 months before profile date		9.6%	10.0%	0.4ppt
Employed at 9 months before profile date		8.6%	9.0%	0.4ppt

Variable	Level	Participant	Comparison	Difference
Employed at 10 months before profile date		7.9%	8.9%	1.1ppt
Employed at 11 months before profile date		7.7%	8.8%	1.1ppt
Employed at 12 months before profile date		7.5%	9.0%	1.5ppt
Employed at 15 months before profile date		6.2%	7.4%	1.3ppt
Employed at 18 months before profile date		4.4%	5.4%	1.0ppt
Employed at 21 months before profile date		3.4%	4.4%	1.1ppt
Employed at 24 months before profile date		3.2%	4.3%	1.1ppt
Income Support: Childhood benefit receipt				
Childhood benefit (0-4)	No time on main benefit	29.2%	29.4%	0.1ppt
	Under 25% of the period	8.8%	8.5%	0.4ppt
	25 to 75% of the period	18.2%	18.6%	0.4ppt
	Over 75% of the period	43.8%	43.6%	0.1ppt
Childhood benefit (4-8)	No time on main benefit	34.8%	37.1%	2.3ppt
	Under 25% of the period	9.1%	9.7%	0.5ppt
	25 to 75% of the period	17.1%	16.4%	0.7ppt
	Over 75% of the period	39.0%	36.9%	2.1ppt
Childhood benefit (12-16)	No time on main benefit	32.7%	34.0%	1.4ppt
	Under 25% of the period	8.7%	8.9%	0.2ppt
	25 to 75% of the period	18.2%	18.8%	0.6ppt
	Over 75% of the period	40.4%	38.4%	2.0ppt
Childhood benefit (16-18)	No time on main benefit	39.0%	41.4%	2.4ppt
	Under 25% of the period	9.5%	10.2%	0.7ppt
	25 to 75% of the period	19.8%	19.0%	0.8ppt

Variable	Level	Participant	Comparison	Difference
	Over 75% of the period	31.8%	29.4%	2.3ppt
Justice: Police offences				
Number of offences		1.18	1.57	0.38
Time since last offence	Never	77.3%	76.5%	0.8ppt
	6 months to under 2 years	8.7%	8.2%	0.5ppt
	2 to under 5 years	6.2%	7.0%	0.8ppt
	Under 6 months	7.8%	8.2%	0.4ppt
Most serious offence score		55.30	62.95	7.65
Number of parents with a police offence		0.74	0.71	0.02
Parent number of offences		3.88	3.62	0.26
Parent time since last offence	Never	50.2%	51.1%	0.8ppt
	Under 6 months	8.2%	7.8%	0.4ppt
	6 to under 12 months	5.6%	6.1%	0.5ppt
	1 to under 2 years	8.3%	8.2%	0.1ppt
	2 to under 5 years	16.3%	15.2%	1.1ppt
	Over 5 years	11.3%	11.6%	0.2ppt
Parent most serious offence score		147	129	18.49
Justice: Corrections spells				
Parent time since last Corrections involvement	Never	47.7%	48.2%	0.5ppt
	No duration	8.5%	8.3%	0.2ppt
	less than 2 years	8.2%	7.3%	0.9ppt
	2 to under 5 years	9.7%	9.5%	0.2ppt
	Over 5 years	25.9%	26.7%	0.8ppt
Number of parents with a Corrections involvement		0.79	0.78	0.01
Parent total time in prison		195	187	8.28
Parent total time in home detention	-0.01 to 0.01	90.5%	91.5%	1.0ppt
	0.02 to 1004	9.5%	8.6%	0.9ppt
Parent total time in community service		763	727	35.93

Variable	Level	Participant	Comparison	Difference
Justice: Youth Justice				
Youth Justice referrals	No referrals	96.8%	96.8%	0.1ppt
	One referral	3.2%	3.2%	0.0ppt
Residency: Migrant status				
Proportion of life living in New Zealand		0.93	0.94	0.01
Age at first arrival in New Zealand	Born in NZ	89.6%	90.2%	0.6ppt
	Under 15 years	10.4%	9.8%	0.6ppt
Migrant's region of origin	New Zealand	95.9%	96.0%	0.2ppt
	Oceania	4.1%	4.0%	0.1ppt
Visa when first arriving in New Zealand	Citizen	90.9%	91.4%	0.5ppt
	Resident	3.4%	3.1%	0.2ppt
	Temporary	5.7%	5.4%	0.3ppt
Income: Income history				
Net income at 0 months before profile date		123	116	6.91
Net income at 1 month before profile date		119	120	1.18
Net income at 2 months before profile date		118	119	0.72
Net income at 3 months before profile date		109	108	0.80
Net income at 4 months before profile date		98.96	97.61	1.35
Net income at 5 months before profile date		88.06	105	17.17
Net income at 6 months before profile date		81.66	97.61	15.95
Net income at 7 months before profile date		79.49	88.15	8.66
Net income at 8 months before profile date		67.73	69.58	1.84
Net income at 9 months before profile date		60.65	63.01	2.37
Net income at 10 months before profile date		51.63	50.18	1.46
Net income at 11 months before profile date		47.64	45.92	1.72
Net income at 12 months before profile date		50.11	52.38	2.27
Net income at 15 months before profile date		35.94	39.46	3.52
Net income at 18 months before profile date		21.71	27.40	5.69
Net income at 21 months before profile date		14.79	20.38	5.58
Net income at 24 months before profile date		16.43	22.87	6.44

