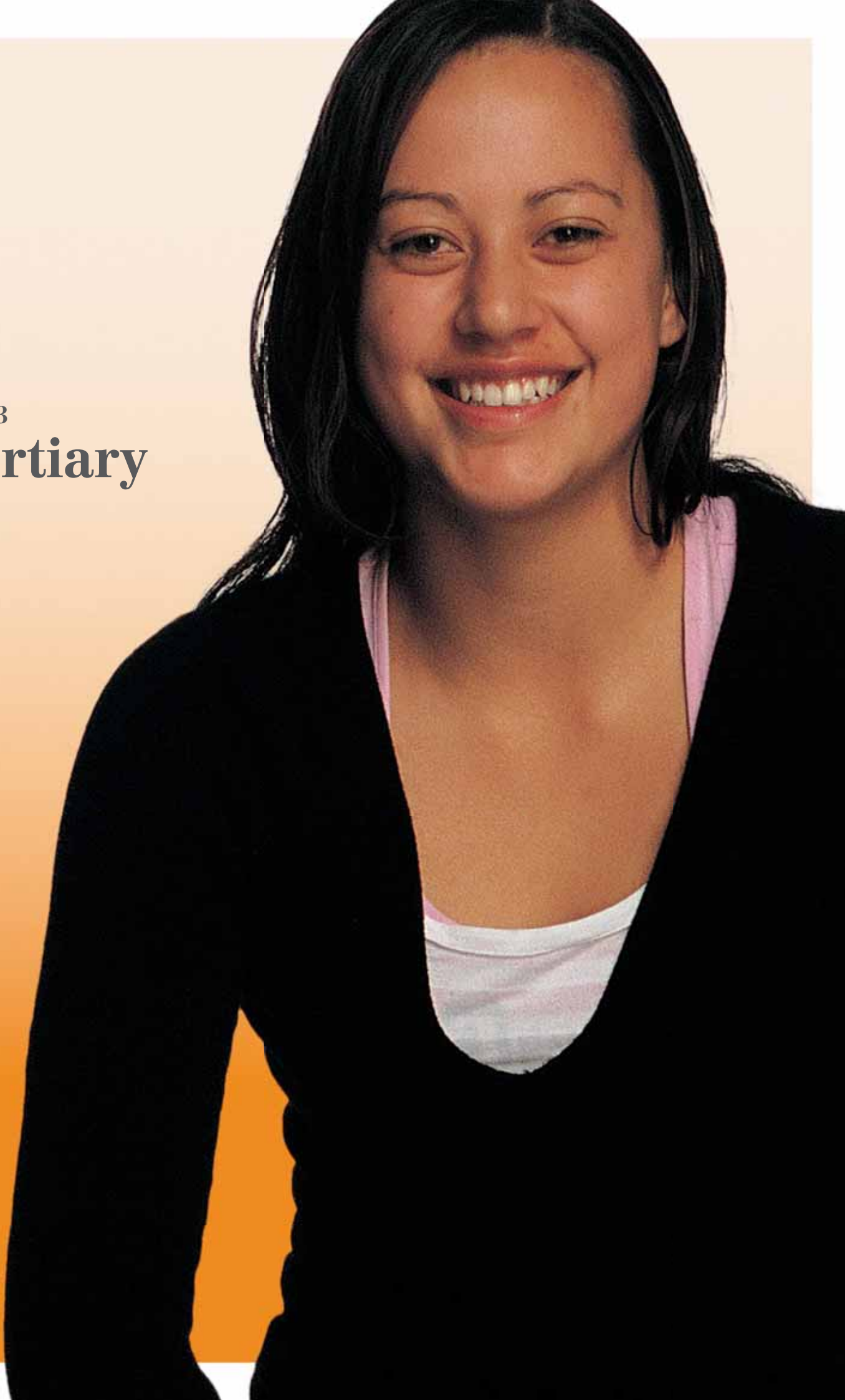


Part 3

Tertiary



Participation in tertiary education opens up career opportunities and enables people to gain the skills required for the knowledge-based society. It is also associated with a range of other positive outcomes, including improved health, better income and standards of living.

Tertiary education is very broad. It ranges from foundation education and training, which bridges people into further education and training or work, through to world-class doctoral studies. It also includes learning that happens at work through studies at universities and research institutes.

Tertiary education must be accessible, of excellent quality and relevant for all who participate.

Areas examined in this chapter are: participation, achievement, international education and research quality.

There is an increasing amount of information on international comparisons and on trends in tertiary education, but there are still some gaps including information on the quality of teaching.



12. Participation

What we have found

In 2007 there were 579,000 students enrolled at tertiary education providers and 194,000 workplace-based learners. Just over 13 percent of New Zealanders aged 15 years and over were enrolled at a tertiary education provider in 2007, and six percent were undertaking formal learning in the workplace. A strong economy, coupled with increases in the number of people in employment, led to workplace-based learning continuing its strong upward trend in 2007, while the participation rate in tertiary education institutions declined slightly.

The participation rate of Māori and Asians in formal tertiary education has decreased in recent years in part as a result of the decline in enrolments in lower level qualifications. For Europeans/Pākehā, the rate has remained static. The participation rate in tertiary study by Pasifika peoples increased in 2007, after a decrease in 2006.

The proportion of students who, after completing, continued with a higher level qualification was up slightly, and Pasifika students now have the highest progression rate to higher study.

The affordability of tertiary education improved slightly on average in 2007, due primarily to average weekly incomes rising faster than tuition fees.

Why this is important

Participation in tertiary education is an important indicator that measures how well the population accesses learning opportunities after compulsory schooling. Success in tertiary education provides benefits to the individual and to society, not only in terms of increased employment opportunities and income but also in terms of wellbeing and social capital.

Being part of a knowledge society implies continued participation in learning and education over a person's lifetime. With rapid changes in society, the economy, and technology, skills can quickly become outdated. It is important that people continue to learn new skills after they have completed their initial education.

