Was it worth it?

Do low-income New Zealand student loan borrowers increase their income after studying for a tertiary qualification?

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.

Author
Ralf Engler, Senior Research Analyst
Email: ralf.engler@minedu.govt.nz
Telephone: 04-463 7039

Published by
Tertiary sector performance analysis
Graduate achievement, vocations and careers
MINISTRY OF EDUCATION

This report is available from the Ministry of Education's Education Counts website:
www.educationcounts.govt.nz.

June 2014

Was it worth it?

1 SUMMARY

KEY POINTS

This report looks at student loan borrowers living in New Zealand 20 to 50 years of age with pre-study incomes below the student loan repayment threshold.

The average incomes of these New Zealand student loan borrowers, and their rate of increase in income, are higher if they complete a higher-level qualification like a diploma or bachelors degree, compared to those who complete a certificate-level qualification.

Women generally have lower average graduate incomes, and lower rates of increase in their income compared to men, although older women completing bachelors degrees have higher income trajectories than their male counterparts.

Those on a benefit, indicating some difficulty in accessing the labour market, generally have smaller increases in income on completing the same level of qualification, and relatively flat rates of increase in income after graduating, compared to those not on a benefit, on average.

Younger graduates generally have higher rates of increase in their incomes than older graduates, on average.

Average incomes increase with time, generally.

These factors and their interactions are associated with both whether a low-income student loan borrower living in New Zealand crosses the loan repayment threshold—that is, has an income after study that obliges them to start repaying their student loan—and the timing of when this occurs.

Younger men generally have average incomes which are above the loan repayment threshold one year after completing a qualification at any level, and under most circumstances, men have average incomes above the threshold after some years even if they don't complete their qualification.

Only women who complete diploma or bachelors degrees have average incomes above the repayment threshold soon after graduating, though in the longer term, most women's average graduate incomes cross the repayment threshold, although it is only just above the threshold for those who complete lower-level qualifications.

If any individual student loan borrower finds ongoing paid employment after completing their study, they are likely to have an income above the student loan repayment threshold. It is therefore the interplay between their access to the labour market, and how that is facilitated by their qualification, and their personal characteristics and circumstances, which will determine whether they will have sufficient income to be obliged to repay their student loan.

If someone living in New Zealand is earning below the student loan repayment threshold, then they probably don't have a job, or they have a low-paid or part-time job. If that person with a low income takes out a student loan to study for a qualification to enhance their employment prospects—and for most people this is primarily why they study—for their post-study income to reach the student loan repayment threshold they have to find paid employment, or better-paid employment, or increase their hours of work. Whether a graduate can do this depends on how much the labour market values the generic or industry-specific skills gained by completing that qualification. It also depends on the person's experience in the particular industry or career being sought, and their 'employability'. These factors in turn are associated with the person's gender, their age on graduation, their beneficiary status, and the level of qualification gained.

Personal characteristics like ambition, motivation, previous qualifications held, non-work obligations and such like are also important, as are the prevailing labour market and economic conditions.

In this report, we investigate whether student loan borrowers with a low incomes (those with a pre-study income below the student loan repayment threshold), living in New Zealand, earn enough income after studying for a tertiary qualification to meet the loan repayment threshold, that is, to be obliged to start repaying their student loans. We considered the level of qualification studied, whether the qualification was completed or not, and sex, age, and benefit status. We looked at how average incomes changed through time for this combination of factors, and we also looked at the distribution of graduate incomes one year after study. We also considered the association between the subject of the qualification completed and these factors. We were not able to consider personal characteristics and many of the other factors associated with someone's income.

Whether someone's income reaches the student loan repayment threshold depends on their pre-study income and the size of the step increase in their income once they complete their studies. Clearly, the higher their pre-study income and the larger the step-increase, the easier it is to reach the repayment threshold. Generally, step increases in income are higher after completing higher-level qualifications, and generally, younger people have higher step increases for completing the same level of qualification than older people.

Incomes also generally rise over time. The annual rise in income is important if someone's income is not above the repayment threshold immediately after completing study. A faster rising income also means loan repayments are less burdensome financially, particularly for people with post-study incomes that are at first not much higher than the repayment threshold. Younger people generally see a higher annual rise in their income after completing a qualification compared to their annual rise before they studied, while older people generally do not. Younger people's income generally rises faster than older peoples.

In our study, being on a benefit or not is a proxy for the level of engagement with the labour market. For **people on a benefit**, the step change in income on completing a qualification is generally lower than for those seen by non-beneficiaries, and beneficiaries' annual rate of change in income after completing a qualification is often flat. Men in their twenties who are on a benefit after completing a qualification are the exception.

Student loan borrowers with low incomes, and who study for and complete **bachelors degrees**, have estimated average incomes one year after graduating which are above the student loan repayment threshold. Even graduates with post-completion incomes at the bottom quarter of the income distribution (given their particular circumstances) have incomes above the repayment threshold. This applies to both sexes, for people up to 50 years of age, and regardless of their level of access to the labour market, as indicated by their beneficiary status.

If these student loan borrowers study for but don't complete a bachelors degree, their estimated average income will exceed the repayment threshold within five years after they finish their study.

For low-income student loan borrowers who complete **diplomas**, their estimated average income is also above the student loan repayment threshold one year after graduation. However, for those diploma graduates with incomes at the bottom quarter of the income distribution for their group, generally only men have incomes above the repayment threshold. For women completing diplomas, their graduate incomes are above the threshold only for those with median and higher incomes.

For low-income student loan borrowers who study for but don't complete diplomas, men generally have estimated average incomes above the repayment threshold one year after study, but most people have estimated average incomes within five years after their study ends.

For low-income student loan borrowers completing **certificate-level qualifications**, the results are more varied. Men who have no restrictions on their access to the labour market, and older men and women generally, are more likely to have estimated average incomes above the repayment threshold one year after graduating, compared to their respective counterparts. But within five years, most groups graduating with a certificate-level qualification have estimated average incomes above the repayment threshold, even if only slightly above.

Whereas all bachelors graduates, and most diploma graduates, with incomes at the bottom quarter of the income distribution for their group, had high enough incomes to be obliged to start to repay their student loans, certificate-level graduates with incomes at the 25th percentile for their group one year after completing don't have incomes which cross the repayment threshold, so they are not obliged to start to repay their student loans. Older student loan borrowers on a benefit also don't reach the repayment threshold one year after completing a certificate if they have median or lower incomes for their group. Young men are again the exception—those with incomes at the 25th percentile generally are above the repayment threshold.

Most groups who study for but don't complete **qualifications below the level of a bachelors** degree don't have average incomes above the repayment threshold one year after completing study. However, since incomes rise with time, most non-completers, other than young women, have average incomes above the repayment threshold within five years after study.

Since incomes are generally rising over time, if someone already has an income that is above the student loan repayment threshold, then notwithstanding any circumstances which might reduce their income, they will continue to have sufficient income to be obliged to start to repay their loan. This is independent of what level of qualification they study and whether they complete that qualification or not.

All these results are contingent on a person gaining employment after completing their study.[1] Similarly, personal motivation, persistence and ability will also play a role, both in terms of gaining employment, and in the level of remuneration received, independent of the level of tertiary study undertaken.

It is likely that the subject of the qualification also plays a role—for example, whether the qualification completed was in engineering or nursing. However, our analysis finds there are strong associations between the subject studied and gender, and to some extent age, and this association is stronger for lower-level qualifications. So controlling for age and gender implicitly controls for the subject of the qualification to a large extent.

Any low-income graduate student loan borrower in our study populations may earn above the loan repayment threshold; it is just statistically more likely that someone completing a higher-level qualification will have this level of graduate income. Therefore, we cannot suggest that simply completing a higher-level qualification will always result in someone earning sufficient income for them to be obliged to start paying off their student loan. Like any research analysis that does not or cannot control for personal characteristics, like motivation, ability, confidence—or indeed any factors systematically linked with the outcome of interest—there is always the possibility that the factors *causing* the changes in income we observed for people

---

[1] More precisely, it has to be *paid* employment. There is a world-wide trend for young graduates, or anyone attempting to start a new career, to work as unpaid interns. This is being driven by more difficult economic conditions and higher unemployment. More details, including the situation in New Zealand, can be found in the report by Stewart and Owens (2013).

completing a tertiary qualification are due to these unobserved factors. That the step changes in average income we observed in our study are linked in time to the qualification completion event is not in question. But it might be that any intelligent, motivated and confident person completing *any* qualification will have a higher income after graduating. The different incomes we see for people graduating with different levels of qualification might just be because a higher proportion of able and motivated people choose to study at bachelors level, so on average, their graduate incomes will be higher than those who choose to study at lower levels.

These caveats apply to any research findings that do not or cannot control for these unobserved human characteristics.

Glossary of terms

Annual change in income	The increase in income someone experiences due to pay rises, or cost-of-living adjustments to their salary or income. The annual change in income might be different before and after someone studies, and before and after someone completes a qualification.
Complete a qualification	Studies for and is awarded a qualification at the end of a period of study.
Pre-study income	The income for someone who is not studying, and for most people in the study population, before they complete a qualification.
Post-completion income	The income for someone who has studied and completed a qualification, and is not studying currently.
Post-study income	The income for someone who has studied, but is not currently studying.
Step increase in income	A one-off change (usually an increase) in income due to a person changing jobs, receiving a promotion, or being paid a bonus. It might also come about by someone entering or re-entering the work force.

These concepts are illustrated graphically below for someone completing a qualification.
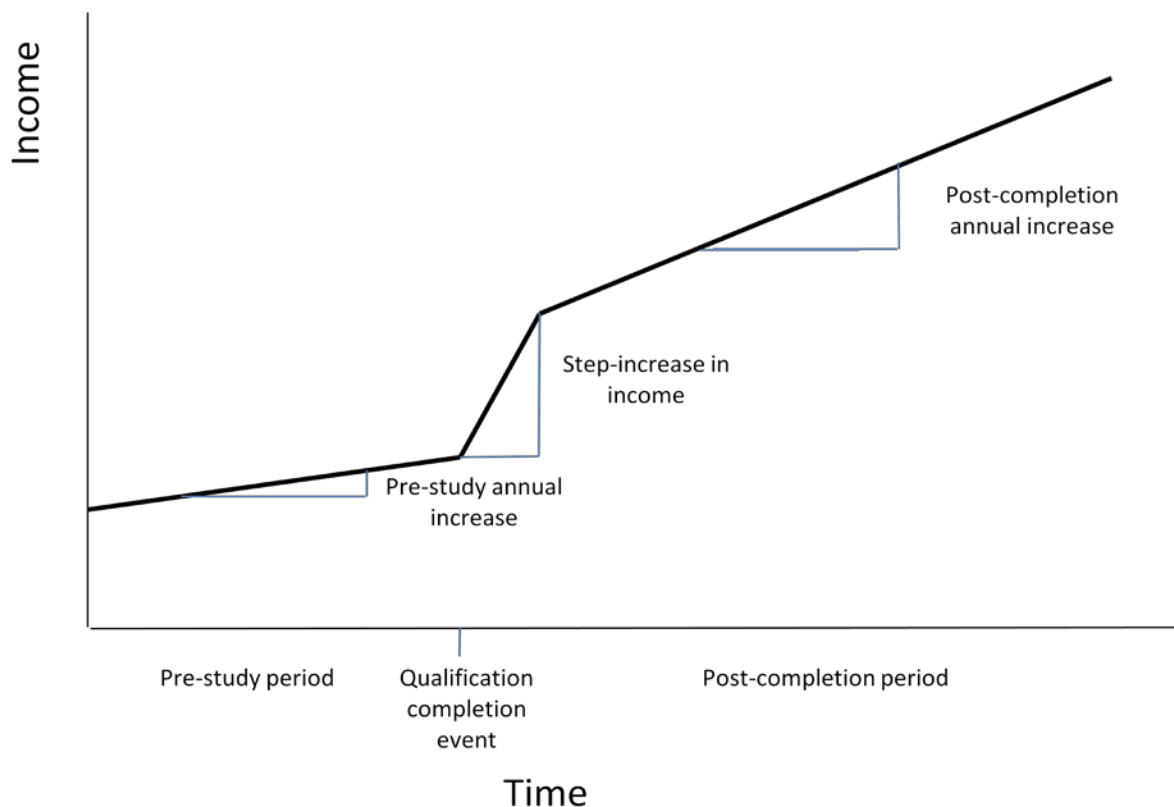
2   INTRODUCTION

In New Zealand, people studying for a tertiary qualification are, in the main, entitled to take out a student loan to fund their study.[2] Unlike some other countries, student loans in New Zealand are interest-free,[3] and there is no obligation to start paying back the loan until the person's income reaches a threshold (it was $19,084 for the 2014 tax year). For student loan borrowers who earn salaries or wages, repayments are deducted from their income by their employers. However, if a person's income is below the student loan repayment threshold, there is no automatic deduction.[4] Self-employed people with student loans are required to make regular loan repayments themselves if their income is above the repayment threshold.

