



MINISTRY OF EDUCATION

*Te Tāhuhu o te Mātauranga*

Does it really matter where you study?

This report forms part of a series called *Beyond tertiary study*.

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# Does it really matter where you study?

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# 1 SUMMARY AND KEY FINDINGS

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Over the years, there have been claims that people with bachelors degrees from polytechnics are discriminated against in the labour market – that they earn less than people who complete similar qualifications at universities. This report sets out to look at the evidence for these claims. Using the integrated dataset on student loans and allowances, we have tracked the earnings of people who leave study with a bachelors degree.

The analysis finds that the labour market in New Zealand appears not to discriminate against polytechnic degrees.

- Whether a student graduates with a bachelors degree from a polytechnic or a university, their pay in their first job is likely to be roughly the same.
- Overall, by the fifth year, university bachelors graduates tend to be earning slightly more on average than polytechnic bachelors graduates. The upper end of the earnings range tends to be more weighted towards university graduates but the differences are relatively small for the majority of the graduates.
- In many areas where polytechnics have specialised – such as information technology, commerce, engineering and architecture – there is very little difference in the earnings of bachelors graduates from polytechnics and universities. In some cases in these areas, the polytechnic graduates are earning slightly more than university graduates.

The reasons for the differences are complex and hard to discern from the data collected. However, there is no evidence that the gap in earnings that appears over time can be attributed to provider quality.

## 2 INTRODUCTION

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One of the most significant changes to tertiary education in the reforms of 1989/1990 was that polytechnics, colleges of education and private training establishments won the right to offer bachelors degrees – formerly the preserve of the universities. And some polytechnics, colleges and private training establishments were given approval to teach postgraduate programmes. The rationale for these changes was that the qualification approval process should concentrate on the quality, the level and the focus of the qualification – rather than the type of environment in which the qualification is taught. So if a polytechnic had the staffing, resources and research capability to extend one of its specialisations to degree level – and if there was enough demand from students – then they could develop and win approval for a degree.

These changes led to some blurring of the distinctions between different types of tertiary education providers. By 2001, 24 percent of polytechnic enrolments (measured in equivalent full-time student units) were at bachelors degree level or higher. Between 2000 and 2004, about 14 percent of all bachelors enrolments were in the polytechnics.

More recently, the government has stressed the distinctive contributions of different types of providers – each sub-sector has a particular focus and hence, a particular part to play in the network of tertiary education provision (Cullen, 2006). This move has seen a renewed interest in the polytechnics on their traditional core focus – applied professional and vocational qualifications. The distinctive contributions move has not, however, seen any effort to close down degrees at polytechnics or private training establishments – many degrees outside the universities have proved popular and it's clear that polytechnic degrees differ from those taught in universities – both in what is taught and how it is taught. Most are applied or vocational degrees that fit with the government's statement of the polytechnics' distinctive contribution<sup>1</sup>. In general, polytechnics place less reliance on traditional lectures where classes tend to be larger. In many polytechnic degrees, there is a greater use of practical work – via internships, placements in industry or other forms of cooperative education. The Education Act 1989 states<sup>2</sup> that degrees are to be taught mainly by people engaged in research. Polytechnics offering degrees are expected to be able to demonstrate that they have research capacity in the relevant field to support the degree teaching.

The distinctive contributions statement about the universities in the Tertiary Education Strategy 2007/12 consolidates the focus of those institutions on research and research-led qualifications. The qualifications that they offer are taught in an institutional environment that is imbued with a research culture, consistent with the characteristics of a university laid out in the Education Act<sup>3</sup> and with the requirement for degree-teaching to be conducted by people active in research.

In response to the distinctive contributions emphasis, there has been some (slight) reduction in the extent of polytechnic focus on degrees. By 2007, the proportion of polytechnic enrolments in bachelors degrees or higher had reduced to 19 percent, while polytechnics accounted for 13 percent of all bachelors enrolments.

