



MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

School to work: what matters?
*Education and employment of young
people born in 1991*



Beyond tertiary study

This report forms part of a series called Beyond tertiary study. Other topics covered by the series include how graduates' earnings change over time, labour market outcomes, education and economic growth, and qualifications and income.

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All views expressed in this report, and any remaining errors or omissions, remain the responsibility of the author.

Unless stated otherwise, all data in this report has been obtained from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand. The results in this report are not official statistics, they have been created for research purposes from IDI.

The opinions, findings, recommendations, and conclusions expressed in this report are those of the author, not Statistics NZ or the Ministry of Education.

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SUMMARY

KEY POINTS

School experience can be looked at in two ways: performance and engagement. Performance can be measured through relative achievement in NCEA. Engagement can be measured by whether students have been stood down, suspended or had serious truancy.

Young people with higher school performance and no experience of disengagement are much more likely than other young people to go on to tertiary education and to find full employment.

Young people who were disengaged at school are more likely to leave New Zealand or to be not in employment, education or training (NEET). This effect is over and above any effect of their level of school performance.

School background and achievement are strongly related to the extent to which young people are employed. A higher proportion of young people with NCEA Level 2 or higher were in employment. The majority of young people in full employment, and no longer in study, had attained at least NCEA Level 2 and/or studied tertiary education at Level 4 and above.

However, earnings for young people are mostly dependent on whether they are in full or part employment. When their extent of employment is taken into account, there is very little difference in earnings by school background or achievement. For young people who have completed a tertiary qualification by age 22, who do not continue in study, their qualification level had a small association with higher annual earnings at age 23. This provides an early indication of the effect of qualification completion on earnings.

While higher-qualified young people are much less likely to be NEET, they still make up a significant minority of those who are NEET.

In more recent cohorts (up to 1995), the proportion of young people going overseas has increased, particularly between 19 and 22. Of those staying in New Zealand, more 16 to 19 year olds are staying in education. The proportion who are NEET and/or on benefit has been decreasing.

Introduction

This study explores the education and employment experiences of young people born in 1991. The main purpose of the study is to explore the kinds of employment and labour market measures that can be derived from data in Statistics New Zealand Integrated Data Infrastructure (IDI) and how these vary across groups of young people with different educational experiences and achievement.

The study looks at a set of outcome measures covering migration, employment, earnings and non-participation in employment and education. It uses school performance, engagement and achievement to explore the patterns in the outcome measures. School performance is based on relative achievement levels in the National Certificate of Educational Achievement (NCEA) Level 1. School engagement is based on whether students had ever been stood down, suspended or had serious truancy. Achievement is based on highest level of NCEA award and the highest level of enrolment in tertiary education.

Birth cohort analysis considers all people who are born in the same year and compares or tracks their experiences. In doing so it includes both people who did and did not participate in tertiary education and who did and did not complete qualifications.

The current study provides a different view of employment and income than in the employment outcomes of tertiary education project (EOTE). The latter is focused on measuring employment and earnings of young graduates. This study looks at the experiences of young people as they move from school to tertiary education and employment.

Experiences of the 1991 and 1994 birth cohorts

The young people in the 1991 birth cohort were in senior secondary school when the economy went into decline during the global financial crisis. The economy had been strong during their earlier school years and so they were not necessarily prepared for going into a difficult labour market.

They can be compared with the 1994 cohort, only three years younger, who experienced the downturn while still in early secondary school and had some forewarning that employment would be hard to find when they reached school leaving age.

In spite of these differences in the impact of the economic downturn, young people in the 1991 cohort had higher employment rates than those in the 1994 cohort. This was partly the result of increasing retention in education, but may also have reflected lags in the recovery for the youth labour market.

For the 1991 cohort, the family experiences of the economy varied according to the educational qualifications of the parents. Parents with bachelors degrees and above had a much more stable experience over the period from 1991 to 2013. Parents with no qualifications were highly vulnerable to the economic cycles, in terms of unemployment.

Staying in New Zealand

At age 23, 13% of the 1991 birth cohort who had been in New Zealand at age 15, were overseas. Up to age 23, going overseas is related to school performance and experience.

Those with higher school performance who had not been disengaged from school were more likely to stay in the country. This is likely to be strongly related to their increased opportunity to study in the New Zealand tertiary education system.

Those who had been disengaged at school were more likely to leave the country. Those who had been disengaged at school and had higher school performance were the most likely to be overseas.

Participating in education

School performance and engagement were highly related to continuing at school past age 16 and enrolling in tertiary education. Those with higher school performance who had not been disengaged at school were much more likely to go on to tertiary education than other students.

Most people who studied at degree level had attained NCEA Level 3, and the majority of those who attained NCEA Level 3 went on to study at degree level. Similarly, most people studying in Level 4 to 7 certificates or diplomas had attained at least NCEA Level 2.

Getting a job

Young people with higher school performance who had not been disengaged at school were more likely to be in employment at age 23 (either with or without study) than other young people. They were also more likely to combine education with employment.

Young people with lower school performance who had been disengaged at school were least likely to be in employment at age 23 (either with or without study). Of this group who were in study, a larger proportion did not have employment compared to other groups.

This suggests that having lower performance and/or disengagement at school is associated not just with lower study participation but also with lower employment rates.

A higher proportion of young people with NCEA Level 2 or higher were in employment. The majority of young people in full employment, and no longer in study, had attained at least NCEA Level 2 and/or enrolled in tertiary education at Level 4 and above.

Not in employment, education or training (NEET)

The IDI data provides a number of options for measuring NEET status. These measures take account of employment and education status across each year, which contrasts with the point-in-time estimates from the Household Labour Force Survey.

The broadest measure of NEET status includes all young people who were NEET within a year. Having short spells of being NEET during the year is reasonably common for young people and is only partly related to educational participation and achievement. Similarly, a reasonably large proportion of young people will be on benefit at some stage during the year.

Being on benefit and being NEET involve different, but overlapping, groups of young people. Not all young people who are NEET are on benefit and not all people on benefit are NEET.

Measures that capture whether a young person is long-term NEET¹ or has NEET as main activity² during the year are more differentiated by educational participation and achievement. Measuring NEET using these definitions provides a better focus on young people who could be at risk from being NEET. The measures pick up largely the same group of young people. The long-term NEET measure is limited by needing data for the year before and the year after the year of measurement. NEET as main activity can be calculated from data from within each year. This makes the latter a more timely measure.

The strictest definition of NEET is having no education or employment during the year. This measure is highly differentiated by educational participation and achievement. It identifies the group of young people who are likely to be at higher risk of poor outcomes as a result of being NEET.

Being disengaged at school increased the incidence of being NEET, over and above the effect of the level of school performance. Young people with no NCEA or Level 1 only were more likely to be NEET than those with NCEA Level 2 or 3.

¹ That is, having a continuous spell of being NEET of six months or more

² That is, having more days in the year being NEET than days in education, employment or overseas.

While people with higher educational achievement and participation were less likely to be NEET (across all measures), they still made up a significant minority of those who were NEET. So it cannot be assumed that young people who are NEET are only those with poor educational outcomes.

Earning an income

For young people up to the age of 23, higher educational participation and achievement are associated with being in employment. However, given the level of employment that a young person is in, there is only a small association between educational participation and achievement and annual earnings.

For young people who have completed a tertiary qualification by age 22, and do not continue in study, their qualification level had a small association with higher annual earnings at age 23. This provides an early indication of the effect of qualification completion on earnings.

Main activity in each year

For analytical purposes it is useful to be able to assign a single activity per year to each person. A measure has been developed that assigns a main activity to each person, based on the activity in which they were involved for the highest number of days in the year.

The main activity measure effectively summarises the observations above and shows the distribution of young people across employment, education and being NEET.

Young people who were disengaged and/or had lower performance were less likely to remain in education and more likely to be employed or NEET.

Those with no school qualifications or NCEA Level 1 only were more likely to be NEET and less likely to be in education or employment at age 23. Similarly, those who had studied at level 4 or higher in tertiary education were more likely to be in employment or education and less likely to be NEET at age 23.

Changes from the 1991 to 1995 birth cohorts

Comparing the 1991 to 1995 cohorts, we can see that there has been a small increase in the proportion who were overseas, particularly from age 19 to 22.

For those who stayed in New Zealand, the proportion in education from 16 to 19 years of age has been increasing. At the same time, the proportion in employment and not in education has decreased.

There has been an overall decrease in the proportion of those who are NEET at each year of age, as there has been in the proportion receiving a welfare benefit.

Comparison with other studies

A review of other related New Zealand studies highlights some general themes that are relevant to the current report:

- There are strong and persistent relationships between family background and early experiences on later education and employment outcomes.
- Attaining school qualifications is connected with having more positive outcomes in education and employment. There is also a connection between expectations and aspirations and attainment of qualifications.
- There are multiple risk factors associated with poor outcomes following school. Studies point towards an accumulation of risk factors influencing negative outcomes, rather than any single factor being deterministic.
- There are a number of ways of defining being NEET. There is also a diversity of young people who experience being NEET.

1 INTRODUCTION

KEY POINTS

This study explores the education and employment experiences of young people in the 1991 birth cohort. The main purpose of the study is to explore the kinds of employment and labour market measures that can be derived from the IDI data and how these vary across groups of young people with different educational experiences and achievement.

Birth cohort analysis considers all people who are born in the same year and compares or tracks their experiences. In doing so it includes both people who did and did not participate in tertiary education and who did and did not complete qualifications.

The study looks at a set of outcome measures covering migration, employment, earnings and non-participation in employment and education.

The current study provides a different view of employment and income than in the employment outcomes of tertiary education project (EOTE). The latter is focused on measuring employment and earnings of young graduates. This study looks at the experiences of young people as they move from school to tertiary education and employment.

1.1 Purpose of this study

This study explores the education and employment experiences of a birth cohort of young people. It uses data from the Statistics New Zealand Integrated Data Infrastructure (IDI). The IDI is a linked longitudinal dataset of administrative data from government agencies. It is available for policy evaluation and research analysis, and the production of statistical outputs on the transitions and outcomes of people (Statistics New Zealand, 2015).

The main purpose of the study is to explore the kinds of employment and labour market measures that can be derived from the IDI data and how these vary across groups of young people with different educational experiences and achievement. An immediate use of this has been to inform the selection of outcome measures to be used for monitoring the Youth Guarantee policies (Earle, 2015). This study establishes a base for further exploration of the outcomes for different groups of young people and the relationship of these to education.

This study is descriptive in nature. There is opportunity for future studies to use multivariate statistical methods to gain better understanding of the effects of different variables.

1.2 Why birth cohorts?

Most data analyses on school and tertiary education look at enrolment and achievement at specific points in time. For example, an analysis may look at the number of people in selected age groups enrolling each year. This kind of analysis is useful for understanding changes in the overall state of education. However, it doesn't give a clear view of the experiences of groups of people moving through the education system and beyond.

A cohort is a group of individuals who have started or entered a system at the same time. This could include students who started tertiary education in the same year, or who graduated in the same year, or people born in the same year. It is assumed that individuals in a cohort will have

similarities through shared experiences that may be different for other cohorts. Cohort analysis looks at the differences between cohorts, as well as within cohorts in terms of 'age' (time since entry) and 'period' (time when an outcome is measured or events happen) (Mason & Wolfinger, 2001).

The Ministry of Education uses cohort analysis to look at events within the tertiary education system and also outcomes following graduation. Ussher (2007) compared the tertiary education participation of selected birth cohorts from 1949 to 1984. His work is further discussed in Appendix A on page 46. The Ministry publishes retention, completion and progression rates for students who started study in the same year (Scott, 2004, 2005). The Employment Outcomes of Tertiary Education work programme looks at the earnings and destinations of graduates in the same year, compared by the number of years since they graduated (Mahoney, Park, & Smyth, 2012; Park, Mahoney, Smart, & Smyth, 2013, 2014; Park, 2014).

Birth cohort analysis considers all people who are born in the same year (or set of years) and compares or tracks their experiences. In doing so it includes both people who did and did not participate in tertiary education and who did and did not complete qualifications.

Birth cohort analysis assumes that people born in the same year share some common experiences during their life-time. For example, they may all finish secondary school during a period of greater economic growth, or higher unemployment. Other time-based effects are:

- Age: specific ages are associated with different types of events, such as leaving school
- Period: something can happen that affects people of different ages and cohorts within the same period of time (year, month or day), such as a change in the economy or a natural disaster.

Cohort, age and period can be seen as three dimensions for exploring population experiences. These dimensions are difficult, if not impossible, to properly separate. In descriptive analysis, it is possible to consider any two of the dimensions at once, but not all three. This comes about as the dimensions are interrelated, in that

- Cohort = Period Age (e.g. 1991=2014-23)
- Age = Period Cohort (e.g. 23 = 2014-1991)
- Period = Cohort + Age (e.g. 2014 = 1991 + 23).

Studies that look at only one dimension, such as age or period, miss important information on the other dimensions. Combining age and period provides greater explanatory values, but continues to miss the impact of cohort effects. For example, a study using age and period may show that older people have improving outcomes over time. But it does not explain whether this is something to do with improvements within that age group or differences in the experiences of more recent cohorts.

In this study, the two dimensions looked at are cohort and age. As an initial exploration of the data, the report looks at the age-related experiences within a single cohort. So this is in effect, age controlled for cohort. The final chapter looks at the differences between cohorts across ages. However, the age effects are confounded with period, and this cannot be distinguished within this approach. For example, a change in a measure from 16 to 17 could reflect an age related change in

experiences or it could be that the cohort turned 17 in a year that a new education policy was introduced, which affected the outcome.

Nonetheless, examining cohorts by age can provide useful insights into the life stories of people and clarifying whether these are changing over time (for each subsequent cohort). These results can then be contrasted to age by period to further explore dimensions of change. There is also a range of modelling solutions proposed to further untangle cohort, age and period effects, which is beyond the scope of this current study (Bell & Jones, 2013; Mason & Wolfinger, 2001; Yang & Land, 2006).

1.3 This study

The young people in each cohort were identified using school enrolment records. Each birth cohort includes all young people enrolled in a New Zealand school (as a non-international-fee paying student) during the year of their 15th birthday. Each cohort was then further filtered to include only those young people who could be counted as being in the country for the year in which they turned 15. For example, this excludes young people who attended a school for a short period during that year but were overseas for the rest of the year.

The main focus of this study is on the 1991 birth cohort. This is the earliest cohort for which we have fairly complete secondary school participation and achievement records³. They were 15 in 2006 and 23 in 2014. Using the approach above, we identified 61,600 young people at age 15 in 2006 in the 1991 birth cohort. This compares with an estimated population of 62,250⁴. It is likely that we are missing a small number of students who were in New Zealand but not enrolled in school. The exact number of these is unknown, as they may also be missing from the population data.

The study looks at a set of outcome measures covering migration, employment, earnings and non-participation in employment and education. These are analysed using two sets of background variables. One set is a combination of school performance and engagement, which captures aspects of school experience, motivation and attitudes (these variables are discussed in detail in the next chapter). The other is the highest level of the National Certificate in Educational Achievement (NCEA) attained and the highest enrolment level in tertiary education after leaving school.

The data presented in this study looks at the distribution of groups of young people, using the background variables, against the outcome measures at each year of age. This can be thought of as a series of 'snapshots' of the average outcomes for each group in question. The study doesn't explore the pathways individuals take and the extent to which they move between different outcome states over time. For example, the group of people who are in employment at 17 will not be entirely the same group of people who are in employment at 18. There will be some who were in employment at both ages and some who were in employment only when either 17 or 18, but not at both ages. So it cannot be assumed that patterns of outcomes represent groups of individuals who continue to have the same outcome status over time.

Appendix A contains a review of other New Zealand studies of young people that used cohort methods and/or had a focus on young people not in employment, education or training. It shows

³ They are the earliest cohort to be covered by the collection of individual student enrolments by the Ministry of Education. They also participated in NCEA after it was fully implemented.

⁴ Source: Statistics New Zealand, National Population Estimates (2013 base).

the extent to which these studies found similar results, as well as other research questions that were considered which are outside the scope of this current report.

1.4 Comparison with Employment Outcomes of Tertiary Education

The Ministry of Education has developed a project on the Employment Outcomes of Tertiary Education which looks at the earnings and destinations of students up to eight years after they graduate (Mahoney et al., 2012; Park et al., 2013, 2014; Park, 2014)

The current study provides a different view of employment and income than in EOTE. The latter is focused on providing consistent measures of employment and earnings of young graduates. As such it more clearly demonstrates the employment and income premiums that young people have following graduation, by level and subject of study. This report focuses more on the employment outcomes and income distribution for young people as they make the transition from school to tertiary education and employment. Its purpose is to explore the different ways in which destinations and earnings can be measured.

The differences between the studies are set out in Appendix A

2 SCHOOL PERFORMANCE, ENGAGEMENT AND ACHIEVEMENT

KEY POINTS

This study uses school performance, engagement and achievement to explore the patterns in the outcome measures.

School performance is derived from Level 1 NCEA results. School engagement is based on whether a student has ever experienced a stand down, suspension or serious truancy incident. These two measures are strongly related and interdependent.

Outcomes are also examined by the highest level of NCEA achievement and highest enrolment in tertiary education.

2.1 School performance

Using NCEA results it is possible to calculate a performance score for each student based on the proportion of assessment standards with achieved, merit or excellence that they achieve relative to their peers. This provides a performance score from zero to one for each student for each level of NCEA on which they have attempted achievement standards in. For this study, the Level 1 performance scores have been standardised for each birth cohort to a mean of zero and a standard deviation of one for all students in the cohort.

Students have been assessed for nearly all of the Level 1 achievement standards they are likely to take by the end of the year in which they turn 16. This means the Level 1 performance score provides a reflection of the level of their educational achievement at that age. It can then be used as a variable for looking at their subsequent participation and achievement. Also, the majority of young people have undertaken at least some achievement standards at Level 1, but not all of them go to Levels 2 and 3. This means the Level 2 and 3 scores would not be as representative.

