



MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga

Advanced trade, technical and professional qualifications

Matching supply to demand

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.

Author:

David Earle, Senior Analyst
Email: david.earle@minedu.govt.nz
Telephone: 64-4-463-8524

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Advanced trade, technical and professional qualifications – matching supply to demand

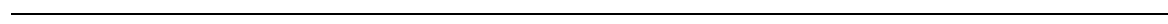
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Executive Summary

Increasing the achievement of advanced trade, technical and professional qualifications

The Tertiary Education Strategy 2007-12 includes a key priority to “increase the achievement of advanced trade, technical and professional qualifications to meet regional and national industry needs”. Success of this priority will be seen through more people achieving these qualifications, particularly in areas of long-term skill shortage. Progress will be measured through monitoring the performance of a representative set of qualifications.

This report is the second in a series of three reports that aim to set up monitoring of this priority. The first report assessed the demand for skills and qualifications across the professional, technician and associate professional, and trades worker occupations. This second report looks in more detail at the demand for particular qualifications across those occupations. The final report will establish a list of qualifications and specialisations that will be monitored over time.

Approach to linking qualifications to skill shortages

Skill shortages arise and can persist over time for a number of reasons. These can include both insufficient supply of people with the required skills and lack of attractiveness of work within certain occupations and industries. The link between increasing the number of qualified people and meeting industry skill needs is indirect and dynamic.

The key to understanding the contribution of tertiary education to alleviating ongoing skill shortages is to monitor the link between changes in the supply of graduates with occupationally relevant qualifications and the level of unmet demand within those occupations.

The overall purpose of this work is to provide a broad basis for understanding the areas that the tertiary education system should concentrate on to address skill shortages. In each of these areas, further detailed work will be required to understand issues of quality, quantity and timeliness of supply. This requires providers and industry to work together to understand and address these issues.

The first report in this series identified the occupations that are experiencing ongoing skill shortages and require advanced-level qualifications, and broadly identified the qualifications that enable entry to those occupations.

This second report starts from the identified qualifications and checks the extent to which they are in demand in the occupations experiencing skill shortages. It examines the match of qualifications to occupation, levels of unemployment by qualification field and level, and evidence of income premiums being paid for specific qualifications.

Areas of unmet demand for qualifications

The first report found that the broad areas of study with high unmet demand for advanced qualifications are information technology, engineering, building and health. Other areas identified with similar demand are early childhood education, architecture, accountancy, financial and business management services, psychology, social work, and food and hospitality.

Having looked at the indicators of occupational match, unemployment and income for each field of study, this report concludes that there are a limited number of areas where there is a clear case

that increasing the number of people attaining qualifications would contribute to reducing skill shortages. These areas are mostly in engineering, building and medical professions.

A few other areas are identified where increased numbers of people attaining qualifications may contribute to reducing skill shortages. These cover bachelors degrees in information technology, architecture, building, nursing and accountancy, and diplomas in nursing and other health-related studies. However, in several of these areas, the quality and relevance of provision may also be important to address. In the remaining areas, increasing the number of people attaining qualifications is unlikely to make a particular contribution to easing skill shortages, unless there are also improvements in attractiveness and conditions of employment.

The underlying drivers for demand for increased numbers of people with advanced qualifications have been the boom in construction, increased use of technology and increasing demand for health services.

The growth in the construction industry peaked in 2005, and therefore the current demand for related qualifications is likely to be overstated by the data used in this report, which reflects the situation in early 2006. Recent forecasts confirm that while the domestic housing boom has ended, there is likely to be renewed growth in commercial construction and infrastructure development over the next few years. The key issue will be to ensure that there is a steady supply of new graduates in the building- and construction-related areas with the skills required as the technology evolves and develops.

It should be noted that education was not examined in this report due to limitations on the available data. The first report highlighted shortages of early childhood teachers and science, mathematics and technology secondary teachers. It is likely that these are both areas where increased supply of graduates may help.

1 Introduction

1.1 Purpose of this report

One of the four priorities set out in the Tertiary Education Strategy 2007-12 is to “increase achievement of advanced trade, technical and professional qualifications to meet regional and national industry needs”.

The success of this priority will be seen through an “increased supply of people with advanced-level trade, technical and professional qualifications, particularly in areas of long-term skill shortage”. Progress is to be measured through increased participation and achievement in these types of qualifications and progression into advanced levels from lower levels. It is intended that “measurement will focus on a set of trade, technical and professional qualifications which can be monitored consistently and relate to areas of ongoing skill need within the economy” (Office of the Minister for Tertiary Education, 2006).

The overall purpose of this work is to provide a broad basis for understanding which areas the tertiary education system should concentrate on in terms of addressing skill shortages. In each of these areas, further detailed work will be required to understand issues of quality, quantity and timeliness of supply. This requires providers and industry to work together to understand and address these issues.

In April 2008, the Ministry published the first in a series of three reports in this area, which looked at skill demands within occupations and the qualifications held by the current workforce (Earle, 2008). This report concluded with initial comment on the nature of unmet demand for advanced qualifications.

This is the second report in the series. This report looks at the qualification areas highlighted in the first report. It considers how well these qualifications match the occupations with identified skill shortages, as well as examining measures of employment rates and income premiums to assess the value placed on these qualifications in the labour market.

The third report will examine the number of people graduating with advanced trade, technical and professional qualifications and establish a list of qualifications, and specialisations within qualifications, that will be monitored over time. It will include baseline information on trends in participation and achievement.

1.2 Linking education to skill needs

The first report discussed the link between education and skill needs. It noted that skill shortages arise and can persist for a number of reasons. These can include both insufficient supply of people with the required skills and lack of attractiveness of work within certain occupations and industries.

The link between education and skill demand was conceptualised as:

- People make decisions about what they would like to study and/or what occupation(s) they would like to work in.
- People attain education relevant to one or more occupations.

-
- People build experience relevant to one or more occupations (which may be before, during or after their period of study).
 - Their qualifications and occupational experience enable them to be employed within one or more industries.

1.3 Approach to monitoring achievement of advanced qualifications

The key to understanding the contribution of tertiary education to alleviating ongoing skill shortages is to monitor the link between changes in the supply of graduates with occupationally relevant qualifications and the level of unmet demand within those occupations.

The first report in this series identified the occupations that are experiencing ongoing skill shortages and require advanced-level qualifications, and broadly identified the qualifications that enable entry to those occupations.

This second report starts from the identified qualifications and checks the extent to which they are in demand across occupations, in particular professional, associate professional and trades worker occupations. It examines the match of qualifications to occupations, levels of unemployment by qualification field and level and evidence of income premiums being paid for specific qualifications. This analysis will refine the scope of the qualifications where there is strong evidence of unmet demand.

Having done so, we can then look at whether the supply of people attaining those qualifications is increasing or decreasing. This will signal areas for further investigation in terms of the dynamics of individual choice, intake, retention and completion – as well as which occupations those graduates are moving into within New Zealand and overseas.

This information provides a nexus for monitoring changes in supply and demand. From this, further exploration can be made of contributing factors and effects. However, it doesn't necessarily provide an evaluation of the effectiveness of tertiary education in reducing skill shortages, given the wide range of factors involved.

This approach focuses entirely on the quantity of provision and number of people graduating. A critical question for further examination will be the extent to which new graduates take up jobs within New Zealand or move overseas. It will also be important to look at how long New Zealand graduates remain overseas and what skills they return with.

An important aspect in many occupations and industries will be the quality and relevance of the content of the qualifications. This is much more difficult to measure at a system level and is an area that can only really be addressed by providers, learners and employers having stronger engagement with regard to specific qualifications.

Finally, the set of qualifications identified through this approach is likely to be reasonably valid for monitoring changes across the whole of the tertiary education system. However, it may not be sufficiently robust to inform specific decisions about funding and provision of qualifications. These decisions need to take account of a wider range of information about existing and future demand and be informed by active engagement among providers, learners and employers. Even where there is a reasonable argument to increase the number of graduates, this still needs to be addressed in a coordinated way.

2 Methodology

2.1 Key question

The key question addressed in this report is which of the shortages identified in the first report could be addressed through an increased number of people attaining advanced trade, technical or professional qualifications. The report also considers whether the evidence about the link from qualifications to occupations confirms the assessment made in the first report.

2.2 Measures of relationship of qualifications to occupations

Three measures are used in this report to explore the relationship between field and level of tertiary qualification and occupation.

The first measure is the match of qualifications to occupations. This measure considers whether people with a qualification in a specific field of study are more or less likely to work in selected occupations than people with qualifications in other fields at the same level of study. A positive result in this measure suggests a strong relationship between the field of study and the occupation. A negative result shows that people with qualifications in that field are much less likely to work in the occupation. Where the result is close to the line, it means that the particular field of study doesn't make much difference to whether a person works in that occupation or not.

The next measure is the unemployment rate for people with qualifications in a specific field compared with qualifications at the same level in other fields. This shows the relative value placed on the field of study in the labour market. Results are shown by both gender and age group.

Finally, incomes are examined. The income measure looks at the proportion of people earning above a specific figure. These figures have been chosen as being close to the overall median for the level of study.¹ The measure gives an idea of whether people with a qualification in a specific field are more likely to earn above the given income level than people with the same level of qualification in another field. This measure shows whether there are premiums being paid for people with qualifications in the specific field of study.

2.3 Data source and limitations

All data used in this analysis comes from the 2006 Census of Population and Dwellings, unless otherwise stated. The census data provides information on the highest level of educational qualification attained. Both level and field of study are self-reported by way of a write-in question, which has then been coded to the official classifications. The same is true for occupation. The data in this report looks at the total working age population.