The shifts that have occurred over the last 17 years raise the question of how the labour market rates the two different kinds of degrees. A British study by Chevalier and Conlon (2003) found that, controlling for the effects of such factors as school performance, there is an earnings premium of between 0 and 6 percent attributable to graduating from a university in the high prestige 'Russell Group'. In New Zealand, there have been claims and anecdotal accounts of

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<sup>1</sup> For instance, many polytechnic degrees are in fields like nursing, business, computing or technology.

<sup>2</sup> Section 254(3).

<sup>3</sup> Which states that university 'research and teaching are closely interdependent and most of their teaching is done by people who are active in advancing knowledge' (s162(4)(a)).

discrimination in the labour market against polytechnic bachelors degrees<sup>4</sup>. This paper looks at whether these anecdotes represent a trend and whether there is discrimination in this country of the type found in the United Kingdom by Chevalier and Conlon.

It examines data on the post-study earnings<sup>5</sup> of those who had completed bachelors level qualifications at polytechnics and at universities for evidence of differences of treatment between the two in the labour market. It reports on differences in the earnings of those who had studied in various fields of study at polytechnics and universities. The paper also describes a statistical analysis of post-study earnings that examines whether the premium for completion of a bachelors degree depends on the type of tertiary education provider.

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<sup>4</sup> Refer to Tertiary Education Advisory Commission (2001). The Commission reported on 'concerns that degrees offered by polytechnics do not have the same status as those offered by universities ...[and] ... that polytechnic students (sic) may not fare as well in the labour market ...' (p77). The Commission was echoing the remarks of the OECD (1997) '... that students simply do not trust because they appear to believe that the labour market is not rewarding such qualifications...' (p10).

<sup>5</sup> 'Earnings' in this context refers to income from wages, salaries and self-employment. It excludes income from sources such as interest, dividends, rents and benefits.

### 3 DATA SOURCES AND METHODOLOGY

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The integrated dataset on Student Loan Scheme borrowers, managed by Statistics New Zealand, can give data that allows us to explore these questions. The integrated dataset is a longitudinal dataset that includes information on people's tertiary study, linked to data on their income, including for the years following their leaving study. The dataset contains data on all individuals who used the Student Loan Scheme between 1997 and 2006. Details of this dataset, its construction and the privacy protocols associated with its management can be found in Ministry of Education (2005).

The approach to using this dataset to measure returns to tertiary study is explained in Hyatt and Smyth (2006), in Nair (2006) and in Nair, Smart and Smyth (2007). Essentially, we look at subgroups, drawn from the dataset, grouped according to the year they leave tertiary study and then do comparisons within those subgroups. For instance, in this paper, we mostly look at all those in the dataset who left study in 2000; we can then compare the earnings in a given tax year – up to the tax year ending 31 March 2007 – of those who studied at particular levels, in particular fields of study or at different provider types. In looking at those who studied at bachelors level and left study in 2000, we are ignoring the people who went on to postgraduate study and we are keeping our focus only on those for whom the bachelors degree is a terminal qualification. And we can use statistical analysis to quantify the influence of demographic or study-related variables on earnings.

The importance of this form of analysis is that it provides an indicator of the influence of the tertiary education system in forming human capital (Nair, Smart and Smyth, 2007).

This paper contains three analyses in which we compare the outcomes for those whose last study was at universities and polytechnics.

In section 4, we look at the income distribution in the years 2000 to 2006 of people who left study in 2000 having successfully completed a bachelors degree at a polytechnic or a university. In section 5, we use regression analysis to look at the post-study earnings of those who have studied different fields of study in different types of providers. In section 6, we compare the premium for completion of a qualification by qualification level and by type of provider, holding all other factors constant. Section 7 discusses the conclusions that can be drawn from the analysis and comments on the possible explanations for the results of the study.

