



MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga

Benefits of tertiary certificates and diplomas

Exploring economic and social outcomes



This report forms part of a series called Beyond tertiary study.
Other topics covered by the series include how graduates' earnings change over time, labour market outcomes, education and economic growth, and qualifications and income.

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1 SUMMARY

MAIN FINDINGS

Level 1 to 3 certificates are associated with lower employment and income than school qualifications, but are better than having no qualifications at all. The social outcomes for people with level 1 to 3 certificates are similar to those of people with no qualifications.

Level 4 certificates are associated with higher employment and income than school qualifications. Men with level 4 certificates have very good rates of employment and relatively high incomes, probably due to the high demand for trades qualifications at this level. There is some evidence for better social outcomes for women with level 4 certificates, but not for men.

Diplomas are associated with similar employment rates as bachelors degrees, but slightly lower income. Women with diplomas are likely to have better health, have higher overall life satisfaction, are more likely to volunteer and to read to their preschool children than women with no qualifications. These effects are less evident for men.

There is evidence that education can have an effect on social outcomes over and above, or independent of, its effect on improving employment and income.

The clearest evidence of social outcomes from tertiary certificates and diplomas is for greater maternal support for their children's learning. These effects are largely independent of employment and income.

1.1 Purpose

This report examines the economic and social benefits associated with tertiary certificates and diplomas. These include employment, income, well-being, social participation and intergenerational benefits. This analysis helps inform understanding of the value of these qualifications to individuals, their families and wider society.

Tertiary certificates and diplomas represent a significant proportion of the tertiary education system. They provide entry to a wide range of occupations. Qualifications at this level also provide a pathway to higher levels of learning. More than a third of the population aged 25 to 39 holds one of these qualifications as their highest qualification. However, previous research on the benefits of tertiary education has tended to focus more at bachelors level and above, and treat tertiary certificates and diplomas as a single group of qualifications.

1.2 Approach

The data used in this study focuses on people aged 25 to 39 years. This covers people who are likely to have completed their initial education and excludes the older group of working age people, where work experience, life experience and other factors may have a greater effect on outcomes than education.

The report makes use of a range of point-in-time data sources. As such it can only draw attention to associations between education and economic and social outcomes. It cannot demonstrate causation. However, the discussion of social outcomes includes analysis to explore the extent to which these outcomes are associated with, or independent of, the economic effects of education. In a number of the social outcomes, the small size of the subsamples used from the survey data may limit the extent to which definite associations can be found.

The report looks at the highest qualification attained. For the purposes of this analysis, all post-school qualifications are treated as higher than school qualifications. However, people who have studied at more than one level are only counted at the level at which they attained their highest qualification. For level 1 to 3 certificates, in particular, this means that the group being examined are those who only completed a qualification at this level and excludes those who went on to complete a higher level qualification.

1.3 Tertiary certificates and diplomas

Tertiary certificates and diplomas cover a range of vocational and general qualifications below bachelors degrees. In the New Zealand tertiary education system, these qualifications can be obtained through tertiary education providers, as well as industry training organisations who manage work-based learning. Tertiary certificates and diplomas can be grouped into three broad levels:

- Level 1 to 3 certificates are equivalent in level to school qualifications and generally involve only a few months of full-time equivalent study. They prepare people for entry to employment or further education. The most common field in which people hold these qualifications is management and commerce. People with these qualifications are most likely to work as sales and service workers or clerks.
- Level 4 certificates provide more advanced employment-related education and generally involve 6 months or one year's full-time equivalent study. The most common field in which people hold these qualifications is engineering. People with these qualifications are most likely to work as trades workers.
- Diplomas are at level 5 to 7 and have a greater focus on technical and professional knowledge and generally require one or two years' full-time equivalent study. The most common field in which people hold these qualifications is health. People with these qualifications are most likely to work in professional and technician and associate professional occupations.

1.4 Employment and income benefits

People with level 1 to 3 certificates are more likely to be employed and earn higher incomes than those with no qualifications, but are slightly less likely to do so, on average, than those with school qualifications only.

Level 4 certificates provide greater employment and income benefits than school qualifications only. The employment and income benefits at this level are greater for men than for women.

Employment rates for people with diplomas are very similar to those for bachelors degrees. However, people with diplomas have lower incomes than those with bachelors degrees.

The relative employment and income benefits of tertiary certificates and diplomas vary distinctly across ethnic groups. Asians get relatively less advantage from school qualifications and relatively smaller advantage from tertiary qualifications than people in other ethnic groups. This may be related to the large number of recent Asian immigrants for whom lack of recognition of qualifications and having English as an additional language are barriers to higher-paid employment. Employment and income advantages are similar for European, Māori and Pasifika women. European men gain much greater advantages than Māori and Pasifika men.

Employment and income benefits vary by field of study. The variations are greater for men than for women, probably reflecting different patterns of labour force participation and occupational

choice. People with certificates and diplomas in information technology have lower rates of employment and lower incomes than others with the same level of qualification. This reflects an oversupply of these qualifications. Men with qualifications in engineering and building have consistently higher employment and income than men with the same level of qualification in other fields of study. Previous research has demonstrated a shortage of qualified people in these areas. Women with qualifications in management and commerce tend to have higher incomes than women with the same level of qualification in other fields of study.

1.5 Social benefits

There is evidence that women with diplomas have better well-being than women with lower-level qualifications. The association between education and well-being is less clear for men, and for women with tertiary certificates. Women with diplomas are likely to have better health status, even once differences in income and employment are controlled for. They are also likely to have greater overall life satisfaction.

People with level 4 certificates and diplomas are likely to have better economic standards of living than those with no qualifications. Some of this is due to higher income and greater employment. However, qualifications appear to be directly associated with better economic living standards, particularly for women, over and above the related effects of income and employment.

There is limited evidence that attaining a tertiary certificate or diploma is associated with greater participation in society, in terms of measures such as volunteering and voting. There appears to be some association with increased volunteering for women who have level 4 certificates or diplomas. Men with tertiary certificates and diplomas appear to be more likely to vote than men with no qualifications.

There is clear evidence that parents' attainment of tertiary certificates and diplomas is associated with greater support for their children's learning. They are more likely to have a greater number of educational resources in the home. Mothers with level 4 certificates and diplomas are more likely to read to their preschool children.

1.6 Conclusions

It is clearly evident that tertiary certificates and diplomas are associated with higher rates of employment and higher incomes, particularly when compared with having no qualifications. Qualifications at level 4 and above are generally associated with better employment and income when compared with having just a school qualification. These findings are consistent with the vocational focus of education at this level.

The evidence of social benefits associated with tertiary certificates and diplomas is less clear. It would seem that women get greater relative social benefits from education at this level than men. Some of the social benefit can be explained by the associated economic benefit. That is, improved employment and income is associated with improved social outcomes. However, part of the social benefit is independent of, or over and above, the economic benefit. The clearest social benefit of education at this level is intergenerational, with a strong association to greater support by parents for their children's learning, particularly on the part of mothers.

Having a level 1 to 3 tertiary certificate as the highest qualification is associated with better employment and income than having no qualification, but not as good, on average, as having a school qualification. There is very limited evidence for any social benefits from level 1 to 3 certificates compared with having no qualifications. This may reflect a double selection effect for people who have level 1 to 3 certificates as their highest educational qualification. They are

more likely to have limited school education and they also have not gone on to complete further tertiary education. The qualifications are also of quite short duration and narrow focus, compared with school qualifications. This suggests that level 1 to 3 study is of most benefit to people with no or low school qualifications, and is best seen as a pathway to higher levels of tertiary study.

2 INTRODUCTION

2.1 Purpose

This report looks at the economic and social benefits associated with the various levels of tertiary certificates and diplomas. The economic benefits cover employment and income. The social benefits cover well-being, social participation and intergenerational benefits. This analysis helps inform understanding of the value of these qualifications to individuals, their families and wider society.

Tertiary certificates and diplomas represent a significant proportion of the tertiary education system. Over the last nine years, students studying courses that contribute towards a tertiary certificate or diploma have represented 70 percent of students enrolled at tertiary education providers or 50 percent of equivalent full-time students. In 2009, there were 290,000 people studying at this level in tertiary providers. A further 195,000 were participating in work-based learning through industry training.

Tertiary certificates and diplomas are important entry requirements for a number of occupations across trades, education, health and services. In 2008, around a third of the population aged 25 to 39 held a tertiary certificate or diploma as their highest level qualification.

These qualifications also provide a pathway to further study. Half of 18 to 19 year old students who enrol in a level 1 to 3 certificate go on to further study at a higher level within five years. For 20 to 24 year old students, the figure is 40 percent. For level 4 certificates and diplomas, 40 percent of 18 to 19 year olds and 30 percent of 20 to 24 year old students go on to higher level study within five years.

Previous research on the benefits of tertiary education has tended to focus more on bachelors degrees and above, and to treat tertiary certificates and diplomas as a single group of qualifications. It has not looked in depth at the diversity of provision at this level and the different outcomes.

2.2 Approach

This report focuses on the 25 to 39 year-old age group. This age group excludes people under 25 who may still be studying towards their highest level tertiary qualification and/or only just starting out in the workforce. It includes an age cohort who has had similar experiences of education and employment and excludes people in their mid- to late-careers, where work experience and other factors may have had a greater influence on their outcomes.

The study uses point-in-time data from a range of sources to explore the relationships between qualification level and outcomes. As such, conclusions can only be drawn about the association of educational level with the outcomes in question. In some cases, the direction of influence is reasonably clear. For example, attaining a qualification is a prerequisite for entry to a number of jobs, which improves opportunities for employment and income. In other cases it is less clear. For example, a lack of education may influence poorer health outcomes, but having poorer health may also be a barrier to continuing in education. Also, attainment of a qualification may also represent a range of other factors not collected in the data, such as ability, motivation and upbringing. The complexity of family formation and functioning also confounds the results of some of the social outcome measures, particularly where information has only been obtained about one adult in the family. For a number of the social outcomes, the relatively small size of the subsamples used may limit the extent to which definite associations can be found.

The analysis looks at the highest level of study attained. In all cases, post-school qualifications are treated as higher than school qualifications. It effectively represents the benefits for those who completed their study at each level and have not completed any higher level qualifications. It doesn't capture the benefits participating in lower level study in order to progress to higher levels of study, as discussed above. For example, the people with level 1 to 3 certificates in this report are those who studied at this level and did not go on to complete a higher-level qualification. Those who studied at level 1 to 3 and subsequently completed for a level 4 certificate or diploma are only included in the higher-level categories. In this way, the results under-represent the full value of lower-level qualifications.

2.3 Tertiary certificates and diplomas

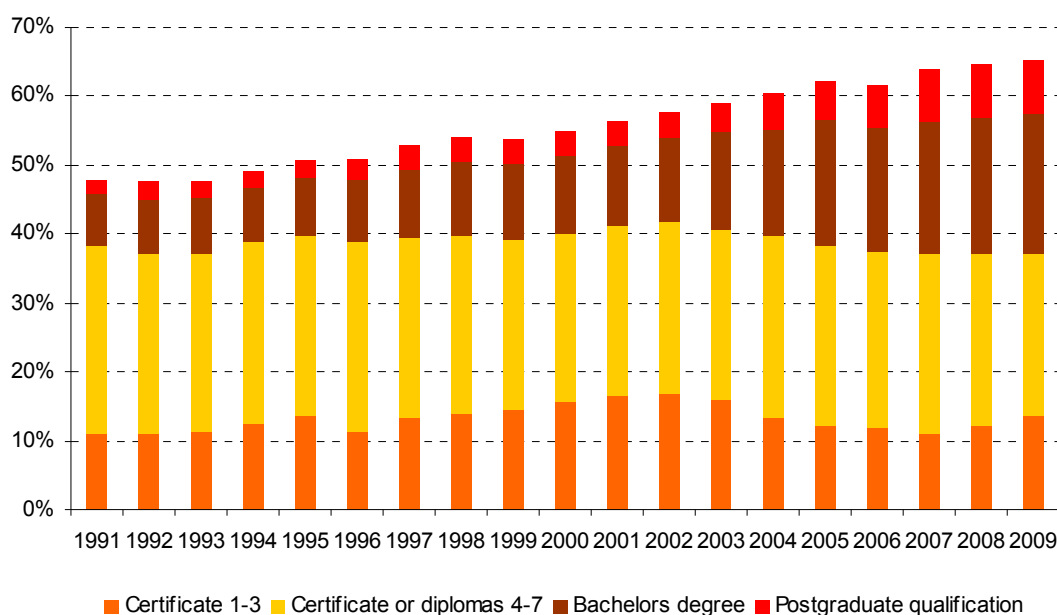
Tertiary certificates and diplomas cover a range of vocational and general qualifications, below bachelors-degree level, offered by tertiary education providers and industry training organisations. In this report, the qualifications are categorised as level 1 to 3 certificates, level 4 certificates and level 5 to 7¹ diplomas. It is not possible to distinguish in the data sources between qualifications attained at a provider and those attained through industry training.

Level 1 to 3 certificates are equivalent in level to senior secondary school qualifications. They are generally require a few months of full-time equivalent study to complete and focus on specific skills. They are often used as preparation for entry-level employment and/or further education. Level 4 certificates provide more advanced practical knowledge and lead to mid-level employment in trade and vocational occupations. They most commonly require either 6 months or one year of equivalent full-time study to complete. Diplomas have a greater focus on technical and professional knowledge and prepare candidates for lower-level management roles. Diplomas most commonly require one or two years full-time equivalent study to complete (Ministry of Education, 2009 and New Zealand Qualifications Authority, 2007).

The Household Labour Force Survey estimates that 37 percent of the population aged 25 to 39 held a tertiary certificate or diploma as their highest educational qualification in 2009. This proportion has decreased in recent years, as the proportion with bachelors degrees and higher has increased. This has been the result of skilled migration and increased participation in degree-level study. However, there are more people in this age group with tertiary certificates or diplomas as their highest qualification than there are with bachelors degrees and above.

¹ For information sourced from the 2006 Census, only level 5 and 6 diplomas are reported. Level 7 diplomas have been included with bachelors degrees in the Census classification.

Figure 1
Proportion of 25 to 39 year olds with tertiary qualifications as highest qualification



Source: Statistics New Zealand, Household Labour Force Survey

The 2006 census estimates that 9 percent of 25 to 39 year olds held a level 5 to 6 diploma as their highest qualification and 10 percent held a level 4 certificate and 10 percent held a level 1 to 3 certificate.

Table 1 shows the demographic and employment characteristics of people aged 25 to 39 with no qualifications, school qualifications only and tertiary certificates and diplomas. These are compared against the total population aged 25 to 39.

People with level 1 to 3 certificates as their highest qualification are more likely to be female and younger. Māori are more likely to hold qualifications at this level, than people who identify with other ethnic groups. The most common fields of study are management and commerce and food hospitality and personal services. People with these qualifications are most likely to work as sales and service workers.

Two-thirds of people with level 4 certificates are male and they are likely to be older. Europeans are more likely to hold qualifications at this level than people who identify with other ethnic groups, and Asians are less likely to do so. The most common fields of study are engineering and related technologies and architecture and building. People with these qualifications are most likely to work as trades workers.