There are a few caveats that should be kept in mind when interpreting the results:

- There will be some degree of error in self-reporting and in the classification process, meaning that the data is not perfectly exact.

¹ The choice of figures is constrained by the income bands used in the census data collection.

-
- Some of the older vocational qualifications do not easily map to the new system of qualification levels.
 - Information is provided only on highest qualification, which can mask qualifications held in other fields at lower levels.
 - While the census uses a common definition of unemployment (that is, not in work and actively seeking work), the rates can differ somewhat from other sources, such as the Household Labour Force Survey and the Ministry of Social Development's unemployment register.
 - People will build work experience over the period of their working lives that enables them to move into occupations other than those they originally qualified for.

These last two points are particularly relevant in considering the match of qualifications to occupations. Reasons for people working outside the occupation they are qualified in can include that they have a lower-level qualification in another field and/or that they have built sufficient work experience to move into a different occupation.

2.4 Percent difference

The results presented in this report are shown as percent difference. This is the percentage point difference between the proportion for the group of interest and the proportion for the comparison group noted below the graph.

As an example, Figure 4.1 shows that the proportion of people with a level 5 or 6 diploma in information technology working as physical, mathematical and engineering science professionals is almost 20 percentage points higher than the proportion for people with level 5 to 6 diplomas in other fields.

3 Identifying demand for advanced qualifications

The first report in this series ended with a summary of the demand for advanced qualifications across occupational groups. The qualifications that appear to be in high demand are set out in Table 1 below in terms of field of study, occupation and level of qualification.

Table 1: Qualifications in high demand by occupation, field of study and level

Field of study	Professionals	Technicians and associate professionals	Trades workers	Other
Information technology	Bachelors +	Bachelors		
Manufacturing engineering		Diploma	Level 4 certificate (printing)	Level 4 certificate
Process and resources engineering	Diploma/Bachelors+			
Automotive engineering		Diploma	Level 4/5 certificate	Level 4 certificate
Marine engineering		Diploma		
Mechanical and industrial engineering	Diploma/Bachelors+	Diploma/Bachelors	Level 4/5 certificate	Level 4 certificate
Civil engineering	Diploma/Bachelors+	Diploma/Bachelors		
Geomatic engineering	Diploma/Bachelors			
Electrical and electronic engineering	Diploma/Bachelors+	Diploma/Bachelors	Level 4/5 certificate	Level 4 certificate
Aerospace engineering		Diploma		
General engineering	Diploma/Bachelors+	Diploma/Bachelors+		
Architecture	Bachelors	Diploma/Bachelors		
Building		Diploma/Bachelors	Level 4/5 certificate	Level 4 certificate
Medical studies	Bachelors+			
Midwifery	Bachelors			
Pharmacy	Bachelors	Diploma		
Dental studies		Diploma/Bachelors		
Radiography		Bachelors		
Rehabilitation therapies		Diploma/Bachelors		
Early childhood education	Diploma			
Special education	Bachelors			
Accountancy	Bachelors+			
Business and management		Diploma/Bachelors		
Sales and marketing		Diploma/Bachelors		
Tourism		Diploma		
Human welfare studies and services		Diploma/Bachelors		
Behavioural science	Bachelors+			
Law	Bachelors+			
Food and hospitality			Level 4 certificate	Level 4 certificate

This second report works through the subject areas identified in the above table. The subject areas have been grouped by the broad levels of bachelors and above, level 5 and 6 diplomas and level 4 certificates.² Education is not covered in this report as the data the Ministry has from the census is not sufficiently disaggregated to look at the different levels of teaching.

² These categories reflect the coding categories for the 2006 census.



4 Information technology

The first report found that there was an adequate supply of people with diploma-level qualifications in information technology, but an unmet demand for people with bachelors degrees and above in this field. This unmet demand is in the physical, mathematical and engineering science professions as well as in the physical science and engineering associate professions. This demand is being driven by technology development.

4.1 Match of qualifications to occupation

People with information technology qualifications are more likely to work in the relevant professional and technical occupation groups than others with the same level of qualification.

Figure 4.1 shows that for those with diplomas in information technology, there is a moderate match to the relevant occupations. The match is stronger for those with bachelors and above. However, at both levels they are about equally likely to work in other occupations.

4.2 Unemployment

Figure 4.2 shows that the unemployment rates for people with information technology qualifications are higher than for people with the same level of qualification in other fields.

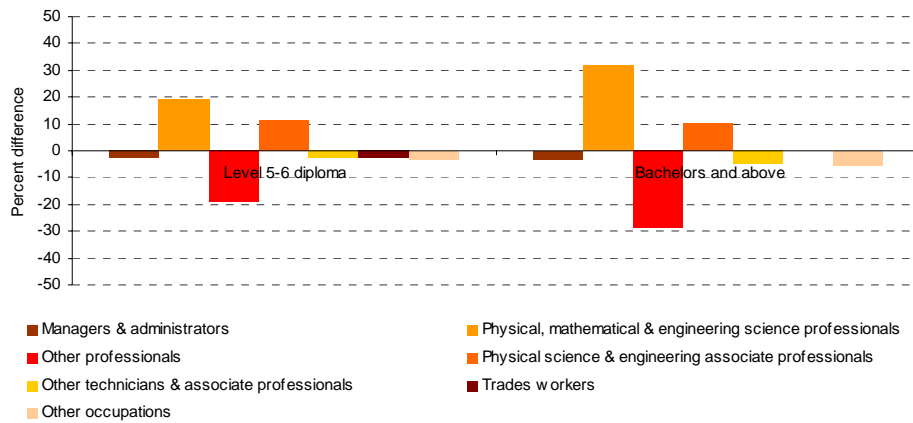
There are limited differences in unemployment rates between males and females. The unemployment rates are higher for people with diplomas, suggesting that there may be oversupply in this area. However, people with bachelors or above in information technology are also more likely to be unemployed than others with the same level of qualification in other fields. This result raises questions about whether the content of qualifications held is relevant to current industry needs.

4.3 Income

Managers and professionals with information technology qualifications are likely to earn more than others with the same level of qualifications.

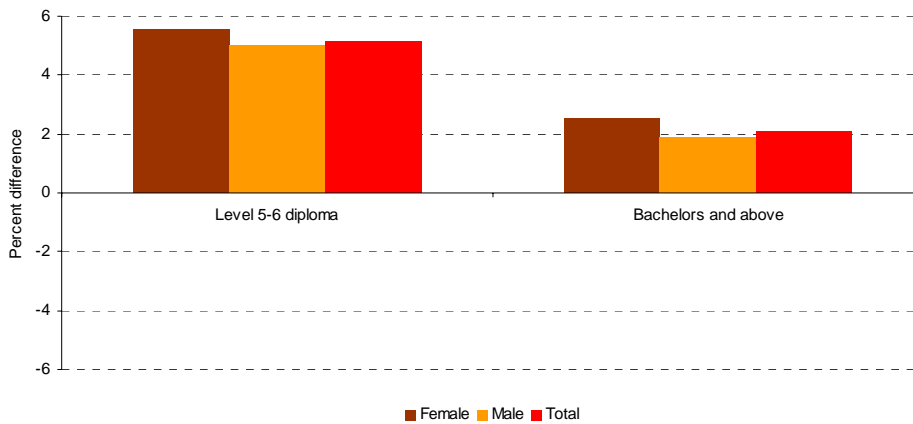
Figure 4.3 shows that people with information technology qualifications at both bachelors and diploma level earn more in management and professional occupations. While there is a premium for working as a professional, people with diplomas earn less as technicians than others with the same level of qualification. At bachelors level, there is very little premium for working as an information technology professional.

Figure 4.1: Are people with information technology qualifications more likely to work in related occupations?



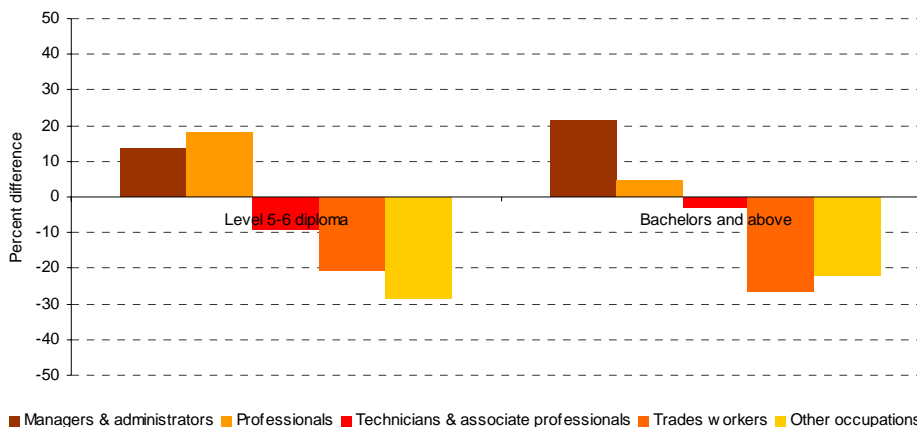
Compared with people with the same level of qualification in other fields.

Figure 4.2: Are people with information technology qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 4.3: Are people with information technology qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.
Proportion earning more than \$50,000 a year for diplomas and more than \$70,000 for bachelors and above.

5 Engineering and related technologies

The first report identified unmet demand for people with engineering qualifications at both diploma and bachelors level and above in professional and technician and associate professional occupations. Unmet demand for people with level 4 engineering certificates was also identified in the trades. Demand is being driven by technology changes, as well as the growth in the construction industry.