## 4 BACHELORS DEGREES AND PROVIDER TYPE

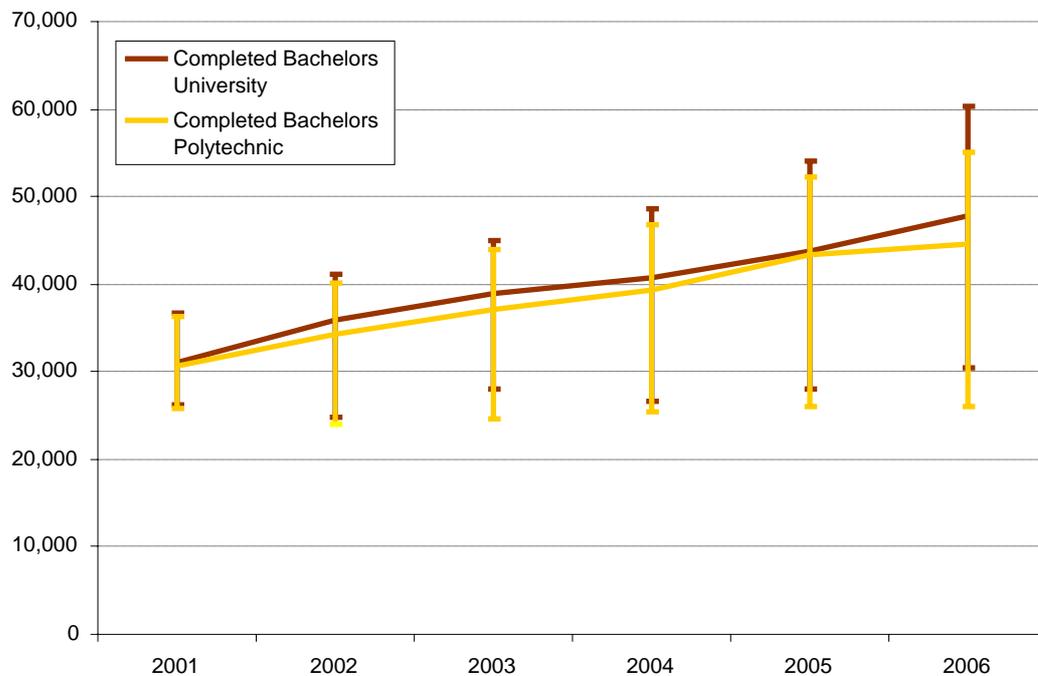
### *The earnings of those who completed bachelors degrees at universities and polytechnics*

The graphs in Figures 1 and 2 display the distribution of earnings of people in the dataset who left study in 2000, having successfully completed a bachelors degree at a polytechnic or at a university. This enables us to compare the earnings of the two subgroups over their first six years in the labour force.

The solid line in Figure 1 shows the median earnings. Figure 1 displays the 25th and 75th percentiles – meaning that this graph shows the middle half of the group. Figure 2 also shows the median but also gives the 5th and 95th percentiles. Therefore it shows the extremes in the distribution.