People with level 5 to 6 diplomas are more likely to be female and older. Māori and Pasifika are less likely to hold qualifications at this level. The most common fields of study are management and commerce, health and engineering and related technologies. People with these qualifications are most likely to work in professional and technician and associate professional occupations.

Table 1

Characteristics of 25 to 39 year olds by qualification level

	Population aged 25-39	No qualification	School qualification	Level 1-3 certificate	Level 4 certificate	Level 5-6 diploma
Gender						
Female	52%	46%	56%	59%	33%	59%
Male	48%	54%	44%	41%	67%	41%
Age						
25-29years	30%	27%	28%	37%	25%	27%
30-34 years	34%	30%	34%	33%	34%	34%
35-39 years	37%	42%	37%	29%	39%	39%
Ethnic group						
Asian	11%	5%	10%	7%	5%	12%
European	72%	65%	75%	75%	87%	81%
Māori	14%	29%	14%	21%	13%	10%
Pasifika	7%	11%	9%	8%	4%	4%
Field of study						
Natural & physical sciences				1%	0%	2%
Information technology				10%	1%	5%
Engineering & related technologies				12%	35%	14%
Architecture & building				4%	17%	5%
Agriculture, environmental & related studies				7%	5%	3%
Health				3%	4%	14%
Education				2%	1%	11%
Management & commerce				30%	12%	25%
Society & culture				9%	5%	10%
Creative arts				5%	3%	9%
Food, hospitality and personal services				18%	15%	2%
Occupation						
Administrators & managers	15%	9%	17%	13%	12%	16%
Professionals	17%	2%	7%	7%	6%	26%
Technicians & associate professionals	14%	6%	14%	15%	12%	21%
Clerks	11%	8%	16%	15%	7%	9%
Sales & service workers	12%	14%	14%	20%	13%	11%
Agricultural workers	6%	10%	7%	7%	6%	5%
Trades workers	9%	11%	7%	8%	31%	5%
Plant & machine operators & assemblers	7%	20%	9%	7%	7%	3%
Labourers	5%	14%	6%	5%	3%	2%

Source: Statistics New Zealand, Census 2006.

Notes:

1. Population column is the total population aged 25 to 39, including people with bachelors and above.
2. All percentages are column percentages and add up to 100% for each qualification category, with the exception of ethnic group.
3. Ethnic group is reported on a total response basis. People can be in more than one category. The percentages can add up to more than 100%.
4. Figures for occupation relate to people in employment on Census night.

3 EMPLOYMENT BENEFITS

MAIN FINDINGS

People with level 1 to 3 certificates are more likely to be employed than those with no qualifications, but slightly less likely to be employed than those with school qualifications only.

People with level 4 certificates are more likely to be employed than those with school qualifications only. The employment advantage is much greater for men than for women.

Employment rates for people with diplomas are close to those for people with bachelors degrees.

Rates of employment by qualification level differ across ethnic groups. Asians get the least advantage from educational qualifications. This may reflect the larger proportion who are recent immigrants and have English as an additional language. Europeans gain the greatest employment advantage from tertiary certificates and diplomas, while Māori and Pasifika men gain the least.

Employment benefits of tertiary certificates and diplomas vary by field of study. The variations are greater for men than for women, with engineering being a consistently strong area of employment for men.

3.1 Measuring employment

The adult population (P) can be divided into three groups:

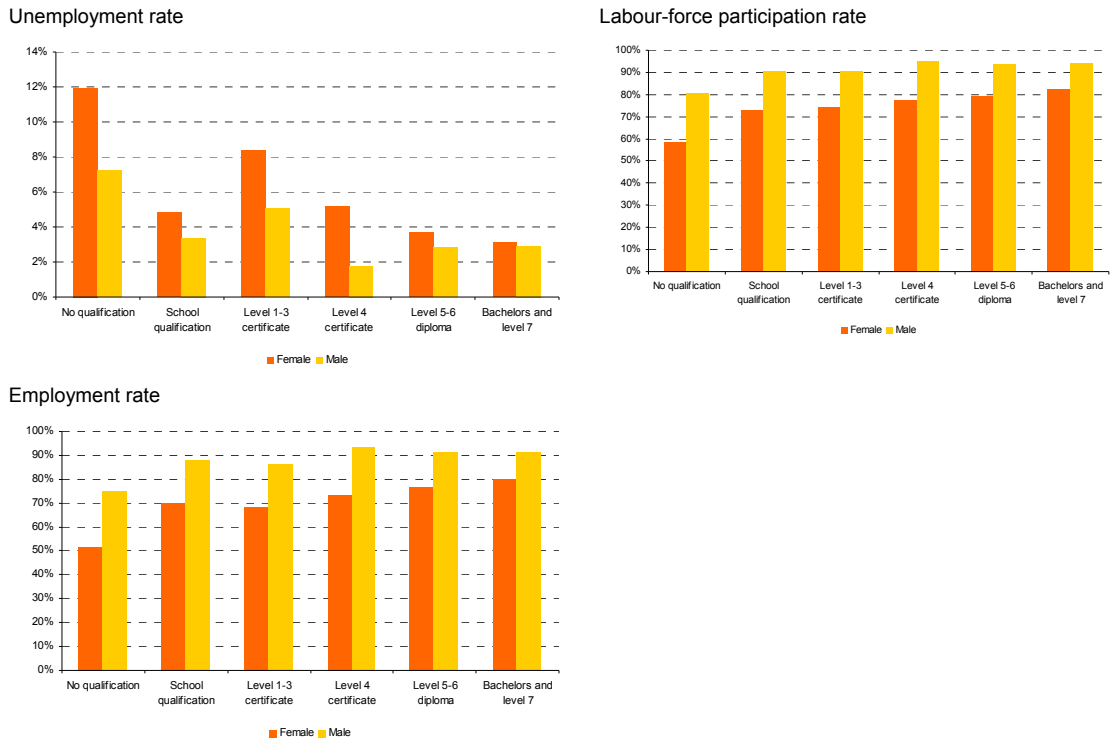
- **Employed:** those in full or part-time employment (A)
- **Unemployed:** people not in employment who are available for work and actively seeking work (B)
- **Not in the labour force:** people not employment and either not available for work or not actively seeking work (C)

The **labour force** is made up of both the employed and unemployed (A+B).

These divisions give rise to three measures of engagement with employment. The most common measure is the **unemployment rate**. This is the proportion of unemployed within the labour force $[B/(A+B)]$. This provides a measure of the current level of unmet demand for employment. The **labour force participation rate** is the proportion of people in the labour force out of the total population $[(A+B)/P]$. This provides a measure of the extent to which people participate in the labour force over other activities, such as full-time study, care-giving and retirement. The **employment rate** is the proportion of people in employment out of the total population $[A/P]$. This provides a measure of the extent to which people are employed.

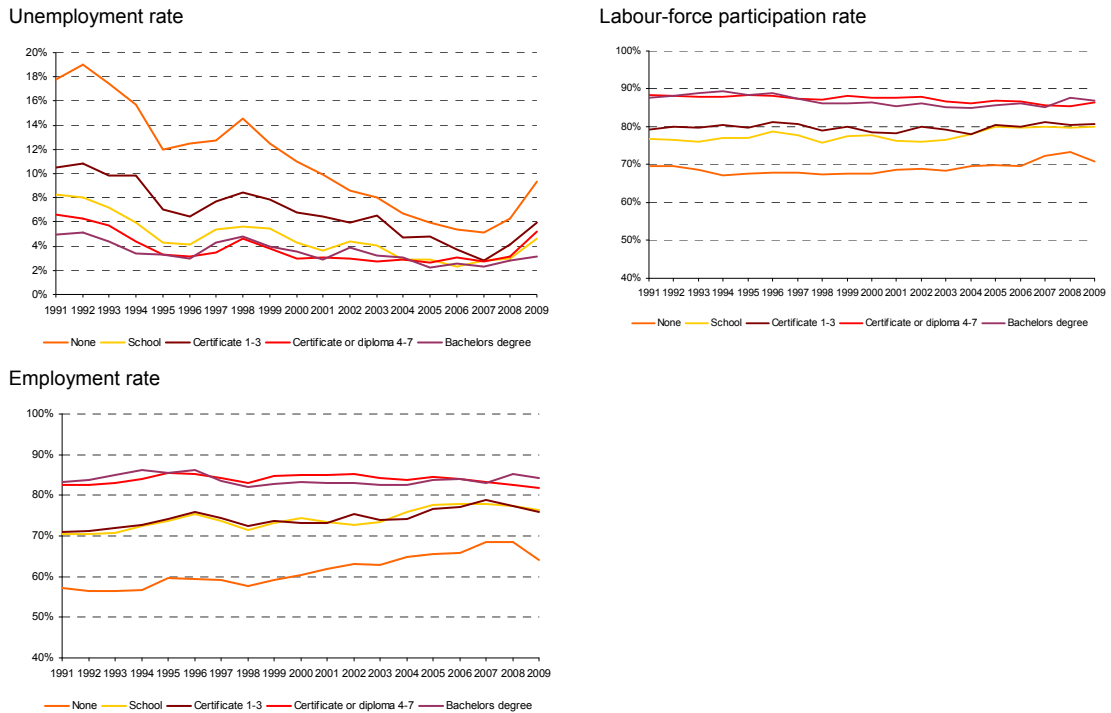
The unemployment rate provides a good measure of current supply of and demand for labour, but is changeable over time and reflects current economic conditions. Figures 2 and 3 show the variability of the unemployment rate between levels of study and over time. Using the unemployment rate to analyse point-in-time data, such as the Census, can lead to misleading conclusions about the medium- to long-term value of qualifications.

Figure 2
Employment indicators for 25 to 39 year olds by highest qualification and gender



Source: Statistics New Zealand, Census 2006.

Figure 3
Trends in employment indicators for 25 to 39 year olds by highest qualification



Source: Statistics New Zealand, Household Labour Force Survey

The labour-force participation and employment rates provide more stable, medium- to long-term measures of employment. Figures 2 and 3 show these measures are more consistent by

level of study and across time. They are not as strongly influenced by current economic conditions. They are more useful for drawing longer-term conclusions from point-in-time data. The employment rate provides a greater differentiation between levels and directly measures the ability to attain and maintain employment. For these reasons, the employment rate is used as the measure for this analysis.

3.2 Overall employment benefits of certificates and diplomas

Figure 3 above shows employment rates for people with level 4 to 7 certificates and diplomas have been close to those of people with bachelors degrees. The rates for people with level 1 to 3 certificates have been close to those of people with school qualifications only. From 1991 to 2007 there was a steadily increasing demand for labour, which is shown in the higher employment rates for people with no qualifications and those with school qualifications or level 1 to 3 tertiary certificates. This effect has changed with the current recession.

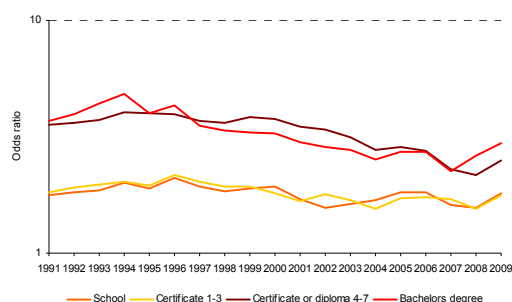
Figure 2 above provides more detailed information on employment rates by level and gender for 2006. This shows that for both men and women, having either a school qualification or level 1 to 3 certificate raises employment rates compared to having no qualification. Employment rates for men with level 4 certificates or level 5 to 6 diplomas are similar, and higher than for level 1 to 3 certificates. For women, there is a steady increase in employment rates from level 1 to 3 certificates to level 5 to 6 diplomas. Employment rates for people with diplomas are only slightly lower than those for people with bachelors degrees.

Figure 4 below presents the odds ratio for being employed by level of qualification. This ratio compares the odds of being employed² for people with a qualification with the odds of being employed for people with no qualification³. In the left chart, this approach effectively adjusts for changes in employment rates over time. The results show that the odds ratio for a school qualification or tertiary level 1 to 3 certificate has been fairly steady relative to having no qualifications. The odds ratio for a level 4 to 7 certificate or diploma has decreased, relative to no qualification. A similar pattern is evident for people with bachelors degrees and above. The relative differences for school and tertiary qualifications started to increase in 2008 and 2009, as the recession reduced demand for unskilled labour.

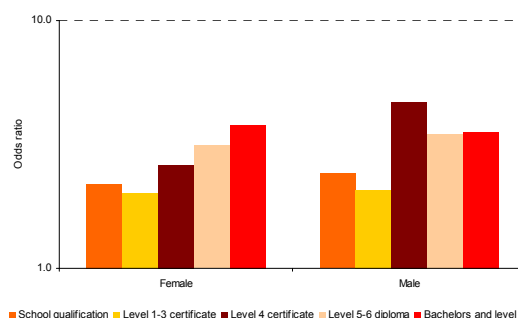
Figure 4

Likelihood of 25 to 39 year olds being employed by highest qualification (compared with no qualification)

Over time (1991-2008)



By gender (2006)



Sources: Statistics New Zealand, Household Labour Force Survey and Census 2006.

The right chart in Figure 4 compares the differences within each gender as odds ratios, where the odds for each qualification level are compared to the odds for someone of the same gender

² The odds is the ratio of number of people employed to the number of people not employed. It is not the same as the employment rate, which is the proportion of people employed out of the total number employed and not employed.

³ The odds ratio is the ratio of the odds for the first group to the odds for the second group. It provides a measure of the relative likelihood of the first group experience the event (e.g. employment) compared with second group.

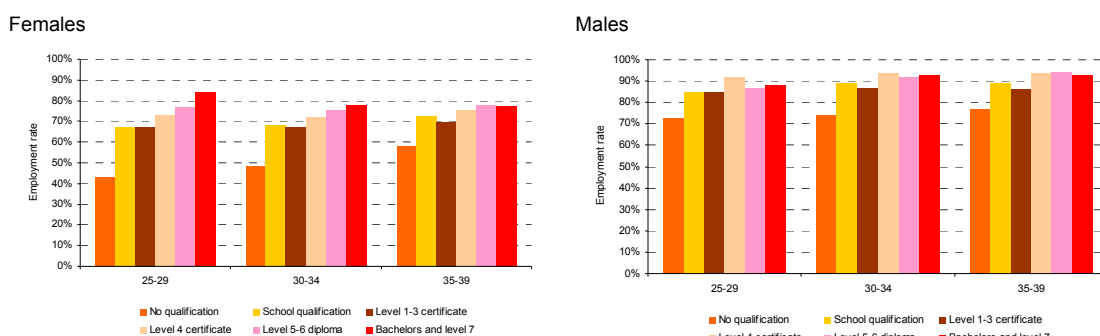
with no qualification. This highlights that for men and women aged 25 to 39, there is a step up in employment rates for school and level 1-3 certificates compared to no qualifications. For women there is a steady increase in employment rates from level 4 certificates to bachelors degrees. For men in this age group, having a level 4 certificate is associated with the highest employment rate. This high employment rate is associated with the short supply of trade workers during the period from 2002 to 2008 (Earle, 2009a). There is little difference for men in employment rates between diplomas and bachelors degrees.