5.1 Match of qualifications to occupation

People with engineering qualifications are more likely to work in the associated professional and technical occupation groups, and in trade occupations, than people with qualifications at the same level in other fields.

Figure 5.1 shows that people with level 4 certificates are more likely to work in the trades. People with diplomas are spread across professions, associate professions and the trades. People with bachelors and above are more concentrated in the professions.

5.2 Unemployment

Figure 5.2 shows that males with engineering qualifications are less likely to be unemployed than males with qualifications in other fields. However, females with engineering qualifications are much more likely to be unemployed than people with the same level of qualification in other fields.

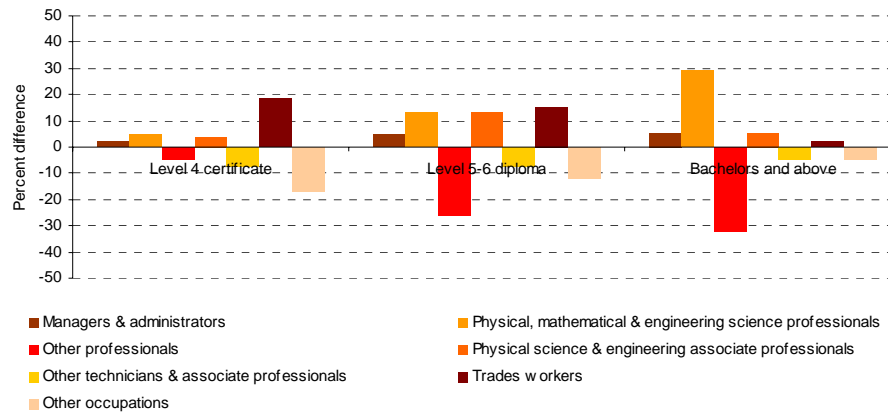
Unemployment rates are lower for qualifications below degree level.

5.3 Income

There is clear evidence of income premiums being paid for people with engineering qualifications across levels and occupations.

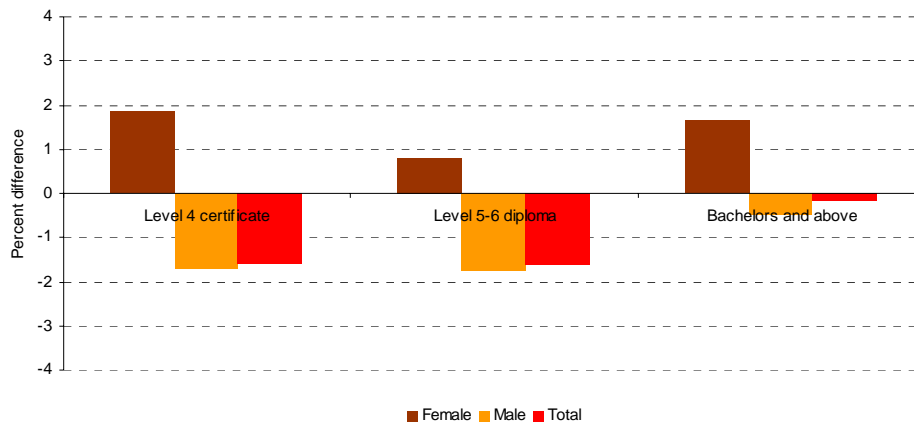
Figure 5.3 shows that people with engineering qualifications below degree level are paid more than others with the same level of qualification across all occupational groups. At bachelors level the premium applies to those working as managers, professionals and associate professionals. It shows that people with qualifications in engineering are particularly valued as managers.

Figure 5.1: Are people with engineering qualifications more likely to work in related occupations?



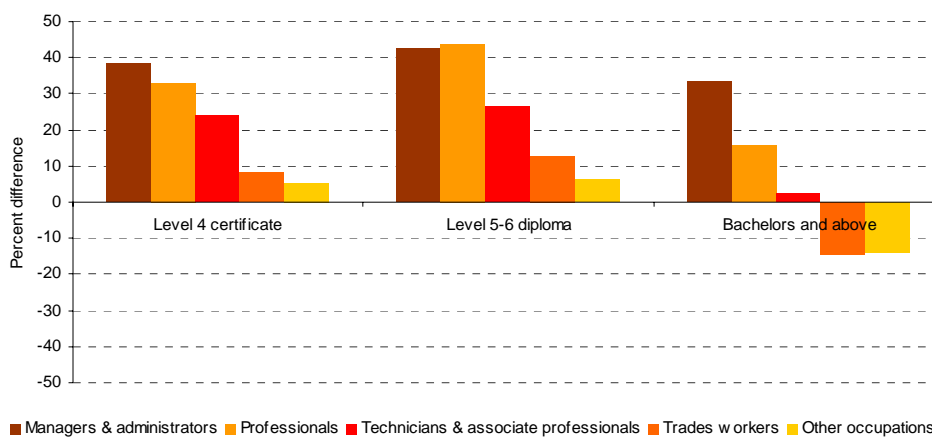
Compared with people with the same level of qualification in other fields.

Figure 5.2: Are people with engineering qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 5.3: Are people with engineering qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.

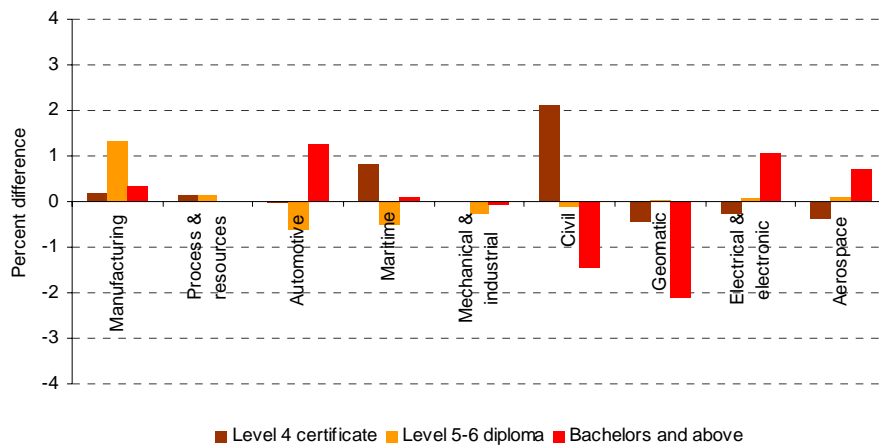
Proportion earning more than \$50,000 a year for certificates and diplomas and more than \$70,000 for bachelors and above.

5.4 Demand for specialties

The first report indicated strong unmet demand for manufacturing engineers (with level 4 certificate), automotive engineers (level 4 certificate), mechanical and industrial engineers (all levels), civil engineers (diploma, bachelors and above) and electrical and electronic engineers (all levels).

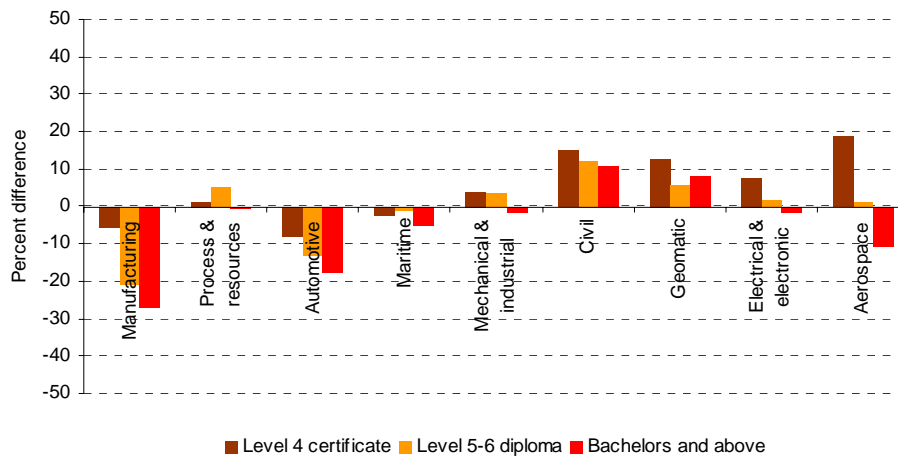
These comparatively higher levels of demand are not as strongly evident with regard to unemployment rates and income, with the exception of civil and geomatic engineers,³ who have lower unemployment and higher incomes at both diploma and bachelors level. There are also income premiums for level 4 electrical and aerospace engineers.

Figure 5.4: Which engineering specialties are more likely to be unemployed?



Compared with rate for all engineering at the same level.

Figure 5.5: Which engineering specialties are more likely to earn more?



Compared with rate for all engineering at the same level.
Proportion earning more than \$50,000 a year.

³ Civil engineers are trained in the areas of building, construction, public works and infrastructure. Geomatic engineers are trained in mapping and surveying. The two areas are therefore quite closely connected.



6 Architecture

The first report identified unmet demand for architects with bachelors degrees and above and draughters with diplomas. This unmet demand is largely located within the physical, mathematical and engineering science professions (architects) and the physical science and engineering associate professions (draughters). Demand has been driven by growth in the construction industry.

6.1 Match of qualifications to occupation

People with architecture qualifications are much more likely to work in the associated professional and technical occupation groups and less likely to work in other occupations.

Figure 6.1 shows that people with diplomas in architecture are more likely to work in either the related professional or associate professional occupations. People with bachelors or above in architecture are more likely to work in the related professional occupations.

6.2 Unemployment

Males with diplomas and bachelors in architecture are less likely to be unemployed than people with qualifications at the same level in other fields.

