MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

Income of Student Loan Scheme Borrowers

Report
Income of Student Loan Scheme Borrowers

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Disclaimer
Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the author, not Statistics New Zealand.

Summary Statistics New Zealand Security Statement: Integrated Data Disclaimer
The integrated dataset on Student Loan Scheme Borrowers is based on the integration of data from the Ministry of Social Development, the Inland Revenue Department and the Ministry of Education. This project has been approved by Statistics New Zealand as a data integration project with data access provided through the Data Laboratory under relevant legislation and policy. Only approved researchers who have signed Statistics New Zealand's declaration of secrecy can access the integrated data in the Data Laboratory. For further information about confidentiality matters in regard to this study please contact Statistics New Zealand.

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Sources, Scope & Coverage

The integrated dataset on Student Loan Scheme borrowers (ISLDS) combines:

- information on students and on their enrolments and courses collected by tertiary education providers and submitted to the Ministry of Education
- information on students' borrowings under the Student Loan Scheme collected by StudyLink
- data on student loan balances and repayments from Inland Revenue, and
- Inland Revenue data on income and tax status.

The data from these sources is linked at the unit-record level by Statistics New Zealand to create a record for each Student Loan Scheme borrower that includes data on demographic characteristics, tertiary study, borrowing and post-study income. Statistics New Zealand manages and is custodian of the dataset. Its management conforms to procedures designed to guarantee the confidentiality of the data. The data-set has identifiers (such as name, address and IRD number) removed. It has been analysed under confidential and secure conditions in Statistics New Zealand's datalab. Numbers in the tables have been random rounded to base 3. Under the protocols set by Statistics New Zealand, analytical results are expressed in terms of medians, percentiles and other statistical measures or as sums of groups. No individual's records will be able to be identified.

More background information on the dataset can be found later in this report. For more technical information on the matching methodology and the quality of the matching, refer to Statistics New Zealand (2002) *Report on the Matching and Results of the Student Loans Integration Project.*

The Data Held in the ISLDS

The integrated dataset currently contains matched records for the years 1997 to 2000. It also contains Inland Revenue data on income and debt for those who used the Student Loan Scheme between 1992 and 1996. That earlier data has not been matched to education or borrowing data. Because the matched records in the dataset cover only the years 1997 to 2000, our full analysis is confined to those people who used the Student Loan Scheme in any of those years.

Student Loan Scheme Borrowers

The ISLDS contains data only about students formally enrolled in tertiary education who have accessed the Student Loan Scheme. There are some parts of the New Zealand tertiary education sector where students are not entitled to borrow through the loan scheme. For example, the 90,000 students studying industry training each year and the 6,000 modern apprentices cannot access student loans, while those undertaking certain

forms of foundation education – such as Training Opportunities – receive other forms of government support and hence, are not entitled to borrow through the scheme. Of those eligible to borrow, some choose not to. It is estimated that 50 percent of eligible students borrowed through the scheme in 1999. This figure rose to 55 percent in 2000 and stood at 60 percent in 2003.[1]

The likelihood that a student borrows through the loan scheme varies according to which tertiary education sub-sector the student is enrolled in. In 2003, the estimated uptake rates among full-time students ranged from 87 percent in the colleges of education, through 80 percent in the universities and 71 percent in the polytechnics to 32 percent in the wānanga.[2]

Since the Student Loan Scheme began in 1992, around 550,000 people have used the scheme, with more than 140,000 having completely repaid their loans at 30 June 2004.[3] At 30 June 2004, 13 percent of the population aged over 15 had a current student loan balance. The ISLDS contains the matched records of 203,271 borrowers who used the scheme between 1997 and 2000. Thus, the population represented in the dataset and studied in this report is substantial. That no comparable data is held on students who have not used the loan scheme, however, makes it difficult to compare borrowers to non-borrowers and thereby characterise borrowers as a distinct group of students.

Reporting Approach

A single response approach has been adopted for this paper whereby each borrower is counted once irrespective of the number of qualifications enrolled in. Where a student is enrolled in a number of qualifications in their last year of study, the level sub-sector and field of study is chosen from the qualification at the highest level. Where a student has completed one or more qualifications, the level, sub-sector and field are chosen only from those completed qualifications.

Where rates have been categorised by level, age group, ethnic group or gender, only categories with non-missing values have been displayed. However, row totals include all students.

Other Data Sources

While this paper reports on a study of the ISDLS, some use is made of other data sources. In particular, reference is made to Ministry of Education, Ministry of Social Development and Inland Revenue (2004) *Student Loan Scheme Annual Report to 30 June 2004*. This paper complements another analysis of the ISLDS, Ministry of Education (2005) *Living with a Student Loan*.

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[1] Ministry of Education, Ministry of Social Development and Inland Revenue (2004) *Student Loan Scheme Annual Report to 30 June 2004*, page 20

[2] Uptake in the wānanga is low because a large number of wānanga students are enrolled in qualifications with zero fees and a high proportion of all borrowing nationally is directed towards the payment of fees.

[3] Ministry of Education, Ministry of Social Development and Inland Revenue (2004) *Student Loan Scheme Annual Report to 30 June 2004*, page 29

Extensions of the Dataset

The dataset was updated in late November 2004 to include data from 2001 and 2002. It will be extended annually with new waves of data. In time, this time-series will mature so that the borrowing, debt, repayment and income history of every borrower will be recorded, linked to a record of their tertiary education. Over time, the integrated dataset will give us a longitudinal, multidimensional view of the scheme and hence will enable us to analyse and report on its impacts more fully.

Definitions

Last year of Study:	*The last year in which a student was enrolled at any tertiary provider covered by the data.*
Borrowed in year:	*A student is deemed to have borrowed in a given year if a loan account was established and activated for study that commenced in that calendar year. In this report only those with debt transferred to the IRD in February of the following year are considered to have borrowed.*
Completion:	*A student is classified as completed if in their last year of study they completed any qualification in which they were enrolled.*[4]
Level:	*Refers to the highest level of qualification being studied in the last year of study. Where a student has completed, the level is obtained from the highest of the completed qualifications.*
Sub-Sector:	*This is obtained from the same qualification as used to determine level.*
Field:	*This is obtained from the same qualification as used to determine level.*[5]
Ethnicity:	*Ethnicity or ethnic group is based on MoE supplied data.*
Age:	*Unless otherwise stated, age is the student's age last birthday as at 1 July in the last year of study.*

[4] Thus, for example, a student who in 1999 finishes her bachelors degree, and enrols in an honours programme in 2000 (and borrows from the student loan scheme) but does not successfully complete will be classified as having last studied in 2000 and to have not completed. Note however, that if she were to enrol in any programme in 2001, this enrolment would not change the last year of study as this information is outside the dataset. Consequently, the population 'last borrowed and studied in 2000' is much larger than 'last borrowed and studied in 1999'. The former is about 250% of the latter.

[5] Field of study is analysed in this section using the New Zealand Standard Classification of Education (NZSCED) broad categories. Formally registered qualifications are assigned to an NZSCED classification. Information on NZSCED can be found at www.minedu.govt.nz or at www.nzqa.govt.nz

Earned income:[6] *Money from the following sources: Before tax income from salary and wages, partnership income (net profit or loss), self-employed income (less expenses).*

Benefit income: *This data is only available for the 2000 and 2001 tax years.*

Total income: *Total taxable income for the period. This includes the above plus unearned income such as rent, interest and dividends and other income.*[7]

In this report, the term 'completion' is used to refer to successful completion of a *qualification*, rather than a *course*.[8] Further in distinguishing those that completed versus those who did not, 'completion' means 'completed in the last year of study'.

Measurements of income diversity

Several statistics are used in this paper to characterise the breadth and shape of the income distribution for identified groups. Most commonly used are:

P90 / Median: *The ratio of the 90th percentile of income to the median income. Higher values indicate a wider range of incomes 'at the top end' and greater income disparity.*

P10 / Median: *The ratio of the 10th percentile of income to the median income. Lower values indicate greater income disparity for those on the lowest incomes.*

SD / Mean: *The ratio of the standard deviation of income to the mean income. This is a simple (although not always useful) measure of income breadth, with higher values indicating a broader spread of incomes for the group.*

Chapter 4 also makes use of the Gini coefficient as a measure of within group income disparity (see footnote on page 80 for its interpretation).

Throughout the paper are stacked bar charts designed to visualise the spread of incomes received by various groups. These show selected percentiles of income, and are introduced in chapter one on page 18 (figure 1.4), where there is a general discussion in the text and footnotes of percentile measures.

[6] Income data is sourced from IR3 and IR5 returns for tax years 1998 and 1999 and from PTS (personal tax summary) data for tax years 2000 and 2001 via the IRD data warehouse.
[7] Including any loss carried forward from a previous year.
[8] A 'course' is a component of a qualification. Courses are variously called 'papers' or 'subjects'. Completion of a qualification usually involves the successful completion of a prescribed set of courses.

Introduction

Background

The Student Loan Scheme is managed by three government agencies: the Ministry of Education, the Ministry of Social Development and Inland Revenue.[9]

- The Ministry of Education is responsible for providing policy advice to government on the scheme. It also collects and acts as custodian of information on enrolments in and completion of tertiary education.

- StudyLink (a service of the Ministry of Social Development) is responsible for the delivery and administration of the payment of student loans.

- Inland Revenue is responsible for the assessment of student loan balances and for the collection of student loan repayments.

The agencies have each developed information systems necessary to run their parts of the system. Those systems are not connected, however. None of the systems contains all of the important information on borrowers, their tertiary education, their borrowing, their loan balances and their repayments. It is not possible, using those transactional systems, to analyse the key outcomes of the Student Loan Scheme. For instance, it is not possible to study the repayment characteristics or the post-study income of borrowers by (for instance) qualification level or by demographic characteristics, such as ethnic group.

The integrated dataset on Student Loan Scheme borrowers was developed specifically to address such questions. Its development responded to criticisms made by the Auditor-General of the level of analysis that had been undertaken of the broader impacts of the Student Loan Scheme.[10] It combines:

- information on students, their enrolments and courses and whether they are successful in completing the qualifications they have enrolled in

- information on students' borrowings under the Student Loan Scheme

- data on student loan balances and repayments, and

- Inland Revenue data on income and tax status.

[9] For an account of the background to the Student Loan Scheme and its operation, refer to Ministry of Education, Ministry of Social Development and Inland Revenue (2004) *Student Loan Scheme Annual Report to 30 June 2004*.

[10] Office of the Controller and Auditor-General (2000) *Student Loan Scheme, Publicly Available Accountability Information*.

By making linkages between information drawn from the systems of the three agencies, the integrated dataset enables us to study the effects of the Student Loan Scheme on students and on subgroups of students.

Using the Dataset to Analyse Income

This report uses the dataset to analyse the income of student loan borrowers. In particular, it relates data on people's tertiary study to information on their income once they finish studying. Post-study income is one of the most important ways of understanding the outcomes of tertiary education. It enables us to determine whether someone is in employment, on a benefit or resident overseas. Therefore, we can examine how people fare once they have left study and focus our analysis on subgroups of borrowers – for instance, women, Pasifika or older people. We can explore the different impacts of certain qualification types – such as certificates or bachelors degrees. Because the dataset is longitudinal, we can examine how incomes change over time.

Therefore, this report provides a unique perspective on the outcomes of tertiary education for groups of Student Loan Scheme borrowers. Because of the high proportion of borrowers in formal tertiary education, it also gives us a view on the relative value of different forms of education for different groups.

The Relationship Between Education and Income

There is much evidence in the literature that higher education is correlated with higher incomes.[11] Data from the Census and from the Household Labour Force Survey – Income Supplement make it clear that higher qualifications are associated with higher incomes. Sholeh Maani found in her 1999 analysis of the internal rates of return to education using data from the census years 1981 to 1996 that investments in education show a real and positive return to individuals.

However, studies of the education – income link using the Census and other population surveys do not allow the longitudinal perspective or the level of precision in the analysis of the educational record that we gain using the integrated dataset. The integrated dataset is still 'young'; in the present study, we have access to the linked records for the years 1997 to 2000 only. As additional waves of data are added to the dataset, however, we will gain the ability to track the patterns of growth of income post-study and to relate those patterns to demographic and educational characteristics.

The Report

The first chapter of this report is titled **Income while Studying**. This chapter looks at the incomes of students who were studying and who borrowed from the scheme in 2000.

The second chapter, **Pathways** is about the destinations of borrowers after they leave study. It looks at those who last studied and borrowed in 1997 and examines their

[11] Much of the recent information about the education income relationship in New Zealand is summarised in Ministry of Education (2004) *New Zealand's Tertiary Education Sector: Profile and Trends 2003*. Refer in particular, to Chapter 4. Refer also to Maani (1999), Maani (1997) and Maani and Maloney (2004).

progression over the following three years. It looks at the characteristics of those who have left New Zealand and determines rates of departure and return to New Zealand.

The chapter also considers the sources of borrowers' post-study income and looks at the contribution of unearned income – such as benefits – to people's total income.

The third chapter **Starting Salaries** is about earned income in the first year out of study. It examines the earned income in the tax year ending 31 March 2001 for those who last studied and borrowed in calendar year 1999.

Chapter four, **Income Growth** is concerned with the growth in earned income over the first few years following study. This chapter is focused on those borrowers who remained resident in New Zealand and did not receive benefit income in the last two tax years available to this study.

The last chapter **Income three years after finishing study** rounds off the report by returning to examine total income at the maximum 'distance' from study currently available in the dataset.

1 Income while Studying

Introduction

This chapter looks at the income in the tax year 2000/01 of students who studied in 2000 and borrowed from the student loan scheme in 2000. It describes this as the income while studying. This includes vacation earnings as well as in-term, part-time jobs.

It should be noted that a student who finished their study in, say, November 2000 will be included in this dataset. Average income amounts will therefore be exaggerated by those former students attaining greater income than is usual among students over the remaining four months of the tax year.

Population studied

In the 2000 academic year there were nearly 346,500 students enrolled in formal tertiary education. In total 232,500 (67%) were eligible for student loans and of these more than 128,100 (55%) students borrowed.[12] This forms the base for the population studied.

A small number of students were 'lost' in the data matching exercise. 3.4% of students could not have their data matched between Inland Revenue (IRD), the Ministry of Education (MoE) and the Ministry of Social Development (MSD) and have been removed from the sample population.[13]

Only those borrowers who had their borrowings transferred to Inland Revenue in February of the following year, following normal practice, are considered in this population. This therefore excludes those students who repaid the year's borrowing before this date.

The population considered in this chapter is restricted to individuals classified as resident for tax purposes in the tax year ending 31 March 2001 and who had non-zero total income in that year. This therefore excludes those students who had gone overseas or who had earned no income.

The result is that we are looking at 109,600 students. Of these borrowers 83.5% were full-time students and 16.5% were part-time students.

The proportions enrolled in each provider type are set out in the table below. The table also compares the composition of this population with the proportions in the 2000 year set out in the annual report on the Student Loan Scheme to 30 June 2001.

[12] Source: Student Loan Scheme Annual Report to 30 June 2001 published December 2001
[13] Statistics New Zealand (SNZ) data sources for 2000

Figure 1.1: Students who borrowed from the student loan scheme in 2000 by provider type

	Population Studied	2001 Annual Report
University	51.5%	50.0%
Polytechnic	30.9%	30.1%
College of Education	4.5%	4.2%
Wānanga	1.6%	1.7%
Private Training Establishment	11.4%	14.0%

Sources: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.
Student Loan Scheme Annual Report 2001, Ministry of Education

The education sub-sector split seen in this population differs slightly to that reported in the annual report which examines all student loan borrowers. From this comparison we can conclude that PTE students are about 20% under represented in the population used in this analysis but no other significant differences exist.

This population is 55.7% female. Unpublished data from MSD shows 55.8% of borrowers in this year were female. A comparison by age between these two sources also shows very similar results.

Additional population numbers are given in the appendix showing more detailed population breakdowns by part-time or full-time status, level of study, gender, ethnicity, educational sector and age groups.

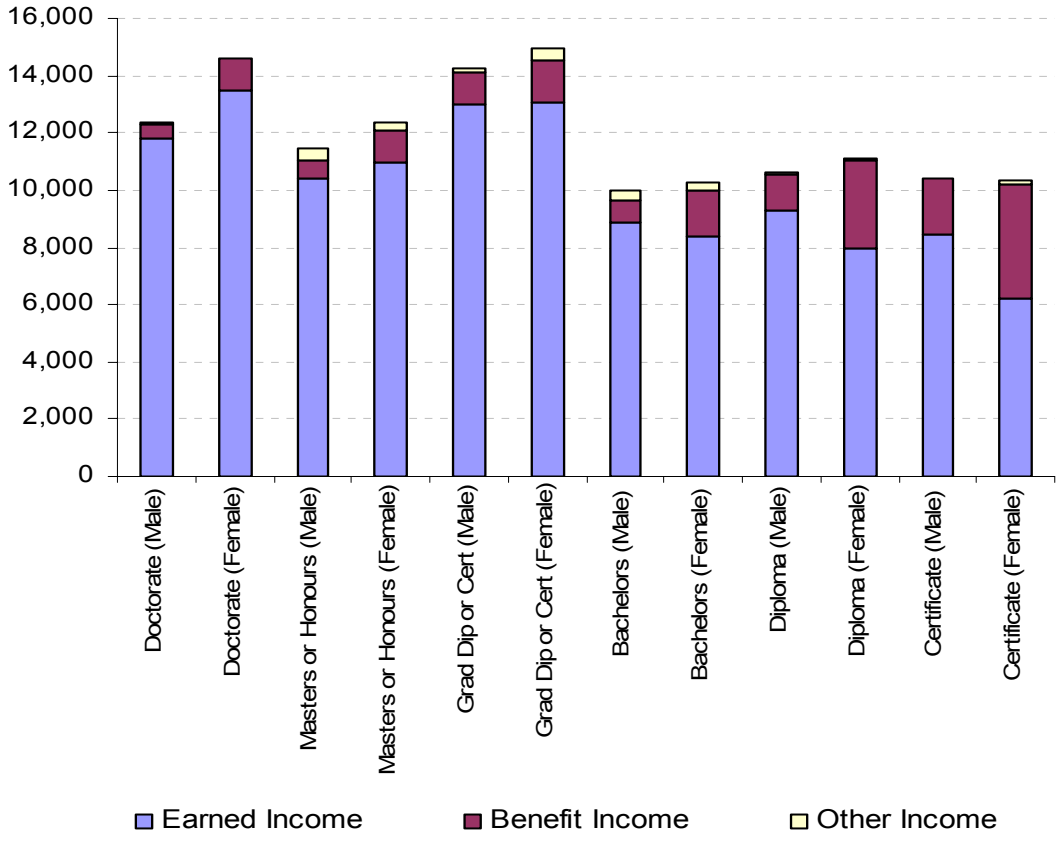
Average income of full-time students in 2000

The overall mean total taxable income for full-time students while studying in 2000 was $10,480 over the 2000/01 tax year. Of this, $8,450 was from earned sources and $1,800 from benefits (including student allowances[14]) and $230 from other sources such as interest and dividends. Across the wider population, the average total income for 20-24 year old females was $13,300 and for males was $16,400.[15]

The following graph breaks this down by gender and level of study.

[14] In 2000 there were 68,000 student allowance recipients receiving on average $5,645 each over the calendar year.
[15] Census 2001 reporting on the income over the year 1/6/2000 to 31/5/2001

Figure 1.2: Average total income of full-time student loan borrowers in the 2000/01 tax year by level of study and gender



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Across all levels of study (except certificate), females have a higher average total income than males while studying. At certificate level, incomes are more or less equal but as the qualification level rises, females gain an increasing premium over males. At doctorate level, females have a total income 17.6% higher than their male counterparts.[16] Earned income for males is higher than females from bachelors level down, but females still have a greater total income as a result of higher benefit income.

Figure 1.3: Female and male average total income of full-time student loan borrowers in the 2000/01 tax year by level of study

	Doctorate	Masters and Honours	Postgrad Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All levels*
Male average total income	12,390	11,490	14,280	9,960	10,630	10,420	*10,350*
Female average total income	14,570	12,350	14,980	10,290	11,140	10,320	*10,590*
Female income as a proportion of male	117.6%	107.5%	104.9%	103.3%	104.8%	99.0%	*102.3%*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

[16] The gender differences are reversed among part-time students, with males having higher earned income – see figure 1.12.

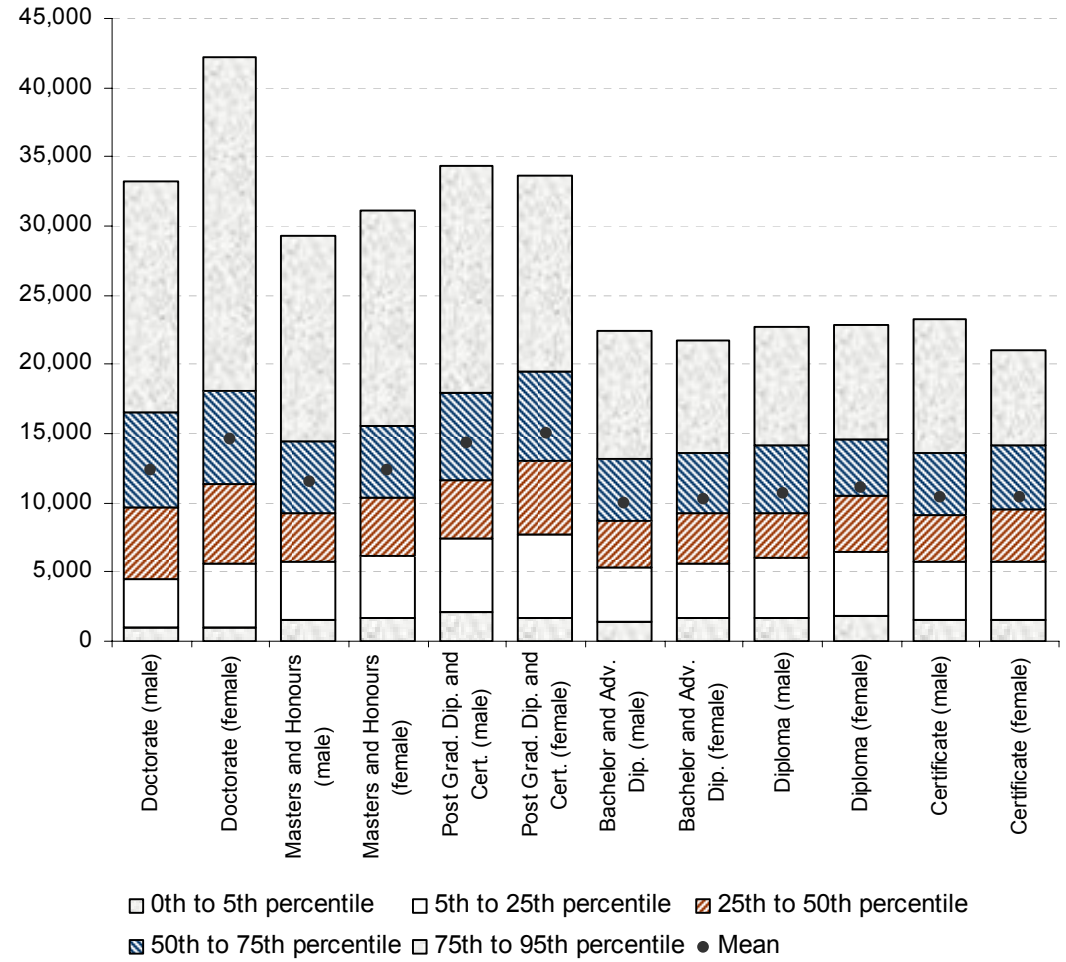
Spread of income for full-time students in 2000

Many income distributions in this report are 'long tailed' at the high-income end with relatively few individuals earning large amounts and with most of the population centred around a much lower median.[17] This is also the case for full-time students as well as part-time students. The consequence is that mean values are usually higher than medians.

In figure 1.4 the top 5% of student incomes are excluded to remove outliers, so 95% of students have total income below the top of the bar.

The cross hatched areas between the 25th and 75th percentiles represent the middle 50% of the income range with the median in the middle.

Figure 1.4: Total income percentiles for full-time student loan borrowers by level of study and gender



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

[17] The median income is the level of income which divides the population into two numerically equal halves. Half the population has incomes below the median and half above the median. With 'long right-hand tails' we see a median lower than the mean (average).

At every level of study, the 75th, 50th and 25th percentile[18] total income while studying is greater for women than for men.

Undergraduate full-time students appear to have incomes from similar distributions, with a slight advantage accruing to women and diploma students. However, the differences between undergraduate groups are large. The range of median incomes is from $8,680 (bachelors male) to $10,490 (diploma female). Over all undergraduate groups, the middle 50% have income while studying between $5,640 and $13,740.

The disparities in income while studying are much greater among graduate students. Firstly, the median income ranges from $9,190 for a male masters or honours student to $13,060 for a female postgraduate diploma or certificate student.

Secondly, the spread of incomes within these groups is much wider. The difference between the 95th percentile and the 5th percentile is around $32,000 for graduates compared with around $20,000 for undergraduates. The female doctorate students show a range of $41,000 while honours and masters students show ranges around $27,000 for males and $29,000 for females.

Average income of full-time students in 2000 by ethnicity

Figure 1.5: Average total income of full-time students by ethnic group and level of study

	Doctorate[19]	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	All levels
European	13,010	11,560	15,940	10,210	10,780	10,290	*10,480*
Māori		16,200	15,650	11,420	11,850	10,830	*11,420*
Pasifika		13,370	15,420	10,420	10,300	10,160	*10,430*
Asian	12,310	10,300	10,450	8,120	9,340	9,290	*8,720*
All[20]	13,290	11,880	14,640	10,140	10,920	10,360	*10,480*
As a proportion of the average at given level							
European	97.9%	97.3%	108.9%	100.7%	98.7%	99.3%	*100.0%*
Māori		136.4%	106.9%	112.6%	108.5%	104.5%	*109.0%*
Pasifika		112.5%	105.3%	102.8%	94.3%	98.1%	*99.5%*
Asian	92.6%	86.7%	71.4%	80.1%	85.5%	89.7%	*83.2%*
All	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	*100.0%*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Asian students' average total income while studying in 2000/01 was 83.2% of the average of all full-time students. Asian students' income was lower across all levels of

[18] The median can also be called the 50th percentile. In general the nth percentile is the lowest level below which n% of the population fall. So, for example the 25th percentile is the level below which one quarter of the population lie.

[19] Average incomes while studying for most doctoral student categories have been removed form this table to maintain the confidentiality of the 50 odd Māori and Pasifika doctoral students in this population.

[20] All includes data from the ethnicities listed above together with 'other' and 'unknown'. These last two groups account for 4.1% of the full-time population.

study but the margin was particularly high among postgraduate certificate and diploma students who received only 71% of the level of study average.[21]

Māori have higher than average total income while studying at every level. Māori masters and honours students had incomes 36% greater than the average at that level of study. This is an extreme result and relates to a relatively small number of individuals.[22] More significant is the 9.1% income advantage attained by Māori at the undergraduate level.

European make up 61.5% of the full-time students who borrowed in 2000 and consequently dominate the level averages. It is not surprising then that the European total income averages are very close to the overall level averages. At the postgraduate diploma and certificate[23] level however, European average total income while studying is 8.9% higher than the norm. Asians make up 22.3% of the population here (about double the representation at other levels) so the relatively high performance of European (and Māori and Pasifika) is more a reflection of the low Asian incomes. Nevertheless, Europeans do have higher incomes than all other ethnic groups at this level.

Pasifika students' income while studying is more than European and less than Māori at bachelors, masters and honours levels. For certificate and diploma level, Pasifika student loan borrowers have average total income while studying that is less than Māori and European.

Spread of income of full-time students in 2000 by ethnicity

The relatively high incomes of Māori studying at the masters and honours level can be seen right across the income spectrum but is most obvious amongst the high income earners. One quarter of Māori student loan borrowers at this level had taxable incomes while studying in excess of $20,170 (compared with $14,850 for all ethnicities). The Māori median total income was $12,560 and the median for all ethnicities was $9,640. One quarter of full-time Pasifika student loan borrowers studying at this level had incomes in excess of $17,540. The Pasifika median income was $10,830.[24]

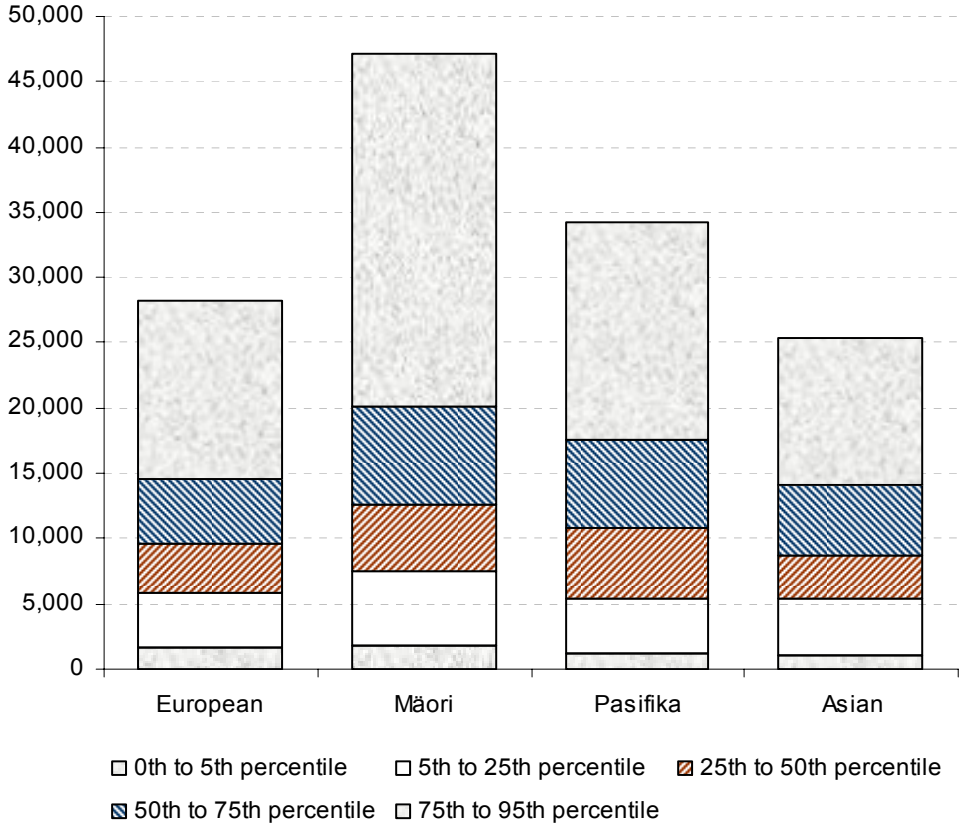
[21] It is worth noting that postgraduate certificates and diplomas attract a significant number of enrolments from people who are already in careers. The income profile of this group is somewhat different as a consequence.

[22] There are 372 full-time Māori studying at masters and honours level in this population, representing 9.2% of full time students studying at this level.

[23] Postgraduate diplomas and certificate students make up only 1.8% of the population here. Doctorate students make up about 0.6%.

[24] Pasifika borrowers make up only 2.5% (102 individuals) of full-time students studying at the masters and honours level.

Figure 1.6: Total income percentiles for full-time student loan borrowers studying for masters or honours by ethnic group



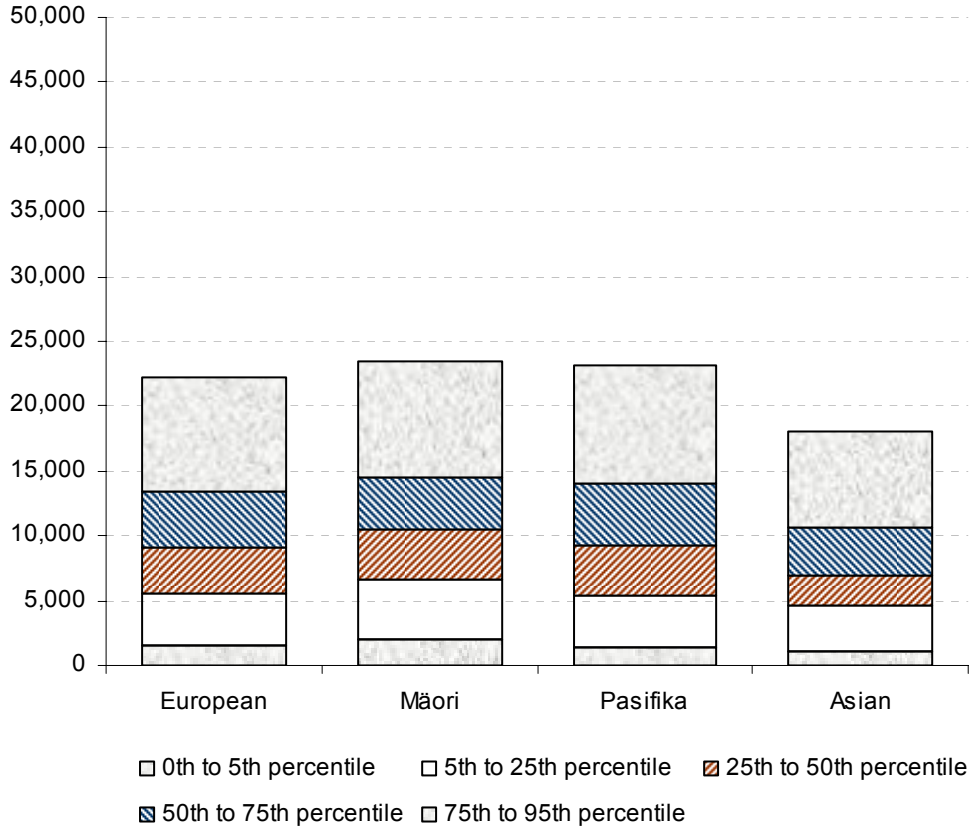
	European	Māori	Pasifika	Asian	*All*
95th percentile	28,250	47,090	34,230	25,410	*29,860*
75th percentile	14,520	20,170	17,540	14,070	*14,850*
Median	9,590	12,560	10,830	8,660	*9,640*
25th percentile	5,860	7,520	5,390	5,380	*5,890*
5th percentile	1,710	1,750	1,200	980	*1,590*
Number of borrowers	2,943	372	102	405	*4,041*

Notes:
1. 'All' includes data from the ethnicities listed above together with 'other' and 'unknown'.
2. Ethnicity is based on single response.
3. Counts have been randomly rounded to base 3.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

The bachelors and advanced diploma group is by far the most populous of the full-time student loan borrowers, accounting for 54.3% of these students. The spread of incomes by ethnicity is shown in the following figure.

Figure 1.7: Total income percentiles for full-time student loan borrowers studying at the Bachelor or Advanced Diploma level by ethnic group



	European	Māori	Pasifika	Asian	*All*
95th percentile	22,180	23,500	23,170	17,990	*22,020*
75th percentile	13,500	14,570	14,090	10,610	*13,460*
Median	9,040	10,440	9,320	6,920	*8,920*
25th percentile	5,490	6,680	5,420	4,660	*5,480*
5th percentile	1,600	2,000	1,400	1,010	*1,560*
Number of borrowers	33,558	6,549	2,415	5,076	*49,713*

Notes:
1. 'All' includes data from the ethnicities listed above together with 'other' and 'unknown'.
2. Ethnicity is based on single response.
3. Counts have been randomly rounded to base 3.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

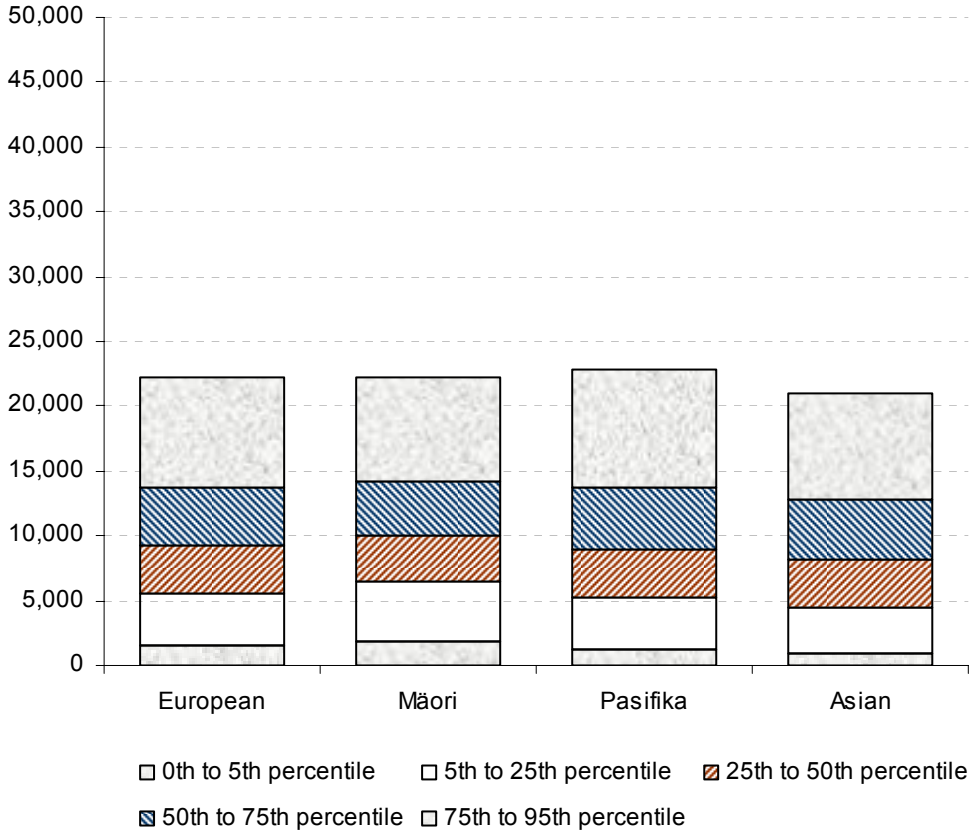
The ethnic differences at this level of study are less extreme but account for a much larger number of individuals.