3.3 Employment benefits by age and ethnicity

Figure 5 looks at employment rates for men and women by five-year age groups. For men, there are small increases in employment rates with age for each level of qualification. For women, the rates of employment of women with no qualifications increase with age, while the rates for women with bachelors degrees decrease. Other levels are fairly similar across age groups.

The differences in rates for women by age reflect the extent to which women take time out of the labour force to raise children, balanced against increased employability by age. Dharmalingam et al (2004) found that 70 percent of women with no qualifications had their first child before the age of 25, compared with 43 percent of women with tertiary certificates and diplomas and only 17 percent of women with degrees. By age 40, the proportions were much closer: at 93 percent for women with no qualifications and 79 percent for women with degrees.

Figure 5
Employment rates for 25 to 39 year olds by gender, age and highest qualification



Source: Statistics New Zealand, Census 2006

The employment advantage of tertiary certificates and diplomas varies across ethnic groups. Figure 6 compares the likelihood of employment for each level of qualification across ethnic groups with the overall likelihood of employment for someone with no qualifications in each gender.

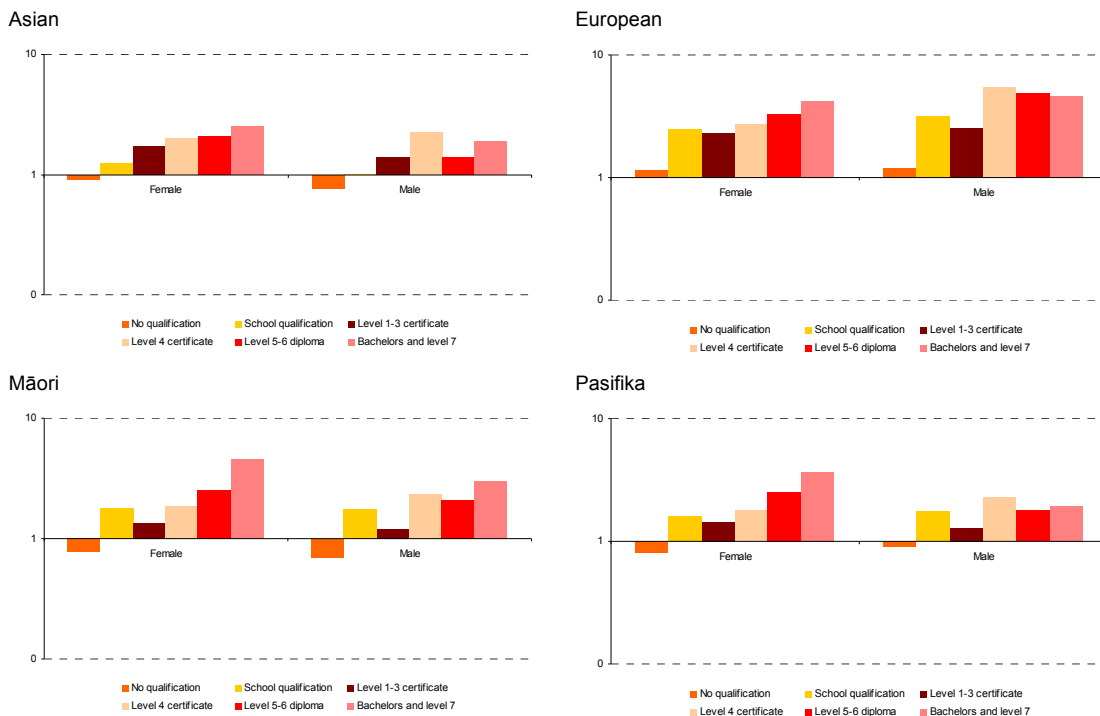
The results show quite distinct patterns by ethnic group and gender. Asians get the least employment advantage from school qualifications only and therefore greater relative advantage from tertiary qualifications. However, they do not get as much employment advantage from tertiary qualifications as Europeans and Māori. This may be showing the effect of recent Asian immigrants being disadvantaged in the labour market due to lack of recognised qualifications and/or English as an additional language (as discussed in Earle 2009b).

Europeans have the greatest employment advantage associated with tertiary certificates and diplomas. Māori, Pasifika and Asian men have the least. Across all ethnic groups, the likelihood of employment improves with each qualifications level for women. For men, those with level 4 certificates have the highest likelihood of employment. The drop from school to level 1 to 3

qualifications is particularly large for Māori men and women and for Pasifika men. It is relatively small for Europeans.

Figure 6

Likelihood of 25 to 39 year olds being employed by ethnic group, gender and highest qualification (compared with all people aged 25 to 39 with no qualifications)



Source: Statistics New Zealand, Census 2006.

3.4 Employment benefits by field of study

There is variation in the employment benefits of tertiary certificates and diplomas by field of study at each level. Figure 7 looks at the relative likelihood of employment by level and gender for various fields of study. The likelihood is compared within each group to the average for the group as a whole. The fields of study are a mixture of broad and narrow fields. This mixture has been selected for each level and gender to represent the predominant fields of study.

Across the levels, variation in the likelihood of employment is greater for men than for women. The consistent finding across men and women in all levels is that people with a certificate or diploma in information technology are substantially less likely to be employed than men or women with the same level of qualification in other fields of study. This finding is consistent with Statistics New Zealand (2003) and Earle (2009a). The latter report identified an oversupply of people with diplomas in information technology. Popularity of these qualifications had been relatively high at a time when employment opportunities were decreasing, due to fewer new information technology system developments and existing systems requiring less labour to maintain.

Qualifications in creative arts are also associated with lower rates of employment, with the exception of women with level 1 to 3 certificates.

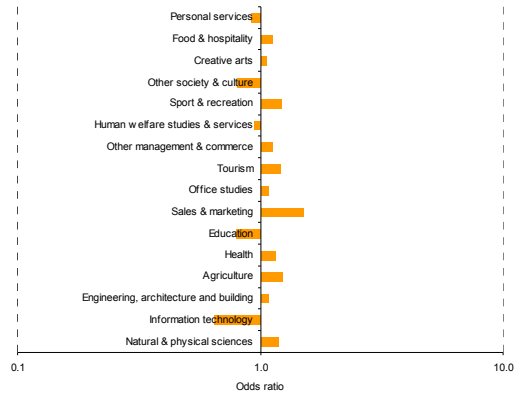
At level 1 to 3, women with certificates in sales and marketing, tourism, sport and recreation and agriculture have the highest likelihood of employment. For men, the higher employment fields are in electrical and electronic engineering, agriculture and horticulture and building.

Figure 7

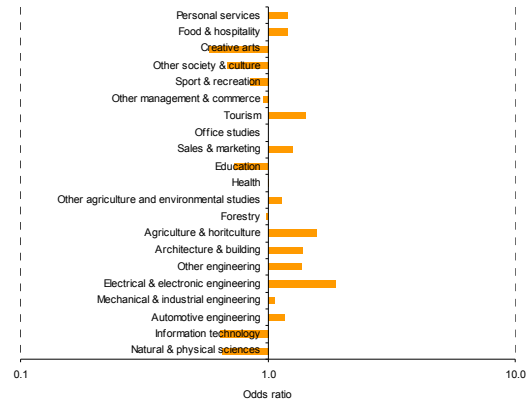
Likelihood of 25 to 39 year olds being employed by highest qualification, gender and field of study (compared with average rate for each level and gender)

Level 1-3 certificates

Females

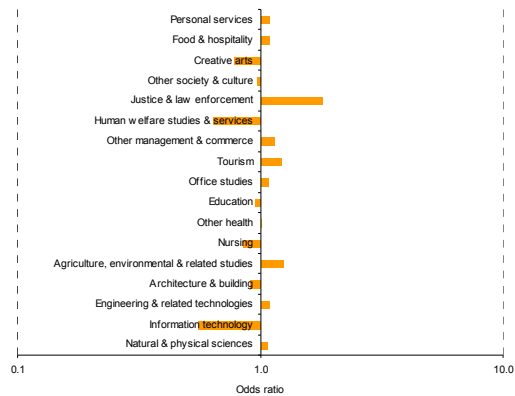


Males

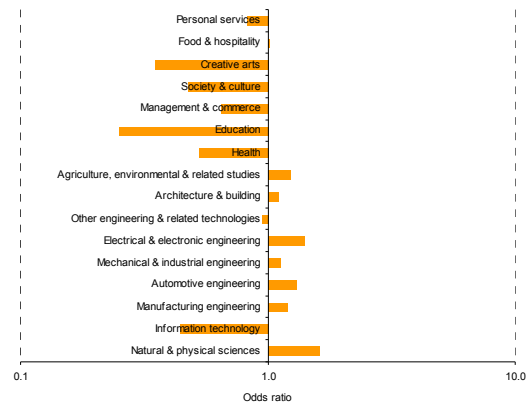


Level 4 certificates

Females

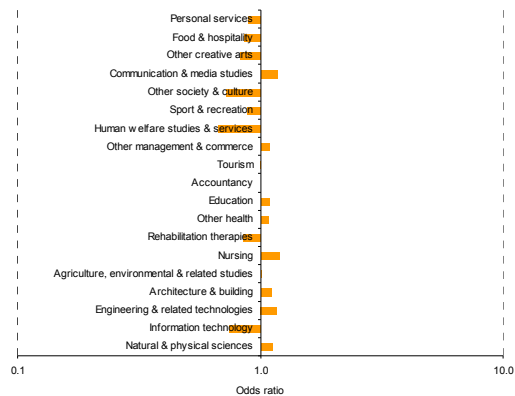


Males

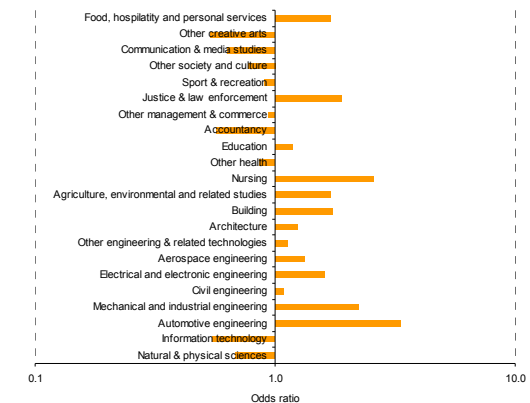


Level 5-6 diplomas

Females



Males



Source: Statistics New Zealand, Census 2006

At level 4, the highest employment likelihood for women is in justice and law enforcement, which are legal services qualifications. Other areas with higher employment outcomes are tourism and agriculture. For men, the subjects with higher employment likelihood are mostly in engineering and related technologies.

For level 5 to 6 diplomas, differences in employment likelihoods are fairly small for women. For men, engineering and building are related to higher likelihoods of employment, as are nursing, justice and law enforcement (policing) and food and hospitality.

4 INCOME BENEFITS

MAIN FINDINGS

People with level 4 certificates and diplomas have higher incomes on average than those with no qualifications or school qualifications only. People with level 1 to 3 certificates are likely to earn more than those with no qualifications, but slightly less than those with school qualifications only.

Women with level 4 certificates earn about the same as women with school qualifications only. Women with diplomas are likely to earn more than women with lower level qualifications, but not as much as women with bachelors degrees.

Men with level 4 certificates earn substantially more than men with lower level qualifications and have similar incomes to those with diplomas. Their incomes are below those of men with bachelors degrees.

The relationship between qualifications and income varies across ethnic groups. European, Māori and Pasifika women gain similar advantages from tertiary certificates and diplomas. European men gain much stronger advantages than men in other ethnic groups. The relative advantages for Asians are lower than other ethnic groups.

The income benefits of tertiary certificates and diplomas vary by field of study. Women with qualifications in management and commerce (including office studies and tourism) tend to have higher incomes across all levels. Men with qualifications in engineering and building tend to have higher incomes across all levels.

4.1 Overall income benefits of certificates and diplomas

Men with a school qualification earn on average 18 percent more a week than men with no qualifications, men with a level 1 to 3 certificate earn on average 23 percent more a week and men with a level 4 certificate or diploma earn on average 40 percent more.

Figure 8 shows income from wages and salaries for men and women by qualification level. The first measure shown is hourly income. This measure reflects how much people with different levels of qualification are rewarded for their labour and skills. Real median hourly wages have steadily increased over the last twelve years, both for people with and without qualifications. Among both men and women, having a school qualification, tertiary certificate or diploma is associated with higher hourly wages than having no qualifications; but with lower hourly wages than those with bachelors degrees. Hourly wages for men are somewhat higher than for women at all qualifications levels.

Women with a school qualification or level 1 to 3 certificate earn, on average, 27 percent more per hour than women with no qualifications, and women with a level 4 certificate or diploma earn 39 percent more. The figures for men are 16 percent and 30 percent respectively.

The second measure is weekly income. This measure effectively adjusts for the number of hours worked during the week. The median weekly income for women is lower than for men, largely due to more women being in part-time employment. Median weekly incomes for people with school qualifications, tertiary certificates and diplomas are higher than those for people with no qualifications, but not as high as those for people with bachelors degrees.

Real weekly income for women has increased over the last twelve years for all levels of qualification, due to a combination of increased wages and increased hours of employment.

Women with a school qualification earn on average 13 percent more a week than women with no qualifications, women with a level 1 to 3 certificate earn on average 22 percent more a week and women with a level 4 certificate or diploma earn on average 34 percent more.

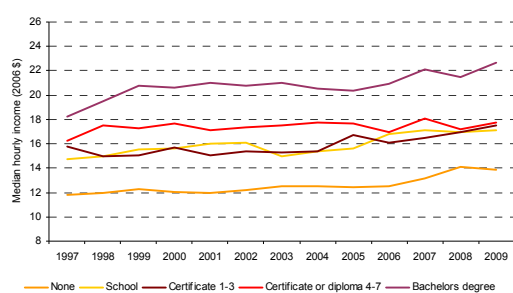
Real weekly income for men has been fairly steady over the last twelve years for all levels of qualifications. Some decrease is evident in 2009 for men with higher-level qualifications as a result of the recession. Men with a school qualification earn on average 18 percent more a week than men with no qualifications, men with a level 1 to 3 certificate earn on average 23 percent more a week and men with a level 4 certificate or diploma earn on average 40 percent more.

Figure 8

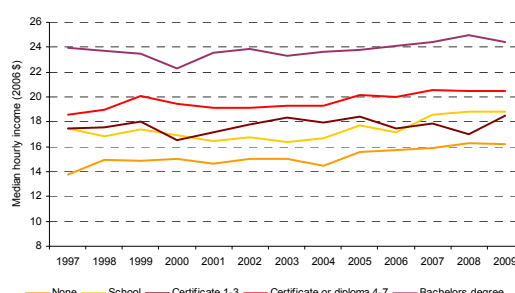
Trends in real median earned income of 25 to 39 year olds by gender and highest qualification

Hourly income

Females

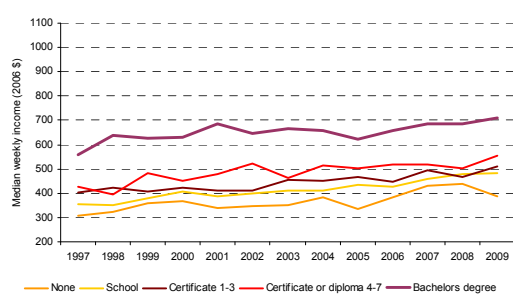


Males

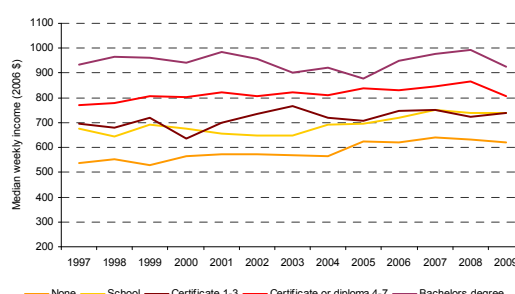


Weekly income

Females



Males



Source: Statistics New Zealand, New Zealand Income Survey

The rest of this section looks at total annual personal income using 2006 census data. This measure includes both the effects of wages and hours of employment. It also includes income from other sources, such as benefits, interest and dividends and rental properties.