The government carries the liability for the student loan while it is not repaid. One of the main drivers of the cost of New Zealand's student loan scheme is loan borrowers whose income is insufficient to make progress in repaying their loans (Ministry of Education 2012). Therefore it is important to understand the circumstances where people's income is below the repayment threshold after they have completed a tertiary qualification. Colloquially we ask, 'was the study worth it?'[5]

Previous studies have shown there is a sizeable proportion of people who have student loans but who earn insufficient income to repay that loan. For the cohort who left study in 2006, about a quarter of all New Zealand resident student loan borrowers' income was under the repayment threshold for each of the following three years (Chen and Webster 2013).

'Slow repayers', of which those who do not make repayments to their loan at all are a sub-group, have been extensively studied over the past few years (Smyth and Hyatt 2005, Hyatt 2005, Griffin, Scott and Smyth 2005, Chen and Webster 2013), so the factors that characterise slow repayment are quite well known. In particular, females, older people, people in receipt of a benefit, people of Māori and Asian ethnicity, those who don't complete their qualification, and people who study at lower qualification levels are over-represented in those who are slow to repay their student loans (Chen and Webster 2013).

Previous New Zealand studies on tertiary education and post-study income have usually considered income at particular years after completing a qualification. Mahoney, Park and Smyth (2013) considered incomes one, two and five years after completing a qualification, while Griffin et. al. (2005) considered income three and six years later. Mahoney (2011) considered income one and four years after completion for his work on income differences by gender. Crichton and Dixon (2011) did some time-series analysis, but their main focus was on the relative differences in income between people who completed a qualification and a matched control group (who did not study) three years after the completion of a qualification. One further study considered income over time (Maani 1999), but in that study the time points were census years, so time was represented in four-year intervals, and Maani considered each year in a separate regression analysis. All these reports are helpful in determining if someone is earning sufficient income to be above the repayment threshold *at a particular point in time*, but we can't determine *when*, or whether they *might* reach that threshold.

To answer this question we need to know how income changes over time. Knowing how income changes not only allows us to ask how long it will take for someone to reach the

---

[2] The eligibility rules for student loans in New Zealand can be found at http://www.studylink.govt.nz/financing-study/student-loan/index.html.

[3] The loans remain interest-free if the student loan borrower remains in New Zealand after they finish their studies.

[4] The rules for paying back a student loan in New Zealand can be found at http://www.studylink.govt.nz/finishing-study/paying-back-your-loan/index.html.

[5] Just to be clear, we are not asking whether tertiary study is associated with better employment outcomes or with a lower likelihood of being on a benefit.

threshold, but we can also see how income changes when different qualifications are completed, how it varies between people of different age, or for people in different economic circumstances, and how the various factors act in combination.

There are three aspects of income that need to be considered when comparing it to a threshold. Firstly, we need to consider the income prior to any tertiary study. Clearly, if income is above the repayment threshold, then it is unlikely, barring any unexpected life events, to fall below that threshold, at least in the longer term. For this reason we need to consider people whose pre-study income is below the repayment threshold. Secondly, there may be a step change in income on completing a qualification. This might result from a person being able to work extra hours, or move from part-time to full-time work, or start on a new, better-paid career path. Alternatively, the qualification might enable a person to enter (or re-enter) the labour market. Each of these events would result in a step change in income. Lastly, completing a tertiary qualification may increase the rate at which income rises over time. This may come about because a person may be promoted to a more senior position, or they may take on more responsibilities, which in turn attracts a higher annual increment in their salary or wages. For self-employed people, a qualification might lead to higher productivity, and hence higher income, or provide greater status, which might attract more business.

In this study we use two approaches to gain a better understanding of the dynamics of income when studying for and completing a tertiary qualification. First, we model average incomes[6] through time. We consider the annual change in income before studying and after completing a qualification, and the step change in income on completing. We model income for individual men and women student loan borrowers over time who had low incomes—defined as being below the 2008 student loan repayment threshold—at the start of the study period in 1999. We look at people across a range of ages, some of them studying for a variety of qualification types, some of who complete those qualifications. We note whether someone is receiving a benefit or not in any one year. We limit our study population to those people who are resident in New Zealand, and we consider their income over the ten years 1999 to 2008. We compare income in 2008 dollars, and the rate of change in income, for the various combinations of factors, pre- and post-study, against the loan-repayment threshold in 2008.

Our second approach is to look at the distribution of post-completion incomes for people who *have* completed a qualification. Specifically, we consider whether incomes in the lower, middle or upper quartiles of the post-completion income distribution are above the repayment threshold, also controlling for age, gender, benefit status and whether or not someone has a student loan.

The age groups considered in this report are for people in their twenties, thirties and forties. We did look at people in their fifties, but relatively few people of this age completed qualifications, especially at higher levels. We therefore can't have as much confidence in these results. We don't present the results for this age group formally, but we do summarise the findings generally in section 5.

In Section 3 we model income trajectories for student loan borrowers with incomes below the student loan repayment threshold at the start of our time series. Section 4 covers our second approach, looking at the distribution of post-completion incomes for our study groups. In section 5 we consider some other aspects of this study.

This report deliberately omits the statistical and technical details which underpin the analysis used in this study. This was done to make the report more readable to a non-technical audience.

---

[6] Income in our study is the sum of wages and salaries, self-employed income, ACC payments, other benefit payments, pensions, study grants and parental paid leave payments. Excluded is rental income and accommodation supplement payments. These excluded sources of income are not in the Inland Revenue income data we had access to.

The statistical and technical details can be found in a separate report, '*Statistical methods and results for* Was it worth it?' which is available on the Ministry of Education's EdCounts website (http://www.educationcounts.govt.nz/publications/tertiary_education).

3   HOW INCOME CHANGES FOR LOW-INCOME STUDENTS AFTER STUDYING FOR A TERTIARY QUALIFICATION

Personal income generally increases with time. As people become more experienced, they achieve pay rises by taking on more responsibility, or they move into better paid jobs. For many people, this career progression and rise in income is facilitated by becoming more qualified.

In this section we consider how income changes on completing a qualification for student loan borrowers with low pre-study incomes; our definition of 'low income' is that a person had to have an income at the outset of the analysis period below the student loan repayment threshold. Our results are shown in Figures 1 to 3.[7] There are some quite clear patterns.

In many cases, completing a qualification results in a step increase in income, with larger step increases associated with completing higher-level qualifications. However, in some situations, completing a lower-level qualification results in essentially no change in income. This occurs predominately for those on a benefit—being a proxy for engagement with the labour market—and for women.

There is essentially no change in the income trajectory for people with low incomes in their thirties or forties who studied for a qualification but did not complete it. Younger people do see a step increase in income if they don't complete, and this step is higher if they studied higher-level qualifications. But the step increase is always much less than the change in income if they did complete. These observations also apply to people in receipt of a benefit.

Average pre-study incomes for people on a benefit are slightly higher for men in their forties, and somewhat higher for women in their thirties or older, compared to people not on a benefit. Young men in their twenties have lower incomes when on a benefit, while younger women on a benefit have much the same incomes. The annual rate of increase in income is generally lower for beneficiaries. The difference in income between beneficiaries and others is probably related to the fact that those on a benefit have a guaranteed income, while others may or may not have an income. The predominant benefit type also varies between men and women, with men on a benefit more likely to be on the unemployment benefit, while women on a benefit are more likely to be on a dependent persons benefit. See Section 5 for more details regarding the relationship between benefit type and gender over the years of the study period.

Another feature of the income trajectories is that the annual rise in income is lower for beneficiaries after completing a qualification, comparing people of similar age and gender. In many cases, the annual change in income for those on a benefit is relative flat. It also seems that on average, beneficiaries don't receive as large a step increase in income as non-beneficiaries for completing the same level of qualification.

The exception to this appears to be young adult males with low incomes who are in their twenties when they complete a qualification. For these young men, beneficiaries have a smaller step increase on completing a qualification, at any level, but the annual rate of increase after completing is only slightly less than similar young men not on a benefit. In contrast, young women on a benefit have lower annual increases in income after completing a qualification than their peers not on a benefit. We note that the annual rise in income for young women not on a benefit is lower than their corresponding male counterparts.

---

[7] The graphs are produced from the results of mixed model regressions, one for each combination of age group and highest level of tertiary study. Annual income was regressed against gender, benefit status, student loan status, enrolment status, whether a person had ever studied, completion status, time in years (as linear and quadratic terms), and time since completing (also as linear and quadratic terms), and their interactions. Pre-study income, the annual change in income pre- and post-study, and the step change in income on completing were modelled as random effects.

Notes on the figures

The plotted results (Figures 1 to 3) are the results of regression models. The incomes (in 2008 dollars) are estimated average incomes for prototypical people with particular combinations of factors. For example, Figure 1, top left hand panel, shows the estimated income, over time, for men in their twenties. One line is for men before they studied, and then after they completed studying for a certificate at levels 1 to 3, who were not in receipt of a benefit. This line separates into the estimated income for a man who completed that qualification (solid black line), and another for a man who did not complete that qualification (dashed black line). The second line in that figure is for men who were on a benefit (gray line), who also studied for a certificate at levels 1 to 3, and who either did or didn't complete that qualification. The 2008 student loan repayment threshold is also shown in each figure.

The x-axis shows time as years since the last enrolment. Time periods -3 to 0 indicate the estimated income for a particular group in the years prior to any study. Years 1 to 6 show the estimated income for a particular group after they've ended their study. The years actually enrolled in tertiary study are not shown. This is done deliberately. In the models, we have a variable which estimates income during the enrolment years. This is generally negative, as peoples' income is usually lower while they are studying, either because they are not working, or working less hours. It is usually more negative for younger people, and for those studying for higher-level qualifications. It is often not significantly different from zero for older people studying lower-level qualifications, probably because the study is part-time and doesn't impact on their income.

When someone's study ends, there are two components to the change in their income; there is the change back to the 'usual' income because they are no longer studying, and there is the possible change in income due to completing a qualification. If we don't separate these two components in the models, then we would over-estimate the step change in income due to the actual completion of a qualification, as opposed to the cessation of study itself. The lines in the figures track the expected change in income on completing a qualification (or not) compared to the income for a group before any study.

Personal characteristics can be constant through time, like gender, or they can vary with time, like being on a benefit. Plotting estimated income trajectories for characteristics that are time-invariant is straightforward. We show separate figures for men and women, and for people who have the same highest level of study. However, for characteristics that can vary with time, what to plot is more problematic. Consider whether someone has a benefit or not. It is possible to show estimated income trajectories for people who are in receipt of a benefit in year 1, and not in any other year, or in year 2, and not in any other year, or in years 1 and 2, and not in any other years, etc. The possibilities, when combined with the other characteristics we are modelling, quickly become unmanageable, and many combinations won't be particularly informative. Instead, what we have done is to plot the two end points of these possibilities; one line shows the estimated income for a prototypical person who is *never* on a benefit in any year, and the other line is for a prototypical person who is on any benefit for at least one month in *each* year. The two lines indicate the upper and lower limits of income for the particular combination of characteristics being plotted.

The study populations were people living in New Zealand, who were either 20, 30 or 40 years of age in 1999, with pre-study incomes in 1999 below the 2008 student loan repayment threshold. People with zero income in every year of the study were excluded. Sample sizes (randomly rounded to base 3) are provided in the following table.

	Age in 1999		
Highest level of study (if any)	20	30	40
Certificates at levels 1 to 3	61,041	46,302	43,842
Certificates at level 4	61,197	46,764	44,070
Diplomas	64,713	48,519	45,336
Bachlors degrees	72,954	50,301	46,371

Source: Statistics NZ Integrated Data Infrastructure, Ministry of Education interpretation.