Here the pattern with the means is similar to the trend evident in the medians and higher percentiles: Māori have higher total income, followed by Pasifika then European and lastly Asian. In the bottom quarter of incomes, Pasifika students fare about the same as Europeans.

The corresponding graphs for diploma and certificate students are very similar except that Asian borrowers fare a little better, but still below all others, at these levels of study.

Figure 1.7b shows the total income percentiles for full-time student borrowers studying at the certificate level.

Figure 1.7b: Total income percentiles for full-time student loan borrowers studying at the certificate level by ethnic group



	European	Māori	Pasifika	Asian	*All*
95th percentile	22,150	22,260	22,890	21,020	*22,160*
75th percentile	13,770	14,250	13,670	12,850	*13,840*
Median	9,210	9,980	8,910	8,150	*9,320*
25th percentile	5,540	6,440	5,300	4,470	*5,680*
5th percentile	1,620	1,870	1,250	940	*1,570*
Number of borrowers	11,187	6,765	2,193	1,695	*22,653*

Notes:
1. 'All' includes data from the ethnicities listed above together with 'other' and 'unknown'.
2. Ethnicity is based on single response.
3. Counts have been randomly rounded to base 3.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Average income of full-time students in 2000 by age

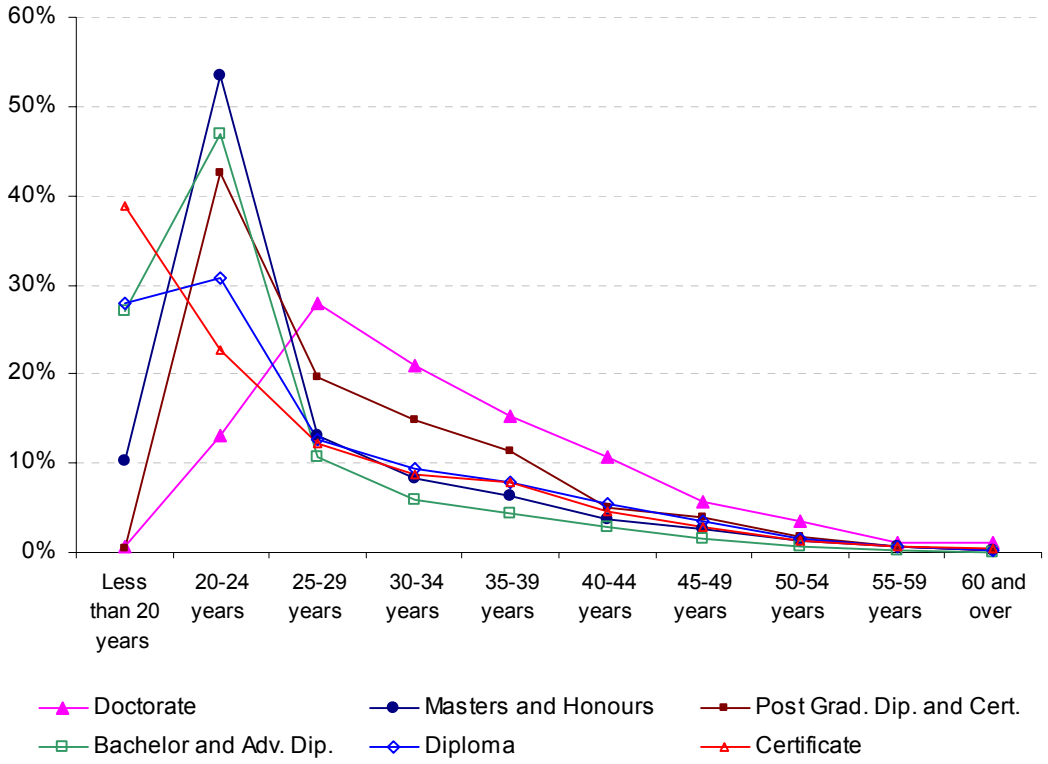
Analysis by age reveals that much of the difference in student income while studying at bachelors or lower levels can be attributed to differences in age. Broadly speaking, undergraduate full-time student incomes increase with age up until age 30 and then

remain flat thereafter.[25] It is the differences in the age distributions between the levels of study which account for much of the income difference.

The graduate student picture is more complicated. Masters, honours and graduate diploma and certificate students have higher incomes compared with undergraduates, but doctoral students up until their mid 30s earn less.

The following figure shows the age distribution of full-time students who borrow from the student loan scheme at different levels of study.

Figure 1.8: Age distributions of full-time student borrowers by level of study



	Doctorate	Masters and honours	Grad. Dip. And Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Average age	34.1	26.7	29.5	24.2	26.8	25.9

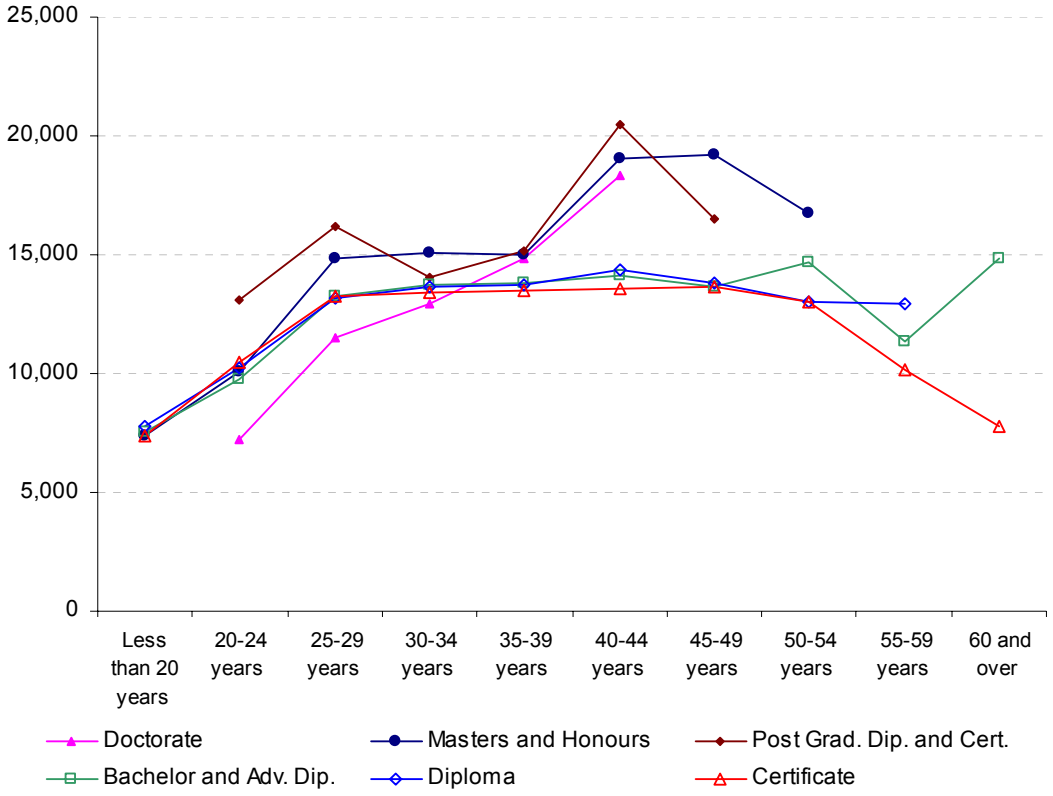
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Certificate students stand out for having almost 40% of students under 20 years of age. Bachelors students have the youngest age profile with the majority between the 20 and 24 years. Graduate diploma and certificate students show relatively high proportions aged over 25 with 37% of students 30 years or older and 11% over 40 years of age. The doctoral students are distinguished by having the oldest age profile: 58% are over 30 years, 22% are over 40 years.

Of all full-time student borrowers, 67% are under 25 years of age.

[25] See figure 1.9

Figure 1.9: Mean total income of full-time student borrowers by level of study and age



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

What is notable here is the very close tracking of average incomes by age for diploma, certificate and bachelor level students. Having adjusted for the age profile in each qualification type, it appears that, among undergraduate full-time students, there is little distinction in incomes by level. This is perhaps not surprising given that most of these students will not have any tertiary qualification at this point.

The graduate students exhibit higher incomes while studying in each age group, but only from a threshold age. For those at masters and honours level, higher incomes appear from age 25 but for doctoral students the higher incomes are only achieved from around age 35. This could be evidence that work experience has enhanced the income of those students. Given the aggregate time required in education to engage with higher study, the available years for work experience is small for students in their twenties and early thirties.

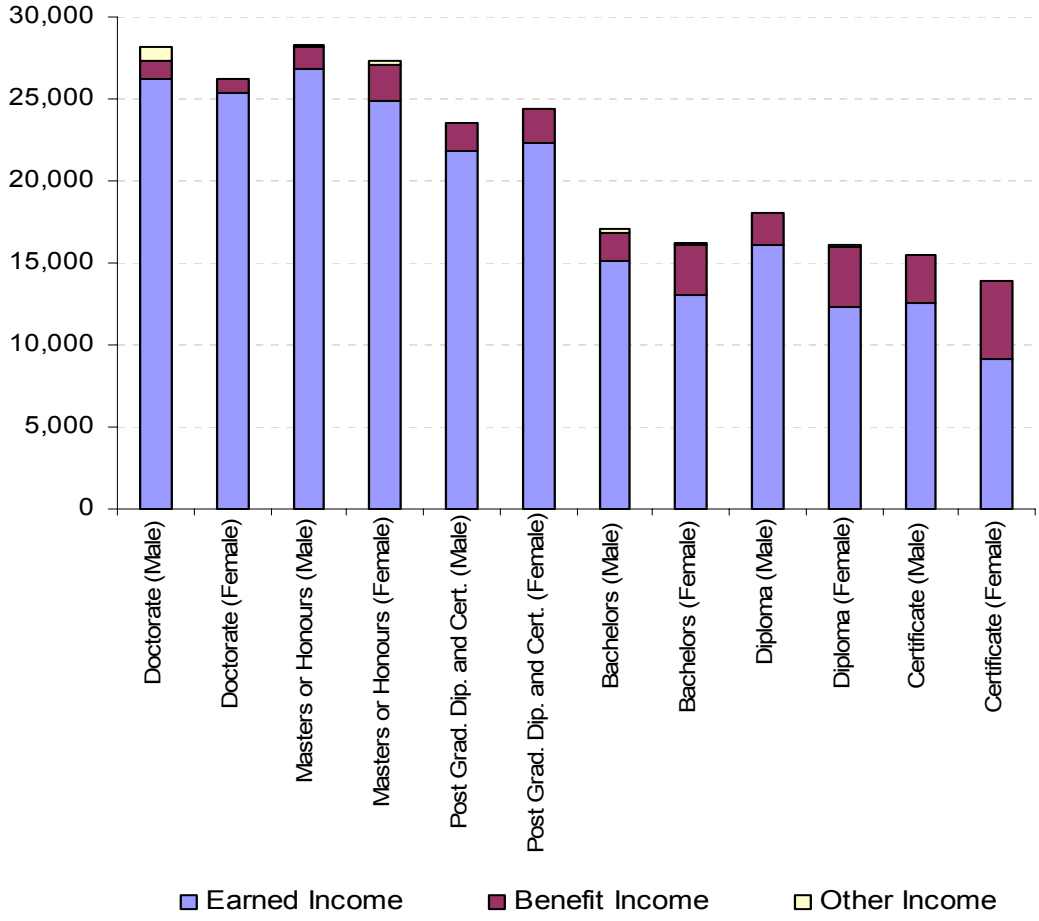
When we look at the median incomes by age and level of study, it becomes apparent that the relatively high incomes of doctoral students are more a function of age than something inherent in the level of study. In fact, the lowest income figure represented in figure 1.9 is for the 13% of doctoral students who are aged 20 to 24 years with an average total income of $7,190.

Average income of part-time students in 2000

Part-time students made up only 16.5% of student loan borrowers in 2000, with a higher proportion of females (60.6%) than in the full-time student loan borrowing population (54.8%).

The incomes of part-time students are understandably larger than those of full-time students. The mean total taxable income for part-time students was $17,220, 64% greater than the full-time amount. Of this $14,190 was from earned sources, $2,940 from benefits and $90 from other sources.

Figure 1.10: Average total income of part-time student loan borrowers in the 2000/01 tax year by level of study and gender



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

As we have seen with full-time students, the part-time student borrowers exhibit higher income at higher levels of study. Here there is an even stronger graduate / undergraduate distinction. Part-time graduate students have an average income of $25,980 while studying while part-time undergraduate students have $16,030, a ratio of 1.62: 1. The corresponding average incomes for full-time student income are $12,720 for graduates; $10,320 for undergraduates, a ratio of 1.23: 1.

Clearly, the effect of being a graduate is coming into play; the graduate part-time student is able to acquire substantially greater income while engaged in part-time study, presumably because of the qualification.

Figure 1.11: Average incomes while studying for full-time and part-time graduate and undergraduate student loan borrowers

	Part-time	Full-time
Graduate Students	25,980	12,720
Undergraduate Students	16,030	10,320

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Interestingly, the average total income of the part-time masters or honours student is greater than that of other graduate part-time students. The opposite is true of full-time students.

Figure 1.12: Female and male average total income of part-time student loan borrowers in the 2000/01 tax year by level of study

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Male average total income	28,180	28,320	23,420	17,090	18,040	15,420
Female average total income	26,220	27,320	24,200	16,270	16,080	13,930
Female as a proportion of male	93.0%	96.5%	103.3%	95.2%	89.1%	90.3%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

The average total income of the male part-time student borrower was $17,990 while the part-time female borrower's average income was $16,720 (92.9% of male). The average total income of females was lower than males' average income at every level of study except for those studying at the graduate diploma and certificate level. The disparity in income was most extreme at diploma and certificate level where average incomes were around 90% of male average incomes. This is in sharp contrast to the gender differences seen in the full-time student population where females held an income advantage over males.

Spread of income of part-time students in 2000

While mean incomes of male part-time student borrowers exceed that of females, broadly speaking the reverse is true of medians.

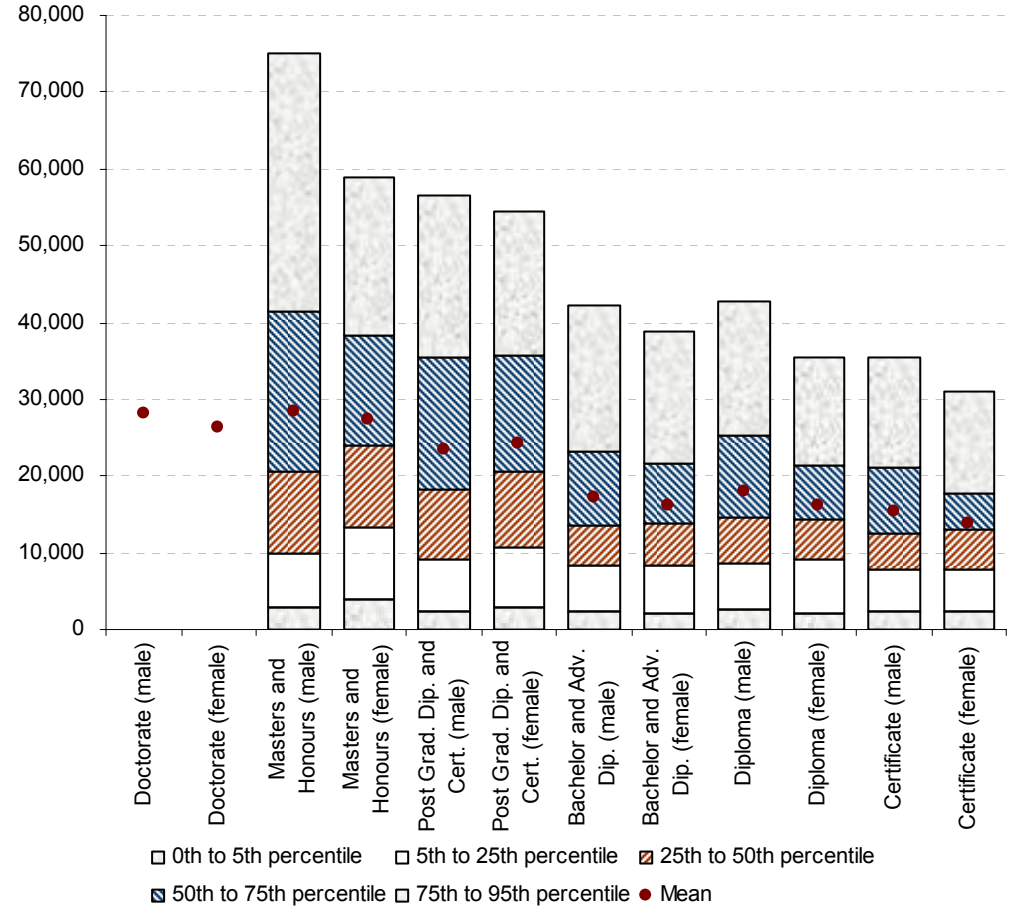
Figure 1.13: Female and male median total income of part-time students by level of study

	Doctorate	Masters and Honours	Grad. Dip. And Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Male median total income		20,660	18,280	13,500	14,600	12,420
Female median total income		23,910	20,710	13,900	14,300	13,090
Female as a proportion of male		115.7%	113.3%	103.0%	97.9%	105.4%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

This suggests that the male income distribution is more strongly skewed to the right[26] and that the range of incomes is greater among males than among females. This is supported by comparing percentile ratios.

Figure 1.14: Spread of total income for part-time student borrowers by gender and level of study



Total Income	Doctorate[1]	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Male						
median total income		20,660	18,280	13,500	14,600	12,420
P90 / Median		3.02	2.64	2.59	2.40	2.40
P10 / Median		0.25	0.24	0.32	0.32	0.34
mean total income	28,180	28,320	23,420	17,090	18,040	15,420
Female						
median total income		23,910	20,710	13,900	14,300	13,090
P90 / Median		2.13	2.25	2.30	2.11	1.93
P10 / Median		0.29	0.27	0.27	0.29	0.31
mean total income	26,220	27,320	24,200	16,270	16,080	13,930

Notes:
1. The numbers of part-time doctoral students are too low to permit publishing of percentile measures
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

The spread of income both above and below the median is greater for males at graduate levels particularly at masters and honours level. At undergraduate levels, the spread of

[26] That is, there are a larger number of males with relatively high incomes.

incomes above the median is greater for males than females, but below the median, females have a larger spread.

Thus, males exhibit greater 'within group' income inequality and this is more so at the higher levels of study. Females at the lower levels of study exhibit greater income inequality at the low end of the income spectrum.

Income of part-time students in 2000 by ethnicity

Part-time Asian students as a group have very low incomes. Among graduate students, the average total income for Asians is around 63% of the level average. The average Asian graduate student's total income is half that of the average Māori studying at the same level. Among undergraduates, the Asian part-time student fares a little better: the undergraduate group average is $16,030 compared to the Asian average of $12,700 (79.2%).

Māori have the highest average incomes at bachelors level and above: 7.2% higher than the level norm for bachelors and advanced diploma students and around 25% higher for graduate students. At diploma and certificate levels, Māori incomes are around 4% lower than level averages, which is in contrast to the full-time situation where Māori incomes were 8.5% (diploma) and 4.5% (certificate) higher.

The average part-time Pasifika student's income is between the averages for European and Māori at bachelors level and above. Amongst bachelors and advanced diploma students, Pasifika incomes are 5.7% higher.

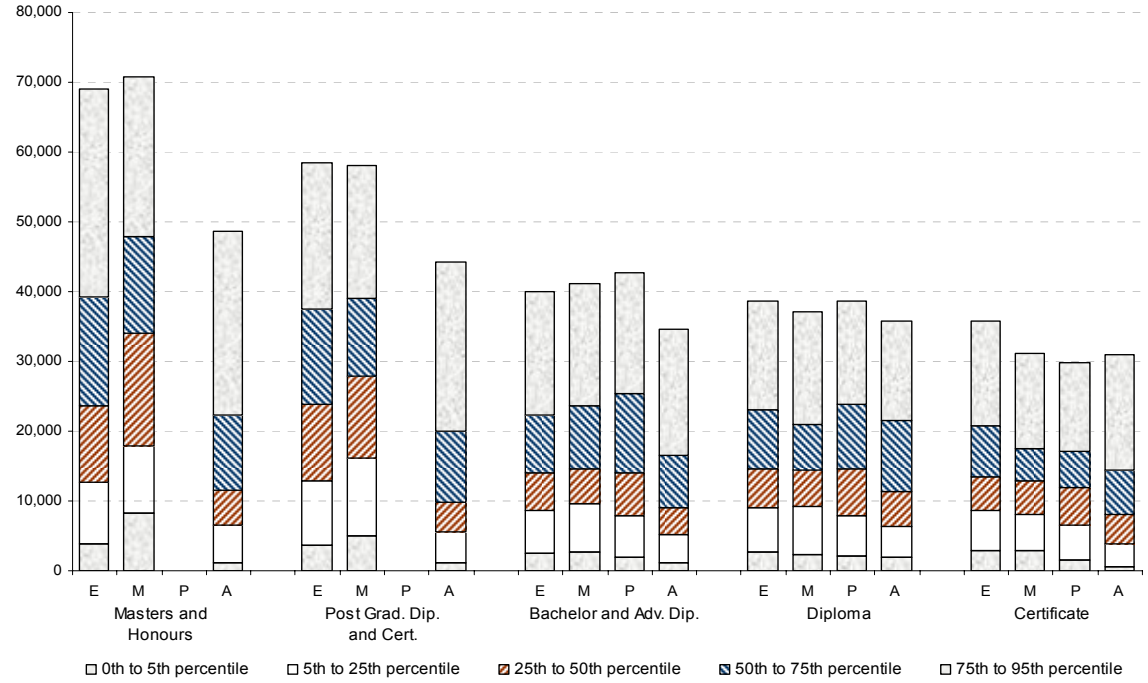
The average part-time European student's income is higher than that for all other ethnicities at diploma and certificate level and higher than the level average at all levels of study.

Figure 1.15: Average total income of part-time students by ethnic group and level of study

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
European	28,430	28,570	26,520	16,830	17,310	15,710
Māori		34,840	29,850	17,760	16,190	13,950
Pasifika		30,110		17,510	17,100	13,050
Asian		17,640	15,010	12,580	14,840	10,810
All	27,350	27,730	23,850	16,570	16,860	14,560
As a proportion of the average at given level						
European	103.9%	103.0%	111.2%	101.6%	102.7%	107.9%
Māori		125.6%	125.2%	107.2%	96.0%	95.8%
Pasifika		108.6%		105.7%	101.4%	89.6%
Asian		63.6%	62.9%	75.9%	88.0%	74.2%
All	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes:
1. The numbers of part-time doctoral students are too low to permit publishing of percentile measures
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 1.16: Spread of total income for part-time student borrowers by level and ethnic group



Notes:
1. The ethnicities European, Māori, Pasifika and Asian are denoted by their first letter.
2. The number of part-time Pasifika students studying at graduate diploma and certificate level and at masters and honours level was too low to permit the publication of percentile measures.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Median incomes show a similar pattern of ethnic group difference as we have seen with mean income. As a proportion of the median income by level, Asian median incomes appear even worse at around 50% for graduate students and between 63% and 79% for undergraduates. An analysis of percentile ratios (by level) show Māori to have slightly less 'spread' than European, Pasifika students slightly more than European and Asian students much more.

Income of part-time students in 2000 by age

Amongst student loan borrowers in 2000, part-time students were on average 5.0 years older than full-time students.[27]

Figure 1.17: Average age of part-time student borrowers by level of study

	Doctorate	Masters and Honours	Grad. Dip. And Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Average age	35.2	34.5	34.3	29.9	30.4	28.5

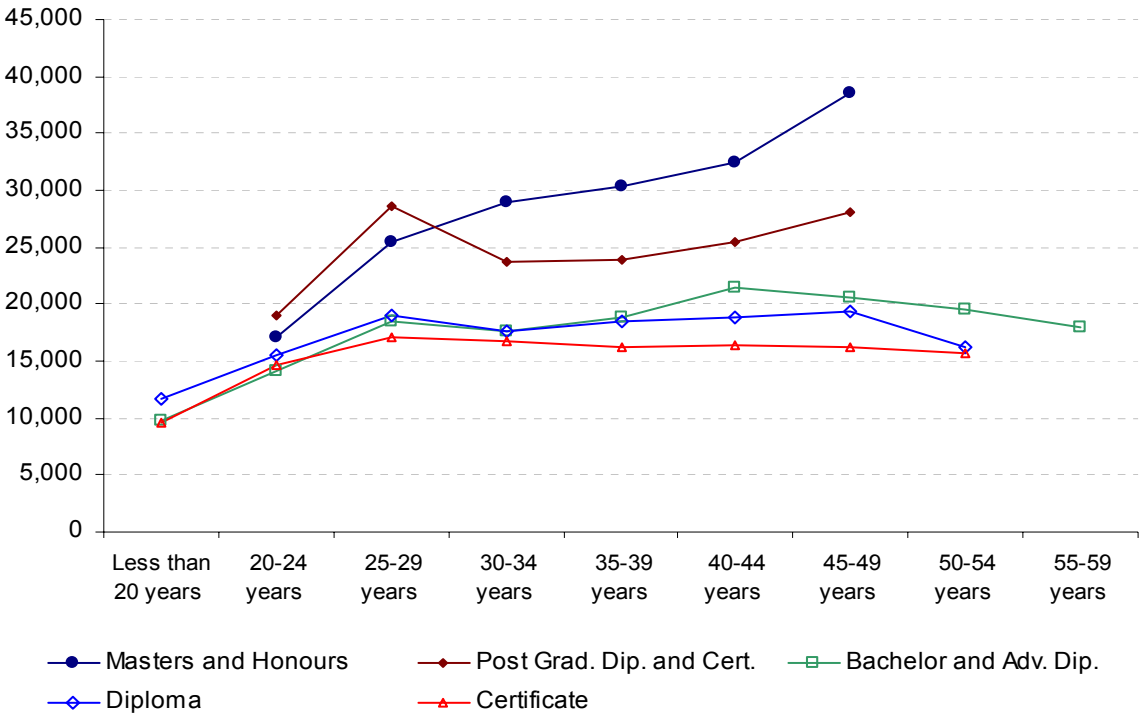
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

By age group, we see larger relative differences in income between levels for the over 30s than were seen in the full-time students. There is a clear and consistent premium afforded to masters and honours students over 30 years of age which was not seen with

[27] Interestingly, the average age difference between part time and full-time varies dramatically by level of study. The difference is 7.8 years at the masters and honors level but only 2.6 years at certificate level.

full-time students. Interestingly, the reverse is true below age 30 where graduate diploma and certificate students have higher incomes than masters and honours students – this can also be seen in the full-time student population.

Figure 1.18: Mean total income of part-time student borrowers by level and age



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

The median income of the part-time student borrower is $14,000 which is 52% greater than that for the full-time student. The level differences for full-time students are slight compared with the differences seen in the part-time student population. For full-time students, median incomes range by level from $8,920 for bachelor to $12,410 for postgraduate diploma and certificate (a factor of 1.39). For part-time students, the lowest median income is $12,820 for certificate level, while the highest is $26,420 for doctoral students (a factor of 2.06).

Figure 1.19: Full-time and part-time student borrowers median total income by level of study

	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All levels*
Full-time	10,370	9,640	12,410	8,920	9,910	9,320	*9,230*
as a proportion of all level median							
	112%	104%	134%	97%	107%	101%	*100%*
Part-time	26,420	22,880	19,150	13,760	14,430	12,820	*14,000*
as a proportion of all level median							
	189%	163%	137%	98%	103%	92%	*100%*
part-time as a proportion of full-time							
	255%	237%	154%	154%	146%	138%	*152%*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Conclusions

Among full-time students:

- Across all levels of study (except certificate), females have a higher average total income while studying than males.
- Earned income for males is higher than females from bachelors level down. But females still have a greater total income as a result of higher benefit income.
- The disparities in income while studying are much greater among graduate students.
- Asian students' income was lower across all levels of study.
- Māori students' income was higher across all levels of study.
- Much of the difference in student income at bachelors or lower levels can be attributed to differences in the age profiles of the students taking those qualifications.
- By age group graduate students have higher incomes while studying, but only from a threshold age.

Among part-time students:

- Part-time students are on average five years older than full-time students.
- Part-time graduate students have higher average income while studying than part-time undergraduate students.
- The average total income of females was lower than males' at every level of study except for those studying at the graduate diploma and certificate level
- Asian students as a group have very low incomes compared with other part-time students.
- Māori have the highest average incomes at bachelors level and above while European students' income is higher at diploma and certificate level
- The median income of a part-time student while studying is 52% greater than that of a full-time student.

The range of incomes seen within all sub-groups is wide. The lowest 5% are earning typically only a sixth of the median income while the best paid 5% are earning around three times the median amount. The 'within group' ranges greatly exceed the differences seen between medians or means of specific gender, level or ethnic groups. Clearly, many students are being supported in ways not reflected in their taxable income, be it through personal savings, family, private debt or the Student Loan Scheme.

2 Pathways

Introduction

This chapter looks at some of the transitions experienced by Student Loan Scheme borrowers after they leave study. The two transitions explored are: travelling overseas; and uptake of benefits. The chapter examines the rates at which borrowers first become non-resident following study and their rates of returning to New Zealand. It examines the time spent overseas by graduates from various fields of study over an average of two years following study.[28] Lastly, it examines benefit uptake, how this varies by educational history and how it changes with distance from study.

Population

The non-residency analysis combines three cohorts of tertiary leavers – those who last studied and borrowed in the three years 1997, 1998 and 1999 to obtain maximum sample size and hence, to improve statistical strength. The analysis considers the number of years since study.

The section on the time spent overseas by graduates also combines these three cohorts but with the aggregate experience reported. The post study exposure contributed from the three cohorts is three, two and one years respectively.

Benefit uptake takes the three cohorts separately and discusses their outcomes in 2000.

Travelling Overseas Post-Study

The factors that lead people to leave New Zealand post-study are complex and not well understood.

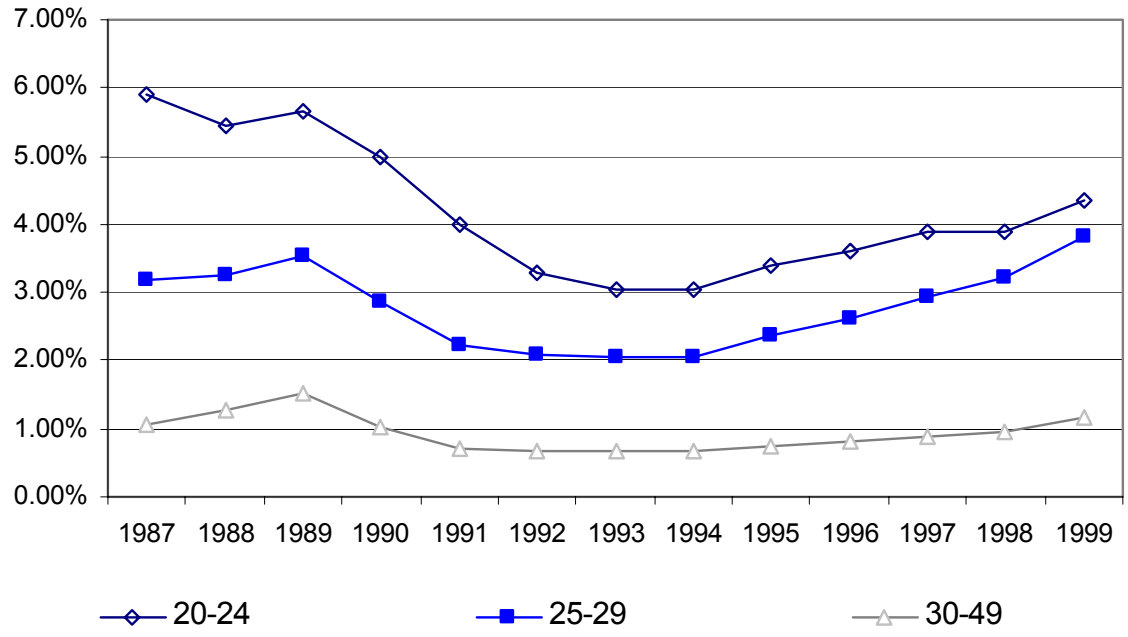
Statistics on permanent and long-term migration show that the rate of emigration from New Zealand peaked in the late 1970s. The rate declined in the middle 1980s before reaching another peak in 1989. By 1993 and 1994 - the first years following the introduction of the Student Loan Scheme - emigration rates reached a low point. In the core tertiary education age-group, 20 – 24, the emigration rate halved between the late 1980s and 1994, falling from 5.9 percent in 1987 to 3 percent in 1993 and 1994. In the 25 – 29 age-group, the emigration rate fell from a high of 3.5 percent in 1989 to 2 percent in 1993 and 1994[29].

Emigration rates rose over the period from 1995 until 2001 when the rate plummeted in response to the September 11 attacks in the US.

[28] For further information drawn from the integrated dataset on the propensity to go overseas following study, refer to Ministry of Education (2005) *Living with a Student Loan: a profile of student loan debt and repayment, post-study income and going overseas*, chapter 6.

[29] Glass H and W-K Choy (2001) *Brain drain or brain exchange?* The Treasury

Figure 2.0: Rates of emigration of New Zealand citizens in selected age groups 1987-1999



Source: Glass H and W-K Choy (2001) *Brain drain or brain exchange?* The Treasury

In each age-group, there is a similar pattern of change over time in the emigration rate. The rate of growth of emigration in the core student age group during the late 1990s matched a similar trend in other age groups.

The age of those departing has increased. The proportion of emigrants from New Zealand aged between 20 and 24 years fell between the 1970s and the 1990s – from 30 percent of all emigrants to 23 percent. Over the same period, the proportion of emigrants in the 30-49 year old age group rose. In the 1990s, the rate of emigration in the 25-29 year old group rose faster than that of the 20 – 24 age-group, implying that emigrants are gradually getting older or that permanent and long-term departure is being delayed[30].

It is clear that there is an association between the size of student loan debt and the likelihood of travelling overseas post-study[31]. The patterns observed above, however, make it clear that the Student Loan Scheme is not a major factor influencing the rate of emigration. Statistics New Zealand notes: '... periods of high emigration of New Zealand citizens – in the late 1970s, late 1980s and late 1990s/2000 – coincided with relatively favourable economic conditions in Australia[32].

[30] *op cit*
[31] Ministry of Education (2005) *Living with a student loan: a profile of student loan debt and repayment, post-study income and going overseas.*
[32] Statistics New Zealand (2000), *Tourism and migration.*

Non residency of former student loan borrowers

Around 5% of 20 to 24 year olds leave the country on a permanent or semi permanent basis every year[33] but only a proportion of those who leave become non-resident for tax purposes.