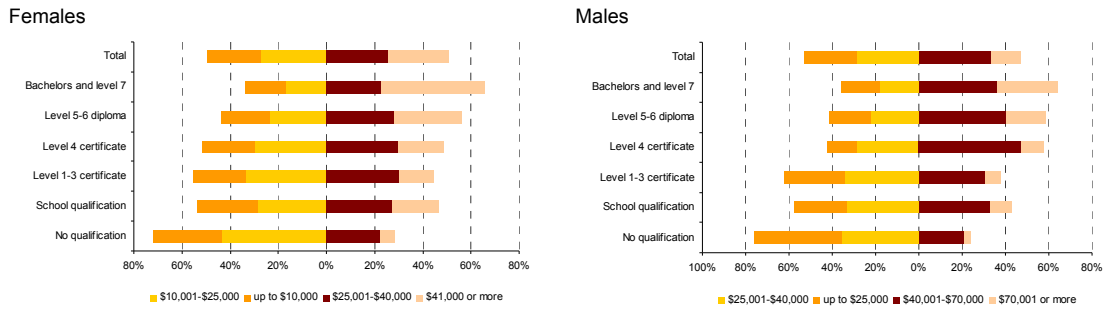
Figure 9 compares the income distribution by highest qualification for men and women. The top bar in each graph is the total income distribution for each gender. It has been divided approximately into quarters.⁴ The other bars display the relative spread of income by highest qualification up to bachelors level.

Women with a diploma are more likely to have income above the median and in the highest quartile than women with lower-level qualifications. Women with no qualifications are much more likely to have income below the median. Women with school qualifications and level 4 certificates have a very similar income distribution. However, women with level 1 to 3 certificates tend to have slightly lower incomes than those with school qualifications. While the differences are small, this suggests that level 1 to 3 tertiary certificates provide a greater benefit to those who did not succeed at school and provide similar returns to school qualifications.

⁴ The Census collects income in bands, so the nearest band has been used in each case.

Men with level 4 certificates and diplomas are much more likely to have income above the median than men with lower-level qualifications. Men with no qualifications are much more likely to have income below the median. As with women, incomes for men with school and level 1 to 3 certificates are similar, with the distribution for level 1 to 3 certificates being slightly lower.

Figure 9
Total personal income of 25 to 39 year olds by gender and highest qualification



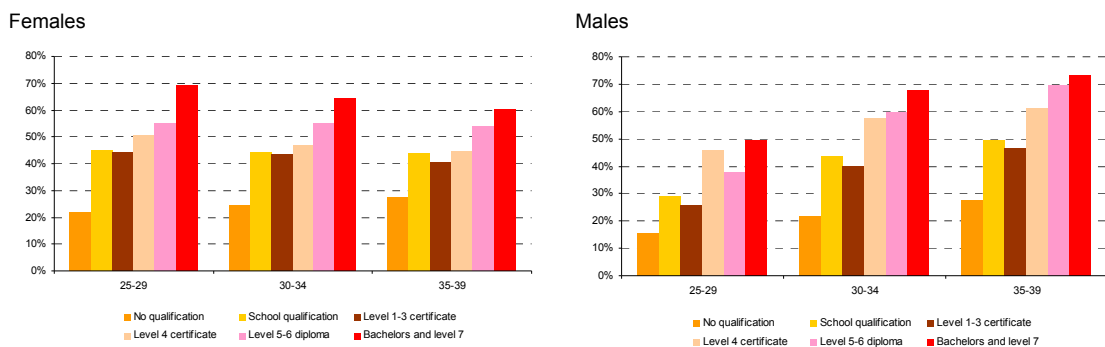
Source: Statistics New Zealand, Census 2006

4.2 Income benefits by age and ethnicity

Figure 10 shows the proportion of males and females by age group and highest qualification who have income above the median for males and females aged 25 to 39. It shows that the proportion of women with incomes above the median for women is fairly stable across ages at each qualification level up to diplomas. There is a small increase in the proportion of women with no qualifications with above median incomes from 25 to 39. There is a decrease for women with bachelors degrees, which may reflect a higher proportion being out of the labour force, as discussed in the previous chapter.

By contrast, the proportion of men earning above the median income for men increases at all levels of qualification from age 25 to 29 to age 30 to 34. For males aged 35 to 39, incomes increase for those with diplomas and above, while remaining steady for those with tertiary certificates or school qualifications.

Figure 10
Proportion of 25 to 39 year olds with personal income over the median by gender, age and highest qualification



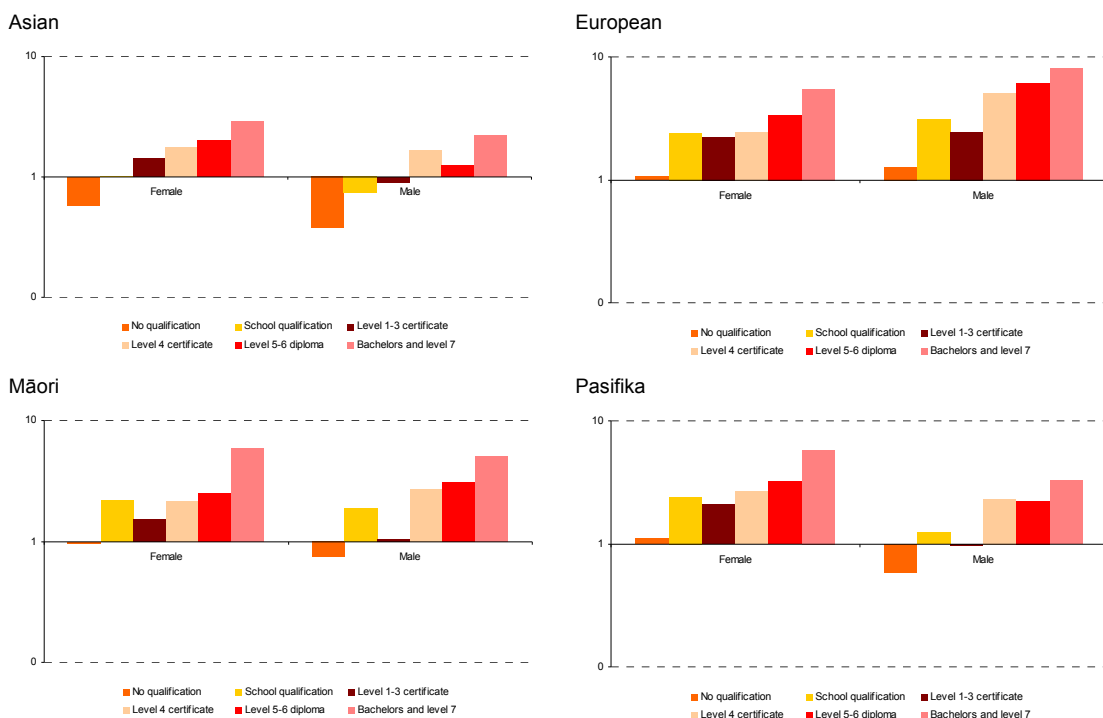
Source: Statistics New Zealand, Census 2006

Figure 11 shows the relative likelihood of having a personal income over the median for each level of qualification across ethnic groups compared with the overall likelihood of having personal income over the median for someone in each gender with no qualification.

As with employment, the results show quite distinct patterns by ethnic group and gender. Asians with no qualifications are much more likely to have incomes below the median than people in other ethnic groups with no qualifications. Having a tertiary qualification improves their chances of having a higher income. This may be an effect of the large number of recent Asian immigrants, as discussed in the employment section.

In most cases, the likelihood of a higher income increases with the level of tertiary qualification. With the exception of the Asian group, those with a level 1 to 3 certificate are less likely to have a higher income than those with a school qualification. This difference is particularly large for Māori men. European, Māori and Pasifika women gain similar income advantages from tertiary qualifications. European men gain much stronger income advantages than men in other ethnic groups.

Figure 11
Likelihood of 25 to 39 year olds having personal income over the median by highest qualification, ethnic group and gender (compared with all people aged 25 to 39 with no qualifications)



Source: Statistics New Zealand, Census 2006.

4.3 Income benefits by field of study

There is moderate variation in the income benefits of tertiary certificates and diplomas by field of study. Figure 12 looks at the relative likelihood of earning above the median income by level and gender for various fields of study. The likelihood is compared within each group to the average for the group as a whole. The median income is estimated for each group. The same groupings of field of study have been used as for Figure 7.

As with employment, people with qualifications in information technology are likely to have lower incomes than others with the same level of qualification. This reflects the lower employment rate and possibly relatively lower salaries, due to the oversupply of qualified workers. The other two fields that have consistently lower incomes are creative arts and personal services. Also men with diplomas have greater variation in income by field of study than other groups.

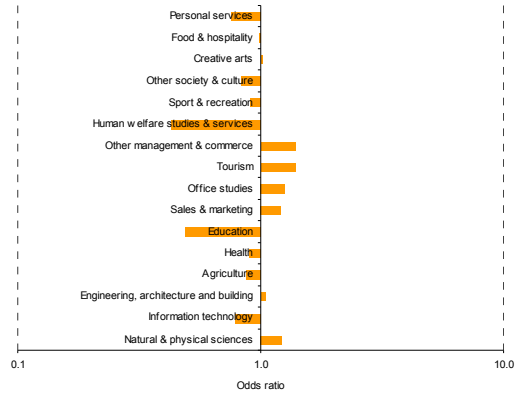
Income patterns are different at each level for men and women. This reflects the gender differences in occupations related to the qualifications, as is the case with employment rates.

Figure 12

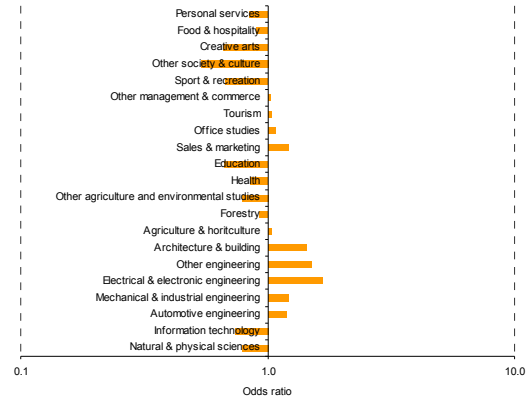
Likelihood of 25 to 39 year olds having income above the median by highest qualification, gender and field of study (compared with average rate)

Level 1-3 certificates

Females

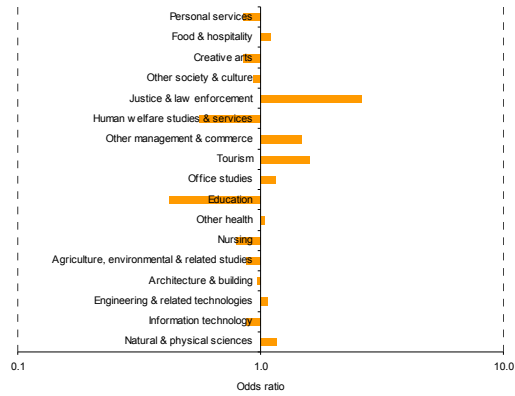


Males

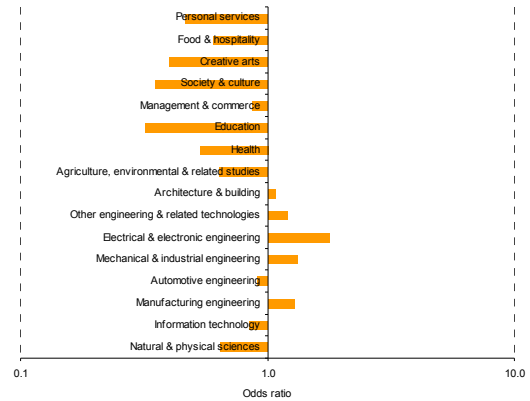


Level 4 certificates

Females

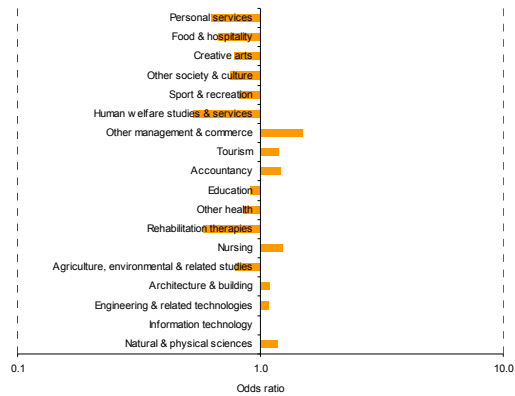


Males

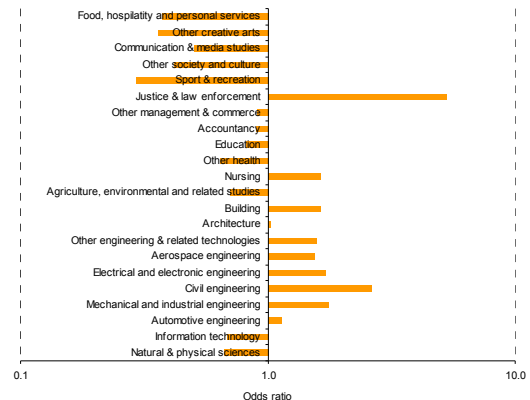


Level 5-6 diplomas

Females



Males



Source: Statistics New Zealand, Census 2006

For women, qualifications in sciences and general management and commerce are associated with higher incomes at all levels. For level 1 to 4 certificates, qualifications in tourism and office studies are also associated with higher incomes. Level 4 certificates in justice and law

enforcement have significantly higher incomes. These are mostly legal services qualifications. For level 5 to 6 diplomas, qualifications in management and commerce, tourism, accounting and nursing are associated with higher incomes. Qualifications in human welfare studies and services (i.e. social and community work) are associated with lower incomes at all levels. Level 1 to 4 certificates in education are also associated with lower incomes, as are diplomas in agriculture and health other than nursing.

For men, qualifications in electrical and mechanical engineering are associated with higher incomes across all levels. Other areas of engineering and building are associated with higher incomes for level 1 to 3 certificates and diplomas. Justice and law enforcement diplomas are also associated with much higher incomes. These are mostly policing qualifications. Qualifications in sport and recreation, education and agriculture are generally associated with low incomes across all levels.