Figure 1. Expected average income over time for prototypical people with low incomes **in their twenties** with a student loan, by level of qualification, gender, beneficiary status, and whether or not they completed a tertiary qualification
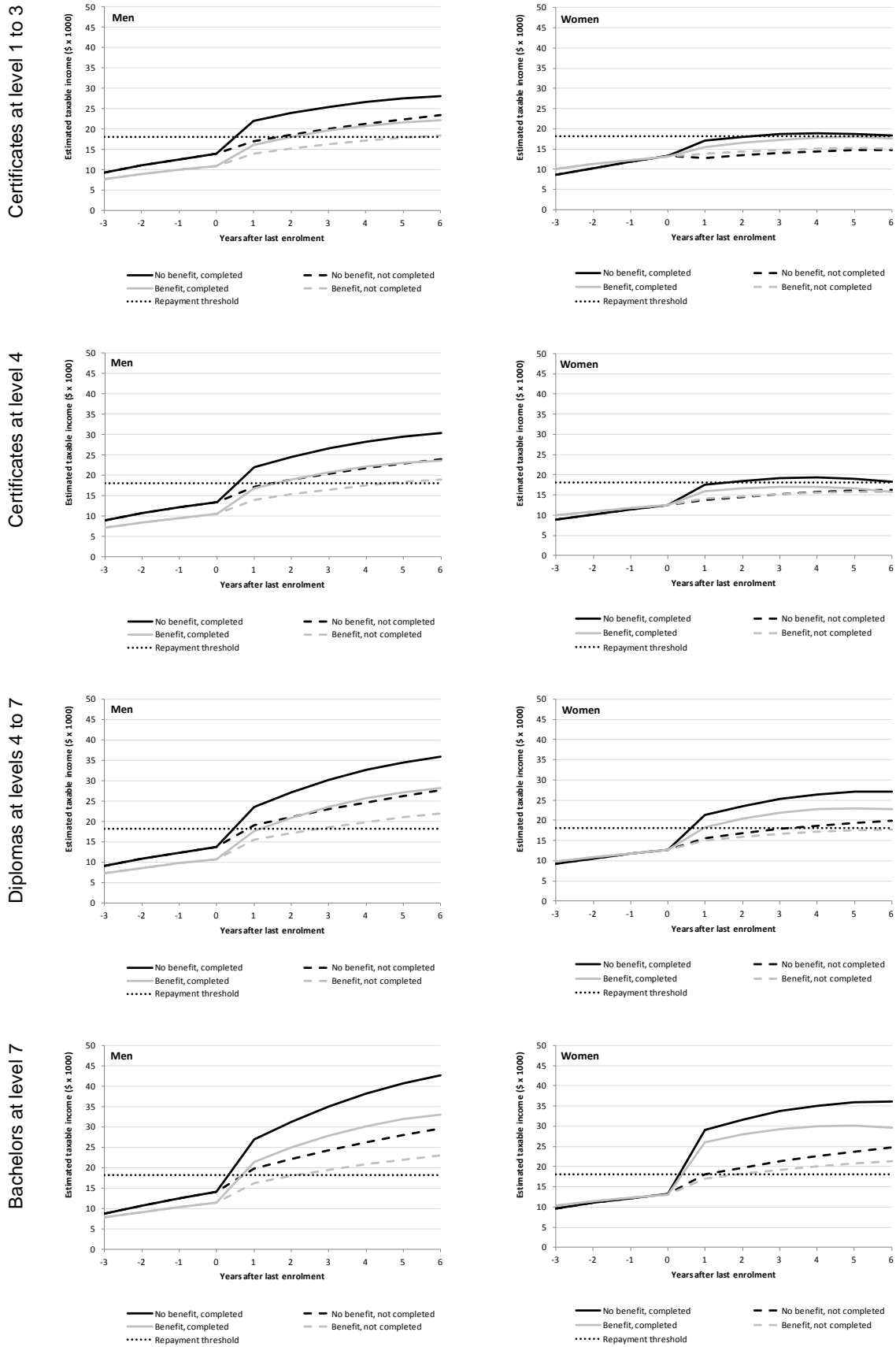
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

Figure 2. Expected average income over time for prototypical people with low incomes **in their thirties** with a student loan, by level of qualification, gender, beneficiary status, and whether or not they completed a tertiary qualification
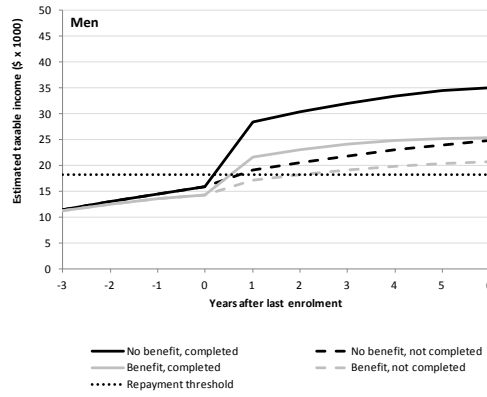
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.
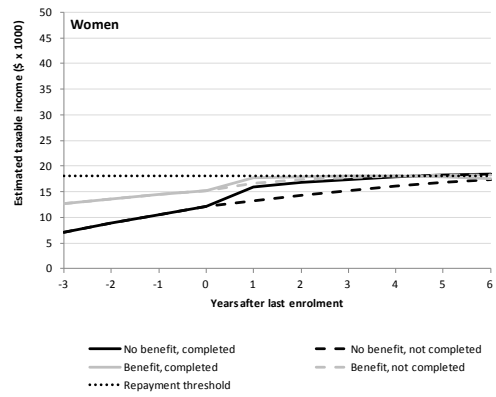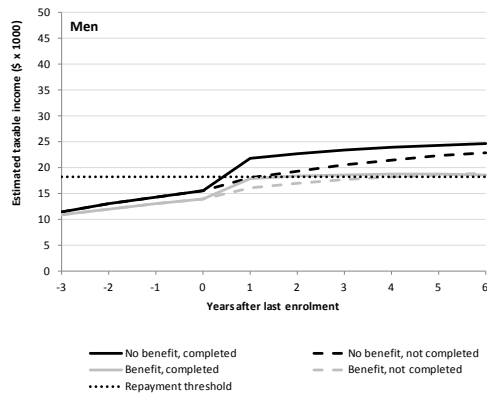
Figure 3. Expected average income over time for prototypical people with low incomes **in their forties** with a student loan, by level of qualification, gender, beneficiary status, and whether or not they completed a tertiary qualification
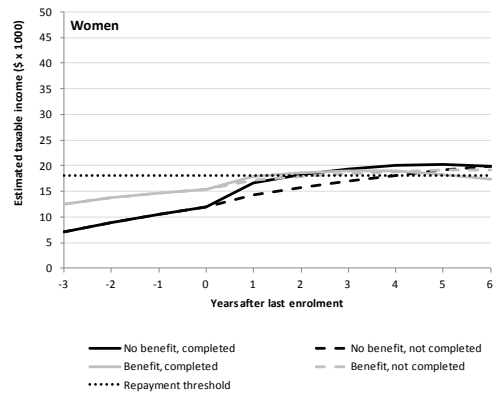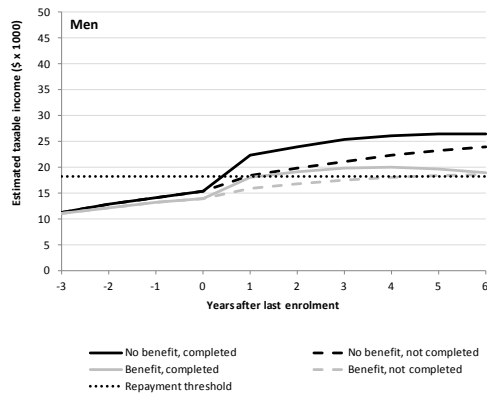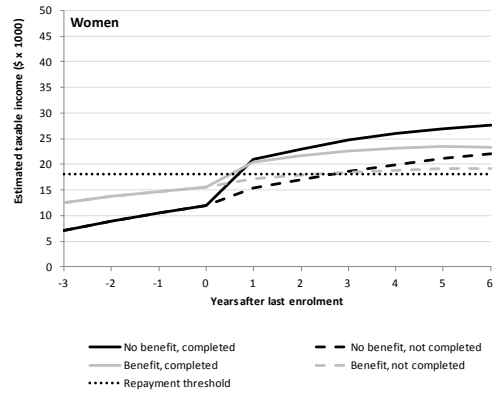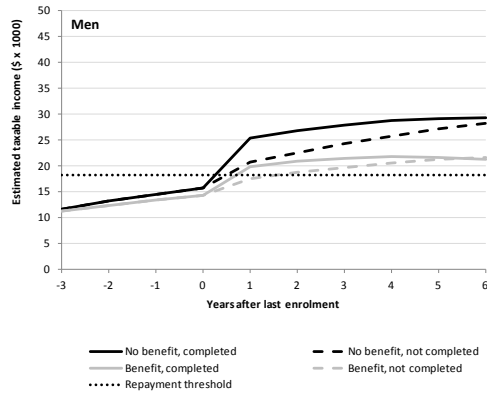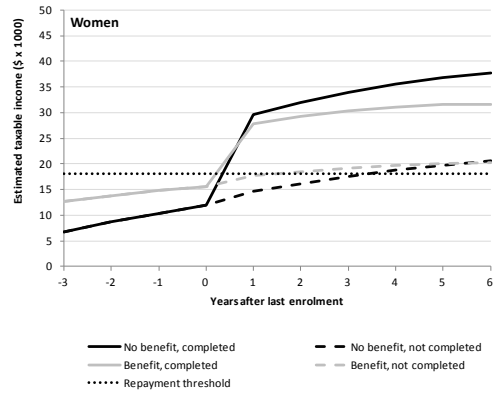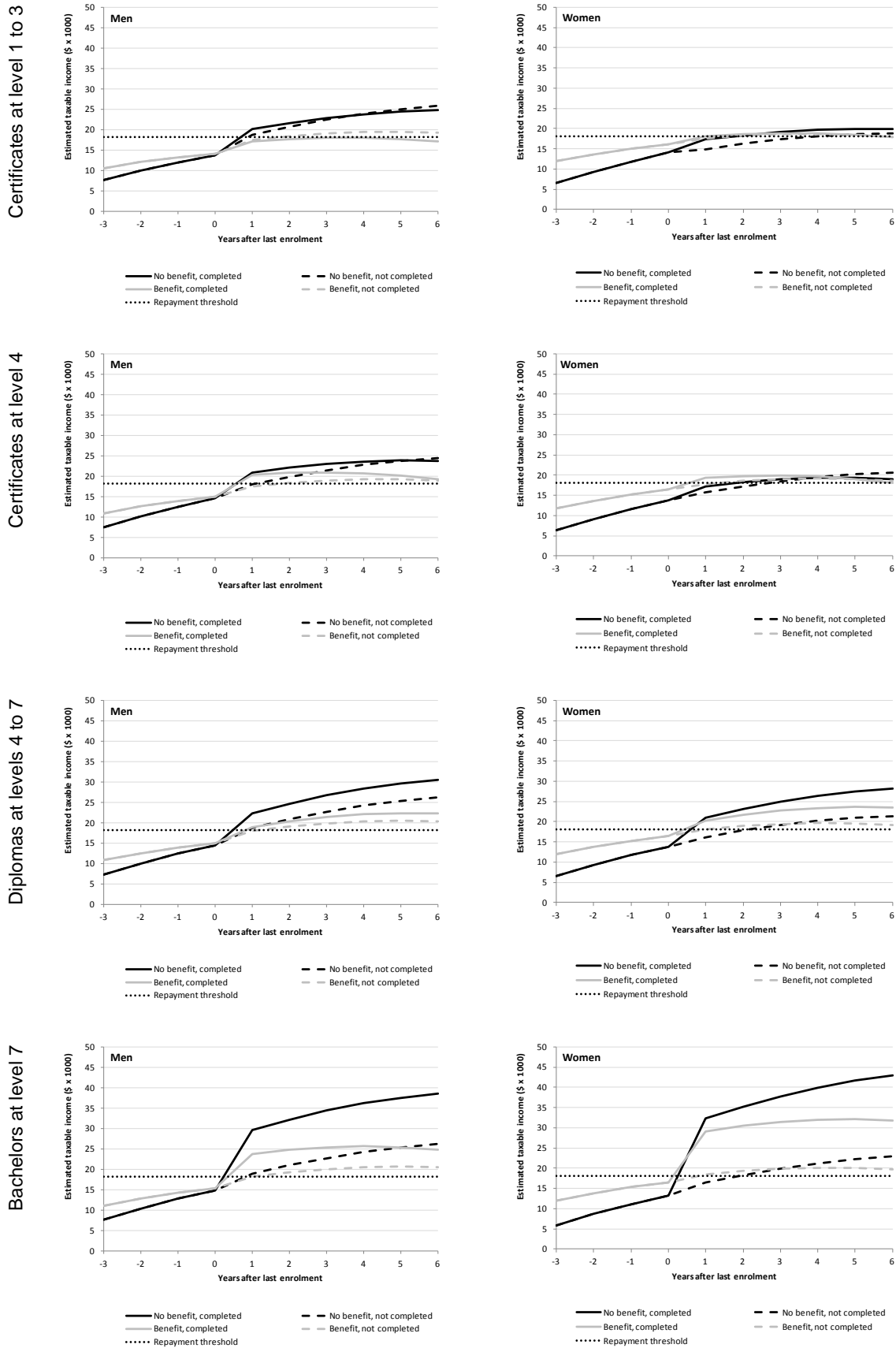

Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

One thing that needs to be kept in mind is that these income trajectories are not the average of all people in the population; they apply only to those student loan borrowers who have low pre-study incomes. For young adults, this will include people who have not yet started work, or are in part-time work. The trajectories therefore are probably typical of many young adults before they start their careers. But for the older study populations, their low average income makes them atypical of the older population generally. The factors that might result in an older worker having a low income could be lower than average education or qualifications, personal or physical impediments to working full time, or having other non-work responsibilities which limit the hours they can work in paid employment. There might be other reasons too: a lack of motivation to improve their lot, a lack of ability (perceived or real) which prevents them from undertaking study to improve their employment prospects, and other circumstances, like where they live geographically, or their access to transport. Some of these factors will not be mitigated by completing a qualification at any level.