How we are going

Tertiary participation rates

Participation rates show the proportion of the New Zealand domestic population, or sub-group of that population, participating in tertiary education. After substantial increases in the number and proportion of people enrolled in formal tertiary education since 1998, the decrease experienced in 2006 continued into 2007. This was largely due to reductions in certificate-level tertiary education. In 2007, 444,000 New Zealand students were enrolled in tertiary education. The data show:

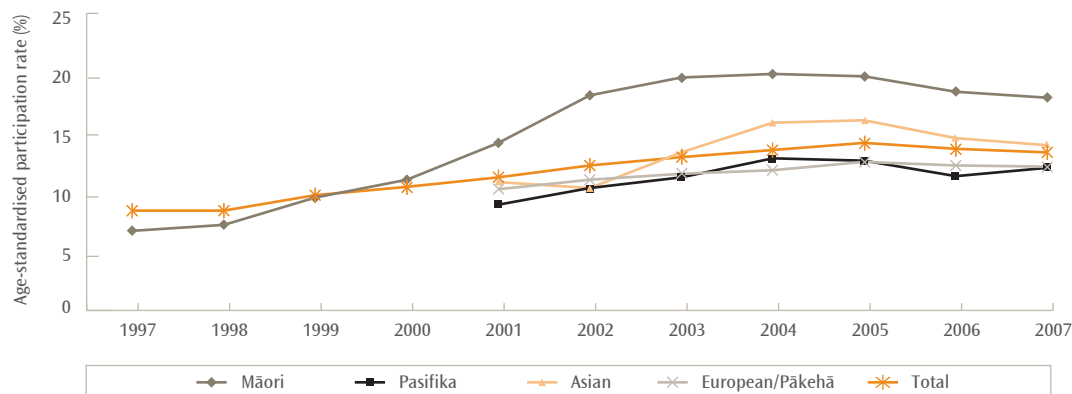
- 13 percent of the population aged 15 and over participated in some form of formal tertiary education during 2007. This is an increase of two percentage points from 11 percent in 2001, but down from a peak of 14 percent in 2005





- the main increase in participation since 2001 has been at certificate levels 1-3. From 2001 to 2005, the number of students enrolled in certificates increased by 68 percent from 129,000 to 217,000, but fell by 13 percent from 2005 to 2007 to 188,000 students. The participation rate in certificates remained relatively static at six percent in 2007
- since 1999, participation in tertiary education by Māori has grown at more than twice the rate of non-Māori, resulting in about 18 percent of Māori aged 15 years and over participating in some form of tertiary education in 2007 (see Figure 12.1). While all ethnic groups showed an overall decline in participation since 2005, Pasifika increased in 2007
- although Māori have substantially higher participation rates at sub-degree level, Asian and European/Pākehā participation rates are highest at the degree level and above. Pasifika have the lowest participation rates at degree level and above
- female participation rates have been higher than males, with the difference reaching a maximum of four percentage points in 2004. While overall participation rates have fallen from 2005, male participation rates have fallen less sharply. The difference in participation rate between the genders was just two percentage points in 2007.

Figure 12.1: Age-standardised participation rates in tertiary education of the population aged 15 years and over by ethnic group (1997 to 2007)



Source: Ministry of Education (2008k).

1. Participation rates are not available for the Other ethnic group.
2. Separate participation rates are not available for Pasifika, Asian, and European/Pākehā ethnic groups prior to 2001.
3. Total includes students whose ethnic group was unknown.

Participation in industry training

The substantial increase in learners in industry training is one of the most notable features of the tertiary education system in recent years. The data show:

- the number of industry trainees (including those in modern apprenticeships) increased by 95 percent between 2001 and 2007 (see Figure 12.2)
- the 186,000 industry trainees in 2007 now account for about a quarter of all people in formal tertiary education
- the 10,850 modern apprentices as at 31 December 2007 represent an increase of 15 percent over the previous year
- in 2007, nine percent of all employed people in the labour force were undertaking workplace learning through industry training, up from six percent in 2002.

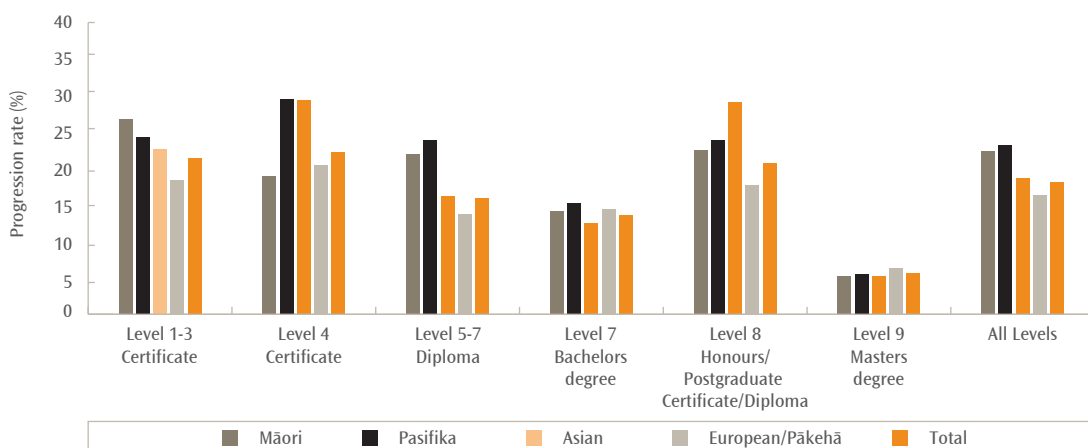
Figure 12.2: Number of trainees in industry training and modern apprenticeships (2000 to 2007)

Source: Ministry of Education (2008l).

Tertiary student progression

Progression refers to the proportion of students continuing tertiary study in the year after completing a tertiary qualification. Progression is classified into three types: students who progress to higher qualification levels; students who continue their study at the same level as the qualification they have completed; and students who go on to study at lower levels of qualifications. The data show:

- of those students who completed a tertiary qualification in 2006, 35 percent went on to further study in 2007
- of those students who completed a tertiary qualification in 2006, 18 percent went on to study at a higher level in 2007
- progression to a higher level qualification was highest for students completing certificates, and generally reduces with increasing level of qualification completed
- historically, Māori and Pasifika students have the highest rates of progression to higher levels of study while European/Pākehā students have the lowest rate (see Figure 12.3). For students finishing in 2006, Pasifika students had the highest rate
- overall, female students have slightly higher progression rates to higher level study, at 18 percent compared with 17 percent for male students
- Female progression rates are generally higher in certificate and diploma levels, while male rates are slightly higher at degree level and above.