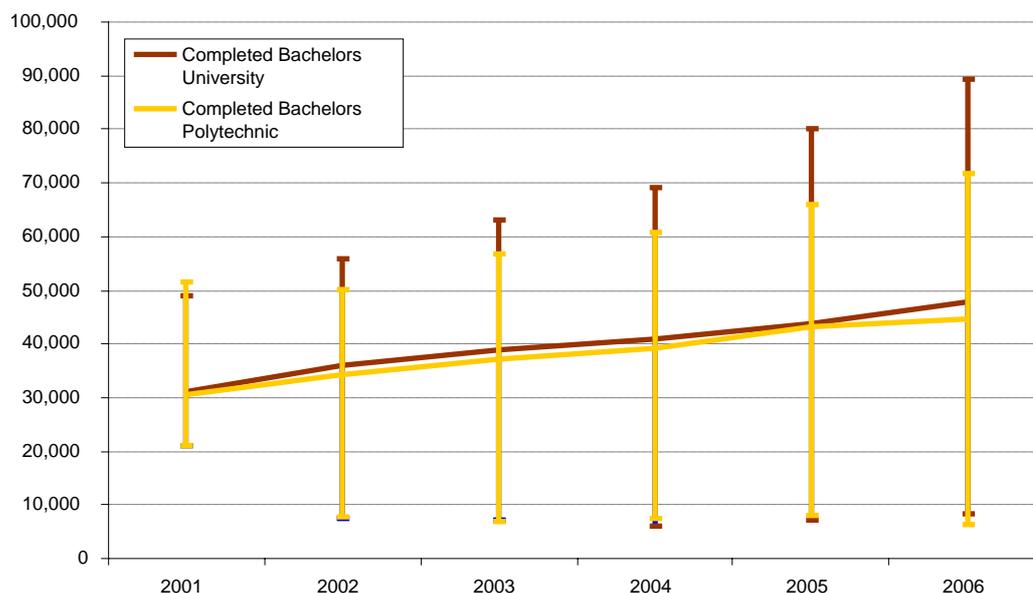
**Figure 1**

Earnings distributions over the years 2001 to 2006 of people who completed a bachelors degree from polytechnics and universities in 2000 – 25th to 75th percentiles



**Figure 2**

Earnings distributions over the years 2001 to 2006 of people who completed a bachelors degree from polytechnics and universities in 2000 – 5th and 95th percentiles



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

In the first year post-study, 2001, the differences between the university and polytechnic degree holders are very small. The median, lower and upper quartile and fifth percentile earnings of polytechnic degree holders are all but indistinguishable, while at the 95th percentile, polytechnic graduates hold a small advantage. In effect, the results of this analysis imply that employers do not discriminate between polytechnic and university bachelors graduates at the point of recruitment – they pay the same, irrespective of the type of institution the person studies at.

By 2003, the third year post-study, a small gap has opened up. The median and the upper and lower quartiles of the university graduate distribution have edged ahead of the polytechnic graduates. The margin at the 95th percentile has stretched slightly. However, there is very little difference at lower levels in the distribution.

The gap at the median has narrowed after five years but returns in year six. The margin between the university and polytechnic graduates still exists but is small, while the gap at the 95th percentile appears to be stretching – a trend that continues into 2006.

The curves illustrate the growth in the graduates' earnings – from both provider types – as they gain experience in work. But the growth is very slight at lower levels of the distribution – in fact, the income of the bottom 5 percent of graduates is effectively static.

In summary, while there is little difference between the earnings of most university and polytechnic bachelors degree holders early in their careers, over time, university degree holders do slightly better. And the university graduates tend to predominate at the higher income levels.

This may be for any one of a number of reasons. One possible conclusion may be that university degree holders reveal their skills more slowly over a longer time period. Universities offer a wider range of degrees, some of which are in higher earning areas – for instance, law and other professions – where the earnings potential of graduates is only demonstrated some years after graduation. But many other reasons are possible. For instance, it may be that the polytechnics are 'finishing' their students well – providing a start in work equal to that of university

graduates – whereas the university graduates take longer to adapt but once they do adapt, they perform better. Another possible reason is that the polytechnic bachelors graduates are older<sup>6</sup>, meaning that they could have a slight initial advantage in the labour market that erodes over time.

A further question may relate to the preparation of students at the beginning of their studies. Among school leavers, universities tend to attract those with higher school performance. Ussher (2007 and 2008) shows that higher performance at school is significantly associated with participation in degree level study<sup>7</sup>. The British study referred to earlier (Chevalier and Conlon, 2003) shows that, controlling for the effects of such factors as school performance reduces the post-study earnings premium attributable to graduating from a university in the high prestige ‘Russell Group’ substantially (although a premium<sup>8</sup> still exists).

Another factor that may be causing differences between the two groups is that the population for this study is the set of people who left study with a bachelors degree in 2000, having used the Student Loan Scheme. Because of the university system’s focus on postgraduate provision, a proportion of the best performing students in the universities may have been recruited to postgraduate study on completion of their bachelors degrees and hence, would have been excluded from the analysis.

One of the key differences between polytechnic and university degrees is the subject of specialisation; the degrees offered by polytechnics are more likely to be vocational in nature and they are likely to be concentrated in relatively few specialisations. And a number of those specialisations have been poorly paid. The next section looks at this aspect further.