There are two types of assessment standards that can be used to achieve NCEA: achievement standards and unit standards. Achievement standards are based on the New Zealand curriculum, can be internally or externally assessed and can be achieved with merit and excellence. It is the results from these standards that are used to calculate the performance score. Unit standards are competency-based, and have been mostly developed for work-place training. Many schools offer these alongside assessment standards. Most unit standards only have either a pass or fail result (New Zealand Qualifications Authority, 2015).

There is a proportion of students who do not successfully complete any Level 1 achievement standards. In the 1991 birth cohort, around 15% had not successfully completed any Level 1 achievement standards. This has decreased in the 1994 birth cohort. These students have done either no NCEA standards⁵ or only unit standards⁶. This group includes lower achieving students who have had low or no engagement with NCEA, and higher achieving students who have opted for international school qualifications. In this study, a performance score has been imputed for

⁵ This includes students who were assessed using only international school qualifications.

⁶ In the 1991 birth cohort, 11% had not achieved any Level 1 standards by age 16 and 4% had achieved only unit standards. In the 1994 birth cohort, the proportions were 9% and 2% respectively.

those with no Level 1 achievement standards. A predictive model for the score was developed using demographic and school variables. This model was then used to impute a plausible value for each student with a missing score.

2.2 School engagement

Information on individual students who have been suspended from school, stood down or been involved in serious truancy is reported to the Ministry of Education. These students can be linked via their national student numbers to other education data. If a student has been reported for one or more of these reasons, they are assigned a variable of being disengaged from school.

It should be noted that there is a wide variety of circumstances leading to disengagement across the various cases, making it difficult to generalise why students may be in this group. It may be that the student had disengaged from education, or the school had withdrawn educational services from the students as a sanction for unacceptable behaviour, or both. The period of disengagement can vary from one day to longer periods of time, and there may be repeated periods over several years. And the severity of the issues involved also varies. However, this variable denotes a group of young people who have experienced at least one serious issue affecting their engagement with schooling.

This variable is therefore not a precise measure of engagement and disengagement. The extent of disengagement is not captured. Nor does it capture how well each young person was engaged with learning and education, as opposed to issues to do with school attendance and discipline. There will also be differing family circumstances that are not captured. Nonetheless, it distinguishes two groups of young people who have had different experiences of schooling.

2.3 Performance and engagement

Using performance and engagement together it is possible to segment each cohort into four groups. The performance measure can be used to identify those with higher than average and lower than average scores. This can then be cross-tabulated with whether or not they had been disengaged or not from school.

The distribution of these groups is quite stable across cohorts. Table 1 shows the distribution for the 1991 birth cohort. Experiencing disengagement at school is associated with lower performance in NCEA Level 1. Only a small proportion of those with higher performance have experienced disengagement at school, and their average performance score is lower than higher performing students who were not disengaged. The same pattern is evident among lower performing students.

Table 1

Distribution of performance and engagement groups, with average and median standardised performance scores 1991 birth cohort

Performance	Disengaged	Number of people	Percent of cohort	Average performance score	Median performance score
Higher	No	24,768	40%	0.91	0.79
	Yes	3,249	5%	0.69	0.51
Lower	No	23,616	38%	-0.66	-0.61
	Yes	9,936	16%	-0.95	-0.89

Number of people refers to people in the 1991 birth cohort at age 15 living in New Zealand.

These two measures are strongly related and interdependent. It is not clear that one is a cause of the other. It may be that students who experience disengagement find it harder to perform well in their studies or that students who are performing less well are more likely to be in situations of disengagement.

The approach in this study provides a way of identifying different groups of learners using these characteristics. A more sophisticated multivariate analysis is needed to specifically isolate the effect of each variable on life outcomes.

2.4 NCEA achievement

The outcomes are also examined by the highest level of NCEA qualification achievement. Qualification achievement includes both the award of the qualification by NZQA and the accumulation of sufficient credits to be eligible for the award.⁷ Including the latter group smooths out differences over time as a result of timing of awards and of changes to the process for confirming an award.

Students obtain each level of NCEA over a period of time and do so at different ages. Up to age 19 it is not certain that each student has completed their highest level of NCEA. So in this study outcomes by highest level of NCEA are considered at age 23. By this time, nearly all students will have completed their highest level of school qualifications.

Some schools provide the option of completing international qualifications instead of NCEA. The two largest ones are the International Baccalaureate and Cambridge. These qualifications have not been included, because of lack of information in the IDI. Using the Ministry of Education school leaver data, it is estimated that 3% of 19-year-olds in 2014 had an international school qualification as their highest school leaving qualification. Of those with no NCEA qualification, around 14% had an international qualification. Of those with NCEA Level 1, around 6% had an international qualification at a higher level. This means that some of those reported in this study as having no NCEA or NCEA Level 1, will instead have achieved an international qualification. This needs to be kept in mind in interpreting the results for this group.

2.5 Highest enrolment in tertiary education

The highest level of tertiary enrolment provides another means of exploring the outcomes. This is a cumulative measure of enrolment up to and including the specific age. It includes only enrolments that occurred after the young person left school. This excludes taster courses that were undertaken in conjunction with schooling. It shows the proportion of young people who were ever enrolled at each level. Those young people may or may not be still enrolled at the age in question: some may also have had only a short period of enrolment at that level and may or may not have successfully completed any courses.

⁷ This is a narrower definition than used for the reporting of attainment of NCEA Level 2 or equivalent for Better Public Services. The latter also includes people who attained international qualifications, Level 2 or higher non-NCEA qualifications, NCEA Level 3 without necessarily attaining Level 2 or had enrolled at degree-level.

3 EXPERIENCES OF THE 1991 AND 1994 BIRTH COHORTS

This section uses broader population data to describe the experiences of the 1991 birth cohort. To illustrate differences between the cohorts, the 1994 birth cohort is included for comparison.

KEY POINTS

While the 1991 and 1994 birth cohorts were only three years apart, their experiences of the economy and labour market were quite different.

The young people in the older, 1991 cohort were in senior secondary school when the economy went into decline during the 2007-08 Global Financial Crisis. The economy had been strong during their earlier school years and so they were not necessarily prepared for going into a difficult labour market.

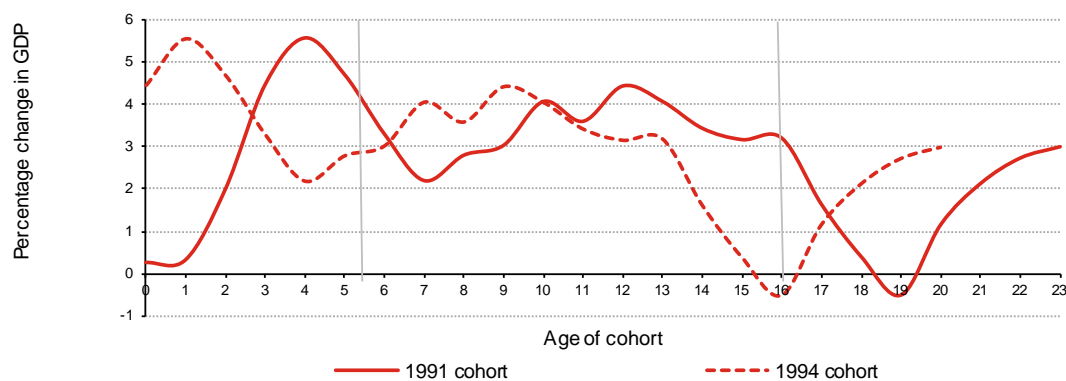
By contrast, the 1994 cohort experienced the downturn while still in early secondary school and had some forewarning that employment would be hard to find when they reached school leaving age.

In spite of these differences, young people in the 1994 cohort had lower employment rates than those in the 1991 cohort. This was partly a result of higher retention in education, but may also have reflected lags in the recovery for the youth labour market.

For the 1991 cohort, the family experiences of the economy varied according to the educational qualifications of the parents. Parents with bachelors degrees and above had a much more stable experience over the period from 1991 to 2013. Parents with no qualifications were highly vulnerable to the economic cycles, in terms of unemployment.

In terms of educational experience, those in the 1991 birth cohort were born around the time of the implementation of “Tomorrow’s Schools”, which devolved management and decision making to New Zealand schools. They entered senior secondary school after NCEA had been fully implemented and they entered tertiary education after interest was removed from student loans.

Figure 1
Economic growth by year of age for 1991 and 1994 birth cohorts



Source: Reserve Bank of New Zealand.
Rolling three-year average of annual percentage change in real production-based GDP (December quarters).

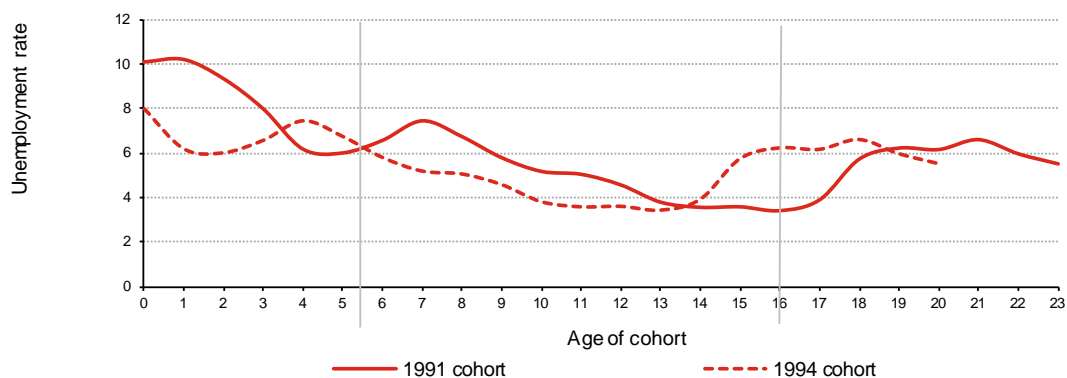
The 1991 birth cohort was born during the recession of the early 1990s. As shown in Figure 1, by the time they started school, the economy was in strong recovery. Throughout their compulsory school years, the country had consistent economic growth of around 3%. However, just as they turned 16

the 2007-08 global financial crisis (GFC) hit and the next three years were marked by declining growth.

By contrast the 1994 birth cohort (just three years younger) was born during the recovery of the mid-1990s. The GFC occurred when they were just starting secondary school and by the time they were 16, the economy was recovering.

During the early life years for the 1991 cohort, adult unemployment rates were very high, as shown in Figure 2. The rates decreased during their school years, but then increased when they turned 16 as a result of the GFC. Those in the 1994 cohort were less affected by high adult unemployment in their early years and were entering senior secondary school as the labour market was recovering.

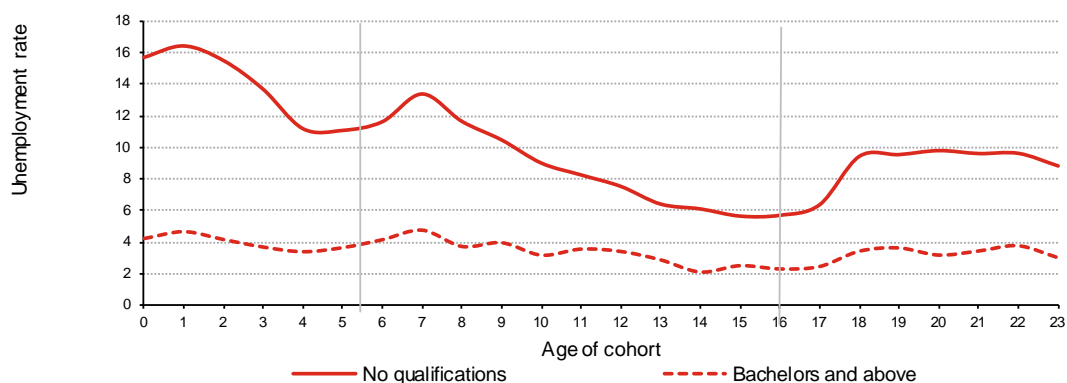
Figure 2
Adult unemployment rate by year of age for 1991 and 1994 birth cohorts



Source: Statistics New Zealand, Household Labour Force Survey. Unemployment rate for 25- to 44-year olds.

The effect of the economic cycles in terms of unemployment rates was much greater for adults with no qualifications than for those with bachelors degrees and above. Children with unqualified parents would have had greater exposure to the consequences of high unemployment than those with highly qualified parents, as shown in Figure 3.

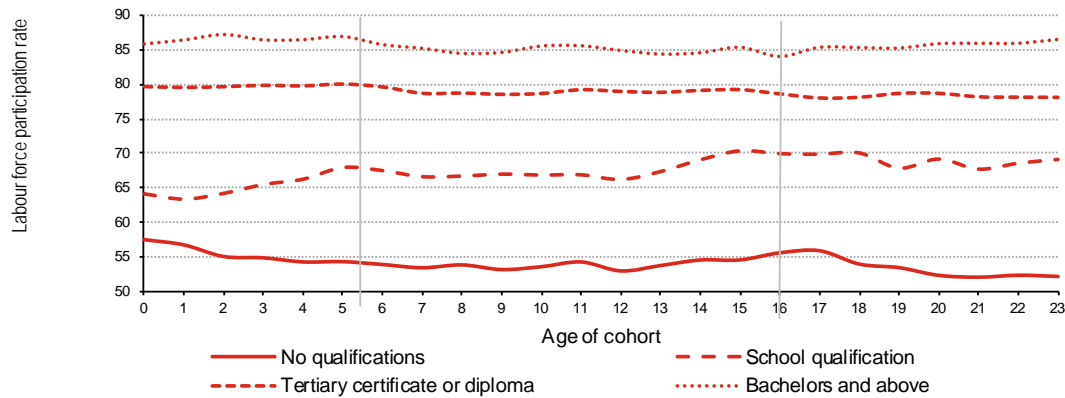
Figure 3
Adult unemployment rate by highest qualification level and year of age for 1991 cohort



Source: Statistics New Zealand, Household Labour Force Survey. Unemployment rate for 25- to 44-year olds.

While unemployment rates fell and rose over the period, labour force participation rates⁸ were steadier as shown in Figure 4. Labour force participation decreased for adults with no qualifications, and increased for those with only school qualifications. Rates for those with tertiary qualifications remained fairly stable.

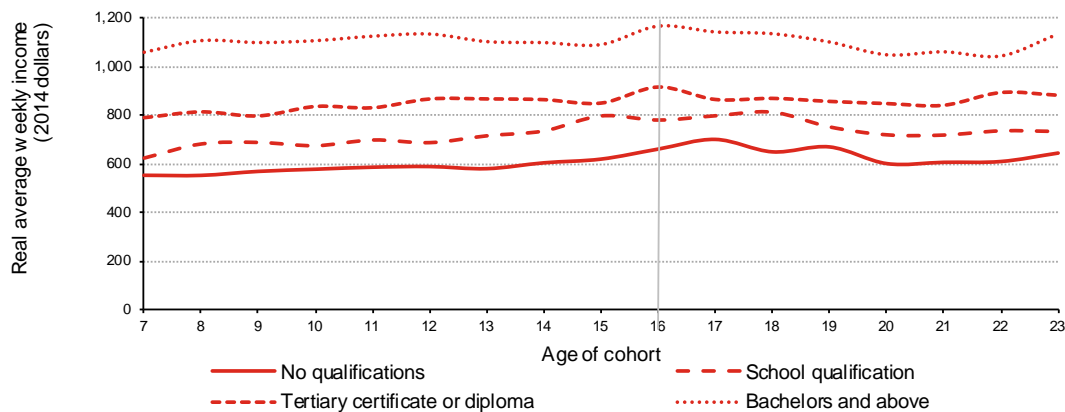
Figure 4
Adult labour force participation rates by highest qualification level and year of age for 1991 cohort



Source: Statistics New Zealand, Household Labour Force Survey.
Labour force participant rate for 25- to 44-year olds.

Real incomes from wages and salaries also increased for adults with qualifications below degree-level during the time those in the 1991 cohort were in compulsory schooling, as shown in Figure 5. The GFC had the effect of stalling income growth at the time they were finishing schooling.

Figure 5
Average real weekly income from wages and salaries for employed adults by highest qualification level and year of age of the 1991 cohort



Source: Statistics New Zealand, New Zealand Income Survey.
Real median income for 25- to 44-year olds in 2014 dollars.
Note: Graph starts at age seven because New Zealand Income Survey data is only available from 1998.

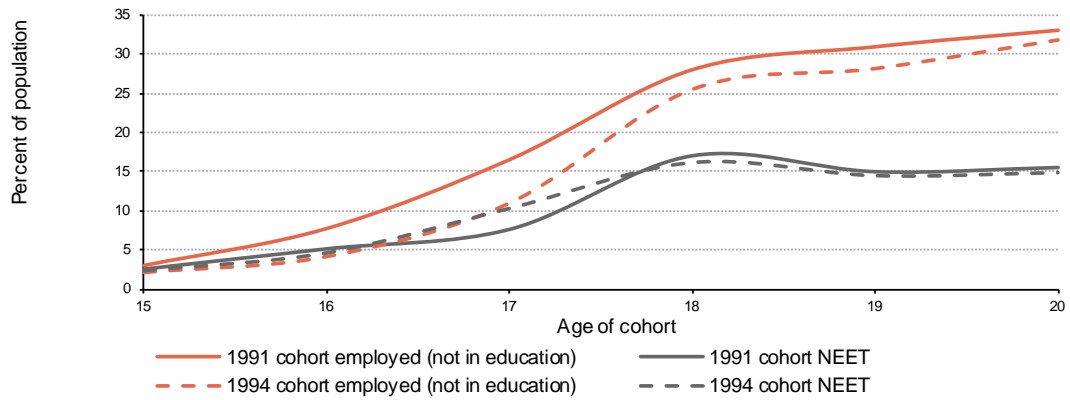
The proportions of young people in employment and not in employment, education or training (NEET) provide indicators of the youth labour market that the cohorts were entering. Figure 6 shows that employment rates for the 1991 cohort were higher at each year of age than for the 1994 cohort. However, the proportion who were NEET were similar for both.

⁸ The labour force participation rate is the proportion of the population who are employment or unemployed.

