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TE TĀHUHU O TE MĀTAURANGA

# Qualification level match and mismatch in New Zealand

*Analysis from the Survey of Adult Skills*



Beyond tertiary study

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# Qualification level match and mismatch in New Zealand

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# SUMMARY

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## KEY FINDINGS

New Zealand has one of the highest rates of qualification level mismatch in the OECD. This report explores the nature of that mismatch.

People gain qualifications for many reasons, not just to get a job. Employers also hire workers for different reasons, not just for their qualifications. So, there is always going to be some qualification level mismatch. However, high rates of mismatch raise concerns about possible negative effects on workers and employers, and the economy. People may not get the full value from their education, or employers may not get the best skilled people for jobs.

This report uses data from the Survey of Adult Skills. The Survey provides a measure of workers' views of the usual qualification level currently needed to get their jobs, which can then be compared with their actual qualification level. Mismatch occurs when these are different.

Comparing the survey responses with occupational skill measures suggests that the workers' views of the qualification levels needed to get their jobs may be lower, on average, than what employers think is needed for the job, particularly for jobs needing qualifications below bachelors level.

This report finds that mismatch was related to a number of characteristics of workers and their jobs. Younger people were more likely to be overqualified, and older people were more likely to be underqualified. Recent immigrants were less likely to be underqualified. Mismatch was also more prevalent in part-time jobs, in casual work and in smaller firms. People in jobs they were underqualified for generally had higher skills than people with the same qualification level working in matched jobs. No, or very little, relationship was found between qualification level mismatch and gender, ethnicity or where people lived.

Mismatched workers were found across all worker and job groups. Differences between workers and their jobs only explained some of the variation in who was over- or underqualified.

A major contributor to the overall rate of mismatch was the difference in the number of people with each qualification level, and the number of jobs needing those qualification levels to enter. In particular, there were more people with Level 4 to 7 non-degree qualifications than jobs that needed this qualification level to enter.

The data doesn't support the proposal that mismatch was mostly driven by too many people with bachelors degrees and above. People with bachelors degrees and above were more likely to be in a job that matched their qualification level.

Workers got a wage benefit from working in jobs they were underqualified for, and a wage penalty from working in jobs they were overqualified for. However, for jobs that needed the same qualification level to enter, there was no differences in wages between over- and underqualified or matched workers. This suggests that pay is more related to the qualification level needed to get the job, than the qualifications of the people working in the job.

The high rate of overqualification, compared with underqualification, in New Zealand can be beneficial from an employer's perspective, but a cost from a worker's perspective. Employers are getting people with higher skills and potentially higher job performance for the same wages, while overqualified workers have less job satisfaction and are paid lower wages than others with the same qualification level.

When the results of the Survey of Adult Skills were released in 2016, a key finding was that New Zealand had the highest rate of qualification level mismatch among participating countries (Ministry of Education and Ministry of Business Innovation and Employment, 2016).

The Survey asked respondents to identify the usual qualification level someone would currently need to get the type of job they were doing. This was compared with the level of the qualification held by the respondent.

The Survey showed that 40% of people aged 16 to 65 in employment held a qualification that they thought was higher than needed to get their type of job (overqualified), 14% held a qualification that they thought was lower than needed to get their type of job (underqualified) and 47% had a qualification at the same level as needed to get their type of job.<sup>1</sup>

A high rate of mismatch raises concern about the negative impacts on both workers and employers. It may mean that people are not getting the full value from their education, or employers are not getting the best skilled people for jobs. Some mismatch is inevitable as a result of decisions made by both workers and employers. People gain qualifications for many reasons, not just to get a job. Employers also hire workers for different reasons, not just for their qualifications. Mismatch may also be related to transitions into the labour market, for example, by young people, or reflect differences in skills between people with the same qualification level. It can also occur as occupational entry requirements change over time, and established workers' qualifications become out of line with the requirements for new applicants.

This report looks into who experienced qualification level mismatch in New Zealand, what kinds of jobs they were in, how mismatch varies by qualification level and how it relates to skills and wages.

The mismatch measure used in this report is based on the workers' view of the qualification level currently needed to get their type of job. Comparing the survey responses with occupational skill measures (see Appendix 1) suggests that this may be lower than the qualification level employers think is needed, particularly for jobs needing qualifications below bachelors level.