A student loan borrower who will be absent from New Zealand for a period of more than three months is required to contact Inland Revenue (IRD) and supply them with a permanent overseas address (or details of a New Zealand contact address or an empowered representative) *and* with information to enable IRD to assess their tax residency status.

The definition of tax residency in relation to the Student Loan Scheme is the same as that applied for general personal taxation purposes. If you leave New Zealand, you are non-resident for tax purposes if:

- You go away for more than 325 days in total in any 12-month period, and
- You don't have an enduring relationship with New Zealand.[34]

The concept of an 'enduring relationship' is complex; a judgement is made that considers a number of aspects including: intention to return, social ties within New Zealand and financial ties. Inland Revenue make this judgement on the basis of a questionnaire.[35] It is perfectly possible to be overseas for an extended period of time and be tax resident, in which case a borrower's student loan repayment obligations will be the same as any loan borrower living in New Zealand. However, in practice, most borrowers who contact Inland Revenue and inform them of a prolonged absence become non-resident.

Former students who completed a qualification in their last year of study are much more likely to become non-resident in the first few years out of study than their non-completing counterparts. From the group who last studied and borrowed in 1997, 12.5% of those who completed a qualification successfully were non-resident at the end of at least one of this and/or the following three tax years. Of the non-completing students, the corresponding figure is 8.5%. On the basis of this simple measure then, completing students appear to be around 50% more likely to travel. However, the picture is more complicated than this, with equal proportions of completed and non-completing students becoming non-resident in the first few months following study and the distinction only appearing in later years.

Rates of departure derived from all cohorts

Rates of departure have been prepared by the number of years out of study; the rates set out below show the proportion of former students becoming non-resident for the first time one, two and three years following the conclusion of study. In order to have

[33] Source: Statistics New Zealand (External Migration) 2001

[34] In the Student Loan Scheme Act 1992, 'Non-resident' means a person who is not resident in New Zealand in terms of section OE 1 of the Income Tax Act 1994. The Income Tax Act refers to a 'permanent place of abode' which encompasses all ties and links with New Zealand. (IR292 Tax residence rules for individuals).

[35] Inland Revenue uses the questionnaire form IR886 to make the assessment.

sufficient data to enable comparison between different groups, the rate at which borrowers first become non-resident has been calculated using data from all available cohorts of leavers. In the graphs that follow y_0 represents the year ending 31 March of the year following last study, y_1 is 31 March of the following year and so on.

For example, the rate at which borrowers first become non-resident for y_2 is:

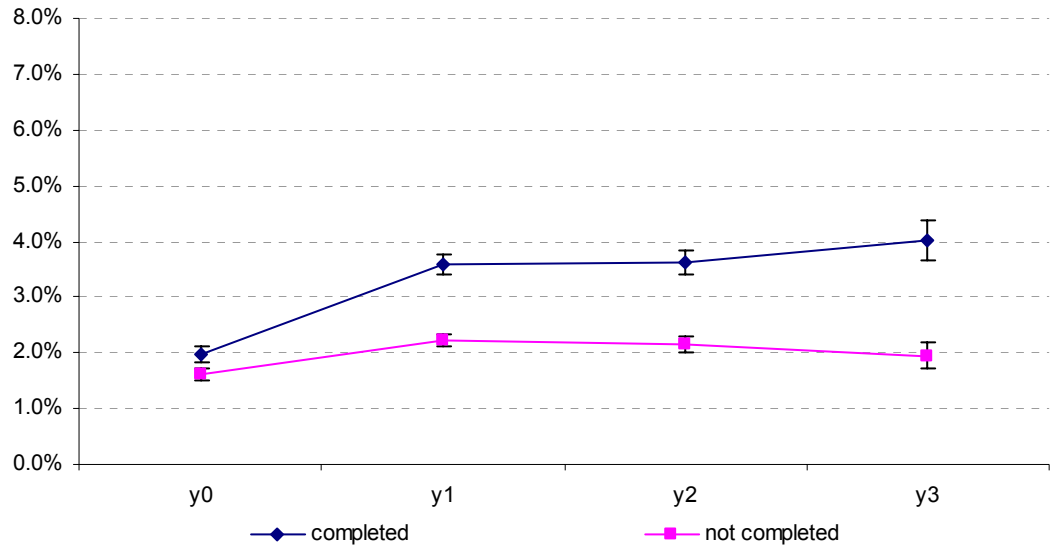
$$\frac{\text{Number resident in the last year of study, the subsequent year but non-resident the next}}{\text{Number resident in last year of study and the next}}$$

In order to make comparisons between different populations and between years, 95% confidence intervals have been calculated and are presented as error bars in the figures.

One might expect that rates of departure would decline with time elapsed since study, but this is not seen. Rather, in each of the first, second and third years, the rate of departure among completed students and among non-completing students remains fairly constant, implying that a significant number of those who leave New Zealand are working for one or two years in New Zealand before going overseas.

Completed students become non-resident for tax purposes for the first time at a rate of 3.7% per annum.[36] [37] Non-completed student borrowers become non-resident for the first time at a rate of 2.2% per annum.

Figure 2.1: Probability of becoming non-resident for the first time since finishing study for completed and non-completing former borrowers[38]



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

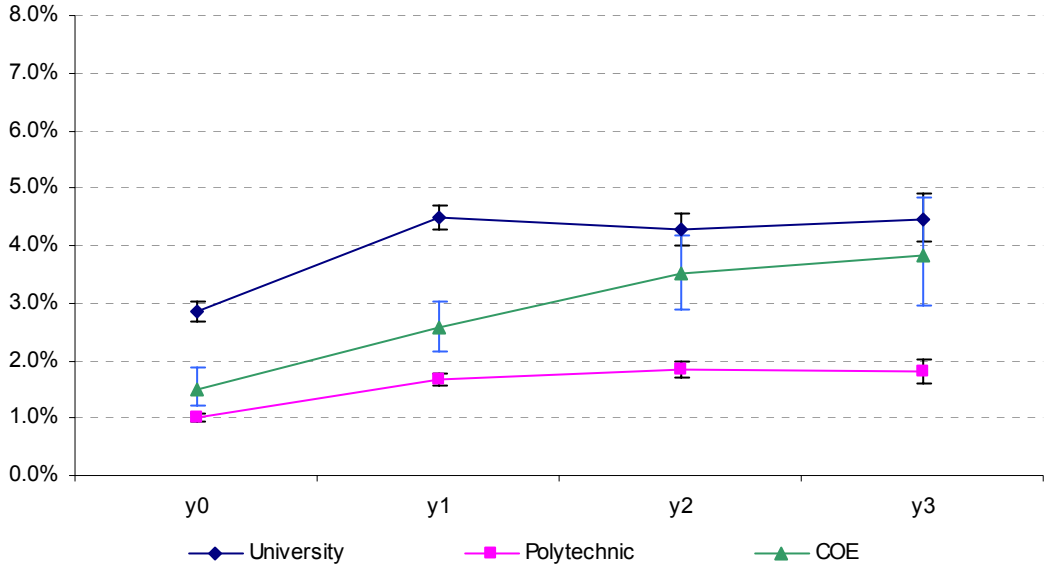
[36] This is calculated from year 1, year 2 and year 3 transitions and excludes year 0 transitions.

[37] There is a suggestion that this rate increases in the third year out of study however this is not statistically significant and is based solely on the 1997 cohort's experience in 2000.

[38] The confidence intervals get wider with time because less data is used in the measurement. Y3 rates reflect the experience of only the 1997 cohort, y2 reflect that of the 1997 and 1998 cohorts and y1 (and y0) reflect the combined experience of all three cohorts of tertiary leavers.

The difference between sub-sectors is stronger than the differences between completed and not completing students. Former polytechnic students become non-resident for the first time at a rate of 1.7% per annum, while university students have a rate of 4.4%. The college of education rate is between these two and the rate increases from the first to the second and third year out of study, but there are relatively low numbers of college students, meaning that the range between the confidence limits is large; the 95% confidence intervals for ex-colleges of education students leaving in the third year extend well into the university rate for this year.

Figure 2.2: Probability of becoming non-resident for the first time since finishing study by selected provider types

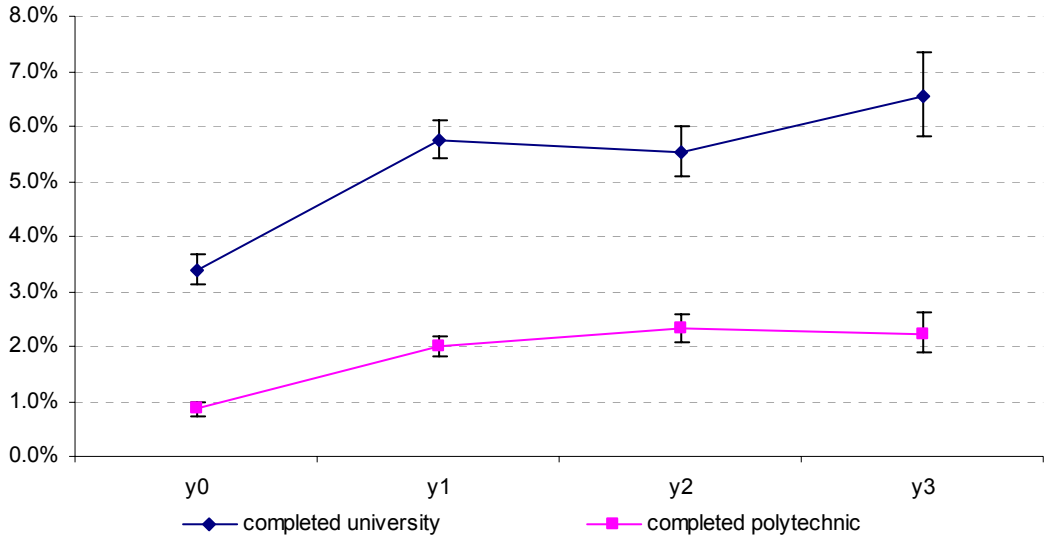


Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Completed university students are considerably more likely than completed polytechnic students to become non-resident. The completed university student is 2.7 times as likely to become non-resident as a completed polytechnic student.[39]

[39] Using data for y_1 y_2 and y_3 departure from the 1997, 1998 and 1999 cohorts and assuming that there is no correlation with time out of study the 95% confidence interval (CI) for the probability of becoming non-resident for the first time in a year is 5.5% to 6.0% for completed university student loan borrowers, and 2.0% to 2.3% for completed polytechnic student loan borrowers. Using a narrower CI, and assuming independence in the errors, the 95% significant range for the ratio of completed university to completed polytechnic is 2.5 to 2.9.

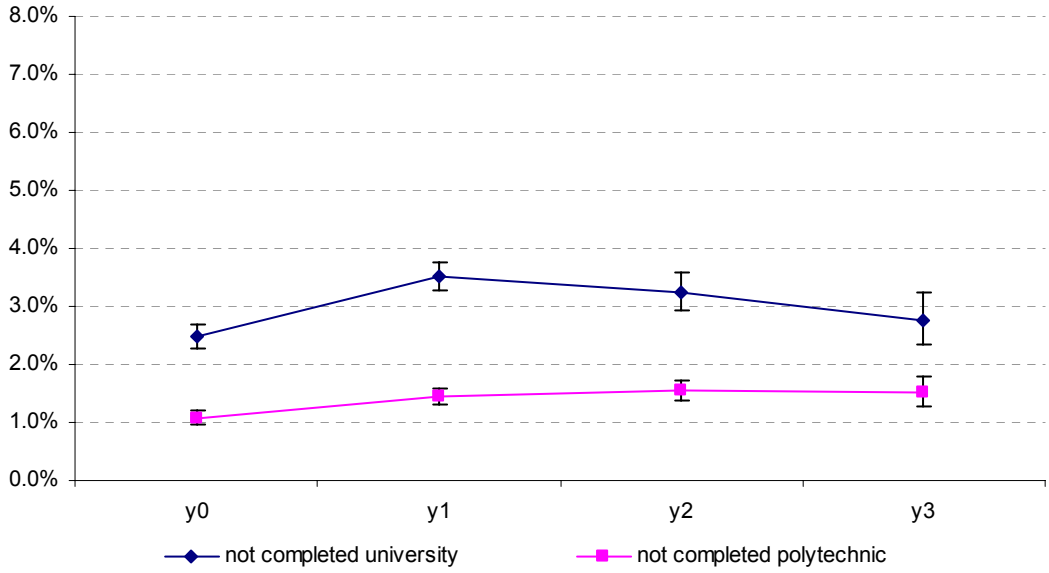
Figure 2.3: Probability of becoming non-resident for the first time since finishing study for completed university and polytechnic students



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

The difference holds for non-completing students as well. Here the ratio of university to polytechnic rates is 2.2.[40]

Figure 2.4: Probability of becoming non-resident for the first time since finishing study for non-completing university and polytechnic students

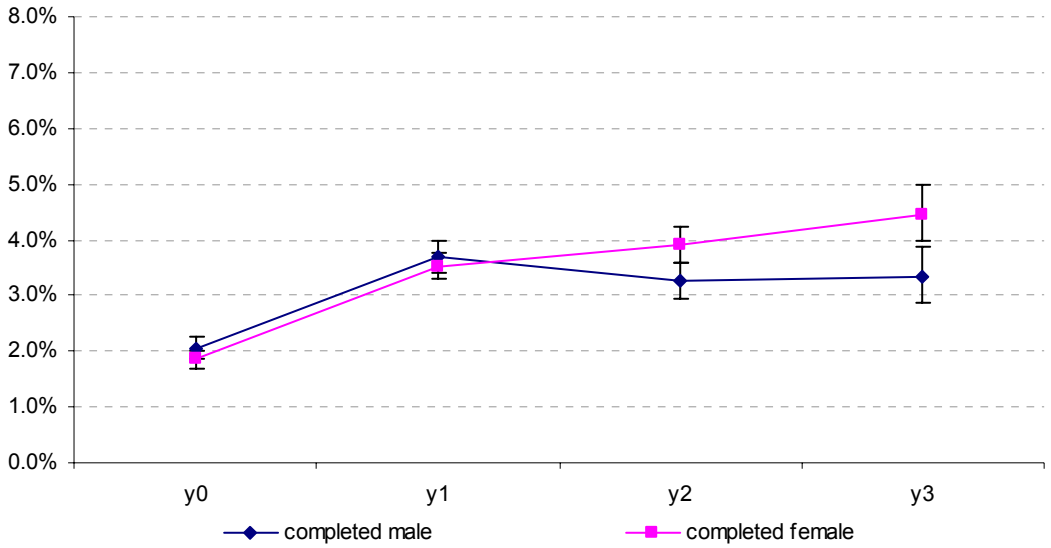


Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

[40] Using data for y1 y2 and y3 departure from the 1997, 1998 and 1999 cohorts and assuming that there is no correlation with time out of study the 95% confidence interval (CI) for the probability of becoming non-resident for the first time in a year is 3.2% to 3.5% for non-completing university student loan borrowers, and 1.4% to 1.6% for non-completing polytechnic student loan borrowers. Using a narrower CI, and assuming independence in the errors, the 95% significant range for the ratio of non-completing university to non-completing polytechnic is 2.1 to 2.4.

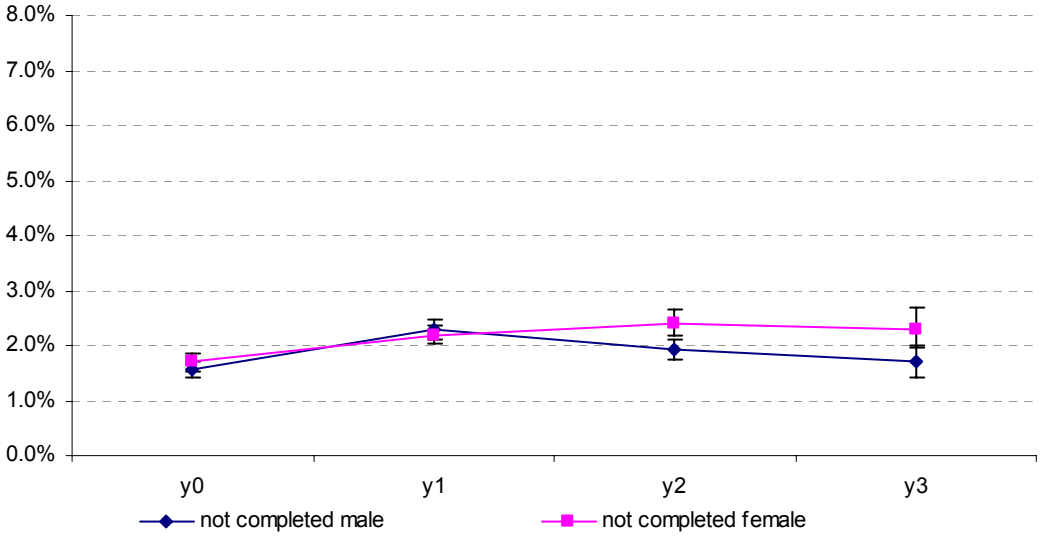
There are gender differences in the probability of becoming non-resident too, but they are not nearly so marked. In y_0 and y_1 the rates are almost identical.[41] In years two and three, women outstrip men in their propensity to become non-resident for the first time. In both the completed and non-completing groups, women are about one quarter more likely than men to become non-resident for the first time in the second and third year out of study.

Figure 2.5: Probability of becoming non-resident for the first time since finishing study for completed students by gender



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 2.6: Probability of becoming non-resident for the first time since finishing study for not completing students by gender



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

[41] Different cohorts show slightly different behavior by gender. For example with the y1 departures, women were more likely than men to become non-resident from the 1998 cohort, but the male rate exceeded the female rate from the 1997 and 1999 cohorts.

Figure 2.6b: Probability of becoming non-resident for the first time by years after last study

	y_0 departure		y_1 first departure		y_2 first departure		y_3 first departure	
completed	2.0%	(1.8% to 2.1%)	3.6%	(3.4% to 3.8%)	3.6%	(3.4% to 3.9%)	4.0%	(3.7% to 4.4%)
not completed	1.6%	(1.5% to 1.7%)	2.2%	(2.1% to 2.3%)	2.1%	(2.0% to 2.3%)	1.9%	(1.7% to 2.2%)
university	2.8%	(2.7% to 3.0%)	4.5%	(4.3% to 4.7%)	4.3%	(4.0% to 4.6%)	4.5%	(4.1% to 4.9%)
polytechnic	1.0%	(.9% to 1.1%)	1.7%	(1.6% to 1.8%)	1.8%	(1.7% to 2.0%)	1.8%	(1.6% to 2.0%)
colleges of education	1.5%	(1.2% to 1.9%)	2.6%	(2.2% to 3.0%)	3.5%	(2.9% to 4.2%)	3.8%	(3.0% to 4.8%)
completed university	3.4%	(3.1% to 3.7%)	5.8%	(5.4% to 6.1%)	5.5%	(5.1% to 6.0%)	6.6%	(5.8% to 7.3%)
completed polytechnic	0.9%	(.7% to 1.0%)	2.0%	(1.8% to 2.2%)	2.3%	(2.1% to 2.6%)	2.2%	(1.9% to 2.6%)
not completed university	2.5%	(2.3% to 2.7%)	3.5%	(3.3% to 3.8%)	3.2%	(2.9% to 3.6%)	2.7%	(2.3% to 3.2%)
not completed polytechnic	1.1%	(1.0% to 1.2%)	1.4%	(1.3% to 1.6%)	1.5%	(1.4% to 1.7%)	1.5%	(1.3% to 1.8%)
completed male	2.1%	(1.9% to 2.3%)	3.7%	(3.4% to 4.0%)	3.3%	(2.9% to 3.6%)	3.3%	(2.9% to 3.9%)
completed female	1.8%	(1.7% to 2.0%)	3.5%	(3.3% to 3.8%)	3.9%	(3.6% to 4.2%)	4.5%	(4.0% to 5.0%)
not completed male	1.6%	(1.4% to 1.7%)	2.3%	(2.1% to 2.5%)	1.9%	(1.7% to 2.1%)	1.7%	(1.4% to 2.0%)
not completed female	1.7%	(1.5% to 1.8%)	2.2%	(2.0% to 2.4%)	2.4%	(2.2% to 2.7%)	2.3%	(2.0% to 2.7%)
all	1.8%	(1.7% to 1.8%)	2.8%	(2.7% to 2.9%)	2.8%	(2.6% to 2.9%)	2.8%	(2.6% to 3.1%)

Notes:
1. The table provides the numbers presented in figures 2.1 through 2.6.
2. The table has been prepared using data from three cohorts of tertiary leavers (last studied and borrowed in 1997 though 1999) and their tax-residency status from 1997/98 though 2000/01. Thus the table does not represent the actual experience of any one cohort of student loan borrowers.
3. y0 is the year ending 31 March of the year following last study, y1 the following year, etc.
4. The 95% confidence interval for the rate is given in brackets.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Cohort differences in the rates of departure

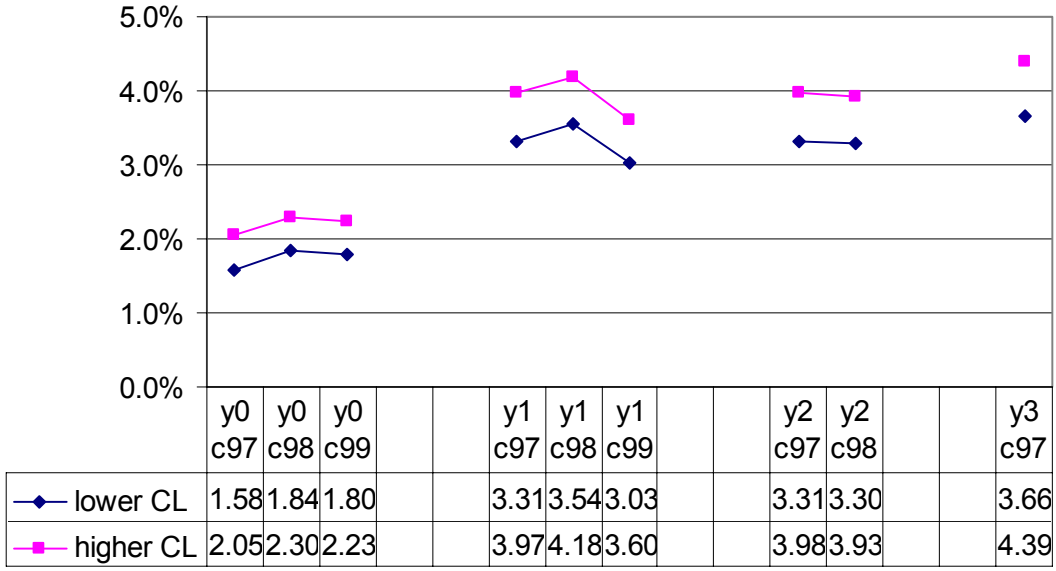
The question arises as to what is important here. Is the lapse of time since study really the most significant factor in affecting the propensity to go overseas or are there other more important factors influencing the decision to travel?

By examining departure rates for different cohorts of students in different tax years, we might get an indication of the relative importance of these factors.

In the following two figures, we see first departure rates as before for y_0 y_1 y_2 and y_3 being the first few months after study, in the first full tax year following study, the second full tax year following study and the third. Within each year group, the rates of departure for each cohort of leavers is shown as two points - the upper and lower bounds of a 95% confidence interval for the measure. This will serve to moderate the force of any conclusions made from comparing cohorts or departures in different years. The cohorts are labelled c97 for those who last studied and borrowed in 1997 and so forth.

The figures below are for completed and non-completing student loan borrowers respectively. In the completed population, there is variability seen between cohorts in y_1, with an apparent reduction in the proportion of the 1999 cohort departing in y_1, a trend even more apparent among those who did not complete (as shown in figure 2.8). The variability between cohorts in y_1 is similar to the variability seen between y_2 and y_3. This suggests that other factors – for instance, the underlying economic and political conditions, or real cohort differences - are as important as duration since study. A longer time series in the integrated dataset will allow for better evaluation of the relative contributions of these factors.

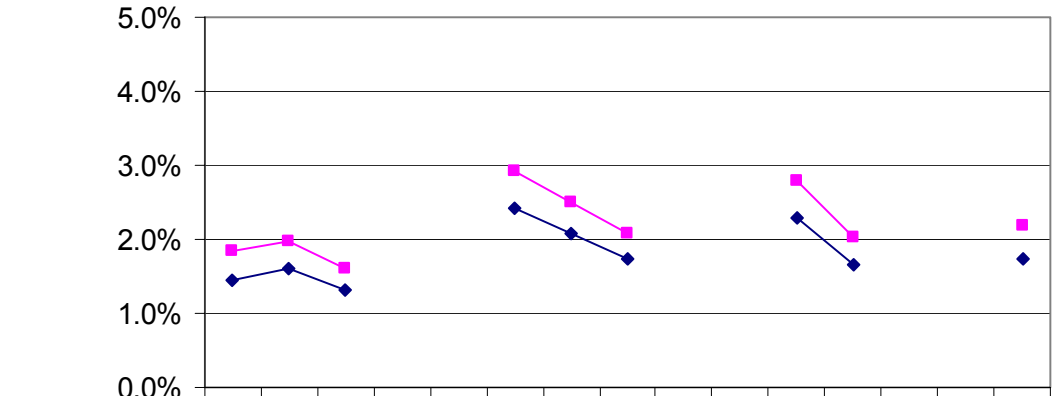
Figure 2.7: Probability of becoming non-resident for the first time since finishing study by years out of study and cohort year for completed students



	y0 c97	y0 c98	y0 c99			y1 c97	y1 c98	y1 c99			y2 c97	y2 c98			y3 c97
lower CL	1.58	1.84	1.80			3.31	3.54	3.03			3.31	3.30			3.66
higher CL	2.05	2.30	2.23			3.97	4.18	3.60			3.98	3.93			4.39

Note: CL denotes 95% confidence limit.
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 2.8: Probability of becoming non-resident for the first time since finishing study by years out of study and cohort year for non-completing students

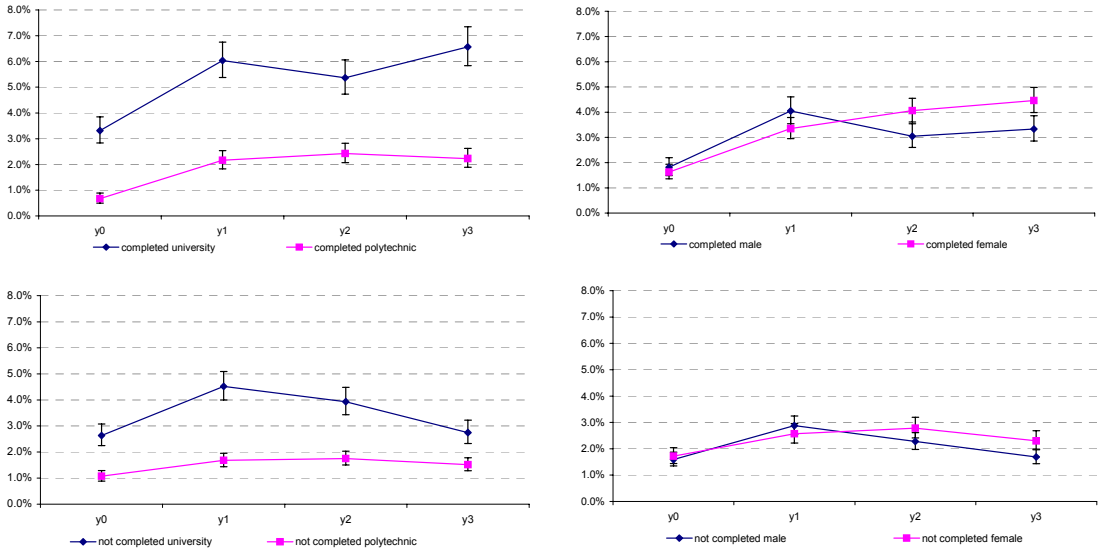


	y0 c97	y0 c98	y0 c99			y1 c97	y1 c98	y1 c99			y2 c97	y2 c98			y3 c97
lower CL	1.44	1.61	1.32			2.42	2.07	1.74			2.28	1.65			1.73
higher CL	1.84	1.98	1.61			2.93	2.49	2.09			2.79	2.03			2.18

Note: CL denotes confidence limit.
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Using only the 1997 cohort of leavers, we see a similar picture to that obtained from all data. The strongest difference (as suggested above) is with higher departure rates for non-completing university students.

Figure 2.9: Probability of becoming non-resident for the first time since finishing study for the 1997 cohort by completion status and by gender and selected provider types



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Rates of return to NZ tax-residency

Most student loan borrowers do eventually return to New Zealand. A study of borrowers who left New Zealand in the year ending June 1996 has shown that a little over a fifth returned within two years, a little over a half had returned after five years and that almost two thirds had returned to New Zealand after eight years.[42]

The student loan integrated dataset containing full educational data is too young to get a sense over longer durations but it can give some insights into the rates of return for people away for up to two years.

The following table shows the rates at which people return to being resident for tax purposes with 95% confidence intervals for the estimated rate. About 10.5% will return after being non-resident for only one tax year. Around 15% will return after being non-resident for two consecutive tax years.[43]

We saw before that completed students and university students were more likely to leave. Perhaps surprisingly, completed students and university students, are more likely to return. Polytechnic students are about as likely as university students to return after only one year away but having been away for two years are less likely to return compared with university students.

Figure 2.10: Probability of returning to NZ tax residency status after a fixed number of years away (all cohorts)

	Returning after 1 year away		Returning after 2 years away	
completed university	12.0%	(10.4% to 13.7%)	16.5%	(13.6% to 19.7%)
not completed university	9.1%	(7.7% to 10.8%)	16.1%	(13.3% to 19.3%)
completed polytechnic	11.5%	(9.3% to 14.1%)	13.3%	(9.4% to 18.0%)
not completed polytechnic	9.2%	(7.4% to 11.2%)	10.9%	(8.0% to 14.3%)
all completed [44]	12.4%	(11.0% to 13.8%)	16.5%	(14.1% to 19.1%)
all not completed	9.1%	(8.0% to 10.4%)	13.6%	(11.5% to 15.9%)
All	10.6%	(9.8% to 11.6%)	15.1%	(13.5% to 16.8%)

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Tax residency by completion and sub-sector

The rates for becoming non-resident and the rates of return can be used to construct tables showing the proportion that are resident after one, two and three years following study. Since the rates of 'churning' of residency status are very small[45], this approach gives reliable results. As before, data from three cohorts of leavers has been used. [46]

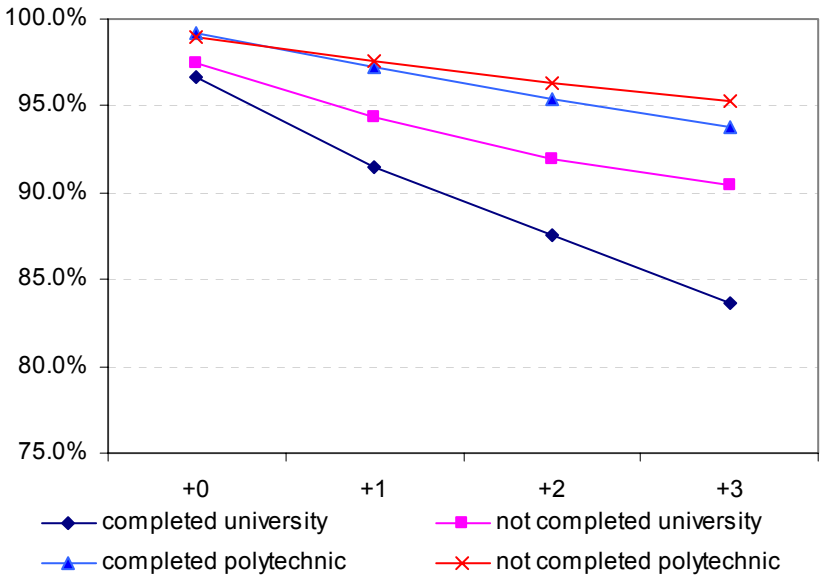
[42] *Student Loan Scheme Annual Report to 30 June 2004* from Inland Revenue data.
[43] The available data are too sparse for a meaningful measure of the return rates after three years.
[44] The 'all' rows cover all sub-sectors not just university and polytechnic. High rates of return among completed College of Education and Wānanga students have taken the 'all completed' rate above both the university and polytechnic rates.
[45] 'Churning' is used here to describe repeated periods of non-residency, for example, non-resident then resident followed by later period of non-residency. We see less than 0.1% of churning in the 1997 cohort data.
[46] Using three cohorts of leavers from 1997, 1998 and 1999 gives about 223,000 student years of exposure.

We see that, by the end of the first full tax year following study, 8.5% of those who studied at university and completed a qualification in their last year of study are non-resident for tax purposes. Of those who studied at a university but did not complete, only 5.7% were non-resident at this time. By the time three full tax years have passed we can expect 16.4% of completed university students to be non-resident and 9.6% of university students who did not complete to be non-resident. Although university students are more likely to return than others, they remain the group most likely to be overseas in any of the first three years following study.[47]

The lower rates of departure among former polytechnic students mean that after the first full tax year following study, only 2.5% are non-resident while 6.9% of former university students are non-resident.

Tables showing the likelihood of being tax resident at 31 March in the years following study are given in the appendix, along with departure rates net of returnees.

Figure 2.11: Proportion of former students who are tax resident by full years out of study



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Years spent overseas by graduates

Traditionally, New Zealanders in their early twenties go overseas to travel, gain work or business experience. Upon their return, some will bring back skills, experience and capital to be invested here. There is a long history of migration with net outflows of New Zealand citizens for forty years, but in terms of numbers and skills, there is evidence that this is more than compensated for by immigrants from other countries.[48]

[47] As noted above and as reported in the *Student Loan Scheme Annual Report to 30 June 2004*, the majority of all who leave New Zealand post-study do return within five years of departure.

[48] Refer to Glass and Choy (2001) and Bryant and Law (2004).

On the migrant side, it is interesting to investigate the skill mix that recent graduates take abroad when they leave, bearing in mind that most will return.

Using cohorts of leavers from 1997 through 1999 and examining their residency status in the year after study through to 2000, it is possible to add up the number of years spent out of New Zealand to gain a crude sense of the duration overseas for those groups. As we have seen (and especially for graduates) the number of non-residents is increasing with length of time since study, so this approach to counting the years overseas, is highly dependent on the number of post-study years observed. Its principal value is that it allows for meaningful comparisons between fields of study and more importantly, it shows which fields of study contribute most to the non-resident population.[49]

There are 80,610 graduate years in this study, of which 5,580 or 6.9% were non-resident.

Among recent graduates, the field of study with the highest number of years spent overseas and therefore, not available to the New Zealand economy was 'Society and Culture'. This field of study accounted for almost one quarter of the total number of non-resident graduate years.

The next highest, representing 18% of non-resident graduate years was 'Management and Commerce'.

This is perhaps not surprising as these fields of study deliver the most graduates in any case. This pattern is broken with the third largest contributing field of study. 'Health' is ranked fifth in producing graduates, but third in producing non-resident graduate years, contributing 9% of the graduate years but 13% of the graduate years overseas.

'Natural and Physical Sciences' accounted for 10% of the non-resident graduate years as did 'Education'.

These top five fields of study account for 63% of the graduate population but 75% of the non-resident graduate population. All except 'Education' had higher than average proportions overseas.

