



MINISTRY OF EDUCATION

*Te Tāhuhu o te Mātauranga*

## School's out – what's next?

*The post-secondary activities of students with  
lower levels of school achievement*

This report forms part of a series called Learners in tertiary education. Other topics covered by the series are access, pathways, support, participation, retention and qualification completions.

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# School's out – what's next?

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1	Introduction	3
2	The factors considered	7
2.1	Post-secondary activity	7
2.2	Highest level of school achievement	8
2.3	Ethnic group	11
2.4	Gender	13
2.5	School decile	13
2.6	Residential location	14
3	Results	15
3.1	Highest level of school achievement	15
3.2	School achievement and ethnicity	18
3.3	Comparing groups within the multi-ethnic category	20
3.4	Within ethnic group differences	23
3.5	School achievement and gender	24
3.6	School achievement and school decile	25
3.7	School achievement and residential location	26
3.8	School achievement, gender and ethnicity	28
3.9	School achievement, ethnicity and school decile	30
3.10	School achievement, gender and school decile	32
3.11	Summary of results	34
4	Discussion	38
5	Data and methods	40

# FIGURES

---

<b>1</b>	Number of students in the wider study population by highest level of NCEA school achievement and gender, for the years 2007 to 2009	9
<b>2</b>	Proportions of students in each post-secondary activity within school achievement categories	10
<b>3</b>	Proportions of students with particular level of school achievement in each post-secondary activity	10
<b>4</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement	11
<b>5</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school qualification gained	16
<b>6</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and ethnic group	18
<b>7</b>	Per cent of students in selected post-secondary activities by highest level of school achievement and ethnic group	21
<b>8</b>	Per cent of students in selected post-secondary activities by highest level of school achievement and ethnic group	22
<b>9</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and gender	24
<b>10</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and school decile	25
<b>11</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and residential location	27
<b>12</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement, gender and ethnicity	29
<b>13</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement, school decile, and ethnicity	31
<b>14</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement, school decile, and gender	33
<b>15</b>	Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and the year in which the student turned 19	41

## TABLES

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1	Demographic breakdown of the study population	12
2	Number of students in each of the school achievement and post-secondary activity categories in figure 4	16
3	Per cent of students in the study population undertaking post-secondary activities by various demographic variables	17
4	Per cent of students in post-secondary activities by selected ethnic groups and highest school achievement	20
5	Most likely post-secondary activity by ethnic group, school decile and the level of school achievement	35
6	Most likely post-secondary school activity by ethnic group, gender and the level of school achievement	35
7	Most likely post-secondary activity by gender, school decile and the level of school achievement	36
8	Most likely post-secondary activity by residential location and the level of school achievement	36



## SUMMARY

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This study looked at the destinations of young New Zealanders after they left school. It considered the likelihood of a student choosing a destination from a range of post-secondary school activities—no further study, targeted training, lower-level certificate study, industry training, Modern Apprenticeships, and non-degree study at level 4 or above—diplomas and certificates at level 4.

These post-secondary activities were considered against the students' highest level of school achievement, gender, ethnicity, the decile of the last school attended, and the students' residential location while at school.

The study population consisted of 19 year-old students who had left school, who gained some credits in the National Certificate of Educational Achievement (NCEA) at school but less than NCEA level 3, and who did not meet the university entrance requirement.

No single factor can explain the choices made by students. School achievement, gender, ethnicity and school decile need to be considered together to explain the post-secondary choices made by students.

### **The most likely destinations ...**

The study found that overall, 36 per cent of these students with lower levels of school achievement do not go on to further study, this being the most likely destination for these school leavers. Students with NCEA level 2 were about as likely, at 33 per cent, to go on to diploma-level study as to not go on to further study. But there was no difference between students with the lowest levels of school achievement—those who did, and did not, gain NCEA level 1—in terms of their most likely post-secondary activity. In each case, no further study was the most likely activity.

In contrast, 82 per cent of students who gained NCEA level 3 and who met the university entrance requirement progress on to bachelors-level study after leaving school, and just 9 per cent were not involved in further study.

### **Students who gained NCEA level 1 ...**

Students who gained NCEA level 1 were more likely than students with other levels of school achievement to be involved in industry training. This was especially true for male European students, and is probably due to the fact that European males are more likely to leave school for work in industries that offer industry training.

### **Ethnic group differences ...**

Asian students generally showed the highest likelihoods of going on to diploma-level study, while Māori students showed the lowest likelihoods. For Māori, no further study was the most preferred option after leaving school, for males and females, and for students from higher- and lower-decile schools. In contrast, female Pasifika students were more likely than male Pasifika students to go on to diploma-level study if they gained NCEA level 2. Pasifika males with NCEA level 2 were most likely not to go on to further study.

Students who indicated Māori as their only ethnic group had a lower likelihood of going on to diploma-level study than students who indicated Māori plus another ethnic group. The reverse was true for European students—those who indicated European as their only ethnic group were more likely to go on to study a diploma than a person who indicated they were European plus another ethnic category.

**School decile and gender ...**

Generally, students from higher-decile schools, and females, were more likely to go on to diploma-level study than students from lower-decile schools, or males, respectively. However, for students who gained NCEA level 2, Asian students from lower-decile schools, and Asian male students, were more likely to study at diploma-level than students of other ethnic groups with the same characteristics.

**Residential location ...**

Students from more isolated residential areas were more likely to be involved in industry training than students from urban areas, whereas those from urban areas were more likely to study at diploma-level, compared with students from minor urban and more rural locations.

Students who went to school in Auckland, compared to students from other locations, were more likely to not go on to further study if they did not achieve NCEA level 1. On the other hand, students who went to school in Wellington, compared to students from other locations, were more likely not to go on to further study if they achieved NCEA level 2 at school.



# 1 INTRODUCTION

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Education helps people find jobs. There are some who learn for personal reasons, or simply for the pleasure of knowing new things, but most younger people will see their education in large measure as a means to their future employment. If a young person knows what type of job they want or field they want to work in, the decision about what education they need to get is relatively straightforward. If the job requires a bachelors degree or higher level qualification, then the progression through school onto further study is well mapped. Students may differ in their ability to succeed in their goal of gaining that education, but the pathway is clear: stay at school until the last year of secondary school and gain the highest school qualification, with the best result you can. In New Zealand, this means staying on at school until year 13, and gaining the National Certificate of Educational Achievement (NCEA) level 3. If the study is offered at university, the student must also meet the university entrance (UE) requirement.

But not all young people with clear career aspirations want a job that requires a bachelors degree. For these students, gaining NCEA level 3 may not be necessary, or even desirable. And because of the focus of many NCEA level 3 subjects on the academic pathway, it may instead be seen by some students as delaying the start of their chosen career.

There are also students who want a job, any job. This may be because of the need to gain money, to support a family, or simply to leave school (Lamb *et al* 2004). For some students, the desire to leave school outweighs the poor labour market outcomes likely to be experienced by these students (Teese 2005).

## **Previous research on school leaver destinations ...**

That the labour market is a strong draw for these young students is supported by overseas research. Lamb *et al* (2004) cite Australian studies which showed that 46 per cent of early school leavers<sup>1</sup> cite work-related reasons for leaving school. This was in spite of their concern about their employment prospects. The finding is backed by UK research (*ibid*). Interestingly, the reasons UK students stayed on at school and completed higher level qualifications were to 'improve career prospects', gain the 'qualifications necessary for a chosen career' or the 'wish to go on to higher education' (Vincent and Dean 1997, cited in Lamb *et al* 2004). In other words, both the students who leave school early, and those who continue on in school to gain higher-level qualifications, are primarily driven by career and employment-related factors.

Teese (2005) also found that Australian youth often leave school as part of a strategy to secure a favourable position in the workforce. This study found that young people are not necessarily deterred by unemployment statistics, "for unemployment does not reduce the search for economic security, and may even intensify it. However, the outcome of this strategy is frequently negative. Unemployment is high among early leavers, and successful integration into the full-time labour market is a protracted process" (*ibid*, page 245).

The life outcomes for these groups, in terms of future employment, health, welfare and a range of other social measures are likely to be compromised as a result (Smart 2006, Scott 2010, Earle 2010).

While the decisions by students to leave school before they complete high school, or to not go on to further study, may be mostly made for employment-related reasons, other factors are also

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<sup>1</sup> The study population in our report could be considered as early school leavers, since they leave before they attain the highest level of school achievement, NCEA level 3. However, we don't specifically consider at what age they leave school, so we have refrained from labelling our students 'early leavers'. Nonetheless, findings that pertain to early leavers will, by and large, apply to our study population.

important. Studies show that students from lower socioeconomic families, those who find the academic curriculum of the school difficult, irrelevant, or unappealing, or those affected by severe welfare problems are more likely to leave school early (Rumberger 2001, Lamb *et al* 2004). There is also a smaller group of students who are more likely to disengage from education: those whose families are highly mobile; have parents who are seriously ill or absent from the home; have one or both parents affected by mental illness; who fall into substance abuse; and girls who become pregnant (Lamb *et al* 2004). In other circumstances, a student may be making a rational decision to leave school early because they are avoiding demeaning treatment at the hands of their teachers (Higgins *et al* 2008). These students often don't do well at school, and for them there is usually little alternative but to enter the labour market.

It is not always the case that low school achievement *determines* leaving school early. Researchers have found that students make decisions about their pathways through the education system at a very early stage, sometimes as early as the first years of secondary school (Lamb *et al* 2004, Leach and Zepke 2005). If the decision to leave school at age 16—the legal school leaving age—has already been made at age 13, it is unlikely that the student will strive for high levels of educational attainment. In other words, the cause of the low educational attainment at school may be the decision to opt out of education as soon as they can. There is also likely to be a level of self-fulfilment in this process. Students who do not do well at school will become discouraged, reinforcing their decision to leave. This result implies that for interventions to be effective in improving school retention and raising school achievement, they need to be focused on students and their parents at any early stage in their schooling (Rumberger 2001). Some research also links family poverty with poor child development and low achievement, so measures to improve children's educational achievement should not be limited to education interventions, but should also include actions which aim to prevent economic deprivation (Duncan and Brooks-Gunn 2000).

So the factors impinging on the decision a student makes whether to stay at school, or continue on to higher secondary school, or go on to further study after leaving school, are varied and complex. The decision on which destination to choose is not just based on how well a student performs at school.

Recent sociological studies (reviewed in Higgins *et al* 2008) have shown that the decision to leave school is part of an on-going decision-making process, not a one-off event. The decision about what to do after leaving school is also linked to life-style choices, is strongly shaped by culture and context, and is influenced by other people in the young person's life, particularly parents, teachers and peers. A person's decisions may be constrained by what they perceive they are able to do, or capable of doing, and indeed by what others perceive they are able to do. Structural factors, like socio-economic status, gender, or ethnicity, also play a role (*ibid.*). And people from ethnic groups outside of the dominant group experience particular difficulties (*ibid.*). For some of these non-European young people, the aspirations and needs of their family, community or church may override their individual desires. Higgins *et al* (2008) say that these students may also face discrimination or alienation at school, and the decision to leave that environment may be a response to these circumstances. In other cases, teachers may see no hope for the student, and explicitly suggest the best thing the student can do is to leave school. This so-called 'deficit thinking' about the student's abilities may have little to do with the actual academic abilities or educational desires of the student (Nairn *et al* 2007).

If the decision as to *what* to do after secondary school is not simple, research also shows that the *transition* to study, work or other activity after leaving school is also not simple (Vaughan 2005, Leach and Zepke 2005). Vaughan used evidence from interviews with New Zealand students to show that many young people are making decisions about their futures that are quite different from those made by their parents—even the types of decisions they have to make are different (Middleton 2008). Vaughan (2005) found that today's young people have different priorities

compared to earlier generations. This is a response to both the need to be flexible in a decentralised labour market, as well as the rapid changes they have seen that can take place to careers or employment—as evidenced by their parents’ struggle with retrenchment or redundancy—which emphasise the desirability of making good work choices. As a result, Vaughan sees young people as choosing to gain ‘just-in-case’ qualifications and experience, prior to undertaking study for their most desired job or lifestyle. Vaughan argued that young people appeared to be motivated and determined, and were committed—just not necessarily, or with any long-term vision, to a career or job at the end of the pathway they were currently on (*ibid*, p 181). Vaughan found students who were deliberately studying at lower levels, before starting higher-level study on their preferred pathway, as an insurance against possible future setbacks. Employment might also be part of this pathway, either to earn the money to continue further study, or as a way to gain experience in a career (*ibid*). Vaughan’s work warns us that young people studying at a lower level, or not continuing with study after leaving school, may not preclude further study at a higher level at a later stage, or that no, or lower-level study *per se*, is necessarily a poor outcome in the short term.

The decisions students make about leaving school, or what to do next, are made with the information available to them, in the context of the circumstances facing the individual student. From the student’s perspective, they are making ‘pragmatically rational’ decisions (Higgins *et al* 2008). However, not all of those decisions lead to ‘good’ *outcomes*. For many young people with low or no school qualifications, the destination is unemployment and dependence on benefits (Statistics New Zealand 2001, Teese 2005, Scott 2010). And the impact is not felt evenly across ethnic groups; Māori have disproportionately high rates of 15 to 19 year olds not in employment, education or training (Department of Labour 2009).

The poor labour market outcomes for students with no or low level school qualifications have prompted the government to establish a set of outcomes it desires for young people leaving secondary school. The tertiary education strategy (Minister for Tertiary Education, 2009) envisages more young people—those aged under 25 years—achieving qualifications at levels 4 and above. It particularly focuses on Māori and Pasifika achieving at higher levels. And it envisages more young people moving from secondary school to higher education. These goals rest on the evidence which shows that people with post-secondary qualifications, and particularly qualifications at level 4 and above, have better employment outcomes and that they are more likely to have better outcomes on a range of non-financial measures of well-being (Scott 2010).

It is important then to see what students do after leaving school, particularly for students with no or low school qualifications. We can then see how particular subgroups are faring in relation to the outcomes envisaged by the tertiary education strategy. While a study based on administrative data can’t determine *why* students are deciding to opt for particular post-secondary activities, we can show *what* is happening. If particular outcomes are only seen for particular groups, then this might be evidence for structural or sociological factors influencing the decision-making process.

This study aims to give a better understanding of the post-secondary activities undertaken by students who leave school with lower level qualifications—less than NCEA level 3—and to explore the factors which are associated with these activities.

Previous Ministry of Education research has looked at students with lower level school achievement (Ussher 2007, 2008). Ussher considered students at all levels of school achievement in his work, while our study considers just those with less than NCEA level 3 as their highest school achievement. We use a method to report ethnicity that allows us to compare both between and within ethnic groups. We also have access to two more years’ data than did

Ussher. Where Ussher's studies and our work are comparable, there is broad agreement on the findings.