Table 1 below shows how over- and underqualification can be looked at in respect to the qualifications held by the person and to the qualifications needed to get the job. For example, looking across the row, at jobs that need Level 4 to 7 non-degree qualifications, people in these jobs with bachelors and above qualifications are overqualified. However, looking, down the column, at people with Level 4 to 7 non-degree qualifications, they are under qualified if they are working in jobs that need bachelors qualifications and above. This distinction is important to keep in mind when reading the findings that follow.

---

<sup>1</sup> These proportions depend on how different levels of qualifications are grouped and the number of groupings that are used. These numbers will differ from other published numbers.

**Table 1**  
Categories of over- and underqualification

		Qualification level held by the person				
		Lower secondary or below	Upper secondary	Level 4-7 non-degree	Bachelors	Postgraduate
Qualification level needed to get the job	Lower secondary or below	Matched	Over	Over	Over	Over
	Upper secondary	Under	Matched	Over	Over	Over
	Level 4-7 non-degree	Under	Under	Matched	Over	Over
	Bachelors	Under	Under	Under	Matched	Over
	Postgraduate	Under	Under	Under	Under	Matched

## Mismatch was related to age, work experience and job hours

Overqualified workers were more likely to be younger and/or have less work experience. These people may need to build up experience in the workforce before they can attain jobs that are matched to their qualifications. While the rates of overqualification were higher in younger and/or less experienced workers, the majority of overqualified workers were aged 25 and over or had 10 or more years work experience.

Overqualified workers were also more likely to work part-time, in smaller-sized firms and/or on casual contracts. However, the majority of overqualified workers worked more than 20 hours a week and/or in permanent employment. Also, a substantial proportion of overqualified workers worked in larger firms.

Underqualified workers were more likely to be older and/or have more years of work experience. Older workers (aged 45-65) made up over half of underqualified workers, and those with 30 years or more work experience made up 40%. These people may be able to draw on their experience in lieu of higher level qualifications. Also, qualification entry requirement may have been lower when they started their job. Underqualified workers were also more likely to be working longer hours, in larger firms and/or in permanent contracts.

No difference was found between men and women in the rate of over- and underqualification. Nor were there any differences by ethnic group, with the exception that Asians were less likely to be underqualified. This difference can be explained by the higher proportion of recent immigrants in the Asian population. Recent immigrants are less likely to be underqualified, but no more likely to be overqualified than people who have been in New Zealand for longer.

No relationship was found between mismatch and the population size or density of the area in which people live. There was very little difference in rates by regions or whether people were living in rural or urban areas. This suggests that qualification mismatch rates are not related to the size of the job market where people live.

The data suggests that people who were overqualified may have found their work slightly easier to do than those who were matched. These differences were not large. They may also have found their work slightly less satisfying.

On the other hand, people who were underqualified may have found their work slightly more challenging to do than those who were matched. At the same time, underqualified people had a slightly higher rate of job satisfaction.

## More people with Level 4 to 7 non-degree qualifications than jobs needing this qualification level

A major factor in the rate of qualification level mismatch was the difference between how many people held various levels of qualifications and how many jobs needed those levels of qualifications for entry.

More than a third of jobs needed no or very low qualifications for entry, but only 19% of people in employment had no or very low qualifications. This means that nearly half of these jobs were filled by people with higher-level qualifications.

One in four workers had a Level 4 to 7 non-degree qualification as their highest qualification, but only one in seven jobs needed this qualification level for entry.

Overqualified workers were more likely to have school-level or Level 4 to 7 non-degree qualifications. They were concentrated in jobs that needed no qualification or school-level qualifications only to enter.

People who were underqualified were more likely to have no or school-level qualifications. They were spread across jobs requiring school-level up to bachelors-level qualifications.

The analysis of mismatch using occupational skill levels found less mismatch in qualifications below degree-level than using the self-reported measures (see Appendix 1). This suggests that employers may estimate the qualifications needed for these jobs at a higher level than workers do.

The data does not support the proposal that mismatch was largely driven by too many people having bachelors degrees. People with bachelors degrees, and jobs requiring bachelors degrees, had the highest rates of match. This was also the case using the occupation skill measures.

Some variation in mismatch was found by field of study. People with Level 4 to 7 qualifications in society and culture were more likely to be overqualified, and those with Level 4 to 7 qualifications in education, health or science were more likely to be underqualified. People with bachelors degrees in agriculture were very likely to be overqualified. This may reflect that many roles and jobs in agriculture have no specific qualification entry requirements. Those with bachelors degrees in education and health were most likely to be matched. These areas have regulated entry qualifications.