We can summarise the results in the figures in tabular form. In Table 2, we show the status of income relative to the loan repayment threshold one and five years after completing study, for those who completed a qualification or not, for men and women with different benefit status. We distinguish between incomes which are above the student loan repayment threshold, only just above, and those which are not. We have shaded these latter instances to help visualise the results.

It is clear from Table 2 that completing a qualification is far more likely to result in an income above the repayment threshold, although for men generally, and older people, average incomes have risen to be mostly above the repayment threshold within five years. Similarly for those who do complete; if their incomes haven't reached the repayment threshold after one year, they mostly have by year five. However, for those completing lower-level certificate qualifications, average incomes are often only marginally above the threshold, while they exceed the threshold for those completing diplomas and bachelors degrees for all age groups, sexes and benefit status.

Subject choices

It might be the case that the differences we see in income trajectories between people of different age and gender after completing the same level of tertiary study is because of differences in the subject of the qualification completed. It is known that some qualifications lead to higher-paid jobs—medical qualifications for example—or are more in demand in the labour market—engineering qualifications are an example. So if there is a systematic difference in the subjects studied between say, men and women, or people on a benefit versus those not receiving a benefit, or younger versus older people, this might go some way to understanding differences in income after completing such a qualification.

We investigated whether there were systematic patterns of preference in the particular qualifications completed by our study populations. We found:

- There are strong associations between gender and the subject of the qualification completed for all levels of study, although the particular subjects studied by men and women depend on the level of study. Women tended to gain qualifications in the areas of nursing, teacher education, human welfare, language and literature and personnel services. Men tended to gain qualifications in the areas of mechanical and industrial engineering, automotive engineering and technology, agriculture, horticulture and viticulture, building, architecture, and sport and recreation.

Table 1. Indicators showing whether average incomes for student loan borrowers reach the student loan repayment threshold for particular combinations of level of study, age, gender and benefit status, one year and five years after completing study, for those who did or did not gain the qualification

Age in 1999	Gender	On a benefit (in the particular year)	Completed qualification								Did not complete qualification							
			One year after finishing study				Five years after finishing study				One year after finishing study				Five years after finishing study			
			Cert 1-3	Cert 4	Diploma	Bachelors	Cert 1-3	Cert 4	Diploma	Bachelors	Cert 1-3	Cert 4	Diploma	Bachelors	Cert 1-3	Cert 4	Diploma	Bachelors
20	Male	No	Y	Y	Y	Y	Y	Y	Y	Y	x	x	Y	Y	Y	Y	Y	Y
		Yes	x	x	M	Y	Y	Y	Y	Y	x	x	x	x	M	M	Y	Y
	Female	No	x	x	Y	Y	M	Y	Y	Y	x	x	x	M	x	x	Y	Y
		Yes	x	x	M	Y	M	x	Y	Y	x	x	x	x	x	x	x	Y
30	Male	No	Y	Y	Y	Y	Y	Y	Y	Y	M	M	Y	M	Y	Y	Y	Y
		Yes	M	M	Y	Y	M	Y	Y	Y	x	x	M	x	M	M	Y	Y
	Female	No	x	x	Y	Y	M	Y	Y	Y	x	x	x	x	x	Y	Y	Y
		Yes	M	M	Y	Y	M	M	Y	Y	x	x	x	M	Y	Y	Y	Y
40	Male	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	M	Y	Y	Y	Y	Y	Y
		Yes	x	Y	Y	Y	x	Y	Y	Y	M	M	M	M	Y	Y	Y	Y
	Female	No	M	M	Y	Y	Y	Y	Y	Y	x	x	x	x	M	Y	Y	Y
		Yes	M	Y	Y	Y	M	Y	Y	Y	M	M	M	M	M	M	Y	Y

These indicators are based on Figures 1 to 3.
Y=income above the student loan repayment threshold
M=income slightly above the repayment threshold
x=income not above repayment threshold

- There are clear associations between the subject of the qualification completed and the age of the student, but this applies mostly to lower-level qualifications, less so for higher levels. Younger women tended to complete certificates in the creative arts, food, tourism, hospitality and personnel services, while young men tended to complete certificates in sport and recreation, building, and engineering-related subjects.

- There are also some recurring patterns in the subjects of the qualifications completed by people on a benefit. The association was strongest in lower-level certificates, and essentially non-existent in bachelors degrees, probably because beneficiaries were less likely to study at this higher level. Beneficiaries tended to be associated with mixed field studies (these include career development programmes, job search skills programmes and work practices programmes), and personnel services, tourism, and visual arts and crafts qualifications. Being on a benefit and being female were also closely associated.

- We looked at the association between having a student loan and the field of study, but the strongest association was between having a loan and being younger.

- We also considered whether there was any link between the subject of the qualification and pre-study incomes, but we found no association.

It is clear there are systematic differences in the subjects of the qualifications completed. It should be also clear that the subjects themselves have different employment and income potentials (see Mahoney, Park and Smyth, 2013). We think these help to understand some of the differences in income trajectory seen for people completing the same *level* of qualification. In particular, beneficiaries who complete lower-level mixed field programmes are likely to be older persons with poor work histories, and completing one of these programmes is not likely to provide the same boost to income as someone completing a vocationally-focussed qualification at the same level of study. More generally, people with less involvement with the labour market will be expected to have lower average incomes over time.

Additional patterns of income trajectories

In our regression models, we include factors, known as residuals, which allow each person's individual income parameters to be scattered about the relevant population averages. These residuals represent those portions of income that remain 'unexplained' by the model's factors (Singer and Willett 2003). Since these residuals represent deviations between the individual income parameters and their respective population averages, their variances and co-variances summarise the population variation around these averages after controlling for the factors in the model.

In our models, we captured between-person residuals for pre-study and post-completion rates of change in income, and for the level of pre-study income and the step change in income on gaining a qualification. The model also captures the residuals which account for any one person's actual income trajectory around their population's average income trajectory through time.

In short, we are able to look at the correlations between these residuals to give us a feel for how people's income varies after controlling for their gender, age, beneficiary status, what level of study they attempted (if any), and whether or not they gained a qualification at that level. These correlations are shown in Table 1.

For young adults in their twenties, at the start of their careers and before they undertake any tertiary study, there is a small but significant positive correlation between their income and how fast that income is rising over time (Table 1, first column of data). That is to say, a higher pre-

study income is weakly associated with a higher annual rise in income. On the other hand, there is a weak *negative* relationship between these two factors for people in the middle of their careers. Or in other words, before starting any tertiary study, generally for those in their thirties or older, the higher their income the slower it is likely to be going up each year. This latter relationship is the one we are most familiar with. People who are paid more, on average, have smaller annual increments in their salary.[8] But this is not the case for young adults. Rather, it seems young people who have started their careers higher up the income ladder seem to be slightly more likely to be on a steeper income trajectory. But the correlations are not large, which means there is much variation in the general patterns just described.

Table 2. Correlation coefficients between selected components of income, by age and level of study

Age in 1999	Level of study	Pre-study income and rate of increase in income before studying	Pre-study income and change in income on completing	Pre-study income and rate of increase in income after completing	Rate in increase in income before studying and change in income on completing	Rate of increase in income before studying and the rate after completing	Change in income on completing and rate of increase in income after completing
20	Certificates at levels 1 to 3	0.09 ***	-0.29 ***	-0.22 ***	-0.16 ***	-0.62 ***	0.14 **
	Certificates at level 4	0.12 ***	-0.28 ***	-0.16 **	-0.19 *	-0.60 ***	0.09 ns
	Diplomas	0.13 ***	-0.16 ***	-0.13 **	0.00 ns	-0.47 ***	-0.07 ns
	Bachelors	0.12 ***	-0.05 ns	-0.04 ns	-0.01 ns	-0.39 ***	-0.19 ***
30	Certificates at levels 1 to 3	-0.17 ***	-0.40 ***	-0.04 ns	-0.02 ns	-0.79 ***	0.22 ***
	Certificates at level 4	-0.17 ***	-0.39 ***	0.04 ns	-0.07 ns	-0.79 ***	0.41 ***
	Diplomas	-0.17 ***	-0.16 ns	0.06 ns	-0.07 ns	-0.64 ***	-0.02 ns
	Bachelors	-0.16 ***	0.06 ns	-0.05 ns	-0.32 ***	-0.61 ***	0.16 *
40	Certificates at levels 1 to 3	-0.14 ***	-0.32 ***	0.02 ns	-0.13 ns	-0.70 ***	0.09 ns
	Certificates at level 4	-0.14 ***	-0.32 ***	-0.04 ns	-0.14 ns	-0.67 ***	0.12 ns
	Diplomas	-0.15 ***	-0.20 *	-0.15 *	-0.05 ns	-0.63 ***	0.28 ***
	Bachelors	-0.15 ***	-0.07 ns	-0.05 ns	-0.26 ***	-0.65 ***	0.18 ***

The probability (p) that a given value is zero is indicated by: *** $p<0.001$; ** $p<0.01$; * $p<0.05$; ns – not significantly different from zero. Confidence indicators are based on bootstrapped standard errors and confidence intervals using 500 iterations for each of the 12 regression results shown (one per line in the table).
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

The correlation between someone's income prior to studying and the change in income on completing a qualification is given in column 2 of Table 1. This shows a consistent pattern of being moderately negative for lower-level qualifications, tending to zero for higher-level qualifications. This suggests that having a higher income somehow negates the advantage, in terms of a step change in income, of completing a lower-level qualification. It's as if there is an upper limit to what a lower-level qualification will provide in terms of income, and if that income has already been reached, completing one of these qualification doesn't add much extra to someone's income. On the other hand, the step change in income on completing a diploma, and especially a bachelors degree, is essentially independent of someone's income before they start their study.

The correlation between the amount of pre-study income and the annual rate of increase in income after completing is given in column 3 of Table 1. It appears there is only a significant

---

[8] For people who earn a salary or wage, their job or position it usually associated with a salary range. The higher someone's income is in that range, the lower their annual increment. Once the upper limit of the range is reached there might be no further increments unless the person changes position or there is a review of the salary range.

correlation between these two components of income for young adults, and it is strongest for young adults studying for and completing a certificate at levels 1 to 3. There is less correlation for certificates at level 4 and diplomas, and no correlation for young adults studying and completing a bachelors degree. The correlation suggests that for young adults completing lower-level qualifications in their twenties, the higher the income prior to study, the lower the rate of increase in income after completing. This pattern complements that seen between income prior to study and the step change in income on completing a qualification.

The correlation between the rate of change in income before studying and the step change in income on completing (Table 1, column 4), and between the step change in income on completing and the annual change in income after completing (Table 1, column 6) do not show any consistent pattern across age or level of study.

The largest correlation is found between the annual changes in income before studying and after completing (Table 1, column 5). There is a consistent trend within each age group for the correlations to be larger (more negative) for lower-level qualifications, but even for people completing bachelors degrees, the correlations are still quite large and negative.

This suggests that someone is less likely to get a large annual increment in their income after completing a qualification if they already receive large annual increments, and this is more likely to be the case if they complete a lower-level qualification. Of course there may still be a benefit in terms of a one-off step increase in income, and on average, this is indeed the case. Again, this step increase is generally higher for those completing higher-level qualifications. The corollary is also important; people with *lower* pre-study rates of increase in income are more likely to have a *higher* rate of increase in their income after completing a qualification.

The incomes reported in this section have been averages, predicted by our regression models. These results are most useful if the average is a good measure of a group's income. However, our models show there is much variation between people in their pre-study and post-study incomes, and in the step change in income on completing a qualification, even for the same gender, age group and level of qualification completed, although our models also show there is far less variability in the annual rate of change in income. So it might be that while the average income is above the student loan repayment threshold, there are others in the group whose income is below the threshold.

In the next section we look at the distribution of post-completion incomes and how these vary with the factors in our models.