### **Our approach to the analysis ...**

Our study includes students who were 16 years of age in 2004, 2005 and 2006, and considers their highest level of tertiary study, if any, up to the time they are 19 years old. Students are included in the study if they gained at least one credit towards an NECA qualification. Most of the analysis is focussed on students with lower levels of school achievement—less than NCEA level 3—but all levels of school achievement are considered for selected comparisons. There were over 97,000 students in the study population with less than NCEA level 3.

The results of the study are reported as probabilities—the probability (or likelihood) that a student will opt for a particular activity after leaving school. A group of students may have a probability of 0.4 of choosing an activity X, and this may be the highest probability of all the options available to the students. However, in that case, the majority of students in that group—60 per cent of them—will opt for other activities. So the majority of students may not in fact do activity X, but the highest single probability is for them to do X. In this report, most of the focus will be on post-secondary activity with the highest single likelihood.

The next section considers the factors used in the study, and explains the post-secondary activities included in the analysis. Section 3 presents the results of the analysis, and section 4 discusses the results. Section 5 provides more detailed information about the study population and the method of analysis.

## 2 THE FACTORS CONSIDERED

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### 2.1 Post-secondary activity

The post-secondary activity is the dependent variable in this study. It can be either a particular type of tertiary study, or no study.

For students who do go on to study, four types of tertiary study are considered: targeted training, certificate-level study (at levels 1 to 3), industry training (including Modern Apprenticeships) and diploma-level study (which includes certificates at level 4, and diplomas at levels 5 to 7). From 2010 onwards there is a new programme available to students with lower levels of school achievement, Youth Guarantee, but the students in our study population will not have had access to this scheme.

The data used for the analysis only includes study in a recognised qualification listed on the New Zealand Qualifications Framework (NZQF), and one where the programme of study is greater than 0.03 equivalent full-time students (more than one week's full-time study).

The following descriptions of tertiary study are adapted from *Profile & Trends* (Ministry of Education 2010).

#### **No further study**

In our data, we can identify students who are not enrolled in any form of formal tertiary study. While we have no data to show what students are actually doing when they choose no study, the available data—from the Household Labour Force Survey, reported quarterly by Statistics New Zealand—shows that this age group is just about as likely to enter the labour market as not. Non-labour market activities might include raising a family, caring for others, or being on a benefit. For those who do enter the labour market, the available data suggests poor employment outcomes for some members of this age group; Māori, Pasifika, and those of European/Māori ethnic identification.

As discussed in the introduction, the decision not to go on to further study after leaving school does not preclude further study in the future.

#### **Targeted training**

The government subsidises targeted education and training for specific groups. There are three separate programmes that were available to students in the study population, but in this study all three types of targeted training are reported as a single activity. The programmes are Youth Training, Training Opportunities and Skill Enhancement.<sup>2</sup>

Youth Training is for people up to the age of 18 years who have left school with no or very low-level qualifications. The programmes funded by Youth Training provide foundation and vocational skills training at levels 1 to 3 on the NZQF.

Training Opportunities is a labour market programme for people aged 18 years and over who are considered to have low or no educational attainment and are at risk of or have experienced labour market disadvantage. The programmes funded by Training Opportunities provide foundation and vocational skills training at levels 1 to 3 on the NZQF.

Skill enhancement offered vocational training to young Māori and Pasifika, at levels 3 and 4 of the NZQF.

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<sup>2</sup> The Skill Enhancement programme is being phased out (as at 2010), but the students in the study population would have had access to this programme.

## **Industry training**

To qualify for participation in industry training a person must be employed—or in the case of Modern Apprenticeships, to have at least arranged future employment—and most of the learning occurs within the workplace. The training is designed by Industry Training Organisations (ITOs) and delivered in conjunction with industry, and is intended to lead to recognised qualifications. All trainees enter into a training agreement with their employer, and their progress is assessed by registered assessors. ITOs facilitate individual training arrangements, purchase training from tertiary education providers, and then tailor these arrangements to the needs of workplace-based learners and their employers.

The Modern Apprenticeships programme is an employment-based education initiative aimed at encouraging participation in industry training by young people aged between 16 and 21 years. The initiative combines the mentoring aspect of the apprenticeship tradition with formal industry training that leads to recognised qualifications at levels 3 and 4 on the New Zealand qualifications framework.

In this study, Modern Apprenticeships is included in the industry training activity.

Mahoney (2009) provides a comprehensive overview of industry training in New Zealand.

## **Lower-level certificates**

Certificates may be studied at all levels up to and including level 7, and are often used to prepare candidates for employment and for further education and training. In this study, certificates at levels 1 to 3 are considered as lower-level certificates. They are equivalent to the level of study that occurs in upper secondary school.

## **Higher-level certificates and diploma-level study**

Diplomas are qualifications in technical, professional and/or managerial areas. In this study, certificates at level 4, and diplomas at levels 5 to 7 are considered in this category.

## **2.2 Highest level of school achievement**

School achievement is measured by the highest level of NCEA qualification gained.<sup>3</sup>

Three levels of school achievement are used; less than NCEA level 1, NCEA level 1 and NCEA level 2. Some students whose highest school qualification is NCEA level 2 also meet the university entrance requirement (UE). These students are excluded from the study population because they have the option of going to university—an alternative destination to the ones of interest in our study. In this report, all references to NCEA level 2 excludes students who also met the UE requirement, unless otherwise stated.

Figure 1 shows the number of students who gained some NCEA credits between 2007 and 2009 for all NCEA qualification levels. While the largest single group are those who gain NCEA level 3 and meet the UE requirement, there are numerically more students with qualifications below NCEA level 3 and who do not meet the UE requirement. The graph also shows that there are large differences in the numbers of males and females in some of the school achievement categories, with generally more females gaining higher school qualifications, and more males gaining lower school qualifications as their highest school qualification.

The count of students with less than NCEA level 1 as their highest school achievement does not include students who do not receive any NCEA credits. This is a limitation of the data, being

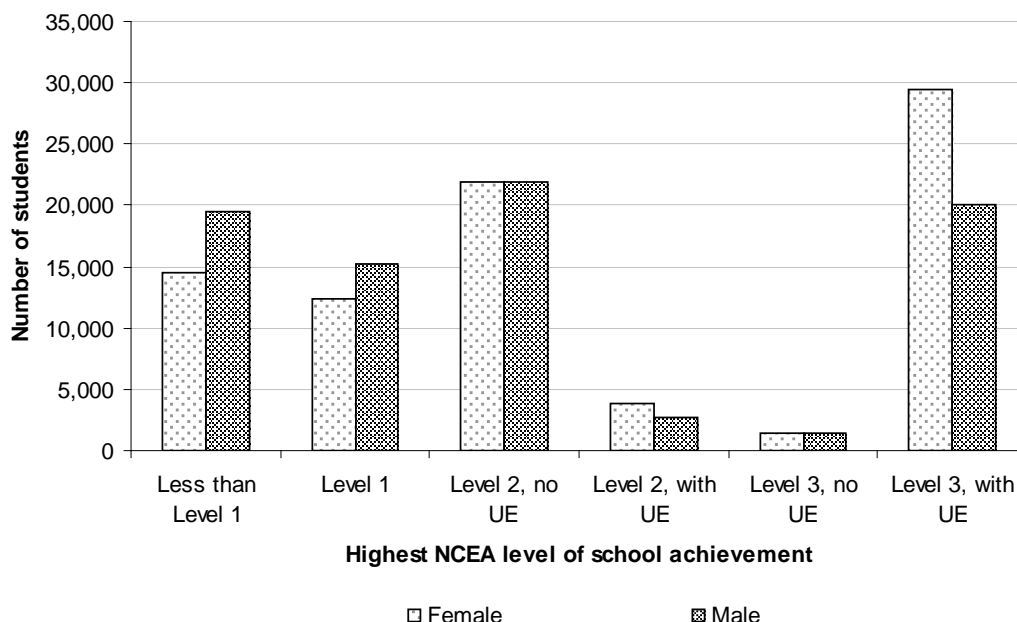
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<sup>3</sup> A finer breakdown of school achievement—using above or below average achievement towards a particular NCEA level—was explored as a factor in the analysis. However, this finer measure of school achievement did not contribute to any greater understanding of the results than when using the NCEA qualification level alone.

based on school achievement records, which only includes students with at least one credit on the New Zealand qualifications framework. Thus, our study population undercounts students with the lowest level of school achievement.

**Figure 1**

Number of students in the wider study population by highest level of NCEA school achievement and gender, for the years 2007 to 2009



For students 19 years of age in 2007, 2008 and 2009.

In our study population, 34 per cent of students achieved less than NCEA level 1, 27 per cent gained level 1, and 39 per cent gained level 2 (without UE) as their highest school qualification.<sup>4</sup>

Figure 2 shows the distribution of students within school achievement categories across the various post-secondary activities. The bars for each school achievement level add to 100 per cent. It can be seen that for the students in the study population—those with a school achievement level up to NCEA level 2 without UE—very few go on to degree-level study. There are also few students with higher school achievement in activities below degree-level study, apart from no study. But for the largest of these groups, students with NCEA level 3 and UE, just 9 per cent opt for no further study, and over 80 per cent go on to degree-level study. The figure also shows the strong association between the level of school achievement and the likelihood of being involved in particular post-secondary activities.

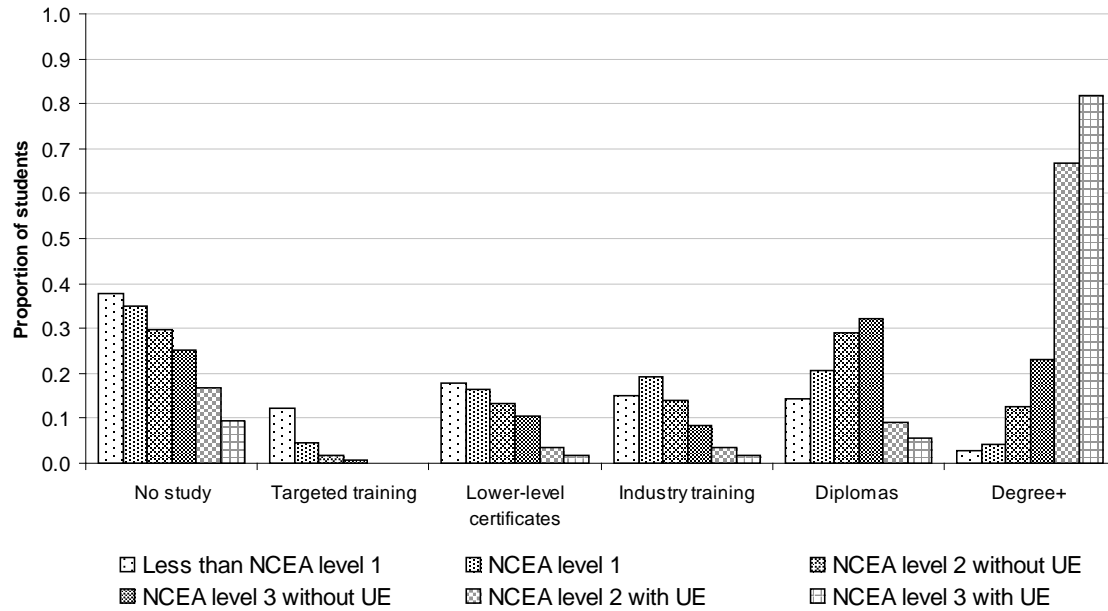
Figure 3 shows the same data, but presented so that bars in each post-secondary activity add to 100 per cent. This indicates the make up of each post-secondary activity in terms of students with different levels of school achievement. As is evident from figure 1, there are few students who gained NCEA level 2 with UE, or NCEA level 3 without UE. It is also clear that while there are sizeable proportions of students with lower level school qualifications going on to each post-secondary activity (figure 2), there is a clear separation between students with NCEA level 3 and those with lower level school qualifications. Bachelors-level study is primarily made up of students with NCEA level 3 and who met the UE requirement—not surprisingly—while the

<sup>4</sup> Note that these are not the probabilities of a student leaving school with the particular level of school qualification, since the study population excludes students who are still at school, and those who gained NCEA level 3 or who met the university entrance requirement. This latter condition includes students who gained NCEA level 2.

other post-secondary activities are primarily made up of students whose highest school qualification is less than NCEA level 3. In targeted training, the majority did not achieve NCEA level 1, while for diploma-level study, the predominant group achieved NCEA level 2 without UE.

**Figure 2**

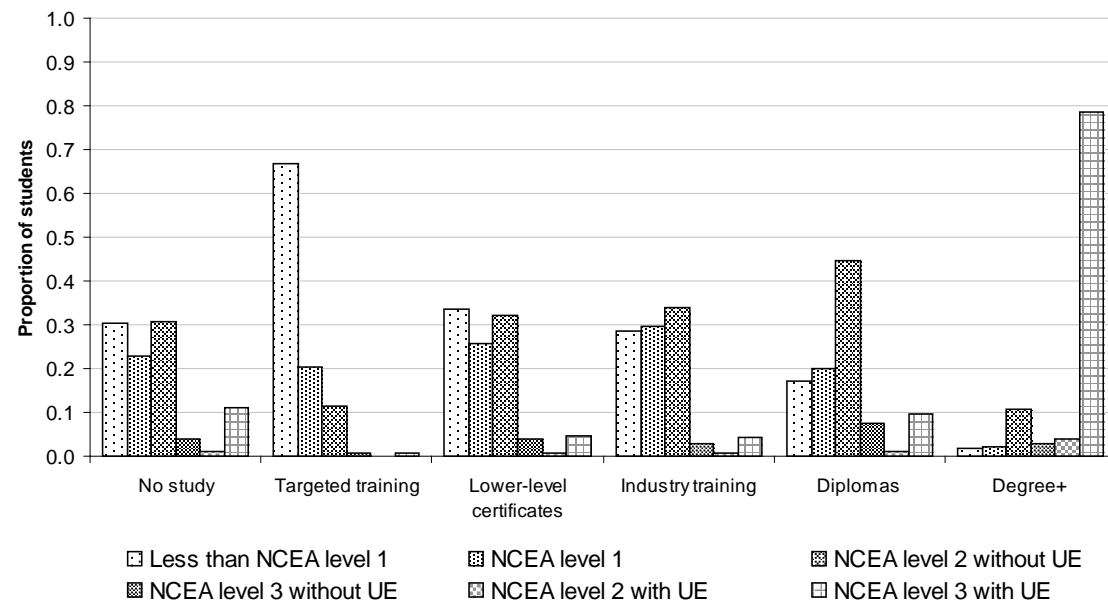
Proportions of students in each post-secondary activity within school achievement categories