Figure 12.3: Higher level progression rates for domestic students completing a tertiary qualification by ethnic group and qualification level (2006)

Source: Ministry of Education (2008m).

1. All rates are estimates.





Affordability of tertiary education

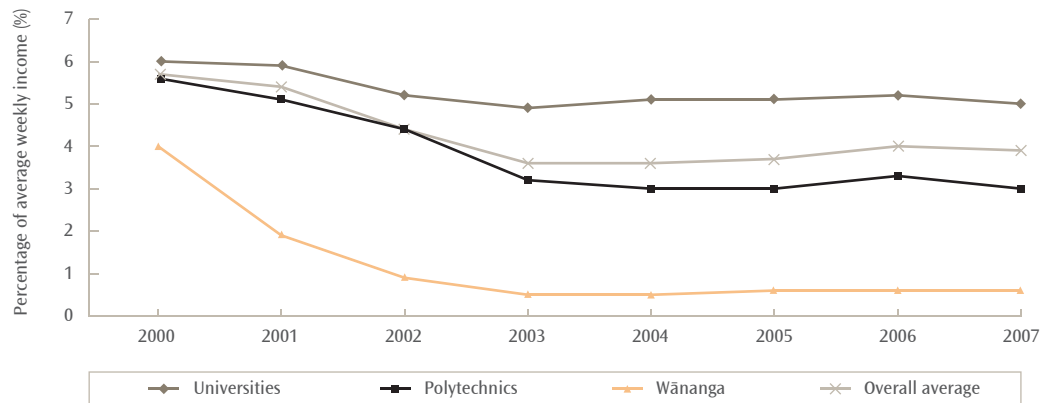
A full understanding of affordability needs to take account of the availability of student financial support arrangements that mitigate direct costs and the wages people forego by taking time out from work to study. This is particularly important given a large proportion of tertiary participants are older students, part-time study, and students who combine work and study. Here we consider the affordability of tertiary education by examining the costs of enrolling in tertiary education in relation to family income, as well as the average amount borrowed by students. The data show:

- in 2001, the average full-year, full-time tuition fee at a tertiary education institution was equivalent to 5.4 weeks' gross earnings at the average weekly wage for employed people. In 2007, it was equivalent to 3.9 weeks. This reflects in part the changing course mix over this period, with more lower-cost certificate-level

provision, and more providers offering courses with discounted or zero fees


- in 2007, the average cost of fees as a proportion of average family income decreased in all sub-sectors, after increasing across all sectors from 2003 to 2006 (see Figure 12.4). The previous increase reflects the transition from the fee stabilisation scheme to policies which allowed limited increases in fees. It also reflects the fact that the proportion of students in low or zero fee courses were reducing after increasing significantly between 2000 and 2003. The fall seen in 2007 is primarily the result of average weekly incomes increasing faster than tuition fees
- the average amount borrowed per student through the student loan scheme has increased by three percent, from \$6,565 in 2006 to \$6,747 in 2007.

Figure 12.4: Average domestic fee at tertiary institutions as a percentage of average weekly income by sub-sector (2000 to 2007)



Source: Ministry of Education (2008o).

Where to find out more

Visit www.educationcounts.govt.nz		
Indicators	Student participation	<ul style="list-style-type: none"> Participation rates in tertiary education Participation in industry training
	Education and learning	<ul style="list-style-type: none"> Tertiary student progression
	Family and community engagement	<ul style="list-style-type: none"> Affordability of tertiary education
Publications	Key publication series	<ul style="list-style-type: none"> Profile and trends Student loan scheme annual report
	Tertiary	<ul style="list-style-type: none"> Participation in tertiary education: a birth cohort approach A changing population and the New Zealand tertiary education sector



13. Achievement

What we have found

Sixty percent of students starting bachelors degree qualifications eventually complete their degree or a higher level qualification. A further seven percent complete a certificate or diploma instead.

Completion rates are higher for postgraduate-level students and lower for students studying at certificate or diploma level.

Thirty-five percent of industry training learners attain at least one programme completion within five years of starting workplace-based learning.

Full-time students do noticeably better than part-time students. Intramural students do better than extramural. Students who are combining work with study are also much less likely to complete than those coming directly from school.

Demographic characteristics make a difference to tertiary completion. Qualification completion rates are higher for women, but the gap reduces at higher qualification levels. Asian students have the highest rates of completion of any ethnic group, while rates are lower for Pasifika and Māori students (in particular at postgraduate level).

Younger students apparently achieve better than older students at bachelors degree level. However older students do better once adjusted for study differences (for example, older students are more likely to be studying part-time or combining study with work).

Why this is important

Completion is important as a measure of the rate of production of qualifications from New Zealand's tertiary education system, and hence as an indicator for the rate of the country's skills acquisition. High tertiary completion rates indicate that we are developing or maintaining a highly skilled workforce.

Completion also provides an indicator of the internal efficiency or quality of the tertiary education system. Having said this, it should be recognised that there are many factors outside the tertiary education system that will have an effect on outcomes, and that concepts of retention and completion are not always good markers of quality, and need to be read in the context of other indicators.

How we are going

Completion of tertiary education qualifications

Fifty percent of all students who started a qualification in 1999 went on to complete that qualification or a higher qualification by 2006 (see Table 13.1). The data show:

- 52 percent of students starting bachelors degree qualifications have completed their degree or a higher-level qualification after five years. Sixty percent have completed after eight years. Another seven percent have completed a certificate or diploma instead
- not all students enrol with the intention of completing a qualification; just over 30 percent of students starting a degree leave study without gaining any qualification. About seven percent of all students



studying for a bachelors degree (and 12 percent of part-time bachelors degree students) pass every course (or paper) they enrolled in, but leave without gaining a qualification at any level

- 50 percent of students starting a diploma or post-secondary-level certificate have completed a qualification after five years. This includes five percent who completed a higher level qualification to the one they started, and nine percent who completed a lower level qualification
- 58 percent of students starting their masters degrees have completed the qualification after five years. Sixty-one percent have completed a masters or higher degree after eight years. A further 10 percent left with a lower level qualification instead
- although just 33 percent of doctorate students have completed their qualification after five years, 60 percent have completed it after eight years, and 63 percent have completed it 10 years after first starting. A further eight percent have left with a lower level qualification instead.