4 POST-COMPLETION INCOME DISTRIBUTIONS

The results in the previous section were average incomes for particular sub-populations of student loan borrowers. The statistical models we used estimated average incomes. The average is a good measure of an outcome if most values are centred near the average, with a small dispersion around this average. However, incomes don't usually follow this pattern. As we saw from the results of the previous section, there is much unexplained variation around the average results. This is why incomes are usually reported as medians, to account for the fact incomes are typically not normally distributed, with fewer people having high incomes, and proportionally more people having below-average incomes. In this section we consider the distribution of post-completion income, conditional on the same range of factors we considered previously. The results are presented in Tables 3 to 4, and summarised in Figure 4 and Table 7. Tables 3 to 6 show the income in the year before someone starts study at a particular level of qualification, and the expected income in the year after completing, for people at the 25th, 50th and 75th percentile of post-completion income.[9]

The study population for this analysis includes anyone with an income under $100,000 in all of the years 1999 to 2008, and excludes people with zero income in each of those years. We select people where we have both a record for them before they start any tertiary study, and another record one year after they completed a qualification.

The tables show the pre-study and post-completion income for three groups; those whose post-completion income was at the 25th percentile for the particular combination of characteristics (age, gender, student loan and benefit status), the median or 50th percentile, and the 75th percentile. In this way we can see whether people in the lower quartile of the income distribution for a particular combination of characteristics reach the student loan repayment threshold on completing a qualification, compared with people with similar characteristics but higher in the post-completion income distribution.

Note that the results in this section are not directly comparable to the results in the previous section. Previously, we ensured everyone's pre-study income in the study population was below the repayment threshold. In this section, some groups with particular combinations of characteristics have pre-study incomes which are above the repayment threshold.

The results show that for student loan borrowers completing bachelors degrees, graduates with incomes at the bottom quarter, and higher, of the income distribution for their particular combination of characteristics have post-completion incomes that are above the repayment threshold.[10] For those at the 25th percentile of graduate income, this is not because their pre-study incomes were already above the threshold. These results conform to the results for average incomes one year after graduating as seen in the previous section (see Table 2 and contrast with Table 7). It also means that at least 75 per cent of bachelors degree graduates will be obliged to start repaying their student loans in the year after completing their qualification.

For those completing diplomas, incomes at the median and 75th percentile are generally above the repayment threshold. However, for those with graduate incomes at the 25th percentile for their group, only men not on a benefit have incomes above the repayment threshold.

---

[9] These results are also derived from statistical modelling. Quantile regression was used to model the expected income in the year after completing a tertiary qualification, controlling for birth year, gender, benefit status and student loan status, conditional on the quartile of the income in the year after starting study.

[10] Since our lowest quartile was the 25th percentile, we cannot say if someone with an income below this would have been above the student loan repayment threshold.

For progressively lower level qualifications, the results show progressively fewer groups with graduate incomes above the repayment threshold. Certainly, anyone with a graduate income at the 75th percentile will be above the repayment threshold, regardless of what level of qualification they complete. But for older people completing a certificate at level 4, those on a benefit with a median income or lower for their group are below the repayment threshold. And for those completing certificates at levels 1 to 3, the same result applies to those on the median income for this group. But for those at the 25th percentile of graduate income, only young men not on a benefit have an income that is above the repayment threshold.

Of course graduates across the post-completion income distribution have different pre-study incomes. These are shown in Tables 3 to 6, and the relationship between the pre-study and post-completion incomes is summarised in Figure 4. Note Figure 4 shows data for people with and without student loans, and with and without a benefit, as the general patterns appear to apply to all students.

Table 3. Distribution of incomes (in thousands of dollars) before and after completing a **certificate at levels 1 to 3**, by age, gender, and student loan and benefit status

Age in 1999	Gender	Was on benefit prior to study	Had student loan	Income before starting study for post-completion income distribution ($ 000)			Expected income after completing ($ 000)		
				25th	Median	75th	25th	Median	75th
20 (n=3,342)	Male	No	No	19.01	32.64	39.89	21.37 ns	38.18 ***	47.44 ***
		No	Yes	17.84	26.02	33.63	21.15 **	33.90 ***	41.33 ***
		Yes	No	10.61	14.32	18.00	14.43 ***	16.71 **	29.01 ***
		Yes	Yes	9.29	11.42	16.03	12.37 ***	19.82 ***	30.75 ***
	Female	No	No	2.81	20.03	29.83	2.18 ns	20.91 ns	34.31 ***
		No	Yes	8.81	19.46	28.01	11.79 *	22.39 **	33.12 ***
		Yes	No	14.12	16.32	18.28	14.43 ns	16.73 ns	22.33 ***
		Yes	Yes	12.11	16.38	18.26	14.65 ***	17.08 ***	24.93 ***
30 (n=4,101)	Male	No	No	28.18	39.96	50.60	23.68 ***	41.59 *	53.60 **
		No	Yes	17.52	32.77	41.40	18.30 ns	33.45 ns	44.45 ns
		Yes	No	11.39	15.23	23.92	14.22 **	22.16 ***	39.58 ***
		Yes	Yes	11.38	14.57	18.95	12.70 *	18.89 ***	32.57 ***
	Female	No	No	5.04	20.28	37.51	9.25 ***	22.84 **	37.69 ns
		No	Yes	4.16	12.99	30.01	6.96 ns	20.30 ***	34.42 *
		Yes	No	15.67	18.14	20.59	14.80 ns	18.12 ns	25.02 ***
		Yes	Yes	16.09	17.97	19.66	15.81 ns	18.82 *	26.72 ***
40 (n=3,738)	Male	No	No	20.97	39.98	52.65	18.50 ns	40.69 ns	54.98 ns
		No	Yes	10.46	27.50	40.23	13.49 ns	32.93 *	41.48 ns
		Yes	No	11.39	14.76	21.94	11.95 ns	17.03 *	31.94 ***
		Yes	Yes	11.38	14.52	18.93	11.45 ns	17.80 **	27.45 ***
	Female	No	No	5.56	19.98	34.27	10.72 ***	24.79 ***	38.63 ***
		No	Yes	3.55	12.76	26.59	12.02 ***	22.08 ***	32.99 ***
		Yes	No	14.76	17.87	20.90	14.97 ns	19.19 *	28.41 ***
		Yes	Yes	14.46	17.93	20.47	14.51 ns	18.71 ns	24.47 ***

The probability (p) that a given post-completion income is greater than the income before study is indicated by:
*** p<0.001; ** p<0.01; * p<0.05; ns – not significantly different.
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

Table 4. Distribution of incomes (in thousands of dollars) before and after completing a **certificate at level 4**, by age, gender, and student loan and benefit status

Age in 1999	Gender	Was on benefit prior to study	Had student loan	Income before starting study for post-completion income distribution ($ 000)			Expected income after completing ($ 000)		
				25th	Median	75th	25th	Median	75th
20	Male	No	No	24.41	33.29	42.34	25.85 ns	40.10 ***	50.01 ***
(n=1,389)		No	Yes	18.20	27.86	34.62	27.40 ***	35.32 ***	44.99 ***
		Yes	No	9.49	12.86	21.03	15.89 **	27.21 ***	34.17 ***
		Yes	Yes	8.96	11.60	16.71	14.48 ***	26.28 ***	36.11 ***
	Female	No	No	5.96	22.93	32.44	8.07 ns	20.35 ns	35.65 ns
		No	Yes	12.23	23.56	32.21	14.30 ns	28.06 ***	36.56 **
		Yes	No	14.43	16.68	18.36	14.29 ns	16.73 ns	23.17 **
		Yes	Yes	12.81	16.67	18.63	15.76 ***	18.72 ***	27.65 ***
30	Male	No	No	34.13	44.43	55.34	35.00 ns	48.99 ***	60.87 ***
(n=1,932)		No	Yes	23.38	33.47	45.55	21.12 ns	36.74 ns	47.86 ns
		Yes	No	14.30	16.71	25.94	14.49 ns	27.06 ***	38.69 ***
		Yes	Yes	11.26	15.28	18.94	12.29 ns	21.08 ***	32.68 ***
	Female	No	No	3.60	22.29	40.95	11.63 ***	23.97 ns	42.73 ns
		No	Yes	4.78	16.81	32.44	8.93 **	26.75 ***	38.54 **
		Yes	No	16.46	18.29	21.43	16.26 ns	19.56 ns	26.59 ***
		Yes	Yes	16.55	18.26	21.85	16.65 ns	19.49 ns	27.78 ***
40	Male	No	No	37.16	49.73	62.38	35.69 ns	51.89 ns	65.03 ns
(n=1,908)		No	Yes	20.60	32.71	43.01	27.45 ns	34.28 ns	45.88 ns
		Yes	No	11.39	15.10	24.32	11.61 ns	18.24 ns	35.32 **
		Yes	Yes	10.94	12.99	18.01	12.52 ns	21.58 ns	30.98 ***
	Female	No	No	11.90	26.51	42.09	15.03 **	30.17 ***	43.97 ns
		No	Yes	8.60	20.05	33.94	12.52 ns	27.68 ***	41.06 ***
		Yes	No	16.72	18.28	23.15	15.75 ns	21.68 ***	30.91 ***
		Yes	Yes	15.96	18.13	21.78	15.73 ns	18.61 ns	25.75 ns

The probability (p) that a given post-completion income is greater than the income before study is indicated by:
*** p<0.001; ** p<0.01; * p<0.05; ns – not significantly different.
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

Table 5. Distribution of incomes (in thousands of dollars) before and after completing a **diploma**, by age, gender, and student loan and benefit status

Age in 1999	Gender	Was on benefit prior to study	Had student loan	Income before starting study for post-completion income distribution ($ 000)			Expected income after completing ($ 000)		
				25th	Median	75th	25th	Median	75th
20	Male	No	No	0.00	11.26	29.95	0.00 ns	27.46 ***	45.88 ***
(n=1,494)		No	Yes	14.73	24.18	33.56	24.14 ***	36.21 ***	44.60 ***
		Yes	No	7.62	12.50	20.83	23.34 **	31.10 **	43.68 **
		Yes	Yes	8.80	10.71	16.12	13.23 ***	24.50 ***	34.07 ***
	Female	No	No	0.00	20.94	31.52	0.30 ns	26.73 *	42.42 ***
		No	Yes	10.67	21.39	29.00	17.98 ***	29.69 ***	38.72 ***
		Yes	No	12.90	17.56	22.99	16.73 *	28.97 ***	35.85 ***
		Yes	Yes	9.68	15.23	18.31	16.25 ***	22.34 ***	31.90 ***
30	Male	No	No	34.21	45.42	55.59	34.84 ns	51.70 *	64.68 *
(n=1,440)		No	Yes	19.63	32.44	43.31	22.19 ns	37.67 **	48.30 **
		Yes	No	11.39	14.59	23.92	14.48 ns	17.65 ns	48.29 ***
		Yes	Yes	11.38	15.54	20.21	15.94 ***	23.20 ***	36.56 ***
	Female	No	No	12.57	32.62	46.39	15.16 ns	34.46 ns	49.67 ns
		No	Yes	7.83	22.54	35.35	15.59 ***	31.48 ***	44.43 ***
		Yes	No	15.96	18.26	22.75	17.97 ns	24.73 ***	33.11 ***
		Yes	Yes	15.01	17.88	20.07	16.26 ns	20.74 **	32.58 ***
40	Male	No	No	33.49	50.05	58.24	37.89 ns	50.90 ns	65.62 ***
(n=1,257)		No	Yes	7.64	29.72	44.78	22.46 ***	35.97 ns	47.54 ns
		Yes	No	11.38	18.59	26.52	14.49 ns	25.87 ns	45.08 ***
		Yes	Yes	11.61	16.04	18.84	13.31 ns	18.35 ns	34.37 ***
	Female	No	No	13.06	29.95	44.87	17.70 **	35.56 **	50.77 **
		No	Yes	4.60	15.93	27.99	12.34 ***	25.28 ***	39.28 ***
		Yes	No	17.28	18.61	24.98	16.28 ns	22.33 ns	33.79 ***
		Yes	Yes	14.80	17.88	20.76	14.95 ns	22.49 ***	34.71 ***