There are some common patterns of benefits by field of study by both employment and income. As noted above, people with certificates and diplomas in information technology have both lower employment and lower incomes. Women with management and commerce certificates and nursing diplomas are more likely to be employed and have a higher income. For men, those with certificates in engineering and building are more likely to be employed and have higher income. There is also consistent employment and income gains in justice and law enforcement.

5 BENEFITS FOR WELL-BEING

MAIN FINDINGS

There is evidence that women with diplomas generally have better outcomes on measures of well-being than women with lower level qualifications. The association for men, and for men and women with tertiary certificates, is less clear.

Women with diplomas are likely to have better health than women with no qualifications or tertiary certificates. This effect is independent of the effects of income resulting from higher qualifications. Men with tertiary certificates and diplomas have similar health status as those with no qualifications.

Women and men with level 4 certificates and diplomas are likely to have better economic living standards than those with no qualifications. Some, but not all, of this association can be explained by higher incomes and greater employment. The effect of qualifications over and above household income and employment appears to be greater for women than for men.

Women with diplomas have higher overall life satisfaction than those with no qualifications. Much of this difference can be explained by the association of higher qualifications with better health and higher income. Qualification level does not appear to be related to overall life satisfaction for men.

Women with level 1 to 3 certificates have lower job satisfaction than women with no qualifications. Other than this, job and housing satisfaction are not related to qualification level for women or men.

The previous two sections have demonstrated the association between tertiary certificates and diplomas and improved employment and income. It is reasonably well established that both employment and income have positive associations with well-being. This chapter goes on to see whether attaining tertiary certificates and diplomas has an association with well-being measures that is over and above, or independent of, employment and income. This section looks at three measures of well-being: overall health status, economic living standards and life satisfaction.

Throughout this, and the following chapters, two sets of measures are reported. The first shows the association between the outcome and highest qualification level, when only qualification level is considered. This shows the extent to which people with different levels of qualification experience a positive outcome. However, it does not explain whether this is directly associated with having a qualification or indirectly associated with the greater economic benefits of the qualification, via income and employment. The second measure shows the association when differences in other factors, such as income and employment, are taken into account. This second measure reveals whether there may be an association between educational qualifications and the outcome, over and above, or separate from, the economic effects and demographic differences.

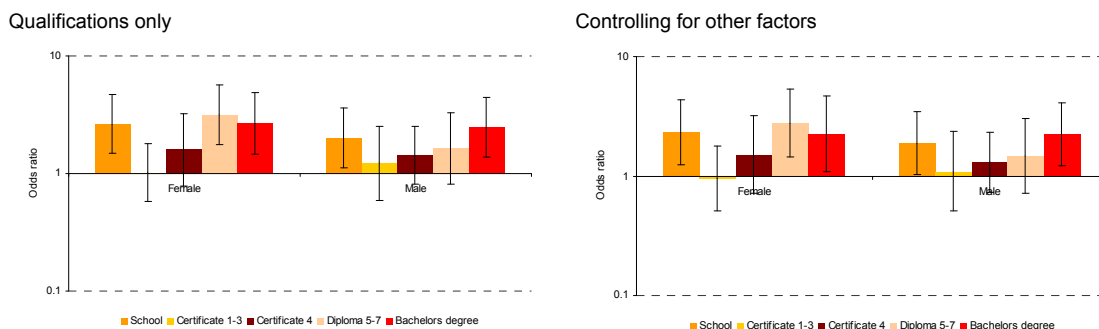
5.1 Health status

Overall health is influenced by a range of factors, including employment and income, occupational risks, lifestyle, access to services, knowledge of health-related issues and family and individual practices. It could be expected that people with higher levels of education have better health as a result of better employment and income, as well as better knowledge about health-related issues.

Self-assessed health status is widely used internationally to measure general health. This question was included in Statistics New Zealand's 2008 General Social Survey (GSS). Figure 13 shows the relative likelihood of having better health for each level of qualification compared with having no qualification, for women and men. An odds ratio of 1 indicates that the likelihood is the same as for someone of the same gender with no qualifications. Results above 1 indicate a greater likelihood of better health and results below 1 indicate a lower likelihood of better health. The error bars show the 95 percent confidence interval for the estimated likelihood. Where these bars cross the 1 axis, no statistically significant difference has been found using this data. The figure on the left shows the direct association with qualification level. The figure on the right shows the association, having controlled for household income and labour force status.

In general, men and women aged 25 to 39 have very similar levels of self-assessed health. The results show that women with a school qualification, diploma or bachelors degree are more likely to have good health than women with no qualifications or a tertiary certificate. This relationship remains statistically significant even once differences in household income and labour force status are controlled for.

Figure 13
Likelihood of 25 to 39 year olds having better health by gender and highest qualification (compared with no qualification)



Source: Statistics New Zealand, General Social Survey 2008

Note: Modelled values are the result of logistic regressions for each gender, which control for household income and labour force status.

Men with a school qualification or bachelors degree are more likely to report good health than men with no qualifications. This relationship remains statistically significant even once household income and labour force status are accounted for. The differences for men with tertiary certificates and diplomas are not statistically significant.

This analysis suggests there is some association between qualification level and overall health and that part of this relationship is independent of income and employment. However, when looking just at those with tertiary certificates and diplomas, the only statistically significant effect shown in the GSS data is for women with diplomas.

International research has also found that education is associated with better health, over and above the effects of better income. Mediating factors between education and health may include better use of health services, better choices about lifestyle and less exposure to occupational hazards. However, some of the effect could also be explained by poorer health early in life reducing opportunities to continue in education (Johnston, 2004).

5.2 Economic living standards

Employment and income provide partial indicators of overall economic living standards. Living standards are also influenced by wealth and assets, financial management and non-consumption

related costs, such as health costs. The Economic Living Standards Index (ELSI) was developed by the Ministry of Social Development to provide a direct measure of living standards based on information about what people had or were consuming. The scale reflects differences in ownership and consumption that are generally associated with high or low living circumstances (Ministry of Social Development, 2006). It provides a measure of achieved living standards that takes account of the ability of people to manage their income and assets, and also effectively adjusts for non-consumption related demands, such as high health-related costs.

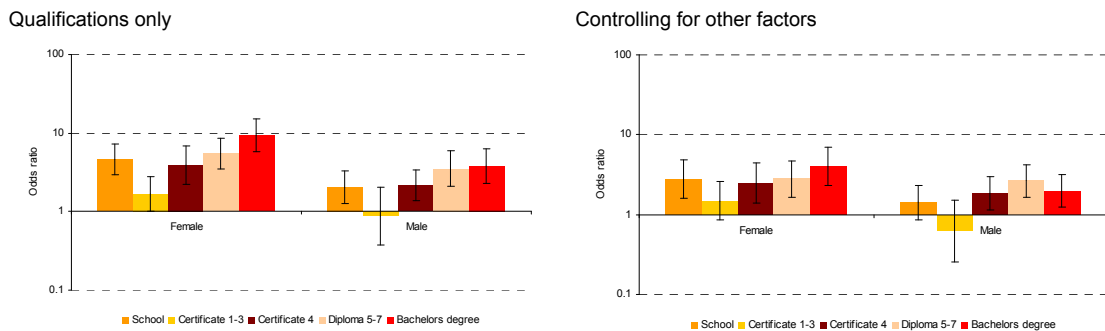
It could be expected that a person with higher education could achieve a higher economic standard of living than a person with lower education, but the same level of income. This could be the result of better financial and asset management, as well as generally better health.

The GSS used the short form of the ELSI questionnaire to establish a score for each respondent. Figure 14 shows the relative likelihood of having better economic living standards for each level of qualification compared with having no qualification, for men and women. The figure on the left shows the direct association with qualification level. The figure on the right shows the association, having controlled for household income, family type, labour force status and health status.

In general, men and women aged 25 to 39 have very similar levels of economic living standards. The results show that women with a school qualification, level 4 certificate, diploma or bachelors degree are more likely to have better economic living standards than women with no qualifications. Once other factors are controlled for, the differences are smaller but remain statistically significant. The pattern is similar for men when qualifications alone are considered, although the differences are relatively smaller. Once other factors are controlled for, the differences for men with level 4 certificates, diplomas and bachelors degrees remain statistically significant.

This analysis suggests improvements in employment, health and income associated with higher educational qualifications do explain part of the relationship between qualifications and economic living standards. However, there is some effect of qualifications over and above these factors. The direct effect of qualifications appears to be stronger for women than for men.

Figure 14
Likelihood of 25 to 39 year olds having better economic living standards by gender and highest qualification (compared with no qualification)



Source: Statistics New Zealand, General Social Survey 2008

Note: Modelled values are the result of logistic regressions for each gender, which control for household income, family type, labour force status and health status.

5.3 Life satisfaction

Life satisfaction provides a summary view of how well people believe they have achieved an optimal lifestyle. Life satisfaction may be influenced by a range of factors, including employment, income and health. It is plausible that attaining higher levels of education may contribute to greater satisfaction. However, people may also rate their satisfaction within the achievable range of lifestyles available to them, given their income, occupation and qualifications.

The GSS asked respondents to rate their overall life satisfaction, as well as their satisfaction with their current employment and housing. Figure 15 shows the relative likelihood of having greater satisfaction on each of these three measures for each qualification level compared with having no qualification, for men and women. The figures on the left show the direct association with qualification level. The figures on the right show the association, having controlled for other factors. The right hand figures show the association, if any, of qualifications on satisfaction over and above the effect of improved income, employment and health status.

In general, women aged 25 to 39 are slightly more likely to be satisfied with their lives than men in the same age group. For women, 32 percent reported being extremely satisfied, compared with 26 percent of men.

The results for overall life satisfaction show that women with diplomas and bachelors degrees are more likely to have better life satisfaction than those with no qualifications. Once other factors are controlled for, women with diplomas continue to have a higher level of life satisfaction.⁵ At all other qualification levels, no association between qualification level and life satisfaction remains. For men, there is no clear association between qualification level and life satisfaction, either before or after controlling for other factors.

In general, men and women aged 25 to 39 had similar levels of job and housing satisfaction. For job satisfaction, the only statistically significant result was that women with level 1 to 3 certificates are less satisfied with their current job than women with no qualifications. This result is not quite statistically significant once other factors are taken into account. No relationships were found between qualification level and housing satisfaction.

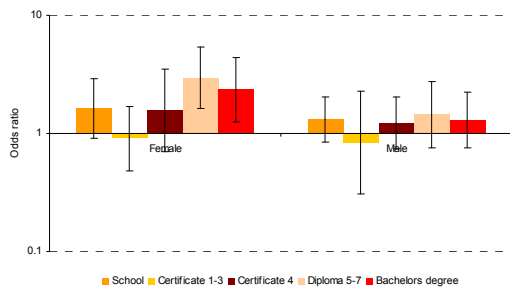
⁵ This result is just outside the boundary for statistical significance at the 95 percent level.

Figure 15

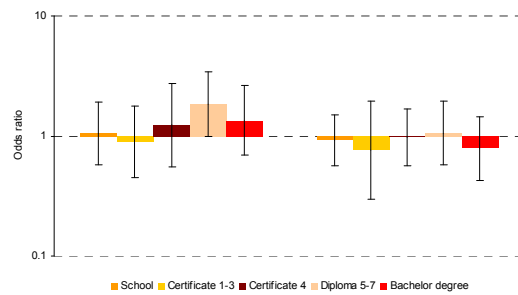
Likelihood of 25 to 39 year olds having greater satisfaction by gender and highest qualification (compared with no qualification)

Overall life satisfaction

Qualifications only

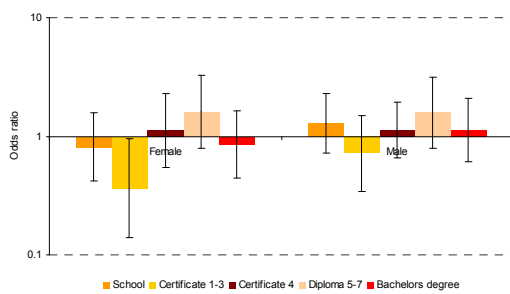


Controlling for other factors

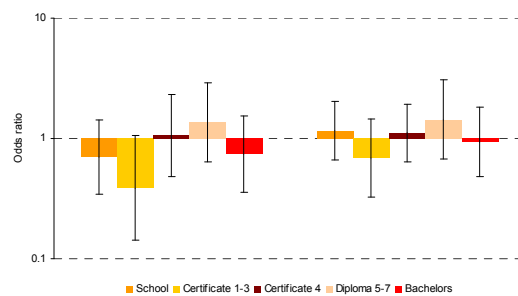


Job satisfaction

Qualifications only

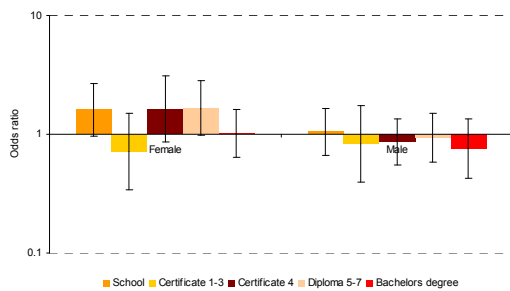


Controlling for other factors

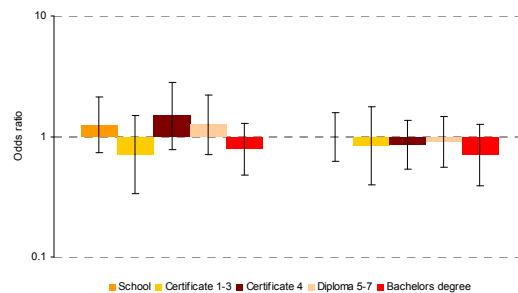


Housing satisfaction

Qualifications only



Controlling for other factors



Source: Statistics New Zealand, General Social Survey 2008

Notes:

Modelled values for overall life satisfaction are the result of logistic regressions for each gender, which control for health status, household income, labour force status and family type.

Modelled values for job satisfaction are the result of logistic regression for each gender, which control for age and health status.

Modelled values for housing satisfaction are the result of logistic regressions for each gender, which control for health status, family type and age.

6 SOCIAL PARTICIPATION

MAIN FINDINGS

There is limited evidence that attaining a tertiary certificate or diploma has any association with greater participation in society.

There appears to be some association with increased volunteering for women who have level 4 certificates or diplomas. The association is less clear for men.

It appears that men with tertiary certificates and diplomas are more likely to vote than men with no qualifications. Women appear to be as likely to vote irrespective of qualification level.

The preceding analysis has looked at benefits which are associated with individuals and their immediate households as a result of qualifications. This section takes the broader view of the benefits and looks at indicators of active participation in wider society. The analysis in this section tests the extent to which having a higher level of education is associated with being more actively involved in society. Two key indicators are explored in this respect: participation in voluntary activities; and voting in the last election.