## Mismatch was also related to the variation in literacy and numeracy skills across people with the same qualification level

Qualification level is an approximate indicator of skill levels. People with the same qualification level have different levels of literacy and numeracy skills. Comparing people with the same qualification level:

- Workers who were **overqualified** for their job had similar literacy and numeracy skill levels to those who were matched to their job. The exception was for people with bachelors degrees. Those people who worked in jobs needing a lower qualification had lower skills than those working in jobs requiring a degree.



- Workers who were **underqualified** for their job had higher literacy and numeracy skills than those with the same qualification level who were matched to their job. So, their higher skills may have enabled them to get a job that they didn't have the usual entry qualification level for.

Comparing people working in jobs that needed the same qualification level to enter:

- Workers who were **overqualified** had higher literacy and numeracy skills than those whose qualification matched the job entry requirements. So these people brought additional skills to the job.
- Workers who were **underqualified** had lower literacy and numeracy skills than those whose qualification matched the job entry requirements. So even though they had higher skills than others with the same qualification level, their skills were not as high as their matched colleagues.

### Differences between people and jobs only explained a small part of mismatch

Regression modelling showed that the combination of qualification level and field of study, observed individual characteristics, employment characteristics and literacy or numeracy skills accounted for about a quarter of the variation in match and mismatch. So, while these factors are important, they only capture some of the reasons that people are working in jobs that their qualification level is not matched to.

This points to mismatch being related to more than just effects of moving in and out of the labour market or the types of qualifications and employment. It suggests that there are other factors. The difference between the number of people with qualifications at each level and the number of jobs that need these levels of qualifications for entry is likely to be an important contributor. The regression models don't provide a measure of how much this impacts on the amount of mismatch.

### Mismatch affected earnings

Over- and underqualification affected how much people earn compared to others with the same qualification level.

Differences in earnings were only seen when comparing people with the same qualification level who worked in jobs that had higher or lower qualification entry requirements. Workers who were overqualified for their job generally earned less than people with the same qualification level working in a job that matched their qualification level. Workers who were underqualified for their job generally earned more than people with the same qualification level. These differences remained after controlling for differences in work experience, skills and other factors.

Comparing people working in jobs that needed the same qualification level for entry, there was no difference in earnings by whether workers were overqualified, underqualified or matched.

This suggests that individuals benefit from working in a job that usually needs a higher qualification to enter than they hold, and are disadvantaged if they work in a job that needs a lower qualification. However, earnings largely reflect the qualification needed to get the job rather than the qualification level held by the person in the job.

## Conclusion

The information in this report suggests that the higher rate of overqualification, compared with underqualification, in New Zealand can be beneficial from an employer's perspective, but a cost from a worker's perspective. Employers are getting people with potentially higher skills and higher job performance for the same wages, while workers are in jobs that may be less satisfying and are being paid lower wages than others with the same qualification level. Employers may also have a higher expectation of the qualification level needed for a job than what workers view as the level needed to get the job.

A major factor in explaining the high rate of mismatch is the larger number of people with Level 4 to 7 non-degree qualifications than jobs that need this qualification level for entry. The data doesn't support the idea that there are too many people with bachelors degrees or higher.

Factors related to the transition into the labour market, and the types of jobs people have, only explain some of the variation in match and mismatch. There is no evidence that rates of mismatch are affected by the size of the local job market.

The data shows that earnings are more strongly related to the qualification level required to get the job than the qualification level held by the worker. For workers in jobs with the same qualification entry requirements, there is no consistent relationship between pay and whether they have a higher- or lower-level qualification.

# 1 INTRODUCTION

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## New Zealand has a high rate of qualification level mismatch

When the results of the Survey of Adults Skills<sup>2</sup> were released in 2016, a key finding was that New Zealand had the highest rate of qualification level mismatch among participating countries (Ministry of Education and Ministry of Business Innovation and Employment, 2016).

The Survey asked respondents, if they applied for their job today, what would be the usual qualification level, if any, that someone would need to get that type of job? This provided new information of how workers understood the qualification entry requirements of their jobs. The responses to this question were compared with the level of the qualifications held by the respondents.