The probability (p) that a given post-completion income is greater than the income before study is indicated by:
*** p<0.001; ** p<0.01; * p<0.05; ns – not significantly different.
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.
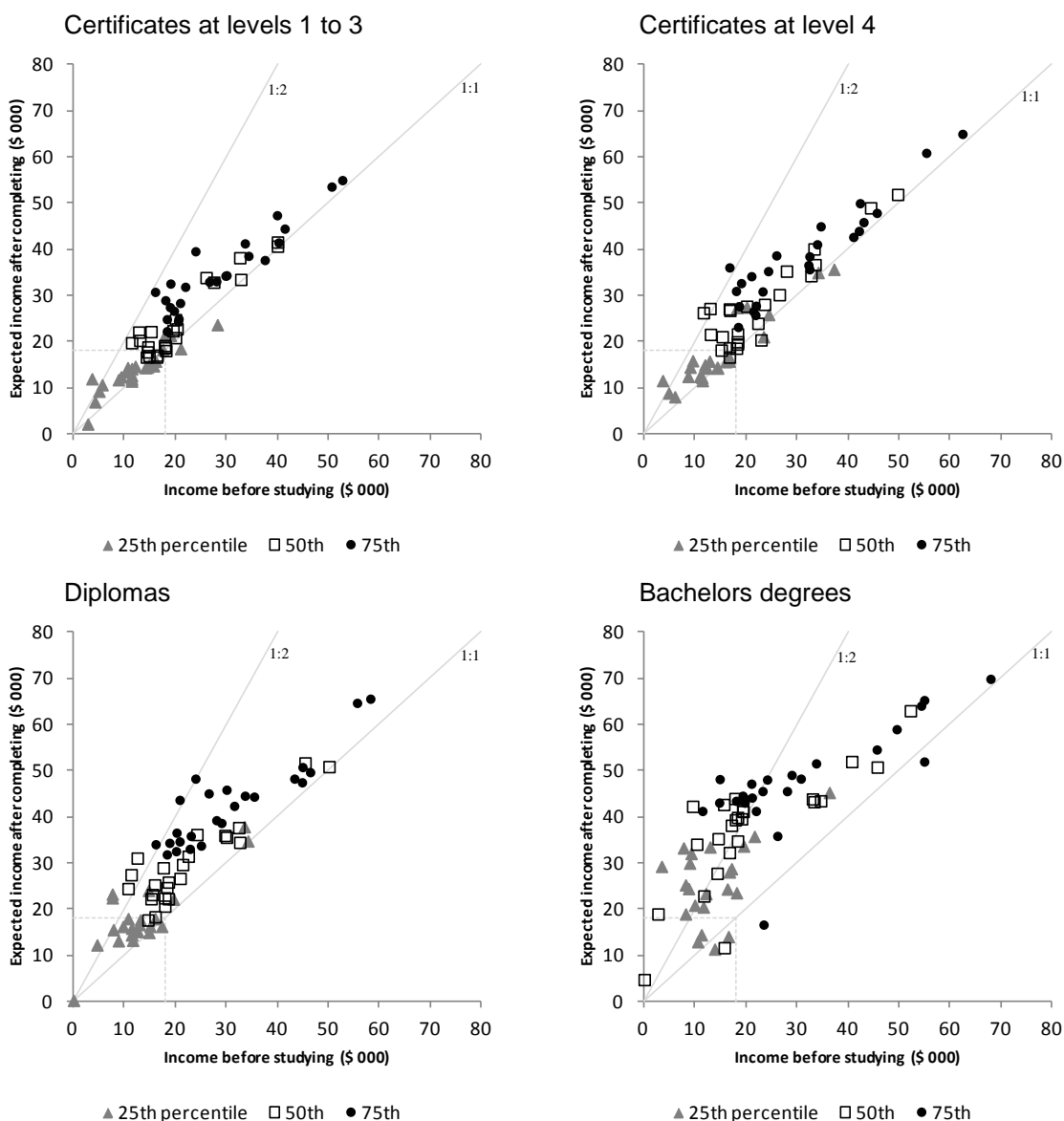
Table 6. Distribution of incomes (in thousands of dollars) before and after completing a **bachelors degree**, by age, gender, and student loan and benefit status

Age in 1999	Gender	Was on benefit prior to study	Had student loan	Income before starting study for post-completion income distribution ($ 000)			Expected income after completing ($ 000)		
				25th	Median	75th	25th	Median	75th
20	Male	No	No	0.00	0.00	11.43	0.00 ns	4.75 ns	41.27 ***
(n=2,067)		No	Yes	8.86	19.27	28.92	30.03 ***	41.27 ***	49.05 ***
		Yes	No	9.20	9.49	14.83	32.07 ***	42.29 ***	48.21 ***
		Yes	Yes	8.08	10.27	14.72	19.01 ***	34.14 ***	43.09 ***
	Female	No	No	0.00	2.66	21.90	0.00 ns	18.96 ***	41.25 ***
		No	Yes	8.05	19.10	27.96	25.27 ***	39.63 ***	45.56 ***
		Yes	No	8.72	16.69	19.70	24.54 ***	32.25 ***	43.08 ***
		Yes	Yes	9.88	14.53	18.04	20.92 ***	35.29 ***	43.49 ***
30	Male	No	No	12.93	45.72	54.91	33.46 ns	50.76 ns	65.33 *
(n=1,104)		No	Yes	19.47	33.03	45.64	33.65 ***	43.87 ***	54.58 **
		Yes	No	13.82	15.69	23.36	11.43 ns	11.66 ns	16.71 ns
		Yes	Yes	11.64	17.13	21.02	20.51 ***	38.20 ***	47.22 ***
	Female	No	No	18.06	34.56	49.48	23.59 ns	43.49 ***	58.97 ***
		No	Yes	3.40	15.61	30.68	29.30 ***	42.65 ***	48.33 ***
		Yes	No	16.45	17.87	19.33	14.06 ns	39.39 ***	44.64 ***
		Yes	Yes	16.31	18.28	23.23	24.44 ***	39.90 ***	45.61 ***
40	Male	No	No	36.34	52.19	67.90	45.31 ns	62.96 *	69.92 ns
(n=933)		No	Yes	12.13	33.27	54.92	23.41 *	43.26 ***	52.03 ns
		Yes	No	11.15	11.69	26.13	14.49 ns	22.89 ns	35.93 ns
		Yes	Yes	10.46	14.27	19.77	12.99 ns	27.77 ***	43.89 ***
	Female	No	No	21.63	40.74	54.30	35.83 ***	51.99 ***	64.10 ***
		No	Yes	7.70	17.84	33.67	33.34 ***	43.96 ***	51.55 ***
		Yes	No	17.09	18.28	21.12	28.76 ns	34.83 ***	44.22 ***
		Yes	Yes	16.67	19.37	24.06	28.06 ***	41.24 ***	48.13 ***

The probability (p) that a given post-completion income is greater than the income before study is indicated by:
*** p<0.001; ** p<0.01; * p<0.05; ns – not significantly different.
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

Figure 4. Pre-study and expected post-completion incomes for people in their twenties, thirties and forties, by level of qualification completed and the percentile of their post-completion income

Certificates at levels 1 to 3

Certificates at level 4

Diplomas

Bachelors degrees

▲ 25th percentile □ 50th ● 75th

Each figure includes all data for people aged in their twenties to forties from tables 3 to 6, including those cases where the difference in pre-study and expected post-completion income was not statistically different.
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

These results show that while it is self-evident that people with post-completion incomes at the 25th percentile have generally lower incomes than other people, their pre-study incomes were already at the lower end of the pre-study income distributions.

The other result is that for the lower-level qualifications, there is a far smaller change in income after graduating. This is seen by the points lying close to the 1:1 reference line in the panels in Figure 4. The distribution of points for diplomas, and especially bachelors degrees, show many more instances where the change between the pre-study and post-completion incomes is double or more. So the reason graduate incomes are below the repayment threshold is that there is virtually no income benefit from completing a lower-level qualifications, so people with incomes below the repayment threshold remain below the threshold.

This is seen by considering the points in the area bounded by the $18,148 reference lines (which is the 2008 repayment threshold). As Table 7 also shows, most of these points are for graduate incomes at the 25th percentile. Only for bachelors degrees do people with low pre-study incomes have graduate incomes above the repayment threshold.

Table 7 summarises the results from Tables 3 to 6 for student loan borrowers. This 'hieroglyphic' representation uses symbols to indicate whether or not someone's income reaches the repayment threshold one year after completing a particular level of qualification, whether they marginally reached that threshold, that is, their income one year after completing is at least 10 per cent above the threshold, or whether someone's pre-study income was already above the repayment threshold. Any statistically insignificant changes in income were regarded as being zero. As we described above, the incomes of graduates with progressively lower-level qualifications need to be higher in the post-completion income distribution for their group to be above the repayment threshold. Thus, for graduates with certificates at levels 1 to 3, most groups with incomes at the 25th percentile don't reach the repayment threshold, but nearly all bachelors degree graduates with incomes at this level for their group reach the repayment threshold.

Table 7. Indicators showing whether someone's income across the post-completion income distribution reaches the student loan repayment threshold after completing a tertiary qualification (for those with a student loan), by level of qualification completed, age, gender, and benefit status

Age in 1999	Gender	Was on benefit prior to study	Certificates level 1 to 3			Certificates level 4			Diplomas			Bachelor degrees		
			25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th
20	Male	No	✓	A	A	✓	A	A	✓	A	A	✓	A	A
		Yes	x	m	✓	x	✓	✓	x	✓	✓	m	✓	✓
	Female	No	x	A	A	x	A	A	x	A	A	✓	A	A
		Yes	x	x	A	x	m	A	x	✓	A	✓	✓	✓
30	Male	No	x	A	A	A	A	A	M	A	A	A	A	A
		Yes	x	m	A	x	✓	A	x	✓	A	✓	✓	A
	Female	No	x	✓	A	x	✓	A	x	A	A	✓	✓	A
		Yes	x	m	A	x	M	A	x	✓	A	✓	A	A
40	Male	No	x	A	A	A	A	A	✓	A	A	✓	A	A
		Yes	x	x	A	x	x	✓	x	x	A	x	✓	A
	Female	No	x	✓	A	x	A	A	x	✓	A	✓	✓	A
		Yes	x	x	A	x	x	A	x	✓	A	✓	A	A

x=income before studying was below the repayment threshold, and did not reach the threshold after completing.
m=income before studying was below the repayment threshold, and it was no more than 10% above the threshold ($19,900) after completing.
✓=income before studying was below the repayment threshold, and did reach the threshold after completing.
M=income before studying was not more than 10 per cent above the threshold, and didn't change significantly after completing.
A=income before study was already at least 10 per cent above the repayment threshold.
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

A limitation of this particular analysis is that we are only considering income one year after completing a qualification. As our earlier results show, income rises with time. And it may take some people more than a year to find employment commensurate with their new qualification. However, as our earlier results also show, there is usually a step-increase in income immediately on completing a tertiary qualification, and this step change contributes significantly to the chance a person has a graduate income above the repayment threshold.

5   OTHER CONSIDERATIONS

Modelling involves simplifications. Sometimes this arises from not having access to all of the variables and personal characteristics necessary to build a more complete or realistic model. But in other cases, the researcher deliberately makes simplifying assumptions so the model will actually work, that its results are relatively easily interpreted, and, just as importantly, are relatively easily to explain to an audience who may not be particularly interested in the finer points of statistical modelling. In this section we explain some of the simplifying assumptions we have made, and what impact these might have had on the results. We also consider other factors that are beyond our control, and how these need to be taken into consideration when interpreting the results of our analysis. But first we present some results for people in their fifties.

5.1 People in their fifties

As we mentioned in the introduction, we had originally included in our analysis people in their twenties, thirties, forties and fifties. However, the number of people in their fifties who completed a qualification, especially at diploma and bachelors levels, was not high enough for us to be confident of the results for this group. In essence, the small number of people completing qualifications meant the models could not statistically distinguish relatively large changes in income from no change in income. In this section, we summarise the results for this age group in general terms.

People in their fifties are beginning to approach the end of their working lives, and some people will be moving to part-time work, or retiring. For many people at this age, their income will be at the highest level in their working lives. This is borne out in the regression results. For the group of people who have incomes below the repayment threshold at the start of the study period, the average pre-study income for the fifty year olds is the highest seen for any age group. However the annual rate of increase in income for these fifty year olds is lower than for people in their forties, and this rate is also slowing at a faster rate. The results also showed that for some groups their average income declines as they approach 59 years of age.

For people in their fifties to have low incomes, there must be circumstances which limit their ability to engage with the labour market. They might have no or low level qualifications, or be in low-paid employment, work part-time, or have some disability or illness that prevents them from working full-time or at all. Some people might still have dependents which will limit the hours they can work. Completing a qualification at this stage in their lives is unlikely to change most of these circumstances. Indeed, the results suggested that, on average, a student loan borrower in their fifties with low income who completed a certificate saw no real change in their income trajectory. Completing a diploma made a slight difference to those not on a benefit, and this was sufficient for their income, on average, to rise above the repayment threshold one year after completing.

Only when people in their fifties completed a bachelors degree did a low income student loan borrower see a large step change in their income, although the rate of change in income after completing was relatively flat compared to younger people. This overall change in income, for both people on a benefit and not, meant that their income, on average, was above the repayment threshold. However, those on a benefit showed declining incomes after an initial increase, so there is a question as to how long their income might stay above the repayment threshold.