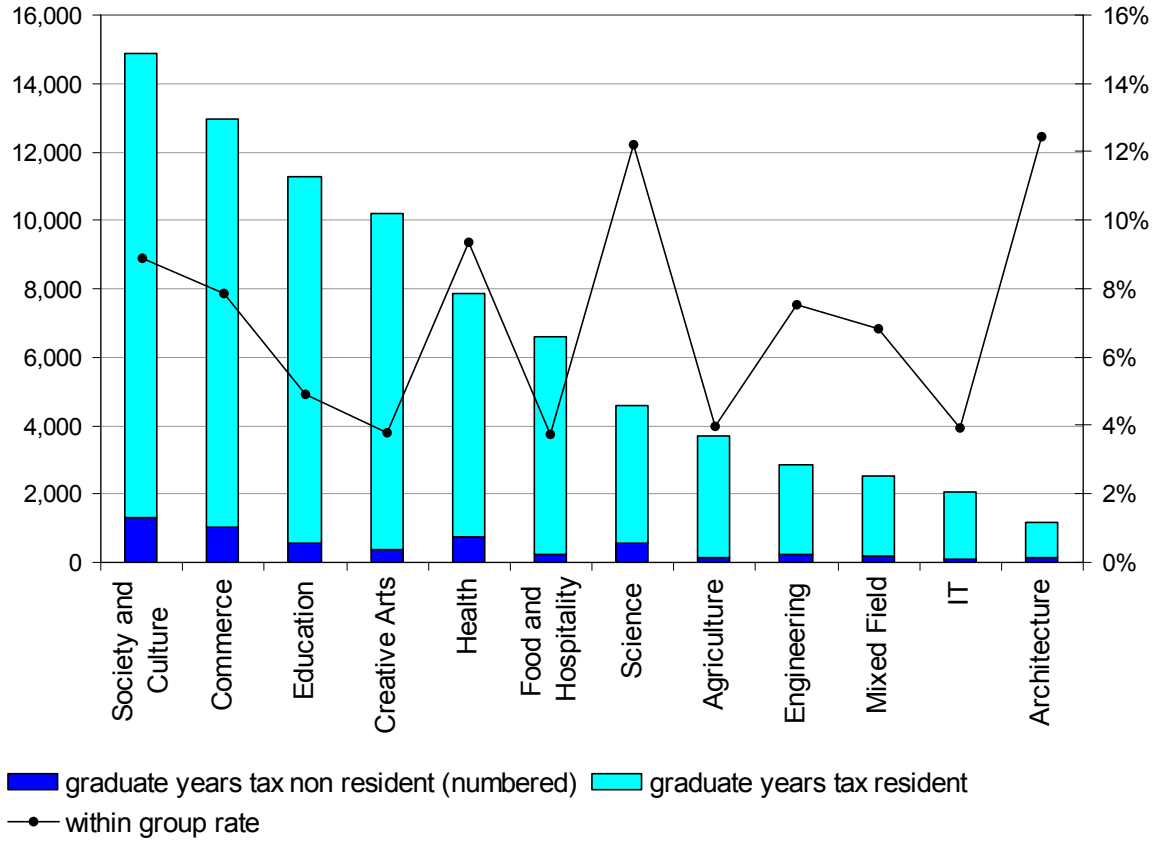
Education is the third ranked field for producing graduates but because of the low rate of non residency (5% by this measure), is the fifth in producing non-resident graduates.

The top five rates of non-residency are: 'Architecture and Building' 12%, 'Natural and Physical Sciences' 12%, 'Health' 9%, 'Society and Culture' 9% and 'Management and Commerce' 8%.

[49] We can see that completed students are increasingly non-resident, so a measurement made later with more years of post-study data will on the surface show a worsening picture. The measurement relies on one year of non-resident tax status meaning one year overseas. The under-reporting of non-residency therefore is one reason for undercounting here. Another is that periods overseas of less than 325 days are not sufficient to become non-resident. Graduate here (as in the rest of this paper) has been defined as someone completing the qualification they studied for in their last year of study so, for example, a failed honours students is deemed not to have completed.

Fields of study with 4% or less of their graduates overseas are: 'Information technology', 'Agriculture environmental and related studies', 'Food, Hospitality and Personal Services' and 'Creative Arts'.

Figure 2.12: Years spent resident and non-resident following study for graduates in 1997-1999 up until 2000



Notes:
1. The bars indicate the total number of tax years lived by graduates since completion up to and including 2000/01. Each bar represents 'graduate years' for the field of study.
2. The data for this figure is from student loan borrowers who last borrowed and completed in 1997, 1998 and 1999.
3. 'Graduate years tax non-resident' is the total number of tax years classified as non-resident, experienced by graduates.
4. The 'within group' rate is to be read off the right hand axis, and is the proportion of 'graduate tax years non-resident' to the total graduate years, for the field of study (group).

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Not surprisingly 82% of non-resident graduate years were from people who were in their twenties in their last year of study. For those aged 20 to 24 in their last year of study 10.0% of graduate years were spent non-resident. For those aged between 25 and 29, 30 and 34, 35 and 39 on graduation, the rates were 7.5%, 5.1% and 3.6% respectively.

Figure 2.13: Years spent resident and non-resident following study for graduates in 1997-1999 up until 2000

	Graduate years (pool)	Proportion of all graduate years (pool)	Non-resident graduate years	Proportion of all non-resident graduate years	'within group' ratio
By field of study					
Natural and Physical Sciences	4,578	5.4%	558	10.0%	12.2%
Information Technology	2,073	2.7%	81	1.5%	3.9%
Engineering and Related Technologies	2,862	3.5%	216	3.9%	7.5%
Architecture and Building	1,182	1.4%	147	2.6%	12.4%
Agric, Environmental & Related Studies	3,708	4.7%	147	2.6%	4.0%
Health	7,854	9.5%	735	13.2%	9.4%
Education	11,256	14.3%	555	9.9%	4.9%
Management and Commerce	12,948	15.9%	1,017	18.2%	7.9%
Society and Culture	14,874	18.1%	1,323	23.7%	8.9%
Creative Arts	10,182	13.1%	384	6.9%	3.8%
Food, Hospitality and Personal Services	6,585	8.4%	246	4.4%	3.7%
Mixed Field Programmes	2,508	3.1%	171	3.1%	6.8%
	80,610	100.0%	5,580	100.0%	6.9%
By age group at graduation					
Less than 20 years	11,988	15.6%	318	5.7%	2.7%
20-24 years	36,945	44.3%	3,681	65.7%	10.0%
25-29 years	11,601	14.3%	873	15.6%	7.5%
30-34 years	7,482	9.5%	384	6.9%	5.1%
35-39 years	5,652	7.3%	204	3.6%	3.6%
40-44 years	3,525	4.6%	81	1.4%	2.3%
45-49 years	2,013	2.6%	36	0.6%	1.8%
50-54 years	906	1.2%	3	0.1%	0.3%
55-59 years	351	0.4%	18	0.3%	5.1%
60 and over	171	0.2%	3	0.1%	1.8%
	80,634	100.0%	5,601	100.0%	6.9%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Decreasing reliance on state benefits

A large number of former students have some level of benefit assistance in the first few years following study. Forty-three percent of those who last studied and borrowed in 1999 received some amount of state benefit in the 2000/01 tax year. The percentage that had income but did not have any benefit income was 45%. The remaining 12%, were either non-resident for tax purposes, or had zero income recorded by Inland Revenue.

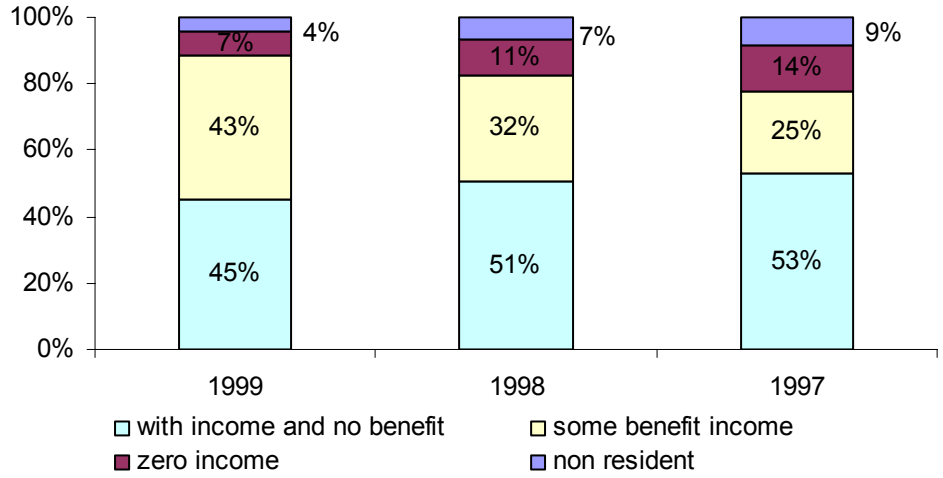
The average benefit amount received by the 1999 cohort in the 2000/01 tax year was $5,760, with 25% receiving less than $1,900 and 25% receiving more than $8,600.

As one would expect, with increasing distance from study, the reliance on benefits diminishes. Of the 1998 cohort of tertiary leavers who had borrowed from the scheme,

32% received some benefit in 2000/01 tax year. The 1998 cohort received slightly more benefit on average ($5,830). Of those who last studied and borrowed in 1997, 25% received some kind of benefit assistance in 2000/01. The average benefit here was larger again at $6,040.

We have seen how the proportion of former borrowers who have declared themselves as non-resident increases with distance from study. The following figure shows, among other things, how the number with nil income also increases. The data provides no details but it is reasonable to speculate that a significant proportion of those with nil income are in reality overseas, and have either not reported their non residency to Inland Revenue or indeed are not regarded as non-resident for tax purposes under Inland Revenue's definition.[50] Either way, borrowers who have nil income and are tax resident will have received a full base interest write off. In the 2000/01 year the base interest rate was 6.1% out of the total of 7.0%.

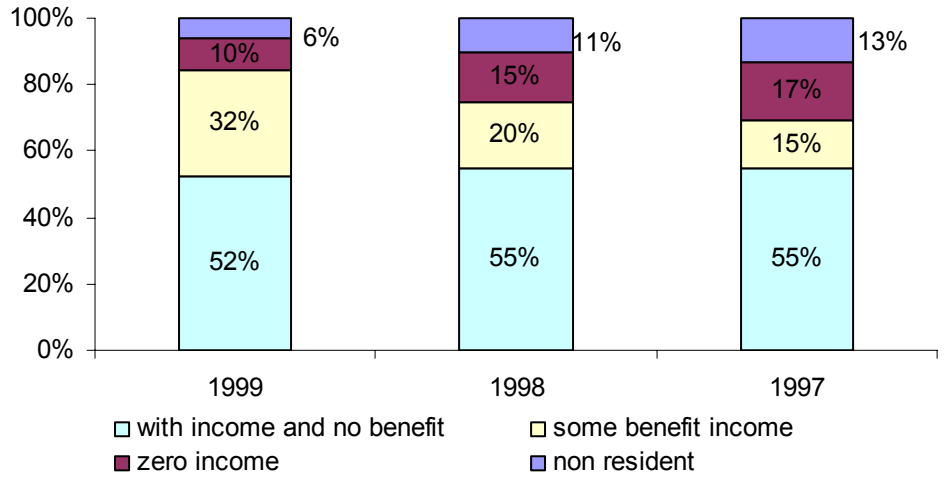
Figure 2.14: Income outcomes in 2000 of borrowers who last studied in 1999, 1998 and 1997



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

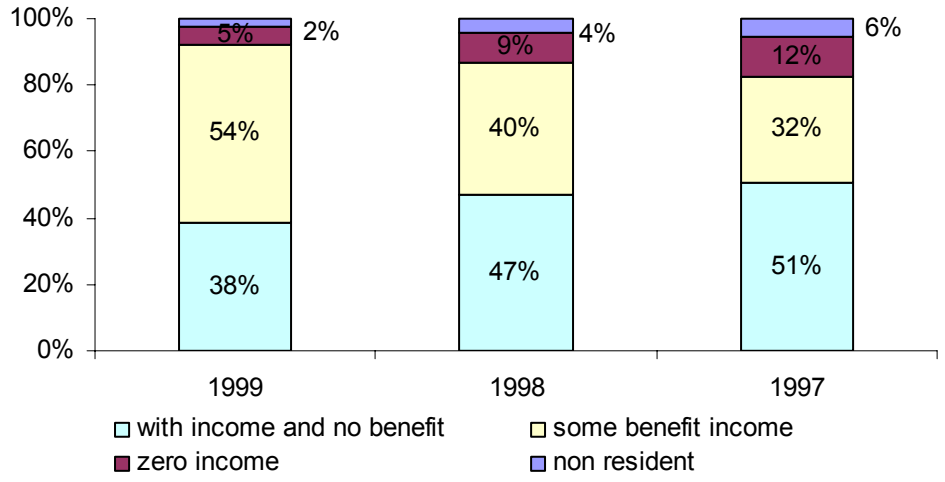
[50] Ascertaining the true level of zero taxable income is difficult. 4.1% of people in their twenties reported no source of personal income in the 2001 census (3.0% of males, 5.1% of females). Of people in their thirties, 4.8% reported no source of income (1.3% of males, 7.9% of females).

Figure 2.15: Income destinations in 2000 of University borrowers who last studied in 1999, 1998 and 1997



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 2.16: Income destinations in 2000 of Polytechnic borrowers who last studied in 1999, 1998 and 1997



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

We see above that former polytechnic borrowers are about twice as likely to receive a benefit as former university borrowers. The propensity to receive benefit assistance from the state is also strongly correlated with level of study, completion status, gender and field of study.

Figure 2.17 shows the proportion of former students who last studied and borrowed in 1997 who received some state benefit in the 2000/01 tax year together with the median benefit amount. The last two columns show the proportion that had income[51] and the ratio of total benefit dollars to total income from other sources.

[51] The proportion that had income is the sum of 'with income and no benefit' and 'some benefit income' in the figures above. In other words it is those who were not overseas nor had nil income.

We see that three years after finishing study, 31% of non-completing students were receiving some state assistance though the benefit system. Of those who completed only 17% did. The total amount of benefit for the tax year was also quite different; the median for non-completing was $6,440 but for completing the median was a third lower at $4,280. The ratio of total benefits to income from other sources was almost three times larger for the non-completing group.

The proportions in receipt of some benefit during the year were broadly equal for men and women both by completion status and in aggregate. However the amounts differed markedly, with the median female benefit amount around 40% larger than the male, irrespective of completion status.

As seen above, a former polytechnic student is about twice as likely to receive a benefit as a former university student. It should be noted that 30% of the university borrowers are either out of the country or have zero income whereas the corresponding polytechnic figure is 18%. However, the median benefit amount for former polytechnic borrowers was $6,070, a full third higher than the university figure.

Perhaps most importantly, the higher the level of study completed, the lower the rate of benefit reliance and the lower the level of benefit amount.

Among the non-completing population, those who held a previous qualification showed much lower rates of benefit uptake. Those who did not have a previous qualification have higher rates of uptake and consistently higher median benefit amounts.

Figure 2.17: Receipt of state benefits in 2000 from those who last studied and borrowed in 1997

	Number of former students[1]	Proportion in receipt of some benefit in the year	Median benefit amount[2 3]	Proportion with income	Benefit $ divided by Other income $
All	27,594	25%	5,820	78%	0.08
completed	12,204	17%	4,280	77%	0.04
not completed	15,390	31%	6,440	78%	0.12
Male	13,671	25%	5,020	77%	0.07
Female	13,926	24%	7,080	78%	0.10
Completed male	5,133	18%	3,460	76%	0.04
Completed female	7,074	17%	4,990	78%	0.05
not completed male	8,535	30%	5,360	78%	0.09
not completed female	6,852	32%	7,610	79%	0.16
University	10,173	15%	4,540	70%	0.04
Polytechnic	15,564	32%	6,070	83%	0.12
college of education	1,611	14%	5,280	82%	0.04
Completed university	4,677	9%	2,090	68%	0.01
Completed polytechnic	6,240	25%	5,130	83%	0.08
not completed university	5,496	20%	5,860	71%	0.06
not completed polytechnic	9,318	37%	6,430	83%	0.16
completed European	8,679	15%	3,160	77%	0.03
completed Māori	1,701	33%	7,060	86%	0.11
completed Pacific Peoples	435	24%	6,240	82%	0.07
completed Asian	921	14%	3,690	63%	0.04
not completed European	9,159	25%	5,420	79%	0.08
not completed Māori	3,252	49%	7,580	85%	0.28
not completed Pacific Peoples	1,068	35%	6,470	82%	0.14
not completed Asian	1,101	20%	4,700	57%	0.08
completed masters and honours	675	8%		64%	0.01
completed postgrad. dip. and cert.	513	8%		70%	
completed bachelor and adv. dip.	5,295	9%	2,090	71%	0.01
completed diploma	1,716	17%	4,940	83%	0.04
completed certificate	3,996	32%	5,300	86%	0.12
not completed masters and honours	750	12%		66%	0.02
not completed postgrad. dip. and cert.	561	11%		68%	0.02
not completed bachelor and adv. Dip.	5,130	24%	6,480	73%	0.09
not completed diploma	2,796	26%	6,150	79%	0.09
not completed certificate	6,090	44%	6,610	85%	0.22

	Number of former students[1]	Proportion in receipt of some benefit in the year	Median benefit amount[2 3]	Proportion with income	Benefit $ divided by Other income $
completed science	672	12%		66%	0.02
completed IT	282	22%		82%	0.06
completed engineering	432	9%		71%	
completed architecture	201	9%		69%	
completed agriculture	630	21%	5,070	82%	0.06
completed health	1,272	6%		72%	0.01
completed education	1,698	10%	3,150	84%	0.02
completed commerce	1,995	12%	4,090	74%	0.03
completed society and culture	2,220	23%	5,090	75%	0.08
completed creative arts	1,488	27%	4,460	83%	0.08
completed food and hospitality	984	29%	4,660	85%	0.10
completed mixed field	330	32%	5,920	69%	0.17

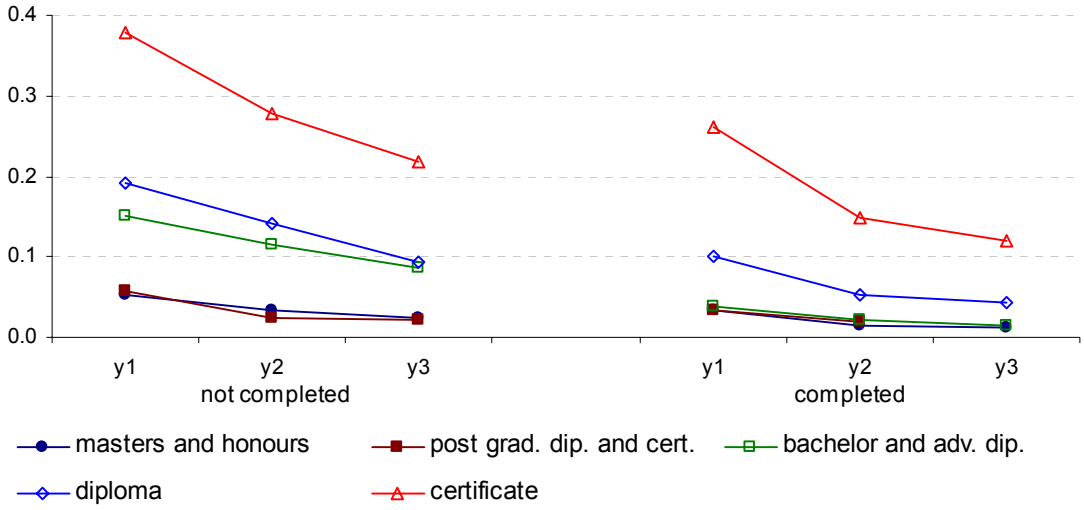
Notes:
1. Counts data has been randomly rounded to base 3.
2. Dollar amounts have been rounded to the nearest $10.
3. Where there are less than 100 beneficiaries in a group, the median amount has been suppressed.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

We saw earlier that, as former students transition into the workforce, the numbers receiving benefits decrease. We also know that incomes from other sources are increasing. We should therefore see a decrease in the ratio of total benefit dollars to total income from other sources when comparing cohorts of leavers at increasing distance from study. The ratio of total benefit dollars to total income from other sources for the 1999 cohort in 2000 was 0.159, for 1998 cohort in 2000 it was 0.108 and for 1997 in 2000 it was 0.083.

The progression of these ratios is shown for five levels of study and by completion status in figure 2.16.

Figure 2.18: Ratio of total benefit dollars to total income from other sources by level of study, completion status and number of years out of study: 2000 income year.



	not completed			completed		
	y_1	y_2	y_3	y_1	y_2	y_3
masters and honours	0.053	0.033	0.025	0.033	0.015	0.011
postgrad. dip. and cert.	0.057	0.024	0.021	0.035	0.020	
bachelor and adv. dip.	0.152	0.114	0.087	0.039	0.021	0.014
diploma	0.193	0.140	0.094	0.101	0.052	0.043
certificate	0.378	0.278	0.218	0.261	0.149	0.120

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Conclusions

Students who completed a qualification in their last year of study are much more likely to travel and become non-resident for tax purposes – at least within the first three years following study. The borrower who completes a qualification in the last year of study is 1.7 times as likely to become non-resident as a non-completing borrower.

There is also a marked difference seen between former university and former polytechnic students. The completed university student is 2.7 times as likely to become non-resident as a completed polytechnic student. Among non-completing borrowers, the former university student is 2.2 times as likely as a former polytechnic student to become non-resident.

Females are a little more likely to become non-resident compared with males, with the difference emerging in the second year post-study.

The study does not look at rates of return for people who have been away for more than two years. But within the shorter period of return, we see around 10.5% returning after being non-resident for only one tax year and around 15% returning after being non-resident for two consecutive tax years. There is evidence that the rates of return for non-

completed and polytechnic borrowers (compared with the completed students and university students) are lower.

Almost one quarter of the graduates overseas held a qualification in the 'Society and Culture' field of study.

A large number of former students have some level of benefit assistance in the first few years following study. Of those who studied in 1999 but did not study in 2000, 43% received some state benefit in the 2000/01 tax year. Of those, two years after study, 32% received some benefit while, three years after study, 25% received some benefit.

Completion status is a strong indicator of benefit uptake: three years after finishing study, 31% of non-completing students were receiving some state assistance through the benefit system. Of those who completed, only 17% did. Further, the higher the level of study completed, the lower the rate of benefit reliance and the lower the level of benefit amount.

3 Starting Salaries

Introduction

This chapter looks at the income in the tax year 2000/01 of those students who borrowed from the student loan scheme in 1999 but did not study (or borrow) in 2000. As such, it seeks to describe the level of starting salaries that recent tertiary sector leavers have received. Since the income data relates to a tax year - rather than being a point measurement of salary - the measure of income used here is actually a proxy for starting salary.[52]

The first section describes total income, giving an indication of the typical level of benefit income and drawing the distinction between students who successfully completed a qualification in their last year of study and those that did not. After the first section, the chapter focuses on earned income. The differences between completed and not completed borrowers are explored throughout the chapter, combined with a disaggregation by level of study.

Population Studied

In the 1999 academic year, there were 319,841 students enrolled in formal tertiary education, of whom 229,301 (72%) were eligible for a student loan. Of these, 115,142 (50%) borrowed from the student loan scheme.[53]

A large number went on to study the following year. Around 5% were not matched in the data matching exercise as the dataset was created and therefore, are not included in the population. Thus, within the integrated dataset, we have 43,866 individuals who studied and borrowed in 1999 but did not study in 2000.

Of these, 1,629 (3.7%) had told Inland Revenue that they were overseas and had been assessed by Inland Revenue as non-resident for tax purposes by 31 March 2001. A further 3,186 (7.5%) are recorded as having zero total income in the dataset for 2000/01.

There are gaps in the completions data for private training establishments (PTEs). To avoid confusing the not completed population with the completed population, all students who studied only at a PTE in 1999 have been excluded from this analysis. This removed 3,732 individuals from the population.

The remaining 35,319 individuals are the population discussed in the first section of this chapter. However, the remainder of the chapter focuses on those who had earned income in 2000/01. This group is 11% smaller, numbering 31,326. Of these, 59.3% completed a qualification in 1999 and 40.7% did not.

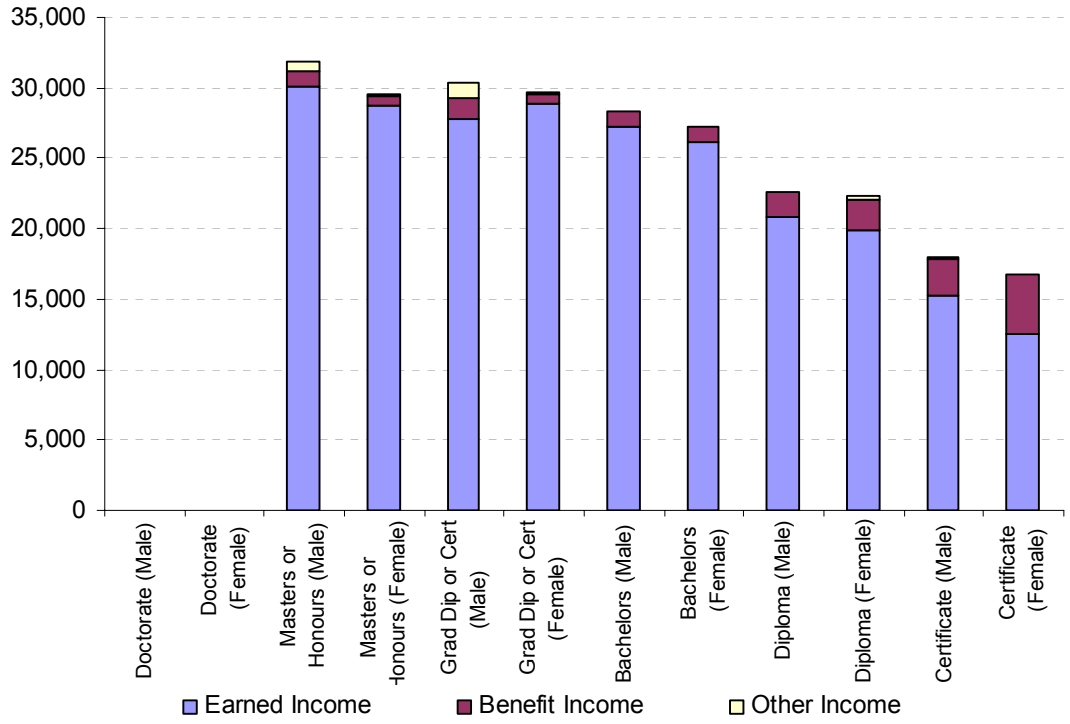
[52] The income in a tax year is likely to be depressed by a variety of jobs and working for only part of the year. This is likely to be particularly significant for those just out of study.
[53] Source: *Student Loan Scheme Annual Report to 30 June 2001*,published December 2001

Average total income in the first year out of study

The average total income of borrowers completing a qualification increased with the level of qualification, with the exception of females completing postgraduate diplomas and certificates who earned slightly more than female masters and honours graduates. Female incomes were on average consistently below those of males. The margin ranged from less than 2% in the case of those completing diplomas to around 7% for masters and honours and certificate graduates.

The major source of income was earned income, with benefit income forming a small proportion. Benefit income was a more significant part of total income amongst certificate graduates, particularly female. Only in the case of male graduates at the more advanced levels, masters and honours and postgraduate diplomas and certificates, was any significant income recorded from sources other than earnings or benefits.

Figure 3.1: Mean total income in 2000 of student borrowers who completed a qualification in 1999



	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Male average total income		31,820	30,420	28,350	22,650	17,950
Female average total income		29,550	29,750	27,300	22,270	16,710
Female as a proportion of male		92.9%	97.8%	96.3%	98.3%	93.1%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

For borrowers not completing qualifications, a very similar picture emerges. Once again, average incomes rise steadily with the level of qualification studied, with the exception of female students at the postgraduate diploma and certificate level whose income slightly exceeded female masters and honours students. Female borrowers not

completing also earned less than their male counterparts, except at the postgraduate diploma and certificate level where they enjoyed a 2% advantage.

A theme recurring throughout this report is the advantage enjoyed by those completing qualifications. For all gender and qualification groups, average incomes were higher for those completing qualifications.

The margin for completion, as recorded in the average total 2000 income for those completing borrowing in 1999, varied markedly for different qualification levels. For masters and honours students, it ranged from 5% to 10%. For certificate level borrowers, males enjoyed a 10% advantage through completing and females 13%. At the diploma level, these margins were 12% and 23% respectively.

The most significant margin occurred at the bachelors level. Here, males' average incomes were 40% higher on completion while females earned 42% more. Borrowers not completing at the bachelors level received, on average, only slightly more than diploma students not completing and significantly less than completing diploma students.[54]

The fact that the margins for women are higher than those for men reflects the fact that returns to higher qualifications are higher for women than for men.[55]

There is a clear jump seen among the non-completing between postgraduate students and undergraduate students. Postgraduate students who failed to complete their qualification understandably retain the advantage that their previously earned bachelors qualification confers.

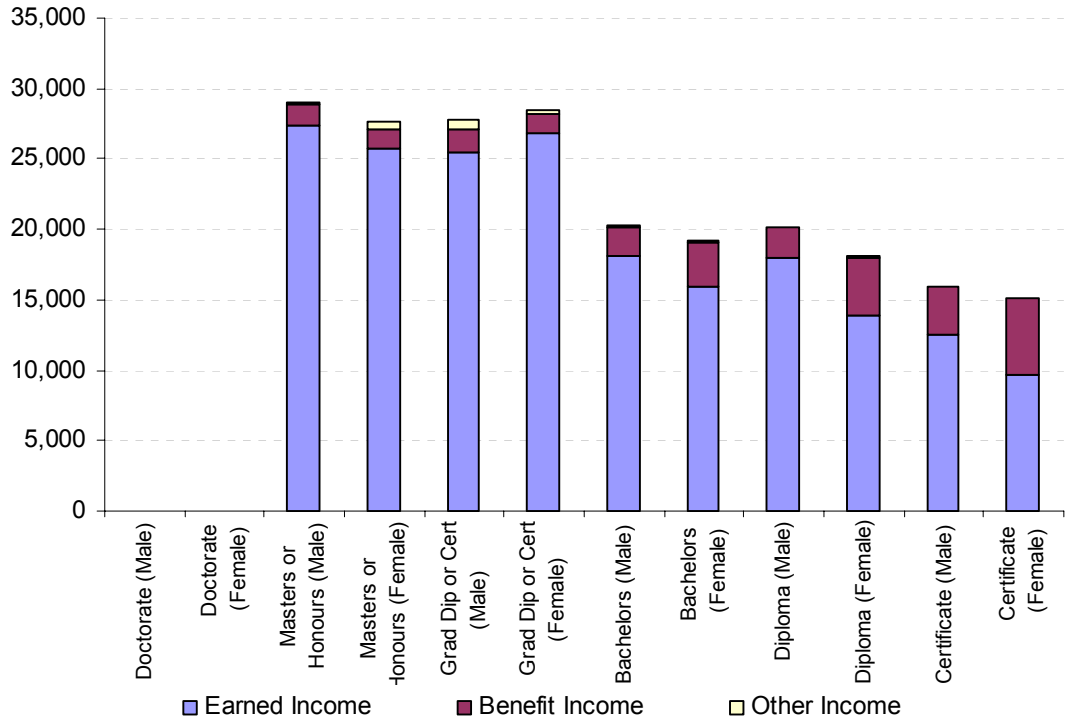
As with completing students, income other than earned and benefit income did not feature significantly, with only small amounts recorded for borrowers at more advanced qualification levels. Benefit income featured as a more significant component of total income, particularly for females and at lower qualification levels.

At the certificate level, average benefit income amounted to 15% of total income for completing males and 25% for completing females. However, borrowers at this level who do not complete have a much greater reliance on benefit income. Benefit income amounted to 21% of total income for males who abandoned without completing at this level and a very high 36% for female non-completers at the certificate level.

[54] The situation changes dramatically three years after study, with the incomes of the completed bachelor exceeding the non-completing bachelor by 27%.

[55] This is not to imply that women earn more than men. Rather, it is evidence that higher qualifications tend to mitigate the disadvantage that women experience in the labour market. Refer to Maani and Maloney (2004).

Figure 3.2: Mean total income in 2000 of student borrowers who last studied in 1999 but did not complete a qualification in 1999 by level of study



	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Male average total income		29,070	27,850	20,290	20,150	15,890
Female average total income		27,600	28,400	19,260	18,080	15,180
Female as a proportion of male		94.9%	102.0%	94.9%	89.7%	95.5%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Spread of starting salaries

We now consider the incomes *earned* by former borrowers, that is, income from paid employment.[56]

It is important to note that the figures presented here relate to those who have some earned income in the tax year. Thus, in the table below, when comparing the earned income of completed against non-completed groups, the reader must be aware that this is describing the income of these groups having first assumed that they are engaged in paid employment.

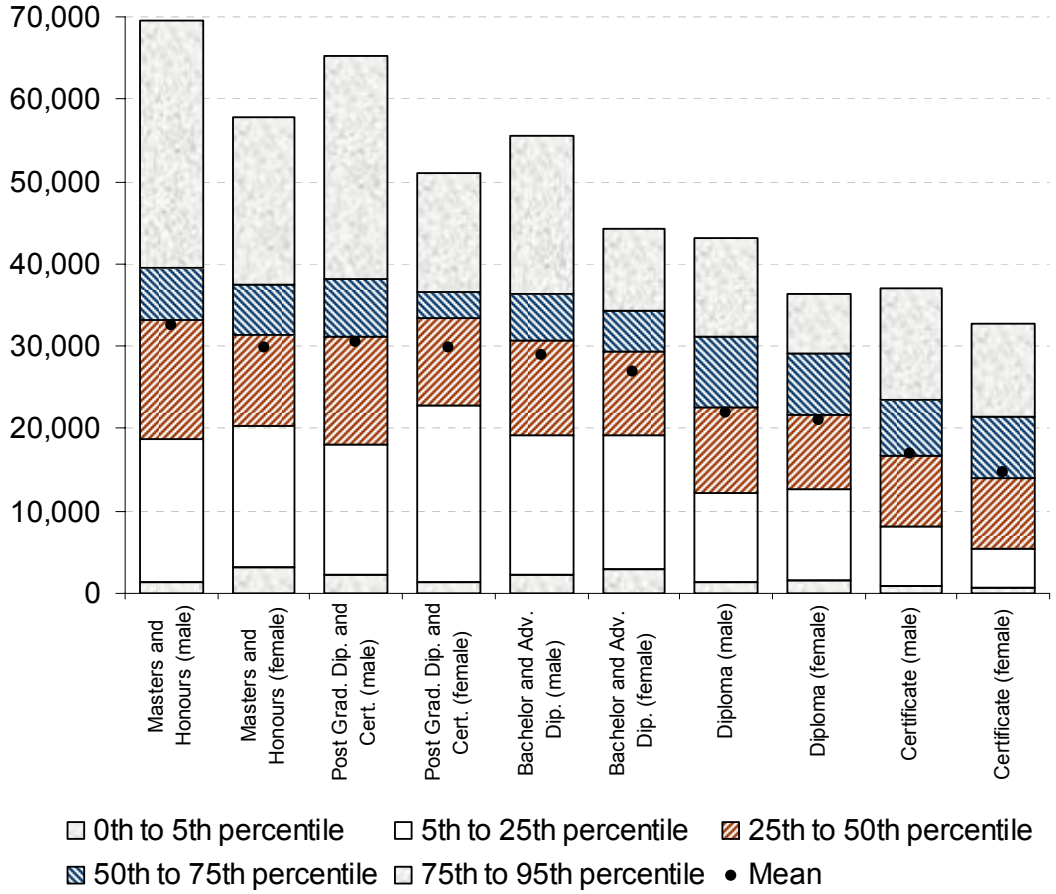
Figure 3.3 illustrates the spread of earned income of borrowers who completed a qualification. It is interesting to note that, among completing borrowers, the medians exceed the means for starting salaries for all except those with certificate level qualifications. This suggests a relatively homogeneous set of incomes among graduates, without the strong tail of high incomes which characterises most income distributions.

[56] Earned income is that from before tax salary and wages, partnership income (net profit or loss) and self-employed income (less expenses). Earned income is equal to total income less benefit income and less unearned income (such as interest, dividends and rents.)

The difference between mean and median is not great in many cases. It is greatest for female graduates at the postgraduate diploma/certificate and bachelors levels, where the distribution of higher incomes is truncated.

The measures of dispersion in figure 3.3 show that generally, incomes for male borrowers are more skewed for higher qualification levels, while those for females are more skewed at lower qualification levels.