While those in the 1994 cohort were in an improving economy at this age (as shown in Figure 1 and Figure 2 above), this did not have an effect on increased employment. In part this was a result of greater retention in education and may also have been because the recovery had a lagged effect on the youth labour market.

Figure 6

Proportion of 15- to 20-year-olds in employment or NEET for the 1991 and 1994 cohorts



Source: Statistics New Zealand, Household Labour Force Survey

4 STAYING IN NEW ZEALAND

This section looks at the extent to which groups of young people stay in New Zealand or go overseas. This sets the context for the followings sections, which mostly examine the outcomes for those who stay in New Zealand.

KEY POINTS

At age 23, 13% of the 1991 birth cohort who had been in New Zealand at age 15 were overseas. Up to age 23, going overseas is related to school achievement and experience.

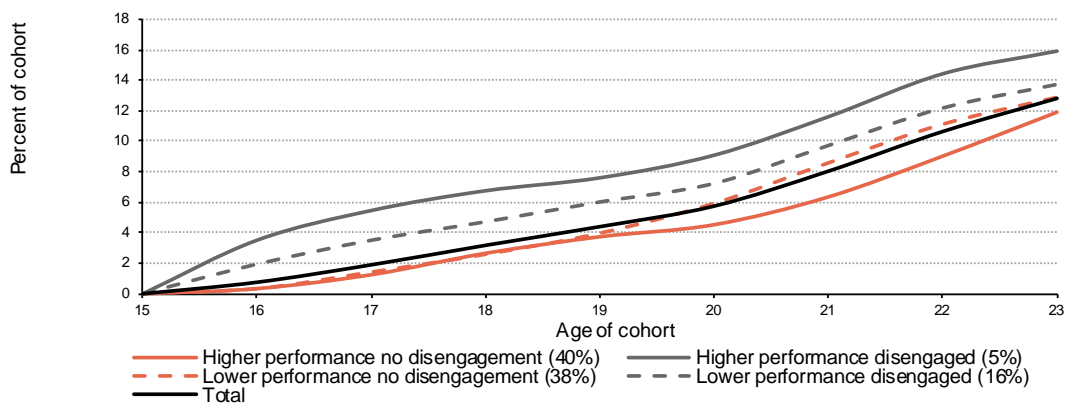
Those with higher achievement who were not disengaged from school were more likely to stay in the country. This is likely to be strongly related to their increased opportunity to study in the New Zealand tertiary education system.

Those who were disengaged at school are more likely to be overseas. Those with disengagement and higher school performance were most likely to be overseas.

Young people are counted as being out of the country during a specified year if they spend more than nine months in a year overseas. Once they are overseas, they are counted as returning if they spend more than nine months of a subsequent year in New Zealand. This follows the methodology in Papadopoulos (2012) and Papadopoulos and Mahoney (2013)⁹.

Figure 7

Proportion of total 1991 cohort overseas by school performance and engagement



Percentage figures show the proportion of the 1991 birth cohort in New Zealand at age 15 in each group

Looking at all young people in the 1991 birth cohort, we find that 13% were overseas at age 23. Young people with higher school performance who were not disengaged at school were least likely to be overseas. As outlined in subsequent chapters, this relates to their higher participation in tertiary education in New Zealand at these ages. Park (2014) shows that young people who go on and graduate with bachelors degrees and higher are more likely to go overseas after graduation than people graduating at lower levels. This means we would expect the proportion of people overseas, who had higher school performance and no school disengagement, to increase from mid to late 20s.

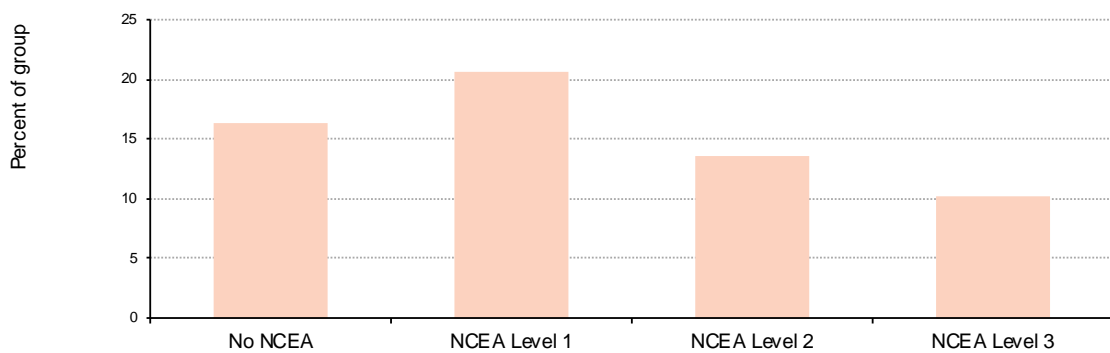
⁹ This methodology differs from that used for the analysis of student loan borrowers who are overseas (Smyth & Spackman, 2012) and employment outcomes of tertiary education (Mahoney et al., 2012).

Those who were disengaged at school were most likely to be overseas, with the rate increasing more for those who had higher school performance. Those with lower performance and no disengagement had similar proportions overseas as for the total cohort.

Young people who had achieved NCEA Level 2 or 3 were much less likely to be overseas at age 23 than those with no NCEA or Level 1 only. Those with no NCEA were less likely to be overseas than those with NCEA Level 1 only. This is likely to be an effect of the former group including students who undertook International Baccalaureate or Cambridge International Examinations rather than NCEA.

Figure 8

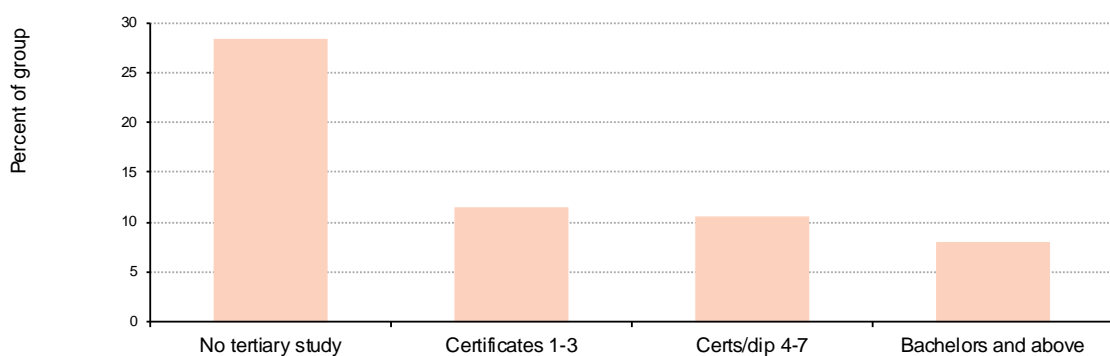
Proportion of total 1991 cohort overseas at age 23 by highest NCEA level



A much smaller proportion of young people who had enrolled in tertiary education since leaving school were overseas at age 23 than those who had not. This is a somewhat self-evident finding in that these young people have chosen to remain in New Zealand for their studies. Some of the young people who had not enrolled in tertiary education in New Zealand will have gone overseas for the purposes of study.

Figure 9

Proportion of total 1991 cohort overseas at age 23 by highest level of tertiary enrolment



5 PARTICIPATING IN EDUCATION

This section provides an overview of participation in education. It looks at the proportions of young people enrolled in school and for those not at school, which broad level of tertiary education they are enrolled in. Tertiary education includes industry training and targeted training programmes, such as Training Opportunities and Youth Training. This section provides background to the following chapters. It has been kept brief as this area has already been treated in much more detail in other studies (Engler, 2010, 2011; Scott, 2008; Ussher, 2006).

KEY POINTS

School performance and engagement was highly related to continuing at school past age 16 and enrolling in tertiary education. Those with higher school performance who had not been disengaged at school were much more likely to go on to tertiary education than other students.

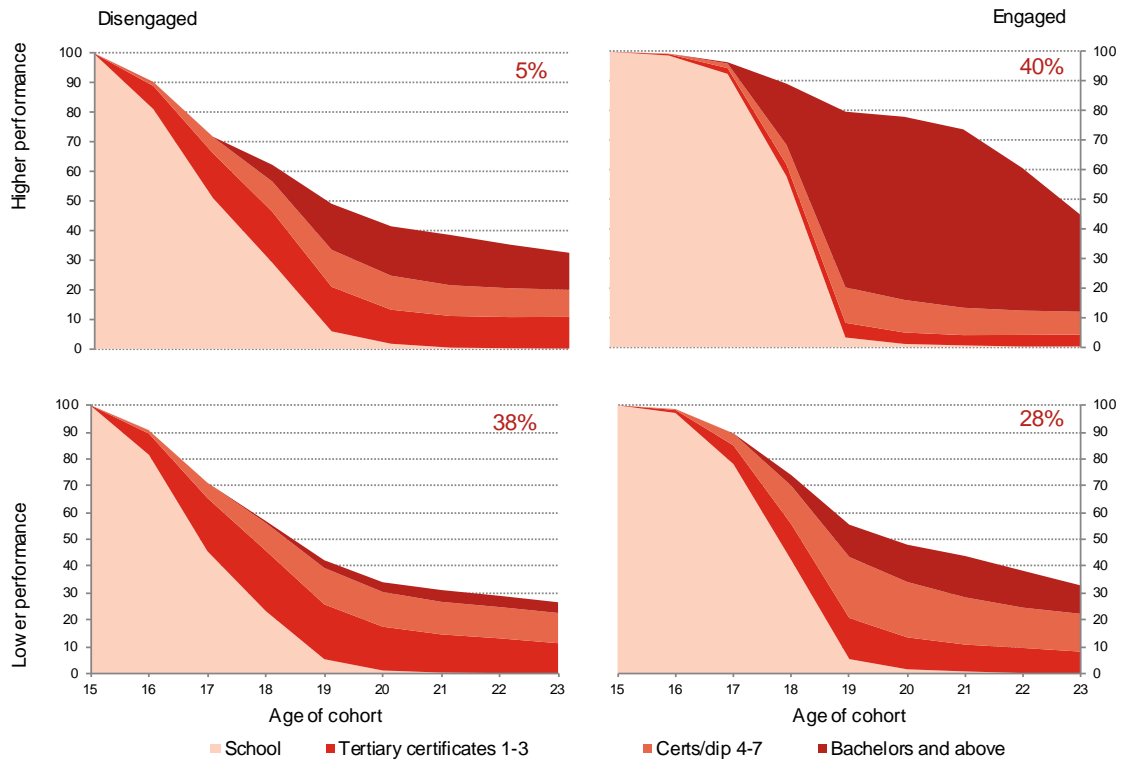
Most people who studied at degree level had attained NCEA Level 3, and the majority of those who attained NCEA Level 3 went on to study at degree level. Similarly, most people studying in Level 4 to 7 certificates or diplomas had attained at least NCEA Level 2.

School performance and engagement are highly related to continuing at school past age 16 and enrolling in tertiary education. The proportion of young people going on to tertiary study at higher levels increases from the lowest performing group (lower performance who were disengaged) through to the highest performing group (higher performance who were not disengaged).

From this descriptive data, it would appear that both performance and disengagement from school are strongly associated with whether young people go on to tertiary education. At age 19, 80% of young people with higher school performance and no disengagement were in education. This compares to 42% of those with lower school performance and disengagement at school.

Figure 10

Proportion of 1991 cohort in New Zealand by level of current education participation, school performance and engagement

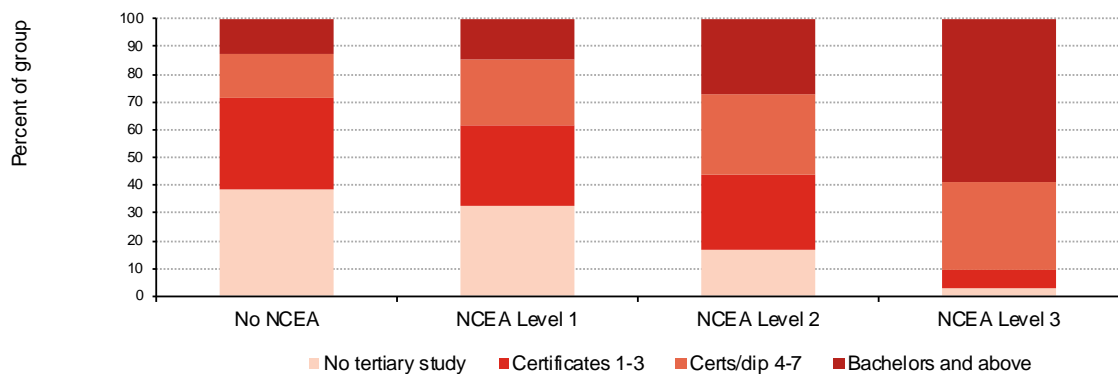


Percentage figures show the proportion of the 1991 birth cohort in New Zealand at age 15 in each group

Figure 11 examines the proportion of 23-year-olds who had enrolled in tertiary education after leaving school by their highest NCEA level. It shows that 60% of those with NCEA Level 3, and 27% of those with NCEA Level 2, had enrolled in degree-level study by age 23.

Figure 11

Distribution of the 1991 cohort in New Zealand at age 23 by highest NCEA level and highest level of tertiary enrolment



From 13 to 15% of young people with no NCEA, or NCEA Level 1, had studied at degree level. It is likely that many of these would have attained international qualifications at school. Some may have also taken bridging courses for admission to degree study.

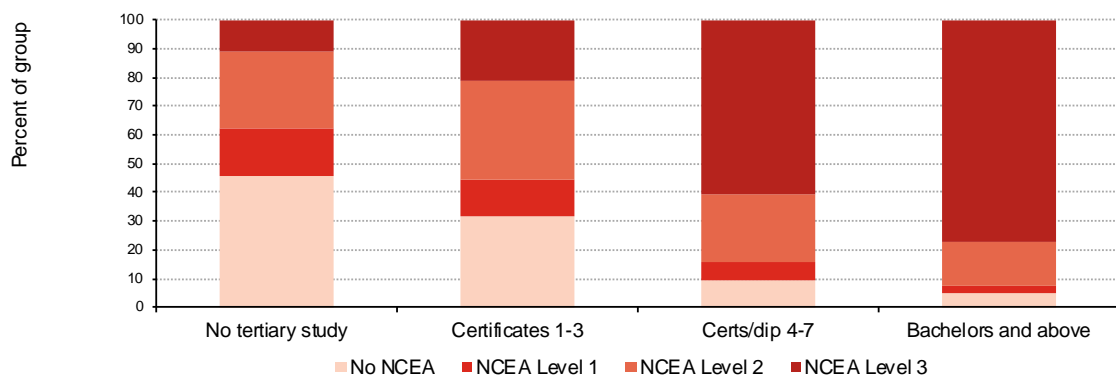
A lower proportion of young people with no NCEA, or with NCEA Level 1, had enrolled in level 4 to 7 certificates and diplomas, than those with NCEA Level 2 or 3, and a higher proportion in level 1 to 3 certificates.

Figure 12 shows the distribution of NCEA qualifications for people who had enrolled at each level of tertiary education by age 23. It shows that 92% of those enrolled at bachelors level had NCEA Level 2 or higher, along with 85% of those who had enrolled in a level 4 to 7 certificate or diploma.

NCEA Level 2 or 3, along with meeting the University Entrance requirements, are pre-requisites for degree-level study. The prerequisites for degree-level study at university are stricter than at other providers. So students who intend to go to degree-level study need to complete these levels of NCEA. This means the attainment follows the intentions of students more so than intentions following attainment.

Figure 12

Distribution of the 1991 cohort in New Zealand at age 23 by highest level of tertiary enrolment and highest NCEA level



6 GETTING A JOB

This section looks at patterns of employment. The data analysis approach used for this study enables us to look at multiple and overlapping periods of activity. For example, we can identify whether a person has been in education and in employment during the same year. This enables us to look at how people combine study and work at different ages, as well as the proportion in employment but not study.

KEY POINTS

Young people with higher school performance who had not been disengaged at school were more likely to be in employment at age 23 (either with or without study) than other young people. They were also more likely to combine education with employment.

Young people with lower school performance who had been disengaged at school were least likely to be in employment at age 23 (either with or without study). Of those who were in study, a larger proportion did not have employment.

This suggests that having lower performance and/or disengagement at school is associated not just with lower study participation but also with lower employment rates.

There was a higher proportion of young people with NCEA Level 2 or higher in employment. The majority of young people in full employment, and no longer in study, had attained at least NCEA Level 2 and/or studied tertiary education at Level 4 and above.

The IDI data provides information on employment spells per person and employer and their taxable income from these spells. It doesn't provide any information on contract type or hours worked. From the length of the spell and the income, we can identify employees who are being paid very low amounts relative to their period of employment. It is likely they are working part-time or irregular hours. For this study, a threshold was set at having an income pro-rated over a 40 hour week that averages to more or less than two-thirds of the minimum wage.

People can have more than one employer during the year, or multiple spells with the same employer under different employment arrangements. This means they can have some spells that fall below the threshold and some above. Furthermore, the length of these spells can vary. For example they could have a short spell above the threshold and a longer spell below the threshold.

People were regarded as more fully engaged in employment, if their total time in employment spells that were above the threshold added to at least 182 days (six months) in a year. All other people with employment were counted as having part employment for that year.