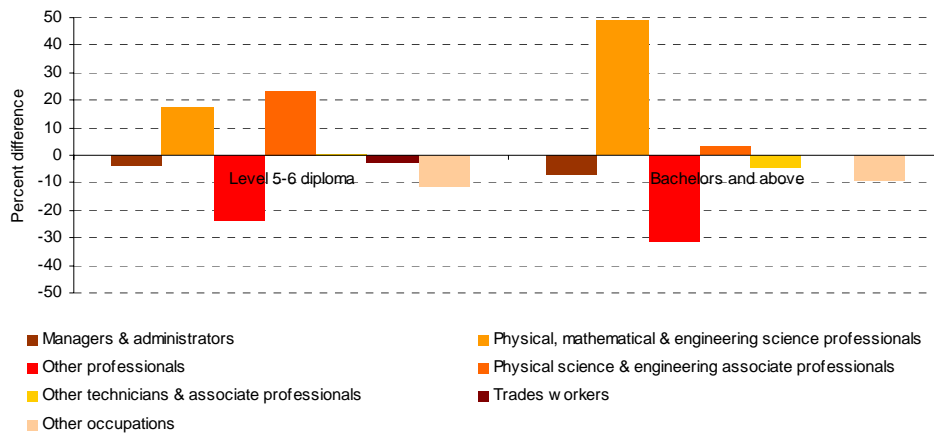
Figure 6.2 shows that the lowest unemployment rate is for people with diplomas. Across all levels, women with architecture qualifications are more likely to be unemployed than others with the same level of qualification.

6.3 Income

People with diplomas and bachelors in architecture are likely to earn more as managers and professionals, and less in other occupations.

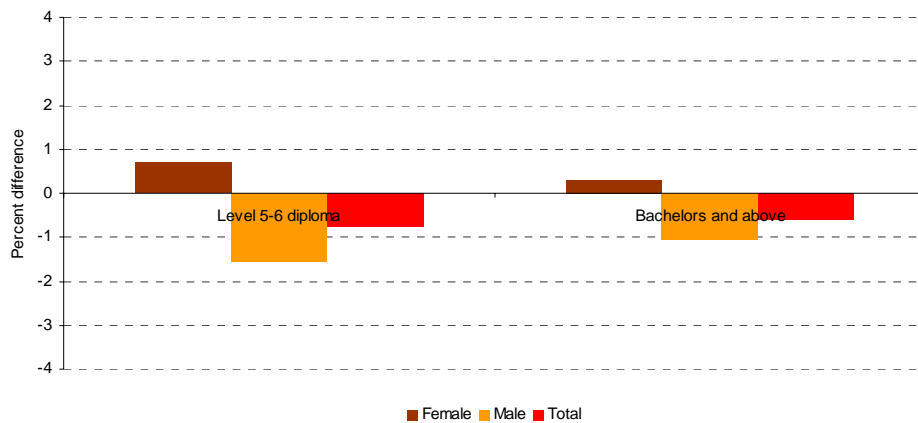
Figure 6.3 shows that people with diplomas in architecture earn more as managers and professionals than others with the same level of qualification. The same is true for people with bachelors degrees or above, but with less of a premium evident in professional occupations. There is no premium evident for people with diplomas in architecture to work as draughters, that is, in the associate professions.

Figure 6.1: Are people with architecture qualifications more likely to work in related occupations?



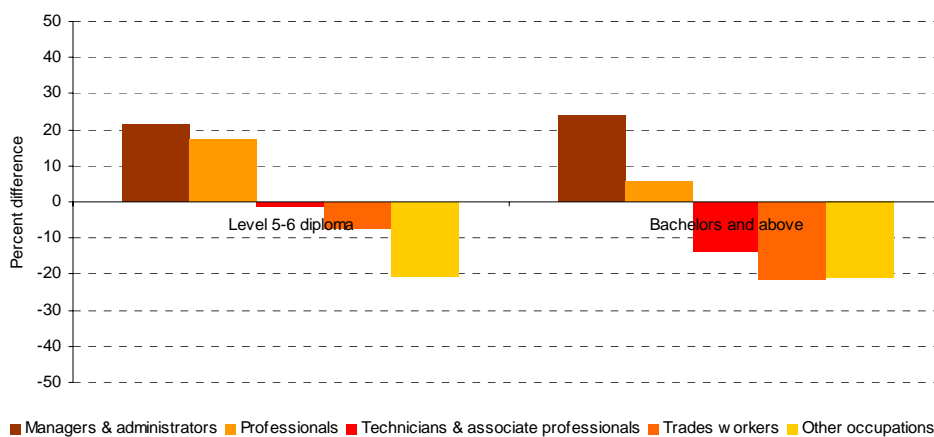
Compared with people with the same level of qualification in other fields.

Figure 6.2: Are people with architecture qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 6.3: Are people with architecture qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.

Likelihood of earning more than \$50,000 a year for certificates and diplomas and more than \$70,000 for bachelors and above.

7 Building

The first report identified unmet demand for people with qualifications in building. Demand was identified at bachelors and diploma level for building surveyors and draughters. Considerable demand was evident in the building trades for people with diplomas and level 4 certificates in building. This demand is largely driven by growth in the construction industry.

7.1 Match of qualifications to occupation

People with a building qualification are much more likely to work as trades workers and physical science and engineering associate professionals, and less likely to work in other occupations, than people with qualifications at the same level in other fields.

Figure 7.1 shows there is a good match of people with level 4 certificates to the trades worker occupations. People with diplomas in building are most likely to work as either trades workers or as draughters and surveyors (part of physical science and engineering associate professionals). People with bachelors degrees are more likely to work as draughters and surveyors, and also as trades workers and managers.

7.2 Unemployment

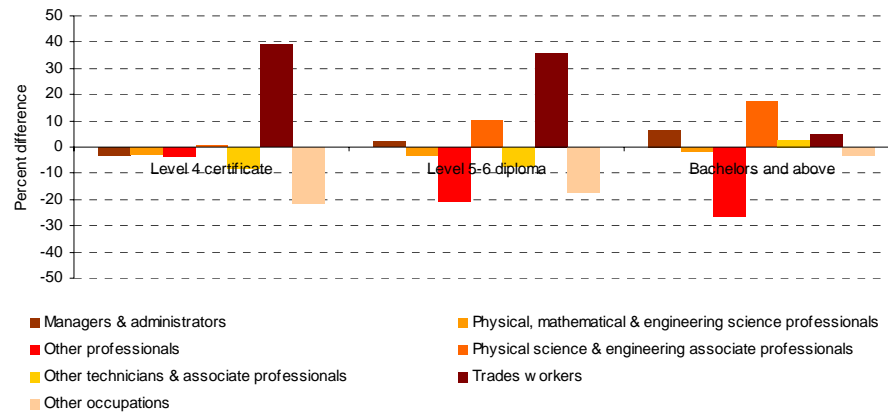
Figure 7.2 shows that males with building qualifications are less likely to be unemployed than people with qualifications in other fields. However, females with building qualifications are more likely to be unemployed than people with qualifications in other fields. Unemployment rates are lower for people with diplomas. However, rates are slightly higher for people with bachelors and above.

7.3 Income

There is good evidence of premiums being paid for people with building qualifications across management, professional and associate professional occupations.

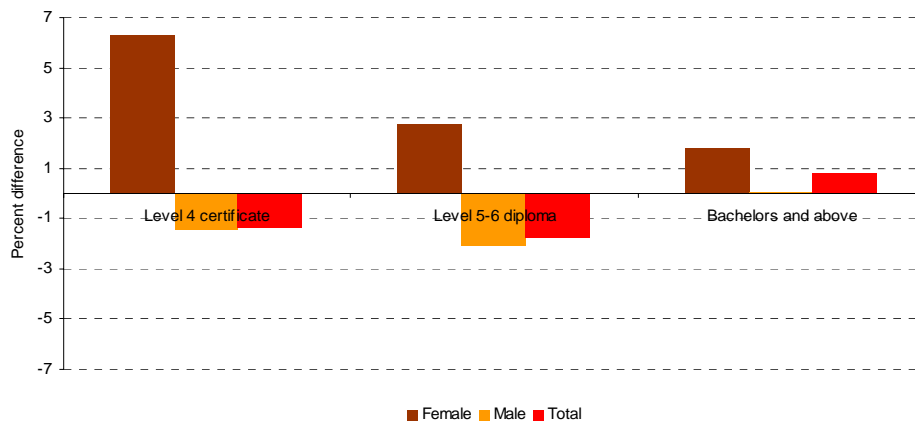
Figure 7.3 shows that people with building qualifications earn more than others with the same level of qualification if they work in management, professions or associate professions. They earn about the same as others in the trades, with the exception of bachelors holders, who earn slightly more.

Figure 7.1: Are people with building qualifications more likely to work in related occupations?



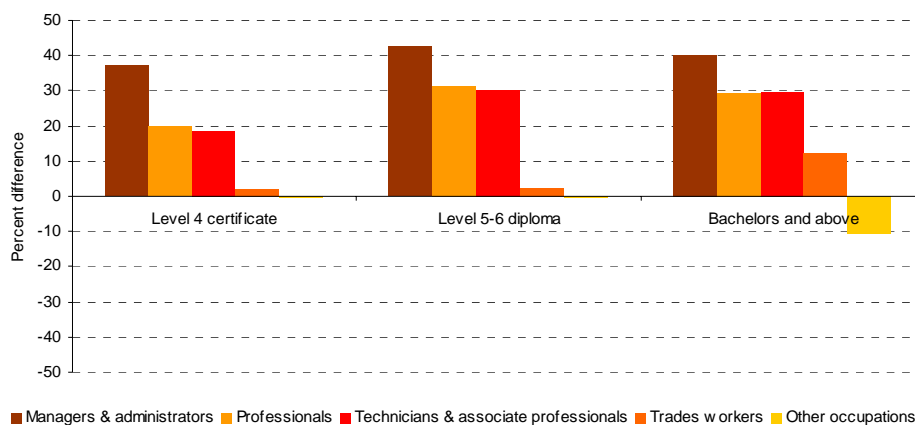
Compared with people with the same level of qualification in other fields.