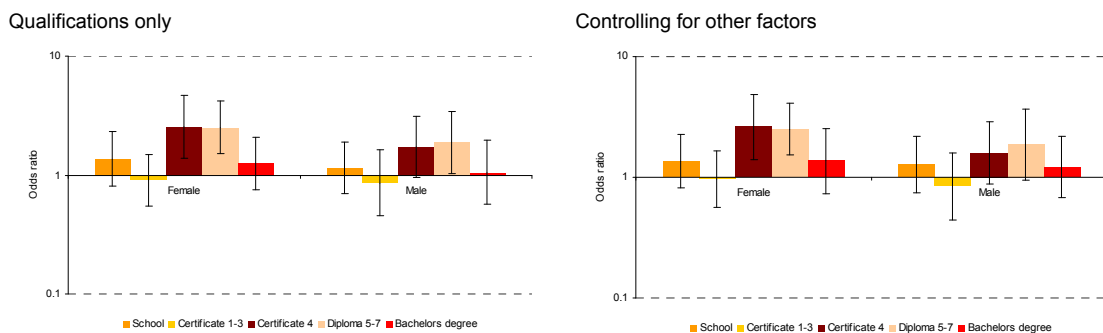
6.1 Volunteering

Undertaking voluntary activities is an important way of contributing to wider society. A number of important social institutions rely heavily on volunteers, including schools, sports clubs and community welfare organisations. It is plausible that attaining higher education is associated with greater opportunity and motivation to volunteer.

The Adult Literacy and Life Skills (ALL) survey asked respondents whether they did any unpaid work as a volunteer for a group or organisation in the last 12 months. Figure 16 shows the relative likelihood of undertaking voluntary work for each level of qualification compared with having no qualification, for men and women. The figure on the left shows the direct association with qualification level. The figure on the right shows the association, having controlled for demographic and economic differences.

Figure 16

Likelihood of 25 to 39 year olds undertaking voluntary work in previous year by gender and highest qualification (compared with no qualification)



Source: Ministry of Education, Adult Literacy and Life Skills Survey 2006

Notes:

Modelled values are the result of logistic regressions, which control for age, family type and health status.

In general, women are more likely to volunteer than men. In the 25 to 39 year old age group, 63 percent of women had undertaken voluntary work in the previous year, compared with 51 percent of men.

The results show that women with a level 4 certificate or diploma are more likely to do voluntary work than women with no qualification. They are also more likely to volunteer than women with bachelors degrees. A similar pattern is evident for men, but is not as clearly statistically significant. Once age, family type and health are controlled for, the relationship remains statistically significant for women and is not statistical significant for men.

Interestingly, no relationship is shown between having a bachelors degree and volunteering. This is consistent with other research that has found that higher education reduces the probability of volunteering, once other factors are taken into account (Johnson, 2004).

6.2 Voting

Voting in general elections provides an indicator of interest in the general direction of the country, as well as perceived connection with national decision making. It is plausible that education could have an effect on the extent to which people vote, through being more informed about politics and having a greater understanding of the importance of civic participation.

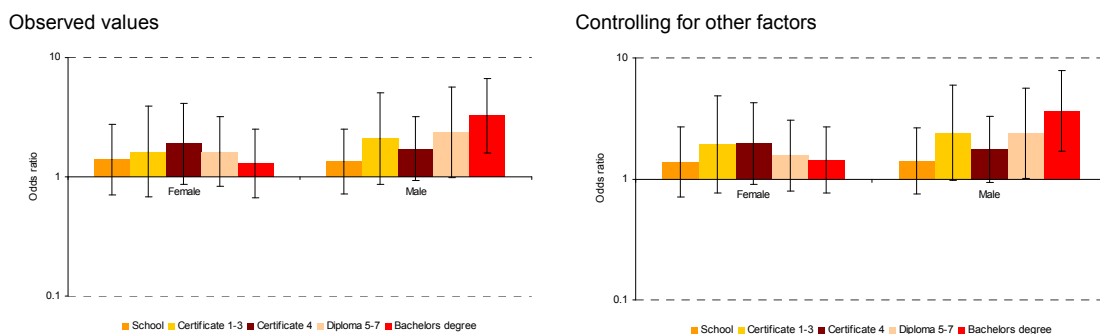
The GSS asked respondents whether they had voted in the last general election. Figure 17 shows relative likelihood of voting for each level of qualification compared with having no qualification, for men and women. The figure on the left shows the direct association with qualification level. The figure on the right shows the association, having controlled for age, family type and health status.

In general, women aged 25 to 39 were more likely to have voted in the last election than men. In this age group, 76 percent of women said they had voted, compared with 69 percent of men.

The results show that there is no statistically significant relationship between education and voting for women. That is, women with tertiary certificates and diplomas have no greater or lesser tendency to vote than those with no qualifications.

For men, there is a statistically significant relationship between having a bachelors degree and voting. Men with tertiary certificates and diplomas also appear to be more likely to vote, although the difference is not quite statistically significant at the 95 percent level. This suggests that tertiary qualifications do have an influence on men’s participation in elections.

Figure 17
Likelihood of 25 to 39 year olds voting in the last election by gender and highest qualification (compared with no qualification)



Source: Statistics New Zealand, General Social Survey 2008

Note: Modelled values are the result of logistic regressions for each gender, which control for age, family type and health status.

7 INTERGENERATIONAL BENEFITS

MAIN FINDINGS

There is clear evidence that parents' attainment of tertiary certificates and diplomas is associated with greater support for their children's learning.

The number of books in the home has been shown to have a strong relationship to children's reading ability. There is evidence that parents with tertiary certificates and diplomas are more likely to have more books in the home than those with no qualifications. This relationship is independent of other factors, including income.

Parents reading to their preschool children have been shown to be linked to their children's early school reading ability. Mothers with level 4 certificates and diplomas are more likely to read to their preschool children than mothers with no qualifications. This effect is independent of the labour force status and health status of the mother. Fathers are less likely to read to their preschool children and education does not seem to affect the likelihood.

Tertiary education can also have benefits for the next generation. There is broadly accepted evidence that the qualifications achieved by parents influence the educational success of their children and the likelihood of their children also achieving higher qualifications.

Educational resources in the home and family literacy practices are one way in which educational achievement is transmitted across generations. The ALL survey provides two indicators covering these areas: the number of books in the home and frequency of reading to children under 5.

7.1 Books in the home

The number of books in the home is often used in surveys as a proxy for the educational resources provided in the home. It has been shown to have a very strong relationship to children's reading ability (Satherley, 2010). It is plausible to assume that more educated parents will have a higher number of books in the home. This may be partly due to higher income, as well as a greater interest in reading and knowledge.

The ALL survey asked respondents to provide a broad estimate of the number of books in their home. Figure 18 shows the relative likelihood of having more books in the home for each level of qualification compared with having no qualification, for two-parent and single-parent families. In two-parent families, the qualification level is that of the survey respondent. The figure on the left shows the direct association to the qualification level of the respondent. The figure on the right shows the association, having controlled for demographic and income differences.

In general, two-parent families have more books in the home than single-parent families. In two-parent families, where at least one parent was aged 25 to 39, 51 percent had more than one hundred books in the home. The proportion for single-parent families in this age group is about half that, at 27 percent.

The results show a relationship between qualification level and books in the home. In two-parent families, if at least one parent has a school or tertiary qualification, there is a greater likelihood of there being more books in the home than if at least one parent has no qualifications. The likelihood is statistically similar across qualification levels. This similarity

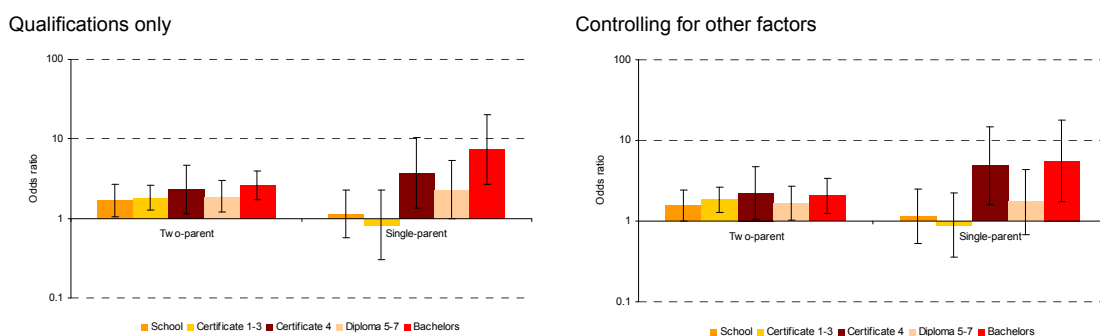
may be a result of the survey only asking for the qualifications of one parent.⁶ If the qualifications of both parents were known, a stronger relationship may be evident.

In single-parent families, parents with level 4 certificates and above appear likely to have more books in the home than single parent families where the parent had no qualifications. There is no difference between those without qualifications, with school qualifications only and with tertiary level 1 to 3 certificates.

Once other factors are controlled for, the relationship between books in the home and qualifications remains similar. This suggests that education has an effect on educational resources in the home, which is independent of other factors, including income.

Figure 18

Likelihood of parents aged 25 to 39 having more books in the home by family type and highest qualification (compared with no qualification)



Source: Ministry of Education, Adult Literacy and Life Skills Survey 2006

Note: Modelled values are the result of logistic regressions for each family type, which control for gender and age of the parent and household income.

7.2 Reading to children

The frequency of parents' reading to their children aged under 5 years provides an indicator of their engagement with their children's preschool learning and prepares their children for learning at school. The general conclusion from research studies is that parental involvement plays an important part in children's literacy development. Analysis of data from the 2005 Progress in International Reading survey shows that when parents read frequently to their preschool children, their early school reading ability is higher (Satherley, 2010). It is plausible to assume that parents with higher levels of education would give greater importance to reading frequently to their pre-school children.

The ALL survey included questions about the frequency of reading to children under 5. Figure 19 shows the relative likelihood of reading more frequently to children under 5 for each qualification level compared to having no qualification, for men and women. The figure on the left shows the direct association with qualification level. The figure on the right shows the association, having controlled for other factors.

In general, mothers read more frequently to their preschool children. In the 25 to 39 year old age group, 65 percent of mothers read to their youngest child every day, compared with 47 percent of fathers.

The results show different patterns for men and women by qualification level. Women with school qualifications, level 4 certificates, diplomas and bachelors degrees are more likely to

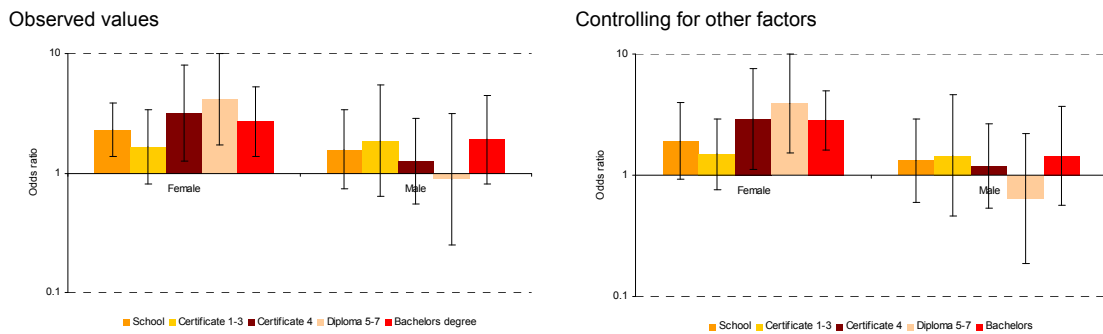
⁶ It may also reflect the way in which tertiary certificates are coded in the ALL data, as discussed in the Appendix A.

read to their youngest child than women with no qualifications or a level 1 to 3 certificate. Controlling for other factors suggests that this relationship is independent of other factors for women with level 4 certificates, diplomas and bachelors degrees.

Men are generally less likely to read to their preschool children than women. Qualification makes no difference for the likelihood of men reading to their children. Other than having poor health, the only factor that made a difference to men reading to their preschool children was if their youngest child was under 2. In this case, fathers were more likely to read to their youngest child and mothers less likely to do so.

Figure 19

Likelihood of parents aged 25 to 39 with children under five reading more frequently to their youngest child by gender and highest qualification (compared with no qualification)



Source: Ministry of Education, Adult Literacy and Life Skills Survey 2006

Note: Predicted values are the result of logistic regressions for each gender, which controls for age of the youngest child and labour force status and health status of the parent.

APPENDIX A NOTES ON DATA

Data sources

Census of Population and Dwellings 2006

The New Zealand Census of Population and Dwellings is the official count of people and dwellings in New Zealand. It takes a snapshot of the people in New Zealand and the places where they live. The New Zealand Census is conducted every 5 years, with the last one being taken on 7 March 2006.

While it is compulsory to return a census form, not all questions have a full response rate. Respondents are asked to write in their post-school qualification level and main field of study. These responses are then coded by Statistics New Zealand to the standard classifications. Around 8 percent of people aged 25 to 39 did not provide sufficient information to determine their highest qualification. Around 20 percent of people aged 25 to 39 with a post-school qualification did not provide sufficient information to determine their field of study.

The Census provides a very detailed snapshot of the population. It is the only data source with detailed level and field of study, as well as other variables of interest, such as employment, income, age, ethnicity and gender.

Household Labour Force Survey and New Zealand Income Survey

The Household Labour Force Survey is conducted by Statistics New Zealand four times a year to provide a comprehensive range of statistics relating to the employed, the unemployed and those not in the labour force. The New Zealand Income Survey is conducted as a supplement to the Household Labour Force Survey in June of each year. The survey produces a comprehensive range of income statistics, allowing analysis of the links between labour force status, educational achievement and income of individuals and households.

The Household Labour Force Survey has a sample of 15,000 households and approximately 30,000 individuals aged 15 years and over. It has a response rate of just under 90 percent. All participants in the Household Labour Force Survey are required to participate in the New Zealand Income Survey.

These surveys provide consistent time series information. They are designed to provide very high quality data on employment and income. However, other fields, such as level of study, are limited by sample size, the nature of the question used and response rates. No information on field of study is included.

The report presents four-quarter averages from the Household Labour Force Survey, based on a calendar year.

General Social Survey

The General Social Survey is a multi-dimensional survey that gathers information across areas that are important to people's lives. It provides data on social and economic outcomes of New Zealanders aged 15 years and over. It was conducted by Statistics New Zealand in 2008. It will be run every two years.

The General Social Survey had a sample of 8,700 individuals aged 15 and over and an achieved response rate of 83 percent.

This survey was designed to provide information across a wide range of social domains. As discussed below, it appears to have good information on highest level of study. No information on field of study is included.

Adult Literacy and Life Skills Survey

The Adult Literacy and Life Skills survey was a survey of the distribution of literacy and numeracy in the adult population of New Zealand. It was conducted in 13 countries including New Zealand. The New Zealand survey was conducted by the Ministry of Education in 2006. It included an extensive background questionnaire as well as direct testing of literacy, numeracy and problem-solving skills.

The survey had a sample of 7,130 individuals aged 16 to 65 and an achieved response rate of 64 percent.

This survey was designed to provide measurement of the literacy and numeracy skills of a representative sample of New Zealanders. It includes an extensive background questionnaire that includes educational qualifications and literacy-related practices.

Highest educational qualification

In this report, qualifications refer to the highest level of qualification attained. Tertiary qualifications are treated as being higher than school qualifications in all sources. In the case of the census and the GSS this may differ from the way they are treated in other reports and outputs.