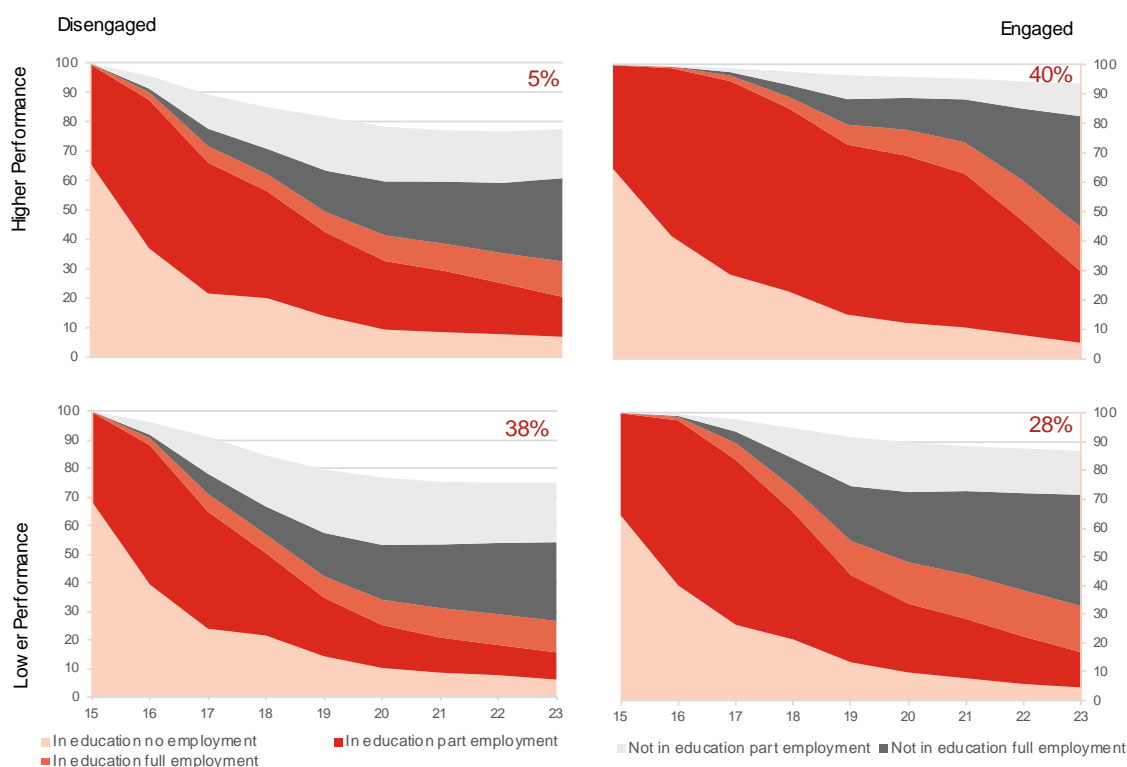
Figure 13 shows the distribution of employment and education participation by school performance and engagement.

Those with higher school performance who were not disengaged at school were more likely to be in employment at age 23 (either with or without study) than those in the other groups, with 88% in some level of employment. They were also more likely to combine education with employment.

Those with lower school performance who were disengaged at school were least likely to be in employment at age 23 (either with or without study), with only 69% some form of employment. Of those who were in study, a larger proportion did not have employment.

Figure 13

Proportion of 1991 cohort in New Zealand by education and employment status, school performance and engagement.



Percentage figures show the proportion of the 1991 birth cohort in New Zealand at age 15 in each group

Table 2 looks at the employment rates of each group by whether they were in or out of study. It more clearly shows the gradation of employment rates from those with high performance and no disengagement down to those with low performance and disengagement. This suggests that having lower performance and/or disengagement at school is associated not just with lower study participation but also with lower employment participation.

Table 2

Rate of employment at age 23, given education participation status, by school performance and engagement

		Higher performance		Lower performance	
		Engaged	Disengaged	Engaged	Disengaged
If in study	Full employment	34%	37%	49%	41%
	Part employment	54%	42%	36%	36%
	Any employment	88%	79%	86%	77%
If not in study	Full employment	68%	42%	58%	38%
	Part employment	20%	25%	23%	28%
	Any employment	89%	67%	80%	66%

The exception is that people in study who had lower performance and no disengagement at school had higher rates of full employment than those in study who had higher performance and no disengagement. This most likely relates to differences in level of study. Those in the former group are more likely to be enrolled in level 4 to 7 certificates and diplomas and the latter group in bachelors and above (see Figure 10 above). People enrolled in level 4 to 7 certificates and diplomas are more likely to combine study with full employment than those enrolled at bachelors and above

(see Figure 16 below). Level 4 to 7 study includes industry training and apprenticeships, where training is delivered to people in employment.

Figure 14

Proportion of 1991 cohort in New Zealand at age 23 by highest NCEA level and employment and education participation

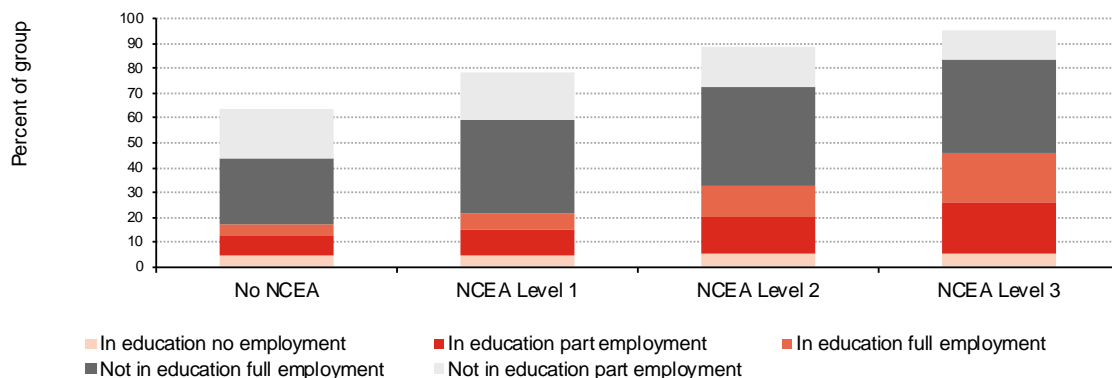


Figure 14 shows that at age 23, a higher proportion of those with NCEA Level 2 and higher were in employment (80 to 90%) than those with NCEA Level 1 only (74%) or no qualification (59%). The most notable difference is in the proportion not in education or employment, which is discussed in more detail in the next chapter. Figure 15 shows the distribution of each employment and education category by NCEA level. It shows that most of those in full employment (in or out of study) had achieved at least NCEA Level 2.

Figure 15

1991 cohort in New Zealand at age 23 by employment and education participation and highest NCEA level

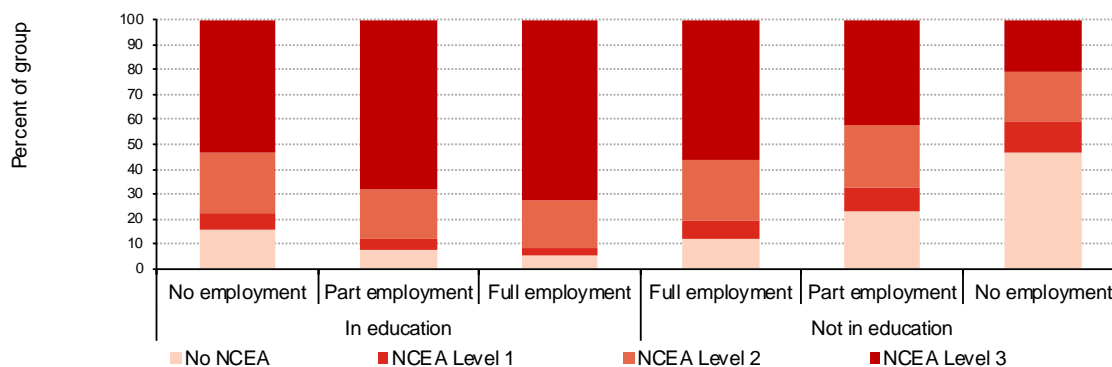


Figure 16 looks at the current employment and education participation of 23 year olds by the highest level of tertiary education they had enrolled in after leaving school. Of those who had not enrolled in tertiary education, just 43% were in full employment and 19% in part employment.

For those who had enrolled in tertiary study, the proportion in study at age 23 increased with level of study, and the proportion in part employment and not in education decreased. Those who had enrolled in level 4 to 7 certificates and diplomas had the highest proportion combining full employment with education. This will include apprentices and other industry trainees. Most of those who had enrolled at bachelors level and above combined study with part employment.

Figure 16

Proportion of 1991 cohort in New Zealand by highest level of enrolment in tertiary education after leaving school and employment and education participation at age 23

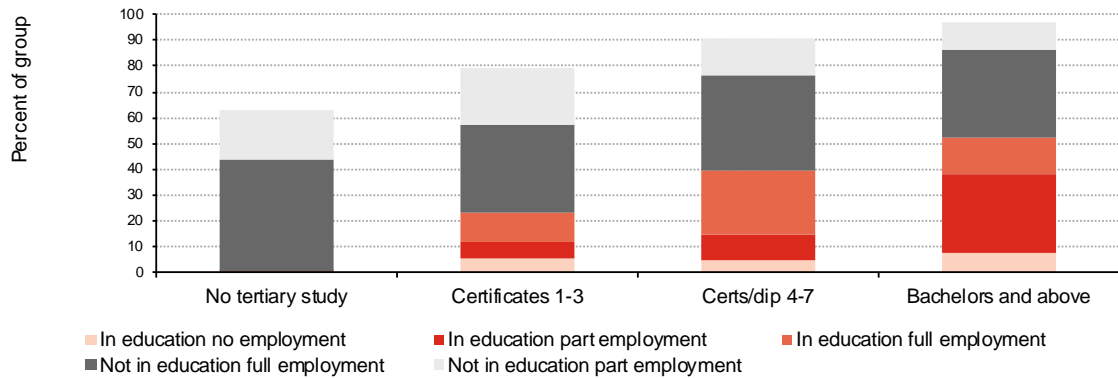
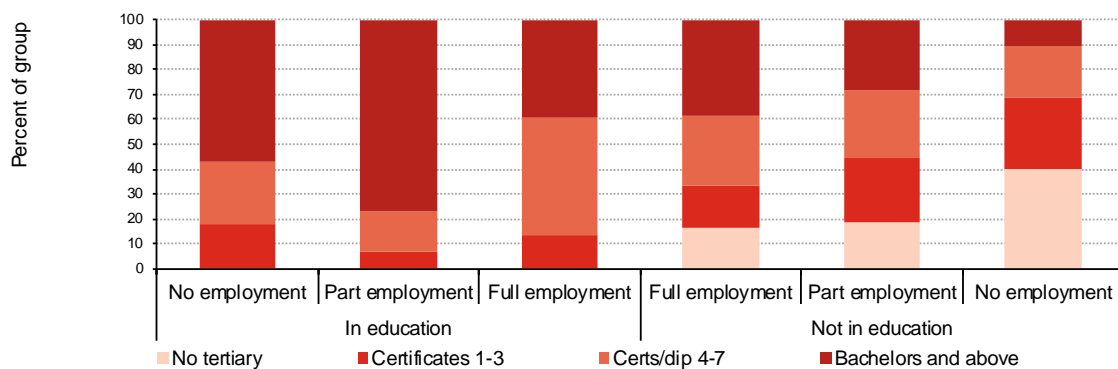


Figure 17 shows the distribution of each education and employment group by highest level of tertiary study. It shows that 67% of those in full employment and not in education had studied at level 4 and above.

Figure 17

1991 cohort in New Zealand by employment and education participation at age 23 and highest level of enrolment in tertiary education after leaving school



7 NOT IN EMPLOYMENT, EDUCATION OR TRAINING

KEY POINTS

The IDI data provides a number of options for measuring NEET status. These measures take account of employment and education status across each year, which contrasts with the point-in-time estimates from the Household Labour Force Survey.

Having short spells of being NEET during the year is reasonably common for young people and is only partly related to educational participation and achievement. Similarly, a reasonably large proportion of young people will be on benefit at some stage during the year.

Being on benefit and being NEET involve different, but overlapping, groups of young people. Not all young people who are NEET are on benefit and not all people on benefit are NEET.

Measures of long-term NEET and NEET as main activity during the year are more differentiated by educational participation and achievement. These measures provide a better focus on young people who could be at risk from being NEET. The measures pick up largely the same group of young people. The long-term NEET measure is limited by needing data for the year before and the year after the year of measurement. NEET as main activity can be calculated from data from within each year. This makes the latter a more timely measure.

The strictest definition of NEET is having no education or employment during the year. This measure is highly differentiated by educational participation and achievement. It identifies the group of young people who are likely to be at higher risk of poor outcomes as a result of being NEET.

Being disengaged at school increases the incidence of being NEET, over and above the effect of the level of school performance. Young people with no NCEA, or with Level 1 only, were more likely to be NEET than those with NCEA Level 2 or 3.

While people with higher educational achievement and participation are less likely to be NEET (across all measures), they still make up a significant minority of those who are NEET. So it cannot be assumed that young people who are NEET are only those with poor educational outcomes.

There is strong policy interest in reducing the proportion of young people who are not in employment, education or training (NEET). Young people who are in this situation, particularly for extended periods of time, are regarded to be at risk of poorer longer term outcomes.

Currently, this group is identified through the Household Labour Force Survey (HLFS). However, this relies on a point-in-time measure of education and employment activity. It doesn't differentiate those who are temporarily out of education and employment from those with longer-term spells. The survey is quarterly, so it also misses people who were NEET between survey periods.

The IDI data provides a number of options for measuring NEET status, including:

- having a period of being NEET any time during the year¹⁰
- being NEET for a longer period, such as greater than six months

¹⁰ In this study, periods of at least 21 days are counted.

- being NEET as the most frequent status (main activity) during the year ie greater number of days being NEET than in education, employment or overseas
- not participating in any education or employment at any time during the year.

We can also look at the proportion who received benefit payments during the year. Most benefits are available from only age 18 and older.

Figure 18 shows the proportion of the 1991 birth cohort in New Zealand that falls within each of these measures. The HLFS total NEET rate and NEET caregiver rate¹¹ are included (as shaded areas) for comparison. The long-term NEET rate is shown only to age 22. The rate is calculated by looking for periods of NEET of at least six months, which can overlap the prior or subsequent year. This means that data for the year before and after is need for this measure. For this reason, the comparison across the measures is made at age 22 in this chapter, rather than age 23.

Figure 18
1991 birth cohort in New Zealand by selected NEET measures

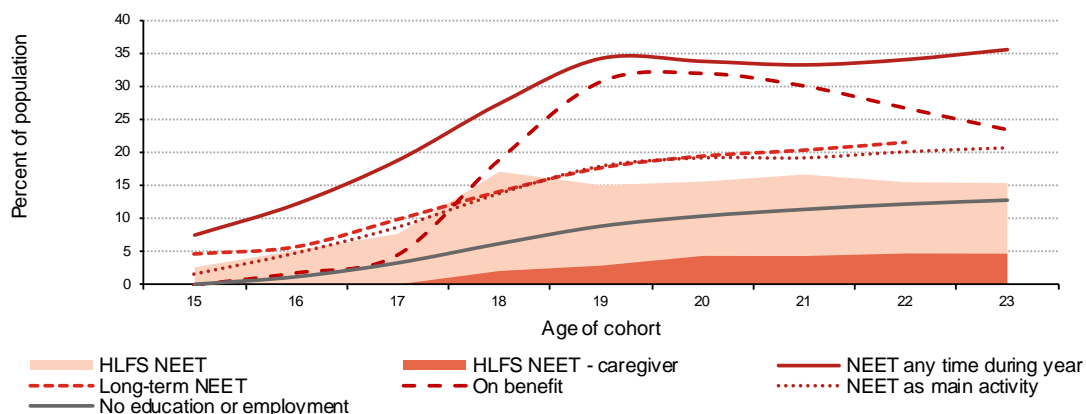


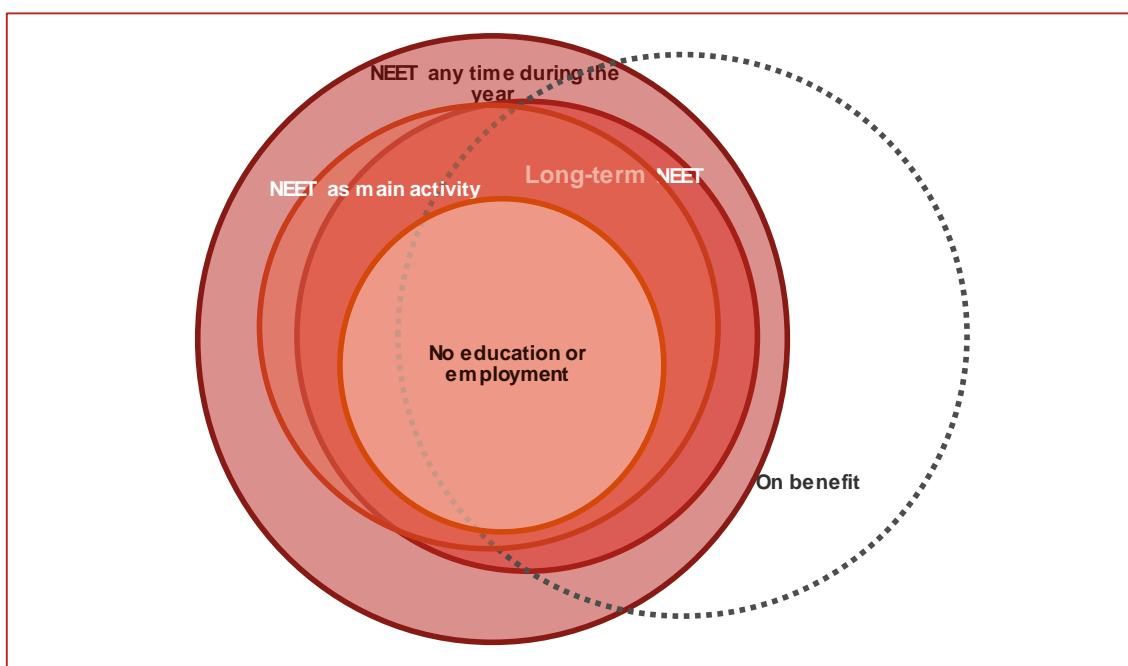
Figure 19 provides a diagrammatic view of how the NEET measures interrelate. The areas of the circles are scaled approximately to the numbers in each group at age 22, and the outer boundary to approximate the total cohort within New Zealand. The intersections approximate the size of the groups in multiple categories.

The IDI data shows 34% of 22 year olds have some NEET spells during the year. This compares with 27% who received a benefit payment at some stage during the year. It would appear that these two measures are reasonably correlated up to age 21. We would expect the benefit rate to be consistently lower, as not everyone who experiences a spell of NEET would be eligible or apply for a benefit. Also, not all young people on benefit are NEET. A proportion of people receiving benefits is engaged in education and/or has some employment (as illustrated in Figure 19).