Figure 3.3: Spread of earned income in 2000 for students who completed a qualification in 1999 by level of study

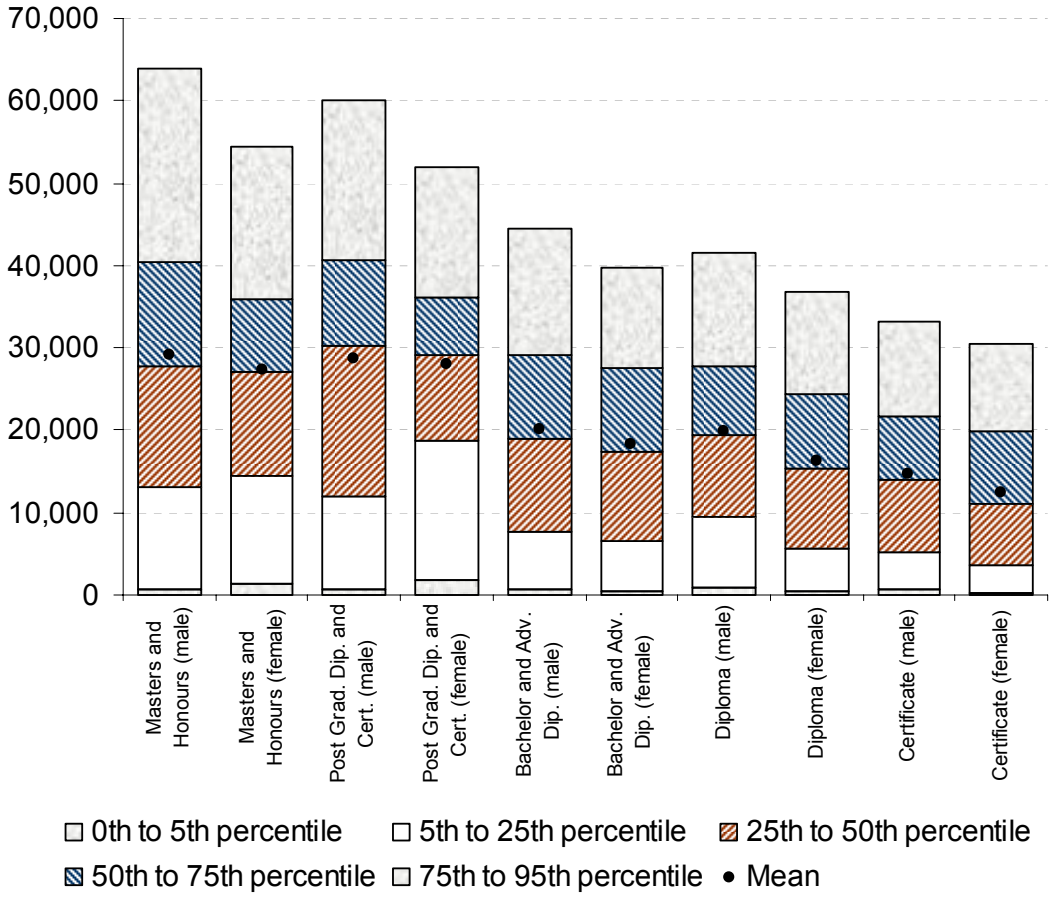


Earned income	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Male						
median earned income	33,250	31,120	30,760	22,640	16,740	*23,400*
P90 / median	1.54	1.55	1.47	1.63	1.84	*1.76*
P10 / median	0.14	0.16	0.19	0.16	0.16	*0.16*
mean earned income	32,460	30,420	28,930	21,990	16,980	*24,010*
SD / mean	0.73	0.60	0.58	0.58	0.67	*0.68*
Female						
median earned income	31,450	33,470	29,410	21,610	13,900	*23,180*
P90 / median	1.45	1.30	1.32	1.59	2.01	*1.59*
P10 / median	0.20	0.14	0.24	0.17	0.11	*0.15*
mean earned income	29,910	29,850	26,910	21,030	14,650	*22,480*
SD / mean	0.55	0.49	0.48	0.65	0.86	*0.64*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 3.4 illustrates the corresponding income statistics for students who last studied in 1999, without completing a qualification. Here, mean incomes tend to exceed median incomes. While incomes on average are lower, some relatively high incomes are recorded, increasing the skew towards the upper end of the range. As with the completed group, skewing is stronger amongst males at higher qualification levels, and amongst females at lower qualification levels. We can note also from all the dispersion measures in figures 3.3 and 3.4, that incomes are more skewed for the non-completing group than for those who completed a qualification for all combinations of gender and level of study.

Figure 3.4: Spread of earned income in 2000 for students who last studied in 1999 but did not complete a qualification by level of study



Earned income	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Male						
median earned income	27,670	30,290	19,030	19,470	14,080	*16,990*
P90 / median	1.98	1.72	2.00	1.83	2.00	*2.09*
P10 / median	0.10	0.06	0.11	0.13	0.10	*0.11*
Mean earned income	29,150	28,720	20,030	19,800	14,730	*18,380*
SD / mean	0.76	0.72	0.88	0.72	0.78	*0.84*

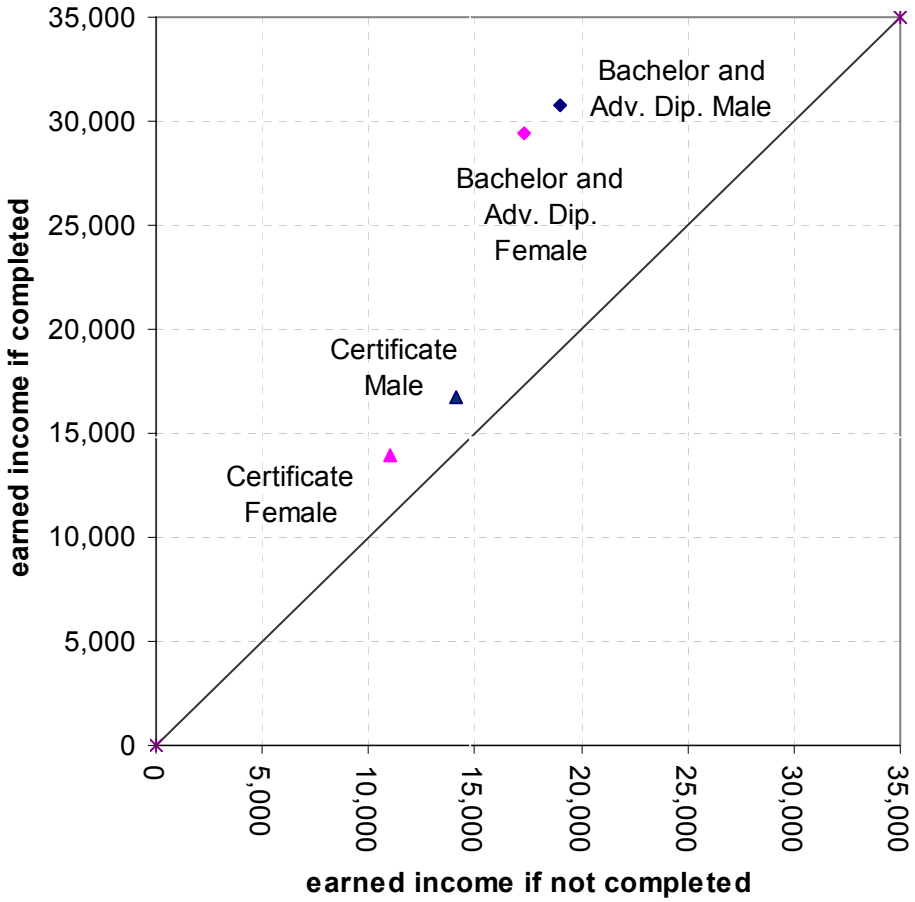
Earned income	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Female						
median earned income	27,040	29,210	17,300	15,410	10,980	*15,140*
P90 / median	1.77	1.57	2.05	2.08	2.38	*2.23*
P10 / median	0.15	0.18	0.09	0.09	0.08	*0.08*
Mean earned income	27,300	27,970	18,180	16,240	12,510	*16,640*
SD / mean	0.76	0.55	0.74	0.95	0.82	*0.84*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Higher starting salaries accrue to borrowers who complete qualifications. Overall, average 2001 salaries were $6,410 (38%) higher for males and $8,040 (53%) for females if the student had completed a qualification. The margin for completion varied according to the level of qualification. It was least for postgraduate diplomas/certificates and greatest at the bachelors level where completed males and female borrowers earned $11,730 and $12,110 respectively more than their non-completing counterparts.

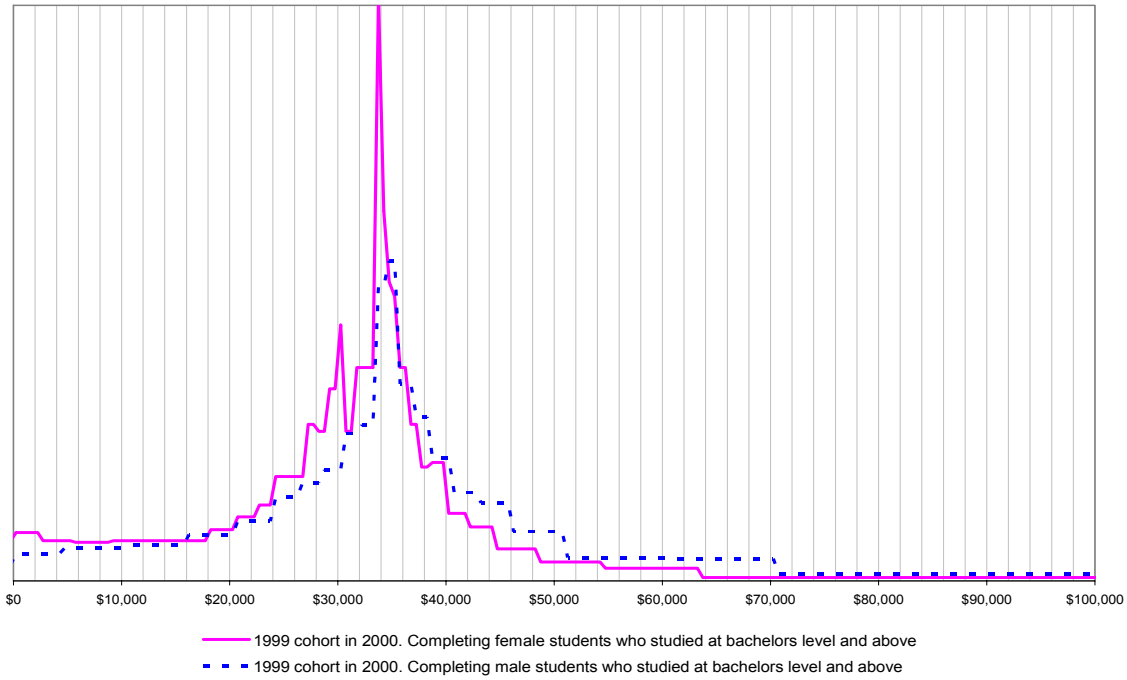
The benefit from completion is represented graphically in figure 3.5. The absolute benefit of completion is the vertical distance from the 45° line to the marker for the group. This is the extra income that the median successfully completed individual earns over the income that the median non-completing individual earns. Results are presented for the bachelors and certificate levels. The highest benefits accrue at the bachelors level; the gain at the certificate level is one of the lowest.

Figure 3.5: Benefits accruing to completion for bachelor and advanced diploma students and for certificate students by gender: median earned income



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 3.6: Distributions of male and female earned income in 2000 for students who completed a qualification at bachelors level or above in 1999[57]



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Further information about starting salaries appears in figure 3.6 where earned income is graphed for male and female borrowers. There is a strong peak for females with 6% earning between $33,500 and $34,000 (there is an earlier secondary peak with 2.7% earning between $30,000 and $30,500). The male peak occurs a little higher and is more spread, with around 7% earning between $34,500 and $35,500.

Only 15.6% of females earned over $40,000 while 29.2% of males did. 17.9% of females earned under $20,000 while 14.6% of males did.

Ethnic differences in starting salaries

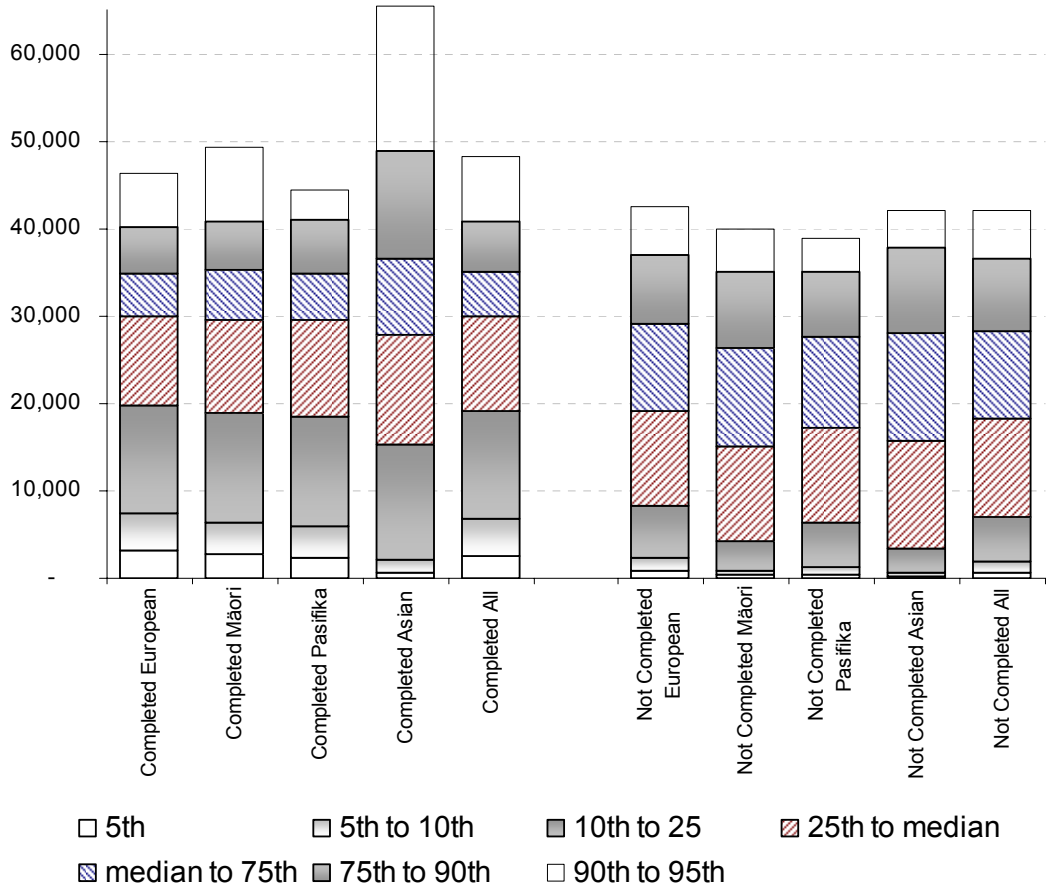
Figure 3.7 presents details of starting salaries by ethnicity and completion status. As before, we note the significant gains resulting from completion of a qualification. Likewise, we note also the greater skew among those who do not complete qualifications.

Indeed, once we control for completion of a qualification, there is relatively little difference observed in starting salaries for different ethnic groups. Among the completed group, the largest difference observed is for Pasifika borrowers with average income 2.5% below average for the group. Somewhat larger differences are observed among the not-completed group, where Māori and Asian borrowers recorded income 11% and 13% below the average for the group respectively. The conclusion is that completion of a qualification has some effect in mitigating the disadvantage in starting salaries experienced by some ethnic groups.

[57] The population for this figure and in its discussion excludes former students who received a state benefit in 2000

The most dramatic result apparent from figure 3.7 is the dispersion of income earned by Asian borrowers who complete qualifications. There is a much higher incidence of high and low incomes by this group, yet with a mean income only 0.25% above average.

Figure 3.7: Spread of earned income in 2000 for students who studied at Bachelor and Advanced Diploma level in 1999 by ethnicity and completion status



Earned income	European	Māori	Pasifika	Asian	*All*
Completed					
median earned income	30,000	29,630	29,490	27,860	*29,850*
P90 / median	1.34	1.38	1.39	1.75	*1.37*
P10 / median	0.25	0.21	0.20	0.08	*0.23*
Mean earned income	27,620	27,350	26,940	27,690	*27,620*
SD / mean	0.48	0.52	0.51	0.65	*0.52*
Not completed					
median earned income	19,220	15,090	17,290	15,620	*18,230*
P90 / median	1.93	2.32	2.02	2.41	*2.00*
P10 / median	0.13	0.06	0.07	0.04	*0.10*
Mean earned income	19,970	16,860	18,070	16,660	*19,050*
SD / mean	0.81	0.83	0.73	0.92	*0.82*

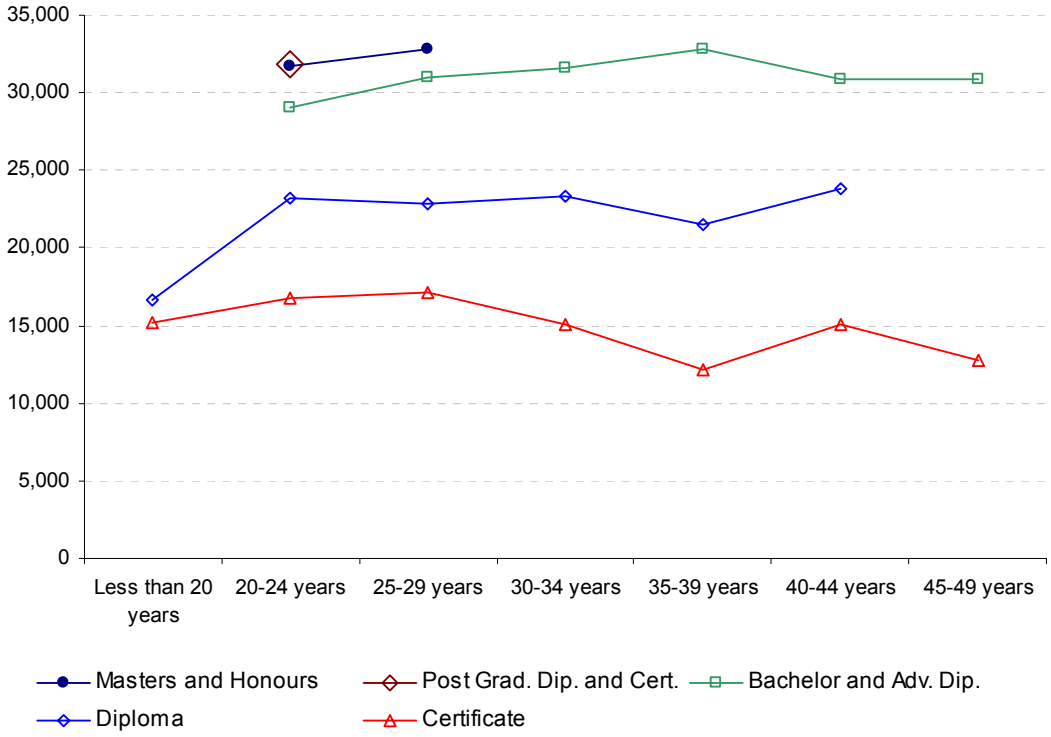
Notes:
1. 'All' includes data from the ethnicities listed above together with 'other' and 'unknown'.
2. Ethnicity is based on single response.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Age differences in starting salaries

As with ethnicity, age does not appear to play a large role in explaining the starting salaries of former borrowers. Figure 3.8 illustrates the median earned income of borrowers of different qualification levels. Because the numbers are low, it is not possible to report many readings from more advanced qualification levels. However, at bachelors level and below, there is little apparent change in median income with age. There may be a slight decline with age at the certificate level.

Figure 3.8: Median earned income in 2000 by age and level of the qualification completed in 1999



completed	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Less than 20 years				16,630	15,140	*15,400*
20-24 years	31,750	31,860	29,060	23,190	16,810	*26,430*
25-29 years	32,840		31,040	22,800	17,180	*25,920*
30-34 years			31,540	23,300	15,070	*24,750*
35-39 years			32,820	21,490	12,110	*23,860*
40-44 years			30,910	23,840	15,120	*23,980*
45-49 years			30,820		12,820	*21,540*
50-54 years						*20,910*
55-59 years						
60 and over						
All	32,200	32,730	29,850	21,990	15,400	*23,290*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Starting salaries by field of study

The five highest ranked fields tend to have a high proportion of degree and above study. The bottom two are largely associated with sub-degree study which in turn is associated with lower incomes.

Figure 3.9: Median and Percentile ratios of earned income in 2000 of former students who last studied in 1999 by field of study and completion

Student Loan Borrowers who completed a qualification in their last year of study (1999)	Median earned income	(rank)	P90/P50	(rank)	P10/P50	(rank)
Health	33,140	1	1.71	7	0.50	1
Engineering and Related Technologies	31,250	2	1.36	11	0.22	3
Education	30,650	3	1.19	12	0.30	2
Architecture and Building	27,230	4	1.49	10	0.11	9
Natural and Physical Sciences	26,420	5	1.51	9	0.19	4
Management and Commerce	24,790	6	1.69	8	0.17	7
Information Technology	22,030	7	1.86	4	0.08	11
Society and Culture	18,680	8	1.92	3	0.10	10
Agriculture, Environmental & Related Studies	18,630	9	1.98	2	0.16	8
Creative Arts	17,480	10	1.78	6	0.17	6
Food, Hospitality and Personal Services	14,810	11	1.82	5	0.18	5
Mixed Field Programmes	13,730	12	2.53	1	0.05	12
All completed	23,290		1.65		0.15	

Student Loan Borrowers who did not complete a qualification in their last year of study (1999)	Median earned income	(rank)	P90/P50	(rank)	P10/P50	(rank)
Health	17,920	5	2.03	6	0.09	8
Engineering and Related Technologies	22,210	1	1.82	11	0.15	2
Education	15,660	8	2.22	3	0.08	11
Architecture and Building	20,090	2	1.76	12	0.21	1
Natural and Physical Sciences	18,350	4	1.97	10	0.09	7
Management and Commerce	19,030	3	2.01	8	0.10	5
Information Technology	15,750	7	2.31	2	0.10	4
Society and Culture	15,840	6	2.21	4	0.09	9
Agriculture, Environmental & Related Studies	15,020	9	2.07	5	0.08	10
Creative Arts	14,470	10	1.97	9	0.10	6
Food, Hospitality and Personal Services	13,280	11	2.02	7	0.10	3
Mixed Field Programmes	12,270	12	2.97	1	0.06	12
All non-completing	16,150		2.15		0.09	

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Conclusions

Our analyses in this chapter demonstrate the gains accruing from completion of a qualification and from more advanced qualifications. These gains are most evident at the bachelors level.

Although most income is received, not unexpectedly, from paid employment, there is a much higher level of average benefit income observed amongst certificate-level students, especially females and those who do not complete.

For almost all levels of qualification and completion status, male average incomes exceed those of females, although it is evident that completion of a qualification has the effect of reducing the disparities between women and men. Men's incomes are more skewed to the right – meaning there are larger numbers who earn high incomes - whereas women's incomes tend to be skewed more to the left.

By contrast, there is less evidence of any disparity in incomes by ethnic group, particularly amongst borrowers who complete qualifications. There is much greater dispersion of incomes amongst Asian borrowers completing qualifications, but, that aside, rather limited differences in the level and distribution of incomes by ethnic group.

Age also does not appear to play a major role in determining the incomes earned by former borrowers, with relatively little variation in incomes earned by borrowers of different age groups, after controlling for level of qualification.

4 Income growth

Introduction

As with the previous chapter, this chapter deals with earned income - income from salary and wages, partnership income and self-employment income. The focus on earned income, as opposed to total taxable income removes benefit and unearned income from the analysis. The purpose of this decision is to increase the focus on those forms of income that might reasonably be believed to be attributable to personal effort, ability, application and education.

Specifically, the subject of this chapter is the way earned incomes change with length of time since studying. Having joined the workforce, what is the increase in earned income from the first full tax year out of study to the second and the third? How does this vary for those who complete a qualification and those who leave tertiary education without having completed a qualification? Do completed students retain their initial advantage or are non-completing students catching up? Which professional groups are showing the steepest rises? And finally, are there increasing disparities in income over time and if so, what are the levels of disparity?

Population

The population has been restricted to those who:

- were resident in New Zealand from the last year of study through to 2000
- had non-zero earned income from the first year out of study through to 2000
- had no benefit income in 1999 or 2000.

Within the integrated dataset, only the last two years of income data have been captured in a consistent way. So, while it would have been preferable to investigate one cohort of tertiary leavers and examine income growth over the following years, it has been necessary here to consolidate information from different cohorts to describe growth from one year out of study to the next. To do this we consider the earned income in 1999 and 2000[58] and measure this growth for each of the cohorts last studied and borrowed in 1997 and 1998.

This population was chosen in an attempt to measure earned income growth without the distortion that gaps in earning would introduce. Periods of unemployment without benefit assistance are not eliminated nor are short periods out of the country. Provided the income gaps that remain are not strongly correlated with time out of study, the error introduced will be small.

Removing beneficiaries understandably increases the average income. Less obviously, if we were to leave beneficiaries in the population, then we would see considerably higher earned income growth. This is because the number receiving a benefit is reducing with time as people find employment and transition into work. With a higher proportion relying on salary and wages, the average earned income naturally rises.

[58] The label 2000 in the context of income refers to the tax year starting 1 April 2000 and ending 31 March 2001 (etc.) Note that Inland Revenue refer to this as the 2001 tax year.

Also, because beneficiaries are more numerous in the not-completed population, we would see higher earned income growth in this group simply because there are proportionally more people transitioning into employment. The reliance on benefit assistance has been separately analysed in chapter 2, Pathways, leaving this chapter to discover patterns of income growth for those actively employed.

The following table compares the median earned income of those in this chapter's population against those from chapter three.

Figure 4.1: Median earned income of those who last borrowed and studied in 1999 with and without beneficiaries in the population

	Including beneficiaries (Chapter 3 Starting Salaries)	Excluding beneficiaries (Chapter 4 Income Growth)
Male	19,040	25,630
Female	18,870	26,130

Notes:
1. Tabled is the median earned income in 2000 of students who last studied and borrowed in 1999 from the populations of chapter 3 and chapter 4.
2. The chapter 3 population requires residency in 2000 while the chapter 4 population requires residency in 1999 and 2000. The chapter 4 population requires no benefit income in either 1999 or 2000. Both populations require earned income in 2000.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

The population definition also excludes people returning to New Zealand after a brief period overseas. There is a widely held belief that 'the great OE' improves an individual's employment opportunities and this will be the subject of future study.

We have seen how completion is associated with a higher propensity to be non-resident. We have also seen how completion is associated with lower utilisation of state benefits. The benefit of completion, the ratio of the earned income of completed students to that of non-completed students, was substantial in the first year out of study *even among those who had earned income*. What is not controlled for in chapter three however, was benefit incidence: The high number of non-completed students who received state benefits brought down the central measures of income.

However, a substantial benefit to completion still exists, even when all beneficiaries are excluded. The median earned income in 2000 of those who completed in 1999, excluding beneficiaries, was $29,120 while, for non-completing students (excluding beneficiaries), the median was $23,910. The ratio of the median income of those who completed to that of those who did not complete is 1.22. The corresponding ratio from chapter three was 1.44.

The question arises if a non-completing student achieves stable employment over three years does the completion advantage persist?

The answer is yes but the advantage is much smaller. This can be seen in the figure below, which presents subgroups of the population of those who last studied and borrowed in 1997, cut down in a series to steps according to the behaviour of the student over the next three years. It shows:

- A large difference (in median earned income in 2000) that having had three years of employment income makes for non-completing students.

- A large difference that never having benefit income makes, particularly for non-completing students.
- The strong correlation between successful completion and having earned income in a given year — of those who last studied and borrowed in 1997 and were tax resident in 2000, 81% of those who completed had earned income, while, of those who did not successfully complete, only 74% did.
- The strong correlation between successful completion and having a consistent history of earning income in New Zealand: Of those with earned income in 2000[59], 80% of those who completed had earned income in both 1998 and 1999 while among the non-completed only 64% did.

Figure 4.2: Median earned income in 2000 for students who last studied and borrowed in 1997 by continuity of employment, reliance on benefit and completion status.

	last studied and borrowed in 1997	tax resident in New Zealand in 2000	with employment income in 2000	always had employment income and always NZ tax resident [2]	never had benefit income [3]
Completed					
number of people	*12,204*	*10,959*	*8,916*	*7,092*	*5,541*
Median earned income			28,350	30,320	33,980
Not completed					
number of people	*15,390*	*14,274*	*10,536*	*6,687*	*4,638*
Median earned income			22,620	26,070	30,500
C / N median earned income ratio			1.253	1.163	1.114

Notes:
1. Counts have been randomly rounded to base 3.
2. The population of the rightmost two columns have employment income in each of 1998, 1999 and 2000.
3. The population of the rightmost column had no benefit income in 1999 or 2000.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Underlying salary inflation

Between tax years 1999 and 2000 national average weekly earnings from salary, wages and self-employment grew by 3.3%. The growth for younger ages was slightly lower with 20 to 29 year olds averaging 3.0% growth.[60] This lower figure has been subtracted from the growth rates calculated in this chapter to show income changes independent of underlying salary inflation.

It is interesting to note that between finishing cohorts at the same period away from study, we see lower implied earned income growth from the 1999 to 2000 income years. The median earned income in 1999 of those who last studied and borrowed in 1997 was

[59] Again, from the 'last studied and borrowed in 1997' and 'were tax resident in 2000' population.
[60] This has been calculated from the Time Series of Average Weekly Income for All People from The New Zealand Income Survey supplement to the Household Labour Force Survey.

$30,550 while the median earned income in 2000 of those who last studied and borrowed in 1998 was $30,770, an increase of only 0.7%[61] in nominal terms. Possible explanations include:

- Real differences between finishing cohorts
- An artefact of the population definition[62]
- A bias in the collection or matching of 1999 and 2000 income data
- Real differences in the labour market for very recent tertiary leavers between these income years.

Whatever the reason, it is safest to follow the practice taken in this chapter and measure instead the within cohort income growth.

Earned income growth to the second and third year of employment

Median earned income grows strongly between the first and second years out of study rising by 8.0% after subtracting underlying salary inflation. Income growth over the following year is more modest, a rise of 2.5% over and above underlying salary inflation. This pattern of a large initial increase followed by a lower increase is seen in most groups but the magnitude of the increases differs markedly between groups.

The median income of the completed students grows more slowly than that of the non-completing students in this population.[63] Starting from a lower base, the non-completing students are slowly narrowing the gap. From the first to the second year, earned incomes of completed and non-completing students grew by 7.7% and 9.4% respectively. Over the following year, non-completing students gained an increase of 4.6% while completing students gained only 2.2%. Over these two years together, the median earned income of completed students rises by 10.1% and that of the non-completing students by 14.4%, above underlying inflation. And the benefit to completion ratio reduces from 1.16 to 1.11.[64]

Figure 4.3: Growth in median earned income for non-beneficiaries by time out of study adjusted for salary inflation

	From the first to the second year	From the second to the third
Completing students	7.7%	2.2%
Non-completing students	9.4%	4.6%
All students	8.0%	2.5%

Notes
1. Growth from the first to the second year is from the experience of the 'last studied and borrowed in 1998' population between 1999/00 and 2000/01. Growth from the second to the third year is from the 'last studied and borrowed in 1997' population between the same two tax years.
2. Growth rates have had 3% subtracted for salary inflation.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

[61] Average earned incomes show a similarly modest increase, 0.5% being the increase from $31,040 to $31,190.

[62] Some of both the 1997 and 1998 cohorts will become non-resident in 2001. If departure rates drop in the fourth year then the relatively higher number of departures from the 1998 cohort would tend to reduce the earned income in that group as some departures will occur in the 2000/01 tax year but will be reported later to the IRD. Another effect could be due to selection against beneficiaries. The 1997 cohort may have had benefit income in 1998 (we cannot tell from the data). If these people were excluded then arguably the 1999 income would increase which would further reduce the observed growth.

[63] Note the population includes only the non-completing students who have had earned income throughout.

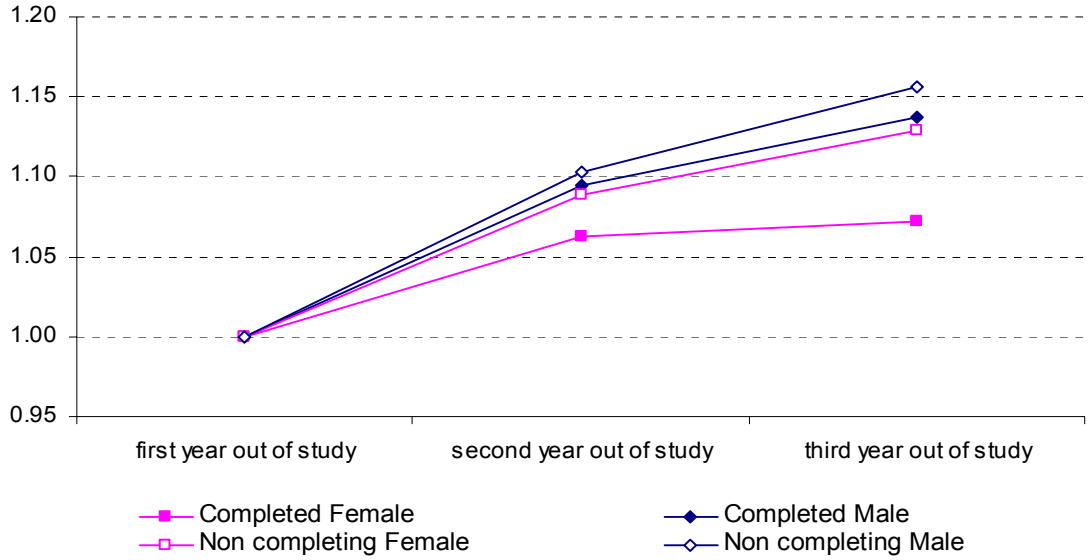
[64] The ratio of the median completed income to the median non-completing income for the 1998 cohort of leavers in the 1999/00 year and the 1997 cohort of leavers in 2000/01 respectively. The benefit of completion to the 1999 leavers in 2000 was considerably higher: 1.22.

Growth rates by gender and completion status

We saw in the previous chapter how men have greater average starting incomes than women in the vast majority of disaggregations. The difference persists and grows over the following two years of paid employment. Between the first and the third full tax year following study, the median male earned income has grown 4.6% more than median female earned income.

Bringing completion status into the equation accentuates the differences, with non-completing males enjoying the greatest median earned income growth and completed females the least. In the next figure, we see by gender and completion status the growth in median earned income from the first to the third year following study with salary inflation removed.

Figure 4.4: Compound growth in median earned income for non-beneficiaries with persistent earned income by years out of study adjusted for salary inflation by gender



	growth from the first to the second year	growth from the second to the third	Implied growth from first to third
Completed students			
Female	6.3%	0.9%	7.2%
Male	9.5%	3.9%	13.7%
All completed students	7.7%	2.2%	10.1%
Non-completing students			
Female	8.9%	3.7%	12.9%
Male	10.3%	4.9%	15.7%
All non-completing students	9.4%	4.6%	14.4%
All students			
Female	7.3%	1.7%	9.1%
Male	9.3%	3.9%	13.6%
All students	8.0%	2.5%	10.8%

Notes
1. Growth from the first to the second year is from the experience of the 'last studied and borrowed in 1998' population between 1999/00 and 2000/01. Growth from the second to the third year is from the 'last studied and borrowed in 1997' population between the same two tax years.
2. The third column is the compound growth implied by the first two columns.
3. Growth rates have had 3%pa subtracted for salary inflation.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Growth rates by level of study and completion status

We have seen how median incomes of non-completing men and women rise faster than for completing men and women. Within levels of study however, there are exceptions to this. The highest growth by level of study and completion implied by this analysis is for *completed* masters and honours students. Median incomes for this group rose by 25% between the first and third year even when allowing for salary inflation, while the non-completing masters and honours group showed a median income increase of 17%.[65] Because the number of individuals in this group is fairly low we should be cautious about the significance we give to this result.

Those who complete certificates and bachelors degrees show lower growth than their non-completing counterparts.

Figure 4.5: Growth in median earned income by completion status and selected levels of study[66]

	growth from the first to the second year	growth from the second to the third	Implied growth from first to third
Completed students			
Masters and Honours	14%	10%	25%
Bachelor and Adv. Dip.	5%	3%	8%
Certificate	9%	7%	16%
Non-completing students			
Masters and Honours	11%	5%	17%
Bachelor and Adv. Dip.	8%	3%	12%
Certificate	10%	8%	19%

Notes
1. Growth from the first to the second year is from the experience of the last studied and borrowed in 1998 population between 1999/00 and 2000/01. Growth from the second to the third year is from the last studied and borrowed in 1997 population between the same two tax years.
2. The third column is the compound growth implied by the first two columns.
3. Growth rates have had 3%pa subtracted for salary inflation.
4. Population excludes beneficiaries and those without persistent earned income.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Income growth for individuals

The previous sections have considered the median earned income of identified groups. However, within each of these groups, there is a broad range of income levels and a multitude of experiences with both large increases and large decreases enjoyed or suffered along with more modest earnings movements.