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

**Figure 3**

Proportions of students with a particular level of school achievement in each post-secondary activity



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

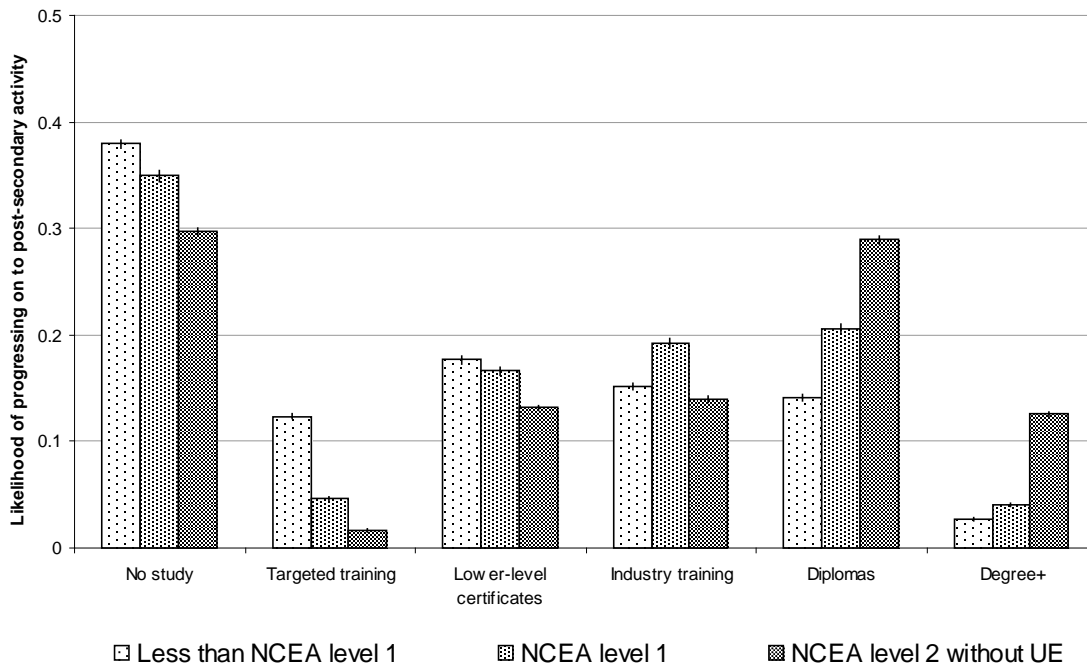


Figure 3 illustrates most clearly the single pathway taken by students with NCEA level 3, and the multiple pathways that students take if they achieve less than NCEA level 3.

Figure 4 shows the likelihood of students going on to all levels of tertiary study, by the highest level of school achievement up to NCEA level 2. A small proportion of these students go on to degree-level study. Comparison with figure 5 shows that ignoring degree students does not materially alter the results for the other levels of study.

**Figure 4**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

## 2.3 Ethnic group

Ethnicity in this analysis is based on the ethnicity as reported in the school achievement data. Up to three ethnic groups can be recorded for a student’s ethnic identification, so a single/combination method of reporting ethnicity can be used. The single/combination reporting method allows the distinction between those students who only indicated a single ethnicity—European, Māori, Pasifika or Asian—from those who indicated a combination of ethnic identifications—European-Māori, Māori-Pasifika, European-Asian, for example.

The reason the school achievement data was used as the basis for determining ethnicity is because a large proportion of students do not go on to tertiary study, so therefore there is no record of their ethnicity in the tertiary data. Recent studies using the dataset on transition from school to post-secondary activity (Engler 2009 and 2010 for example) have used this longitudinal approach to the analysis of ethnic identification to capture changes in students’ ethnicity over time, using ethnic identification in both the school and tertiary data. This is appropriate if the study population is restricted to students who go on to some type of post-secondary activity, or if the proportion of students not going on to tertiary study is low. In the present study, such an approach would lead to unbalanced results for those with multiple ethnic identifications over time.

In this study, the various multi-ethnic categories are grouped into a single category. This was done because the likelihoods of the post-secondary activities of the students in these multi-ethnic groups were much the same. While it would have been better to analyse them separately, there are very few students in some of the multi-ethnic categories. Section 3.3 shows how the multi-ethnic groups compare to each other. Section 3.4 considers within ethnic group differences.

In the study population, 57 per cent of students were in the European ethnic group, 19 per cent were Māori, 10 per cent Pasifika, 5 per cent Asian, and 6 per cent were in multi-ethnic groups. The remainder are made up of 'other' ethnic groups.

Table 1 shows the distribution of students in the ethnic groups by the highest level of school achievement. It can be seen that the proportion of students in the different achievement categories vary with ethnic group. Māori and Māori-Pasifika groups have proportionally more of the lower achieving students, while the Pasifika-Asian group has the highest proportion of students with NCEA level 2.

**Table 1**  
Demographic breakdown of the study population

Variable		Highest NCEA level of school achievement			Number of students
		Less than Level 1	Level 1	Level 2 (no UE)	
Ethnicity	European-Māori	36%	28%	36%	3,513
	Māori-Pasifika	42%	25%	33%	781
	European-Pasifika	31%	27%	42%	680
	Pasifika-Asian	26%	24%	50%	228
	All multi-ethnic groups	35%	27%	38%	5,628
	European	29%	28%	43%	54,576
	Māori	45%	26%	29%	18,475
	Pasifika	35%	24%	41%	9,553
	Asian	32%	27%	42%	5,267
Gender	Female	31%	26%	42%	43,664
	Male	35%	28%	37%	52,739
School decile	1–2	41%	25%	34%	14,668
	3–8	33%	28%	39%	65,392
	9–10	25%	28%	47%	15,471
Residential location	Auckland	33%	25%	41%	26,069
	Wellington	31%	27%	42%	8,480
	Christchurch	34%	28%	37%	7,699
	Other main urban	33%	28%	39%	26,649
	Secondary urban	34%	27%	39%	8,342
	Minor urban	35%	28%	37%	14,110
	Rural centre	29%	29%	42%	1,787
Rural area	30%	30%	40%	1,475	
All students		34%	27%	39%	97,867

Percentages sum across rows to 100 per cent, but not all totals will sum to 100 per cent because of rounding. Percentages in any one category exclude students with missing information. Totals include all students in the study population.

## 2.4 Gender

Males are slightly more prevalent in the study population, at 55 per cent, because males are more likely to have lower-level qualifications as their highest school qualification (see figure 1). In the wider study population, which includes students who achieved NCEA level 3, there is a 50:50 split between the genders.

Table 1 shows the distribution of students across the school achievement categories by gender. The higher proportion of males in the lower school achievement categories is again evident.

## 2.5 School decile

The school decile is determined from the last school a student attended.

The school decile is based on the socio-economic characteristics of the communities from which a school draws its pupils. This means that school decile does not necessarily indicate the socio-economic status of an individual student or their family. This is because most secondary schools draw from diverse communities and hence, most of these schools will have students from a range of socio-economic levels on their rolls. In spite of this, school decile was found to be associated with particular post-secondary activities. While care must be used in interpreting the findings and in extrapolating the results (Hattie 2002), it is generally considered that the results for the higher and lower decile ranges are less influenced by this dilution effect, since these schools will have the highest proportion (in lower-decile schools) and the lowest proportion (in higher-decile schools) of lower socio-economic students.

School decile is also likely to be a proxy for a number of school characteristics which are important in determining the likelihood of deciding what to do after leaving school. Thrupp and Lupton (2006) indicate that the socio-economic composition of the student population affects school processes in numerous ways, which would cumulatively boost the academic performance of schools in middle-class settings, and suppress it in low socio-economic settings. This would have a direct bearing on the likelihood of further study, since without the requisite qualifications and standards, study at higher levels is usually not an option.

Leach and Zepke (2005) cite research which shows that students from higher decile schools have access to more information about tertiary study, and students in these schools develop tastes for the type of training received and occupations held by their peers or their parents. Bélanger *et al* (2009) also cite the positive effects of private (higher decile) schools on student aspirations for further study. While school decile as a proxy for socio-economic status is compromised by the fact that not all students in a school belong to the same socio-economic group, certainly every student in a school is more or less exposed to the ethos of their school.

It is not possible to separate the socio-economic and school factors, or to include them individually in the analysis, but it is likely that many students from low-decile schools will have less experience learning in a motivated and motivating environment, and are therefore more likely to leave school with lower levels of attainment. Table 1 shows the distribution of students across the school achievement categories by the decile rating of their last school. The difference in school achievement between students from different school deciles is apparent.

In the study population, 16 per cent were from schools with decile rankings 1 and 2, and 15 per cent were from schools with decile rankings 9 and 10.

## 2.6 Residential location

The choice of whether or not to go on to tertiary education after leaving school may depend on how easy it is to access that education, and this depends in part on where a person lives.

In this study, residential location is determined by the location of the last school a student attended, since no data is available as to the actual residential address of a student.

Statistics New Zealand classifies each locality in NZ into five categories: main urban, secondary urban, minor urban, rural centre and rural area.

### **Urban areas**

Main urban areas are very large urban areas centred on a city or major urban centre. Main urban areas have a minimum population of 30,000. Secondary urban areas have a population between 10,000 and 29,999 and are centred on the larger regional centres. Examples of secondary urban areas include Taupo, Masterton, and Greymouth. Minor urban areas are urbanised settlements (outside main and secondary urban areas), centred around smaller towns with a population between 1,000 and 9,999. Examples of minor urban areas are Russell, Warkworth, Featherston and Thames.

In this study, the three main cities in New Zealand have been separately identified from the other main urban centres: greater Auckland (comprising the northern, western, central and southern Auckland main urban areas), greater Wellington (comprising the Upper Hutt, Lower Hutt, Porirua, Wellington and Kapiti main urban areas), and Christchurch (comprising the Christchurch main urban area).

### **Rural areas**

Rural centres (which include some off-shore islands) comprise the remainder. Rural areas are rural settlements or townships with a population of between 300 and 999.

Table 1 shows the distribution of students across the school achievement categories for the residential locations used in the study. In the main, there are fewer differences between residential locations than there are between the other demographic variables. This is likely to be because each residential location category will contain students with each of the other demographic characteristics.

## 3 RESULTS

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The results presented in this section are primarily based on logistic regression modelling. The modelling allows us to put confidence limits around the probabilities, so we can say with a particular degree of certainty that two results are actually different, or not.

The modelling showed significant interactions between the factors considered in the study. For example, ethnic group and highest school achievement interact. It is therefore misleading to consider how the likelihood of opting for the different post-secondary activities varies with highest school achievement, since the effect of highest school achievement *depends on which ethnic group* you consider. Nevertheless, we will start our discussion of the results by describing the findings for highest school achievement alone, to provide a baseline or overall result, before we present the more complex results for the multi-factor interactions. Similarly, in subsequent sections we present the results for two factors, even though the models showed significant interactions between three factors. Again, we do this because the results for three factors are quite complex, and we believe it is easier to understand the more complex results after first having seen the two factor results. Section 3.11 provides a summary of the overall results.

### 3.1 Highest level of school achievement

When not controlling for highest school achievement, 36 per cent of students in the study population opted to not go on to further study after leaving school.<sup>5</sup>

Figure 5 shows the likelihoods of students' post-secondary activities by highest school achievement. In this figure, as with the other figures in this section, students who progressed on to degree-level study, as well as those who achieved NCEA level 3 or met the university entrance requirement, are excluded. Table 2 shows the sample sizes on which the results in figure 5 are based.

It can be seen from figure 5 that in all post-secondary activities, other than for industry training,<sup>6</sup> there is a step-wise progression of likelihoods (either up or down) for students with the lowest levels of school achievement to those with the highest levels. For example, for students who have NCEA level 2 as their highest school qualification, are the most likely to go on to diploma-level study, while those who do not gain NCEA level 1 are the least likely, and the likelihoods for students with NCEA level 1 fall between the two. For students who go on to study at lower-level certificates, the order of likelihoods is the reverse, with those who gained NCEA level 2 being the least likely to study at this level.

For industry training, it is students with NCEA level 1 as their highest school qualification who are most likely to choose this activity. Students with no NCEA qualification or NCEA level 2 have essentially equal likelihoods of being involved in industry training.

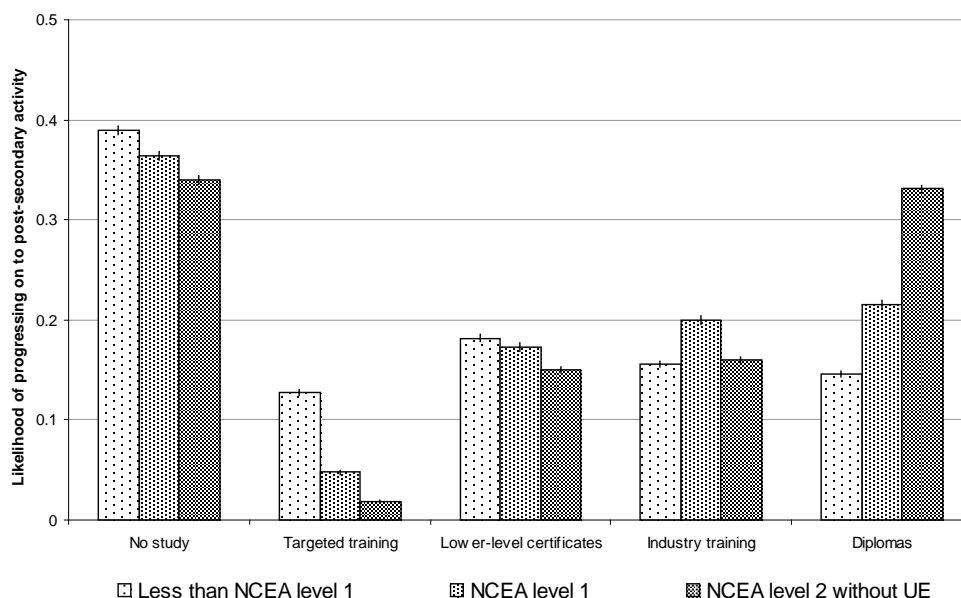
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<sup>5</sup> This figure of 36 percent represents those students in the study population, who, by the age of 19 years, had never been in any type of tertiary training. Some of the training that students undertake is quite short in duration, and a student may go on to other training, or enter the labour force, on completion of that training. For the study population, 60 percent of students were not in tertiary training at the age of 19 years, of which 47 percent had previously been in some type of tertiary training.

<sup>6</sup> References to industry training implicitly include Modern Apprenticeships.

**Figure 5**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school qualification gained



Diploma-level study includes certificates at level 4.