Twenty one per cent of 22-year-olds had experienced a long-term period of being NEET (six months or more) in that year and a similar proportion was identified by looking at the main activity during the year. The definitions of these groups are similar and there is a very high degree of overlap between them. The definition of long-term NEET includes periods of being NEET that span calendar years, while the main activity definition is confined within a calendar year and may miss these periods between years.

¹¹ The caregiver rate includes people who are caring for a dependent child or adult, and are not in employment, education or training.

Figure 19
Diagrammatic relationship of NEET measures



The areas of the circles approximate the size of each group.

The most restrictive definition of being NEET is having no education or employment participation during the year. The rate at age 22 was 12%. All those in this group were also long-term NEET and had NEET as a main activity. Not all of them received a benefit.

This last group is likely to include a significant group who are full-time parents and caregivers. In this study, we have not included any data on parenting and care giving. This data has recently been made available in the IDI and can be investigated further in later reports on this theme.

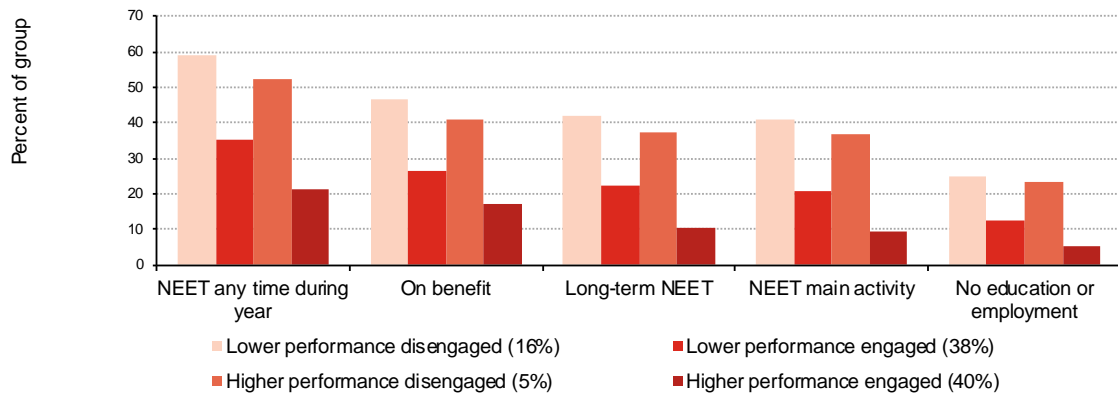
The total HLFS rate roughly follows the IDI rates for long-term NEET and NEET as main activity. The proportion identified as NEET due to care giving responsibilities in the HLFS follows the 'no education and employment' line, albeit at a lower rate. It would not be expected that the HLFS rates would align with any of the IDI rates, as the bases of measurement are quite different.

Figure 20 looks at the incidence of each measure for the four groups of students by school performance and engagement. For the same performance level, being disengaged at school increases the incidence of being NEET. Those with a combination of low performance and disengagement from school have much higher rates of being NEET in every measure than any other group. Those with high performance and no disengagement have much lower rates.

Across the measures, the "NEET any time during year" and "Benefit receipt" measures have relatively high incidence for young people who had higher performance and no disengagement. The 'long-term NEET' and "NEET as main activity" measures have much lower incidence for this group. This reinforces that these measures are more strongly associated with low school performance and engagement.

Figure 20

NEET measures for 1991 birth cohort in New Zealand at age 22 by school performance and engagement

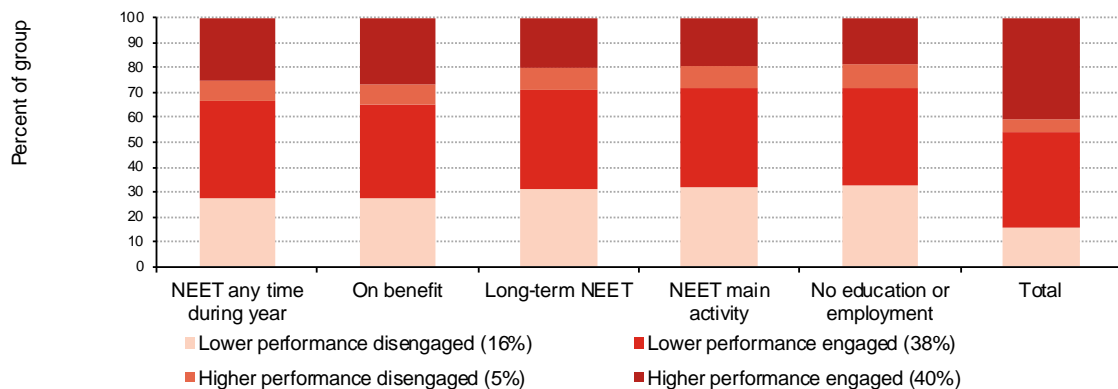


Percentage figures show the proportion of the 1991 birth cohort in New Zealand at age 15 in each group

Figure 21 shows the distribution of people within each NEET group by school performance and engagement. It shows that 20 to 25% of people in each NEET group had higher performance in NCEA Level 1 and no school disengagement. So while only a small proportion of this group are likely to be NEET, they still make up a significant proportion of young people who are NEET.

Figure 21

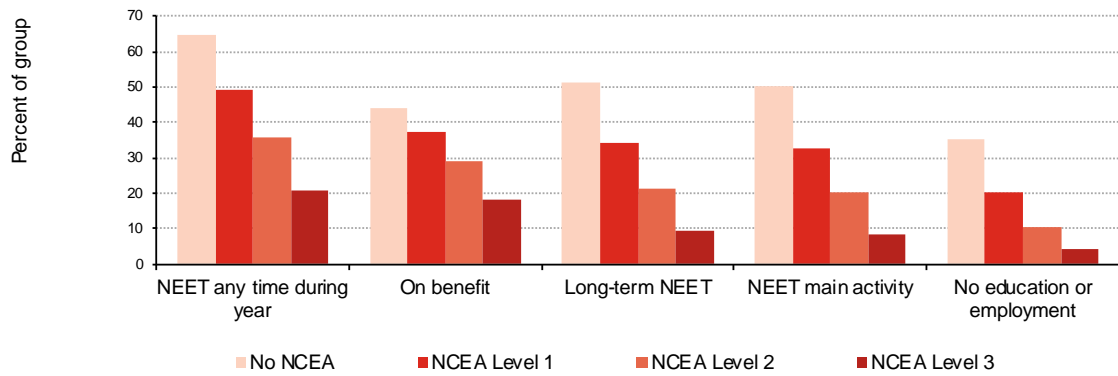
Distribution of the 1991 birth cohort in New Zealand at age 22 within NEET measures by school performance and engagement



Percentage figures show the proportion of the 1991 birth cohort in New Zealand at age 15 in each group

Figure 22 looks at the incidence of each measure by the highest level of NCEA achieved. For each measure, the incidence decreases for people with higher levels of NCEA. There is a reasonably large proportion of people with NCEA Level 3 who were NEET at some time during the year and/or on benefit. The other three measures provide greater differentiation between NCEA levels.

Figure 22
NEET measures for 1991 birth cohort in New Zealand at age 22 by highest level of NCEA



So while a smaller proportion of this group are likely to be NEET, they still make up a significant proportion of young people who are NEET.

So while a smaller proportion of this group is likely to be NEET, they still make up a significant proportion of young people who are NEET.

Figure 23 shows the distribution of each NEET group by their highest level of NCEA. It shows that 37 to 61% of people in each NEET group had NCEA Level 2 or higher. So while a smaller proportion of this group is likely to be NEET, they still make up a significant proportion of young people who are NEET.

Figure 23
Distribution of the 1991 birth cohort in New Zealand at age 22 within NEET measures by highest level of NCEA

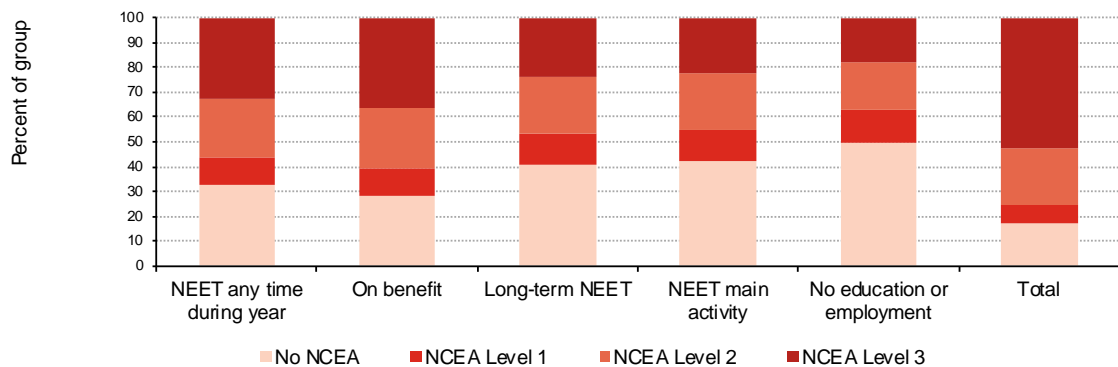
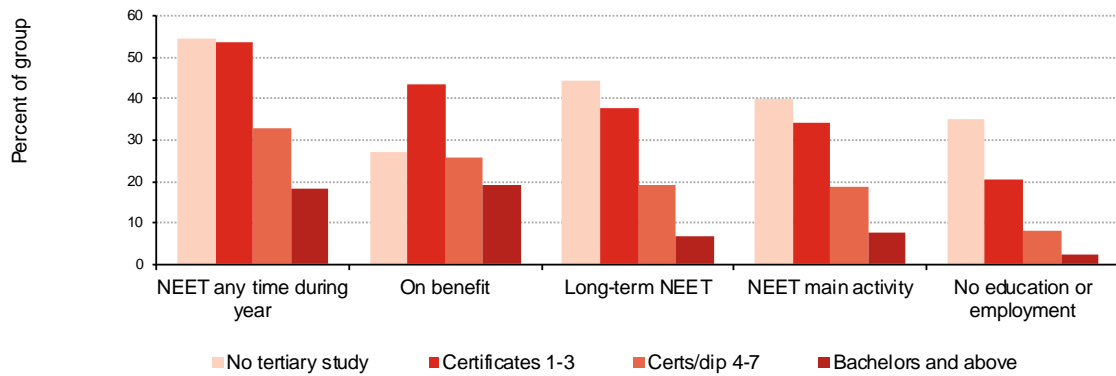


Figure 24 looks at the incidence of each measure by the highest level of enrolment in tertiary education since leaving school. It shows some interesting variations between the measures.

Figure 24
NEET measures for 1991 birth cohort in New Zealand at age 22 by highest level of tertiary enrolment

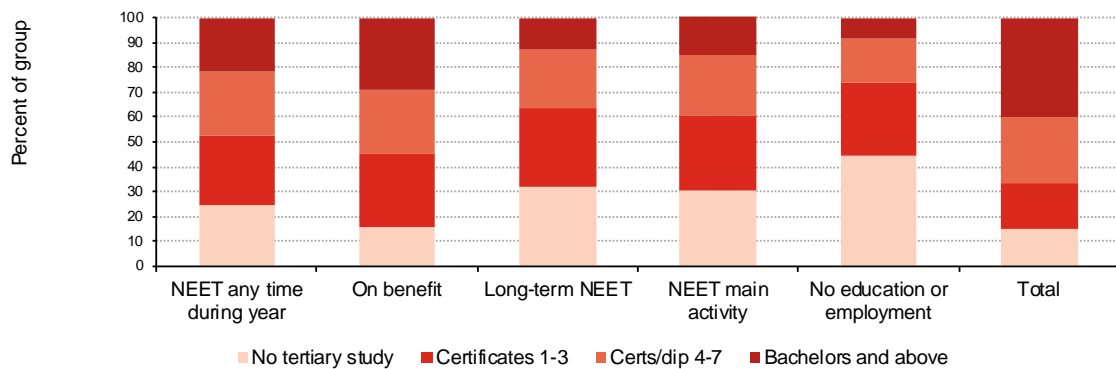


People who had only studied in level 1 to 3 certificates by age 22 had the same incidence of being NEET at any time during the year as those who undertook no tertiary study. They were also much more likely to be on benefit at age 22. This is a result of enrolment in level 1 to 3 certificates fulfilling the training requirements for receiving a benefit. The “long-term NEET” and “NEET as main activity” measures also show very little difference between those who had studied at level 1 to 3 and those with no tertiary study.

Across all the measures, people who had studied at level 4 or higher had lower rates than those who had not studied in tertiary or only at levels 1 to 3. People who had studied at bachelors level and above had relatively high incidence of being NEET at any time during the year and being on benefit, but quite low incidence of the other measures.

Figure 25 shows the distribution of each NEET group by their highest level of tertiary education enrolment. It shows that 26 to 47% of people in each NEET group had enrolled at level 4 or higher. So while a smaller proportion of this group is likely to be NEET, they still make up a significant proportion of young people who are NEET.

Figure 25
Distribution of the 1991 birth cohort in New Zealand at age 22 within NEET measures by highest level of tertiary education



8 EARNING AN INCOME

This section looks at the annual earnings of young people who were in employment in New Zealand during each year. It looks at people who were in full and part employment, and in or out of education. This chapter uses the same definitions of education and employment as set out in

KEY POINTS

For young people up to the age of 23, higher educational participation and achievement is associated with being in employment. However, given the level of employment that a young person is in, there is only a small association between educational participation and achievement and annual earnings.

For young people who have completed a tertiary qualification by age 22, and do not continue in study, their qualification level had a small association with higher annual earnings at age 23. This provides an early indication of the effect of qualification completion on earnings.

chapter 6.

Figure 26 shows annual earnings for the 1991 birth cohort in New Zealand, adjusted to 2014 dollars¹². Young people in full employment had the same average annual earnings whether or not they were also in education. For young people aged under 21 in part employment, there was a very small difference between those who were in education and those who were not. Annual average earnings for young people in full employment increased with age, whereas for those in part employment there was very little increase with age.

Figure 26

Real annual average earnings of 1991 birth cohort in New Zealand by employment and education status and age (2014 dollars)



Figure 27 looks at earnings for young people in different combinations of employment and education by their school performance and engagement. It shows that school performance and engagement make remarkably little impact on average annual earnings, given that a young person is in either full or part employment. As explored in the previous section, these factors are strongly associated with whether a young person is in employment. But given that they are in full employment or in part employment, there is little effect on earnings within these age groups.

¹² Earnings have been adjusted using the June Consumer Price Index from Statistics New Zealand.

For those in full employment and not in education (bottom left), there is some divergence showing up at age 23 between those with higher and lower school performance. This is likely to increase as more tertiary qualified people enter the workforce.

Of those in part employment and not in education (bottom right), the ones with lower school performance who were disengaged at school were likely to have lower earnings and those with high performance and no disengagement had the highest earnings.

Figure 27

Real annual average earnings of 1991 birth cohort in New Zealand by employment and education status, school performance and engagement, and age (2014 dollars)

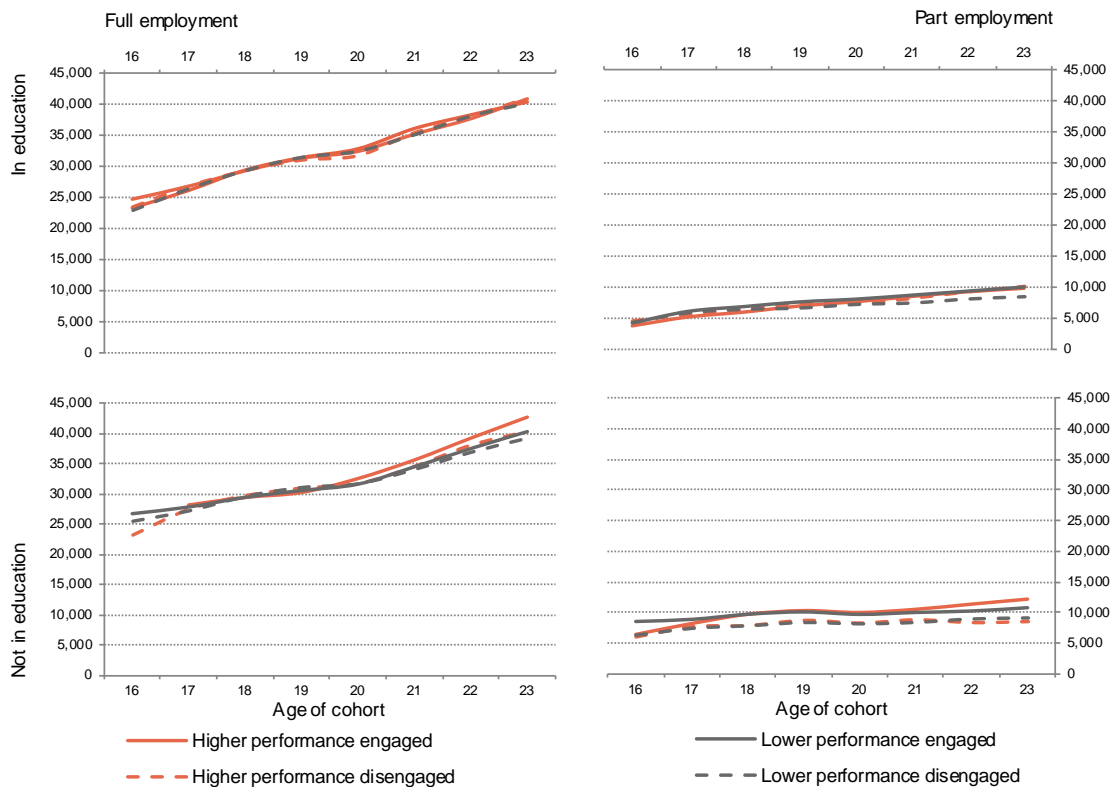
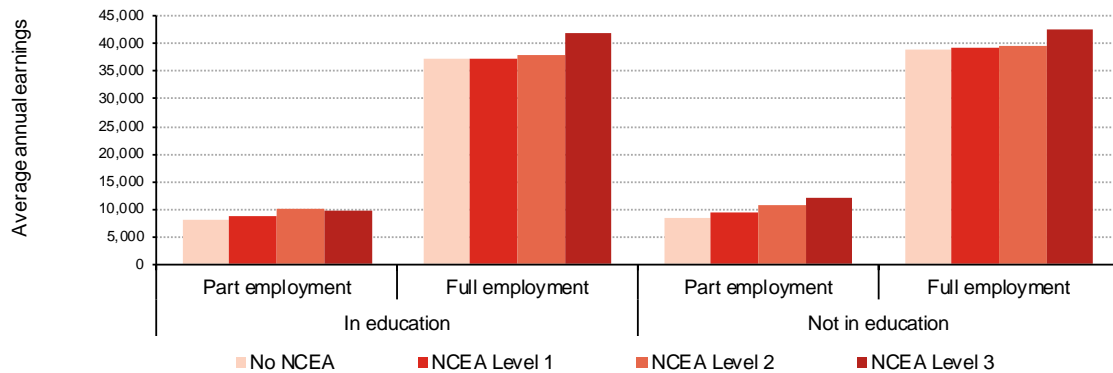


Figure 28 below looks at annual earnings at age 23 by NCEA level. It shows small differences in annual earnings by NCEA level within each employment group, with the largest difference being for those with NCEA Level 3. This suggests that the larger impact of NCEA qualifications is on increasing the opportunity to gain employment and, given the level of employment, there is a smaller effect on earnings at this age.