In this section, the subject is the individual former student's income growth expressed as a ratio of the earned income in the 2000/01 to the earned income in the 1999/00 tax year. In this and the following section, there is no adjustment for salary inflation.

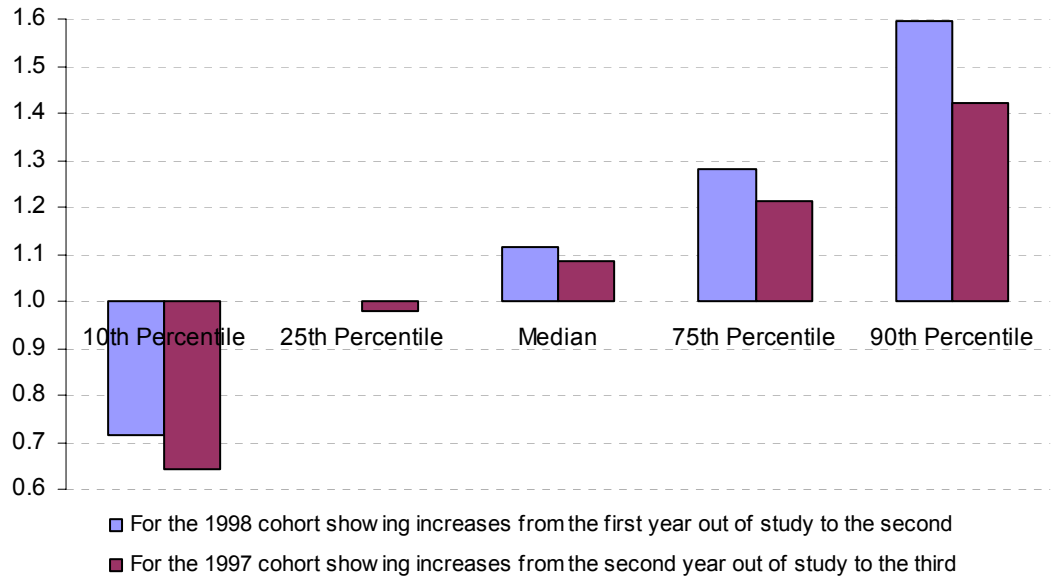
[65] A similar advantage for masters and honours graduates is apparent when mean incomes are considered – 21% compared with 9% for the non-completing. See figure 6.14 in the appendix.

[66] The same methodology is followed here as in the previous section. Within cohort income growth between 1999/00 and 2000/01 (less 3% inflation) is combined for those 1 to 2 years after study (1998 leavers) and 2 to 3 years after study (1997 leavers) to obtain a measure of income growth from the first to the third year following study.

From the first to the second year out of study, we look at those who last studied and borrowed in 1998. One in four has income remaining the same or falling in nominal terms. One in four has income growing by 28% or more. The middle half of the population have earned income growing somewhere between 0% and 28% with half of the cohort having growth of 11.7% or more. At the extremes, one in ten has earned income growing by 59% or more and one in ten has income falling by 28% or more.

From the second to the third year following study (examining the 1997 cohort), income growth is more muted. One in four has income falling by 2% or more. One in four has income growing by 21% or more with the middle half having income growth between these levels. One in ten has earned income growing by 42% or more and one in ten has income falling by 36% or more.

Figure 4.6: Individual earned income ratios from the first year out of study to the second



	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile
For the 1998 cohort showing increases from the first year out of study to the second					
Completed	0.758	1.011	1.115	1.269	1.542
Not completed	0.676	0.989	1.120	1.293	1.667
All	0.717	1.000	1.117	1.281	1.594
For the 1997 cohort showing increases from the second year out of study to the third					
Completed	0.604	0.980	1.084	1.202	1.386
Not completed	0.678	0.980	1.089	1.227	1.469
All	0.641	0.980	1.086	1.214	1.420

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

There is little distinction between completed and not-completed students. Students who did not complete demonstrate a slightly wider range of ratios in both cohorts. For example, with the 1998 cohort, the top quartile of ratios is bounded by 1.27 for completed students and by 1.29 for not completed students. This difference is repeated for those a year further away from study and is stronger at the 90th percentile. An

exception is to this is the 0.6 ratio for the lowest decile of growth seen in the completed 1997 cohort.

Analysis by level of study shows that, between the first and second year out of study, masters and honours students show strong growth among the top quarter of individuals.[67]

Deciles of earned income

The previous section examined the movements in earned income for individuals from one income year to the next. While 25% of people enjoyed increases of 28% or more from the first year to the second year of employment, the rate of growth does not tell us anything about their incomes in absolute terms.[68] This raises the question: Do those with high growth tend also to be among those with higher starting incomes or is there a correction happening for some who were initially undervalued? A similar question surrounds the quarter whose earned incomes decreased.

The population examined here is the same: former students who used the student loan scheme in their last year of study and who did not receive any benefit in 1999/00 and 2000/01 tax years and who have consistently, since finishing study, earned income and remained tax resident. For the finishing in 1997 and 1998 cohorts, the deciles of income in 1999/00 and 2000/01 have been calculated and individuals within each cohort have been categorised into their deciles for both tax years. Since completion status is a strong determinant of starting income, this has been done separately by completion status. An analysis of the movements between deciles is the subject of the next section – stability of earned income.

The figure below gives the decile boundaries and sets out how they change from the first year out of study into the second. We see that:

- Incomes of the top 20% to 30% of the range increased faster for completing than non-completing students.
- From the 3rd to the 7th decile, the not-completed students are gaining on the completed students in the corresponding decile ranges. The catch up is around 2%. For these middle range students, the advantage in earned income that completed students enjoy over non-completing students in 1999 is around 15.3% while in 2000, it has dropped to around 13.4%.
- In the 2nd decile, income growth is small but positive for both groups.
- In the lowest decile, earned incomes are decreasing for both groups and for non-completing students, they are decreasing faster.

Overall, increases in income increase with decile of income. This means that the distribution of income is becoming broader.

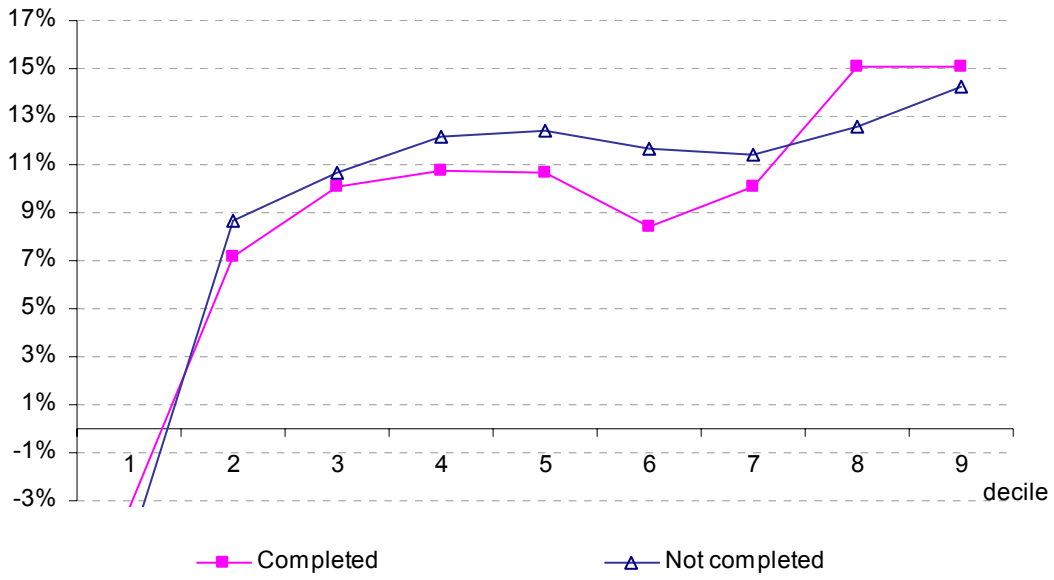
Figure 4.8 is based on the same data as figure 4.7, and shows two curves for the ratio of completed earned income to non-completed earned income, for the same cohort, one year out of study and two years out of study. We see that the benefit of completion is

[67] See table 6.16 in the appendix.

[68] A large percentage increase from a low income may well be less in dollar terms than a small increase from a larger starting point.

greatest at lower deciles of income, and that, for this population of consistent earners, is decreasing with time.

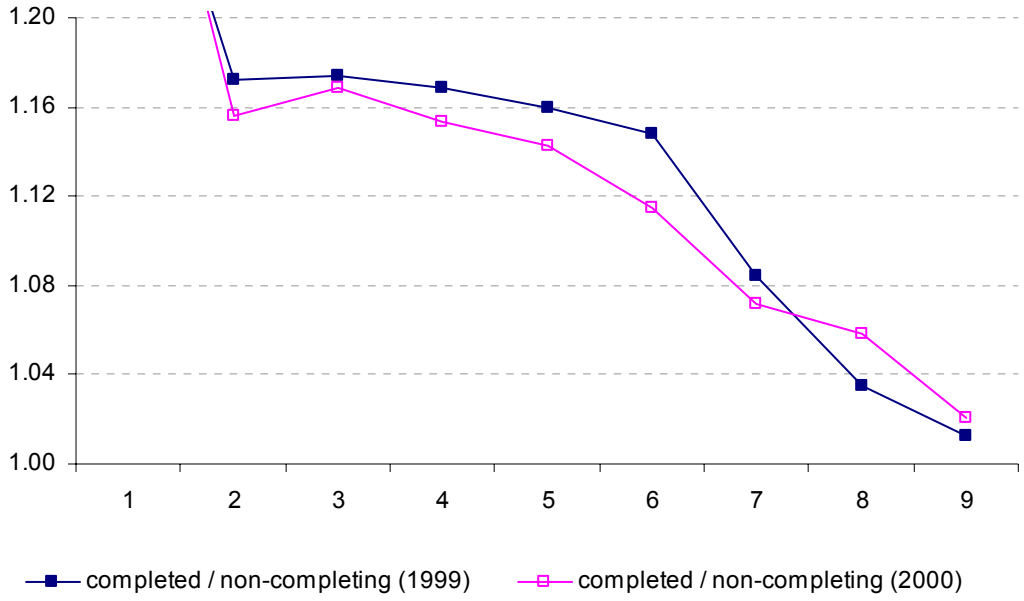
Figure 4.7: Growth of upper bounds of earned income deciles for those who last studied and borrowed in 1998 (income growth from 1st to 2nd year)



	Completed students			Not completed students		
Decile	1999	2000	growth	1999	2000	Growth
1	14,020	13,550	-3.4%	10,610	10,070	-5.1%
2	19,610	21,020	7.2%	16,730	18,180	8.7%
3	23,450	25,820	10.1%	19,970	22,100	10.7%
4	26,590	29,450	10.8%	22,760	25,530	12.2%
5	29,660	32,830	10.7%	25,570	28,740	12.4%
6	32,500	35,230	8.4%	28,310	31,610	11.7%
7	34,160	37,610	10.1%	31,510	35,100	11.4%
8	36,340	41,830	15.1%	35,120	39,540	12.6%
9	42,350	48,750	15.1%	41,820	47,770	14.2%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 4.8: Ratio of upper bounds to earned income deciles (completed : not completed) for those who last studied and borrowed 1998 at one year out of study (1999) and two years out of study (2000)



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Looking at the growth from the second to the third year, it is clear (figure 4.9) that the higher the decile of income the higher the rate of growth. This effect is very strong among the completed population and a little less so among the non-completers, with the middle deciles showing similar increases. Given that around three-quarters remain in their decile or shift by at most one decile, we can conclude that, generally, those with higher incomes enjoy greater income growth. This is true for both the completing and the non-completing student loan borrower.

From the second to third year, the decile boundaries capping decile 1 (non-completing), and decile 1 and 2 (completed), all decreased. The drop in the upper bound of decile 2 (completed) was small, but the upper bound of decile 1 (non-completing) dropped by 11% and that of decile 1 (completed) dropped by 25%.

This significant shift in the decile 1 upper-bound for completed borrowers from $16,450 pa to $12,310 pa implies a near total erosion of the financial benefit of completion among the lowest 10% of tertiary leavers who are earning income and not receiving a benefit.[69] Among non-completing former borrowers, the maximum income of the lowest decile of earners was $12,280. What this does not tell us is anything about the conditions of work; the hours of work required to earn this income or the choices of work available which may differ between these groups.

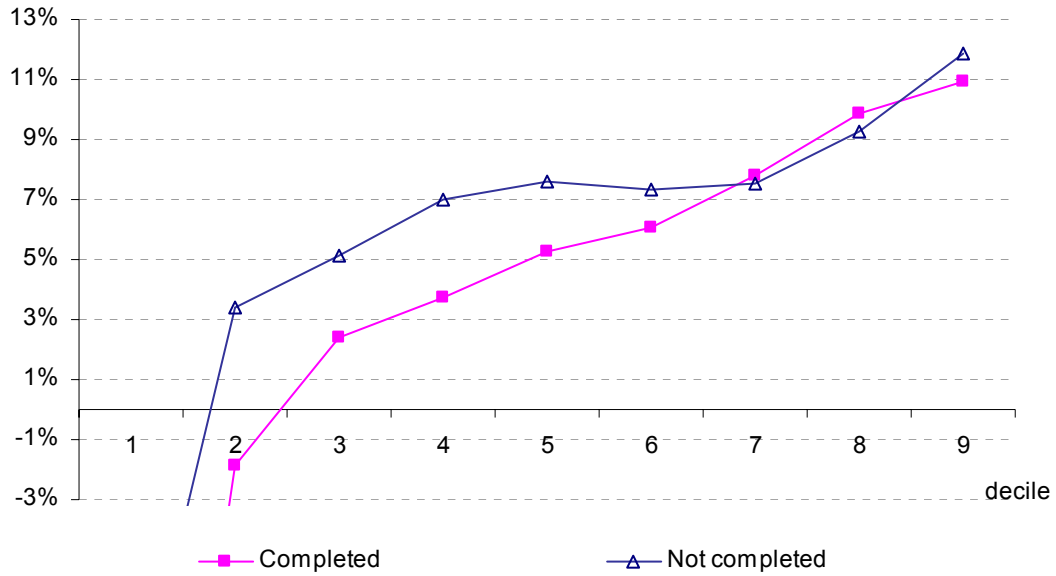
This can be seen in figure 4.10, where three years after study the completed to not-completed ratio of decile one earned incomes is unity. At the other end of the income scale there is also little benefit of completion. Three years out of study the boundaries between the ninth and tenth deciles of earned income of the completed and non-completing groups (as defined here) are very similar: $51,250 for non-completing and

[69] Each decile of the 1997 completed cohort contains around 554 individuals, and of the non-completing around 464 individuals, so this is likely to be a significant result.

$51,080 for completed. At the 95th percentile the advantage to the non-completing is a little greater at $61,130 versus $59,420.

Between the 10th and the 90th percentile of earned income, the earned income advantage that the completed student has over the non-completing student remains strong: around 4% in deciles 2 and 8, around 10% in deciles 2 through 6 dropping down to around 2% in decile 9.

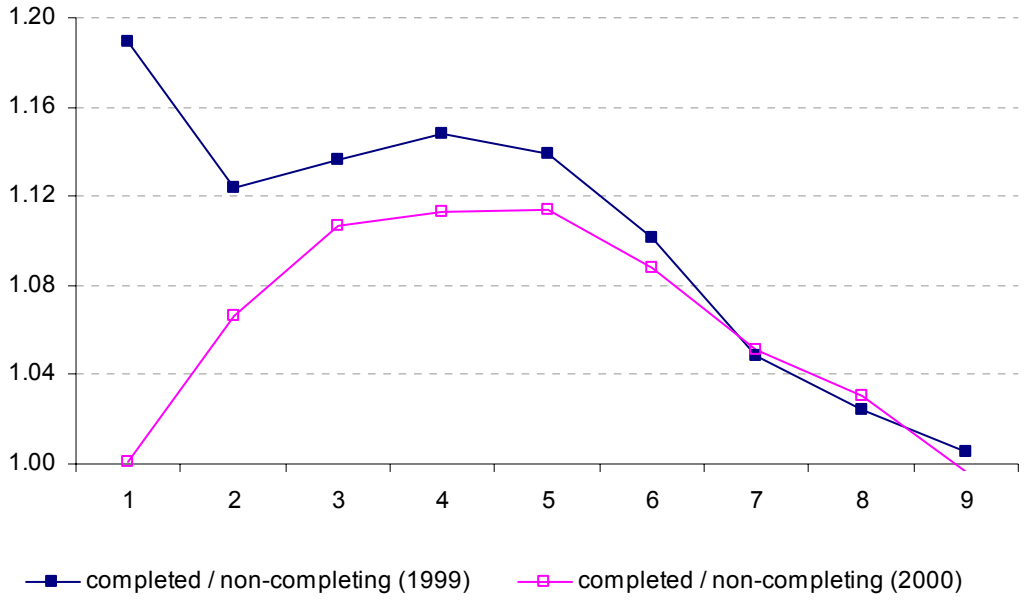
Figure 4.9: Growth of upper bounds of earned income deciles for those who last studied and borrowed in 1997 (income growth from 2nd to 3rd year)



	Completed students			Not completed students		
Decile	1999	2000	Growth	1999	2000	growth
1	16,450	12,310	-25.2%	13,830	12,300	-11.1%
2	21,710	21,300	-1.9%	19,320	19,980	3.4%
3	25,760	26,380	2.4%	22,670	23,840	5.2%
4	29,290	30,390	3.8%	25,520	27,310	7.0%
5	32,290	33,980	5.2%	28,350	30,500	7.6%
6	34,550	36,650	6.1%	31,370	33,680	7.4%
7	36,440	39,290	7.8%	34,750	37,370	7.5%
8	39,700	43,630	9.9%	38,760	42,350	9.3%
9	46,040	51,080	10.9%	45,810	51,250	11.9%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 4.10: Ratio of upper bounds to earned income deciles (completed : not completed) for those who last studied and borrowed in 1997 at two years out of study (1999) and three years out of study (2000)



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Stability of earned income

The decile to decile changes can be used to examine the stability of income for individuals. The number of deciles changed is one measure of income stability. Looking at the situation in 2000 of the 1998 cohort (representing changes from the first to the second year in employment) and among the completed students, the borrowers moved on average 1.25 deciles. The not-completed shifted an average of 1.29 deciles. This suggests that the non-completing are slightly less stable in income.

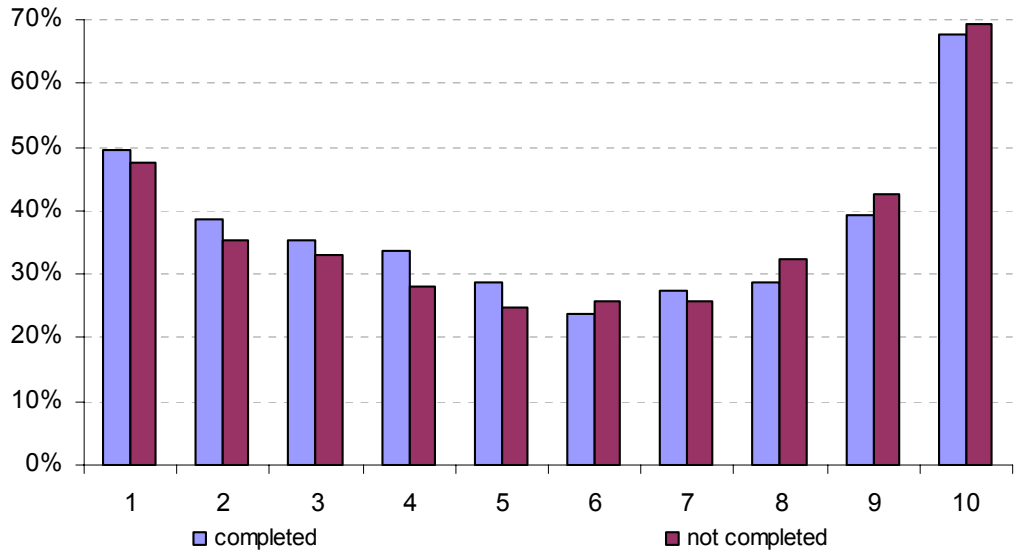
The next year however tells a different story. The situation in 2000 of the 1997 cohort represents changes in income between the second and third year out of study. This showed an average number of deciles changed among completed students of 1.26 while the not-completed shifted on average 1.23 deciles.

A related (and perhaps more natural) statistic is the number remaining in the same decile in both income years and this tells a similar story. For the 1998 cohort 37.2% of the completed students had no change in decile, while 36.4% of the non-completed students had no change in decile. For the 1997 cohort 37.6% of the completed did not move and 39.5% of the not-completed did not move.

	Average change in number of deciles		Proportion remaining in the same decile	
	Completed	Not completed	Completed	Not completed
Cohort 1998 (+1 -> +2)	1.25	1.29	37.2%	36.4%
Cohort 1997 (+2 -> +3)	1.26	1.23	37.6%	39.5%

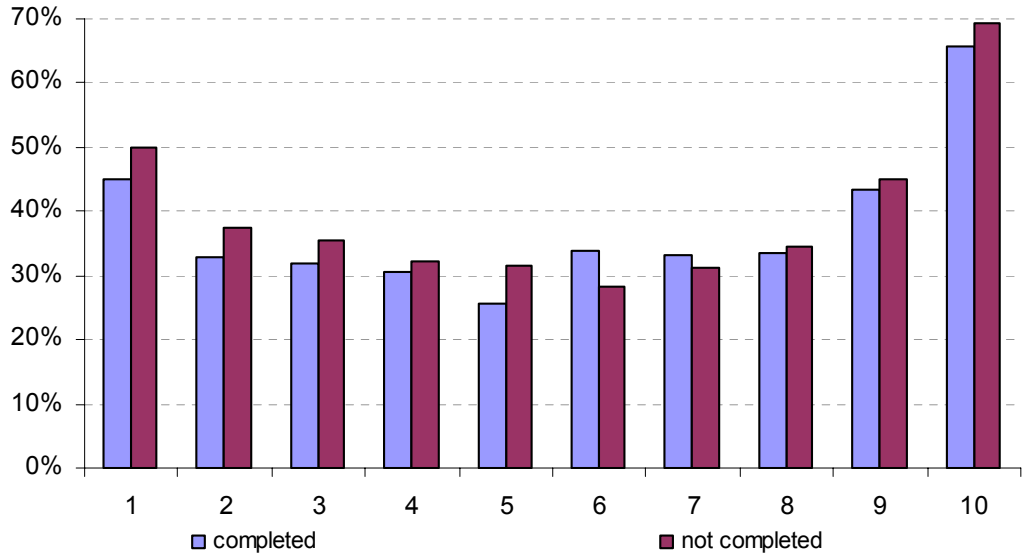
Comparing the transitions from the 1st to the 2nd year after study to that from the 2nd to the 3rd, it is apparent that incomes of the not-completed group are settling down a little and becoming less likely to have larger changes in their income. This is seen more particularly in those with lower incomes in figure 4.12 and figure 4.13.
The completed group retain their mobility. Of course for every shift up or down in decile there must be a corresponding shift in the opposite direction.

Figure 4.12: Proportion of students remaining in the same decile of earned income between 1999 and 2000 for completed and not-completed groups who last studied and borrowed in 1998



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 4.13: Proportion of students remaining in the same decile of earned income between 1999 and 2000 for completed and not-completed groups who last studied and borrowed in 1997



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

To a large extent, the stability of the top decile for both groups is a consequence of the definition because those in decile 10 cannot shift up to a higher decile and because of the wide range of incomes within it. This said, the probability of someone in decile 9 remaining there or shifting up to decile 10 is 58% while the probability of a decile 10 individual remaining in decile 10 is 68%.

Changes in disparity of income

Disparity of income is used here to mean the diversity of, or inequality in, incomes earned by people within a group.

Figure 4.14 presents four measures of the diversity of income within groups, defined by completion and level of study. By design the sub-populations of this chapter are fairly homogeneous; all have persistent earned income, none received financial assistance from the state for at least two years and all are tax resident. Consequently the Gini coefficients are lower than that for the country as a whole[70], and the percentile ratios reflect a narrower distribution than seen in chapter 3, Starting Salaries.

In the first year following study, the disparity in earned income is greatest among non-completing former masters and honours students. Non-completing certificate students showed similar, but slightly higher, income disparity to non-completing bachelor students.

Comparing the completing to the non-completing among those who studied at the same level, bachelors level and above show *less* income inequality if completed. The income disparities within the completed and non-completing certificate groups were similar.

As time goes on, the disparity increases among borrowers who completed a qualification in their last year of study, both from the first to the second, and from the second to the third years following study. This was to be expected given the higher rates of growth seen among the higher deciles of income. However, the *increase* in disparity is much greater among those qualified at bachelors, honours and masters level compared with certificate holders, who are arguably becoming more homogeneous in earned income with time.[71]

There is a suggestion that the increase in disparity among completed bachelor students is greater between the second and third years.

Changes in income inequality among borrowers who did not complete a qualification in their last year of study are also complicated. Masters and honours have *decreasing* disparity from years one to two and a lesser increase in disparity over the next transition. Non-completing bachelors students show increasing earned income disparity over both transitions. The income inequalities of the non-completing certificate students do not vary with time out of study.

[70] The Gini coefficient is a measure of inequality often used with income distributions. A Gini coefficient of zero would indicate perfect income equality with everyone receiving the same income. A Gini coefficient of one would indicate perfect income inequality with one person receiving all the income. In 1997 New Zealand had a Gini coefficient of income of 0.362 (United Nations Human Development Report 2004).

[71] Certificate holders however, as with every other group, show the P10/P50 ratio reducing with time which implies increasing disparity.

Two other phenomena deserve mention. All groups show a strong decrease in P10/P50 with time indicating a slump among the lowest incomes. This could be down to an increasing prevalence of part-time work.

Secondly, the disparity at +2 among the 1997 cohort is consistently lower than the disparity at +2 from the 1998 cohort. The former is from data from the 1999/00 income year, and the latter from 2000/2001; however this is not the cause: analysis of all of those with earned income (like the population used in chapters 3) done the same way as here show very similar Gini coefficients in the second year following study.[72] It therefore seems that the difference is in the population definitions. The 1997 group used in this chapter has had one more year resident in New Zealand compared with the 1998 group. It is possible that those who become non-resident are biased towards those with extremes of income, both high and low, and this would account for the difference in income inequality seen here. At this stage this is only speculation.

Figure 4.14: Changes in the disparity of earned income with time since study for completed and non-completing students at selected levels of study

1998 cohort - 1st and 2nd	N	Gini		SD / mean		P90 / P50		P10 / P50	
completed		+1	+2	+1	+2	+1	+2	+1	+2
Masters and Honours	387	0.23	0.27	0.48	0.59	1.46	1.48	0.46	0.27
Bachelors	2769	0.19	0.22	0.38	0.47	1.33	1.43	0.56	0.48
Certificate	1443	0.25	0.26	1.27[3]	0.54	1.63	1.62	0.51	0.41
non-completing									
Masters and Honours	339	0.31	0.28	0.87	0.55	1.70	1.59	0.36	0.28
Bachelors	1830	0.25	0.27	0.48	0.52	1.54	1.56	0.39	0.30
Certificate	1440	0.26	0.27	0.55	0.53	1.62	1.58	0.48	0.40

1997 cohort - 2nd and 3rd	N	Gini		SD / mean		P90 / P50		P10 / P50	
completed		+2	+3	+2	+3	+2	+3	+2	+3
Masters and Honours	327	0.22	0.25	0.46	0.48	1.54	1.57	0.58	0.41
Bachelors	2637	0.18	0.23	0.36	0.45	1.38	1.44	0.61	0.35
Certificate	1401	0.24	0.25	0.66	0.52	1.54	1.50	0.53	0.40
non-completing									
Masters and Honours	300	0.26	0.27	0.56	0.62	1.61	1.69	0.51	0.42
Bachelors	1659	0.24	0.28	0.50	0.55	1.51	1.63	0.49	0.36
Certificate	1389	0.24	0.24	0.52	0.48	1.57	1.54	0.54	0.45

Notes:
1. Population: Those with earned income who last studied and borrowed in 1998 and 1997 (the 1998 cohort and the 1997 cohort – tabled separately) and who did not receive any state benefit income in 1999/00 and 2000/00 and who were NZ tax resident in the years following study up until 2000/01.
2. In the top 1998 cohort section of the table, +1 means income year 1999/00, +2 2000/01. In the 1997 cohort section, +2 means 1999/00, +3 2000/01.
3. This extreme standard deviation is due to the presence of a very large outlier.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

[72] See figure 6.17 in the appendix.

Conclusions

Completed students were 33% more likely to have consistently had income from employment in each of the three years following study than non-completed students.

Among those who have not received a state benefit and who have a consistent record of earning income in each of the three years following study, the benefit of completion (the ratio of earned income among the completed over the earned income of the non-completing) is around 1.11 for the middle groups of earners. This contrasts with the 1.25 ratio of median incomes of those who completed in the third year after study with beneficiaries included in both groups.

Median incomes grow strongly between the first and third years out of study. The earned incomes of non-completing students grow faster, leading to a reduction in the earnings gap between those who gained a qualification and those who did not. For those with a consistent record of earning income the benefit of completion narrows from 1.16 to 1.11. The earned incomes of males are growing faster too, leading to a widening of the gender gap over the same period from 1.02 to 1.06.

At the extremes, in the lowest and highest deciles of earned income, there is zero (and perhaps negative) benefit of completion with very little difference in incomes between completed and non-completed groups.

The ratio of earned income in one year to that of the previous year for individuals with constant history of earning forms a distribution where around three-quarters have earned income rising in nominal terms from one year to the next. One quarter have their income rise by more than 28% from the first to second year following study, and one quarter have rises over 21% from the second to the third.

Income disparity (the diversity of incomes within a group) is greater in the non-completing population. As time since study increases, earned income disparity changes in different ways according to the level of study attempted; among the non-completing, masters and honours borrowers show decreasing income disparity, bachelors borrowers increasing disparity and certificate borrowers broadly level disparity. Among borrowers who completed a qualification in their last year of study at bachelors or higher level, income disparity is increasing. Certificate holders are arguably becoming more homogeneous in earned income with time.

Between 1999/00 and 2000/01 earned income grew at a greater rate among the higher income earners.

5 Income three years after finishing study

Introduction

There are various sources of income data with divisions by highest level of qualification - for instance the New Zealand Income Survey and the Census. But there is nothing published (at least in the New Zealand context) which attempts to control for the time that has elapsed since last studying. As has been seen in the previous chapter, incomes rise markedly as people progress in their careers in the first few years after study. This chapter investigates the total income of student loan borrowers who studied and borrowed in calendar 1997 and did not study again (or borrow) in the following three years. We look at the total income attributable to former borrowers in the tax year 2000/01. As such it represents the greatest duration since study with full educational data that is available in the current integrated dataset.

Population

In the 1997 academic year, 105,038 students borrowed from the Student Loan Scheme.[73] Many went on to study in 1998, 1999 or 2000. Around 8% were not linked in the data matching.

In the integrated dataset there are 27,594 students who last studied and borrowed in 1997.[74] Of these, 2,358 (8.5%) were non-resident in 2000. A further 3,735 (13.5%) are recorded as having zero income in the dataset for 2000/01.

The remainder is the population for analysis in this chapter. It consists of 21,501 former students, of whom 9,423 (43.8%) had completed a qualification in 1997 and 12,078 (56.2%) had not. We analyse the income levels of these groups three years on, that is, in the 2000/01 tax year (year ended 31 March 2001). The not-completed group studied in 1997, did not complete a qualification in that year and did not study (or borrow) in any of the next three years. Those who completed a qualification in 1997 and went on to further study at a higher level (or otherwise) in any of the next three years, did study, and are therefore excluded from this population.

The income measured for this analysis is income from all sources, including that from benefits and investments. It provides a measure of the borrowers' ability to repay loans three years after completion of borrowing. Further details of the statistical measures of income after study are contained in the notes on data and tables at the beginning of this report.

Much of the focus of this analysis classifies borrowers according to the level of qualification they undertake and to whether or not they complete that qualification. The distinction on the basis of completion provides a proxy for differences in prior qualifications or the ability which students bring as they begin study for that qualification. For example, masters students enter their course with an undergraduate degree and it could be expected that their outcomes, should they not complete, will at least reflect their prior achievements.

[73] Source: Student Loan Scheme Annual Report to 30 June 2000 published December 2000.
[74] The integrated dataset has no private training establishment students for 1997.

Distinguishing incomes according to completion or not at each level of study provides us with a measure of the benefit that the qualification confers upon the student. Further, analysis of the characteristics of students who do and do not complete their studies identifies those students who receive those benefits.

Because of confidentiality limitations, it is not possible to provide an analysis at each level of disaggregation.

Of all those who had completed in this population, 58% are female and 42% are male. By contrast, only 45% of those who had not completed are female. The greater incidence of completion amongst female students is consistent with recent Ministry research.[75]

Māori are over-represented in lower-level (certificate) programmes in both groups, and were more likely to have not completed studies than other groups. Māori represented 15.6% of the completed population, but 23.0% of the not-completed group. Pasifika are even more over-represented in the not-completed category, with 3.8% of the completed population, but 7.3% of the not completed.

More than half of students had studied at polytechnics. Polytechnic students were less likely than average to complete qualifications, comprising 54.8% of the completed population, but 63.9% of the not completed group. By contrast, university students were slightly more likely than average to complete, representing 33.7% of the completed group, but only 32.3% of the non-completed group.

About 75% of both groups were under 30. The under 30 group was slightly less likely to complete than those over 30.

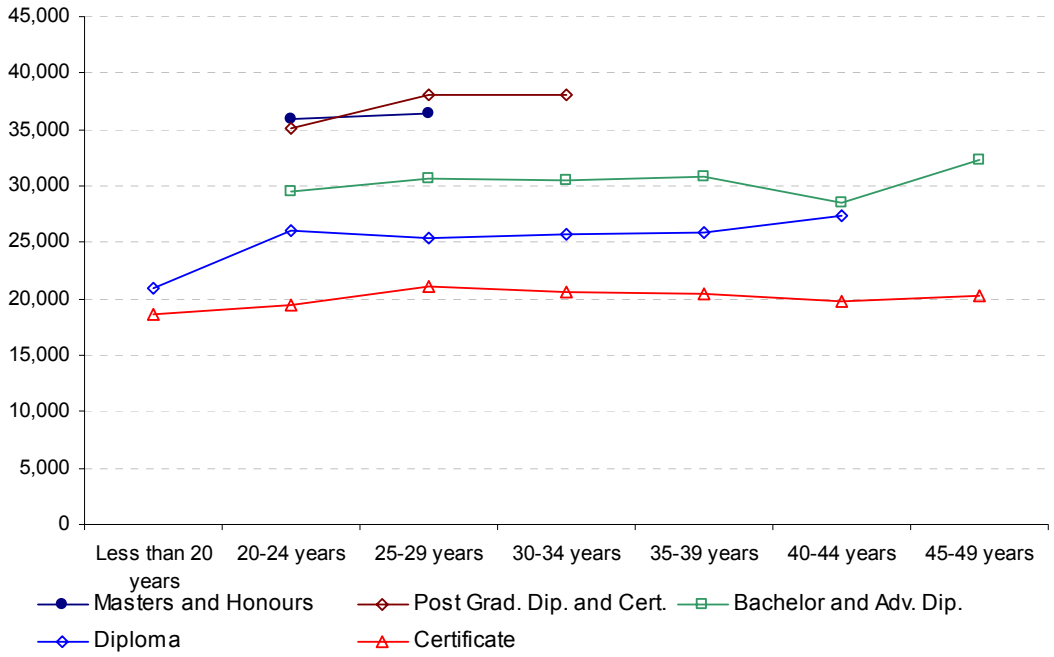
Income Levels

The average total income for the population group in 2000 was $25,240. At this income borrowers would repay $1,047 under the conditions that applied in 2000/01 and would receive a partial write-off of interest should their debt be greater than $8,584.

The total income for this group does not vary greatly by age, with more significant differences emerging according to the qualification category studied, as illustrated in figure 5.1 below. Because of minimum cell size requirements on data used in the analysis, mean income is not available for all qualification-age group categories.

[75] See Ministry of Education (2003) *Retention, Completion and Progression in Tertiary Education 2003*

Figure 5.1: Mean total income in 2000 for all students who last studied and borrowed in 1997 by level of study and age



Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Within each qualification category, further significant differences emerge according to whether borrowers completed their qualification.