The estimates of the number of people and proportion of the population by level of highest qualification vary across data sources. The largest differences are for the proportions with no qualifications, school qualifications only and level 1 to 3 tertiary certificates.

These variations arise from the different way in which questions about school and tertiary qualifications are asked in the questionnaires, as well as variations in coding categories, response rates and survey weightings. This means that no one data source can be taken as correct. Rather each should be treated as an estimate, with its own strengths and weaknesses.

Table 2 shows the differences between the data sources used in this report for people aged 25 to 39. The Census and the GSS produce similar proportions. The numbers and proportions with no qualifications and school qualifications only are higher in the Census. This may reflect the level of non-response to the school and post-school education questions. The HLFS and ALL surveys provide similar numbers and proportions for no qualifications and school qualifications only. In the ALL survey, the no qualifications group includes people who complete year 11 (or form 5) of school. It may include some people with low level school qualifications.

The proportions across tertiary certificates and diplomas are similar for the Census, the GSS and the ALL survey, given some known differences in questions and output. The Census includes level 7 diplomas with bachelors. This results in a 2 to 3 percent lower estimate for diplomas and a 2 to 3 percent higher estimate for bachelors. The ALL survey includes trade certificates with level 1 to 3. In the Census and GSS, trade certificates are treated as level four. This results in a much higher count in the ALL survey for level 1 to 3 certificates and a lower count for level 4 certificates.

Table 2

Estimated distribution of highest qualification for 25 to 39 year olds by data source

	Census		GSS		HLFS		ALL	
	2006		2008		2007		2006	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No Qualification	114,852	15%	84,263	10%	137,375	16%	138,423	17%
School qualification	251,232	33%	215,607	26%	170,250	20%	154,759	19%
No post-school qualification		49%		36%		36%		35%
Level 1-3 certificate	43,995	6%	47,437	6%	93,900	11%	106,405	13%
Level 4 certificate	83,799	11%	102,551	12%	-	-	74,834	9%
Level 5-7 diploma	72,912	10%	111,352	13%	222,675	26%	95,473	12%
Tertiary certificate or diploma		27%		31%	309,600	37%		33%
Bachelor degree only	135,999	18%	136,472	16%	164,400	19%	153,924	19%
Total aged 25 to 39	753,408	100%	844,641	100%	839,400	100%	828,029	100%
Unknown	67,149							

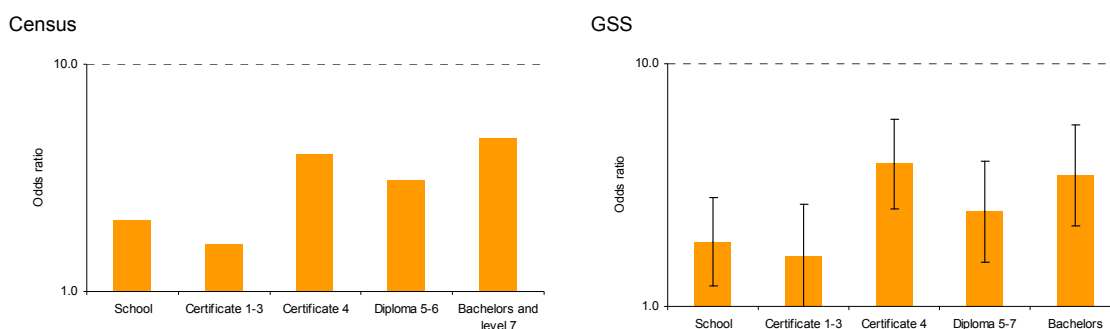
Notes: "Unknown" responses have been removed from the total for the Census. The Census includes level 7 diplomas with bachelors degrees. In the HLFS, level 4 certificates are included with level 5-7 diplomas.

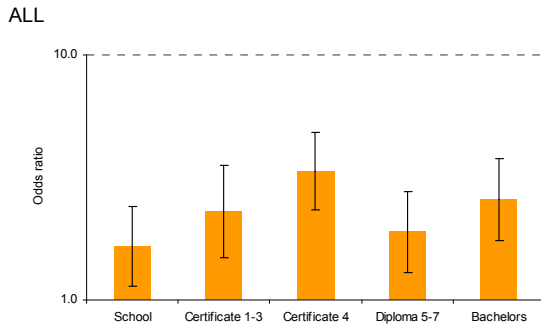
Reconciling the estimates of the numbers of people with different levels of qualifications provide one assurance of comparability of sources. Another approach is to look at how well each source can predict similar outcomes for each group. A common variable across the Census, GSS and ALL survey is personal income. All three data sources estimate the median personal income for 25 to 39 year olds to be around \$35,000.

Figure 20 compares the likelihood of having personal income above the median for each qualification level, compared with people with no qualifications. All three data sources predict a similar pattern for school qualifications, level 4 certificates, diplomas and bachelors. The only difference occurs with level 1 to 3 certificates, where the ALL survey predicts a higher likelihood than the other two. This is likely to be a consequence of trade certificates being included in level 1 to 3 in the ALL survey.

Figure 20

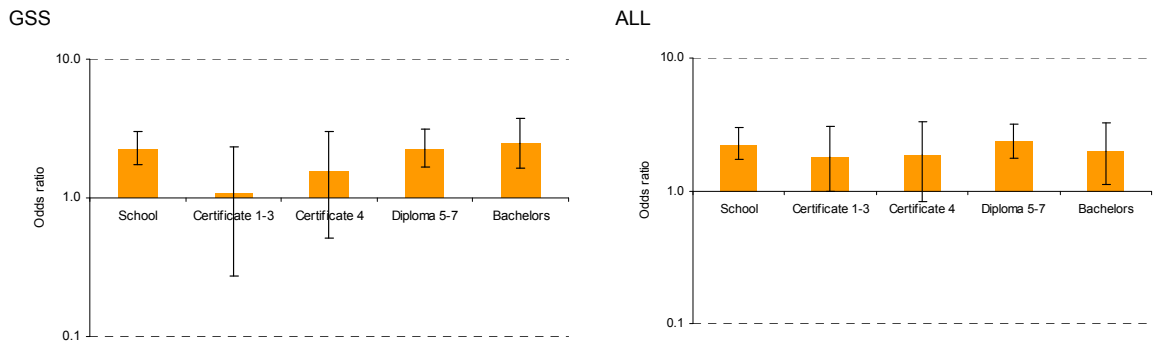
Likelihood of 25 to 39 year olds having a personal income above the median by qualification level – comparison of Census, GSS and ALL





The GSS and ALL also both include an identical question about self-assessed health status. The proportions of the 25 to 39 year old age group reporting each level of health status are almost identical in each survey. However, there are differences in the distribution of health status by qualification level between the two surveys, as shown in Figure 21. The GSS shows a clearer difference in the outcomes between tertiary certificates and diplomas than the ALL survey. This reinforces the view that the categories of tertiary certificates and diplomas are less clearly delineated in the ALL survey.

Figure 21
Likelihood of 25 to 39 year olds having better health by qualification level – comparison of GSS and ALL



Outcome variables

Employment

Employment includes both full- and part-time employment. Data is drawn from the Household Labour Force Survey and the 2006 Census. In both sources, being in employment is treated as working for at least one hour a week.

Income

Income data from the New Zealand Income Survey refers to gross income from wages and salaries. Income data from the Census refers to gross personal income from all sources. It is presented as annual income.

Health status

Health status is based on a question in the General Social Survey, which asks “In general, would you say your health is excellent, very good, good, fair or poor?” This question is part of the SF12[®] health questionnaire, which collects information on physical and mental health. This general question captures the full spectrum of self-assessed health status. The other questions in the SF12[®] are used to form an index of physical and mental impairment (SF-36.org, 2010).

Economic living standards

The Economic Living Standards Index was developed by the Ministry of Social Development. The short form questionnaire was included in the General Social Survey and scores were calculated by Statistics New Zealand. The scores have been grouped into bands, as recommended by the Ministry of Social Development.

Life satisfaction

Measures of life satisfaction are based on three questions in the General Social Survey. These asked:

- How do you feel about your life as a whole right now?
- Think about the last four weeks, how do you feel about your job?
- How do you feel about where you are currently living?

For each of these questions, the response options were very satisfied, satisfied, no feeling either way, dissatisfied and very dissatisfied.

Volunteering

The Adult Literacy and Life Skills survey was used to measure participation in volunteering, as it asked a question about activity over the last 12 months. By contrast, the GSS asked about activity in the last four weeks. Analysis of this question showed no variation by qualification level for 25 to 39 year olds, although it did show some effects for people in older age groups. The longer time period seems to be more appropriate to the 25 to 39 year old age group. It may be that people in this younger age group tend to undertake irregular voluntary activities, whereas those in the older age group are more likely to be involved in regular activities.

The Adult Literacy and Life Skills survey question asked “In the last 12 months did you do any of the following activities as an UNPAID VOLUNTEER through a group or organisation?” The activities listed were:

- Fundraising
- serving as an unpaid member of a board
- coaching, teaching or counselling
- collecting food or other goods for charity
- any other activities such as organising/supervising events; office work or providing information on behalf of an organisation.

If a respondent said yes to at least one of these activities, the respondent was counted as having volunteered in the last 12 months.

Voting

Voting is based on a question in the General Social Survey, which asks “Did you vote in the last general election?”

The survey was conducted between April 2008 and March 2009. The most recent general election was held in October 2008 and the preceding election in October 2005. All of the people in the 25 to 39 year old age group in 2008 would have been eligible to vote in both elections. Depending on when the interview took place, the time since the last election could vary from a few days to nearly three years. Given the general nature of the question, this timing difference is likely to have minimal impact on responses.

Books in the home

The number of books in the home is based on a question in the Adult Literacy and Life Skills survey, which asks respondents “How many books do you have in your household?” Response options were:

- less than 25
- 25 to 100
- Over 100

Analysis of this question was restricted to parents with at least one dependent child aged under 16.

Reading to children

Reading to children is based on questions in the Adult Literacy and Life Skills survey. These questions asked:

- Some people read to children, while some don't. How often do you read to the child(ren) under 2, or show them pictures or wordless baby books?
- How often do you read to the child(ren) aged 2 or more but under five years?

Response options for each question were:

- Every day
- A few times a week
- Several times a month
- Once a month or less
- Never

Analysis of this question was restricted to parents with at least one dependent child aged under 5. The response relating to their youngest child was used for analysis.

APPENDIX B DATA MODELS

The data from the General Social Survey and Adult Literacy and Life Skills survey was analysed in SAS using the SURVEYLOGISTIC procedure. This procedure produces logistic regressions on complex survey samples. The replicate weights in each survey were used to estimate the sample errors.

Where the response variable was an ordinal scale, a cumulative logistic regression was run. These models take account of the distribution across categories and estimate the probability of being in a higher order category. Where the response variable was binary (yes or no), a binary logistic regression was run.

The odds ratios presented in this report have all been derived through the logistic regression procedure. Those presented as “qualifications only” are the results of a model that had just highest qualification level as an explanatory variable. Those presented as “controlling for other factors” are the results of a model with other factors included. Parallel models were run for men and women. Factors that were not statistically significant for either gender were eliminated from the models. Factors that were statistically significant for at least one gender were retained.

Table 3

Logistic regression model for self-assessed health status

Variable	Female				Male				
	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	
Intercept	Excellent	-1.6961	0.3427	24.4978	0.0000	-1.7439	0.3148	30.6822	0.0000
	Very good	0.1095	0.3237	0.1145	0.7351	0.0368	0.2843	0.0167	0.8971
	Good	1.7955	0.3231	30.8764	0.0000	1.6792	0.3094	29.4454	0.0000
	Fair	3.8355	0.4012	91.4093	0.0000	3.3179	0.3779	77.0788	0.0000
	Poor								
Highest qualification	None								
	School	0.8448	0.3217	6.8984	0.0086	0.6399	0.3106	4.2438	0.0394
	Certificate 1-3	-0.0495	0.316	0.0246	0.8754	0.0904	0.3905	0.0536	0.8169
	Certificate 4	0.4116	0.3839	1.1495	0.2836	0.2696	0.2974	0.8222	0.3645
	Diploma 5-7	1.0210	0.3372	9.1693	0.0025	0.3872	0.3672	1.1116	0.2917
	Bachelors	0.8093	0.3727	4.7142	0.0299	0.8045	0.3054	6.9385	0.0084
Household income	Less than \$25,000	-0.3899	0.3304	1.3924	0.238	-1.1003	0.7149	2.3687	0.1238
	\$25,001-\$50,000	-0.6369	0.2168	8.6267	0.0033	0.0274	0.2868	0.0091	0.9239
	\$50,001-\$70,000								
	\$70,001-\$100,000	0.031	0.2354	0.0173	0.8952	0.475	0.2239	4.5019	0.0339
	\$100,001 or more	-0.0641	0.2627	0.0596	0.8071	0.2224	0.2732	0.6628	0.4156
Labour force status	Employed								
	Unemployed	-0.8277	0.3083	7.2097	0.0073	0.5984	0.8939	0.4482	0.5032
	Not in the labour force	0.0419	0.1823	0.0528	0.8182	0.1112	0.4448	0.0625	0.8027

Table 4

Logistic regression model for economic living standards

	Variable	Female				Male			
		Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept	Very good	-4.1336	0.3797	118.5026	0.0000	-3.7390	0.3229	134.0956	0.0000
	Good	-1.8644	0.3477	28.7468	0.0000	-1.5881	0.2919	29.6038	0.0000
	Comfortable	-0.5258	0.3183	2.7283	0.0986	-0.0629	0.2852	0.0487	0.8254
	Fairly comfortable	0.5532	0.3095	3.1952	0.0739	1.2043	0.2866	17.6564	0.0000
	Some hardship	1.3689	0.3285	17.3635	0.0000	2.2106	0.3094	51.0504	0.0000
	Significant hardship	2.4034	0.3511	46.8703	0.0000	3.3758	0.3379	99.8155	0.0000
	Severe hardship								
Highest qualification	None								
	School	1.0122	0.2819	12.8958	0.0003	0.3457	0.2493	1.9237	0.1654
	Certificate 1-3	0.401	0.2813	2.0323	0.1540	-0.4747	0.4512	1.107	0.2927
	Certificate 4	0.908	0.2943	9.5182	0.0020	0.6125	0.2400	6.5127	0.0107
	Diploma 5-7	1.0248	0.2666	14.7733	0.0001	0.9697	0.2422	16.0307	0.0000
	Bachelors	1.3888	0.2765	25.2383	0.0000	0.6720	0.2377	7.9926	0.0047
Household income	Less than \$25,000	-0.9946	0.2900	11.7620	0.0006	-0.2501	0.6827	0.1342	0.7141
	\$25,001-\$50,000	-0.3101	0.2370	1.7123	0.1907	-0.3966	0.2691	2.1725	0.1405
	\$50,001-\$70,000								
	\$70,001-\$100,000	0.3292	0.2070	2.5307	0.1116	0.3293	0.2301	2.0472	0.1525
	\$100,001 or more	1.2213	0.2436	25.1462	0.0000	1.1893	0.2720	19.1235	0.0000
Family type	Couple no dependents	-0.0157	0.1737	0.0081	0.9282	0.8192	0.2311	12.563	0.0004
	Couple with dependents								
	Single no dependents	0.1665	0.2297	0.5256	0.4685	0.2033	0.2269	0.8026	0.3703
	Single with dependents	-0.6329	0.2760	5.2604	0.0218	0.0034	0.494	0.0000	0.9945
Labour force status	Employed								
	Unemployed	-0.2498	0.4290	0.3391	0.5604	-1.5908	0.5019	10.0484	0.0015
	Not in the labour force	-0.3794	0.1961	3.7420	0.0531	-1.0716	0.3918	7.4798	0.0062
Overall health	Excellent	0.5809	0.1869	9.6552	0.0019	0.6255	0.2134	8.5912	0.0034
	Very good								
	Good	-0.1174	0.1766	0.4420	0.5062	-0.5070	0.1761	8.2931	0.0040
	Fair/Poor	-1.0733	0.2829	14.3965	0.0001	-0.7512	0.2919	6.6233	0.0101