Figure 28

Annual average earnings of 1991 birth cohort at age 23 by education and employment status and highest level of NCEA



The next set of figures look at the distribution of annual earnings at age 23 for various groups. Average earnings can hide important differences in the distribution of income. These figures show the extent of differences across the distribution. The diamond in the box denotes the median earnings. The box shows the distribution from the 25th percentile to 75th percentile. The whiskers show the distribution from the 10th percentile to the 90th percentile.

Figure 29 shows the income distribution by school performance and engagement. For people in part employment, there was very little difference by school background. For people in full employment and not in education, there were small differences. Those with no disengagement and higher performance had higher incomes than those with those with disengagement and lower performance.

Figure 29

Distribution of annual earnings for 1991 birth cohort at age 23 by education and employment status and school performance and engagement

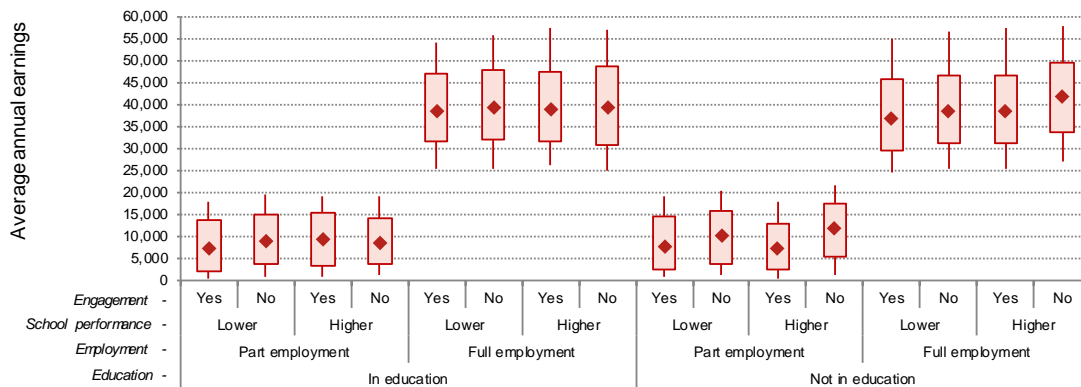


Figure 30 shows the income distribution by the highest level of NCEA achieved. It shows a similar story as for the averages in Figure 28.

Figure 30

Distribution of annual earnings for 1991 birth cohort at age 23 by education and employment status and highest level of NCEA

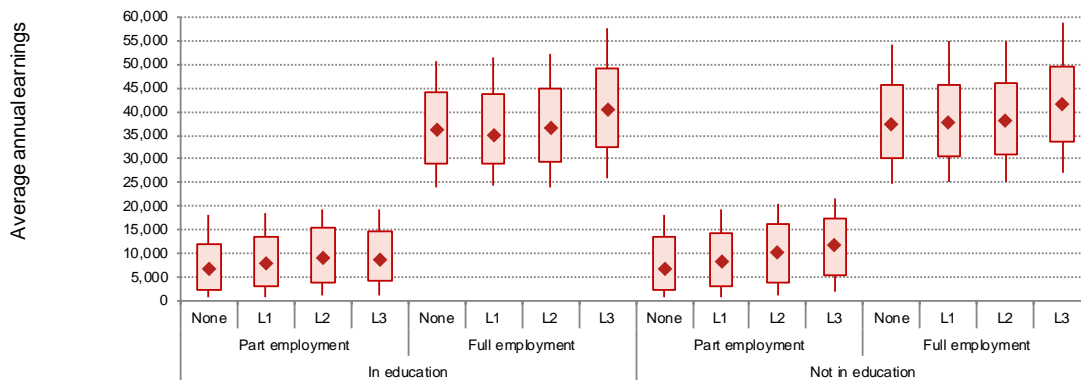
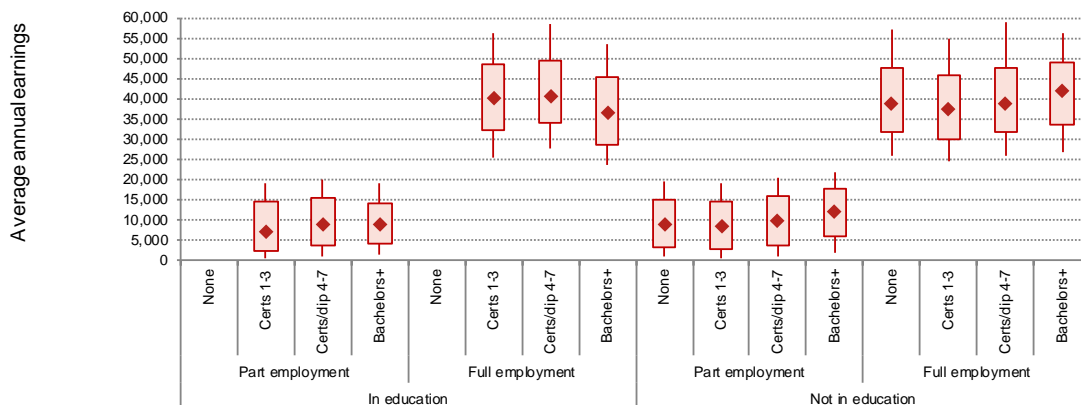


Figure 31 shows income distributions by highest level of tertiary enrolment after leaving school. It shows very little difference in the distribution of incomes, given the level of employment. One exception is young people studying at bachelors level with full employment had lower incomes overall than other young people combining full employment with study. This may reflect that the higher study demands for bachelors degrees decrease the amount of employment students can take on.

Figure 31

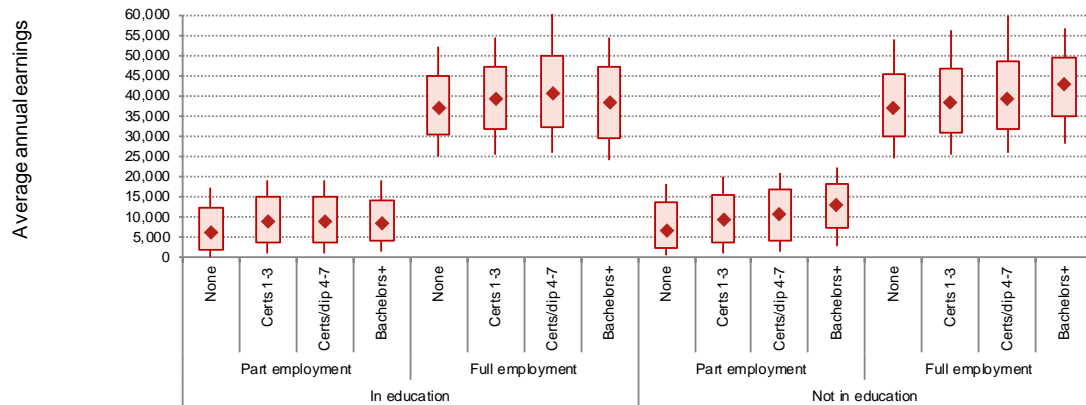
Distribution of annual earnings for 1991 birth cohort at age 23 by education and employment status and highest level of tertiary education enrolment



In Figure 31, “not in education” includes people who studied at each level without completing a qualification. There is likely to be a higher proportion in this group at the higher levels of study. Figure 32 shows income distributions by the highest level of tertiary completion. Age 23 is early for looking at completion across all levels, especially bachelors and above, especially given that those “not in education” would have completed their qualifications by age 22. However, it provides an interesting picture of differences that are likely to show up once more young people have completed their studies, and have had some time in the labour market. For those in education, there is very little difference compared to the highest level of enrolment. However, for those not in education, there are some differences emerging by completion level. People in part employment have higher incomes if they had completed a tertiary qualification. People in full employment had higher incomes if they had completed a bachelors degree or higher.

Figure 32

Distribution of annual earnings for 1991 birth cohort at age 23 by education and employment status and highest level of tertiary education completion



The EOTE project looks at the incomes of all young graduates (up to age 29) after they have completed study. It looks at earnings for different cohorts of graduates but in the same labour market, up to eight years after they complete their studies, and shows much stronger effects of completing study at higher levels on income (Park et al., 2014).

9 MAIN ACTIVITY IN EACH YEAR

KEY POINTS

For analytical purposes it is useful to be able to assign a single activity per year to each person. A measure has been developed that assigns a main activity to each person, based on the activity in which they were involved for the highest number of days in the year.

The main activity measure effectively summarises the observations in the previous chapters and shows the distribution of young people across employment, education and being NEET.

Young people who were disengaged and/or had lower school performance were less likely to remain in education and more likely to be employed or NEET.

Those with no school qualifications, or with NCEA Level 1 only, were more likely to be NEET and less likely to be in education or employment at age 23. Similarly, those who had studied at level 4 or higher in tertiary education were more likely to be in employment or education and less likely to be NEET at age 23.

Most of the preceding analysis has counted young people in multiple states in the same year. A young person could have been in education, had some employment and been NEET in the same year.

For analytical purposes, it is useful to be able to assign a single activity per year to each person. The variable explored in this chapter does that by picking out the 'modal activity' that is the activity in which the person had the highest number of days during the year. The underlying data allows for periods of employment and education to overlap. The modal value is chosen from the total number of days in each 'activity', irrespective of overlaps. This means that we can look at a range of outcome variable according to the predominant activity of each person in each year.

This contrasts with other approaches which assign activities in priority order. For example, the EOTE project used a priority order of overseas, study, employment, benefit and other activity. This was done to separate people in further study from those in employment and provide information on employment returns after study (Mahoney et al., 2012).

Where someone has been continuously employed throughout the year and also had a full-year enrolment in school or tertiary, they will be counted as employed. People in industry training will most likely be counted as employed in this measure. In this way, the measure favours reporting employment over education.

Figure 33 shows this main activity variable for all young people in the 1991 cohort, whether in New Zealand or overseas. The clear area at the top of the graphs in this section is the proportion who were counted as not being in New Zealand at each year of age. The coloured areas represents the main activities (in New Zealand) of those counted as being in New Zealand. A small proportion of those counted as being in New Zealand were overseas for longer than any of the other three activities¹⁵.

¹⁵ People are counted as being in New Zealand if they were overseas for all of the year, were overseas for more than nine months in the year they left, or were in New Zealand for less than nine months in the year they returned. People who meet these thresholds in the year they leave or return could still have more time overseas than in either education, employment or being NEET.

Figure 33
Main activity for total 1991 birth cohort by age

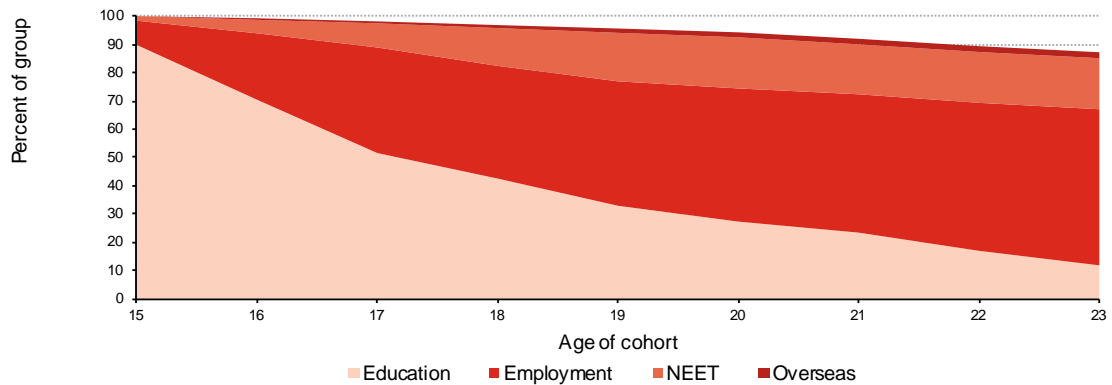
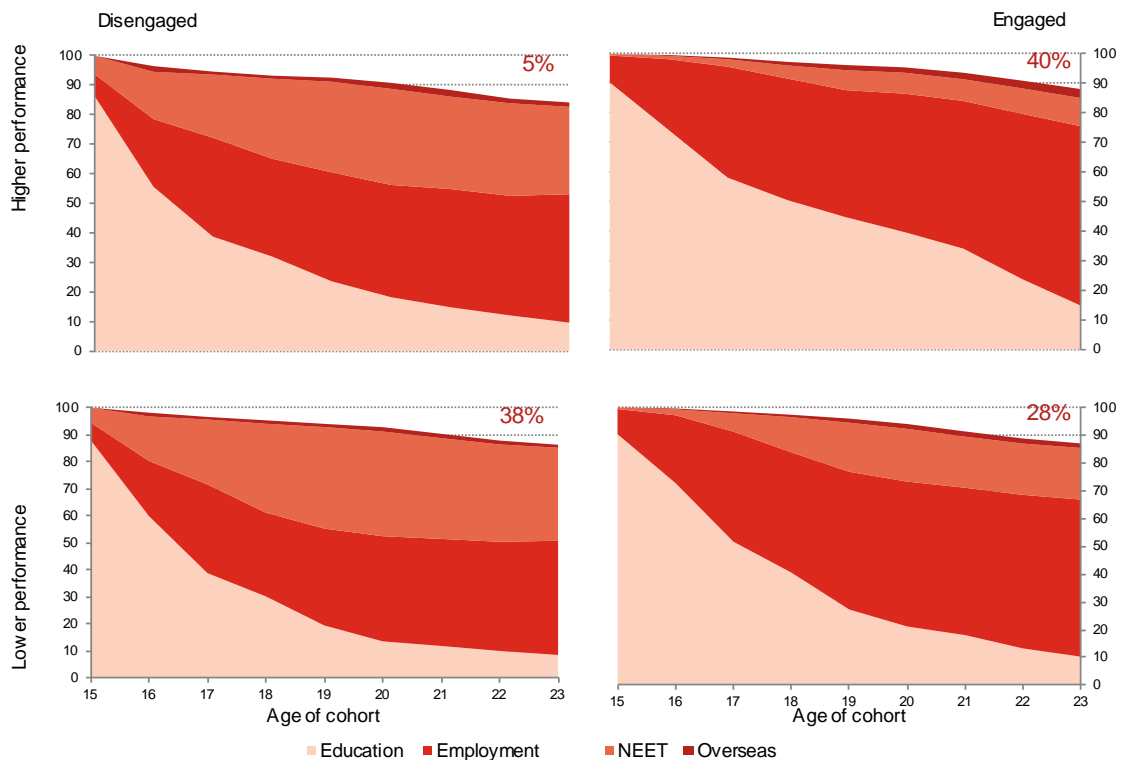


Figure 34 looks at main activity by school performance and engagement for all young people in the 1991 cohort. It shows how this variable effectively summarises the observations in the previous chapters. Young people who were disengaged and/or had lower performance were less likely to remain in education and more likely to be employed or NEET.

Figure 34
Main activity for total 1991 birth cohort by school performance and engagement and age



Percentage figures show the proportion of the 1991 birth cohort in New Zealand at age 15 in each group

Figure 35 shows main activity at age 23 by the highest level of NCEA attained for all young people in the 1991 cohort. Again, the area above the coloured bars represents the proportion of each group that was not in New Zealand. The figure shows that the proportion whose main activity was NEET decreases with NCEA level. The proportion in employment increases from no NCEA to NCEA Level 3. People with NCEA Level 3 had the highest proportion in education.

Figure 35
Main activity for total 1991 birth cohort at age 23 by highest level of NCEA attained

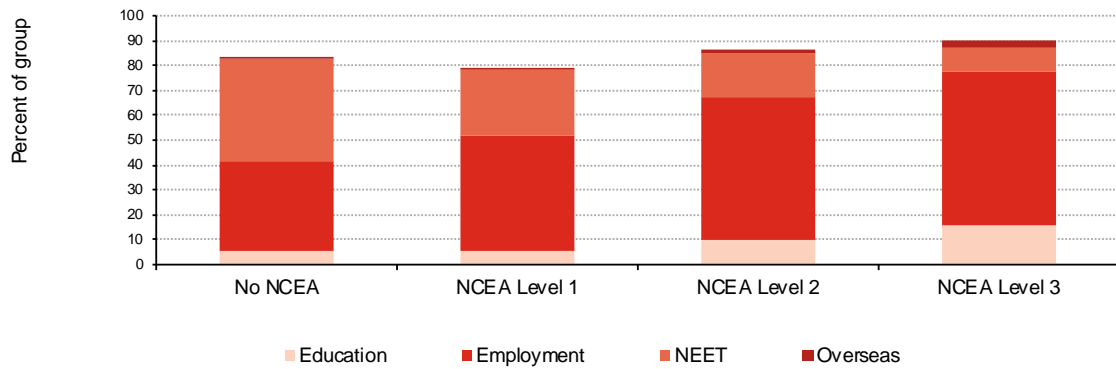


Figure 36 shows the distribution of people by highest level of NCEA within each main activity group¹⁴. It shows that, at age 23, 90% of those in education and 85% of those in employment had attained NCEA Level 2 or higher. On the other hand, 50% of those who were NEET had qualifications below NCEA Level 2.