**Table 2**

Number of students in each of the school achievement and post-secondary activity categories in figure 5

NCEA school achievement	No study	Targeted training	Lower-level certificates	Industry training*	Diplomas†	All students
Less than level 1	12,893	4,209	6,006	5,147	4,817	33,072
Level 1	9,622	1,275	4,594	5,317	5,705	26,553
Level 2 (no UE)	13,003	731	5,757	6,099	12,652	38,242
All students	35,558	6,215	16,357	16,563	23,174	97,867

\* Industry training includes Modern Apprenticeships.

† Diploma-level study includes certificates at level 4.

This departure in industry training from the even gradients seen for the other post-secondary activities is probably due to the fact that to be involved in industry training, the young person is first required to be employed, or, in the case of Modern Apprenticeships, to have at least negotiated a position with a prospective employer. The likelihood of being in industry training is therefore both a function of a student's aptitude, demonstrated by their school results, and their likelihood to find employment. This latter ability will vary with a number of factors, including ethnicity, socio-economic status and gender, in addition to a number of personal attributes and factors, and their level of school achievement. The requirements and expectations of the industry training organisation and employer will also be important factors in determining if a student is accepted into an industry training arrangement. Finally, business and economic cycles, which impact employment, will also play a role in the longer term. These features of industry training complicate the conclusions that can be reached for this activity.

The results also show that for students who achieved less than NCEA level 2, the highest single likelihood is not to go on to further study. For students with NCEA level 2, there is about an equal likelihood of either no study, or going on to diploma-level study. This is in contrast to students who gain NCEA level 3 and meet the university entrance requirement, where 9 per cent choose no study, and 82 per cent go on to bachelors-level study (see figure 2).

Not unexpectedly, there is a strong association between the highest level of school achievement, and the decision to go on to diploma-level study or targeted training. The differences in the likelihood of undertaking the post-secondary activity between the levels of school achievement are substantial. On the other hand, the decision to go on to lower-level certificate study is less strongly associated with school achievement, and as noted above, as is involvement in industry training. The level of school achievement makes relatively little difference to the likelihood of not going on to further study.

Table 3 shows how students are distributed across the post-secondary activities within the school achievement categories. The top three lines of the table are the numbers presented in figure 5. Table 3 also shows the proportions of students—unadjusted for school achievement—in the post-secondary activities by the other factors considered in this study. These serve as a reference point when considering likelihoods adjusted for school achievement, and other factors, presented in the following sections and figures.

**Table 3**

Per cent of students in the study population undertaking post-secondary activities by various demographic variables

Variable		No study	Targeted training	Lower-level certificates	Industry training	Diplomas
<i>Highest NCEA qualification</i>	Less than Level 1	39%	13%	18%	16%	15%
	Level 1	36%	5%	17%	20%	21%
	Level 2 (no UE)	34%	2%	15%	16%	33%
<i>Ethnicity</i>	European-Māori	37%	7%	19%	16%	20%
	Maori-Pasifika	41%	11%	18%	10%	20%
	European-Pasifika	40%	7%	14%	11%	27%
	Pasifika-Asian	40%	2%	19%	8%	32%
	All multi-ethnic groups	38%	7%	18%	14%	22%
	European	32%	5%	16%	22%	25%
	Māori	38%	11%	19%	14%	18%
	Pasifika	42%	8%	18%	7%	25%
	Asian	56%	1%	10%	4%	29%
<i>Gender</i>	Female	38%	7%	19%	9%	26%
	Male	35%	6%	15%	23%	22%
<i>School decile</i>	1–2	39%	10%	20%	11%	20%
	3–8	36%	6%	17%	18%	23%
	9–10	37%	3%	14%	17%	30%
<i>Residential location</i>	Auckland	40%	6%	15%	11%	28%
	Wellington	40%	7%	16%	13%	23%
	Christchurch	35%	6%	15%	14%	30%
	Other main urban	35%	7%	18%	19%	22%
	Secondary urban	31%	6%	17%	24%	22%
	Minor urban	35%	6%	18%	23%	19%
	Rural centre	32%	6%	17%	26%	18%
Rural area	38%	8%	19%	18%	17%	
All students		36%	6%	17%	17%	24%

Percentages sum across rows to 100 per cent, but not all totals will sum to 100 per cent because of rounding.

Percentages in any one category are based on numbers which exclude students with missing information.

Industry training includes Modern Apprenticeships.

Diploma-level study includes certificates at level 4.

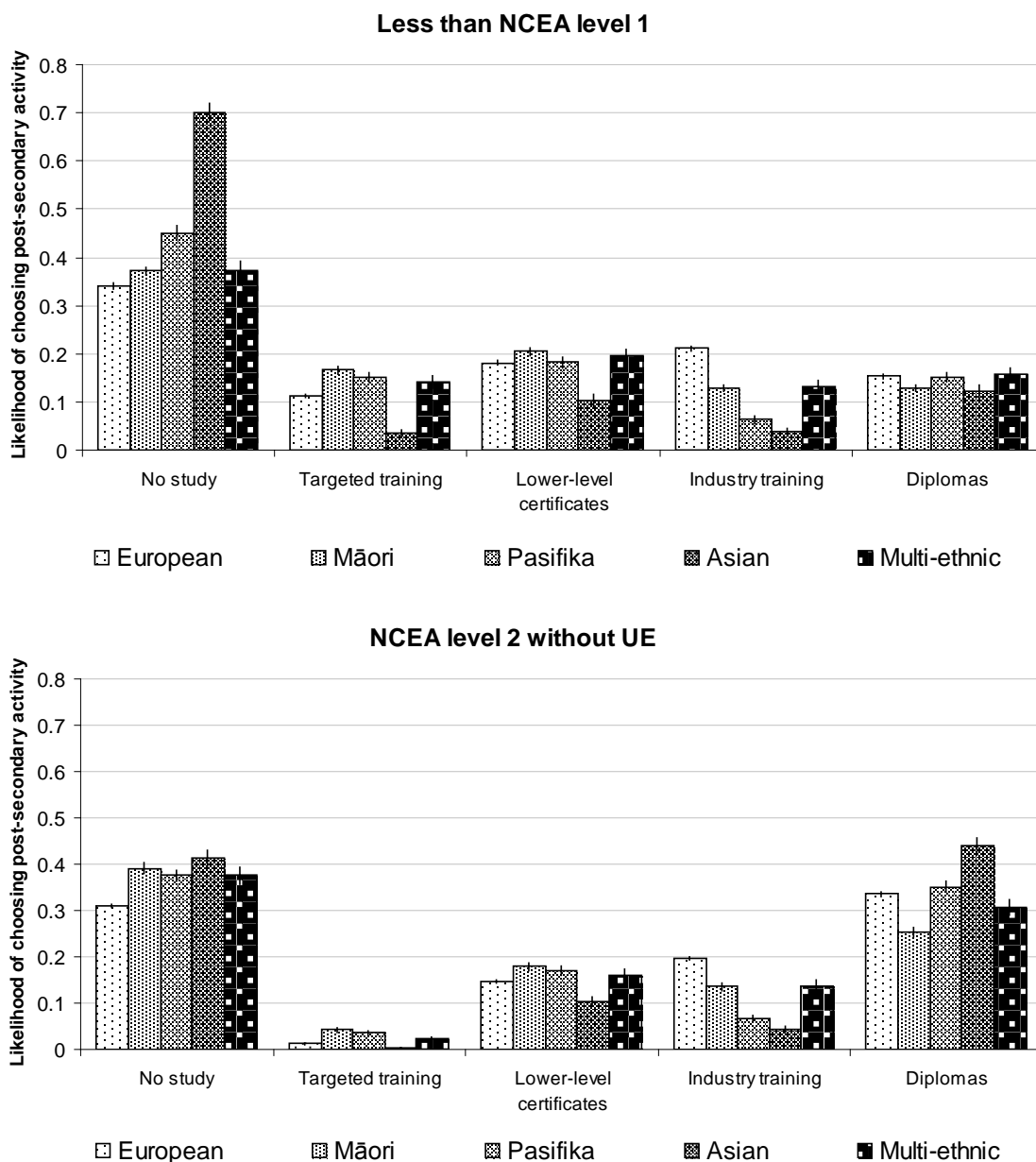
### 3.2 School achievement and ethnicity

Figure 6 shows the likelihoods of students’ post-secondary activities when controlling for school achievement and ethnic group. We present only the results for those without an NCEA qualification and for those with NCEA level 2—the results for students who have NCEA level 1 as their highest school achievement fall between those two categories.

The modelling indicated there was a significant interaction between school achievement and ethnic group. That is, the likelihood of a student going on to any one post-secondary activity varies both with the student’s ethnicity and their highest level of school achievement.

**Figure 6**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and ethnic group



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.



The results show that for students who do not gain NCEA level 1:

- The most likely post-secondary activity is not to go on to further study, regardless of the students' ethnicity. The likelihood of no further study is not the same for each ethnic group however. Asian students with this level of school achievement are most likely to not go on to further study, while European students the least likely.
- Asian students are very unlikely to be involved in targeted training, or industry training. Pasifika students are also far less likely to be in industry training than the other ethnic groups.
- Europeans are most likely to be involved in industry training.
- There is much the same likelihood of students going on to lower-level certificate training across most ethnic groups, apart from Asian students.
- The likelihood of diploma-level study is also relatively uniform likelihood across ethnic groups, with Māori and Asian students slightly less likely to go on to this level of study.

For students who gain NCEA level 2 without UE:

- Diploma-level study is the most likely outcome for European and Asian students. For the other ethnic groups, the single most likely outcome is no further study.
- The likelihood of no further study is relatively consistent across ethnic groups, but with Europeans showing a significantly lower likelihood than other groups.
- The likelihood of diploma-level study varies with ethnic group. It is highest for Asian students, and lowest for Māori students.
- Like students with lower levels of school achievement, Asian students are very unlikely to be involved in targeted training or industry training, and have the lowest likelihood of going on to lower-level certificate study.
- The likelihood of students being involved in targeted training is much less for students with NCEA level 2. The higher likelihoods for Māori and Pasifika students reflect that some of these programmes are focussed on these ethnic groups.

Overall, the change in the pattern of behaviour of students who didn't gain NCEA level 1 to those who gained NCEA level 2 shows a higher preference to go on to diploma level study, at the expense of opting for no further study. The proportion of students involved in targeted training also falls substantially. The proportion going on to lower-level certificate study, or industry training, remains much the same between the two groups of school achievers.

### 3.3 Comparing groups within the multi-ethnic category

In the main analysis described in this report, results are reported for the ‘single’ ethnic groups and a group combining all the multi-ethnic groups. This multi-ethnic group is, in the main, quite homogeneous in terms of the likelihood to go on to a particular post-secondary activity, but the numerically larger European-Māori group does influence the average result, hiding subtle differences in the other multi-ethnic groups. This section explores in more detail this multi-ethnic group. But because of the small sizes of these subgroups, we consider only the effect of highest school achievement, omitting the effect of school decile and gender. In addition, the results are not modelled, but are the observed proportions of students seen in the various post-secondary activities. Confidence limits are therefore not able to be reported.

Table 4 shows the data in tabular form, and figures 7 and 8 show the results graphically. The figures also include results for the groups with a single ethnicity, to facilitate comparisons across the ethnic groups considered in our study. Table 4 also shows the number of students in each ethnic group/school achievement category, and the small number of students in the groups other than European-Māori can be seen. The results for the remaining multi-ethnic groups are not shown as there are too few students for the results to be meaningful.

**Table 4**

Per cent of students in post-secondary activities by selected ethnic groups and highest school achievement

Highest NCEA school achievement	Ethnic group	Post-secondary activity					Number of students
		No study	Targeted training	Lower-level certificates	Industry training	Diplomas	
Less than Level 1	European-Māori	36%	13%	19%	17%	15%	1,142
	Māori-Pasifika	38%	21%	19%	8%	13%	309
	European-Pasifika	40%	14%	14%	10%	22%	196
	Pasifika-Asian	42%	5%	20%	10%	22%	59
	All multi-ethnic groups	37%	14%	19%	14%	16%	1,824
Level 1	European-Māori	40%	5%	21%	17%	17%	932
	Māori-Pasifika	41%	6%	17%	13%	23%	191
	European-Pasifika	42%	5%	17%	14%	22%	175
	Pasifika-Asian	49%	2%	20%	5%	24%	55
	All multi-ethnic groups	40%	5%	20%	15%	20%	1,475
Level 2, no UE	European-Māori	36%	2%	17%	16%	28%	1,254
	Māori-Pasifika	45%	2%	17%	10%	27%	260
	European-Pasifika	39%	2%	13%	11%	35%	286
	Pasifika-Asian	34%	0%	18%	8%	40%	114
	All multi-ethnic groups	37%	2%	16%	14%	30%	2,083

Percentages sum across rows to 100 per cent, but not all totals will sum to 100 per cent because of rounding.

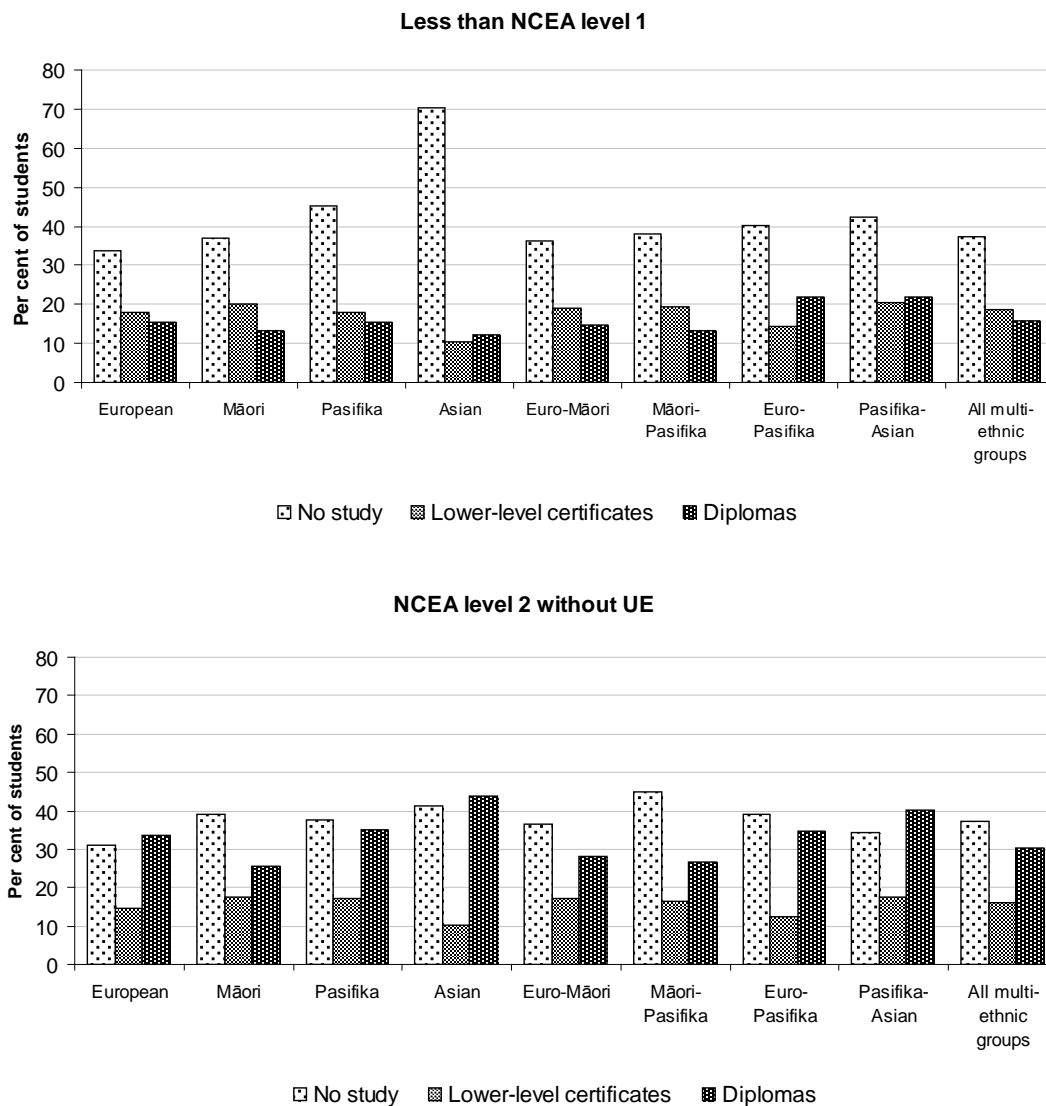
Diploma-level study includes certificates at level 4.