Full-time students have significantly higher qualification pass rates than part-time students. International students have higher completion rates than domestic students. Asian students and female students have higher overall completion rates than their relevant counterparts;

however there are differences at specific levels of study. The data show:

- about 75 percent of bachelors degree students studying full-time continuously complete a bachelors degree or higher-level qualification, compared with 47 percent for students studying part-time
- over all tertiary levels, Asian students have the highest rate of five-year qualification completion, while Māori and Pasifika have the lowest
- while younger students have higher degree completion rates than older students, once differences are adjusted for (such as the fact that older students are more likely to be studying part-time and extramurally) older students do better
- females complete qualifications at a higher rate than males, across all levels except masters degrees and doctorates (see Figure 13.1)
- international students do better than domestic students. For example, 48 percent of domestic students who began their bachelors degrees in 2002 had completed after five years, compared with 58 percent for the corresponding cohort of international students. Domestic students are more likely to be studying part-time, but even after 10 years a higher percentage of international students have completed.

Table 13.1: Eight-year qualification completion rates for students starting qualifications in 1999 by qualification level and ethnic group

Level of study	Eight-year qualification completion rate (%)				
	European/ Pākehā	Māori	Pasifika	Asian	Total
Levels 1-3 Certificates	42	51	44	54	45
Level 4 Certificate	36	44	30	36	37
Levels 5-7 Diplomas	41	40	32	44	40
Level 7 Bachelors degree	64	47	41	67	60
Level 8 Honours/Postgraduate Certificate/Diploma	68	59	49	58	65
Level 9 Masters degree	61	44	53	71	61
Level 10 Doctorates	60	54	note 2	56	60
Total	51	48	41	57	50

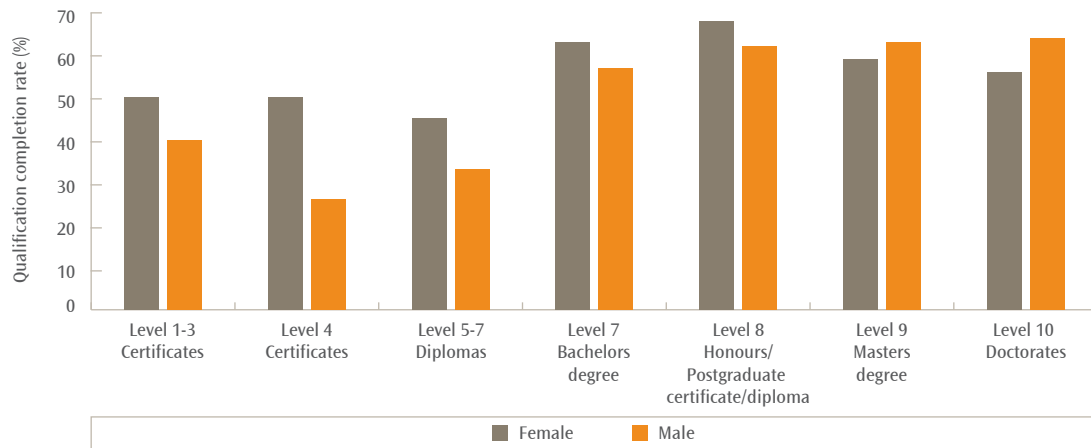
Source: Ministry of Education (2008p).

1. The qualification completion rate refers to the percentage of students starting a qualification in 1999 who went on to complete any qualification at the same level or higher over the next eight years (i.e. by the end of 2006).

2. Rates are not reported for groups of fewer than 30 students (in this case for Pasifika students starting doctorates in 1999).



Figure 13.1: Eight-year qualification completion rates for students starting a qualification in 1999 by qualification level and gender



Source: Ministry of Education (2008p).

1. The qualification completion rate refers to the percentage of students starting a qualification in 1999 who had completed a qualification at the same level or higher by the end of 2006.

Of all students who leave without completing, about two-thirds do so in their first calendar year of study. Over three-quarters (77 percent) of people who leave without completing qualifications leave after one year or less of equivalent full-time study. The data show:

- 30 percent of bachelors degree students leave without completing any qualification. Just under a quarter of students starting degrees are no longer enrolled in a degree after their first year
- for sub-degree-level certificates and diplomas, about 50 percent of students will eventually leave without gaining any qualification; 35 percent leave in the first year. However, of those who leave without any qualification, 40 percent have passed every course or paper they enrolled in
- about 30 percent of certificate non-completers leave in the first three to four weeks
- New Zealand's lifelong approach to tertiary learning, relatively open access to enrolment, easy access to student loans, and recent high demands for labour have tended to increase the number of students focusing on part-time course-based study and those combining work with study. These factors are associated with reduced rates of qualification completion
- the relatively high level of part-time study in New Zealand leads to lower completion rates when compared with other countries with more full-time students. When only full-time bachelors degree students are considered,

New Zealand rates become more comparable with rates in Australia, United States, and the United Kingdom.

Completion of tertiary education courses

Course (i.e. paper or module) completion rates will generally be much higher than qualification completion rates, as most qualifications will require the successful completion of a number of courses. The data show:

- course completion rates in New Zealand are more than 80 percent for degree-level courses, 66 percent for certificate-level courses and 73 percent for diploma-level courses (see Table 13.2)
- course completion rates are highest for universities (82 percent) and lower for polytechnics (70 percent), private training establishments (69 percent), and wānanga (64 percent)
- students successfully complete courses at a much higher rate than they complete qualifications, and many leave study (in particular, in times of higher employment) with only one or two courses left to complete for their qualifications. Other students will enrol for qualifications but abandon them once they have met their objectives, which may be passing only two or three courses. Such people will have acquired skills and knowledge useful in the workforce or in the community, even if no qualification was gained. Around 29 percent of all students starting a qualification have passed every course they enrolled in after five years but have gained no qualification.

Table 13.2: Course and qualification completion rates by sub-sector (2006)

Sub-sector	Course completion rate estimate (%)	Qualification completion rate estimate (%)
Universities	82	59
Institutes of technology & polytechnics	70	38
Wānanga	64	48
Private training establishments	69	42
Total	73	46

Source: Ministry of Education.