When we looked at the distribution of the post-completion incomes for this age group, graduates completing any level of qualification with an income at the 75th percentile for their particular group were above the repayment threshold, apart from men on a benefit who completed a

certificate at levels 1 to 3. For those on median incomes for their group, being on a benefit meant they were under the repayment threshold, apart from those completing bachelors degrees. And those at the bottom quarter of the income distributions for their groups, essentially no-one was above the repayment threshold, regardless of the level of qualification completed. Only women in their fifties, not on a benefit, who completed a bachelor degree were above the threshold, and while their income increased by nearly $11,000 per annum after completing, their pre-study income was already above the repayment threshold.

5.2 Subject of the qualification

Chen and Webster (2013) found that New Zealand resident student loan borrowers who studied in the broad fields of food and hospitality, society and culture and information technology were more likely to be under the repayment threshold in the three years after leaving study in 2006. On the other hand, similar students who studied in health, education and science were less likely to be under the threshold. So we know the field of study is an important explanatory variable. But there are eleven broad fields of study and many more narrow fields, and it becomes clear that this many categories will be problematic to model; the number of combinations of qualifications and subjects become very large, which reduces sample sizes, and results in far more complex models. And if the subjects studied are correlated with gender or age—as we found they were—the models will not be robust in any case. For these reasons we decided not to include the subject of the qualification directly in our models. In any case, it is relatively straightforward to envisage which subjects attract the higher incomes. The recent work by Mahoney et. al. (2013) and Park et. al. (2013) also provides a good insight into the income that can be expected for young graduates by subject area and the level of the qualification.

We have helped our understanding of how the subject of the qualification is associated with post-completion incomes by looking at associations between the subject studied and level of the qualification completed, and the graduate's gender and age. These results are described in Section 3. We found a strong association, especially for lower-level qualifications, between gender and subject. So in some respects, by controlling for gender and birth year we have taken into account some of the variation in outcomes due to the particular subject studied.

5.3 Type of job or industry of employment

A similar argument applies to the industry, or type of job a person holds. Including these factors in our models would help to explain a large amount of the differences in people's pre-study and post-study incomes. However, Inland Revenue income data does not contain people's job titles. But like the subject of the qualification, it is not difficult to envisage, or to find out, which occupations or industries pay above the odds.

5.4 Type of tertiary study, full-time or part-time

A variable that is usually included in studies of tertiary education is one that indicates whether a student studied full-time or part-time. Typically, full-time students are more likely to be younger, and proportionally more full-time students gain a qualification (but see Engler (2012) for the impact of study type on non-bachelors qualifications when controlling for student ability). We did not include the method of study in our analysis because principally we were interested in what happened *after* someone studies. Had we included this variable, it might have helped to explain some of the variation in income during the time someone was enrolled in tertiary study. Young men and women show a significant drop in income while they are enrolled in tertiary study, with the drop being larger for higher-level qualifications. Young adults are more likely to be studying full-time, so it is expected they might have a larger drop in their income, on average. And since higher-level qualifications take longer, and are more

intensive in terms of the commitment required, it is also reasonable to find that studying for higher-level qualifications has a greater impact on incomes while someone is studying.

For middle-aged people however, we find there is no significant impact on income for people while they are studying for lower-level qualifications. For people in these age groups however, studying at higher-level qualifications is associated with a larger drop in income. Again, these patterns make sense from the point of view that shorter, less demanding study can be done part-time, which mitigates the effect that study has on income, while longer, more intensive study, with its corresponding greater time commitment, has a correspondingly larger effect on income. But the magnitude of that effect for older people is less than that seen for young adults. It is likely that more of the older people are studying part-time, which again limits the impact of their study on their incomes.

A further avenue of investigation is whether or not full-time or part-time study has any association with the step change in income on completing, or the annual change in income after having studied or completed a qualification. We have not pursued this line of enquiry in this study, partly because the type of study is a time-varying variable, and it is not straightforward to assign a single status, full-time or part-time, to a person's study history. We could have included it as a factor during enrolment, which might have partitioned the effect on income between these two methods of study. In our defence, we argue that including the type of study predominantly helps in understanding the dynamics of income during study, while our focus in this analysis is primarily on what happens to someone's income after they finish their study.

5.5 Previous qualifications attained

Given how important completing a tertiary qualification is to someone's income, one of the main limitations in our analysis is our lack of knowledge about the *prior* qualifications a person might have, obtained before 1999. The fact is we cannot control for prior qualifications with the data we have. We could have limited our study to young adults, where we might have been able to determine their previous qualifications (or at least assumed that most wouldn't have a previous tertiary qualification), but focussing only on younger students excludes many people who are slow at repaying their student loans. Much of the variation in pre-study income, particularly for older people, is probably related to their prior qualifications, which in turn affects what jobs people have, and the industries they work in.

5.6 Size of student loan

There is evidence which suggests that a higher initial loan balance results in people being slower to start repaying their loan (Smyth and Hyatt 2005). However, we don't include information about the size of someone's student loan in our models. The size of the loan—and the level of income—will determine, to a great extent, how long it takes to pay off a loan. In our study we are more interested in whether a person is obliged to start to pay off their loan, rather than how long it takes them to do so. Generally, larger loans are associated with qualifications that take longer to complete, or which are regarded as more prestigious, which in turn are associated with higher-paid graduate employment, at least in the longer term. Doctorates and masters degrees, and medical, veterinary and law degrees fall into this category. And having a higher income means it's more likely someone will be able to make student loan repayments. On the other hand, the more specialised the qualification, the more difficult it might be to find employment, or find employment in New Zealand, which might delay the start of loan repayments.

However, if the loan is larger because someone takes out several student loans to gain multiple qualifications, particularly in subject areas with little prospect of employment, this might be an

important explanatory variable associated with non-repayment of student loans. This could be an area for further study.

5.7 Ease of repayment

If someone has an income above the student loan repayment threshold, this does not mean making the repayments will be easy—it depends on their other financial commitments and obligations.[11] This applies more to people whose incomes are closer to the repayment threshold, and whose income trajectories are relatively flat, suggesting they might struggle with increases in the cost of living, or have difficulty dealing with unforeseen changes in their financial circumstances. Again, our study is focussed on whether someone is obliged to start repaying their loan by virtue of them having an income above the repayment threshold. But predicting that someone has reached the student loan repayment threshold doesn't necessarily mean they can, or do, start to pay off their student loan.

5.8 Type of benefit

In our study, we controlled for whether someone was in receipt of a benefit or not. We also investigated the length of time on a benefit (see next section) and what type of benefit was being received.

Figure 5 shows the proportion of beneficiaries in our low-income study populations across time for men and women in the three different birth year cohorts used in our analysis. It is clear there is a strong association between the type of benefit and sex; men on a benefit are far more likely to be on the unemployment benefit, while women if they are on a benefit are far more likely to be on the domestic purposes benefit.[12] Young women, like men, are also more likely to be on the unemployment benefit if they are in receipt of a benefit at all. The other benefit types— sickness, invalids, widows, emergency and hardship, independent youth and orphan and unsupported child benefits—are far less prevalent than these two main benefit types.

This separation of the benefit types for men and women makes it difficult to include both gender and benefit type in our models at the same time. This is because there are too few men on the domestic purposes benefit, and women on the unemployment benefit, for the models to be robust. In general terms, gender can be regarded as a proxy for benefit type, notwithstanding the result for young women. This should be borne in mind when interpreting the results.

The other clear trend is a decline in the proportion of people on a benefit over time. We are not sure this is a general trend with age, or the fact that the study period, 1999 to 2008 coincided with improving economic and labour market conditions in New Zealand (see Figures 6 to 8). This would certainly have reduced the proportion of people requiring unemployment benefits, but we are unsure whether it would have had the same effect on the incidence of being on the domestic purposes benefit. More likely the decline in the proportion of women on the DPB is associated with age, where women's caring responsibilities reduce as their children grow older, reducing the need for them to receive this benefit. This trend is evident in the figure.

---

[11] Inland Revenue offers provisions for people who have a student loan and are in financial hardship. See http://www.ird.govt.nz/studentloans/payments/non-payment/ for details.

[12] There were significant changes to the New Zealand benefits system in July 2013. One of these was to combine the unemployment, sickness, widow's and domestic purposes benefits into a new benefit type, Jobseeker Support. However, for the people in our study populations, the old benefit types still applied. More details can be found at http://www.workandincome.govt.nz/individuals/brochures/moving-to-job-seeker-support-what-you-need-to-know.html.

Figure 5. Proportions of the study populations on unemployment and domestic purposes benefits across time, by age in 1999 and gender
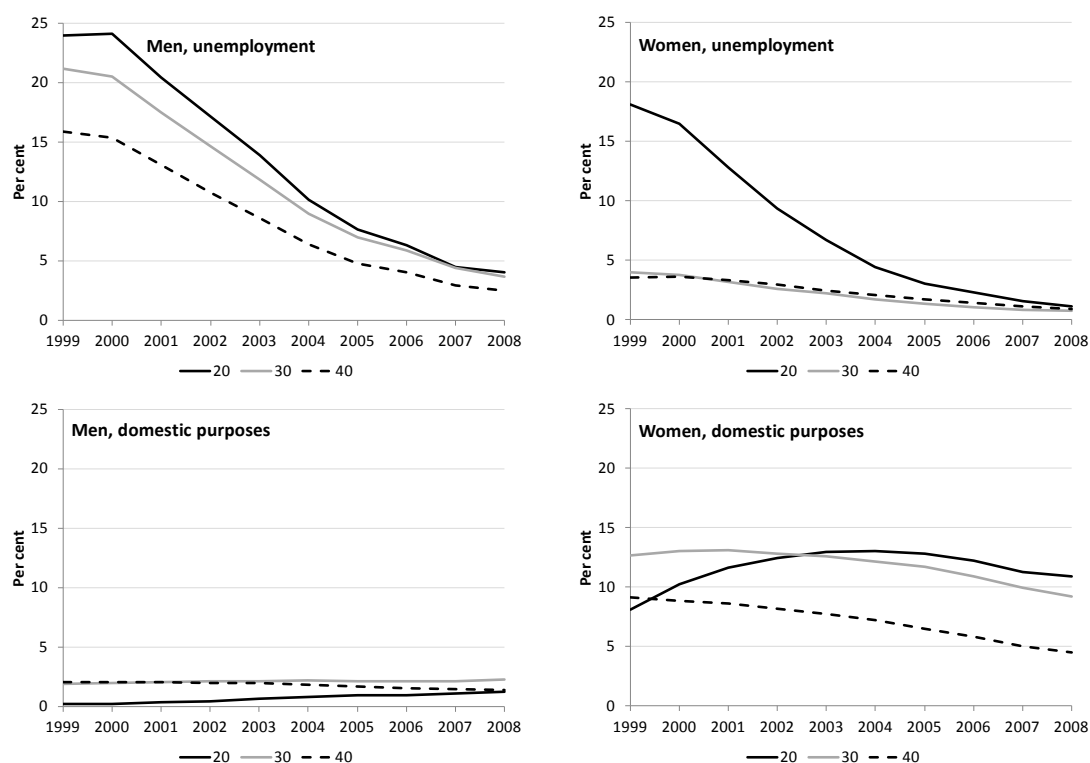
Source: Statistics New Zealand, Integrated Data Infrastructure, Ministry of Education interpretation.

5.9 Length of time on a benefit

Being on a benefit can be modelled as a binary as we did (either on or not on a benefit), or as months per year on a benefit. Clearly the longer someone is on a benefit, the less access they have to the labour market. We investigated using months on a benefit as a variable in our models, and the results showed that increasing months on a benefit progressively reduced the positive effects of completing a qualification. However, the distribution of people across the one to twelve months on a benefit each year is not uniform. This uneven distribution of months on a benefit meant the models using a binary representation of benefit status were slightly better models.

The effect of these decisions on how to include benefit status in our modelling is that our models capture the *average* time spent on a benefit, for the *average* benefit type. The average time spent on a benefit varies with the type of benefit, and the average benefit type will vary with gender and age. We think it is probably best to regard benefit status as a type of proxy for access to the labour market. People not in receipt of any benefit would have good access to the labour market, while those on a benefit would have some type of restriction placed on their ability to find or keep work. These restrictions will vary with gender, and with age, but the effect is that people's income would be compromised somewhat by not being able to work for one or more months in a year. The average income trajectories we see in our results, where the average incomes for those on a benefit are usually lower than those not on a benefit, particularly after completing study, seem to bear this out. This interpretation is even more compelling considering that it is usually an event—losing a job, or having a child—which results in the benefit being received. It is not that being on a benefit causes the lower income.

5.10 Labour market and economic conditions

It is important to consider the labour market and economic conditions that were operating during the period for which we have data, and ask whether those conditions were different enough from other historical time periods that it would preclude our results from being applicable more generally.