Figure 7.2: Are people with building qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 7.3: Are people with building qualifications likely to earn more?



Compared with people with the same level of qualification in other fields. Likelihood of earning more than \$50,000 a year for certificates and diplomas and more than \$70,000 for bachelors and above.

8 Medical studies

Medical studies cover qualifications required to be a medical doctor, including both general practitioners and specialists. Recognised qualifications in this field of study are all at bachelors level and above. Medical studies are looked at in total due to the limitations of available census data.

The first report identified unmet demand for people with medical qualifications at bachelors level and above. This is being driven by greater demand for health services, in part due to an aging population.

8.1 Match of qualifications to occupation

People with medical qualifications are most likely to work as health professionals.

Figure 8.1 shows that they are less likely than other people with bachelors qualifications and above to work outside of the health professional occupations.

8.2 Unemployment

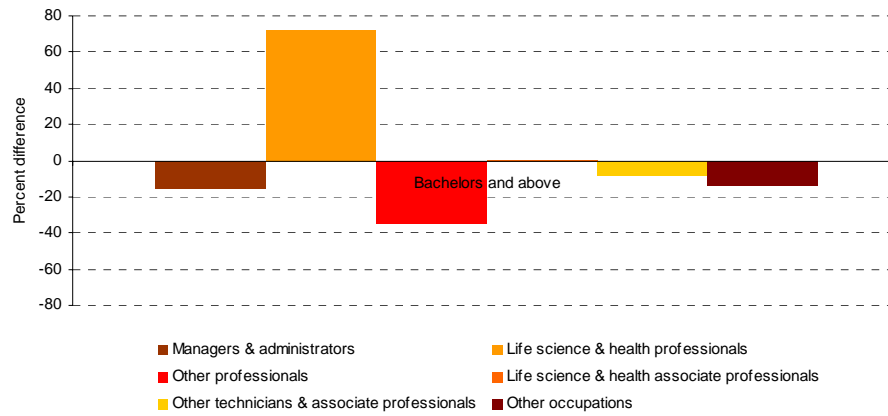
People with medical qualifications are less likely to be unemployed than others with a bachelors qualification or above, as shown in Figure 8.2.

8.3 Income

There is evidence of premiums being paid for people with medical qualifications in management and professional occupations.

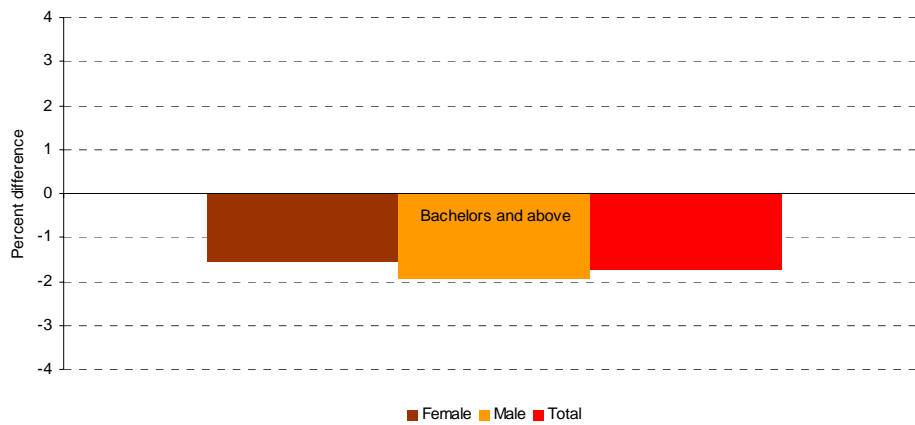
Figure 8.3 shows there is a clear premium for people with medical qualifications working as professionals. They earn less than others with bachelors degree or above in other occupations, with the exception of management.

Figure 8.1: Are people with medical qualifications more likely to work in related occupations?



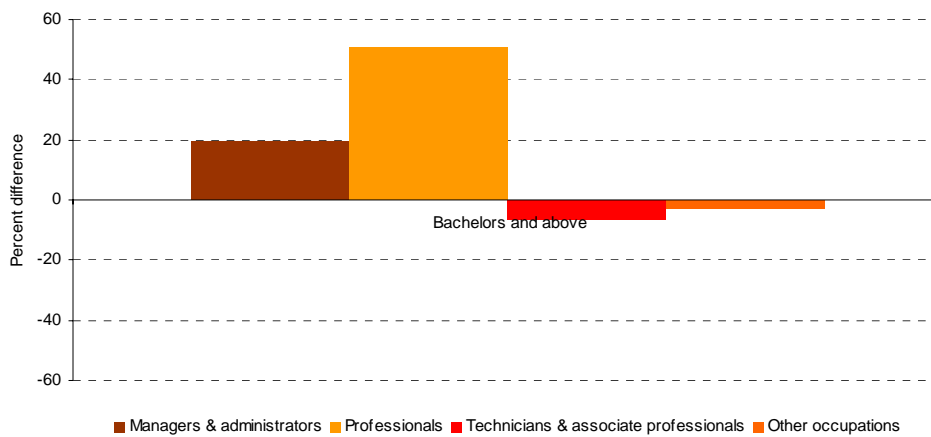
Compared with people with the same level of qualification in other fields.

Figure 8.2: Are people with medical qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 8.3: Are people with medical qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.
Likelihood of earning more than \$70,000 a year.

9 Nursing

Nursing qualifications cover registered and enrolled nurses, midwives and health care assistants.

The first report noted shortages for registered nurses and midwives. Registered nursing shortages were possibly more due to recruitment and retention than to undersupply of graduates, but graduate undersupply was noted as an issue for midwives. Shortages of enrolled nurses appeared evident in 2007. Increased demand for people with nursing qualifications is being driven by greater demand for health services, including demand due to an aging population. This section looks at nursing as a whole by level of qualification. It was not possible to get separate data on midwifery at this level of detail.

9.1 Match of qualifications to occupation

People with nursing qualifications are more likely to work in the health professions than in other occupations.

Figure 9.1 shows that people with level 4 certificates in nursing (mostly health care assistants and nurse-aids) are more likely than other people with level 4 certificates to work in the health professions and associate professions, and less likely to work in other occupations. People with diplomas and bachelors in nursing are much more likely to work as health professionals and less likely to work in other occupation groups.

9.2 Unemployment

In general, people with nursing qualifications are less likely to be unemployed than people with qualifications at the same level in other fields.

Figure 9.2 shows both males and females with nursing diplomas or degrees are less likely to be unemployed than others with diplomas and degrees. For those with level 4 certificates, females are less likely to be unemployed than others with the same level of qualification.

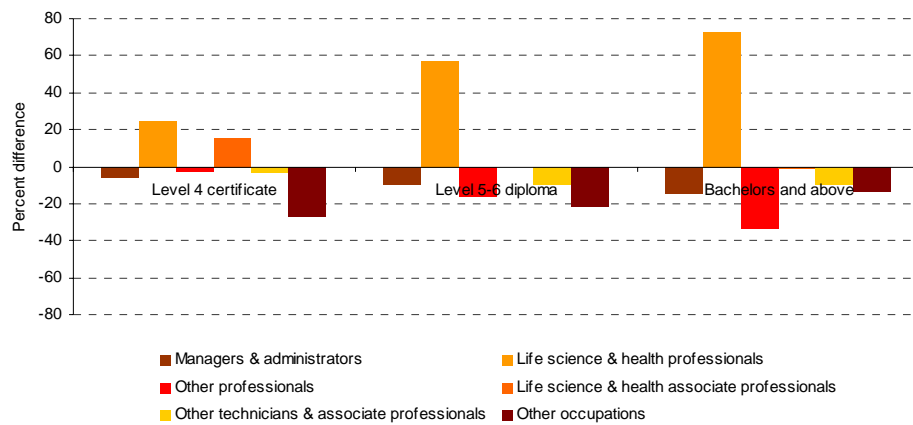
9.3 Income

Nurses and health care workers are generally paid less than others with the same level of qualification.

Figure 9.3 shows that people with level 4 certificates in nursing earn considerably less relative to others with level 4 certificates in the same occupational groups. The differences are not as great at diploma level, but incomes are still lower, with the exception of those working in management. At bachelors level, their incomes are also lower than others with bachelors and above, with the exception of those working in management.