Completing students

The mean income[76] in 2000 of completing students who last studied in 1997 was $27,980. This is 89% higher than the repayment threshold of the time[77], requiring a repayment obligation in that year of $1,321. Borrowers with that mean income would have received a partial write-off of their interest should their debt have been greater than $10,830, while they would have reduced their outstanding loan balance provided debt was no more than $18,875.

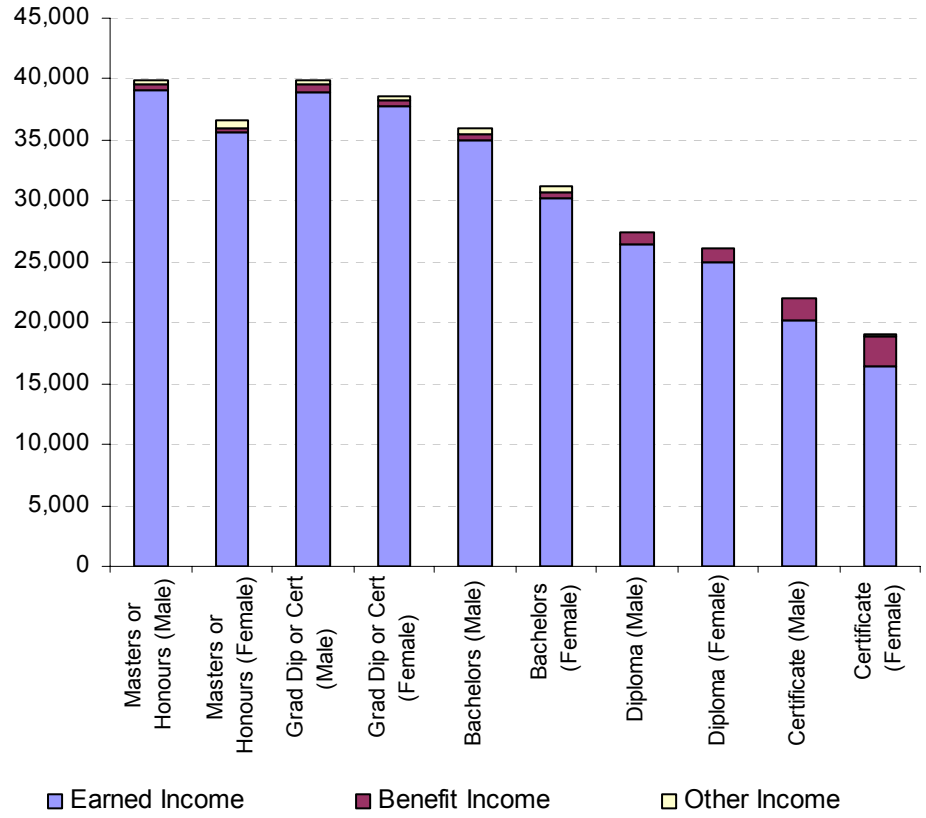
Generally, mean income rose with the level of qualification. Notably, these studying for postgraduate diplomas and certificates received the highest income on average, slightly higher than masters and honours students. These two groups received incomes that were 37% and 40% more than the average for the total group.

Those completing bachelors degrees and advanced diplomas earned 18% above the average, those with diplomas and certificates earned 5% and 27% below the average for the completed group.

The relationship between income and level of qualification is illustrated in figure 5.2.

[76] Income consists of total income for all former borrowers having non-zero total income, that is, borrowers with zero total income are excluded from the analysis.
[77] The repayment threshold for the 2000/01 year was $14,768.

Figure 5.2: Mean total income in 2000 for completed students who last studied and borrowed in 1997 by level of study and gender



Notes:
1. Population excludes those with zero total income.
2. The number of completed doctoral students in this population was too low to permit publication.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

The same pattern of incomes rising with level of qualification was evident for population sub-groups, disaggregated by gender, ethnicity or age. Consistently, postgraduate diplomas and certificates received the highest incomes on average, followed by those completing masters and honours, bachelors, diplomas and certificates. Only in exceptional cases were average incomes higher for a lower level of study in any population sub-group.

Females received 89% of the male income on average, while former university students received 24% above the average, reflecting the bias towards higher level qualifications at universities. Those completing postgraduate diplomas and certificates received incomes 40% above the overall average.

Incomes of Māori borrowers were 90% of the average. This reflects a concentration of Māori amongst lower level qualifications – diploma and certificates. Even within those qualification levels, mean incomes for Māori borrowers were below average for those groups. However, at bachelors/advanced diploma level mean incomes for Māori borrowers were close to average and the same as for European borrowers.

Incomes for Pasifika borrowers followed a similar pattern. They averaged 95% of overall incomes and are over-represented amongst diploma and certificate holders.

However, within each qualification group, incomes for Pasifika borrowers were about average or higher.

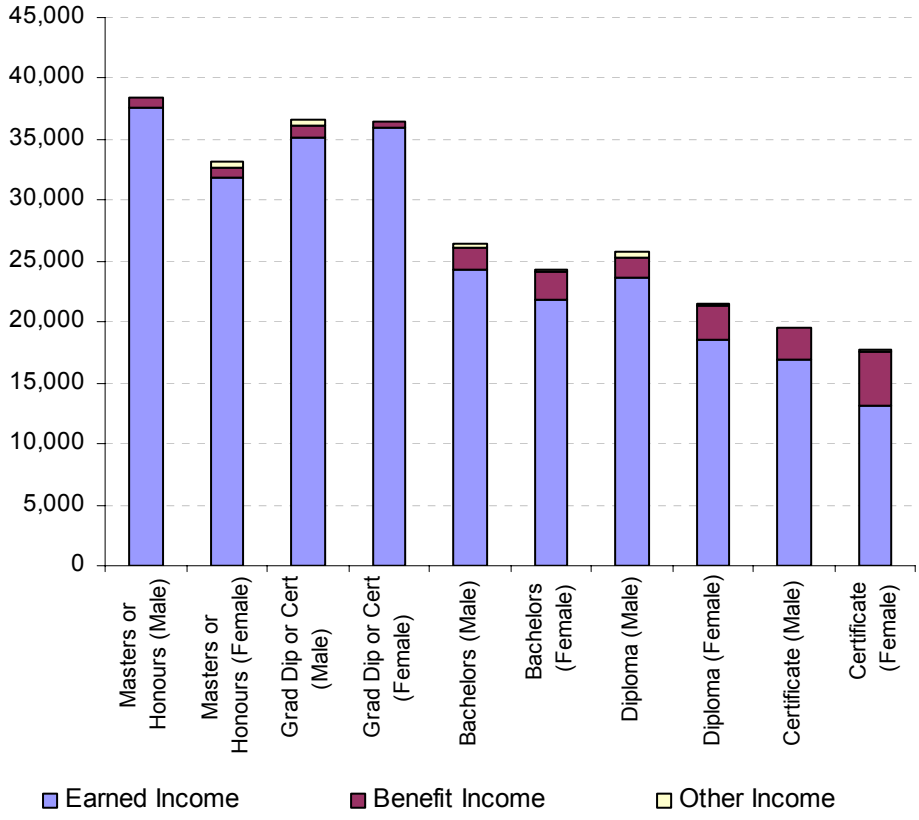
Mean income did not rise markedly with age. For those completing average income was highest for the 45-49 age group, 14.3% above average.

Non-completing students

Average incomes were once again higher for those who had entered a higher level of qualification – see figure 5.3 below. Students not completing masters and honours, and postgraduate diplomas and certificates, were 55% and 58% higher than the average for all students not completing. This reflects the fact that the great majority of them are holders of a bachelors degree. And again, incomes were higher for higher levels of study for each population sub-group.

Average incomes for those not completing also did not vary markedly with age. The highest average incomes were once again recorded for those in the 45-49 age group, 15% above average, as with the completed group, but there was no apparent trend across the age groups

Figure 5.3: Mean total income by level for non-completing students who last studied and borrowed in 1997



Notes:
1. Population excludes those with zero total income.
2. The number of completed doctoral students in this population was too low to permit publication.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

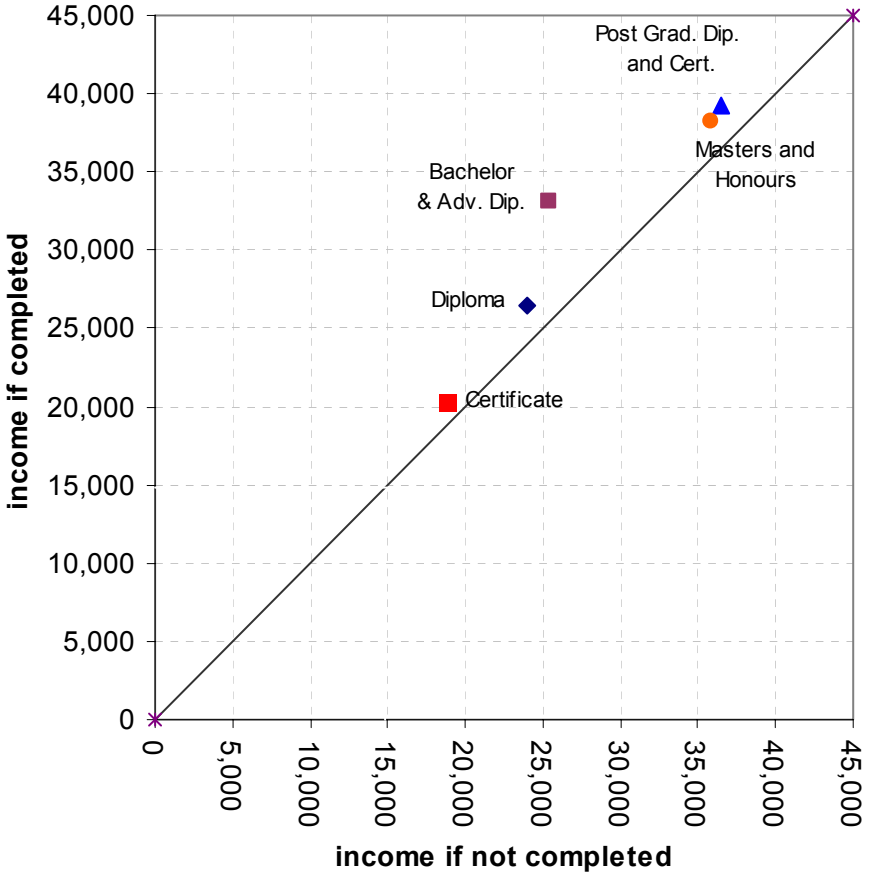
Comparison between completed and non-completing

Overall average incomes for those completing were higher than for those not completing, by 21%. This 'reward' for completion, as measured by the additional income received on average by those who had completed their qualification, compared to students at the same level not completing, ranged from 6.5% for those who completed masters and honours to 30.3% for those who completed bachelors degrees.

Incomes of females were lower than males' incomes for most levels of study. Amongst female completed students, *median* incomes were 96% of male completed students incomes, while amongst non-completed students, the ratio was 87% — implying that completion of a tertiary qualification tends to reduce the disparities between the incomes of men and women. The same result applied at each level of qualification except for those not completing postgraduate diplomas where female median incomes exceeded male incomes by 2.1%

The gains for completion are illustrated in figures 5.4 to 5.7. In each, mean total income (three years after finishing studying and borrowing) is plotted for the completed group against the not-completed group. The vertical distance above the diagonal line represents the margin that a borrower completing a qualification receives over and above that received by a borrower in the not-completed group.

Figure 5.4: Benefits accruing to completion at each qualification level: mean income

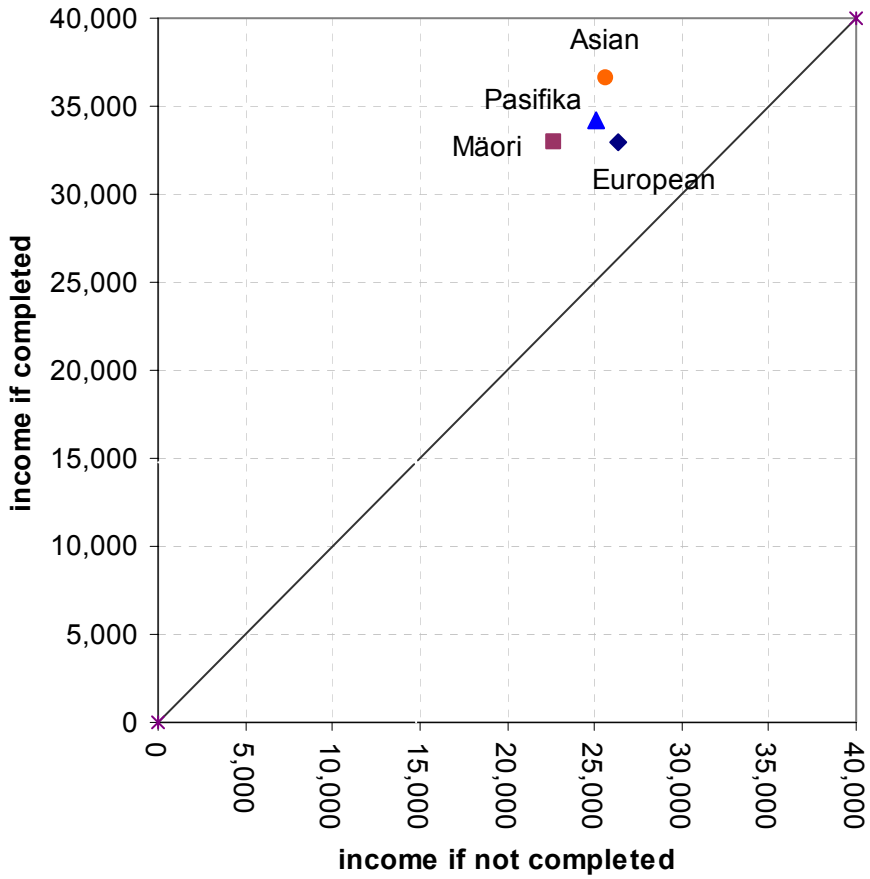


Notes:
1. Population excludes those with zero total income.
2. The number of completed doctoral students in this population was too low to permit publication.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Figure 5.4 illustrates how borrowers benefit from completing at all levels of qualification. The gains are greatest at bachelors/advanced diploma level. Lesser gains, — in the range 7% to 9% — are recorded by graduates with masters/honours, postgraduate diplomas/certificates and certificates.

Figure 5.5: Benefits accruing to completion at the bachelors and advanced diploma level by ethnicity: mean income

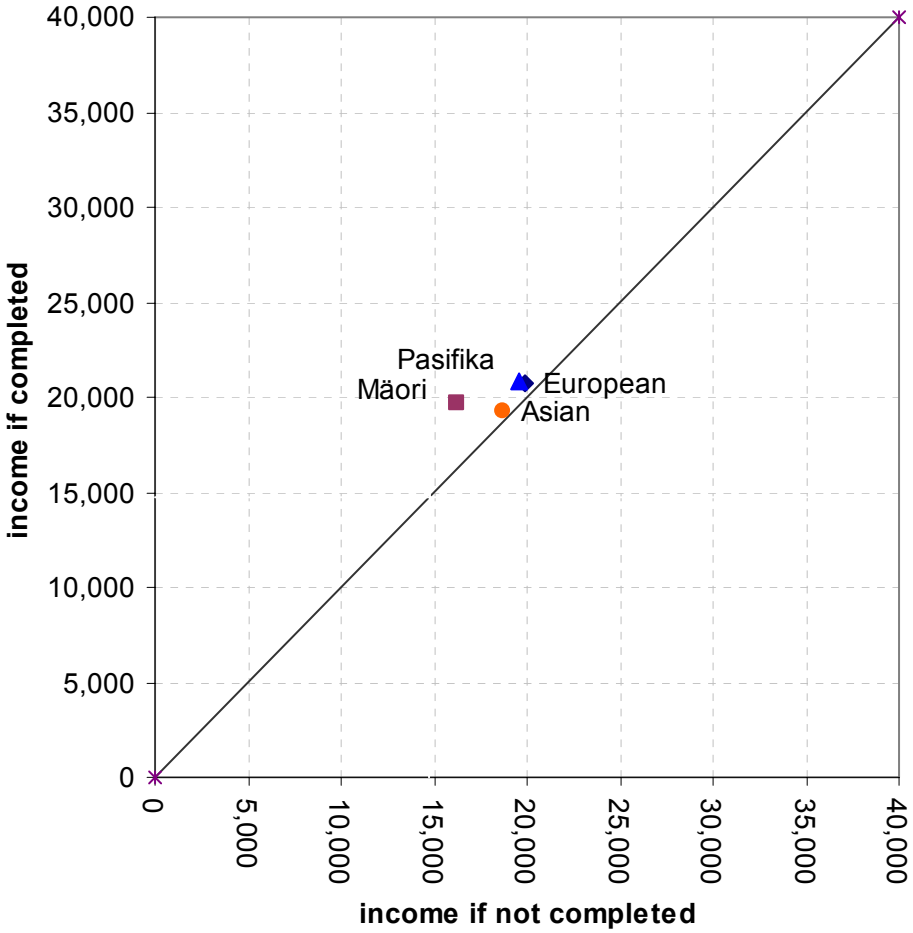


Note: Population excludes those with zero total income.
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Figure 5.5 shows that borrowers in all ethnic groups make significant gains from completing at bachelors and advance diploma level. For Māori and Asian students the gains are greatest ($10,160 and $10,860 on average respectively). Amongst the non-completing groups, the mean income of Māori was the lowest, but Māori mean income was the same as European mean income in the completed population. European incomes were highest on average, though they gain least from completing.

Figure 5.6 shows that there are few income gains on average from completing at the certificate level, as evidenced by the clustering of incomes around the diagonal line. The gain is greatest for Māori, who have the lowest incomes amongst the not-completed group.

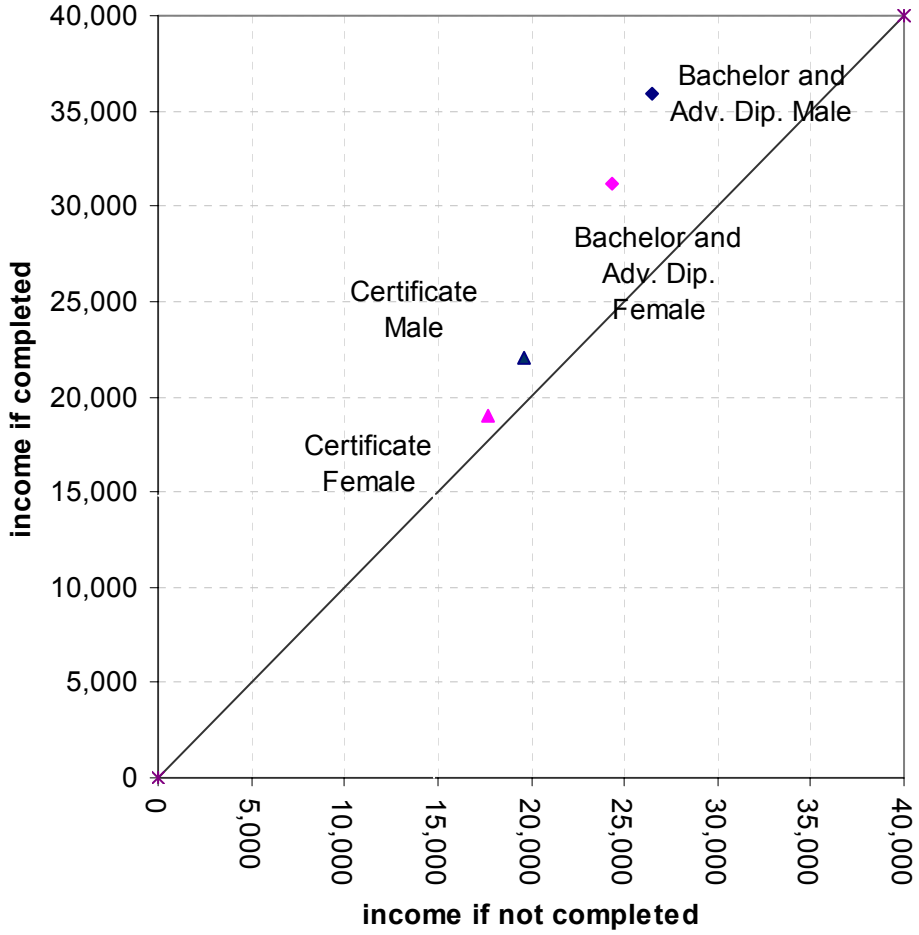
Figure 5.6: Benefits accruing to completion at the certificate level by ethnicity: mean income



Note: Population excludes those with zero total income.
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Figure 5.7 shows how gains at the certificate level are mainly enjoyed by males who have higher average incomes than females at that level. Both males and females, however, enjoy significant gains from completion at the bachelors/advanced diploma level.

Figure 5.7: Benefits accruing to completion by gender for specific levels: mean income



Note: Population excludes those with zero total income.
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Distribution of Income

The pattern observed in the discussion of mean incomes is similar to that which emerges when median incomes are considered.

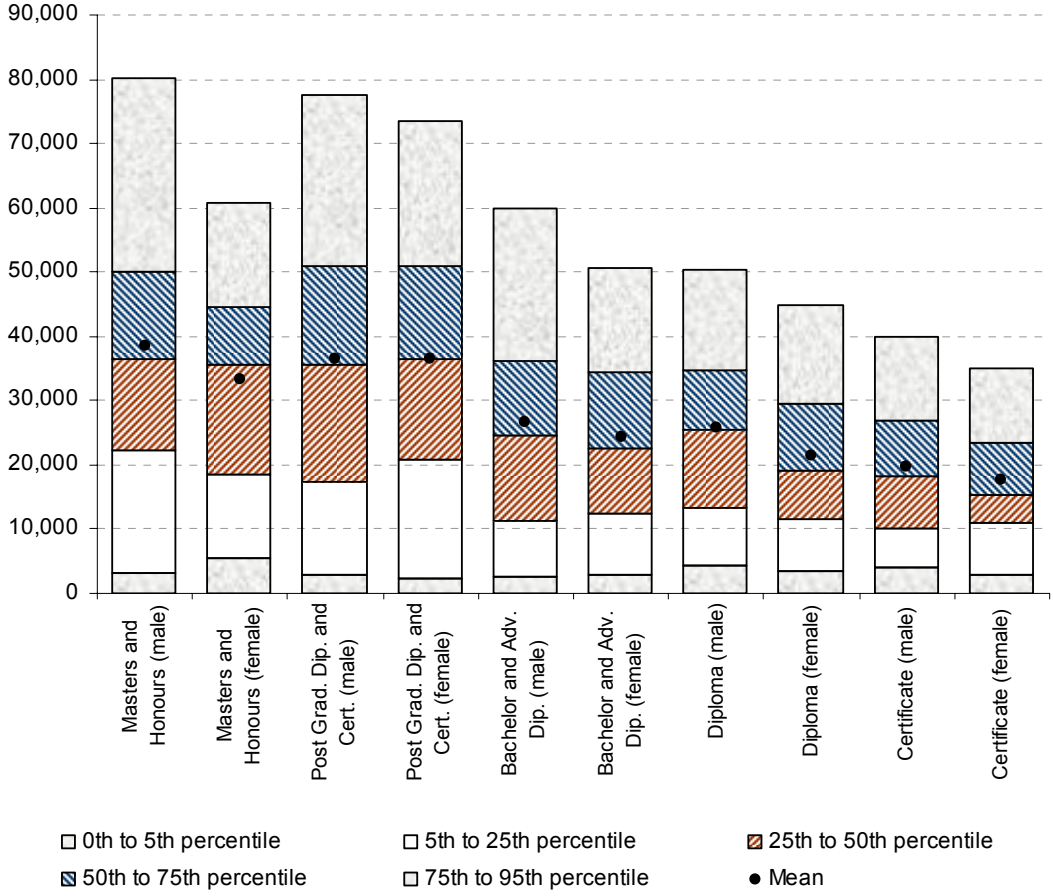
Median incomes for the completed students were 32% greater than for the non-completed group. The median incomes of those completing postgraduate diplomas and bachelors level qualifications were 8% and 48% higher respectively than the corresponding non-completed groups.

Median incomes were slightly (1.8%) lower than mean incomes for the completed group. Medians were lower than means for many sub-groups – including males, polytechnic students and most ethnic groups. The position was reversed though, for females, university students, Asians and those under 30, implying that in those groups, there was a scarcity of individuals with relatively high incomes.

However, median incomes were markedly lower (10.3% overall) than mean incomes amongst the not-completed group. This relativity applied for all population sub-groups. It reflects a somewhat larger concentration of lower incomes amongst the not-completed

group. Figure 5.8 illustrates variations in income distributions for those not completing a qualification.

Figure 5.8: Spread of total income in 2000 for students borrowers who last studied in 1997 but did not complete a qualification in 1997 by level of study



Total income	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Male						
median income	36,510	35,650	24,720	25,610	18,230	*21,980*
P90 / median	1.81	1.83	1.99	1.69	1.88	*1.98*
P10 / median	0.25	0.17	0.23	0.28	0.39	*0.31*
mean income	38,510	36,590	26,490	25,710	19,600	*24,010*
SD / mean	0.72	0.69	0.73	0.62	0.62	*0.72*
Female						
median income	35,580	36,390	22,570	19,230	15,470	*19,060*
P90 / median	1.56	1.74	1.94	1.95	1.97	*2.13*
P10 / median	0.26	0.23	0.27	0.35	0.42	*0.34*
mean income	33,200	36,520	24,300	21,460	17,660	*22,000*
SD / mean	0.54	0.61	0.64	0.62	0.59	*0.67*

Notes:
1. Students did not study again in 1998 through 2000
2. Population excludes those with zero total income
3. See the discussion surrounding figure 1.4 on the interpretation of this type of graph and the 'notes on data and tables' section at the beginning of this report for interpretation of the ratios in the table.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Among the non-completing group, those studying for masters/honours and postgraduate diplomas/certificates received the highest incomes on average. Their incomes are likely to reflect rewards to their prior qualifications and experience. Means and medians were in the $35,000 to $40,000 range, while the 75th percentile was around $50,000, though lower for female masters and honours students. Female incomes were generally less broadly distributed than male – the SD/Mean ratio was 0.54 for females compared with 0.72 for males.[78] Over 5% of male masters and honours students recorded incomes over $80,000.

Average incomes were markedly lower for lower level qualifications that were attempted but not completed. The medians for all groups who studied at bachelors level and below were all under $30,000. The $50,000 mark which is close to the 75th percentile for students not completing more advanced qualifications was approximately the 95th percentile for female bachelors/advanced diploma students and male diploma students. At the lower end of the income spectrum, the 25th percentile for lower level qualifications was close to the $15,000 to $16,000 level, slightly above the repayment threshold for the 2000/01 year of 14,768.

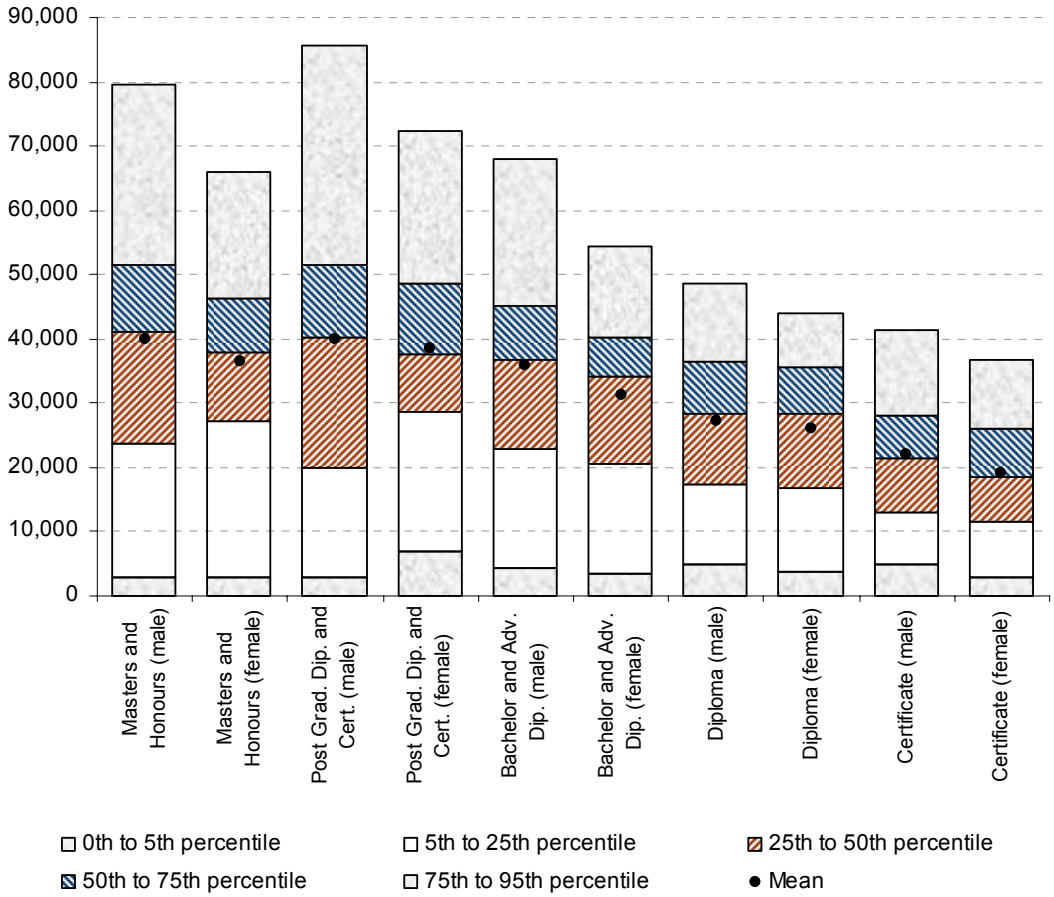
Figure 5.9 illustrates variations in income distributions for those completing a qualification. Compared with those who did not complete, it shows:

- That the spread of incomes among the completed group is narrower.
- That the central measures of income are consistently higher in the completed group.

Mean incomes are below median incomes for completed groups (especially among women) indicating that the above average incomes for those groups are relatively compressed. Higher incomes have started to stand out for males completing postgraduate diplomas/certificates. The income range for females studying masters and honours remains more compressed, both for those completing and not completing, than the ranges for other advanced level qualifications.

[78] The ratio of the 90th percentile to median among men was also significantly higher than for women – 1.81 compared with 1.56. This implies the top 10 percent of men has a significant margin over the majority and that the male/female margin is higher among those with higher qualifications at higher income levels.

Figure 5.9: Spread of total income in 2000 for students who completed a qualification in 1997 by level of study



Total income	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Male						
median income	41,200	40,190	36,780	28,480	21,530	*28,240*
P90 / median	1.64	1.87	1.54	1.56	1.68	*1.79*
P10 / median	0.19	0.16	0.25	0.31	0.37	*0.29*
mean income	39,980	39,940	35,940	27,330	22,000	*29,900*
SD / mean	0.61	0.65	0.57	0.50	0.59	*0.64*
Female						
median income	38,000	37,570	34,210	28,350	18,550	*27,010*
P90 / median	1.51	1.49	1.40	1.36	1.74	*1.63*
P10 / median	0.24	0.40	0.24	0.27	0.30	*0.26*
mean income	36,560	38,610	31,210	26,140	19,040	*26,600*
SD / mean	0.49	0.48	0.50	0.47	0.55	*0.56*

Notes:
1. Students did not study again in 1998 through 2000.
2. Population excludes those with zero total income.
3. See the discussion surrounding figure 1.4 on the interpretation of this type of graph and the 'notes on data and tables' section at the beginning of this report for interpretation of the ratios in the table.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

The distribution of male incomes was consistently above that of females. For example, the range between the 25th and the 75th percentiles for males completing qualifications was $16,350 to $39,750, significantly above the $14,570 to $36,630 range for females. The 25th percentile is above the repayment threshold (at which borrowers are required to make repayments of their loans) for males but not females.

The gap between male and female incomes is most noticeable at the upper extreme for more advanced qualifications. The difference between male and female incomes at the 95th percentile is around $14,000 for those completing bachelors courses and above, and approximately $4,000 to $20,000 for students who did not complete those higher qualifications.

Men tend to predominate in the high income groups; among the completed students around 10% of men have incomes over $50,000 compared with around 5% of women.

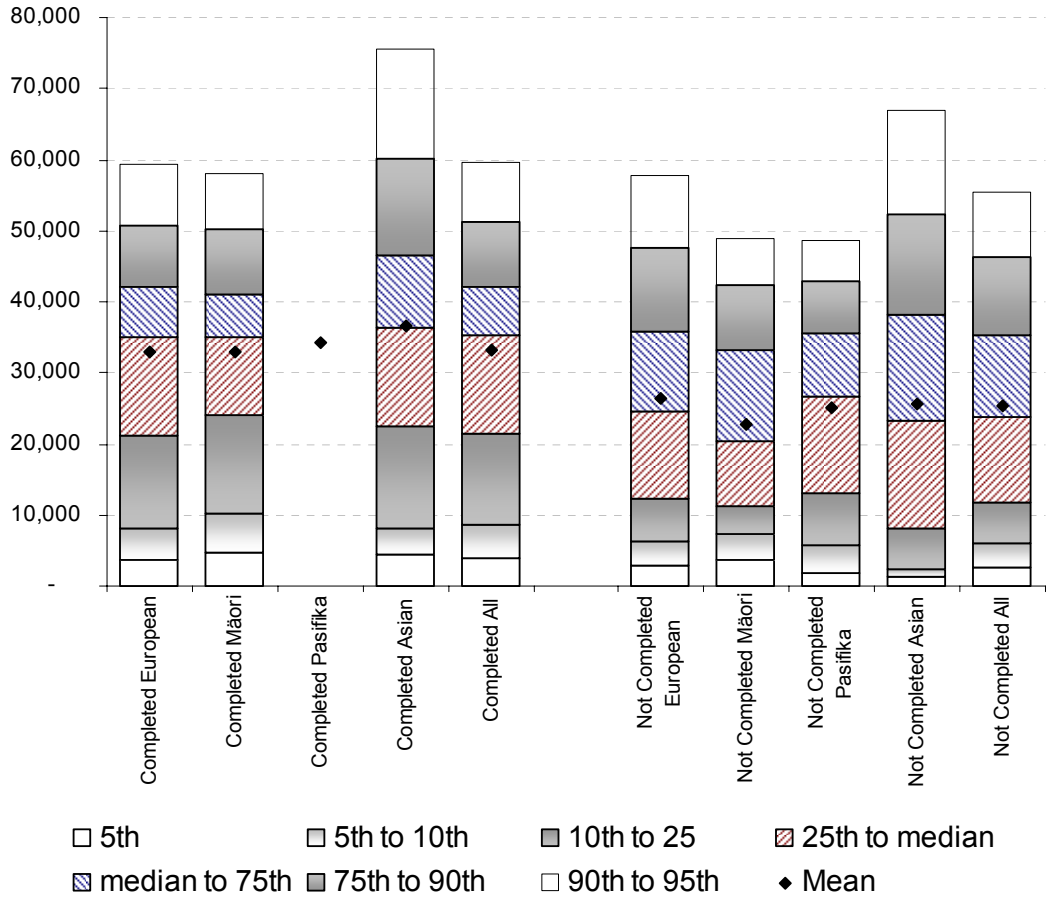
Figure 5.10 illustrates total income spreads for those who studied at the bachelors/advanced diploma level. It is divided into completed/not completed and by ethnic groups.

There was no marked variation around mid-points with similar levels for means and medians for the ethnic sub-groups, though Māori were the lowest (for both measures) among the not-completed and European the lowest (for both measures) among the completed. The distribution of incomes of Asian borrowers was markedly wider than for other groups with both higher and lower extremes.

Analysis by ethnicity of borrower shows that:

- Incomes of Māori borrowers were generally below average irrespective of completion status. This was apparent across all but the lower percentiles. Māori borrowers completing certificate qualifications had median income of 89% of the overall median; amongst the not-completed group this percentage was only 83%. Thus, while completion of a certificate has reduced the disparity between Māori and others, it has not eliminated it. At bachelors/advanced diploma level, Māori borrowers who did not complete also had lower incomes, although the disparity was all but eliminated when one considers those who successfully completed at that level.
- Incomes of Asian students were much more unevenly distributed, with the lower income percentiles lower and the higher percentiles higher.
- Incomes of Pasifika students were 95% of the overall average, both for completed and not completed groups. However, they were slightly above average at the certificate level – both for those completing and for those not completing. This finding reflects the relatively poor income results for Māori undertaking certificate level qualifications, particularly those not completing, which lowers average incomes for those groups.