1. The qualification completion rate refers to the percentage of students starting a qualification in 2000 who went on to complete a qualification (not necessarily the one they started) at the same level or higher as the one they started by the end of 2006.
2. The course completion rate estimates the percentage of students starting courses in 2006 who have completed that course.
3. Universities include former colleges of education.

Achievement in workplace-based training

Industry training is learning that occurs within the workplace. It differs from provider-based tertiary education in several important ways. Most importantly, industry training learners' main activity is their job, and learning and assessment occurs around each learner's employment schedule.

Industry training learners learn and are assessed on skills that are directly relevant to their employment. They undertake programmes of learning consisting of unit standards on the National Qualifications Framework. Each learner earns, on average, 53 credits while involved in industry training. The data show:

- during 2007, a total of 3.6 million credits were attained by industry training learners
- most learners study in programmes that potentially lead to national certificates. During 2007, more than 29,000 national certificates were attained by industry training learners
- 35 percent of learners in industry training attain at least one programme completion within five years of commencing their learning, while 37 percent of learners in total attain a national certificate
- industry training learning mostly occurs at Levels 3 and 4 of the National Qualifications Framework. These rates of attainment and completion are similar to those for the learners in provider-based tertiary education at equivalent levels.

Where to find out more

Visit www.educationcounts.govt.nz



Indicators

Education and learning

- Completion of tertiary education
- Tertiary student progression

Publications

Key publication series

- Profile and trends

Tertiary

- Retention, completion and progression in tertiary education in New Zealand



14. International Education

What we have found

After rapid growth between 2000 and 2004, the number of international students enrolled at tertiary education providers has declined slightly over the past three years but remains high. International students now make up eight percent of all formal tertiary students.

About 40 percent of all international students enrolled in formal tertiary education come from China.

International students contributed \$330 million in fees to the revenue of public tertiary education institutions in 2007 (nine percent of the institutions' total revenue).

Why this is important

The presence of international students in New Zealand adds an international perspective to the teaching, learning, and research of tertiary education organisations, and has cultural as well as educational benefits.

In addition, the enrolment of international students has a financial dimension. Nine percent of revenue of public tertiary education institutions came from international students in 2007.

International education generates a considerable amount of revenue for New Zealand providers through fees. It contributed over \$2 billion dollars in added economic value in 2007/08 through, for example, the costs of living paid by students while studying in New Zealand.

How we are going

International students enrolled in formal tertiary education

The substantial increase in international students since 1998 is one of the most notable features of the tertiary education system in recent years. The data show:

- during 2007, there were 39,900 international students enrolled in formal tertiary education in New Zealand
- nearly one in 12 students enrolled in formal tertiary education were international students during 2007,

an increase from one in 20 students during 2000 but down from one in 10 in 2006

- in 2007, for the third consecutive year, the number of international students studying in formal tertiary education in New Zealand declined, after strong growth since 1998 (see Figure 14.1)
- Chinese students made up 41 percent of all international students. The next largest sources are India, South Korea, the United States, Malaysia, and Japan
- during 2007, 60 percent of international students enrolled in formal tertiary education in New Zealand were studying at degree level or above, compared with 40 percent during 2001 (see Figure 14.2)
- most international students (more than 80 percent) studying at a tertiary level during 2007 were at public tertiary education institutions; 58 percent were at universities, and 24 percent were at polytechnics.

A considerable number of international students study at English language schools. These are private training establishments which specialise in the delivery of English language training. According to the Statistics New Zealand Survey of English Language Providers, a total of 39,700 international students were enrolled for the year ended 31 March 2008. This was a five percent increase on the figure for the year ended 31 March 2007.



Revenue from international students

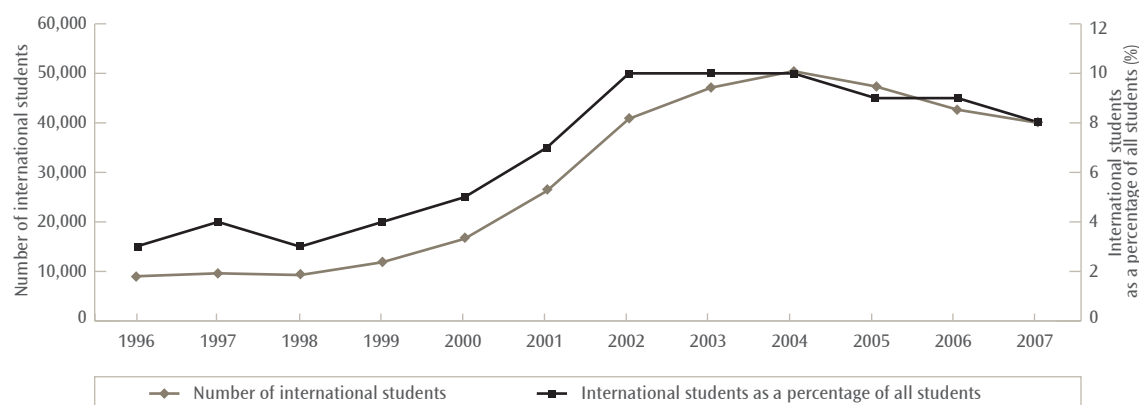
Revenue from international students for tertiary providers and the economy in general are of considerable importance. The data show:

- international students contributed \$330 million (exclusive of GST) in fees to the revenue of public tertiary education institutions in 2007. This equated to 8.9 percent of the total revenue of public tertiary education institutions
- the fees charged to international students have increased significantly on an equivalent full-time student basis. Between 2002 and 2007 the average

international tuition fee per equivalent full-time student in tertiary education institutions increased by 29 percent, from \$13,000 (inclusive of GST) to \$16,700. In real terms, the increase was 13 percent. This partly reflects an increase in international students studying at degree level and above.