Industry training includes enrolments in Modern Apprenticeships.

Students with less than NCEA level 1 show their highest likelihood as no study, regardless of ethnic group. It can be seen from figure 7 that no study is the most likely activity in each ethnic group. The figure also shows that the multi-ethnic groups, as a group, are reasonably consistent in their likelihood of choosing no further study.

There is some variation in the relative likelihoods of the two study activities for these students who did not gain NCEA level 1. The likelihood of lower-level certificate study is higher than the likelihood of diploma-level study, except for Asian, European-Pasifika and Pasifika-Asian students. The average for multi-ethnic students reflects that of the European-Māori and Māori-Pasifika groups, who make up the majority of the multi-ethnic group.

**Figure 7**  
Per cent of students in selected post-secondary activities by highest level of school achievement and ethnic group



Diploma-level study includes certificates at level 4.

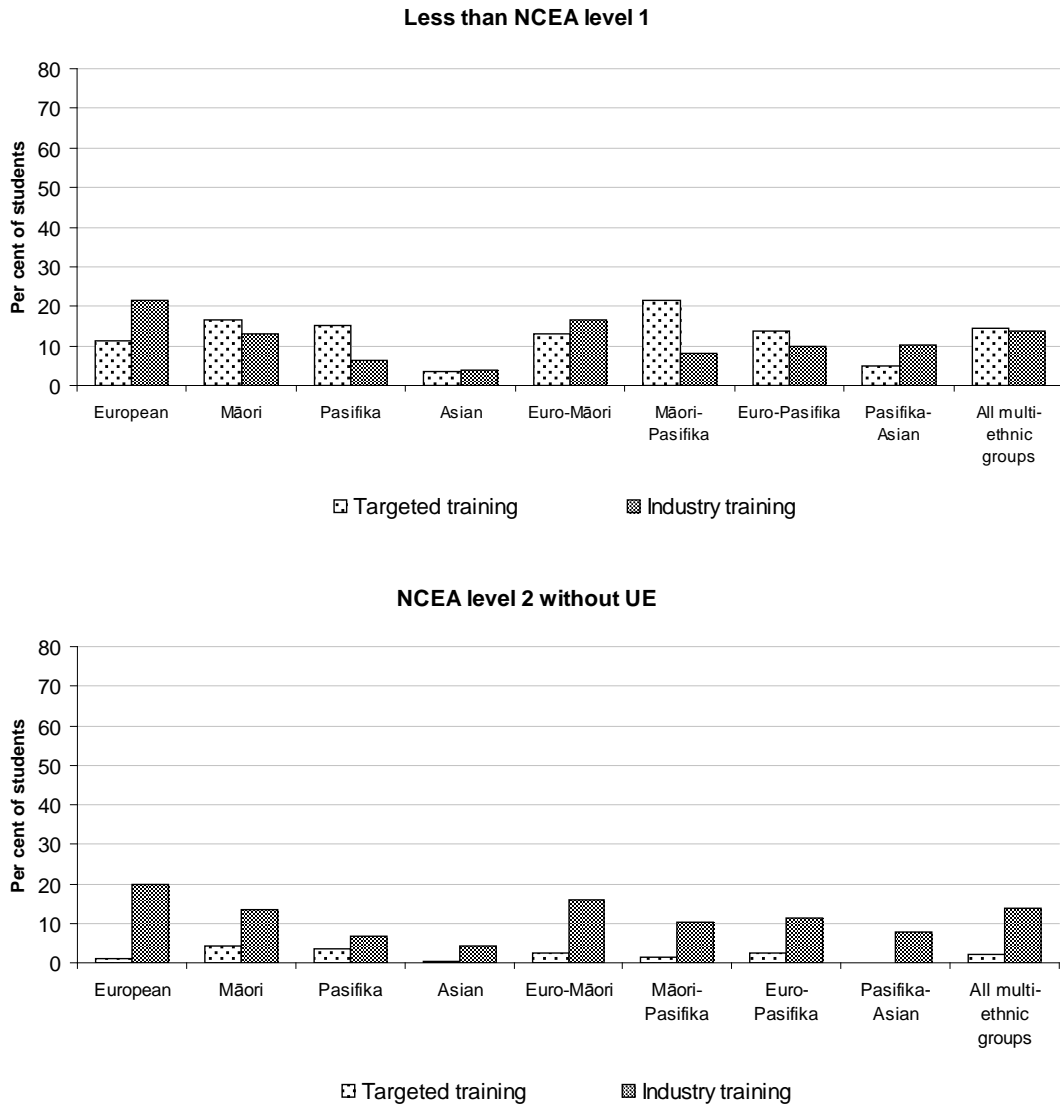
For students who gained NCEA level 2 there are again quite similar patterns across all ethnic groups (figure 7, lower graph). The likelihood of no study is the highest of these three except for European, Asian and Pasifika-Asian students. As a group, the multi-ethnic students are quite similar.

Figure 8 shows the pattern of likelihoods for the post-secondary activities targeted training and industry training.

For students who did not achieve NCEA level 1 (figure 8, top graph), the multi-ethnic groups are somewhat more consistent than the single ethnic groups. For students who gained NCEA level 2, there is much consistency in the multi-ethnic group

**Figure 8**

Per cent of students in selected post-secondary activities by highest level of school achievement and ethnic group



### 3.4 Within ethnic group differences

The method of reporting ethnicity used in our analysis allows comparisons to be made both between and within ethnic groups. Within ethnic group comparisons compare the students who indicated a single ethnic group, with those who indicated that ethnic group and another one.

The data shows significant differences within each ethnic group, but the differences are not the same in each ethnic group.

For students who do not gain NCEA level 1, there are no differences in the likelihood of going on to the various post-secondary activities between students who indicated Māori as their only ethnic group, versus those who indicate Māori and some other ethnic group. However, for students who gained NCEA level 2, Māori only students were more likely to be involved in targeted training, and less likely to go on to diploma-level study, than Māori-plus-other students. The most likely post-secondary activity for both Māori ethnic categories is no study, for both levels of school achievement.

Students with Pasifika-plus-other ethnic identification are more likely to be in industry training than Pasifika only students, at all levels of school achievement. Pasifika only students are also more likely to be in targeted training if they gained NCEA level 2, compared to Pasifika-plus-other ethnic students, and are more likely not to go on to further study if they didn't achieve NCEA level 1. Like Māori, both categories of the Pasifika ethnic group were most likely not to pursue further study after leaving school, whatever the level of school achievement.

For European students who didn't gain NCEA level 1, students who only indicated European as their ethnic group were more likely to be in industry training, but showed no other differences with the likelihood of being involved in any of the other post-secondary activities. For European students who gained NCEA level 2, European only students were again more likely to be involved in industry training, but were also less likely not to go on to further study, less likely to be involved in targeted training, and more likely to go on to diploma-level study.

For European students, the most likely activity varies within the ethnic category. For students who did not gain NCEA level 1, the most likely activity is no further study. For students who gained NCEA level 2, European only students are most likely to go on to diploma-level study, while for students who indicated European and some other ethnic group, the most likely activity is again no further study.

For Asian students who did not gain NCEA level 1, there are quite marked differences. Asian only students are most likely to not go on to further study, whereas Asian-plus-other students are more likely to have been involved in targeted training and industry training, lower-level certificate study and diploma-level study. The differences are less marked for students who gain NCEA level 2. For these students, Asian-plus-other students are more likely to go on to lower-level certificate and diploma-level study, and are slightly less likely to not go on to further study.

All Asian students are most likely to not go on to further study if they did not gain NCEA level 1, and for those who gained NCEA level 2, all Asian students are about equally as likely to go on to no further study as diploma-level study after they leave school.

### 3.5 School achievement and gender

Figure 9 shows the results for school achievement and gender. Again, only the results for students with the lowest and highest school achievement levels are shown.

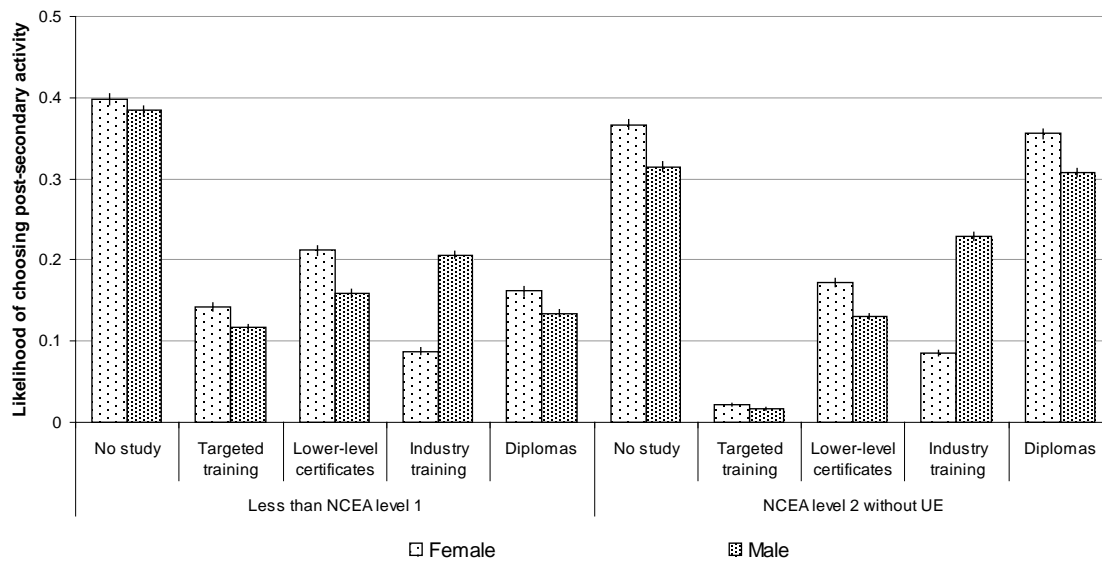
An interaction between gender and school achievement can be seen. For students who don't achieve NCEA level 1, the likelihood of no study is much the same for males and females, whereas for students who achieve NCEA level 2, females are more likely not to study.

On the other hand, females are significantly more likely than males to choose any of the post-secondary study activities other than industry training, regardless of the level of school achievement. As noted previously, this difference between the genders is due to both school achievement, and the likelihood to be in work that offers industry training. Males are more likely to be in the labour force, and the types of industry which offer industry training tend to be male dominated (Mahoney 2009).

These differences between males and females are in contrast to the finding for students who achieve NCEA level 3 and meet the UE requirement, where it was found that gender makes little difference in the likelihood of going on to bachelors-level study once we control for school achievement (Engler 2009).

**Figure 9**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and gender



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

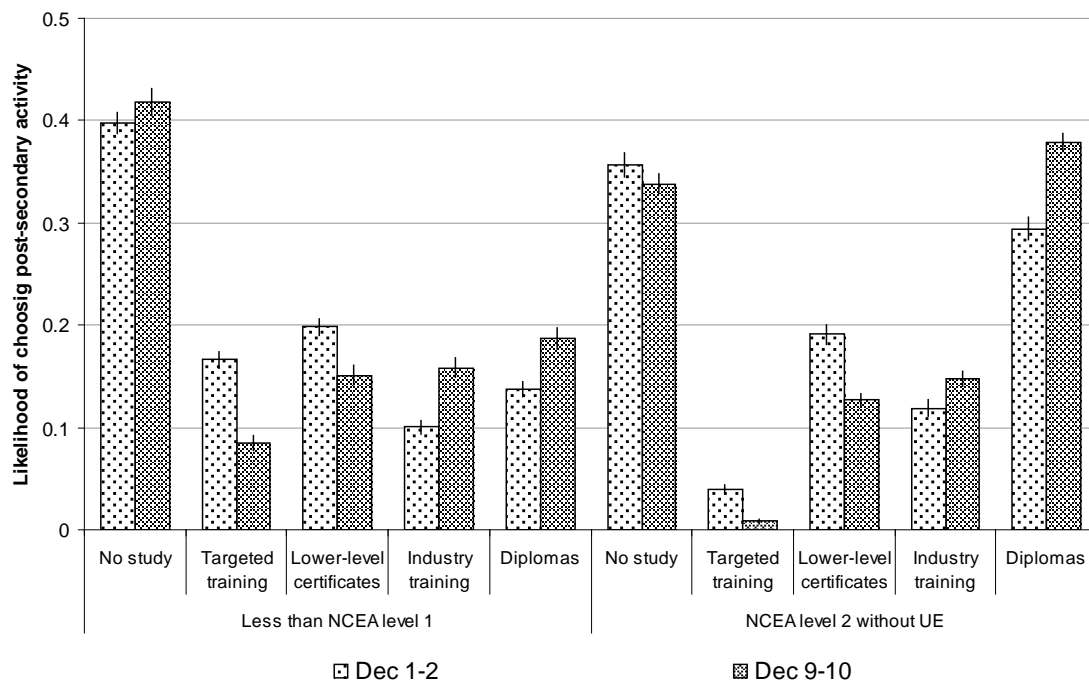
### 3.6 School achievement and school decile

Figure 10 shows the results of the modelling of students’ post-secondary activity controlling for school achievement and school decile.