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<sup>6</sup> For instance, in 1999, polytechnic bachelors graduates were four years older on average than university bachelors graduates. The average age of those completing a graduate certificate or graduate diploma from a polytechnic was two years above the average age of those completing the corresponding qualification from a university.

<sup>7</sup> However, Ussher doesn’t report on the extent of the grade difference between polytechnic and university degree students.

<sup>8</sup> Of between 0 and 6 percent.

## 5 FIELD OF STUDY AND PROVIDER TYPE

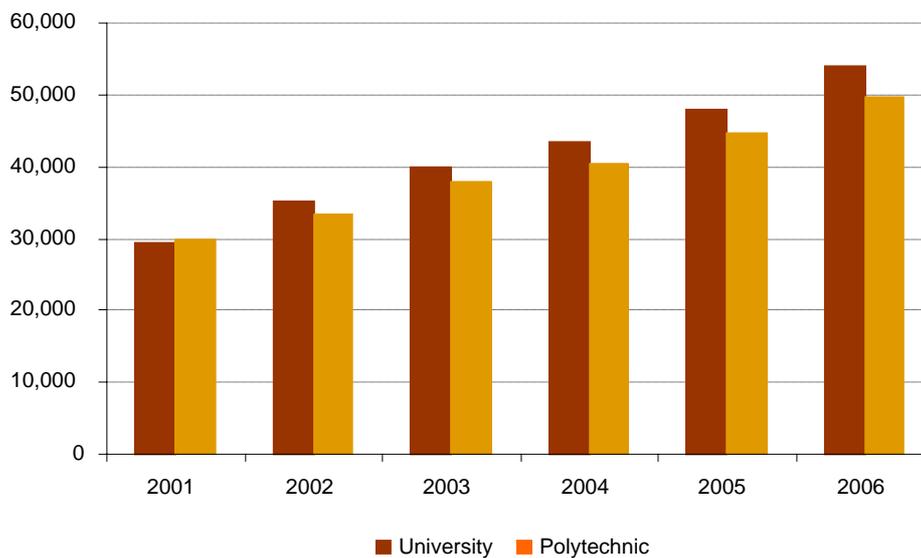
### *What difference does field of study make to earnings for those who studied at different types of provider?*

The field in which students specialise has an influence on their earnings in the years following study (Nair, 2006). This section looks at this aspect.

Figure 2 below looks at the mean earnings<sup>9</sup> of the people who left study at a university and at a polytechnic having completed a bachelors degree in management and commerce in 2000.

**Figure 3**

Mean earnings over the years 2001 to 2006 of those who completed a bachelors degree in 2000 in management from polytechnics and universities



Again we see no difference when the group first enters the labour market, but a small advantage emerging for the university group over time.

Given the differences in the types of students who study at universities and polytechnics, it is important to control also for other factors that may influence earnings. Therefore, we conducted a regression analysis by field of study of incomes following study for those who had undertaken bachelors degrees at universities and polytechnics. Because this analysis used regression techniques, it controls for other demographic and study-related differences and hence, shows the influence of field of study and provider type only. This analysis merged the results for three cohorts – those who left study in 1997, 1998 and 1999 – and controls for a variety of study-related and demographic variables.<sup>10</sup>