Table 5

Logistic regression model for overall life satisfaction

	Variable	Female				Male			
		Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept	Very satisfied	-1.0528	0.3225	10.6542	0.0011	-1.0102	0.2881	12.2926	0.0005
	Satisfied	1.9710	0.3662	28.9666	0.0000	2.0785	0.2942	49.9113	0.0000
	No feeling either way	2.8081	0.3315	71.7510	0.0000	3.3218	0.3343	98.7261	0.0000
	Dissatisfied	4.9746	0.5481	82.3881	0.0000	5.9579	0.5144	134.1687	0.0000
	Very dissatisfied								
Highest qualification	None								
	School	0.0413	0.3077	0.0180	0.8933	-0.0860	0.2506	0.1177	0.7315
	Certificate 1-3	-0.1179	0.3508	0.1129	0.7368	-0.2732	0.4802	0.3236	0.5695
	Certificate 4	0.2119	0.4084	0.2694	0.6038	-0.0354	0.2776	0.0162	0.8986
	Diploma 5-7	0.6058	0.3164	3.6665	0.0555	0.0526	0.3150	0.0279	0.8673
	Bachelors	0.2996	0.3391	0.7803	0.3771	-0.2389	0.3112	0.5892	0.4427
Overall health	Excellent	0.6217	0.2231	7.7653	0.0053	0.8017	0.2465	10.5812	0.0011
	Very good								
	Good	-0.4972	0.1955	6.4658	0.0110	-0.6026	0.2172	7.6993	0.0055
	Fair/Poor	-1.3539	0.3127	18.7428	0.0000	-1.3884	0.2996	21.4728	0.0000
Household income	Less than \$25,000	-0.7740	0.3697	4.3828	0.0363	-0.2088	0.4712	0.1963	0.6577
	\$25,001-\$50,000	-0.525	0.2816	3.4743	0.0623	-0.2692	0.2527	1.1343	0.2869
	\$50,001-\$70,000								
	\$70,001-\$100,000	0.2377	0.2810	0.7153	0.3977	0.0739	0.2466	0.0897	0.7646
	\$100,001 or more	0.0614	0.2583	0.0565	0.8122	0.2801	0.2572	1.1861	0.2761
Labour force status	Employed								
	Unemployed	-1.2251	0.5616	4.7594	0.0291	-2.0017	0.3784	27.9840	0.0000
	Not in the labour force	0.3417	0.2077	2.7077	0.0999	-0.2263	0.3196	0.5015	0.4789
Family type	Couple no dependents	0.2648	0.2416	1.2014	0.2731	0.1214	0.2247	0.2921	0.5889
	Couple with dependents								
	Single no dependents	-0.0937	0.3400	0.0759	0.7829	-0.5558	0.2063	7.2557	0.0071
	Single with dependents	-0.3859	0.2688	2.0608	0.1511	-0.1925	0.3697	0.2711	0.6026

Table 6
Logistic regression model for job satisfaction

Variable	Female				Male				
	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	
Intercept	Very satisfied	-0.6949	0.3489	3.9677	0.0464	-1.0617	0.3050	12.1182	0.0005
	Satisfied	1.6301	0.3584	20.6898	0.0000	1.5436	0.3031	25.9409	0.0000
	No feeling either way	2.4403	0.3339	53.4275	0.0000	2.3879	0.3072	60.4148	0.0000
	Dissatisfied	4.9250	0.6433	58.6140	0.0000	4.5746	0.4073	126.1554	0.0000
	Very dissatisfied								
Highest qualification	None								
	School	-0.3637	0.3627	1.0053	0.3160	0.1473	0.2856	0.2659	0.6061
	Certificate 1-3	-0.9512	0.5103	3.4746	0.0623	-0.3734	0.3790	0.9708	0.3245
	Certificate 4	0.0534	0.4036	0.0175	0.8948	0.1046	0.2811	0.1385	0.7098
	Diploma 5-7	0.3091	0.3879	0.6349	0.4256	0.3582	0.3880	0.8525	0.3558
Bachelors	-0.3009	0.3721	0.6537	0.4188	-0.0692	0.3377	0.0420	0.8377	
Age group	25-29	-0.2878	0.2511	1.3136	0.2518	-0.5876	0.2096	7.8552	0.0051
	30-34	-0.1217	0.1948	0.3904	0.5321	-0.4190	0.2073	4.0838	0.0433
	35-39								
Overall health	Excellent	0.2780	0.2324	1.4307	0.2317	0.8604	0.2188	15.4683	0.0000
	Very good								
	Good	-0.5913	0.2681	4.8640	0.0274	-0.4929	0.2499	3.8922	0.0485
	Fair/Poor	-1.0337	0.3539	8.5313	0.0035	-0.3972	0.4379	0.8230	0.3643

Table 7

Logistic regression model of housing satisfaction

	Variable	Female				Male			
		Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept	Very satisfied	-0.5782	0.2631	4.8320	0.0279	-0.9010	0.2763	10.6356	0.0011
	Satisfied	1.9751	0.2762	51.1178	0.0000	1.4010	0.2786	25.2850	0.0000
	No feeling either way	2.4813	0.2696	84.7079	0.0000	2.2983	0.2763	69.1706	0.0000
	Dissatisfied	4.4609	0.3908	130.2874	0.0000	4.8353	0.4870	98.5624	0.0000
	Very dissatisfied								
Highest qualification	None								
	School	0.2218	0.2736	0.6572	0.4176	-0.0071	0.2353	0.0009	0.9760
	Certificate 1-3	-0.3449	0.3797	0.8251	0.3637	-0.1754	0.3769	0.2166	0.6416
	Certificate 4	0.3978	0.3284	1.4675	0.2257	-0.1607	0.2358	0.4646	0.4955
	Diploma 5-7	0.2286	0.2888	0.6268	0.4285	-0.0983	0.2473	0.1580	0.6910
	Bachelors	-0.2376	0.2496	0.9061	0.3412	-0.3504	0.3008	1.3571	0.2440
Overall health	Excellent	0.3764	0.1645	5.2323	0.0222	0.2352	0.2319	1.0287	0.3105
	Very good								
	Good	-0.2455	0.1842	1.7759	0.1827	-0.1391	0.1969	0.4987	0.4801
	Fair/poor	-0.6576	0.3584	3.3656	0.0666	-0.3214	0.2710	1.4072	0.2355
Family type	Couple no dependents	-0.1540	0.2061	0.5582	0.4550	0.0085	0.2219	0.0015	0.9694
	Couple with dependents								
	Single no dependents	0.1963	0.2799	0.4916	0.4832	0.0289	0.2089	0.0191	0.8901
	Single with dependents	-0.8150	0.2627	9.6275	0.0019	0.0717	0.2642	0.0736	0.7861
Age group	26-30	-0.4446	0.2133	4.3421	0.0372	-0.2396	0.2414	0.9855	0.3208
	31-35	-0.4118	0.1851	4.9493	0.0261	0.1290	0.1711	0.569	0.4507
	36-40								

Table 8
Logistic regression model for volunteering

Variables		Female				Male			
		Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept		-0.1182	0.2021	0.3421	0.5586	0.4539	0.5077	0.7994	0.3713
Highest qualification	None								
	School	0.3036	0.2616	1.3467	0.2459	0.2421	0.2758	0.7704	0.3801
	Certificate 1-3	-0.0422	0.2747	0.0236	0.8780	-0.1740	0.3288	0.2800	0.5967
	Certificate 4	0.9582	0.3152	9.2419	0.0024	0.4690	0.3040	2.3809	0.1228
	Diploma 5-7	0.9147	0.2507	13.3102	0.0003	0.6246	0.3481	3.2199	0.0727
Bachelors degree		0.3114	0.3164	0.9686	0.3250	0.1930	0.2970	0.4224	0.5158
Age group	26-30	-0.4127	0.2077	3.9502	0.0469	-0.6478	0.2786	5.4052	0.0201
	31-35	-0.1319	0.1639	0.6480	0.4208	-0.5435	0.2143	6.4318	0.0112
	36-40								
Family type	Couple with dependents	0.4418	0.2161	4.1792	0.0409	0.0790	0.5424	0.0212	0.8842
	Single with dependents								
	Other	-0.1099	0.2432	0.2041	0.6514	-0.3684	0.5454	0.4562	0.4994
Health status	Excellent	0.5396	0.1665	10.4973	0.0012	0.1934	0.2581	0.5615	0.4536
	Very good								
	Good	0.3013	0.1721	3.0658	0.0800	-0.2967	0.2160	1.8873	0.1695
	Fair/poor	0.4926	0.2560	3.7019	0.0544	-0.8582	0.3743	5.2570	0.0219

Table 9
Logistic regression model for voting

Variables		Female				Male			
		Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept		1.3730	0.3504	15.3586	0.0000	0.3316	0.3154	1.1049	0.2932
Highest qualification	None								
	School	0.3165	0.3399	0.8672	0.3517	0.3430	0.3171	1.1698	0.2794
	Certificate 1-3	0.6610	0.4737	1.9468	0.1629	0.8765	0.4639	3.5698	0.0588
	Certificate 4	0.6752	0.3961	2.9061	0.0882	0.5586	0.3222	3.0051	0.0830
	Diploma 5-7	0.4516	0.3449	1.7144	0.1904	0.8710	0.4369	3.9755	0.0462
	Bachelors degree	0.3598	0.3190	1.2726	0.2593	1.2863	0.3914	10.8015	0.0010
Age group	25-29	-0.9490	0.2145	19.5722	0.0000	-0.5036	0.2346	4.6098	0.0318
	30-34	-0.5519	0.2099	6.9172	0.0085	-0.0014	0.2081	0.0000	0.9946
	35-39								
Family type	Couple with dependents								
	Couple no dependents	-0.4123	0.3026	1.8569	0.1730	-0.2546	0.2773	0.8431	0.3585
	Single with dependents	-0.2721	0.2689	1.0237	0.3117	-0.0694	0.5499	0.0159	0.8996
	Single no dependents	0.7449	0.3123	5.6892	0.0171	-0.5211	0.2619	3.9575	0.0467
Health status	Excellent	0.2063	0.2313	0.7955	0.3724	0.3825	0.2824	1.8349	0.1756
	Very good								
	Good	-0.2519	0.2537	0.9861	0.3207	0.5811	0.2311	6.3247	0.0119
	Fair/poor	-0.1631	0.3526	0.2138	0.6438	0.0313	0.3041	0.0106	0.9180

Table 10

Logistic regression model of number for books in the home

Variable		Couple				Single			
		Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept	Over 100	-0.601	0.1783	11.3627	0.0007	-2.0765	0.8461	6.0231	0.0141
	25 to 100	1.4061	0.2213	40.3895	0.0000	0.2963	0.8948	0.1096	0.7406
	Less than 25								
Highest qualification	None								
	School	0.4554	0.2267	4.0365	0.0445	0.1397	0.3962	0.1243	0.7244
	Certificate 1-3	0.6043	0.1830	10.8982	0.0010	-0.1112	0.4700	0.0559	0.8130
	Certificate 4	0.7988	0.3814	4.3866	0.0362	1.5876	0.5648	7.9006	0.0049
	Diploma 5-7	0.5030	0.2476	4.1274	0.0422	0.5479	0.4766	1.3221	0.2502
	Bachelors degree	0.7301	0.2561	8.1279	0.0044	1.7096	0.5956	8.2395	0.0041
Gender	Female								
	Male	0.5429	0.1802	9.0732	0.0026	1.1927	0.4803	6.1678	0.0130
Age group	26-30	-0.9464	0.2384	15.7604	0.0000	-0.6373	0.3414	3.4857	0.0619
	31-35	-0.1751	0.1548	1.2800	0.2579	-0.2000	0.3110	0.4134	0.5202
	36-40								
Household income	under \$30,000	-0.2121	0.4070	0.2715	0.6023	-0.1865	0.7845	0.0565	0.8121
	\$30,000 to \$49,999	-0.1371	0.2571	0.2843	0.5939	-0.6641	0.8206	0.6549	0.4184
	\$50,000 to \$69,999								
	\$70,000 to \$99,999	-0.0263	0.1865	0.0198	0.8880	0.6568	0.8204	0.6409	0.4234
	\$100,000 or more	0.3209	0.2482	1.6711	0.1961	0.6531	1.2954	0.2542	0.6142

Table 11

Logistic regression model for reading to youngest child

Variable	Female				Male				
	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	
Intercept	Every day	0.0359	0.3143	0.0130	0.9092	-0.6284	0.3939	2.5448	0.1107
	A few times a week	1.6634	0.4124	16.2675	0.0000	0.9863	0.4202	5.5093	0.0189
	Several times a month	2.1849	0.3643	35.9664	0.0000	1.6268	0.4914	10.9599	0.0009
	Once a month or less	2.9807	0.3071	94.2172	0.0000	2.0328	0.5213	15.2070	0.0000
	Never								
Highest qualification	None								
	School	0.6517	0.3699	3.1045	0.0781	0.2752	0.4032	0.4657	0.4950
	Certificate 1-3	0.3965	0.3464	1.3103	0.2523	0.3760	0.5857	0.4121	0.5209
	Certificate 4	1.0669	0.4909	4.7238	0.0297	0.1724	0.4095	0.1773	0.6737
	Diploma 5-7	1.3628	0.4772	8.1561	0.0043	-0.4365	0.6314	0.4779	0.4894
Bachelors degree	1.0412	0.2866	13.1983	0.0003	0.3648	0.4796	0.5786	0.4469	
Labour force status	Employed								
	Unemployed	-0.4993	0.8794	0.3224	0.5702	-0.1376	0.6917	0.0396	0.8423
	Not in the labour force	0.7681	0.2308	11.0776	0.0009	-0.1621	0.6699	0.0586	0.8088
Age of youngest child	Under 2	-0.7045	0.3014	5.4637	0.0194	0.6506	0.2501	6.7679	0.0093
	2 to 4								
Health status	Excellent	0.2170	0.2440	0.7904	0.3740	0.0280	0.3418	0.0067	0.9347
	Very good								
	Good	-0.4136	0.2650	2.4355	0.1186	-0.3567	0.4753	0.5635	0.4529
	Fair/poor	-0.7393	0.3600	4.2179	0.0400	-1.0268	0.4328	5.6289	0.0177

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