Variable	Level	Participant	Comparison	Difference
Net income at 30 months before profile date		7.59	12.15	4.56
Net income at 36 months before profile date		5.32	7.46	2.14
Net income at 42 months before profile date		4.10	5.57	1.47
Overseas: Overseas history				
Overseas at 6 months before profile date		3.0%	2.6%	0.4ppt
Overseas at 7 months before profile date		3.1%	2.2%	0.8ppt
Overseas at 9 months before profile date		3.1%	2.3%	0.8ppt
Overseas at 10 months before profile date		3.2%	2.1%	1.1ppt
Overseas at 12 months before profile date		3.3%	2.5%	0.8ppt
Overseas at 15 months before profile date		4.1%	3.7%	0.4ppt
Overseas at 18 months before profile date		4.3%	4.0%	0.4ppt
Overseas at 21 months before profile date		4.4%	4.1%	0.3ppt
Overseas at 24 months before profile date		4.5%	3.8%	0.7ppt
Overseas at 30 months before profile date		5.0%	4.3%	0.7ppt
Overseas at 36 months before profile date		4.7%	3.8%	1.0ppt
Overseas at 42 months before profile date		5.4%	4.7%	0.7ppt
Care and Protection: Care notifications				
Care notifications (0-3 years)	Two to four notifications	7.1%	7.0%	0.1ppt
	One notification	10.0%	9.1%	0.9ppt
	No notifications	83.0%	83.9%	1.0ppt
Care notifications (4-7 years)	Five or more notifications	3.8%	3.6%	0.2ppt
	Two to four notifications	11.5%	10.7%	0.8ppt
	One notification	11.4%	11.0%	0.4ppt
	No notifications	73.2%	74.6%	1.4ppt
Care notifications (8-11 years)	Five or more notifications	6.1%	5.3%	0.8ppt
	Two to four notifications	12.8%	12.8%	0.0ppt
	One notification	13.7%	12.1%	1.6ppt
	No notifications	67.5%	69.9%	2.4ppt

Variable	Level	Participant	Comparison	Difference
Care notifications (12-15 years)	Five or more notifications	6.1%	4.8%	1.3ppt
	Two to four notifications	14.7%	13.9%	0.8ppt
	One notification	13.4%	13.3%	0.2ppt
	No notifications	65.9%	68.1%	2.2ppt
Transport: Private driver licence				
Private drivers licence status	Restricted	3.1%	3.5%	0.4ppt
	Learner	16.0%	16.9%	1.0ppt
	No licence	81.0%	79.6%	1.4ppt
Time without any driver licence at 0 months before profile date		24.92	24.75	0.17
Time without any driver licence at 1 month before profile date		25.48	25.39	0.08
Time without any driver licence at 2 months before profile date		25.94	25.73	0.20
Time without any driver licence at 3 months before profile date		26.38	26.22	0.17
Time without any driver licence at 4 months before profile date		26.89	26.71	0.18
Time without any driver licence at 5 months before profile date		27.19	26.98	0.21
Time without any driver licence at 6 months before profile date		27.50	27.34	0.16
Time without any driver licence at 7 months before profile date		28.07	27.82	0.25
Time without any driver licence at 8 months before profile date		28.37	28.21	0.16
Time without any driver licence at 9 months before profile date		28.80	28.62	0.18
Time without any driver licence at 10 months before profile date		29.03	28.95	0.08
Time without any driver licence at 11 months before profile date		29.13	28.99	0.14
Time without any driver licence at 12 months before profile date		29.47	29.29	0.18
Time without any driver licence at 15 months before profile date		29.92	29.88	0.04

Variable	Level	Participant	Comparison	Difference
Time without any driver licence at 18 months before profile date		30.16	30.19	0.04
Time without any driver licence at 21 months before profile date		30.55	30.53	0.02
Time without any driver licence at 24 months before profile date		30.41	30.37	0.04
Time without any driver licence at 30 months before profile date		30.31	30.34	0.03

a. Participant: mean value for the participant group.
b. Comparison: mean value for the matched comparison group.
c. Difference: difference between participant and comparison means.
d. s: supressed for IDI confidentiality.

Source: MSD, Stats NZ IDI

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