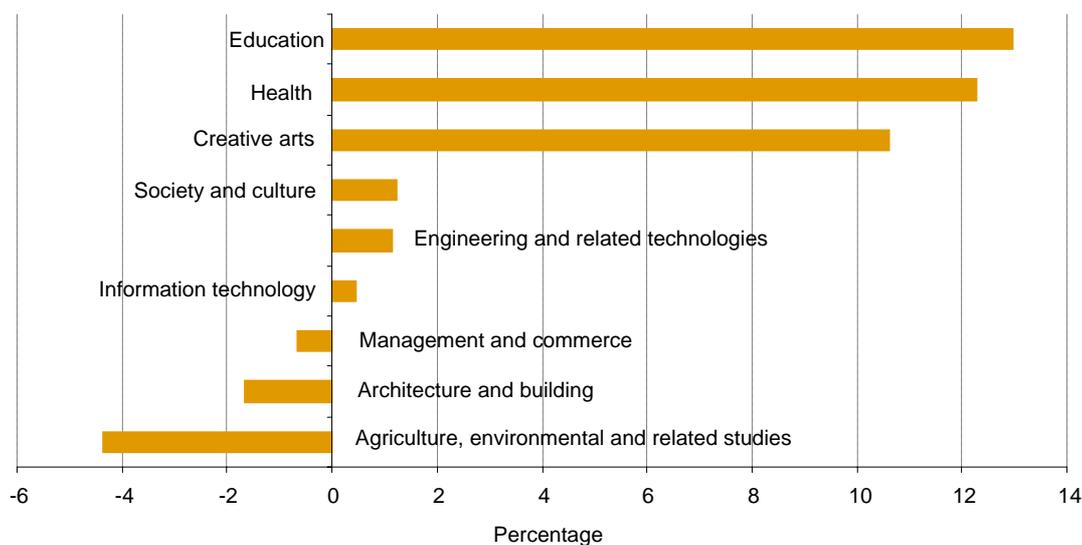
Figure 3 shows the comparison of the earnings five years post-study of those who studied bachelors degrees at universities and polytechnics, irrespective of whether study is completed successfully or not. The analysis is restricted to those fields where the dataset contains sufficiently large numbers of students to enable the analysis to be conducted in a robust way.

<sup>9</sup> This piece of the analysis uses *mean* earnings, rather than medians, because the group size is smaller and falls below the minimum size required by Statistics New Zealand for publication of medians, quartiles and percentiles.

<sup>10</sup> A full description of the model used can be found in Nair (2007). This analysis considers the groups of students who left study in 1997, 1998 and 1999 and considers their earnings five years later. Earnings in different years are normalised using the Labour Cost Index.

**Figure 4**

Earnings premium for studying at bachelors degree level at universities compared with polytechnics by field of study – five years post-study



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

While section 3 of this paper shows that overall, those who complete a bachelors degree at a university may earn more than those who completed at a polytechnic five or six years after leaving study, this doesn't apply in all fields of study. Those who took their degrees at a university<sup>11</sup> in education, health, creative arts, had an advantage. Those who studied in society and culture, engineering and information technology at a university had a very small advantage – of less than 2 percent – while the reverse was the case in management and commerce and architecture and building where those who studied at a polytechnic earned marginally more.

Interestingly, controlling for other factors reverses the apparent advantage enjoyed by the university graduates in management and commerce – when we take account of the full range of variables, there is a small advantage – of around 1 percent – to polytechnic students. In relation to the results in health and education, there are particular aspects of the labour market in those areas over the years studied that will have depressed the earnings of the polytechnic graduates. For instance, the data for the period of this study don't include the effects of the recent increase in the earnings of nurses. And much of the initial teacher education in the polytechnics has been focussed on the early childhood education sector – until relatively recently, paid at a lower rate than other parts of the teaching profession.

The numbers studying at bachelors level in agriculture, environmental and related studies at a polytechnic are small compared with the number of bachelors students in those fields at universities.<sup>12</sup> In addition, the degrees in these fields at polytechnics may be more specialised than the generic degrees in this field offered at the universities. A more specialised, vocationally focused character may mean that these qualifications have better short-term labour market outcomes (Nair, 2006).

<sup>11</sup> Note that in this analysis, the data for the colleges of education were absorbed into the universities – this has an impact in particular in degrees in education.

<sup>12</sup> Note that the relatively small size of these groups doesn't affect the reliability of the findings. This analysis used a bootstrapping technique to synthesise a larger sample size.

## 6 EARNINGS PREMIUM FOR QUALIFICATIONS

### *The premium for completing a qualification – comparing universities and polytechnics*

This section compares the earnings of those who completed a qualification with the earnings of those who start at the same qualification level but who leave without finishing. This gives the premium for completion of a qualification, which gives another way to compare the outcomes for study at different types of providers.