Not by any design, the last year of the study period, 2008, was the start of the 2008 to 2010 global financial crisis. A priori, it would seem unlikely that the results from this period of history would be applicable to more recent times. However, while the global financial crisis had an impact on employment for some groups, various economic indicators suggest that the economic conditions operating during our study period are not atypical of the years following economic downturns.

Firstly, average hourly earnings growth prior to 2008 and afterwards do not show any dramatic departure from the overall long-term trend (Figure 6). Certainly, there was a slowing of income growth during the years 2009 and 2010, but growth in income after 2010 has essentially resumed its previous trajectory. It seems that while fewer people may have been working during the global financial crisis, the income of those who were working was not significantly affected.

**Figure 6.** New Zealand average hourly earnings over time
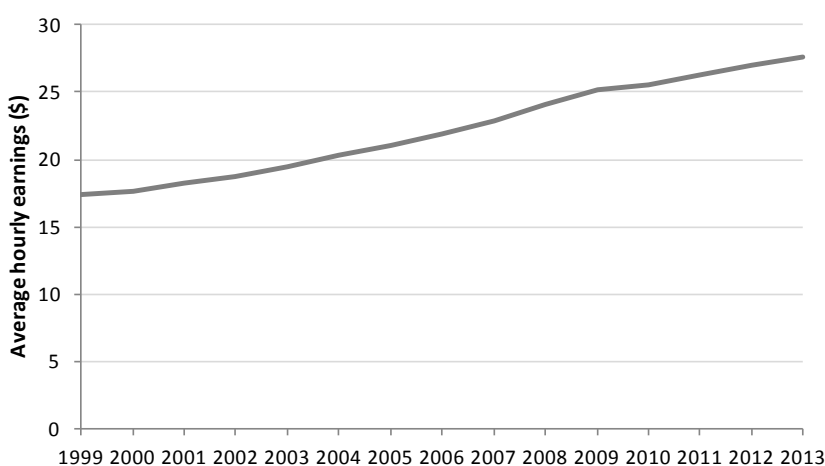
Source: Statistics New Zealand, Infoshare
Data is plotted for results in quarter two of each year.
Average hourly earnings include ordinary time and overtime.

Unemployment rates were generally declining throughout the period 1999 to 2008 (Figure 7).

The unemployment rate for people with diplomas or bachelors degrees changed only slightly over time; people with lower-level qualifications, or no qualifications, were far more likely to be unemployed. Clearly with favourable labour market conditions, all people are more likely to find employment, not just graduates. Favourable labour market conditions might also mean that people on some type of benefit might also find work, even if this was part-time work. So some of the increases in income we saw for low-income people may be the result of these favourable conditions. However, not all graduates saw increases in their income in our data, and generally there were large differences both between levels of qualification completed, and between those who completed and those who did not. In any event, our results and conclusions are predicated on the fact that someone needs to find a job to earn an income; this may be easier when more favourable labour market conditions prevail, but it is a prerequisite for a graduate at any time.

Figure 7. New Zealand unemployment rate over time by highest qualification level
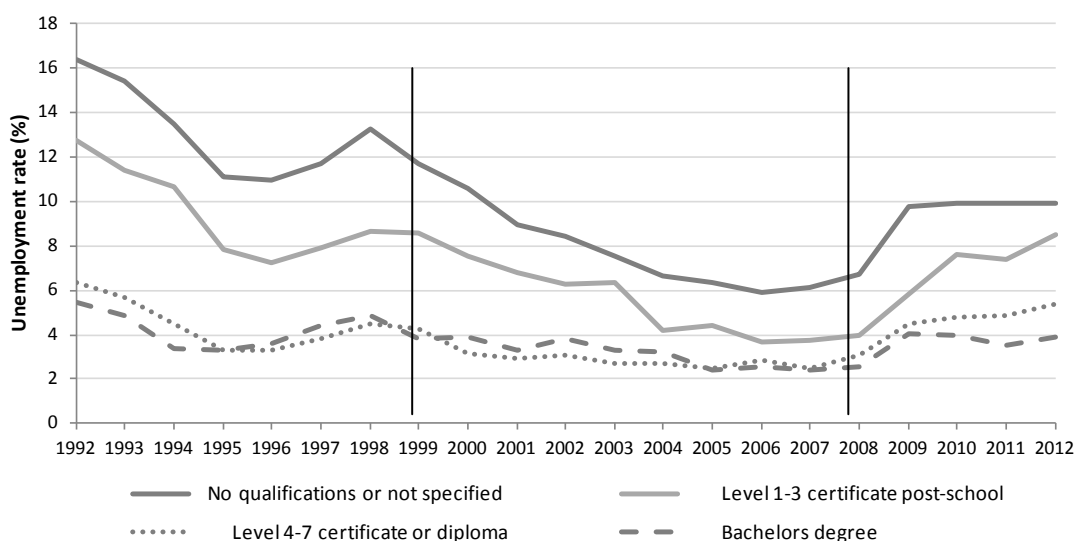
Source. Statistics New Zealand, Household Labour Force Survey
The unemployment rate is averaged of unemployment rate in each quarter in each year.
The vertical lines indicate the years of the study period.

Figure 8 shows the gross domestic product (GDP) for New Zealand from 1993 to 2013. It can be seen that GDP was rising steadily from 1999 to 2008, and stalls somewhat during the recent global financial crisis. But there is evidence that the rate of increase in GDP is improving again. It is likely that the economic conditions during our study period, while not representative of adverse economic and labour market conditions, is not atypical of conditions at other times. In fact, it would appear that the years immediately preceding the start of our study data in 1999 were also somewhat difficult economic times, with GDP slowing and unemployment high. So if anything, the results of our study are probably most applicable to improving labour market and economic conditions in the years following an economic downturn, such as New Zealand was experiencing when this report was written.

Figure 8. New Zealand gross domestic product over time
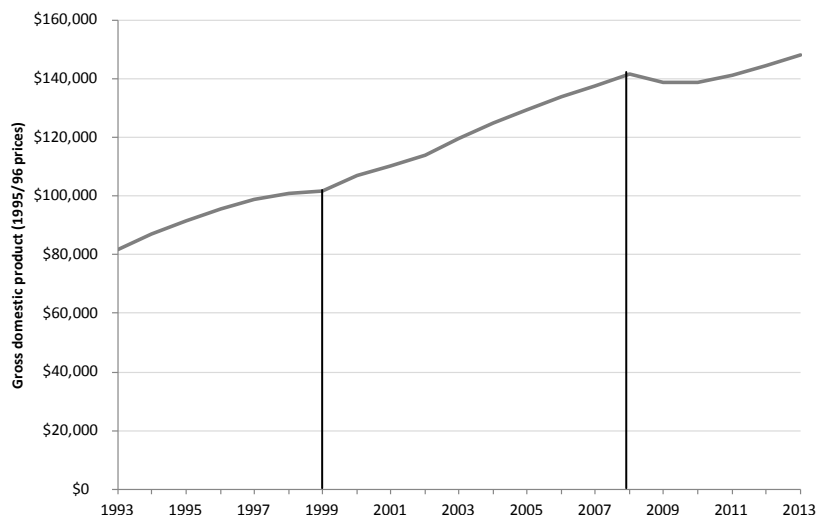
Source. Statistics New Zealand, Infoshare.
Series: GDP (P) chain volume, Actual ANZSIC06, Annual-March figures, high-level industry groups, all industries.
The vertical lines indicate the years of the study period.

5.11 Unobserved factors that might be correlated with income

In this study we have shown an association between income, and the completion of tertiary qualifications. Generally, both average and median incomes are above the student loan repayment threshold one year after graduating with higher-level qualifications.

What we cannot say is that simply completing a higher level qualification will always result in a higher income. Not everyone who completes a bachelors degree will have a higher income on graduating, and some people who complete lower-level certificate qualifications *will* have an income that obliges them to repay their student loans.

This is because many of the factors that *directly* influence income cannot be modelled in this study. These are a person's ability, motivation and confidence—amongst others—which are generally understood to have a large bearing on life outcomes, including employment and income. Therefore, we cannot suggest that simply completing a higher-level qualification will always result in someone earning sufficient income for them to be obliged to start paying off their student loan. Like any study that does not or cannot control for human characteristics, or indeed any factors systematically linked with the outcome of interest, there is always the possibility that the factors *causing* the changes in income we observed for people completing a tertiary qualification are due to these unobserved factors, rather than the changes in remuneration arising directly or indirectly from the completion of the qualification. That the step changes in income we observed in our study are linked in time to the qualification completion event is not in question. It can't be a coincidence that income rises in the year after completing a tertiary qualification. But it might be that any intelligent, motivated and confident person completing *any* qualification will have a higher income after graduating. The difference in the results between the levels of qualification completed we observe might just be because a higher proportion of able and motivated people choose to study at bachelors level, so on average, their graduate incomes will be higher than those who choose to study at lower levels.

But even if a person has the confidence and ability to complete a bachelors degree, if the subject matter is in an area where there are no or limited employment opportunities, or the person is living in a town where there are limited employment opportunities in any field—and for whatever reasons the person cannot relocate—then securing a job will be difficult. However, it might be reasoned that generally, a person with a higher-level qualification will have a better chance of securing employment, with better pay, than someone with a lower-level qualification, given that the two people have equal ability and motivation. A study in 2010 by Earle (Earle 2010) provides some evidence for this. In that study, Earle controlled for 'ability' by using document literacy[13] as a proxy. His results showed that hourly wage rates increased with increasing 'ability', but when holding 'ability' constant, wage rates also increased for increasing levels of tertiary education. In particular, while median and average hourly wages increased with increasing tertiary qualification, the 75th and 90th percentiles of this income were much higher.

What this tells us is that higher level qualifications provide people with a higher income over and above the effect of 'ability', for those people able to find employment in their area of expertise.

---

[13] Document literacy is the ability to understand short texts, charts and tables. It most closely fits common workplace literacy and numeracy tasks (Earle 2010).

6 CONFIDENTIALITY OF DATA

The results published in this report comply with the Statistics New Zealand's confidentiality requirements. These include a requirement to use *random rounding to base 3* for all counts. Additionally, counts for any combination of qualification level, gender and age must be higher than prescribed limits. Blanks may also be suppressed in line with Statistic New Zealand's confidentiality rules.

Disclaimer

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

The opinions, findings, recommendations and conclusions expressed in this report are those of the authors, not Statistics NZ.

Access to the anonymised data used in this study was provided by Statistics NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation and the results in this report have been confidentialised to protect these groups from identification.

Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from www.stats.govt.nz.

The results are based in part on tax data supplied by Inland Revenue to Statistics NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form, or provided to Inland Revenue for administrative or regulatory purposes.

Any person who has had access to the unit-record data has certified that they have been shown, have read, and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements.

7 REFERENCES

Chen, N. and M. Webster (2013) *Slow repayers. The characteristics of borrowers who make slow progress in reducing their student loans*, Ministry of Education: Wellington.

Crichton, S. and S. Dixon (2011) *The labour market returns to further education for working adults*, Department of Labour: Wellington.

Earle, D. (2010) *Skills, qualifications, experience and the distribution of wages*, Tertiary education occasional paper 2010/04, Ministry of Education: Wellington.

Engler, R. (2012) *Staying the course. School leavers completing their first one-year non-degree qualification*, Ministry of Education: Wellington.

Griffin, F., D. Scott and R. Smyth (2005) *Living with a student loan. A profile of student loan debt and repayment, post-study income and going overseas*, Ministry of Education: Wellington.

Hyatt, J. (2005) *Paying off a student loan. An analysis of progress to full repayment from the integrated dataset*, Ministry of Education: Wellington.

Maani, S. (1999) *Private and public returns to investments in secondary and higher education in New Zealand over time: 1981–1996*, Working paper 99/2, New Zealand Treasury: Wellington.

Mahoney, P. (2011) *What do men and women earn after their tertiary education?* Tertiary education occasional paper 2011/02, Ministry of Education: Wellington.

Mahoney, P., Z. Park and R. Smyth (2013) *Moving on up. What young people earn after tertiary education*, Ministry of Education: Wellington.

Ministry of Education (2012) *Student loan scheme annual report October 2012*, Ministry of Education: Wellington.

Park, Z., P. Mahoney, W. Smart, and R. Smyth (2013) *Looking at the employment outcomes of tertiary education. New data on the earnings of young graduates*, Ministry of Education: Wellington.

Scott, D. (2009) *What do students earn after their tertiary education?* Statistics New Zealand: Wellington.

Smyth, R. and J. Hyatt (2005) *Who doesn't pay back? The characteristics of borrowers who make no progress in reducing their student loans*, Ministry of Education: Wellington.

Stewart, A. and R. Owens (2013) *Experience or exploitation? The nature, prevalence and regulation of unpaid work experience, internships and trial periods in Australia*, Report for the Fair Work Ombudsman, University of South Australia: Adelaide.