The modelling also found a significant interaction between school achievement and school decile. Students from higher-decile schools, who gain NCEA level 2, are most likely to go on to diploma-level study. Students from lower-decile schools with NCEA level 2 have no further study as their most likely outcome. This is not because the likelihood of no further study is that much different for students from the two school decile groups—in fact there is no statistical difference between them—but rather, it is because the likelihood of students going on to diploma-level study differs significantly between them.

**Figure 10**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and school decile



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

For students with less than NCEA level 1, students from lower-decile schools are less likely to study at diploma level or be involved in industry training, but are more likely to be involved in targeted training and lower-level certificate study, than similar students from higher-decile schools. There is no statistical difference in the likelihood of not going on to further study between these two groups of students.

For students who attended a higher-decile school, those who gained NCEA level 2 show essentially the same results as students with no school qualifications: they are more likely to study at diploma level and be involved in industry training, and less likely to be involved in targeted training or lower-level certificate study than similarly qualified students from lower-decile schools. Again, the likelihood of not going on to further study is not statistically different between students from higher- or lower-decile schools.

### 3.7 School achievement and residential location

Figure 11 shows the results when controlling for school achievement and residential location.

The results show:

- There is much in common between the different residential localities in the likelihoods of students choosing post-secondary activities. The main difference is that students from main urban areas are generally less likely to be involved in industry training, and more likely to be studying at diploma level, than their peers from more isolated urban or rural locations. This result holds regardless of the level of school achievement.
- Students with NCEA level 2, who went to school outside the three main cities, or in more remote locations, were overall more likely to go on to study lower-level certificates.
- Students from Wellington who gained NCEA level 2 are less likely to go on to diploma-level study, and more likely to not go on to further study, than their peers from Auckland and Christchurch.<sup>7</sup> In fact, the students from Wellington who had gained NCEA level 2 were the most likely of all students not to go on to further study.
- Those from Wellington with NCEA level 2 were also significantly more likely to be involved in targeted training, especially when compared to the other main cities and urban areas.
- Students from Auckland and Christchurch who gain NCEA level 2 are significantly more likely to go on to diploma-level study than other students.

The lower likelihood of progressing on to diploma-level study by Wellington students with NCEA level 2 was investigated further. Wellington students were more likely to be European than students in Auckland, but Christchurch had the highest proportion of European students. The Wellington student population had a slightly higher proportion of male students. The biggest difference was that Wellington was far more likely to have students from higher-decile schools than either Auckland or Christchurch. If anything, this latter characteristic ought to have resulted in higher rates of students going on to diploma-level study. Exploration of the data provided no convincing evidence that any of the factors in this study were associated with the result. Certainly Wellington students who did not gain at least NCEA level 1 were not that different from the other cities, nor were Wellington students with NCEA level 3 and their propensity to go on to degree-level study. Students with NCEA level 1 as their highest school qualification showed intermediate results, with students from Wellington being significantly less likely to go on to diploma-level study than Auckland or Christchurch students, but the likelihood of going on to no study was equal to that of Auckland, but higher than for students from Christchurch.

The particular Wellington effect reflects differences between the main cities that are not visible in our data. There are clearly differences between the main cities in terms of their labour markets, and the types of work that might be available for young people with lower school qualifications. The differences in student behaviour between geographic locations suggest further study is required.

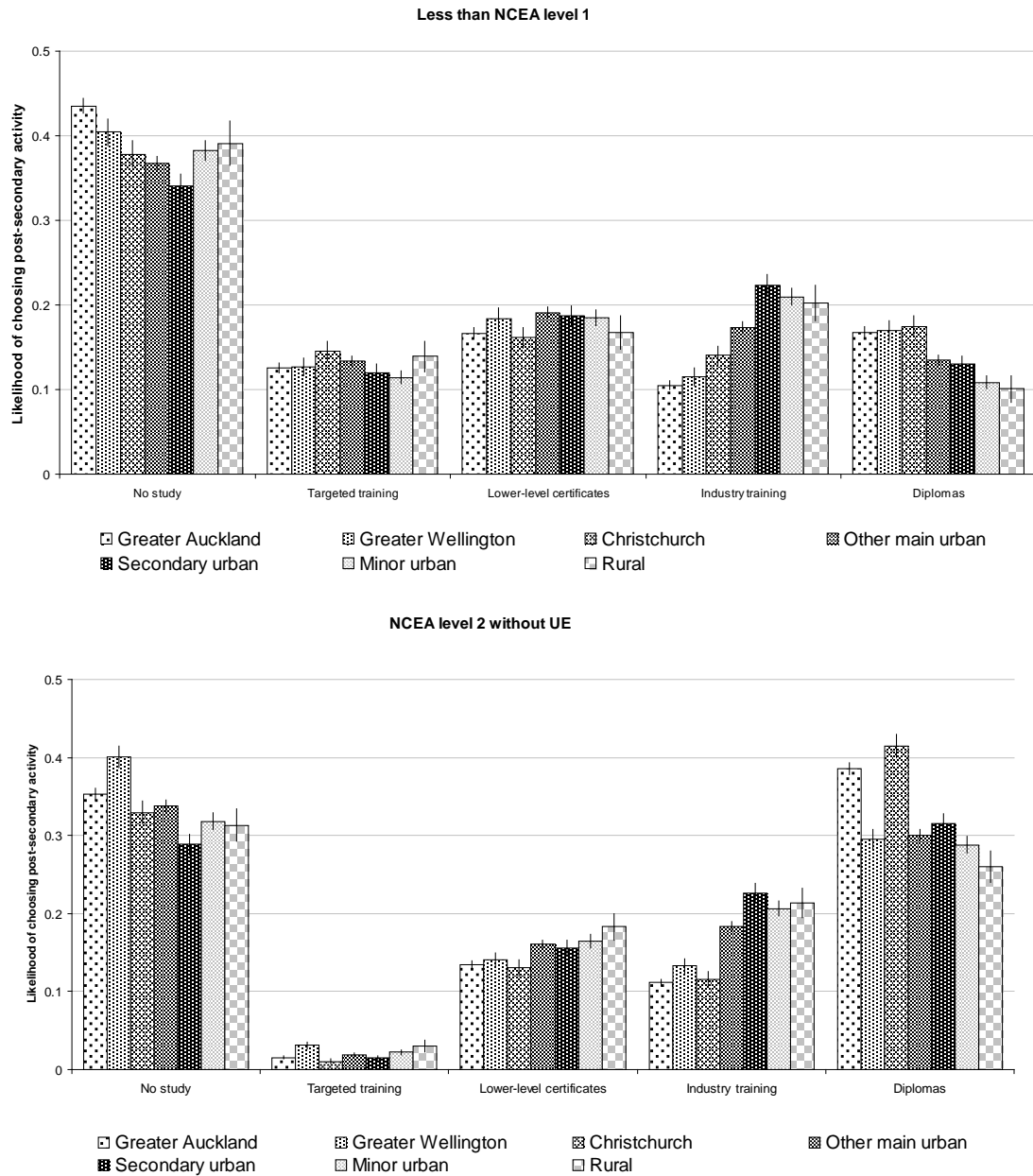
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<sup>7</sup> When the analysis was redone using only the Wellington urban area in the 'Wellington' category, excluding the urban areas that make up the Greater Wellington region, the results were essentially the same. This finding therefore rules out the hypothesis that it is the students from the Greater Wellington region that are contributing to the lower likelihood of students going on to diploma-level study.



**Figure 11**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and residential location



Diploma-level study includes certificates at level 4.  
 Industry training includes Modern Apprenticeships.  
 The 'rural' location category includes both rural centres and rural areas.

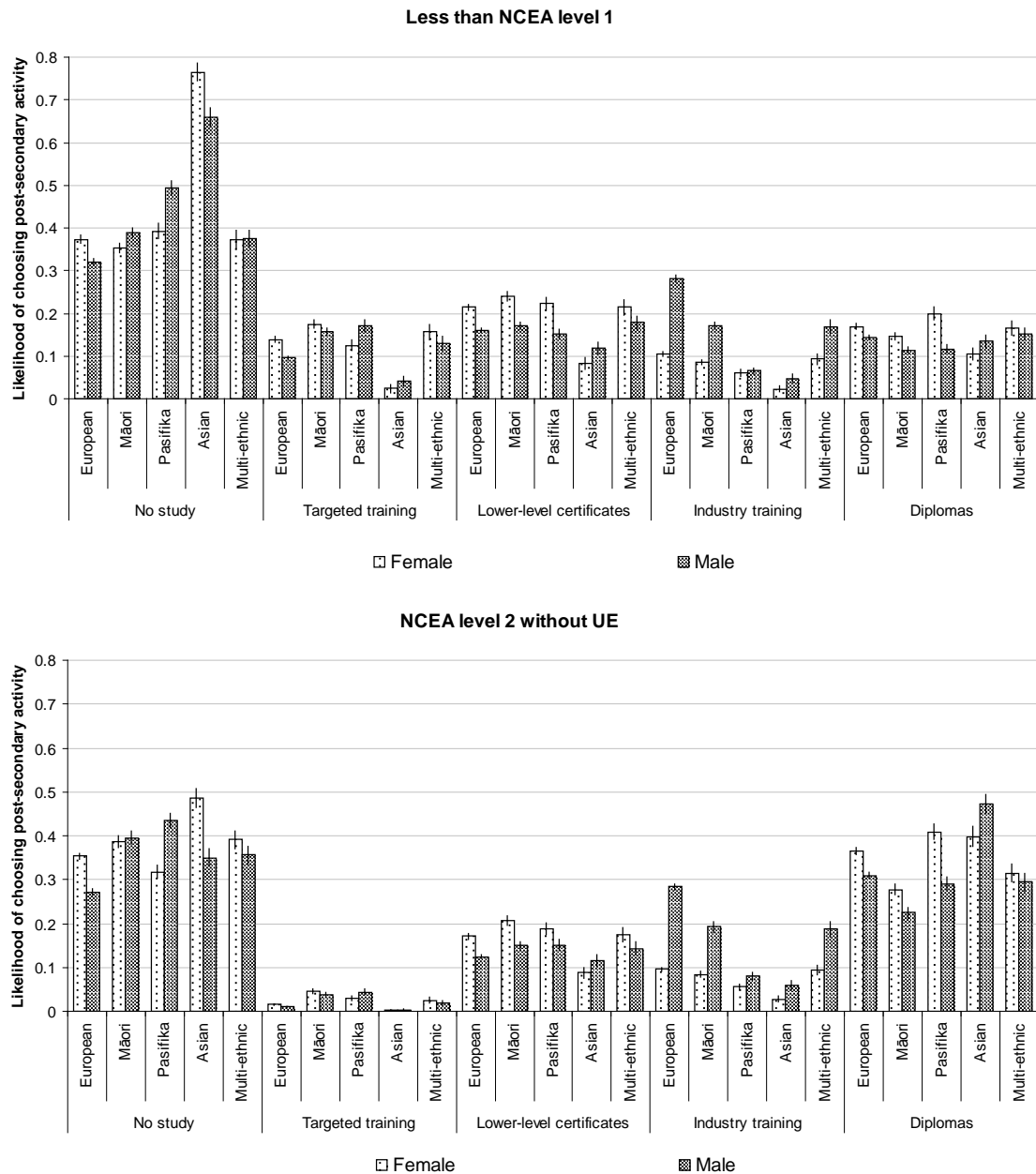
### 3.8 School achievement, gender and ethnicity

Figure 12 shows the results when controlling for school achievement, gender and ethnicity. All two-way interactions between these three factors were significant.

- For students with less than NCEA level 1:
  - Male and female students overall are equally likely to not go on to further study. This is also true for multi-ethnic students as a group. But for European and Asian students, females are more likely not to go on to further study after leaving school than males, while for Māori and Pasifika it is the males who are more likely not to go on to further study than females.
  - Across all ethnic groups, females are more likely to be involved in targeted training than males. This is also true for European and Māori students. For Pasifika, females are less likely than males to do this. For Asian and multi-ethnic students as a group, there is no statistical difference between males and females in their likelihood to be in targeted training.
  - Across all ethnic groups, females are more likely to study lower-level certificates. This is also the case for all ethnic groups apart from Asian, where males are the more likely gender to study lower-level certificates.
  - Across all ethnic groups, males are far more likely to be in industry training. This also holds for European, Māori, Asian and multi-ethnic students, but Pasifika show no difference between male and female students.
  - Females overall are also more likely to go on to diploma-level study. This holds for all ethnic group categories except Asian, where males are more likely to do this, and the multi-ethnic group, which show no statistical difference between genders. In addition, Pasifika females are about twice as likely to go on to diploma-level study as Pasifika males.
- For students who gain NCEA level 2:
  - Females overall are more likely not to go on to further study than males. This holds true for European and Asian students. But for Māori and multi-ethnic students there is no difference between genders, and for Pasifika, it is the males who are more likely to not go on to further study than females.
  - Few students who gain NCEA level 2 are involved in targeted training. Māori, Pasifika and multi-ethnic students are more likely to be involved in targeted training than students from other ethnic groups because of the specific targeting of skills enhancement programmes.
  - Females generally are more likely to study lower-level certificates. This is true for all ethnic groups apart from Asian, where males are more likely to study lower-level certificates.
  - Across all ethnic groups, males are far more likely to be in industry training. For Pasifika and Asian students there is little difference in the likelihoods between the genders. For these two ethnic groups, the likelihood to actually be in industry training is low.

- Across all ethnic groups, females are more likely to go on to diploma-level study, and this is true for all ethnic groups except Asian students, where males are more likely to study at this level than females. For multi-ethnic students, as a group, there is no statistical difference between the genders in the likelihood of going on to diploma-level study.

**Figure 12**  
Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement, gender and ethnicity



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

### 3.9 School achievement, ethnicity and school decile

The modelling showed significant two-way interactions between school achievement, ethnicity and school decile when controlling for these variables. The results are shown in figure 13.