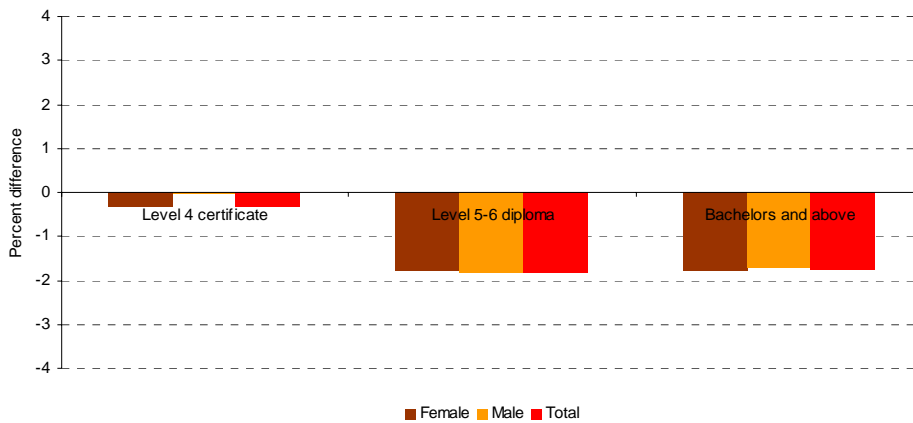
Nurses' salaries have increased substantially after the data used for this report was collected. In July 2006, most nurses in public hospitals received an 8 percent pay increase. This was part of a 20 percent increase agreed in 2005. In 2007, a further 12 percent increase over three years was agreed. This will take the top pay rate for registered nurses to just over \$60,000 in 2009.

Figure 9.1: Are people with nursing qualifications more likely to work in related occupations?



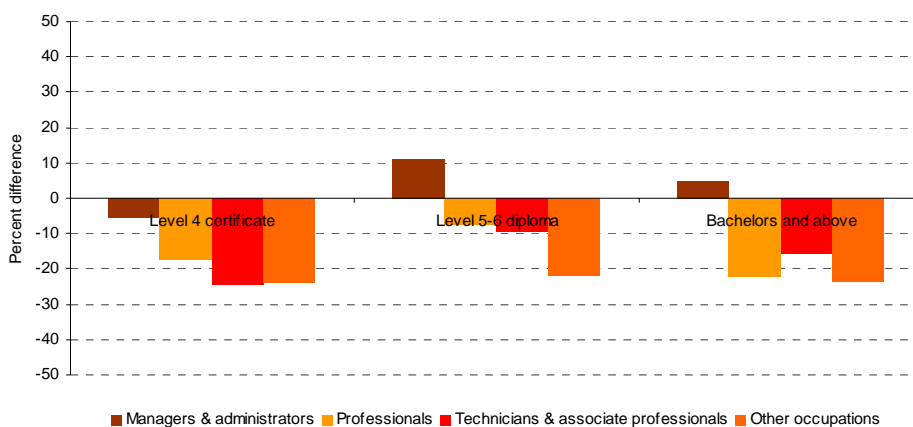
Compared with people with the same level of qualification in other fields.

Figure 9.2: Are people with nursing qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 9.3: Are people with nursing qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.

Likelihood of earning more than \$50,000 a year for certificates and diplomas and more than \$70,000 for bachelors and above.

10 Other health

The fields of study included here in other health are pharmacy, dental studies, optical science, public health, radiography and rehabilitation therapies.⁴

The first report noted that there was a high demand for health associate professionals across these areas, particularly retail dispensary assistants, dental therapists, physiotherapists and occupational therapists. In the professional health occupations, supply and demand seemed to be more evenly matched for these areas.

10.1 Match of qualifications to occupation

People with other health qualifications are more likely to work as health associate professionals or professionals.

Figure 10.1 shows that people with other health qualifications below degree level are more likely to work as associate health professionals than others with the same level of qualification. People with other health bachelors degrees or above are more likely to work as health professionals or health associate professionals.

10.2 Unemployment

People with diplomas and bachelors and above qualifications in other health areas are less likely to be unemployed than people with qualifications at the same level in other fields.

Figure 10.2 shows that both males and females with other health diplomas or degrees are less likely to be unemployed than others with diplomas and degrees. People with level 4 certificates in other health areas are more likely to be unemployed than others with level 4 certificates.

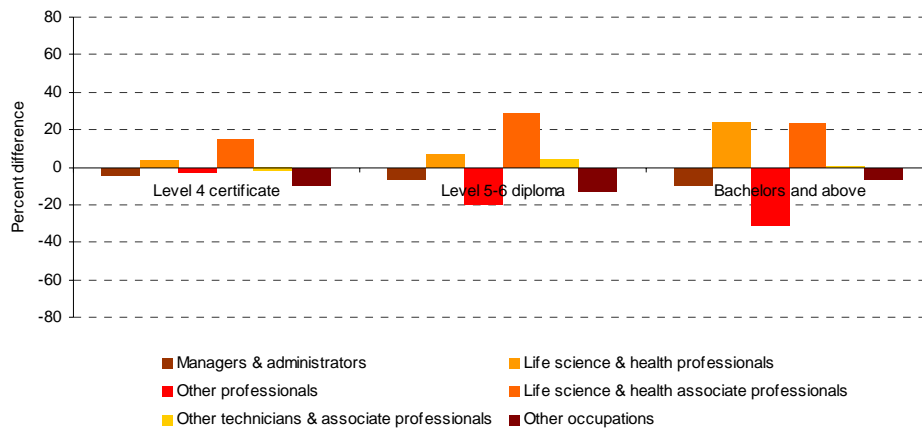
10.3 Income

People with other health qualifications below degree level are generally paid less than those with the same level of qualification in other fields.

Figure 10.3 shows that people with level 4 certificates in health areas earn considerably less than those with level 4 certificates in other fields. At diploma level, people with other health qualifications earn more as managers, but less in other occupations. At bachelors level, those who work as managers and health professionals are paid more, while those in other occupations are paid less.

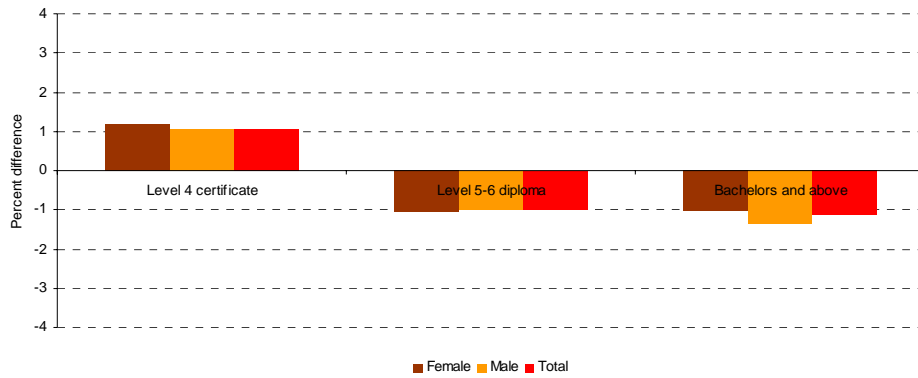
⁴ Veterinary studies and complementary health (naturopathy, acupuncture and traditional medicine) have not been included.

Figure 10.1: Are people with other health qualifications more likely to work in related occupations?



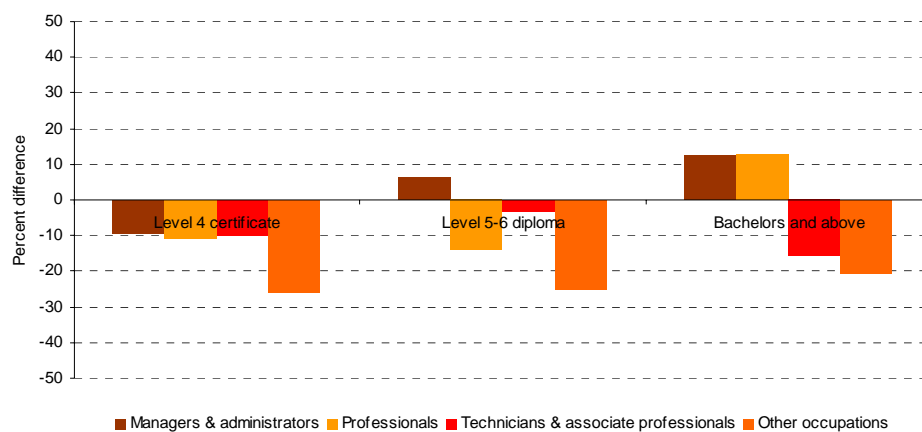
Compared with people with the same level of qualification in other fields.

Figure 10.2: Are people with other health qualifications more likely to be unemployed?



Compared with people with the same level of qualification in other fields.

Figure 10.3: Are people with other health qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.
Likelihood of earning more than \$50,000 a year for certificates and diplomas and more than \$70,000 for bachelors and above.

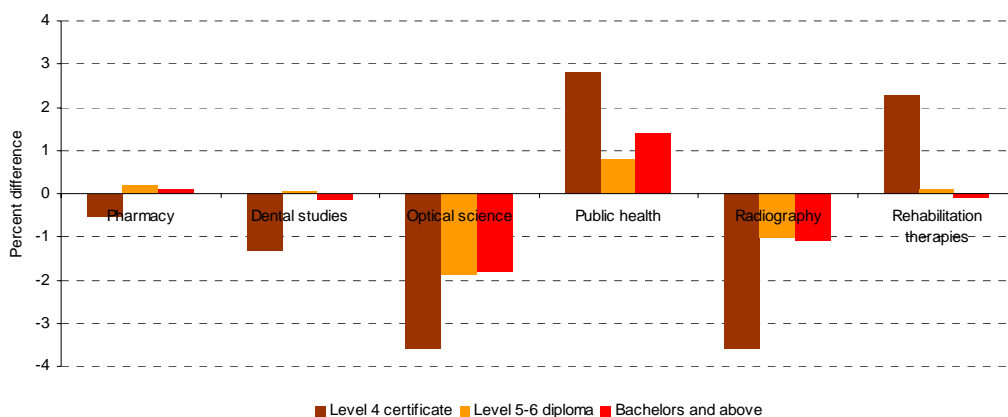
10.4 Demand for specialties

Patterns of demand differ across the specialties within other health. These specialties, shown below, follow the classification of educational fields of study and don't necessarily match current occupational classifications in the health sector.