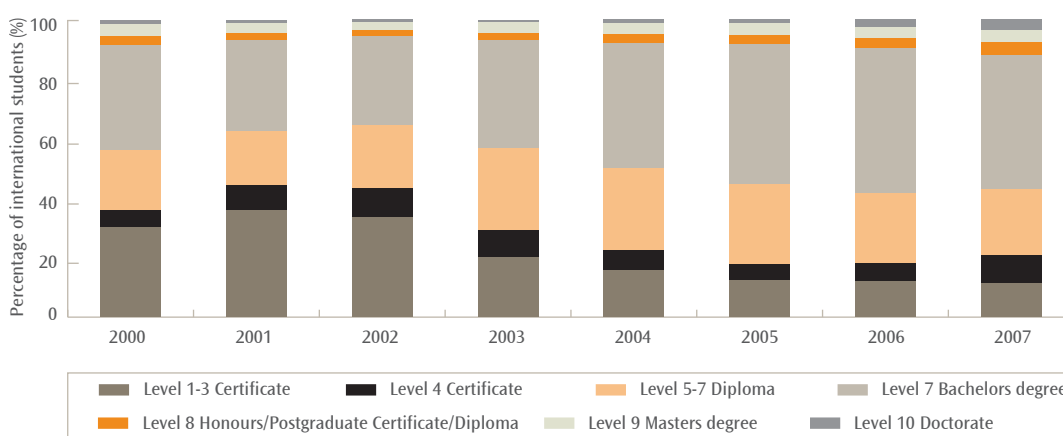
- as a result of the continued decline in the number of international students, total international tuition fee revenue for tertiary education institutions decreased between 2006 and 2007 by 11 percent, from \$371 million to \$330 million.

Figure 14.1: International student numbers enrolled in formal tertiary education (1996 to 2007)



Source: Ministry of Education (2008q).

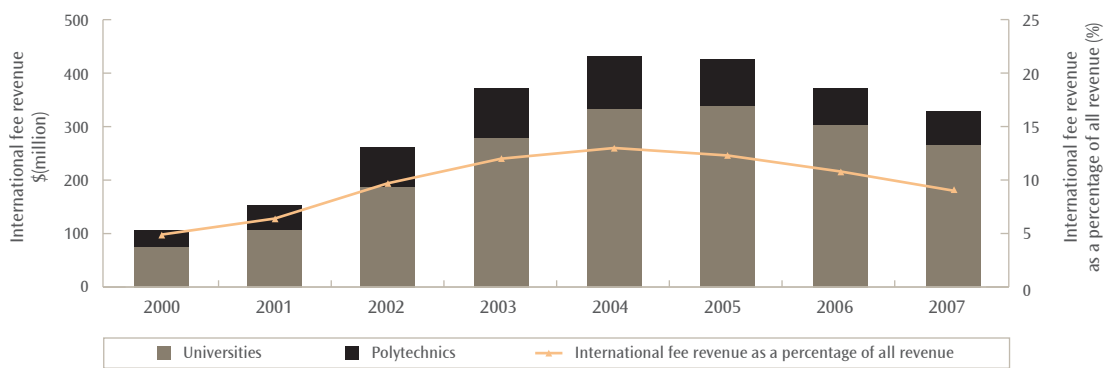
Figure 14.2: Distribution of formal international students by qualification level (2000 to 2007)



Source: Ministry of Education (2008q).



Figure 14.3: International fee revenue in tertiary education institutions (2000 to 2007)




Source: Ministry of Education (2008q).

1. International fee revenue is exclusive of GST.



Where to find out more

Visit www.educationcounts.govt.nz



Indicators	Student participation	<ul style="list-style-type: none"> ▪ International students enrolled in tertiary education
Publications	Key publication series	<ul style="list-style-type: none"> ▪ Profile and trends ▪ International students trends reports
	International	<ul style="list-style-type: none"> ▪ The economic impact of foreign fee-paying students

15. Tertiary Research

What we have found

The number of students being awarded doctorates is increasing. In addition, the long-term completion rate for those students who start a doctorate is rising over time.

The quality of the research in New Zealand's tertiary education sector is measured by the Performance-Based Research Fund (PBRF) quality evaluation. In the 2006 quality evaluation, about 33 percent of New Zealand's PBRF-eligible staff was assessed as having produced original and innovative research, up from 29 percent in the 2003 evaluation. Around seven percent of PBRF-eligible staff produced highly original and innovative research that was esteemed by the international academic community – up from six percent in the previous evaluation.

The academic effect of New Zealand university research is highest in the broad subject area of 'health'.

The share of world-indexed publications and citations produced by New Zealand tertiary education institutions increased between 1998 to 2002 and again between 2003 to 2007.

Why this is important

Highly qualified research graduates and high quality research are crucial to increasing New Zealand's knowledge base and adding to innovation.

The tertiary sector is responsible for training most of the researchers who will contribute to innovation in New Zealand, producing graduates from research degrees with the required skills, knowledge, and attributes to help achieve economic productivity. The sustainability of the country's research and innovation sector depends on a strong and improving research culture in universities.

The tertiary sector directly undertakes research alongside, and sometimes in partnership with, other research organisations, industry and businesses, community organisations, and government. Universities are responsible for more than 60 percent of New Zealand's research papers.²⁰

How we are going

*University research contract income*²¹

Universities report the income they have earned from research contracts on an annual basis. There are several sources of research contract income for the universities. These include contestable research funds allocated via Vote Research, Science and Technology, funding for Centres of Research Excellence (CoREs), research contracted by government agencies, and research commissioned by the private sector. Research contract income is a proxy measure of research quality. It is usually won through competitive bidding and is often subjected to rigorous peer review.²²

Trends in this form of external research income provide a good proxy measure for the extent to which the research meets a test of relevance or alignment to business needs. The data show:

²⁰ Ministry of Research, Science and Technology. (2006).

²¹ This analysis uses the Performance-Based Research Fund definition of external research income to measure research contract income. For trend analysis purposes colleges of education data has been combined with the university data.