Figure 36
Highest level of NCEA attained for total 1991 birth cohort at age 23 by main activity

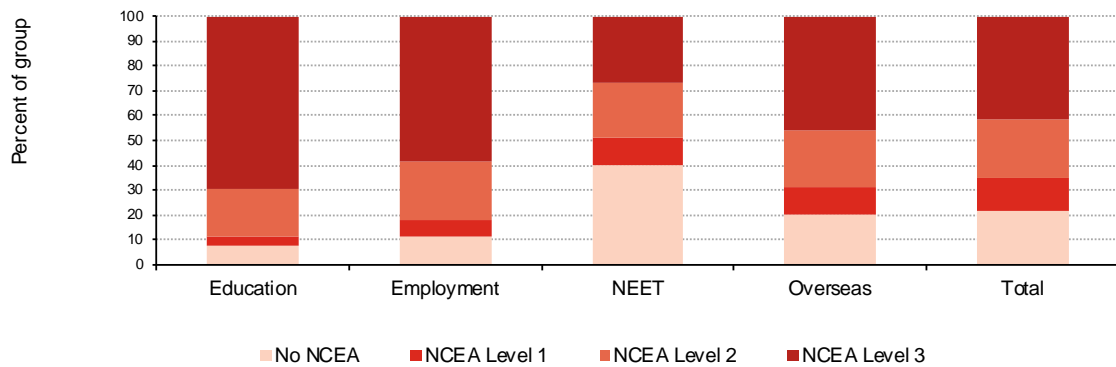


Figure 37 shows main activity at 23 by the highest level of tertiary enrolment since leaving school for all young people in the 1991 cohort. It shows that young people who had no tertiary enrolment or had only studied at levels 1 to 3 were more likely to have NEET as their main activity. Those who had enrolled in tertiary study were more likely to have employment as a main activity than those who had not.

¹⁴ The 'overseas' group includes those who were not in New Zealand during the year (blank section on previous figure) and those whose main activity was "overseas".

Figure 37
Main activity for total 1991 birth cohort at age 23 by highest level of tertiary enrolment

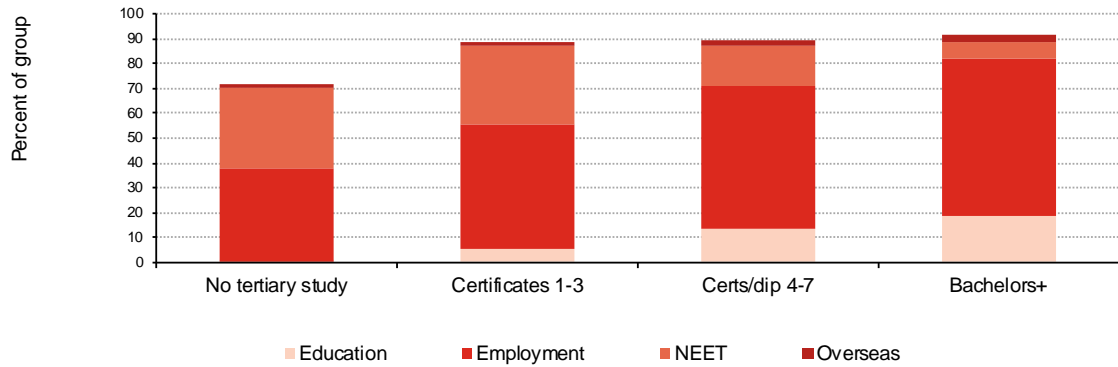
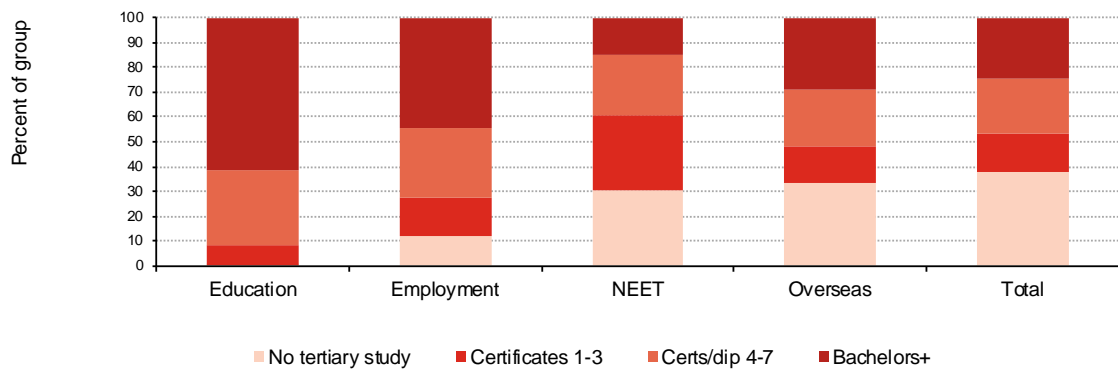


Figure 38 shows the distribution of people by highest level of tertiary enrolment within each main activity group¹⁵. It shows that, at age 23, 95% of those who were in education and 72% of those who were in employment had had their highest tertiary enrolment at level 4 or above. On the other hand, 60% of those who were NEET had either not enrolled in tertiary education or enrolled only in level 1-3 certificates.

Figure 38
Highest level of tertiary enrolment by main activity for total 1991 birth cohort at age 23



¹⁵ The 'overseas' group includes those who were not in New Zealand during the year (blank section on previous figure) and those whose main activity was "overseas".

10 CHANGES FROM THE 1991 TO THE 1995 BIRTH COHORT

As discussed in the introduction, the preceding sections of this report have looked at variations by age, when controlled for cohort. This section looks at variations by cohort, when controlling for age.

This section provides a brief look at the different experiences of the 1991 to 1995 birth cohorts. The 1991 birth cohort turned 23 in 2014 and the 1995 birth cohort turned 19 in the same year. This relates back to the discussion in chapter 3 about the different experiences of the cohorts. As discussed in chapter 3, the 1991 birth cohort was finishing secondary school during the start of the global financial crisis, whereas the 1994 birth cohort had some additional time at school to prepare for a tight labour market.

KEY POINTS

There has been a small increase between older and younger cohorts in the proportion who were overseas, particularly aged 19 to 22.

For those who stayed in New Zealand, the proportion in education from 16 to 19 years of age has been increasing. At the same time, the proportion in employment and not in education has decreased.

There has been an overall decrease in the proportion who are not in employment, education or training at each year of age, as there has been in the proportion receiving a welfare benefit.

Figure 39 shows the proportions of each birth cohort who were overseas. It shows a trend towards an increasing proportion of young people being overseas in each successive cohort, particularly aged 19 to 22. This increase appears to reduce in the last year for each cohort (2014). This may be a reflection of recent decreases in outward migration, but could also be an effect of the last year of data (for example, the movement records for the last year may not be entirely complete).

Figure 39
Proportion of 1991 to 1995 birth cohorts overseas

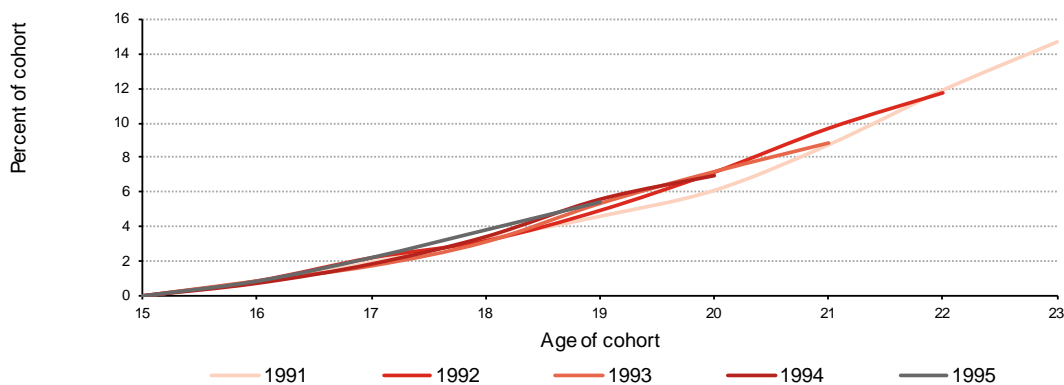


Figure 40 shows the proportions of each birth cohort in New Zealand who were in school and/or tertiary education at each age. It shows increasing proportions in education at ages 16 to 19 for each successive cohort. For example, 77% of 18-year-olds in the 1991 birth cohort were in education, increasing to 82% in the 1995 birth cohort.

Figure 40

Proportion of 1991 to 1995 birth cohorts in New Zealand in education

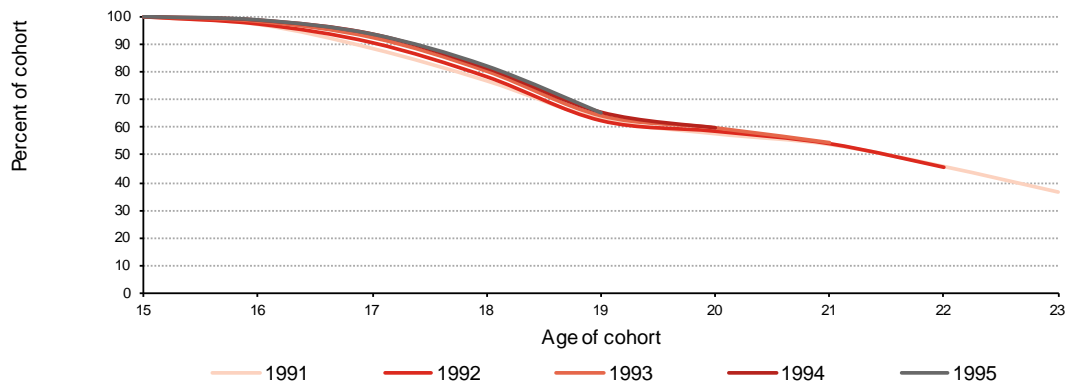


Figure 41 shows the proportions of each birth cohort in New Zealand who were in employment and not in education. The solid lines show the proportion in full employment and the dashed lines show the proportion in any employment.

As education participation has increased, the proportion in employment has decreased. For example, 17% of 18-year-olds in the 1991 cohort were in any employment (and not in education), decreasing to 13% in the 1995 cohort. The proportion in full employment (and not in education) decreased from 8% to 6%.

Figure 41

Proportion of 1991 to 1995 birth cohorts in New Zealand in employment and not in education



Figure 42 shows the proportions of each birth cohort in New Zealand whose main activity at each year of age was 'not in employment, education or training'. It shows that the proportions decreased for each cohort. For example, 14% of 18-year-olds in the 1991 cohort had a main activity of 'not in employment, education or training', decreasing to 11% in the 1995 cohort.

Figure 42

Proportion of 1991 to 1995 birth cohorts in New Zealand whose main activity was 'not in employment, education or training'

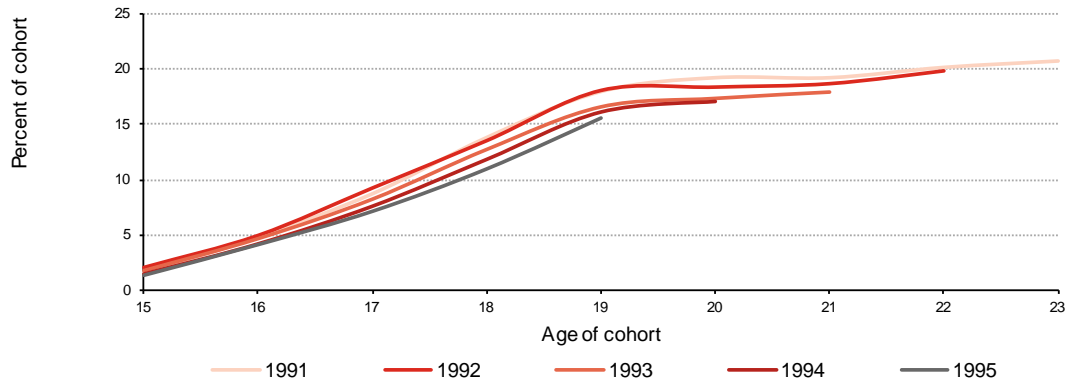
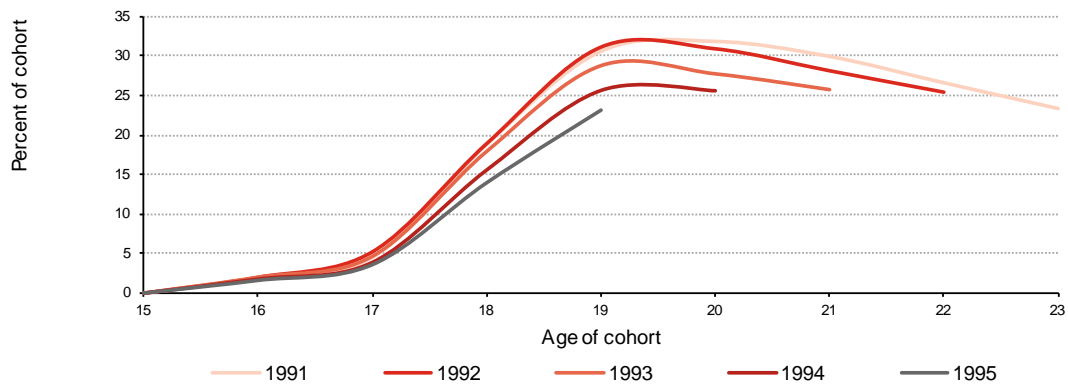


Figure 43 shows the proportion of each birth cohort in New Zealand who received a welfare benefit at each age. It shows that the proportions have decreased. For example, 19% of 18-year-olds in the 1991 birth cohort received a benefit, decreasing to 14% in the 1995 cohort.

Figure 43

Proportion of 1991 to 1995 birth cohorts in New Zealand who received a welfare benefit



APPENDIX A COMPARISON WITH OTHER STUDIES

This appendix reviews other New Zealand studies of young people that used cohort methods and/or had a focus on young people not in employment, education or training. It shows the extent to which these studies found similar results, as well as other research questions that were considered which are outside the scope of this current report.

Christchurch Health and Development Study

The Christchurch Health and Development Study is a longitudinal survey of a cohort born in Christchurch (New Zealand) in 1977. The study followed them from birth, through adolescence and into adulthood. The cohort turned 38 in 2015. The study includes a wide range of information that is not commonly available from survey or administrative data. A number of research papers on outcomes are relevant to this report. The results of a selection of these studies are outlined below grouped by outcome and the contributing factors.

Educational achievement in young adulthood was shown to be strongly related to:

- socioeconomic status at birth, with child cognitive ability and family educational aspirations being important to the relationship, but not explaining all of it. The researchers proposed that the accumulative impacts of many different factors, each with small effects, may explain the rest of the relationship (Fergusson, Horwood, & Boden, 2008)
- family income during childhood (Gibb, Fergusson, & Horwood, 2012)

Early conduct problems and low school achievement were shown to be independently, and additively related, to the risk of involvement in crime in early adulthood. The study implied that raising the educational achievement of young people with early onset conduct problems could reduce longer-term antisocial behaviour. However, the authors noted that this need to be tested through further experimental research (Jakobsen, Fergusson, & Horwood, 2012). Affiliating with deviant peers was also shown to be associated with increased crime and substance abuse, even after controlling for other factors (Fergusson, Swain-Campbell, & Horwood, 2002a).

Early school leaving was shown to be related to:

- a combination of family resources, ability and prior achievement, which had effects over a long period of time (Maani, 2000)
- the proportion of family income from benefits and the mother's educational qualifications for girls, but not for boys (Maani, 2000)
- increased risk of smoking, benefit receipt and no further education or training, once other factors were controlled for (Fergusson, Swain-Campbell, & Horwood, 2002b).

It was shown that leaving school without qualifications was not associated with subsequent mental health problems, once other factors were taken into account (Fergusson, McLeod, & Horwood, 2015).

Young people from disadvantaged backgrounds tended to revise their expectations of attending university downwards from ages 13 to 16, while those in more advantaged situations revised them upwards. There were multiple factors affecting expectations (Maloney, 2004a).

Young people who were not in education, training or employment at age 21 were found to be more likely to be not in education, training or employment at age 25, even after controlling for

background variables (Maloney, 2004b). Exposure to unemployment was found to have a small but pervasive effects on psychosocial adjustment in adolescence and young adulthood. Psychosocial outcomes included mental health, substance use and criminal offending (Fergusson, Horwood, & Woodward, 2001; Fergusson, McLeod, & Horwood, 2014).

Maloney (2002) investigated the differences in early labour market experiences by ethnicity. He found that Māori youth acquired fewer school and tertiary qualifications, and less work experience, by age 21 than other youth. There was also a greater spread for Māori youth, with a substantially larger proportion accumulating very little time in education or employment. Background variables explained much, but not all, of the differences in experience between Māori and other young people. The study noted that Māori youth in the Christchurch Study are not nationally representative.

Early motherhood was shown to be related to higher risks of educational underachievement and poorer economic circumstances. Links to later mental health difficulties could largely be explained by childhood, family and related circumstances occurring prior to parenthood (Boden, Fergusson, & Horwood, 2008). A follow up study at age 30 showed association with working fewer hours, welfare dependence, lower personal incomes and exposure to economic hardship, even after other factors were accounted for (Gibb, Fergusson, Horwood, & Boden, 2015).