Pharmacy is characterised by average unemployment rates and higher earnings for people with bachelors and above. Dental studies are also characterised by average unemployment and average earnings. No people with qualifications in optical science were recorded as unemployed in the census. They also have the highest level of earnings for people with other health qualifications.

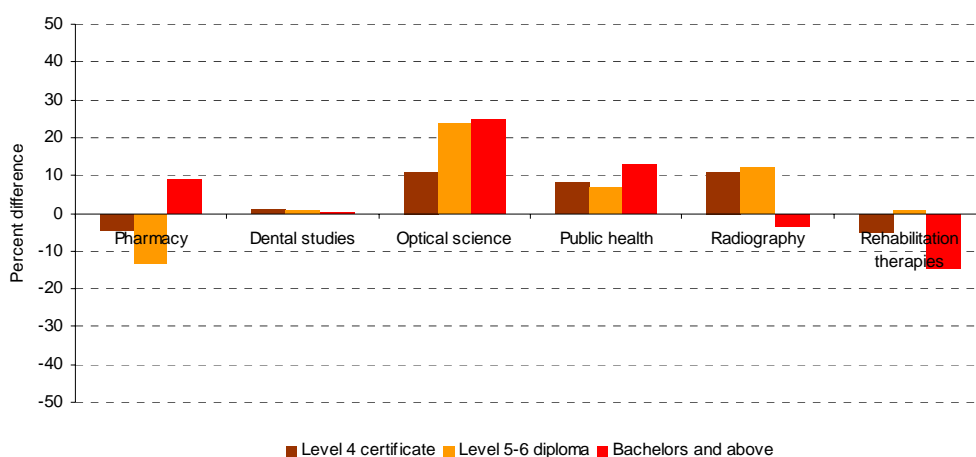
In public health, unemployment rates were higher, particularly for those with level 4 certificates and earnings were above average across levels. Radiographers had low rates of unemployment at all levels and higher earnings below degree level. There was a high rate of unemployment for people with level 4 certificates in rehabilitation therapies, but lower for diploma and above. Earnings were lower for people with level 4 certificates and bachelors degrees.

Figure 10.4: Which other health specialties are more likely to be unemployed?



Compared with rate for all other health at the same level.

Figure 10.5: Which other health specialties are likely to earn more?



Compared with proportion for all other health at the same level.
Proportion earning more than \$50,000 a year.

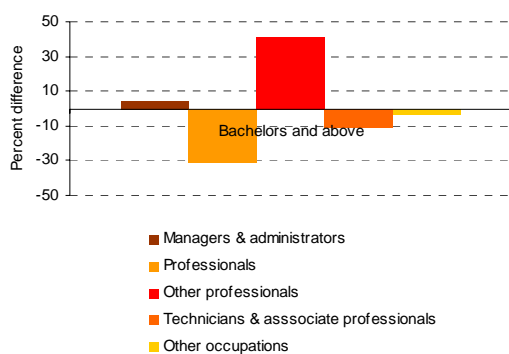
11 Other fields of study

11.1 Accountancy

The first report noted that there appeared to be some shortages for accountants, in particular auditors. The available data from the census looks at people with accountancy qualifications as a group.

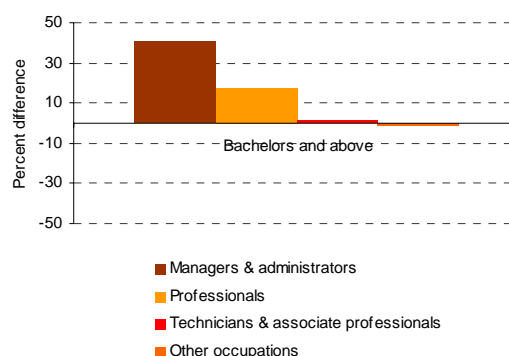
People with bachelors and above in accountancy are more likely to work in the 'other professionals' occupation group, which includes accountants. They have a slightly lower unemployment rate of 2.4 percent, compared with 2.9 percent for other people with bachelors and above. People with bachelors and above in accountancy are likely to earn more as managers and professionals than others with the same level of qualification.

Figure 11.1: Are people with accountancy qualifications more likely to work in related occupations?



Compared with people with the same level of qualification in other fields.

Figure 11.2: Are people with accountancy qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.
Likelihood of earning more than \$70,000 a year.

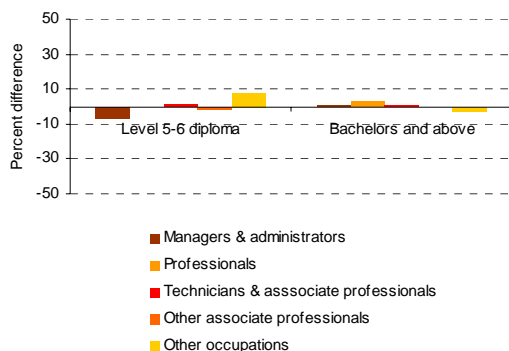
11.2 Finance and sales

In the first report, shortages of finance and sales associate professionals were noted. Specialists in these areas are likely to have diplomas and bachelors degrees in sales and marketing or banking and finance.

People with diplomas and bachelors in finance and sales tend to be spread across occupations. Unemployment rates are higher for people with qualifications in these fields. Those with diplomas had an unemployment rate of 3.1 percent, compared with 2.8 percent for people with diplomas in other fields. For bachelors level, the figures were 4.0 percent and 2.9 percent respectively.

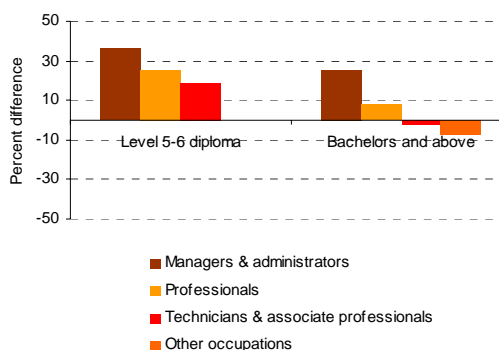
People with bachelors and above are likely to earn more as managers than others with the same level of qualification. At diploma level, those working as managers, professionals and associate professionals are likely to earn more than those with diplomas.

Figure 11.3: Are people with finance and sales qualifications more likely to work in related occupations?



Compared with people with the same level of qualification in other fields.

Figure 11.4: Are people with finance and sales qualifications likely to earn more?



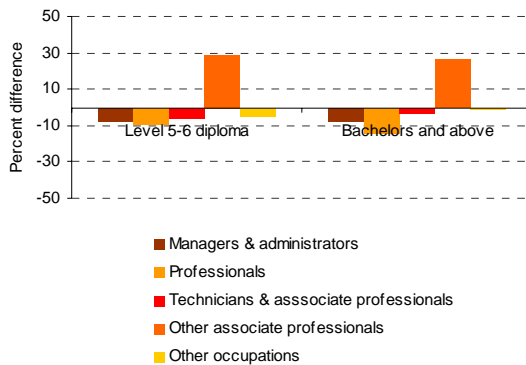
Compared with people with the same level of qualification in other fields.
Likelihood of earning more than \$50,000 a year for diplomas and more than \$70,000 for bachelors and above.

11.3 Human and welfare studies and services

The first report found that there is an ongoing shortage of social workers due to low graduate supply, recruitment and retention difficulties, and the demands of study on the current workforce to upgrade their qualifications to meet the new registration requirements. Social work qualifications are included within human welfare studies and services. Social workers are classed as associate professionals in terms of occupation.

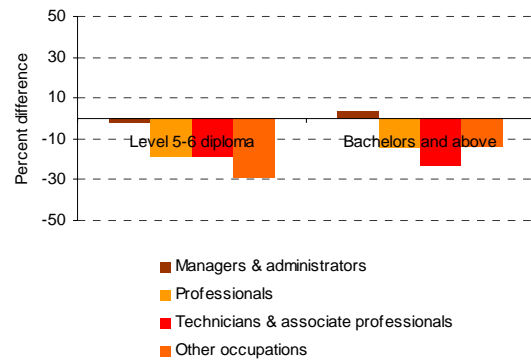
People with diplomas and bachelors and above in human and welfare studies and services are more likely to work as 'other associate professionals' (which includes social workers) than others with the same level of qualification. However, they are much more likely to be unemployed. The unemployment rate for people with diplomas in this field was 5.2 percent in 2006 and 3.6 percent for bachelors. These compare with 2.8 percent and 2.9 percent respectively for other fields. They are also likely to earn substantially less than other people with the same level of qualification.

Figure 11.5: Are people with human and welfare studies and services qualifications more likely to work in related occupations?



Compared with people with the same level of qualification in other fields.

Figure 11.6: Are people with human and welfare studies and services qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.

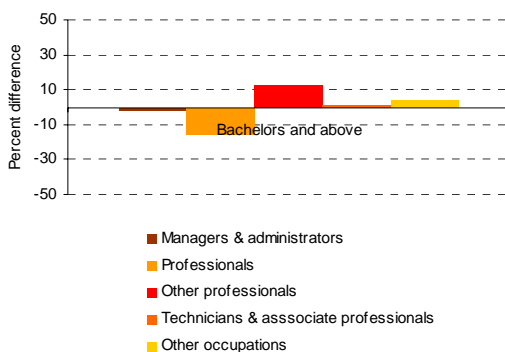
Likelihood of earning more than \$50,000 a year for diplomas and more than \$70,000 for bachelors and above.