**Figure 5**

Premium over the years 2001 to 2006 for completion of a bachelors degree at universities and polytechnics – those who left study in 2000

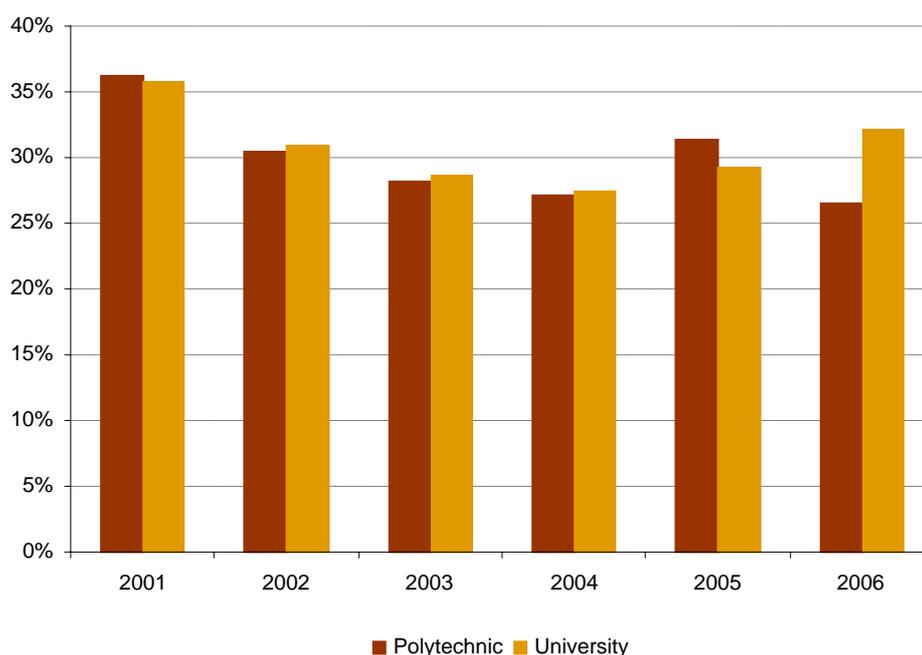


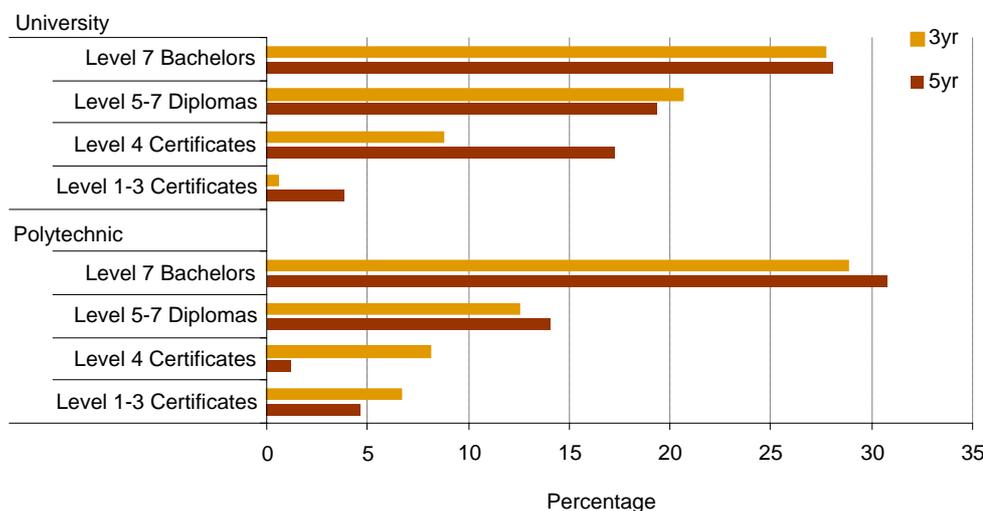
Figure 4 shows that there is a substantial and enduring advantage in earnings for completing a bachelors degree – whether it was completed at a university or polytechnic.

Below, we extend the analysis to other qualification levels at polytechnics and universities three years post-study and five years post-study. This analysis uses regression to estimate the completion premium, having controlled for all other factors.