Figure 5.10: Spread of total income in 2000 for students who last studied and borrowed in 1997 at the bachelor and advanced Diploma level by ethnic group and completion status



Total income	European	Māori	Pasifika	Asian	*All*
Completed					
median income	35,150	34,950		36,450	*35,200*
P90 / median	1.45	1.44		1.65	*1.45*
P10 / median	0.23	0.29		0.22	*0.25*
mean income	32,910	32,910	34,230	36,560	*33,140*
SD / mean	0.55	0.47	0.42	0.61	*0.54*
Not completed					
median income	24,580	20,330	26,600	23,350	*23,730*
P90 / median	1.94	2.08	1.61	2.24	*1.95*
P10 / median	0.25	0.35	0.22	0.10	*0.25*
mean income	26,350	22,750	25,090	25,700	*25,440*
SD / mean	0.70	0.65	0.57	0.78	*0.69*

Notes:
1. Population excludes those with zero total income
2. 'All' includes data from the ethnicities listed above together with 'other' and 'unknown'.
3. Ethnicity is based on single response.
4. The number of completed Pasifika students in this population is too low to permit the publication of percentile measures

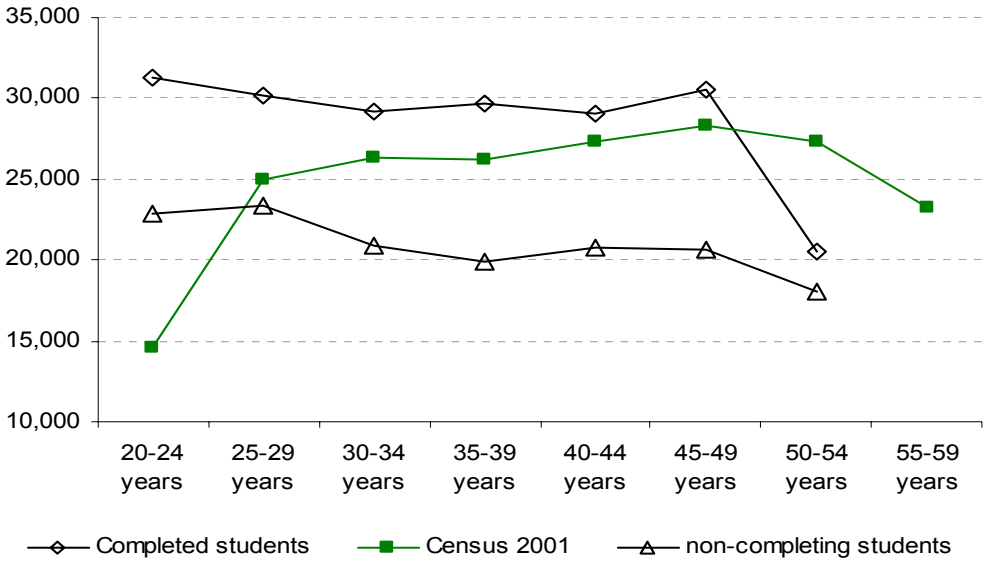
Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers

Comparison with New Zealand wide incomes

Figure 5.11 shows the median total income for completed and non-completing borrowers by age group. As was seen in chapter 3, Starting Salaries, the median income does not vary a great deal by age for students who completed a qualification. Non-completing students who were 30 or older in 1997 have lower median incomes than non-completing students in their 20s.

Figure 5.11 also shows the median total personal income from the 2001 census. This line lies between completed and non-completed, suggesting that students who completed a qualification fare better than the national norm and that those who did not complete a qualification fare worse.

Figure 5.11: Median total income in 2000 for students who last studied and borrowed in 1997 by age group against census 2001: median total personal income [79]



Median total income and median total personal income (census 2001)	Completed students	Census 2001	Non-completing students
20-24 years	31,340	14,600	22,820
25-29 years	30,230	25,000	23,400
30-34 years	29,140	26,300	20,850
35-39 years	29,620	26,200	19,960
40-44 years	29,100	27,300	20,750
45-49 years	30,510	28,300	20,610
50-54 years	20,530	27,300	18,050
55-59 years		23,300	

Notes:
1. The ISLDS data excludes those with zero total income.
2. The median incomes from census 2001 are for total personal income for the census usually resident population count.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers. 2001 Census: Incomes (2001) - Reference Reports Table 8, Statistics New Zealand.

79 Age groups are not strictly comparable, as in this study the age group is defined as age at 1 July of the last year of study. Thus 25-29 years really refers to 28-32 year olds mid-year.

Income by Field of Study

Analysis by field of study[80] shows marked differences between outcomes for students from different fields of study.

Completion rates vary from 33% for Mixed Field Programmes to 72% for Education and 74% for Health.

Mean incomes are highest for Health and Engineering and Related Technologies, whether one considers the completed or not completed group. Mean incomes for Health students are 22% to 26% above average for completed and non-completed groups; for Engineering and Related Technologies the margin is 32% to 33%. Higher incomes recorded in these fields of study reflect a relatively higher incidence of study at degree level. By contrast, Mixed Field Programmes have a higher incidence of study at lower levels – especially at the certificate level.

Amongst all fields of study, mean incomes were higher for the completed group, except for Mixed Field Programmes, where they were only 94% of the not-completed group. The margin for completion was greatest for Management and Commerce and Agriculture, Environmental and Related Studies where a margin of 33% applied. In the latter case, the margin reflects rather low average incomes for the not-completed group.

Key statistics on the distribution of incomes by field of study are detailed in figure 5.13.

[80] See definitions section under 'Notes on Data and Tables' at the beginning of this report.

Figure 5.13: Median and percentile ratios of total income in 2000 for former students who last studied in 1997 by field of study and completion status

Student Loan Borrowers who completed a qualification in their last year of study (1997)	Median total income	(rank)	P90/P50	(rank)	P10/P50	(rank)
Health	35,680	2	1.58	8	0.28	5
Engineering and Related Technologies	39,920	1	1.42	11	0.24	10
Education	34,700	3	1.26	12	0.32	4
Architecture and Building	29,480	6	1.57	9	0.17	12
Natural and Physical Sciences	30,800	5	1.62	7	0.17	11
Management and Commerce	31,610	4	1.79	5	0.27	8
Information Technology	28,600	7	1.92	2	0.28	7
Society and Culture	23,590	9	1.85	4	0.28	6
Agriculture, Environmental & Related Studies	23,860	8	1.87	3	0.32	3
Creative Arts	22,080	10	1.70	6	0.33	2
Food, Hospitality and Personal Services	20,810	11	1.57	10	0.34	1
Mixed Field Programmes	14,350	12	2.91	1	0.24	9
All completed	27,470		1.70		0.28	

Student Loan Borrowers who did not complete a qualification in their last year of study (1997)	Median total income	(rank)	P90/P50	(rank)	P10/P50	(rank)
Health	24,980	3	1.91	7	0.36	3
Engineering and Related Technologies	30,110	1	1.72	11	0.27	11
Education	22,600	7	1.86	10	0.27	10
Architecture and Building	25,460	2	1.65	12	0.32	7
Natural and Physical Sciences	24,810	4	1.94	6	0.24	12
Management and Commerce	22,610	6	2.01	5	0.30	9
Information Technology	23,220	5	2.07	3	0.31	8
Society and Culture	20,240	8	2.18	2	0.32	5
Agriculture, Environmental & Related Studies	16,550	11	2.02	4	0.43	1
Creative Arts	18,540	9	1.86	9	0.35	4
Food, Hospitality and Personal Services	17,110	10	1.89	8	0.40	2
Mixed Field Programmes	15,320	12	2.69	1	0.32	6
All non-completing	20,740		2.04		0.32	

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.11 in the appendix shows the same table for earned income for comparison against figure 3.9.

Conclusions

Three years after completion of study, incomes, measured in this case by total income, vary strongly by the level of qualification attained or attempted. The completion status of the borrower also has a marked effect. There is little difference evident on account of age after controlling for the level of qualification.

Benefits from completion appear greatest at the bachelors/advanced diploma level, and are lowest for certificate level qualifications.

Incomes of Māori borrowers are below average, through a combination of a relative concentration in lower level certificate qualifications, lower completion rates and incomes levels that are well below average in the group not completing certificate level qualifications.

Incomes of Pasifika students, overall about 95% on average, reflect a higher proportion of certificate level courses and completion rates that are below average. However, within groups of qualification levels and completion status, Pasifika incomes are about average.

Incomes of female borrowers are on average, around 10% lower than males' incomes, both among those who complete and those who did not complete. An analysis of the income distributions of incomes by qualification levels and completion status shows that the average margin is greatest at the diploma level, though at masters/honours level, there is a marked difference in the highest levels of income.

TABLES

Figure 6.1: Number and percentage of full-time students who borrowed in 2000 who were resident for tax purposes and had non zero total income in 2001 tax year and were successfully matched in the data integration by gender, ethnic group, provider type, age and level of study

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	Sum
Number of Students	**528**	**4,044**	**1,611**	**49,716**	**12,954**	**22,650**	**91,503**
Male	312	2,208	774	21,576	5,697	10,839	41,406
Female	216	1,836	837	28,140	7,257	11,811	50,097
							91,503
European	324	2,943	948	33,558	7,296	11,187	56,256
Māori	36	372	153	6,549	3,276	6,765	17,151
Pasifika	12	102	81	2,415	1,137	2,193	5,940
Asian	87	405	360	5,076	774	1,695	8,397
Other	66	207	63	1,932	411	744	3,423
Unknown	3	15	3	192	63	69	345
							91,512
University	528	3,918	1,434	38,514	2,022	1,947	48,363
Polytechnic		51	6	7,344	6,474	14,220	28,095
College of Education		3	24	3,264	753	111	4,155
Wānanga		57		255	756	633	1,701
Private Training Establishment		18	144	336	2,952	5,736	9,186
							91,500
Less than 20 years	3	414	6	13,452	3,621	8,796	26,292
20-24 years	69	2,157	684	23,343	3,972	5,133	35,358
25-29 years	147	528	315	5,271	1,647	2,775	10,683
30-34 years	111	333	237	2,883	1,212	1,953	6,729
35-39 years	81	255	183	2,181	1,011	1,764	5,475
40-44 years	57	150	81	1,407	708	1,017	3,420
45-49 years	30	108	63	762	444	654	2,061
50-54 years	18	54	27	288	210	321	918
55-59 years	6	27	9	81	90	135	348
60 and over	6	12	3	51	42	105	219
							91,503

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	Sum
percentage of population studying at a given level							
Male	59.1%	54.6%	48.0%	43.4%	44.0%	47.9%	45.3%
Female	40.9%	45.4%	52.0%	56.6%	56.0%	52.1%	54.7%
European	61.4%	72.8%	58.8%	67.5%	56.3%	49.4%	61.5%
Māori	6.8%	9.2%	9.5%	13.2%	25.3%	29.9%	18.7%
Pasifika	2.3%	2.5%	5.0%	4.9%	8.8%	9.7%	6.5%
Asian	16.5%	10.0%	22.3%	10.2%	6.0%	7.5%	9.2%
Other	12.5%	5.1%	3.9%	3.9%	3.2%	3.3%	3.7%
Unknown	0.6%	0.4%	0.2%	0.4%	0.5%	0.3%	0.4%
University	100.0%	96.9%	89.0%	77.5%	15.6%	8.6%	52.9%
Polytechnic		1.3%	0.4%	14.8%	50.0%	62.8%	30.7%
College of Education		0.1%	1.5%	6.6%	5.8%	0.5%	4.5%
Wānanga		1.4%		0.5%	5.8%	2.8%	1.9%
Private Training Establishment		0.4%	8.9%	0.7%	22.8%	25.3%	10.0%
Less than 20 years	0.6%	10.2%	0.4%	27.1%	28.0%	38.8%	28.7%
20-24 years	13.1%	53.3%	42.5%	47.0%	30.7%	22.7%	38.6%
25-29 years	27.8%	13.1%	19.6%	10.6%	12.7%	12.3%	11.7%
30-34 years	21.0%	8.2%	14.7%	5.8%	9.4%	8.6%	7.4%
35-39 years	15.3%	6.3%	11.4%	4.4%	7.8%	7.8%	6.0%
40-44 years	10.8%	3.7%	5.0%	2.8%	5.5%	4.5%	3.7%
45-49 years	5.7%	2.7%	3.9%	1.5%	3.4%	2.9%	2.3%
50-54 years	3.4%	1.3%	1.7%	0.6%	1.6%	1.4%	1.0%
55-59 years	1.1%	0.7%	0.6%	0.2%	0.7%	0.6%	0.4%
60 and over	1.1%	0.3%	0.2%	0.1%	0.3%	0.5%	0.2%
percentage of total population	0.6%	**4.4%**	**1.8%**	**54.3%**	**14.2%**	**24.8%**	**100.0%**

Notes:
1. Ethnicity is based on single response.
2. Counts have been randomly rounded to base 3.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.2: Number and percentage of population of part-time students who borrowed in 2000 who were resident for tax purposes and had non zero total income in 2001 tax year and were successfully matched in the data integration by gender, ethnic group, provider type, age and level of study

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	Sum
Number of Students	**129**	**1,068**	**957**	**7,557**	**3,624**	**4,770**	**18,105**
Male	75	438	420	2,706	1,452	2,040	7,131
Female	54	630	537	4,851	2,172	2,730	10,974
							18,105
European	93	660	564	4,731	2,151	2,433	10,632
Māori	18	141	102	1,350	732	1,263	3,606
Pasifika	3	54	30	453	276	621	1,437
Asian	12	123	210	678	267	258	1,548
Other	6	75	54	291	162	144	732
Unknown		9	3	54	33	48	147
							18,102
University	132	1,020	927	5,313	483	237	8,112
Polytechnic		18	18	1,605	1,839	2,307	5,787
College of Education		9	3	483	231	27	753
Wānanga		9		30	27	42	108
Private Training Establishment		12	15	126	1,047	2,157	3,357
							18,117

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	Sum
Less than 20 years	3	6	6	516	396	987	1,914
20-24 years	6	195	168	2,718	978	1,302	5,367
25-29 years	42	219	177	1,368	681	834	3,321
30-34 years	36	183	198	963	507	555	2,442
35-39 years	15	147	180	801	384	480	2,007
40-44 years	6	156	99	543	330	285	1,419
45-49 years	12	90	72	348	195	171	888
50-54 years	6	45	36	186	99	90	462
55-59 years	3	12	9	66	36	27	153
60 and over	3	12	12	42	15	33	117
							18,090
percentage of population studying at a given level							
Male	58.1%	41.0%	43.9%	35.8%	40.1%	42.8%	39.4%
Female	41.9%	59.0%	56.1%	64.2%	59.9%	57.2%	60.6%
European	72.1%	61.8%	58.9%	62.6%	59.4%	51.0%	58.7%
Māori	14.0%	13.2%	10.7%	17.9%	20.2%	26.5%	19.9%
Pasifika	2.3%	5.1%	3.1%	6.0%	7.6%	13.0%	7.9%
Asian	9.3%	11.5%	21.9%	9.0%	7.4%	5.4%	8.6%
Other	4.7%	7.0%	5.6%	3.9%	4.5%	3.0%	4.0%
Unknown		0.8%	0.3%	0.7%	0.9%	1.0%	0.8%
University	102.3%	95.5%	96.9%	70.3%	13.3%	5.0%	44.8%
Polytechnic		1.7%	1.9%	21.2%	50.7%	48.4%	32.0%
College of Education		0.8%	0.3%	6.4%	6.4%	0.6%	4.2%
Wānanga		0.8%		0.4%	0.7%	0.9%	0.6%
Private Training Establishment		1.1%	1.6%	1.7%	28.9%	45.2%	18.5%
Less than 20 years	2.3%	0.6%	0.6%	6.8%	10.9%	20.7%	10.6%
20-24 years	4.7%	18.3%	17.6%	36.0%	27.0%	27.3%	29.6%
25-29 years	32.6%	20.5%	18.5%	18.1%	18.8%	17.5%	18.3%
30-34 years	27.9%	17.1%	20.7%	12.7%	14.0%	11.6%	13.5%
35-39 years	11.6%	13.8%	18.8%	10.6%	10.6%	10.1%	11.1%
40-44 years	4.7%	14.6%	10.3%	7.2%	9.1%	6.0%	7.8%
45-49 years	9.3%	8.4%	7.5%	4.6%	5.4%	3.6%	4.9%
50-54 years	4.7%	4.2%	3.8%	2.5%	2.7%	1.9%	2.6%
55-59 years	2.3%	1.1%	0.9%	0.9%	1.0%	0.6%	0.8%
60 and over	2.3%	1.1%	1.3%	0.6%	0.4%	0.7%	0.6%
Percentage of total population	0.7%	**5.9%**	**5.3%**	**41.7%**	**20.0%**	**26.3%**	**100.0%**

Notes:
1. Ethnicity is based on single response.
2. Counts have been randomly rounded to base 3.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.3: Total income spread for full-time students in 2000 by level of study and gender

	Doctorate	Masters and Honours	Post-grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	All levels
Male 95th percentile	33,170	29,290	34,410	22,460	22,730	23,330	*23,390*
Male 75th percentile	16,580	14,370	17,950	13,220	14,130	13,530	*13,580*
Male Median	9,740	9,190	11,680	8,680	9,300	9,080	*8,920*
Male 25th percentile	4,540	5,700	7,430	5,280	6,070	5,680	*5,520*
Male 5th percentile	970	1,520	2,080	1,400	1,750	1,590	*1,490*
Female 95th percentile	42,230	31,130	33,630	21,690	22,920	21,010	*22,350*
Female 75th percentile	18,060	15,560	19,530	13,650	14,570	14,110	*14,110*
Female Median	11,360	10,380	13,060	9,220	10,490	9,540	*9,540*
Female 25th percentile	5,580	6,120	7,660	5,640	6,400	5,680	*5,800*
Female 5th percentile	930	1,730	1,630	1,720	1,770	1,560	*1,680*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.4: Total income percentiles for full-time student loan borrowers studying in 2000 at diploma level by ethnic group

	European	Māori	Pasifika	Asian	*All*
95th percentile	22,460	24,620	23,470	20,850	*22,870*
75th percentile	14,300	14,660	14,570	12,980	*14,510*
Median	9,780	11,280	8,960	8,020	*9,910*
25th percentile	6,200	7,400	5,170	4,930	*6,260*
5^{th} percentile	1,790	2,210	1,280	1,130	*1,750*
Number of borrowers	7,296	3,276	1,137	774	*12,954*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.5: Total income percentiles for full-time student loan borrowers studying in 2000 at certificate level by ethnic group

	European	Māori	Pasifika	Asian	*All*
95th percentile	22,150	22,260	22,890	21,020	*22,160*
75th percentile	13,770	14,250	13,670	12,850	*13,840*
Median	9,210	9,980	8,910	8,150	*9,320*
25th percentile	5,540	6,440	5,300	4,470	*5,680*
5th percentile	1,620	1,870	1,250	940	*1,570*
Number of borrowers	11,187	6,765	2,193	1,695	*22,653*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.6: Mean total income of full-time borrowers in 2000 by age and level of study

	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Less than 20 years		7,420		7,520	7,740	7,410	*7,510*
20-24 years	7,190	10,040	13,080	9,740	10,200	10,460	*9,980*
25-29 years	11,540	14,870	16,180	13,250	13,190	13,280	*13,390*
30-34 years	12,930	15,110	14,080	13,700	13,640	13,410	*13,680*
35-39 years	14,850	15,020	15,190	13,820	13,760	13,490	*13,820*
40-44 years	18,330	19,030	20,480	14,130	14,380	13,610	*14,460*
45-49 years		19,210	16,490	13,650	13,810	13,640	*14,120*
50-54 years		16,740		14,710	13,050	13,040	*14,170*
55-59 years				11,340	12,970	10,170	*11,870*
60 and over				14,820		7,760	*10,990*
All	13,290	11,880	14,640	10,140	10,920	10,360	*10,480*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.7: Median total income of full-time borrowers in 2000 by age and level of study

	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Less than 20 years		6,170		6,750	7,090	6,720	*6,780*
20-24 years		8,780	11,410	8,600	9,110	9,500	*8,830*
25-29 years	9,030	12,510	13,920	12,600	12,980	12,660	*12,650*
30-34 years	10,740	13,120	12,020	13,290	13,290	13,120	*13,260*
35-39 years		12,770	12,670	13,300	13,470	13,110	*13,290*
40-44 years		15,160		13,500	13,780	13,160	*13,350*
45-49 years		14,530		12,820	13,050	12,720	*13,010*
50-54 years				11,770	11,860	11,510	*11,690*
55-59 years						9,480	*10,090*
60 and over						6,560	*9,470*
All	10,370	9,640	12,410	8,920	9,910	9,320	*9,230*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.8: Income spread of part-time student borrowers in 2000 by level of study and gender

	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
Male 95th percentile		75,130	56,600	42,090	42,660	35,540
Male 75th percentile		41,390	35,410	23,230	25,200	21,110
Male Median		20,660	18,280	13,500	14,600	12,420
Male 25th percentile		9,820	9,090	8,340	8,640	7,910
Male 5th percentile		2,780	2,320	2,410	2,690	2,410
Female 95th percentile		58,900	54,480	38,760	35,380	30,970
Female 75th percentile		38,420	35,670	21,660	21,430	17,720
Female Median		23,910	20,710	13,900	14,300	13,090
Female 25th percentile		13,290	10,610	8,240	9,090	7,930
Female 5th percentile		3,890	2,830	2,120	2,190	2,300

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.9: Total income medians of part-time student borrowers in 2000 by ethnicity and level of study

	Doctorate	Masters and Honours	Grad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate
European Median		23,610	23,760	14,060	14,650	13,460
Māori Median		34,030	27,960	14,570	14,330	12,900
Pasifika Median				14,050	14,650	11,840
Asian Median		11,490	9,760	9,110	11,380	8,150
Median	26,420	22,880	19,150	13,760	14,430	12,820
As a proportion of the average at given level						
European Median		103.2%	124.1%	102.2%	101.5%	105.0%
Māori Median		148.7%	146.0%	105.9%	99.3%	100.6%
Pasifika Median				102.1%	101.5%	92.4%
Asian Median		50.2%	51.0%	66.2%	78.9%	63.6%
All	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.10: Mean total income of part-time borrowers in 2000 by age and level of study

	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Less than 20 years				9,720	11,610	9,560	*10,020*
20-24 years		17,050	19,070	14,160	15,450	14,600	*14,760*
25-29 years		25,400	28,590	18,480	19,040	17,110	*19,350*
30-34 years		28,960	23,730	17,600	17,600	16,760	*18,880*
35-39 years		30,410	23,850	18,890	18,430	16,230	*19,540*
40-44 years		32,400	25,490	21,490	18,880	16,460	*21,400*
45-49 years		38,490	28,080	20,600	19,420	16,280	*22,170*
50-54 years				19,590	16,220	15,740	*19,900*
55-59 years				18,020			*17,670*
60 and over							*13,150*
All	27,350	27,730	23,850	16,570	16,860	14,560	*17,220*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.11: Median total income of part-time borrowers in 2000 by age and level of study

	Doctorate	Masters and Honours	Postgrad. Dip. and Cert.	Bachelor and Adv. Dip.	Diploma	Certificate	*All*
Less than 20 years				8,330	10,620	8,250	*8,640*
20-24 years		14,800	17,170	12,690	13,710	13,290	*13,290*
25-29 years		24,120	27,420	14,940	16,900	14,530	*15,610*
30-34 years		23,660	18,540	14,500	14,690	14,530	*14,640*
35-39 years		24,090	17,160	15,140	14,570	13,790	*14,700*
40-44 years		28,510	18,950	16,530	14,760	14,570	*16,050*
45-49 years				15,840	15,870	14,220	*16,390*
50-54 years				13,950			*14,270*
55-59 years							*12,890*
60 and over							*10,680*
All							*14,270*

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.12: Likelihood of being tax resident by full years out of study and selected provider types

At the end of the tax yr after study	University	Polytechnic	College of Education	All
Former students who completed				
+0	96.6%	99.1%	98.8%	98.0%
+1	91.5%	97.3%	96.3%	94.8%
+2	87.6%	95.3%	93.4%	92.1%
+3	83.6%	93.8%	90.8%	89.5%
Former students who did not complete				
+0	97.5%	98.9%	98.1%	98.4%
+1	94.3%	97.6%	96.2%	96.3%
+2	91.9%	96.3%	93.6%	94.7%
+3	90.4%	95.2%	91.7%	93.4%
All former students				
+0	97.2%	99.0%	98.5%	98.2%
+1	93.1%	97.5%	96.2%	95.7%
+2	90.0%	95.9%	93.4%	93.6%
+3	87.3%	94.7%	90.9%	91.7%

Notes:
1. The table has been prepared using data from three cohorts of tertiary leavers (last studied and borrowed in 1997 though 1999) and their tax-residency status from 1997/98 though 2000/01. Thus the table does not represent the actual experience of any one cohort of student loan borrowers.
2. Tabled are the proportion of students expected to be tax resident on 31 March of the first year following study (+0), second year following study (+1) etc.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.13: Net rates of becoming non-resident by years out of study and selected provider types

In tax yr after study	University	Polytechnic	College of Education	All
Former students who completed				
+0	3.4%	0.9%	1.2%	2.0%
+1	5.3%	1.9%	2.5%	3.3%
+2	4.3%	2.0%	3.0%	2.9%
+3	4.5%	1.6%	2.7%	2.8%
Former students who did not complete				
+0	2.5%	1.1%	1.9%	1.6%
+1	3.3%	1.3%	1.9%	2.1%
+2	2.5%	1.3%	2.8%	1.7%
+3	1.7%	1.1%	1.9%	1.3%
All former students				
+0	2.8%	1.0%	1.5%	1.8%
+1	4.2%	1.6%	2.3%	2.6%
+2	3.3%	1.5%	2.9%	2.2%
+3	3.0%	1.3%	2.7%	2.0%

Notes:
1. The table has been prepared using data from three cohorts of tertiary leavers (last studied and borrowed in 1997 though 1999) and their tax-residency status from 1997/98 though 2000/01. Thus the table does not represent the actual experience of any one cohort of student loan borrowers.
2. Tabled are rates of departure, net of returnees. +0 indicates that the rate tabled applies to the year ending 31 March of the first year following study, (+1) indicates that applying over the subsequent year, etc.
3. Rates apply to those that are tax resident in the preceding year.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.14: Compound growth in mean earned income adjusted for salary inflation for non-beneficiaries with persistent earned income by completion status and selected levels of study

	growth from the first to the second year	growth from the second to the third	growth from first to third
Completed students			
Masters and Honours	13%	7%	21%
Bachelor and Adv. Dip.	8%	1%	9%
Certificate	4%	2%	7%
Non-completing students			
Masters and Honours	7%	2%	9%
Bachelor and Adv. Dip.	7%	2%	10%
Certificate	7%	5%	12%

Notes
1. Growth from the first to the second year is from the experience of the 'last studied and borrowed in 1998' population between 1999/00 and 2000/01. Growth from the second to the third year is from the 'last studied and borrowed in 1997' population between the same two tax years.
2. The third column is the compound growth implied by the first two columns.
3. Growth rates have had 3%pa subtracted for salary inflation.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.15: Decile transitions one to two and two to three years following study for completed and non-completing former student loan borrowers who have remained in work and not received a benefit (1998 cohort and 1997 cohort between 1999/00 and 2000/01)

1998 cohort – non-completing: decile of earned income 1999, first year

decile in 2000 - second year	1	2	3	4	5	6	7	8	9	10
1	48%	16%	7%	7%	7%	4%	3%	2%	3%	2%
2	22%	35%	13%	9%	5%	5%	4%	2%	2%	2%
3	8%	22%	33%	17%	7%	4%	3%	1%	1%	2%
4	7%	10%	23%	28%	19%	6%	4%	1%	1%	1%
5	4%	6%	12%	20%	25%	21%	7%	4%	1%	1%
6	4%	4%	5%	10%	19%	26%	21%	7%	2%	2%
7	2%	2%	4%	5%	10%	19%	26%	24%	7%	1%
8	2%	2%	1%	3%	5%	10%	20%	32%	21%	3%
9	2%	1%	1%	2%	3%	3%	9%	20%	43%	17%
10	1%	1%	1%	0%	0%	1%	2%	7%	18%	69%

1998 cohort – completed: decile of earned income 1999, first year

decile in 2000 - second year	1	2	3	4	5	6	7	8	9	10
1	49%	16%	8%	7%	6%	4%	3%	3%	3%	3%
2	26%	39%	16%	5%	4%	3%	1%	3%	3%	2%
3	6%	27%	35%	16%	6%	4%	2%	2%	1%	1%
4	7%	7%	22%	34%	18%	5%	2%	2%	2%	2%
5	4%	5%	10%	19%	29%	15%	9%	5%	3%	2%
6	2%	3%	4%	8%	16%	24%	31%	8%	4%	2%
7	2%	2%	2%	6%	9%	16%	27%	28%	7%	1%
8	2%	2%	2%	3%	6%	16%	16%	29%	21%	4%
9	1%	1%	1%	2%	5%	11%	8%	16%	39%	17%
10	1%	1%	0%	1%	3%	2%	3%	5%	19%	68%

1997 cohort – non-completing: decile of earned income 1999, second year

decile in 2000 - third year	1	2	3	4	5	6	7	8	9	10
1	50%	11%	6%	6%	5%	6%	4%	4%	3%	3%
2	21%	37%	15%	8%	5%	5%	3%	2%	2%	3%
3	9%	29%	35%	12%	5%	3%	3%	1%	1%	1%
4	7%	11%	25%	32%	14%	5%	2%	3%	2%	1%
5	5%	4%	10%	23%	32%	16%	6%	3%	1%	1%
6	2%	3%	5%	12%	23%	28%	17%	7%	3%	1%
7	3%	2%	1%	3%	11%	23%	31%	19%	6%	3%
8	1%	1%	1%	2%	4%	10%	22%	34%	21%	4%
9	1%	1%	1%	2%	2%	3%	9%	20%	45%	15%
10	1%	1%	1%	1%	1%	1%	3%	7%	16%	69%

1997 cohort – completed: decile of earned income 1999, second year

decile in 2000 - third year	1	2	3	4	5	6	7	8	9	10
1	45%	11%	9%	6%	8%	4%	4%	5%	4%	4%
2	31%	33%	9%	7%	4%	3%	4%	4%	2%	3%
3	9%	37%	32%	8%	5%	3%	2%	2%	2%	1%
4	5%	10%	32%	31%	12%	3%	2%	3%	2%	2%
5	3%	4%	12%	28%	26%	11%	8%	4%	2%	2%
6	2%	2%	3%	10%	22%	34%	18%	6%	2%	1%
7	1%	1%	2%	6%	12%	24%	33%	15%	4%	1%
8	2%	1%	1%	3%	7%	12%	20%	34%	16%	4%
9	1%	1%	0%	1%	3%	4%	8%	23%	43%	17%
10	1%	1%	1%	1%	1%	2%	2%	5%	23%	66%

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.16: Individual earned income ratios from 1999 to 2000 income year by level of study

	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile
For the 1998 cohort showing increases from the first year out of study to the second					
Masters and Honours	0.764	1.020	1.147	1.367	1.748
Postgrad. Dip. and Cert.	0.717	1.006	1.123	1.277	1.547
Bachelor and Adv. Dip.	0.705	1.001	1.115	1.270	1.554
Diploma	0.800	1.007	1.101	1.259	1.609
Certificate	0.691	0.986	1.126	1.289	1.593
For the 1997 cohort showing increases from the second year out of study to the third					
Masters and Honours	0.679	1.011	1.116	1.244	1.476
Postgrad. Dip. and Cert.	0.675	1.002	1.095	1.229	1.425
Bachelor and Adv. Dip.	0.578	0.966	1.082	1.201	1.388
Diploma	0.678	0.978	1.075	1.194	1.396
Certificate	0.708	0.984	1.092	1.235	1.469

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.17: Changes in the disparity in income for those with earned income

1998 cohort - 1st and 2nd	N		Gini[1]		SD / mean		P90 / P50		P10 / P50	
completed	+1	+2	+1	+2	+1	+2	+1	+2	+1	+2
Masters and Honours	693	600	0.32	0.30	1.61	1.55	1.56	1.52	0.16	0.19
Bachelors	4878	4383	0.29	0.27	1.52	1.53	1.42	1.43	0.19	0.23
Certificate	3915	3738	0.38	0.36	1.83	1.76	1.91	1.72	0.11	0.12
non-completing										
Masters and Honours	642	573	0.39	0.34	1.72	1.67	1.80	1.67	0.11	0.17
Bachelors	4650	4371	0.39	0.38	1.88	1.85	1.97	1.88	0.12	0.10
Certificate	5856	5772	0.44	0.42	2.04	1.93	2.30	2.02	0.08	0.08

1997 cohort - 2nd and 3rd	N		Gini		SD / mean		P90 / P50		P10 / P50	
completed	+2	+3	+2	+3	+2	+3	+2	+3	+2	+3
Masters and Honours	489	417	0.29	0.29	1.60	1.59	1.59	1.56	0.28	0.21
Bachelors	4101	3654	0.26	0.29	1.49	1.54	1.38	1.44	0.26	0.21
Certificate	3216	3108	0.36	0.35	1.75	1.71	1.75	1.66	0.15	0.13
non-completing										
Masters and Honours	495	468	0.32	0.33	1.64	1.68	1.65	1.66	0.18	0.18
Bachelors	3528	3303	0.37	0.38	1.77	1.81	1.75	1.82	0.11	0.12
Certificate	4443	4320	0.40	0.39	1.89	1.84	1.93	1.83	0.09	0.09

Notes:
1. To calculate the Gini coefficient it was necessary to remove those with negative earned income.
2. Population: Those with earned income who were resident in NZ in the income year, who last studied and borrowed in 1998 and 1997 (the 1998 cohort and the 1997 cohort – tables separately).
3. In the top 1998 cohort section of the table, +1 means income year 1999/00, +2 2000/01. In the 1997 cohort section, +2 means 1999/00, +3 2000/01.

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

Figure 6.18: Median and percentile ratios of earned income in 2000 for former students who last studied in 1997 by field of study and completion.

Student Loan Borrowers who completed a qualification in their last year of study (1997)	Median earned income	(rank)	P90/P50	(rank)	P10/P50	(rank)
Health	35,640	2	1.58	9	0.26	1
Engineering and Related Technologies	40,370	1	1.41	11	0.23	2
Education	34,860	3	1.24	12	0.22	3
Architecture and Building	30,810	6	1.50	10	0.17	7
Natural and Physical Sciences	31,480	5	1.61	7	0.16	9
Management and Commerce	32,260	4	1.77	5	0.20	4
Information Technology	30,720	7	1.79	3	0.14	10
Society and Culture	25,110	8	1.77	4	0.16	8
Agriculture, Environmental & Related Studies	24,600	9	1.82	2	0.17	5
Creative Arts	22,620	10	1.68	6	0.17	6
Food, Hospitality and Personal Services	20,700	11	1.58	8	0.12	11
Mixed Field Programmes	16,750	12	2.53	1	0.10	12
All completed	28,350		1.66		0.17	

Student Loan Borrowers who did not complete a qualification in their last year of study (1997)	Median earned income	(rank)	P90/P50	(rank)	P10/P50	(rank)
Health	26,870	3	1.78	9	0.13	5
Engineering and Related Technologies	30,500	1	1.69	11	0.20	1
Education	24,560	6	1.73	10	0.11	6
Architecture and Building	27,400	2	1.58	12	0.14	4
Natural and Physical Sciences	26,860	4	1.82	7	0.11	8
Management and Commerce	24,110	7	1.91	5	0.14	3
Information Technology	25,710	5	1.94	4	0.15	2
Society and Culture	23,200	8	1.99	2	0.07	11
Agriculture, Environmental & Related Studies	17,060	12	1.95	3	0.10	9
Creative Arts	19,750	10	1.79	8	0.11	7
Food, Hospitality and Personal Services	17,640	11	1.86	6	0.09	10
Mixed Field Programmes	21,250	9	2.02	1	0.05	12
All non-completing	22,620		1.92		0.10	

Source: Statistics New Zealand, Integrated Dataset on Student Loan Scheme Borrowers.

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