The results with all three factors in the model show some differences from the results for school achievement and ethnicity alone (figure 6), and school achievement and school decile alone (figure 10). The results show:

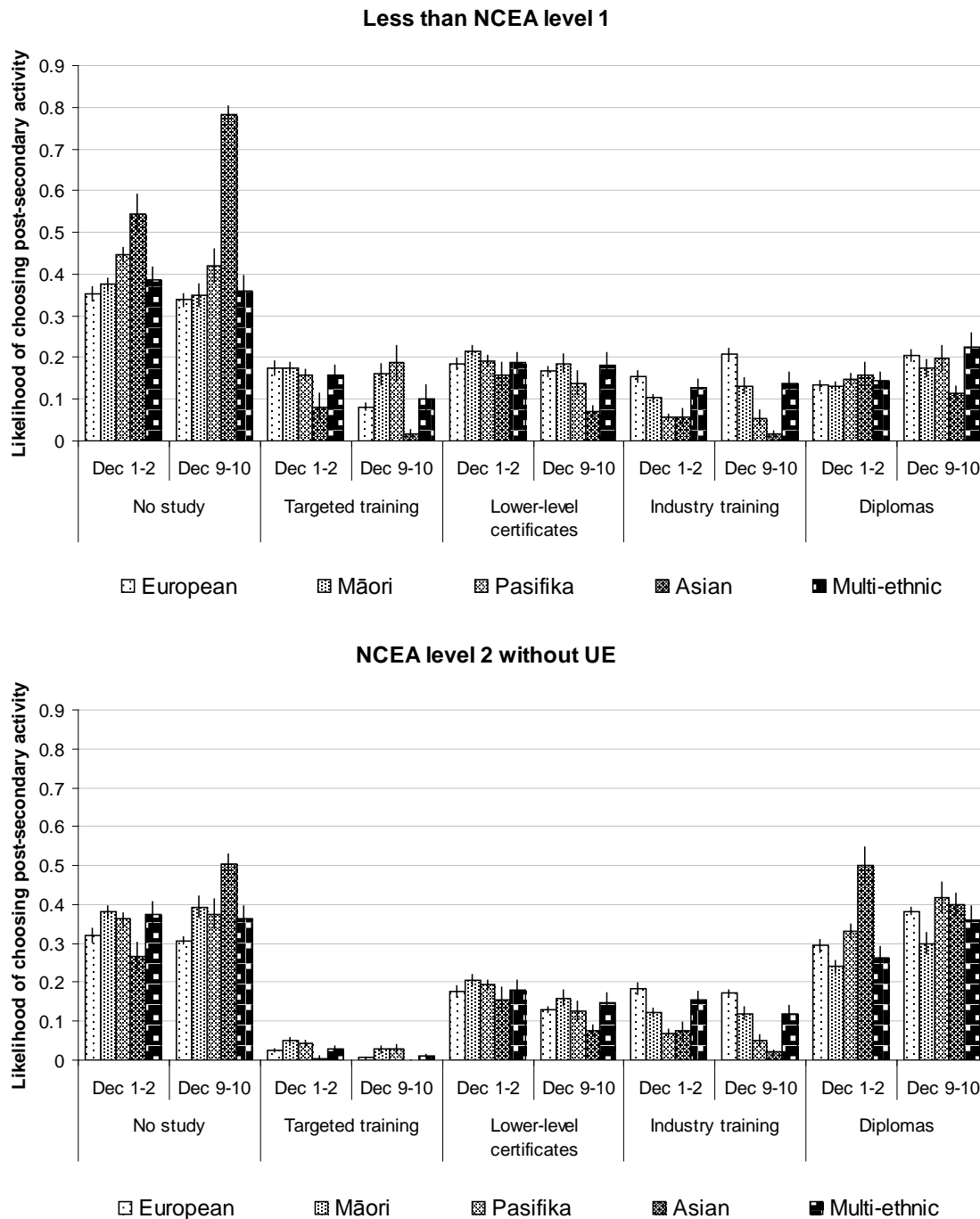
- No study
  - Asian students from higher-decile schools are more likely to not go on to further study than Asian students from lower-decile schools, for both levels of school achievement. For all other ethnic groups, there is no statistical difference in the likelihood of not going on to further study between students from different schools, again, for both levels of school achievement.
- Targeted training
  - Asian students with no school achievement from lower-decile schools are more likely to be involved in targeted training than similar students from higher-decile schools.
  - European students from lower-decile schools are more likely to be involved in targeted training than similar students from higher-decile schools, regardless of school achievement.
  - Multi-ethnic students, as a group, from lower-decile schools are more likely to be involved in targeted training than similar students from higher-decile schools. This occurs for students who have gained NCEA level 2, and while there is a difference in the likelihoods for students with no school achievement, we can't be sure it's a real difference based on the data.
- Lower-level certificate study
  - Asian students from higher-decile schools are less likely to go on to lower-level certificate study than Asian students from lower-decile schools, for both levels of school achievement.
- Industry training
  - European and Māori students with no school achievement from higher-decile school are more likely to be in industry training than similar students from lower-decile schools.
  - Asian students from higher-decile schools are less likely to be in industry training than similar students from lower-decile schools. This occurs at all levels of school achievement.
- Diploma-level study
  - Students are more likely to go on to diploma-level study if they come from higher-decile schools, apart from Asian students, who are less likely to go on to this level of study if they attended a higher-decile school. However, Asian

students with NCEA level 2 from lower-decile schools are more likely than other students to go on to diploma-level study, and similar Asian students from higher-decile schools have one of the higher likelihoods of all ethnic groups.

Section 3.11 summarises the most likely post-secondary activity for this combination of factors.

**Figure 13**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement, school decile, and ethnicity



Diploma-level study includes certificates at level 4.  
Industry training includes Modern Apprenticeships.

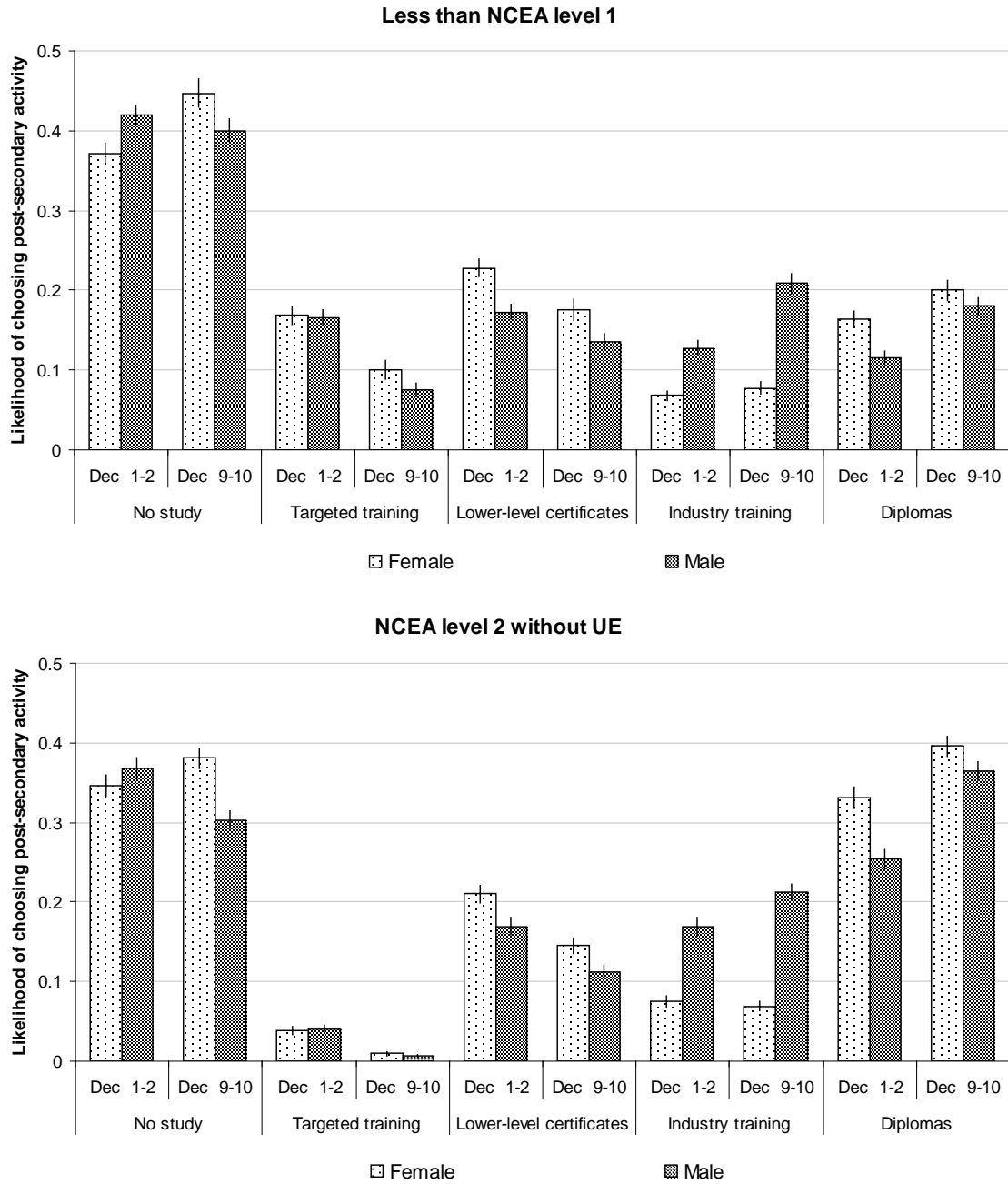
### 3.10 School achievement, gender and school decile

Figure 14 shows the results when controlling for school achievement, school decile and the students' gender. All two-way interactions between these three factors were found to be significant. The results can be compared to the results when considering school achievement and gender alone (figure 9) and school achievement and decile alone (figure 10). The results show:

- No study
  - For both levels of school achievement, the likelihood that female students do no further study is higher for students from higher-decile schools, compared to female students from lower-decile schools.
  - For male students with no school achievement, there is no difference in the likelihood of not going on to further study between students from different schools, while for male students with NCEA level 2, those from higher-decile schools are less likely not to go on to further study than those from lower-decile schools. The opposite pattern seen for female students.
- Targeted training and lower-certificate study
  - In both of these post-secondary activities, the patterns seen are no different from those seen for the individual factors. That is, the likelihood of being involved in targeted training, or going on to lower-level certificate study, is lower for students from higher-decile schools, compared to students from lower-decile schools, for both genders, and for both levels of school achievement. The likelihood of targeted training is much the same for both males and females, with males slightly less likely to do this if they have no school achievement but come from higher-decile schools. For lower-level certificate study, females are more likely to do this across both school decile categories and for all levels of school achievement.
- Industry training
  - Females are less likely to go on to industry training, and their likelihood is the same regardless of school decile, or of the level of school achievement. Males on the other hand are more likely to be in industry training if they come from a higher-decile school, and the difference in likelihood is greater for male students with no school achievement, compared to those who gained NCEA level 2.
- Diploma-level study
  - Female students generally are more likely to go on to study at diploma-level, and this is mostly true for students at all achievement levels and for students from lower- and higher-decile schools. However, for students with no school achievement from higher-decile schools, there is no statistical difference in the likelihood of going on to study at diploma-level between male and female students. This is because the change in likelihood for male students between lower- and higher-decile school students is greater than the change for female students. In other words, school decile has a greater effect on male students' likelihood of going on to study at diploma-level, and as we have seen, on the likelihood of being in industry training.

**Figure 14**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement, school decile, and gender



Diploma-level study includes certificates at level 4.  
 Industry training includes Modern Apprenticeships.

### 3.11 Summary of results

The preceding sections describe some quite complex results, resulting from the interaction between the factors explored in this study. This section will summarise the data to give an overview of the results. This will be done by presenting the results for the *most likely* activity. This is the post-secondary activity that has the single highest likelihood, for a given combination of demographic variables. In some cases, the most likely activity is only slightly more likely than the next most likely activity and in general, the most likely activity is not the majority activity. Where two likelihoods are not statistically different, both are reported. Summary results are provided for all levels of school achievement, including that for NCEA level 1.

The results for the most likely post-secondary activity are given in tables 5, 6, 7 and 8.

The tables show quite clearly that for students with less than NCEA level 2, the most likely post-secondary activity is no study. Only for European male students with NCEA level 1 is industry training the more likely option (table 6). For students with NCEA level 1 from secondary urban locations, industry training is about equally likely as no study (table 8).

For students who gain NCEA level 2, the average result is for students to choose more or less equally between diploma-level study and no further study (last line in table 5). When controlling for school decile, students from lower-decile schools were most likely not to go on to further study, while students from higher-decile schools were most likely to go on to diploma-level study (table 5). When controlling for gender alone, both male and female students who gained NCEA level 2 were most likely to not go on to further study (table 6), but this outcome varied when controlling for gender *and* school decile (table 7), and gender *and* ethnic group (table 6). There were also differences in the most likely activity among residential locations for this level of school achievement (table 8).

For these NCEA level 2 students, groups where the likelihood of going on to diploma-level study is higher than no study are:

- European students from higher-decile schools.
- Asian students from lower-decile schools.
- Asian male students.
- Pasifika female students.
- Students generally from Auckland, Christchurch, and secondary urban locations.

For students who gained NCEA level 2, groups where the likelihood of no further study is higher than going on to diploma-level study are:

- Most students from lower-decile schools (except European and Asian students).
- Asian female students.
- Pasifika male students.
- All Māori students, regardless of school decile or gender.
- Students generally from main urban centres other than Auckland and Christchurch, minor urban centres, and rural centres and areas.

Table 4 (page 20) shows the results for the larger individual multi-ethnic groups. It can be seen that no study is the most likely post-secondary activity for students in the individual multi-ethnic groups who have no school achievement, or gain NCEA level 1. For students who gain NCEA level 2, only the Pasifika-Asian group are more likely to go on to diploma-level study, at 40 per cent.



**Table 5**

Most likely post-secondary activity by ethnic group, school decile and the level of school achievement

Ethnicity	School decile	Highest level of NCEA school qualification		
		<i>Less than NCEA</i>		
		<i>level 1</i>	<i>NCEA level 1</i>	<i>NCEA level 2</i>
Multi-ethnic groups	Lower	No study	No study	No study
	Higher	No study	No study	No study/Diploma
	All schools	No study	No study	No study
European	Lower	No study	No study	No study/Diploma
	Higher	No study	No study	Diploma
	All schools	No study	No study	Diploma
Māori	Lower	No study	No study	No study
	Higher	No study	No study	No study
	All schools	No study	No study	No study
Pasifika	Lower	No study	No study	No study
	Higher	No study	No study	No study/Diploma
	All schools	No study	No study	No study
Asian	Lower	No study	No study	Diploma
	Higher	No study	No study	No study
	All schools	No study	No study	No study/Diploma
All ethnicities	Lower	No study	No study	No study
	Higher	No study	No study	Diploma
	All schools	No study	No study	No study/Diploma

Diploma-level study includes certificates at level 4.