Using regression analysis, Nair (2006, 2007) found that completion of a qualification does not have a significant impact on earnings, except when considered in combination with other factors and in particular, the level of study. Consistent with Nair's findings but using a different approach, Hyatt and Smyth (2006) found that the median earnings of those who have taken a bachelors degree and abandoned it without completion is higher than the median earnings of those who studied at certificate level and did earn a qualification. Bachelors degree students go on to earn more than certificate students, whether they are successful in their studies or not. In other words, the *level* of study was a more important predictor of earnings than success in study. However, *within each qualification level* studied, Hyatt and Smyth find a difference between the median earnings of those who did and did not complete – a premium for completion of the qualification.

Figure 5 gives the completion premium for qualifications at bachelors degrees and below from polytechnics and universities, having controlled for all other factors.

**Figure 6**  
Earnings premium for completing a qualification by level of study and provider



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

Note: This analysis considers the groups of students who left study in 1997, 1998 and 1999 and considers their earnings five years later. Earnings in different years are normalised using the Labour Cost Index.

Figure 5 makes it clear that the earnings premium for completing a qualification is linked to the type of provider.

In particular, the premium for completion of a bachelors level qualification at a polytechnic is greater than at a university, both three years post-study and also five years post-study. This doesn't imply that those with bachelors degrees from polytechnics earn more than university bachelors degree holders – the data presented in section 3 above suggests the contrary. Rather, the data in Figure 5 shows that there was a greater difference in earnings between those who did and didn't complete their bachelors study at polytechnics than at universities. The polytechnic premium is greater than the university premium both three years post-study and five years post-study.

Figure 5 also contains data on qualifications at other levels. Hyatt and Smyth (2006) find that the premium for completion of a bachelors level qualification is much higher than for a certificate. Nair (2007) augments that finding by looking at level 5 – 7 diplomas and finds that the completion premium for those qualifications is somewhere in between but close to the premium for completion of a bachelors degree. Figure 5 confirms that those findings apply both for universities and polytechnics.

Interestingly, while the polytechnic completion premium may be higher at degree level, the premium for completing some sub-degree qualifications is higher at universities. There is a higher premium for completing a level 5 – 7 diploma or a level 4 certificate at a university than at a polytechnic, especially five years after study. Completing a level 1-3 certificate from a polytechnic generated a higher premium advantage than completing at a university.

The fact that the completion premium appears higher at qualification levels that represent only a relatively small share of the providers' offerings may reflect the more focused nature of sub-degree qualifications offered by universities and of degrees offered at polytechnics.

## 7 CONCLUSIONS

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In the first few years after study, there is no earnings advantage for having completed a bachelors degree at a university, rather than at a polytechnic except at higher levels in the earnings distribution – from the 75<sup>th</sup> percentile up. Over time, however, the university graduates' earnings tend to move slightly ahead. By the fifth year post-study, the median university bachelors graduate's earnings has edged ahead of the median for polytechnic degree holders, while the margins increase further over years six and seven post-study. Only at the lower region of the earnings distribution do the earnings remain comparable throughout the first seven years of the analysis.

While there may appear to be some advantage overall for undertaking bachelors degree study at a university, rather than at a polytechnic, that doesn't apply in all fields of study. Those who study for a bachelors degree in education, health or creative arts at a university have an advantage over those who studied at that level in those fields at a polytechnic. In the case of health and education, there were particular factors in the labour market that probably account for a reasonable share of the university graduates' margin. In fields like information technology, commerce, engineering and architecture, there is little difference between the earnings of university and polytechnic bachelors graduates once we control for other factors.

The reasons for the differences are complex and hard to discern from the administrative datasets used in this study. As noted, some of the differences derive from labour market factors. There are also differences in the types of people who study at universities and polytechnics. Polytechnic degree students are older than university degree students, meaning that polytechnic graduates may have an advantage in the labour market. There will be differences in the educational preparation of the students at each type of provider, differences that are likely to be highly significant but which are not captured in the dataset used. While this study is largely focused on bachelors degree study, the character of the qualifications offered in polytechnics and universities are different.

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