The Survey showed that 40% of people in employment, aged 16 to 65, thought they had a qualification that was higher than currently needed to get their type of job (overqualified), 14% thought they had a qualification that was lower (underqualified) and 47% thought they had a qualification at the same level as currently needed to get their type of job (matched).<sup>3</sup>

## Policy interest in the consequences of qualification level mismatch

A high rate of mismatch between qualification levels of workers and the qualification needed to get their jobs raises concern about negative impacts for workers, employers and the economy. Where people have higher qualifications than needed to get their type of job, they may not be getting the most value from their investment in education, they may be earning less than they could in other jobs, taking longer to pay off their student debt and they may not have as much job satisfaction. People with lower qualifications than currently needed to get their type of job may not have all of the knowledge and skills needed to fully undertake the job. This can result in costs to the employer. There may be overall costs to the economy of having people working in jobs they are not best suited to.

Some mismatch is inevitable and may be desirable. People undertake education for a variety of reasons, of which future employment is only one. This means that individuals may or may not see the mismatch between their qualification and job as being problematic. Workers may decide to work in jobs that have greater interest to them or are more conveniently located. Employers may recognise experience and other attributes in addition to formal qualifications. It may be an indicator of the flexibility of workers to take jobs that don't perfectly match their qualifications and of employers to employ such staff. Workers and employers can also have different views about the qualification level needed for the job.

Mismatch can also be related to transitions into the labour market. For example, new graduates may start out in jobs that need lower entry qualifications in order to build up experience. The same may apply to new immigrants, in terms of building up experience with local employers.

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<sup>2</sup> The Survey of Adult Skills measures the skills of New Zealand adults in literacy, numeracy and problem solving in technology rich environments. It is part of the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). The Survey was undertaken in 2014 with a representative sample of New Zealand households. In total, 6,177 people were surveyed. It was conducted in English and included an extensive background questionnaire covering education, employment, and the use of skills at work and in everyday life. The respondents were then tested on their literacy, numeracy and problem-solving skills (Ministry of Education and Ministry of Business Innovation and Employment, 2016b).

<sup>3</sup> These proportions depend on the number of groupings of levels of qualifications used and may differ from other published numbers. The data in this report excludes people in self-employment (see Appendix 2 for further details).

Mismatch may also reflect differences in the skill levels of workers. While qualifications to a large extent show what you know, skills reflect what you can do. Skill levels can vary among people with the same qualification level. Those with lower skills may end up working in jobs that also need a lower level qualification. The Survey includes direct assessment of literacy, numeracy and problem solving skills. This means we can look at the skills differences between matched and mismatched workers with the same qualification level.

Mismatch may also be a result of the structure of the labour market. In particular, where there are fewer job opportunities, people may take employment below their qualification level. This would show up in differences between main centres and provincial or rural areas in the country.

## This report looks in more detail at who is mismatched

This report looks into who experienced mismatch, what kinds of jobs they were in, how mismatch varied by qualification level and field of study, and how it related to skills and wages. The questions that this report addresses are:

- What were the differences in the characteristics of workers who are matched or mismatched? For example, by age, gender, ethnic group, work experience and years spent in New Zealand.
- What were the differences in the characteristics of the jobs of people who are matched or mismatched? For example, by hours of work, contract type, firm size and location.
- How did match and mismatch vary by qualification level and field of study?
- How did literacy and numeracy skills vary across people who are matched or mismatched?
- How did match or mismatch impact on earnings?

As discussed above, the measure used in this report describes what workers believe is the qualification level currently needed to get their type of job. Their employers may have a different idea of the level. There is no directly equivalent information collected from employers. However, the skill levels associated to occupations provides a proxy for employers' views of qualification needed for jobs. Appendix 1 provides a short analysis of mismatch using the occupational skill levels and compares the results with those in the main report. The findings are cross referenced in the main report.

This report doesn't look at why New Zealand's rate of mismatch is higher than in other countries'. It only looks at people who are in employment and doesn't explore the wider issue of underutilisation covering unemployment and underemployment. The data only captures mismatch at a point in time and doesn't provide information about change over time, including interactions with economic cycles.

## There are different types of mismatch

The Survey provides information on three types of qualification and skill mismatch:

- **qualification levels:** when a worker's qualification level is higher or lower than the qualification level needed for their job

- **field of study of qualification:** when a worker's field of study of their qualification is not related to the field of study that is most relevant to their job, as defined by an agreed coding of fields of study and occupations
- **literacy or numeracy skills:** when a worker has higher or lower literacy or numeracy skills than workers in similar jobs who appear to have the right level of skills for the job.