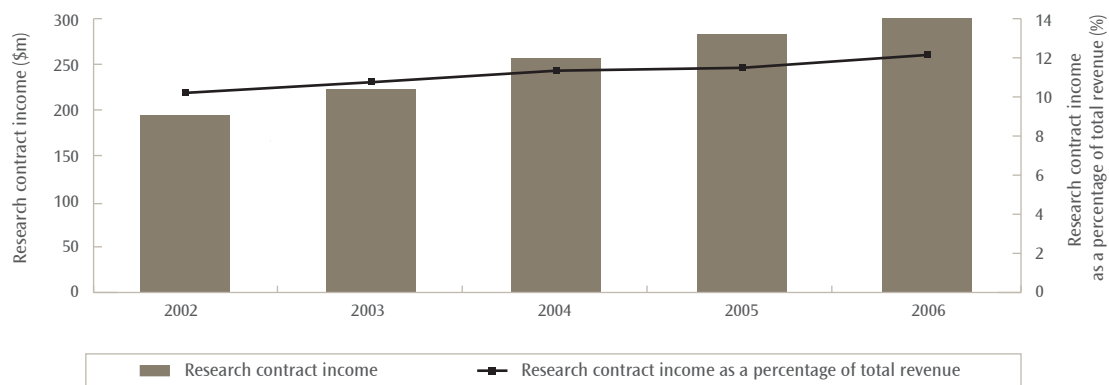
²² It needs to be noted that some research funding is commissioned by industry or by public sector agencies and is not won in competitive tender. The capacity of providers to maintain income from these sources over time, however, depends on their reputation for delivery of research of high quality. It should also be noted that the main public research funds are oriented towards certain types of disciplines or outcomes; this moderates the extent to which external research earnings can be used as a measure of research quality.





- total research contract income increased substantially at universities between 2002 and 2006. During this period, research contract income increased by 55 percent from \$194 million to \$301 million (see Figure 15.1). In real terms this amounts to an increase of 40 percent²³
- after adjusting for the size of the academic workforce and inflation, there has still been a substantial rise in research contract income at the universities. On a per full-time equivalent academic staff member basis, research contract income increased by 34 percent in real terms between 2002 and 2006
- the importance of research contract income to universities increased between 2002 and 2006. As a percentage of all university income, research contract income increased from 10 percent in 2002 to 12 percent in 2006 (see Figure 15.1).

Figure 15.1: University research contract income (2002 to 2006)



Source: Ministry of Education (2008n).

Research degree completion rates

Tertiary providers submit enrolment and completion details for tertiary students to the Ministry of Education. The enrolment and completion details of students can then be statistically matched to calculate qualification completion rates.²⁴ The data show:

- the number of students awarded doctorate degrees increased by 40 percent from 456 in 2000 to 639 in 2006
- the seven-year completion rates for doctoral students increased from 49 percent for students who began their doctorate degrees in 1998 to 54 percent for students who started in 2000. The long-term completion rate for doctoral students is more than 60 percent.²⁵

²³ Sums quoted in real terms have been adjusted for the effects of inflation over time.

²⁴ Scott, D. (2005a); Scott, D. (2005b).

²⁵ The 10-year completion rate for students that started their doctorate degrees between 1995 and 1997 is between 60 and 62 percent.

Researcher quality based on the Performance-Based Research Fund (PBRF)

The quality of researchers in the tertiary education sector has been measured by the Tertiary Education Commission through the PBRF quality evaluations. In the evaluations, all PBRF-eligible staff members submit an evidence portfolio that describes their research performance across three dimensions: the quality of nominated research outputs; the esteem with which they are held by their peers; and their contribution to the research environment. Through a peer review process, each PBRF-eligible staff member is then assigned a quality category. There have been two quality evaluations. The first took place in 2003, followed by a second in 2006.

In the quality evaluations, one of four quality categories (A, B, C, or R) was assigned to each PBRF-eligible staff member who submitted an evidence portfolio. A staff member who received:

- an 'A' quality category was assessed as producing research that was highly original or innovative and was esteemed by the international academic community
- a 'B' quality category was assessed as producing research that was original and innovative and recognised beyond the staff member's own institution

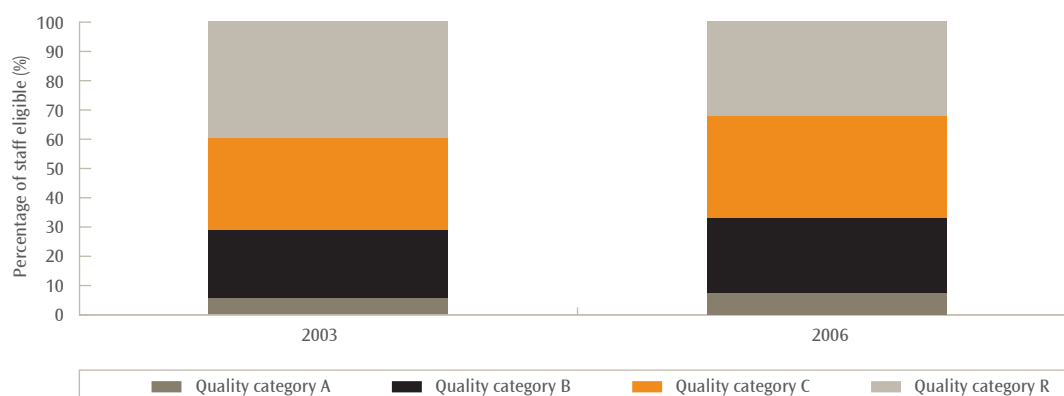
- a 'C' quality category was assessed as producing research that applied existing research methodologies with acknowledgement by their peers of a sound research basis.²⁶

An 'R' quality category was assigned to a researcher who did not meet the standard of a 'C' quality category.²⁷

The results of the 2006 quality evaluation show that the number of PBRF-eligible staff on a full-time equivalent basis rated as producing original and innovative research was 2,663, an increase of 24 percent on 2003. The number of staff producing research that is highly original and innovative and of world-class was 600 in 2006, up 41 percent on 2003.

As a percentage of all PBRF-eligible staff, about 33 percent of staff produced original and innovative research in 2006, compared with 29 percent in 2003. About seven percent of staff produced research that is highly original and innovative and of world-class in 2006, compared with six percent in 2003 (see Figure 15.2).

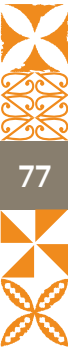
Figure 15.2: Performance-Based Research Fund (PBRF)-eligible staff by quality category (2003 and 2006)



Source: Tertiary Education Commission (2004, 2007).

²⁶ This quality category includes those new and emerging researchers who received a C(NE) quality category in the 2006 quality evaluation.

²⁷ This quality category includes those new and emerging researchers who received an R(NE) quality category in the 2006 quality evaluation.



Academic effects of tertiary education institution research

The academic effects of research by New Zealand tertiary education institutions can be measured by counting the number of times a research publication is cited by subsequent researchers.²⁸ The greater the number of citations a publication receives, the greater the effect that this research has had on the research community.