Looking at economic outcomes at age 30, it could be seen that:

- income was influenced by household characteristics relating to earning power, educational achievement and ability and childhood living standards
- living standards were influenced by income, earning power, mental health and substance use, and childhood living standards (Boden, Fergusson, & Horwood, 2013)

Competent Learners

The New Zealand Council for Educational Research followed a cohort of around 500 children from just before they started school in the Wellington region. The cohort turned 20 in 2009. The most recent set of reports looked at their experiences after leaving school and their involvement in study and employment (Wylie, 2011). The sample for this study has more young people from high-income homes and high levels of maternal qualification than the country as a whole. Nonetheless, it provides in-depth information on transitions from school to adulthood for young people from a range of backgrounds.

The study found that those who left school with NCEA Level 3, and to some extent with NCEA Level 2, had the most straightforward paths beyond school. They had a positive experience of school, had good parental support, were well motivated and mostly went on to university. Gaining NCEA Level 2 or 3 was more than just a useful qualification. It indicated that young people had built the habits they needed to make the most of independence and choices when they left school.

Those who left school with NCEA Level 1 or no qualification had more challenges finding what they wanted to do and finding study and employment. They were less happy with their situation at 20, and less optimistic. They were more likely to be involved in risky behaviour.

Gaining NCEA was not entirely determined by earlier school performance. More than half of those with low performance at age eight went on to gain NCEA Level 2 or 3. Those who gained NCEA Level 2 did not necessarily have higher levels of achievement at age 14 than those whose highest qualification was NCEA Level 1 or no qualification. But they were more persistent and better at

communication, social skills and self-management. The findings indicate that teachers and parents played an important role in supporting children to achieve.

The study identified risk factors for not achieving a satisfactory pathway from school. These included lower performance at school; low levels of perseverance, communication, self-management, social skills and curiosity; dissatisfaction with school; poor advice about what to do after school; lack of family support and resources; and involvement in risky behaviours. None of these factors were decisive on their own. It was combinations of factors that were likely to lead to poorer outcomes.

Tertiary study and labour market outcomes for low qualified school leavers

Tumen, Crichton and Dixon (2015) examined the labour market benefits of enrolling in tertiary education within the first few years of leaving school for those young people who left school with NCEA Level 2. The study followed a cohort born between 1990 and 1992 using data in the IDI. It used a matched comparison method to compare the employment rates, benefit receipt rates and monthly earnings of those who did and did not participate in tertiary education.

The study found that on average tertiary study had a small positive impact on employment rates for low qualified school leavers, as well as being associated with a small reduction in the likelihood of being on benefit two years later. However, these effects were only evident for those who completed a qualification.

The study also found that higher employment rates led to higher total monthly earnings for those who had completed a qualification. However, when comparing young people in employment there was no difference in earnings between those who did and did not undertake tertiary study. As with the findings in this current study, the main effect of tertiary education in this age group is in providing better access to employment rather than to higher incomes once in employment.

The authors noted that an important limitation of their study is that outcomes could also be influenced by unmeasured differences in the two groups.

Comparing experiences of young people across cohorts

Rea and Callister (2009) looked at how young people's transition to adult roles and responsibilities had changed over the previous 30 years. They made use of Census data from 1976 to 2006 to construct pseudo cohorts grouped into five-year age bands. The study followed groups of individuals over time, rather than individuals. It examined their life circumstances between 15 and 24. The study found that:

- recent cohorts of young people are more likely to be living with their parents, and less likely to living with a partner or parenting children
- there had been an increase, followed by a decline, in the proportion of young sole parents
- there had been a huge increase in education participation, and a modest decline in employment, with more employment being part-time
- the prevalence of unemployment and benefit receipt was increasing over the long-term
- the average personal income of young men had decreased, within this there was some income growth for young women
- young people were more mobile within New Zealand and more were going overseas
- mortality rates were decreasing.

Ussher (2007) compared the tertiary education participation of selected birth cohorts from 1949 to 1984. This study looked at a long-term view of three birth cohorts (1949, 1962 and 1975) and a

shorter-term view of more recent cohorts (1978 to 1984). The study used year-of-age population data to calculate participation rates and tertiary enrolment data to determine participation. The long term view used historic aggregated statistics, while the short term view used the more recently available matched unit-record data. This was restricted to provider-based enrolments and did not include industry training or a large proportion of targeted training.

The long-term view found that each successive cohort had higher rates of participation in tertiary education than the previous, especially in the prime tertiary education ages of 18 to 24. In the shorter term view, the cohorts had very similar trends in participation. For the short-term view, cumulative participation was also analysed. This used tertiary enrolment data which matched individual records over time. Finding an appropriate population figure was more challenging. The option chosen was to take the usually resident population estimates of the cohort age 16 and then adjust to include estimates of the number who had emigrated or died since that age.

Who are young people not in education, training or employment?

Several studies have sought to identify young people who are not in education, training or employment and understand more about them.

Hill (2003) analysed New Zealand data on young people who were NEET. She showed that measures of the proportion of young people who were NEET vary between data sources due to differences in the way education and employment questions are phrased. Estimates for the rate for 15 to 19 year olds varied from 10% to 22% depending on the source. The report found that young people with low school achievement and from low socio economic backgrounds are more likely to be NEET.

Maloney (2004b) used the Christchurch Health and Development Survey to look at three definitions of NEET: young people who were not in any education, training or employment; those who were NEET and not living with a dependent child; and those who were NEET or in part-time education, training or work. Those who were not in any education, training or employment and not living with a dependent child at age 21 were found to have the greatest likelihood of being NEET at age 25.

Samoilenko and Carter (2015) examined the economic outcomes of being NEET using the Survey of Families, Income and Employment (SoFIE) and the Statistics New Zealand Integrated Data Infrastructure. They used propensity score matching to compare young people who experienced a long-term NEET spell with similar young people who did not. They found that young people who left school before the age of 18 had generally poorer outcome than other young people, irrespective of whether they were NEET or not. Where young people were NEET between 18 and 24, the experience did affect their outcomes two years later, and more so for those who were NEET between ages 20 and 24. They were less likely to be employed, more likely to experience another NEET spell and more likely to receive a welfare benefit. Four years after the first NEET spells, their outcomes were similar to the comparison group. The study notes that there is considerable variation in the young people who experience NEET spells, as well as in their outcomes.

Another study using longitudinal data from SoFIE examined the patterns and duration of NEET spells among young people in New Zealand (Dixon, 2013). It looked at the period from 2002 to 2010. The study found that most young people were NEET for short periods in their teens and early twenties and at least 25% to 30% had longer term NEET spells of six months or more. The study found that longer-term NEET spells were more common among early school leavers, young people with low school qualifications and teenage parents. The study related increased incidence of NEET

to being from a lower-socioeconomic background. Teenagers who had a long-term NEET spell were more likely than other teenagers to have further periods of inactivity.

The study highlighted that young people who experience long-term NEET spells are diverse in their background, characteristics and experiences. Those who leave school early without qualifications have much higher risks of continuing to experience long-term NEET spells. However, less is known about the risks associated with long-term NEET spells for young people who have completed NCEA Level 2 or 3 qualifications.

The study calculated NEET rates for all original sample members who were observed for the full 365 days at each age. Table 3 compares the results with the 1991 birth cohort by age from this study. The two studies show similar overall patterns for each indicators, with some differences at specific ages. Dixon shows more 17- and 18-year-olds who were NEET during the year and fewer 19- to 23-year-olds who had long-term NEET spells during the year.

Table 3
Comparison of NEET rates reported in Dixon (2013) with 1991 birth cohort

		16	17	18	19	20	21	22	23
Any NEET during the year	Dixon	13%	30%	44%	36%	33%	34%	33%	27%
	1991 cohort	12%	19%	27%	34%	34%	33%	34%	35%
Any long-term NEET during the year	Dixon	6%	10%	14%	13%	12%	12%	14%	13%
	1991 cohort	4%	6%	10%	14%	18%	19%	20%	21%

These differences are likely to be the result of:

- differences in the data sources; sample survey of households vs administrative data of the whole population
- small differences in the definition of the measures, which could have larger effects at different ages
- differences in the way education and employment spells are reported in each data source; SoFIE has self-reported start and finish dates, whereas the administrative data has dates reported by education organisations and employers
- changes in rates over time; Dixon covers 2002 to 2009, five years earlier than the data for the 1991 birth cohort, which covers 2007 to 2014.

The comparison illustrates that while similar measures with a similar overall pattern can be derived from different data sets, the actual size of the measure is dependent on the data source, the way the data is reported and the rules applied to the measure. The major value of these measures is to further understand the interactions of experiencing NEET spells with the background, characteristics and other experiences of young people.

Identifying children and young people at risk of poor outcomes

In 2014 and 2015, the New Zealand Treasury led a set of projects to look at how administrative data could be used to identify and describe the characteristics of children and young people who are at higher risk of poor long-term outcomes as adults. These outcomes include low school achievement, long-term benefit receipt and contact with the justice system.

This initial analysis looked at risk factors for children, using the Integrated Child Dataset developed by the Ministry of Social Development (Crichton, Templeton, & Tumen, 2015). This analysis was

then updated using Statistics New Zealand's IDI (Ball et al., 2016). A further analysis was undertaken looking at risk factors for young people (McLeod et al., 2015)

The analyses of risk factors for children looked at children aged 0 to 14 years and found a small number of key indicators in agencies' administrative data that are highly correlated with poorer outcomes as adults. These are having:

- a finding of abuse or neglect, or having spent time in care of child protection services
- spent most of their lifetime supported by benefits
- a parent who has received a community or custodial sentence
- a mother with no formal qualifications.

It was found that children with two or more of these indicators were more likely to:

- have contact with Youth Justice before 18
- leave school with no qualifications
- receive benefits for more than two years before the age of 21, and/or receive benefits for more than five years when aged 24 to 34 years
- spend time in jail before the age of 21.

Groups of children at different levels of risk could be identified based on the number and combination of the four risk indicators. However, many children at risk of poor outcomes are not identified by these indicators. On average those with no or only one indicator have much lower rates of poor outcomes than those with two or more indicators. Because the former group is much larger, they make up significant numbers of children with poor outcomes.

The analysis of risk factors for young people looked at the outcomes of young people aged 15 to 24 years. It also found that a number of characteristics of a person's early life are predictive of future poor outcomes. These include early contact with government agencies, demographic characteristics and location and caregiver characteristics. It found that characteristics that are predictive of future outcomes change over time.

As with the analysis of children, it was possible to use a small set of factors to identify groups of at-risk youth at different ages. However, a large number of people have poor outcomes despite not having these factors present. In general, geographic location is strongly associated with risk of poor outcomes.

Some general themes

There are some general themes that emerge from across these studies that are relevant to the current report:

- Family background and early experiences have strong and persistent relationships with later education and employment outcomes.
- Attaining school qualifications is connected with having more positive outcomes in education and employment. There is also a connection between expectations and aspirations and attainment of qualifications.
- Multiple risk factors are associated with poor outcomes following school. Studies point towards an accumulation of risk factors influencing negative outcomes, rather than any single factor being deterministic.

- Being NEET may be defined in several ways. There is also a diversity of young people who experience being NEET.

APPENDIX B COMPARISON WITH EMPLOYMENT OUTCOMES OF TERTIARY EDUCATION

This Appendix provides a comparison of the current report with the work done by the Ministry of Education on developing employment outcomes of tertiary education (EOTE) (Mahoney et al., 2012; Park, 2014). The differences in purpose and methodology are set out in Table 4 below.

The two projects have different purposes. The purpose of EOTE is to let prospective students, their families and those who advise them know about the graduate earnings and employment outcomes from different tertiary study options. To support this, a set of indicators have been developed that assign a single destination to each graduate. The purpose of the current report is to provide exploratory analysis of transitions from school to tertiary education and employment and develop destination indicators that are suitable for use in programme monitoring and evaluation.

The projects are focused on different cohorts and groups of young people. EOTE is focused on young graduates up to ages 21 to 29 and looks at different cohorts in the same labour market. This is explained in further detail below. This report is focused on all young people in New Zealand schools at age 15 and follows them up to age 23. The cohorts are defined by year of birth.

EOTE provides analysis of earning and destinations by the level and field of study. This report focuses on school background, performance and achievement.

EOTE reports earnings of young graduates who are not in further study and whose predominant activity is employment. This project reports incomes of all young people in employment, including those who are also in study. It also differentiates them by full and part employment.

The EOTE project more clearly demonstrates the employment and earnings premiums that young people have following graduation, by level and subject of study. This report focuses more on the employment outcomes and income distribution for young people as they make the transition from school to tertiary education and employment.

There are also some minor definitional differences between the reports with respect to what income is included and how income is adjusted over time.

Table 4

Comparison of the current report with the employment outcomes of tertiary education (EOTE) project

	Current report	Employment outcomes of tertiary education
Purpose	Exploratory analysis and provides destination indicators for programme monitoring and evaluation	Provides consistent information on graduate earnings and employment outcomes
Audience	Policy advisors and Ministers	Prospective students, their families and those who advise them
Group of interest	All young people in New Zealand schools at age 15 and their transition from school to tertiary education and employment	Young tertiary education graduates and their transition to employment
Cohorts	People born in the same year, compared with people at the same age born in different years	People in the same 2 years who had graduated at various times previously
Age groups	From age 15 to 23	Up to ages 21 to 29 at time of graduation, depending on the level of qualification
Analysed by	School background, performance and achievement	Level and field of study
Destination definitions	Allows multiple and overlapping destinations to be identified and measured. Destinations are not prioritised.	Assigned to a single destination using rules that take into account the substantiveness and predominance of their activity. Where a graduate meets the criteria for more than one destination, the destination is determined using the order of precedence: overseas, further study, receiving a benefit, employment.
Overseas	If in NZ in previous year, then 9 months or more overseas overall in the current year If overseas in the previous year, then less than 9 months in NZ in the current year	9 months or more overseas overall in the year
In study	Enrolled in school or tertiary education, including industry training, during the year and not classified as overseas	Enrolled in tertiary study, excluding industry training, during the year and not classified as overseas
Receiving a benefit	Received a welfare benefit payment during the calendar year and not classified as overseas	Received a benefit for at least 4 months during the tax year, and not overseas or in study and not in employment for longer than 4 months
Employment	Received wages and salary during the year differentiated by full and part employment and not classified as overseas	Received wages and salary, paid parental leave and/or accident compensation for at least 4 months or more in a tax year and/or any self-employment income
Not in employment, education or training	Various definitions developed see Chapter 7	NA
Other/unknown	NA	Involved in more than one activity during the year and who do not meet the criteria for any of the above four destinations, or for who no matching data can be found in the IDI
Income definitions	Gross wages and salaries of young people in employment differentiated by full and part employment. Adjusted by the Consumer Price Index.	Gross wages, salaries, self-employment, paid parental leave and accident compensation payments of all graduates who are deemed to be in employment, using the definitions above. Adjusted by the Labour Cost Index

The EOTE project looks at all young graduates in the same period, and therefore the same labour market conditions, and compares them by the number of years since they graduated. Table 5 shows how the results for 2010 to 2011 were reported. The results apply to the 2010 and 2011 calendar years and the 2011 and 2012 tax years. Results for people one year out of study refer to

people who graduated in 2009 and 2010. Results for people seven years out of study refer to people who graduated in 2003 and 2004.

Table 5

Alignment of EOTE cohorts with tax and calendar years

Cohort	Years post study	Calendar year	Tax year
09/10	1	2010/2011	2011/2012
08/09	2	2010/2011	2011/2012
07/08	3	2010/2011	2011/2012
06/07	4	2010/2011	2011/2012
05/06	5	2010/2011	2011/2012
04/05	6	2010/2011	2011/2012
03/04	7	2010/2011	2011/2012

APPENDIX C DEFINITIONS

Earnings

Earnings are total gross taxable earnings from salaries and wages received during each year. Earnings excludes income from self-employment, welfare benefits and other sources.

Real earnings have been adjusted for inflation using the consumer price index and are expressed in 2014 dollars.

Employment

People who were employed and paid a wage or salary earners during each year. Self-employment is excluded.

Full employment refers to people who received more than two-thirds of the minimum wage (prorated on a 40-hour week for each employment spell) for more than 182 days in the year.

Part employment refers to people who were employed but not in full employment in the year.

Highest level of tertiary enrolment

The highest level of enrolment in tertiary education since leaving school up to and including the specified age. This includes enrolment in industry training.

In education

Enrolled in school or tertiary study during the year.

School enrolment refers to people enrolled in school during the year. They may also have had some tertiary enrolment.

Tertiary enrolment refers to people who were not enrolled in school, and were enrolled in tertiary education during the year. Tertiary enrolment includes industry training.

Main activity

The activity in which a person spends the largest number of days during the year out of employment, education, not in employment, education or training, or overseas.

NCEA achievement

The highest level of NCEA qualification achieved as at the reported age. This includes being awarded the qualification by NZQA or having successfully completed sufficient total credits to be awarded the qualification.

Not in employment, education or training (NEET)

NEET at any time during the year refers to people who had at least 21 days in the year not in employment, education or training.

Long-term NEET refers to people who had at six month or longer continuous spell of being NEET during the current year. The spell can be entirely during the year or overlapping with the previous or following year.

NEET as main activity refers to people who had “not in employment, education or training” as their most frequent activity during the year see “main activity”.

No employment, education or training refers to people who had no education or employment spells during the year.

On benefit

People who received at least one main welfare benefit payment from the Ministry of Social Development during the year.

Overseas

People are counted as being out of the country during a specified year if they spend more than nine months in that year overseas. Once they are overseas, they are counted as having returned if they spend more than nine months of a year in New Zealand.

The main activity indicator does identify small group of people who are classified as being in New Zealand, using the above definition, but spent more time overseas than in the other activities.

School disengagement

An indicator of whether a student has ever been suspended from school, stood down or been involved in serious truancy that has been reported to the Ministry of Education.

School performance

A performance score is calculated using NCEA Level 1 results, based on the proportion of achievement standards with achieved, merits and excellence gained by each student relative to their peers. In this report, students are split into two groups higher (with above average performance scores, and lower (with below average performance scores).

This score has been imputed for students who have not passed any achievement standards. Multiple imputation was used to impute a single plausible value for the missing records, based on demographic and school background variables.

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