11.4 Behavioural science

The first report found that there are ongoing shortages of psychologists. Qualifications for psychology are classified under behavioural science. Psychologists are included in the 'other professions'.

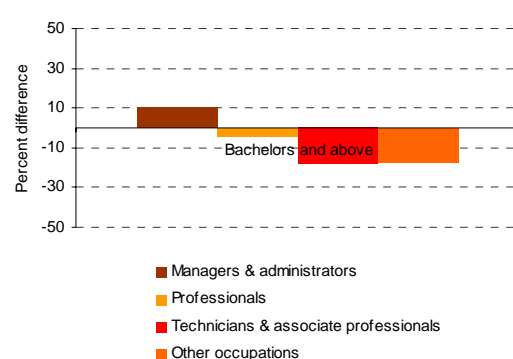
People with bachelors or above in behavioural science are somewhat more likely to work as 'other professionals' and equally likely to work in management and other occupations. Their unemployment rate is a little higher than for people with bachelors or above in other fields at 3.1 percent, compared with 2.9 percent. They are likely to earn less than other people with bachelors and above if they are in a professional occupation and more if they are in a management occupation. In other occupations, their earnings are lower than others with the same level of qualification.

Figure 11.7: Are people with behavioural science qualifications more likely to work in related occupations?



Compared with people with the same level of qualification in other fields.

Figure 11.8: Are people with behavioural science qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.

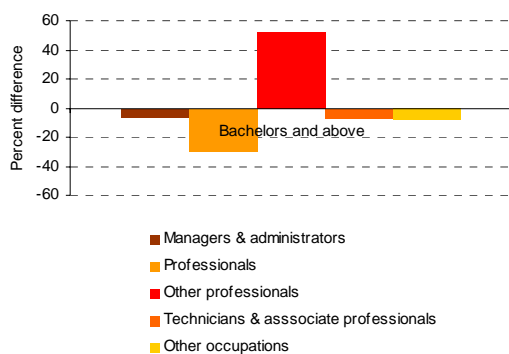
Likelihood of earning more than \$70,000 per year.

11.5 Law

The first report found no evidence of severe shortages for legal professionals, although there is evidence of a shortage of qualified barristers and solicitors.

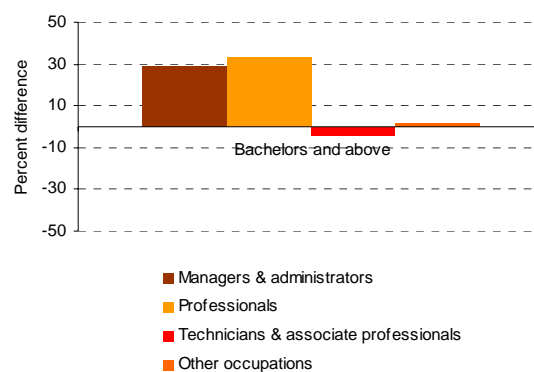
People with bachelors qualifications and above in law are much more likely to work as 'other professionals' and less likely to work in other occupations. Their unemployment rate in 2006 was 2.1 percent, compared with 2.9 percent for other people with bachelors and above. Those who work in management and professions earn more than other people with bachelors and above qualifications.

Figure 11.9: Are people with law qualifications more likely to work in related occupations?



Compared with people with the same level of qualification in other fields.

Figure 11.10: Are people with law qualifications likely to earn more?



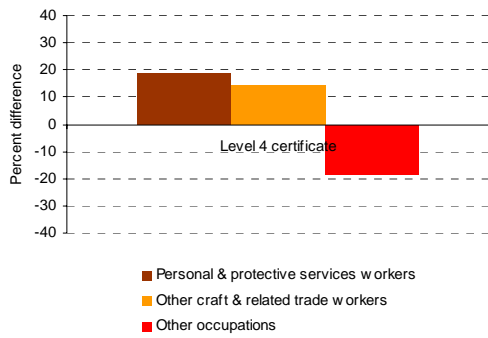
Compared with people with the same level of qualification in other fields. Likelihood of earning more than \$70,000 per year.

11.6 Food and hospitality

The first report identified that there were shortages of butchers, bakers and chefs and that low levels of training in these areas may be a contributing factor. The qualifications for these jobs are generally level 4 certificates within the area of food and hospitality. Bakers and butchers are classified under 'other craft and related trades workers' and chefs and other kitchen workers as 'personal and protective services workers'.

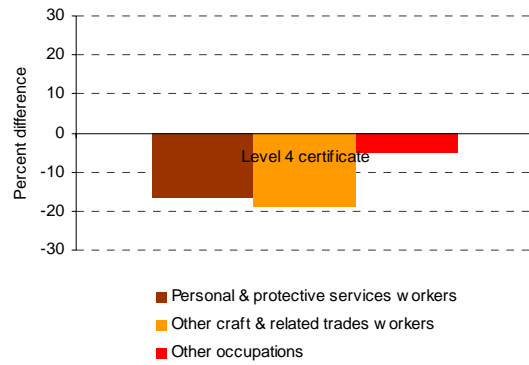
People with level 4 certificates in food and hospitality are more likely to work in the two occupations referred to above. They have slightly higher unemployment rates than others with level 4 certificates, at 2.9 percent compared with 2.5 percent. They earn less than others with level 4 certificates, particularly if they work as chefs or kitchen staff.

Figure 11.11: Are people with food and hospitality qualifications more likely to work in related occupations?



Compared with people with the same level of qualification in other fields.

Figure 11.12: Are people with food and hospitality qualifications likely to earn more?



Compared with people with the same level of qualification in other fields.
Likelihood of earning more than \$50,000 per year.

12 Conclusion

The following table summarises the findings for each field of study discussed above and rates them in terms of the effectiveness of increasing the number of people with qualifications to address shortages. Red (or dark grey) indicates low effectiveness, amber (or mid-grey) moderate, and green (or light grey) high.

Field	Level 4 certificate	Level 5-6 diploma	Bachelors and above
Information technology		Moderate match Very high unemployment Moderate premiums	Good match Higher unemployment Limited premiums
Engineering and related technologies	Strong match Low unemployment (males) Good premiums	Strong match Low unemployment (males) Good premiums	Strong match Average unemployment (males) Moderate premiums
Architecture		Strong match Low unemployment (males) Moderate premiums	Strong match Low unemployment (males) Limited premiums
Building	Strong match Low unemployment (males) Good premiums	Strong match Low unemployment (males) Good premiums	Good match Average unemployment (males) Good premiums
Medicine			Strong match Low unemployment High premiums
Nursing	Good match Average unemployment Negative premium	Strong match Low unemployment Negative premium	Strong match Low unemployment Negative premium
Other health	Moderate match Higher unemployment Negative premium	Good match Lower unemployment Negative premium	Good match Lower unemployment Moderate premiums
Accountancy			Good match Average unemployment Moderate premiums
Finance and sales		Poor match Average unemployment Good premiums	Poor match Higher unemployment Moderate premiums
Human and welfare studies and services		Good match Higher unemployment Negative premium	Good match Higher unemployment Negative premium
Behavioural science			Limited match Average unemployment No premium
Law			Strong match Low unemployment Good premiums
Food and hospitality	Good match Average unemployment Negative premium		

The major conclusion of this analysis is that there are a limited number of areas where there is a clear case that increasing the number of people attaining qualifications would make a definite contribution to addressing skill shortages. These areas are:

- Engineering (all levels)
- Architecture (diploma)
- Building (certificate and diploma)
- Medicine (bachelors and above)
- Other health (bachelors and above)
- Law (bachelors and above).

There are a few others areas where increased numbers of people attaining qualifications may contribute to reducing skill shortages. However, in these areas, the quality and relevance of provision may also be important to address, as well as the conditions of work in some areas. These areas are:

- Information technology (bachelors and above)
- Architecture (bachelors and above)
- Building (bachelors and above)
- Nursing (diploma and bachelors)
- Other health (bachelors)
- Accountancy.

In the remaining areas, increasing the number of people attaining qualifications is unlikely to make a particular contribution to easing skill shortages, unless there are also improvements in attractiveness and conditions of employment.

The main underlying drivers for demand for increased numbers of people with advanced qualifications have been the boom in construction, increased use of technology and increasing demand for health services.

The data used in this analysis reflects the situation as at March 2006, just after the peak of a construction industry cycle (see Earle, 2008, figure 2.1). Five out of the ten areas listed above are strongly related to the construction industry. Law is also indirectly influenced, in the areas of property conveyancing and resource consents. Therefore, the data is likely to overestimate the current demand in these areas.

Recent figures show that the demand for labour in the building industry has flattened out, well below the peak of 2005 (NZIER, 2008a). The housing market boom has ended, with domestic building consents decreasing and sales dropping. Firms are indicating an intention to reduce investment in buildings and plant and machinery. However, commercial building consents have continued to increase, so there may be an increase in commercial building in the near future, accompanied by further growth in infrastructure investment, particularly roading (NZIER, 2008b).

The key issue for the building- and construction-related areas will be to ensure that there is sufficient supply of new graduates to meet the long-term demands of the industry and deliver the new skills required as the technology involved evolves and develops.

It should be noted that the education area was not examined in this report due to limitations on the availability of census data, at the level required to examine this field of study. The first report highlighted shortages of early childhood teachers and science, mathematics and technology secondary teachers. It is likely that these are both areas where increased supply of graduates may help.

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