**Table 6**

Most likely post-secondary school activity by ethnic group, gender and the level of school achievement

Ethnicity	Gender	Highest level of NCEA school qualification		
		<i>Less than NCEA</i>		
		<i>level 1</i>	<i>NCEA level 1</i>	<i>NCEA level 2</i>
Multi-ethnic groups	Male	No study	No study	No study
	Female	No study	No study	No study
European	Male	No study	Industry training	Diploma
	Female	No study	No study	Diploma
Māori	Male	No study	No study	No study
	Female	No study	No study	No study
Pasifika	Male	No study	No study	No study
	Female	No study	No study	Diploma
Asian	Male	No study	No study	Diploma
	Female	No study	No study	No study
All ethnicities	Male	No study	No study	No study
	Female	No study	No study	No study
	All students	No study	No study	No study/Diploma

Diploma-level study includes certificates at level 4.

Industry training includes Modern Apprenticeships.

**Table 7**

Most likely post-secondary activity by gender, school decile and the level of school achievement

Gender	School decile	Highest level of NCEA school qualification		
		<i>Less than NCEA</i>		
		<i>level 1</i>	<i>NCEA level 1</i>	<i>NCEA level 2</i>
Male	Lower	No study	No study	No study
	Higher	No study	No study	Diploma
Female	Lower	No study	No study	No study/Diploma
	Higher	No study	No study	No study/Diploma
All students	Lower	No study	No study	No study
	Higher	No study	No study	Diploma
	All schools	No study	No study	No study/Diploma

Diploma-level study includes certificates at level 4.

**Table 8**

Most likely post-secondary activity by residential location and the level of school achievement

Residential location	Highest level of school achievement		
	<i>Less than NCEA</i>		
	<i>level 1</i>	<i>NCEA level 1</i>	<i>NCEA level 2</i>
Greater Auckland	No study	No study	Diploma
Greater Wellington	No study	No study	No study
Christchurch	No study	No study	Diploma
Other main urban	No study	No study	No study
Secondary urban	No study	No study/IT	Diploma
Minor urban	No study	No study	No study
Rural centres and areas	No study	No study	No study

IT indicates industry training, and includes Modern Apprenticeships.

Diploma-level study includes certificates at level 4.

Ranking the groups in order of likelihood also provides a picture of what factors are more strongly associated with particular student choices. Considering the likelihood of diploma-level study for students who gained NCEA level 2, the following rank order from most likely to least likely is seen:

Gender and school decile (figure 14, page 33):

1. Female<sub>Higher decile</sub>
2. Male<sub>Higher decile</sub>
3. Female<sub>Lower decile</sub>
4. Male<sub>Lower decile</sub>

Ethnicity and gender (figure 12, page 29):

1. Asian<sub>Male</sub>
2. Asian<sub>Female</sub> = Pasifika<sub>Female</sub>
3. European<sub>Female</sub>
4. European<sub>Male</sub> = Māori<sub>Female</sub> = Pasifika<sub>Male</sub> = multi-ethnic<sub>Male</sub> = multi-ethnic<sub>Female</sub>
5. Māori<sub>Male</sub>

Ethnicity and school decile (figure 13, page 31):

1. Asian<sub>Lower decile</sub>
2. Asian<sub>Higher decile</sub> = Pasifika<sub>Higher decile</sub> = European<sub>Higher decile</sub> = multi-ethnic<sub>Higher decile</sub>
3. Pasifika<sub>Lower decile</sub> = Māori<sub>Higher decile</sub> = European<sub>Lower decile</sub> = multi-ethnic<sub>Lower decile</sub>
4. Māori<sub>Lower decile</sub>

Within the multi-ethnic groups the following order is seen (figure 7, page 21):

1. Pasifika-Asian
2. European-Pasifika
3. Average of all multi-ethnic groups
4. Māori-Pasifika  $\approx$  European-Māori

Attending a higher-decile school, or being female, is associated with a higher likelihood of diploma-level study. This association holds broadly within ethnic group. However, for Asian students, the likelihoods are higher for males, and for Asian students from lower-decile schools, contrary to the pattern seen for the other ethnic groups. Asian students are consistently among the higher rankings. Māori students are consistently among the lower rankings, for both genders, and both categories of school decile.

## 4 DISCUSSION

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The pathway that exists for students moving from school to tertiary education for those wishing to go on to bachelors-level study is well understood, and it has been well documented statistically (see for example Engler 2009). Of those who gain NCEA level 3 and meet the UE requirement, over 80 per cent go on to bachelors-level study. The pathway is clear; to gain a bachelors degree, a student must gain NCEA level 3 at school, meet the UE requirement, and enrol in a bachelors programme.

For students up to 19 years of age who gain NCEA level 1 or less, our results show students engage with a variety of activities, but the most likely pathway is to no further study. In our data, 39 per cent of students with no school qualification opted for no further study, but this reached 70 per cent for Asian students. While our data can't show what these people do when they choose not to study further, it is most likely that they enter the labour market.

For students who do manage to achieve NCEA level 2—but not meet the UE requirement—there are more options open to them. Our data shows that on average, 33 per cent of these students go on to diploma-level study as their highest level of study, while 34 per cent opt for no further study. Lower-level certificate study and industry training, particularly for males, together account for 31 per cent of students.

What are the factors that are associated with students deciding to go on to higher levels of study? And what do these associations suggest about the factors that might be influencing students' decisions?

Clearly, having higher levels of school qualification provides students with more options. This will be due to two factors. First, their better school qualifications open opportunities for further study because they are more likely to meet the selection criteria for entry into tertiary institutions. Secondly, greater success at school gives students greater confidence to attempt further study. However, our results show that while gaining NCEA level 1, over not gaining NCEA level 1, is associated with an increase in the likelihood of diploma-level study, this likelihood is still lower than that of not going on to further study. It is only when students gain NCEA level 2 that the likelihood of study for a diploma becomes equally likely as, or is higher than, the option of no further study. Only for European males is there a change in the most likely activity with the attainment of NCEA level 1, and this is to be involved in industry training. As we have noted, to be eligible for industry training, a person needs to be in employment. The types of work that include industry training are mostly trades, which are male dominated (Mahoney 2009). And European males are more likely to be in these jobs.

Aside from school achievement, there is no single factor that is consistently associated with higher likelihoods of higher-level study. The modelling shows that ethnic group, together with school achievement, accounts for much of the variation seen in the post-secondary activities of students. But as our study shows, ethnicity interacts both with gender and school decile, and all three factors need to be considered together, in addition to the level of school achievement, to fully understand the results. This of course makes the results complex to describe.

For students who gain NCEA level 2, attending a higher-decile school is associated with a higher likelihood of diploma-level study. This mirrors the result found for average students who achieved NCEA level 3 and met the UE requirement, who attended a higher-decile school, who go on to bachelors-level study (Engler 2009).

Engler (2009) also showed that gender was not a good predictor of the likelihood of going on to bachelors-level study once a student had gained NCEA level 3 and had met the UE requirement.

In the present study, gender was a more important factor. This is partly because of the strong gender effect for industry training. But even for diploma-level study, there is a strong gender effect, with female students more likely to study at this level, and this occurs consistently within school decile categories. However, Asian females are less likely to go on to diploma-level study than Asian males, while multi-ethnic students, as a group, show equal likelihoods for both genders.

Engler's (2009) study also found differences in the effect of school decile between ethnic groups. Our study finds differences for the school decile categories only for Asian students. Asian students from lower-decile schools have a higher likelihood of going on to diploma-level study than Asian students from higher-decile schools, which is at odds with the result for every other ethnic group in our study. This is due to the very high likelihood for Asian students from higher-decile schools to not go on to further study. In spite of this reversal of the effect of school decile, Asian students, as a group, still have the highest likelihood of going on to diploma-level study.

Māori students who identify with just the Māori ethnic group consistently show the lowest likelihoods of going on to diploma-level study. Their likelihood of opting for this activity is lower than for Māori who also identify with another ethnic group. Engler (2009) also found that, when controlling for school achievement, single-ethnic-group Māori from lower-decile schools showed lower likelihoods of going on to bachelors-level study. Within ethnic group variation is also seen for Europeans; students identifying with just the European ethnic group are more likely to go on to diploma-level study than those European students also identifying with another ethnic group.

Finally, we should reiterate that our study only considered students up to the age of 19 years. When we looked at our students up to the age of 20 years, a necessarily smaller sample, we saw that diploma-level study is the clear first preference for students who gained NCEA level 2, (whereas it is equally preferable to no study for the 19 year olds). This suggests that at least some of the students with NCEA level 2 start diploma-level study within five years of leaving school, after spending some time in the labour market. There will also be students who progress from lower to higher levels of tertiary study.

## 5 DATA AND METHODS

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### **The study population**

The focus of this study is on the activities of students after leaving school. Most students progress directly from school to tertiary study, but a sizable proportion take one or more years off before starting tertiary education. The propensity to take time off varies with ethnic group and socio-economic status. So as not to disadvantage those groups which are more likely to take time off, this study considers student choices in the four years after leaving school (the longest period available to us in the dataset), and does not distinguish between students who progressed directly to further study, or took some time off first.

Students were selected for the study population if they were 16 years old in 2004, 2005 or 2006. Using age 16 as the starting point means we capture students who leave school as soon as they are legally able. While students who eventually gain NCEA level 3 don't usually leave school till they are 18, students whose highest school achievement is lower than this level, leave school at ages earlier than this. We then follow these three cohorts of students till they are 19 years of age, and ascertain their highest level of tertiary study during this time, if any.

The number of students in these three cohorts was 165,193. This compares with the official Statistics New Zealand usually resident population estimate for these three cohorts of 187,150. These numbers are not directly comparable, since the usually resident population will contain students who do not attend New Zealand schools (Leather 2009), whereas our study population does. However, our study group excludes students who did not gain at least one credit on the NZQF. The best we can say, therefore, is that the sample from which our study population was drawn captures *at least* 88 per cent of the New Zealand population who were 16 years old between 2004 and 2006 inclusive.

From this starting group, the study population consists of those students who did not study at bachelors level, who had left school, whose highest school achievement was less than NCEA level 3, and who did not meet the UE requirement. Students who attended schools which are known to favour non-NCEA examinations were also excluded. The study population consisted of 97,867 students.

Tests indicated that the likelihood of the post-secondary choices of the three cohorts of students was statistically different in some cases, but the differences were small, and there was no interaction between cohorts and school achievement (figure 15). That is, the differences in likelihoods of post-secondary activities by school achievement levels were consistent between cohorts. The cohorts were therefore combined.

### **Data modelling**

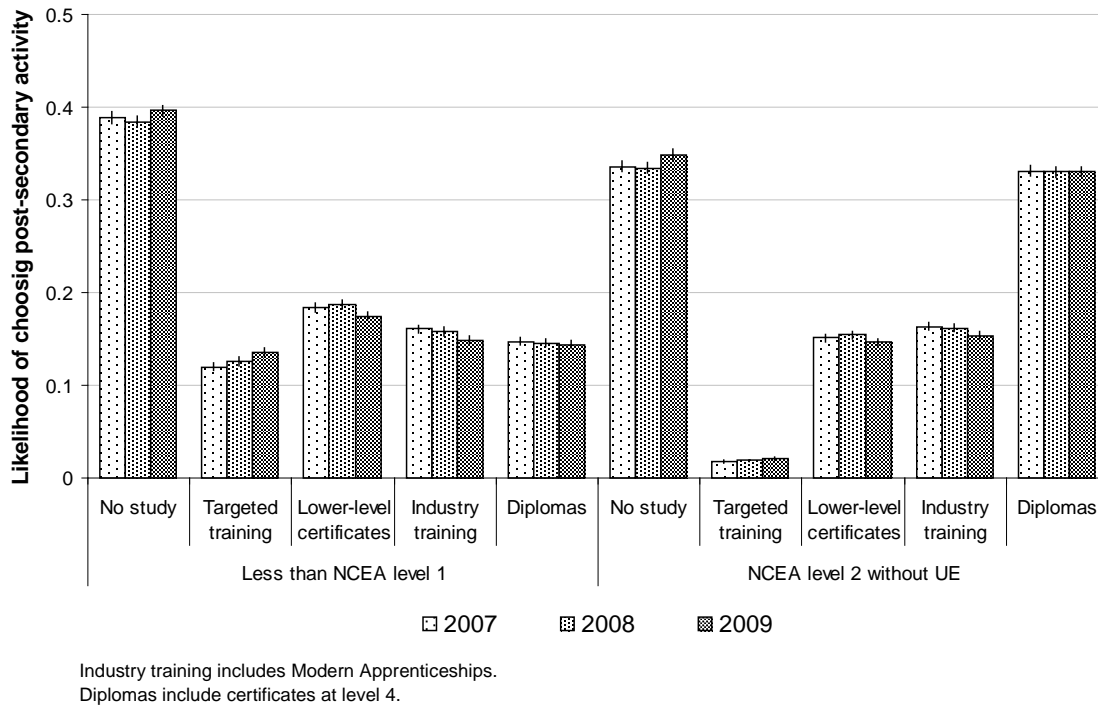
The data was analysed using generalised logistic regression. The dependent variable was the choice of activity a student made after leaving school: no study, or tertiary study in one of the categories considered in this study. The independent variables were highest school achievement, ethnicity, school decile, gender, and residential location. Not all independent variables are included in the models at any one time, since the number of students of some ethnic groups becomes too small. This precluded the testing of interaction terms across all independent variables, but this is not considered to be a problem.

Highest school achievement is included in each model.

The models varied in strength, but were generally acceptably robust for them to be used in the analysis.

**Figure 15**

Likelihood of progressing on to post-secondary activity (with 90 per cent confidence limits) by highest level of school achievement and the year in which the student turned 19



The results of the models were used to calculate the likelihoods, and confidence limits around that likelihood, of a student choosing a particular post-secondary activity.

To determine the order of importance of the factors, a model was run which included all factors. Factors were input into the model using a forward selection process, such that the inclusion of the factor was based on a significant reduction in the likelihood ratio. While it is not possible to calculate the proportion of variance explained by a factor in logistic regression, a proxy for the strength of the factor in the model can be calculated using the contribution each factor makes to the final adjusted  $R^2$  value. The table below shows these figures. It can be seen that highest school achievement is the most important factor, then ethnicity, then gender. It should be noted that this model, with all factors included, was run only to see how all the factors compared, and not for any detailed analysis. This model only included main effects, not interaction terms.

Factor	$R^2_{adj}$	Contribution to final $R^2_{adj}$
Highest school achievement	0.0678	40%
Ethnic group	0.1168	29%
Gender	0.1516	21%
Residential location	0.1645	8%
School decile	0.1675	2%

**A note on the use of confidence limits**

The data in this report is mostly presented in graphical form, with means and 90 per cent confidence intervals. 90 per cent confidence intervals are used so that readers, when comparing the difference between two means using the overlap of the confidence intervals, can be at least 95 per cent certain that the means are significantly different. The reasons why this apparently counter-intuitive approach is used can be found in Schenker and Gentleman (2001).

**Statistical package used**

The logistic regression analysis was performed using the SAS® statistical package, version 9.2.



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