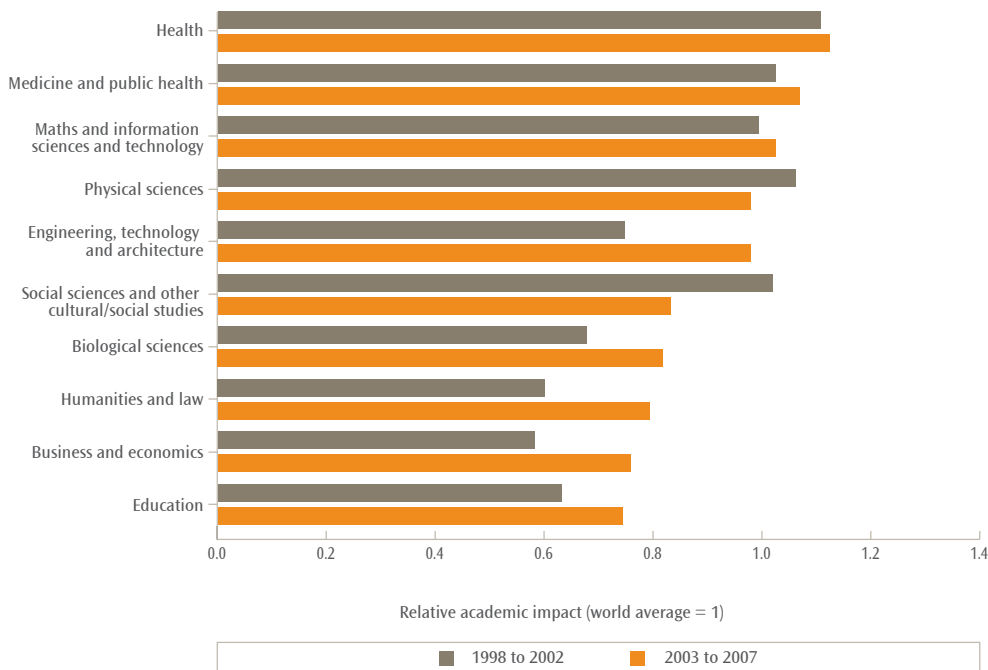
As the rates of citation differ between subjects and are also rising over time, academic effect is expressed as the ratio of New Zealand tertiary education institution citations per publication to world citations per publication. A value greater than one indicates that the academic effect of the New Zealand tertiary education institution

research was above the world average. A value below one indicates the academic effect of the research was below the world average.

The data²⁹ shows that:

- research in the ‘health’ subject area achieved the highest research effect during the period from 2003 to 2007. This was followed by research in the ‘medicine and public health’ area and the ‘mathematical and informational sciences and technology’ area
- the relative academic effect of research increased in eight of the 10 broad subject areas between 1998 to 2002 and 2003 to 2007.

Figure 15.3: Relative academic impact of tertiary education institution research by subject area (1998 to 2002 and 2003 to 2007)



Source: Ministry of Education (2008n).

²⁸ There are important caveats that apply to the use of citations and indexed publication data. For example, not all of the research produced by the universities is captured by this dataset, with the coverage of research in the humanities and social sciences not as extensive as in other subject disciplines. Therefore, caution should be used in judging the academic effect of research in these areas. A detailed discussion of this and other important caveats can be found in Smart and Weusten (2007).

²⁹ A bibliometric dataset provided by Thomson Reuters is used to measure the relative academic effects of research.

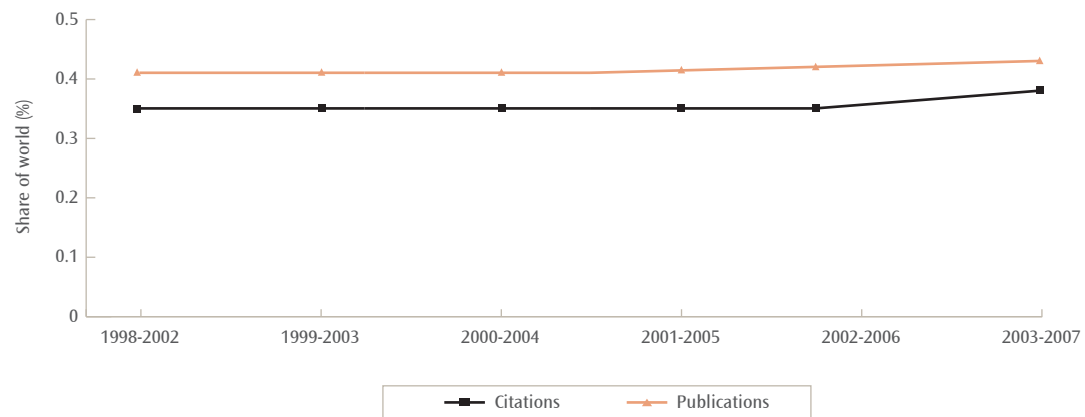


Share of world indexed publications and citations

The share of world indexed publication and the citations attached to those publications is another indicator of research performance. The data show that:

- the share of world publications by New Zealand tertiary education institutions increased from 0.41 percent in 1998 to 2002 to 0.44 percent in the period 2003 to 2007
- the share of world indexed citations by New Zealand tertiary education organisations increased from 0.35 percent in the period 1998 to 2002 to 0.40 percent in the period 2003 to 2007.


Figure 15.4: Share of world indexed publications and citations by tertiary education institutions (1998-2002 to 2003-2007)



Source: Ministry of Education (2008n).



Where to find out more

Visit www.educationcounts.govt.nz		
Indicators	Quality education providers	<ul style="list-style-type: none"> ▪ University research contract income ▪ Research degree completion rates ▪ Performance-based Research Fund staff receiving an A or B quality rating
Publications	Key publication series	<ul style="list-style-type: none"> ▪ Profile and trends
	Tertiary	<ul style="list-style-type: none"> ▪ (ex)Citing research: A bibliometric analysis of New Zealand university research 1981-2005 ▪ An analysis of funding allocations for staff and research degree completions in the Performance-Based Research Fund ▪ Quality vs. impact: A comparison of Performance-Based Research Fund quality scores with citations ▪ Research Measures: Comparing seven new measures of research performance in tertiary education ▪ Research Measures: Comparing the old with the new ▪ What determines the research performance of staff in New Zealand's tertiary education sector?