(Organisation for Economic Cooperation and Development, 2016)

Subsequent investigation of these measures, as specified in the Survey, revealed that there are significant methodological issues with the field of study mismatch measure, and the skills mismatch measure is of questionable validity (Earle, Generosa, & Satherley, 2018). Choi, Guio and Escardibul (2019) also found that there is a large range of possible skill mismatch measures, which provide inconsistent results. This report focuses on the qualification level mismatch measure, which is reasonably valid.

## Measuring qualification level mismatch

There are different approaches to measuring qualification level mismatch (Adalet McGowan & Andrews, 2017; Choi et al., 2019; Desjardins & Rubenson, 2011; Flisi, Goglio, Meroni, Rodrigues, & Vera-Toscano, 2017; Quintini, 2011). Each of these approaches will produce different results using the same data. These differences in results reflects the differences in how the measures are constructed. There is no consensus as to whether one approach is preferable to the others.

Normative approaches use expert opinion to determine the level of education needed for each occupation. Statistical approaches look at the qualifications that are most commonly held in each occupation (the modal qualification).

These occupation-based measures have limitations. They group people and jobs within occupations and do not allow for the variation that may exist across some occupations. Expert opinion is reliant on the quality of information available about jobs. The modal approach only observes the distribution of qualifications of workers currently in jobs, and ignores the actual qualifications needed for those jobs.

An alternative approach is to ask workers directly about the qualification needed for their job. This provides a person and job-specific measure of mismatch. It relies on workers having a reasonable idea of the qualification needed for their type of job. It can be vulnerable to variation in reporting between people and the extent to which workers know what qualifications are needed for their jobs, and can be biased by the wording of the questions.

The Survey asked questions about the level of qualification held by individuals and the usual level of the qualification currently needed to get their type of job (see the Appendix for full wording). The analysis in this report suggests that, in general, respondents had a reasonably accurate idea about this. For example, hourly earnings were more strongly related to the qualification level needed to get the job than the qualification level held by the respondent.<sup>4</sup>

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<sup>4</sup> The correlation coefficient of qualifications required for the job to hourly earnings was 0.57, compared with 0.42 for the qualification held by the respondent. This is based on the R<sup>2</sup> values for log-linear models of hourly earnings to qualification level.

Using the Survey questions, we can group people into:

- **underqualified:** their qualification level is lower than usually needed to get their current type of job
- **matched:** their qualification level is the same as usually needed to get their current type of job
- **overqualified:** their qualification level is higher than usually needed to get their current type of job.

Under- and overqualification can be looked at in respect to the qualification level held by the person, as well as to the usual qualification level currently needed to get their job. For example, looking at jobs that need Level 4 to 7 non-degree qualifications, people in these jobs with bachelors and above qualifications are over qualified. However, looking at people with Level 4 to 7 non-degree qualifications, they are under qualified if they are working in jobs that needed bachelors qualifications and above. This is illustrated in Table 1 above. This distinction is important to keep in mind when reading this report.

There is no directly equivalent measure of employers' views of the qualifications needed for jobs. The Australia and New Zealand Standard Classification of Occupations (ANZSCO) includes a skill level for each occupation. This uses a normative approach and is assessed by expert groups, based on the qualification level typically needed for the occupation, as well as previous experience and the amount of on-job training. The information sources for this assessment largely come from employers (Australian Bureau of Statistics, 2009). This measure provides the nearest available measure of employer perspectives of qualification level requirements. An important limitation of the occupational skill levels is that they are set the same across Australia and New Zealand and may not reflect different requirements in New Zealand.

The ANZSCO skill levels can be mapped to broad qualification levels and treated in a similar way as the Survey responses. Appendix 1 provides a short analysis of the mismatch using the skill levels. The findings are referenced throughout the report to provide a comparison with key findings from the Survey.

## Showing the uncertainty of the results

Any survey based on a sample of the population will have a degree of uncertainty in the results. Differences in the results can be due to who was selected for the survey, particularly where there is a small number of people in a particular group. This is known as the sample error.

The graphs in this report include error bars that show the range of uncertainty for each result. Where there is a gap between the error bars on two results, there is at least a 95% chance that this is a real difference. That is, the difference would be similar in the total population and is unlikely to be due to who was selected for the Survey. This approach lets readers draw valid statistical conclusions directly from the graphs.<sup>5</sup>

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<sup>5</sup> The error bars are set at the 84% confidence interval. Where these bars do not overlap, the p-value for the difference between the two results is 0.05 or lower. This follows MacGregor-Fors and Payton (2013).

## 2 HOW DO INDIVIDUAL CHARACTERISTICS RELATE TO QUALIFICATION LEVEL MISMATCH?

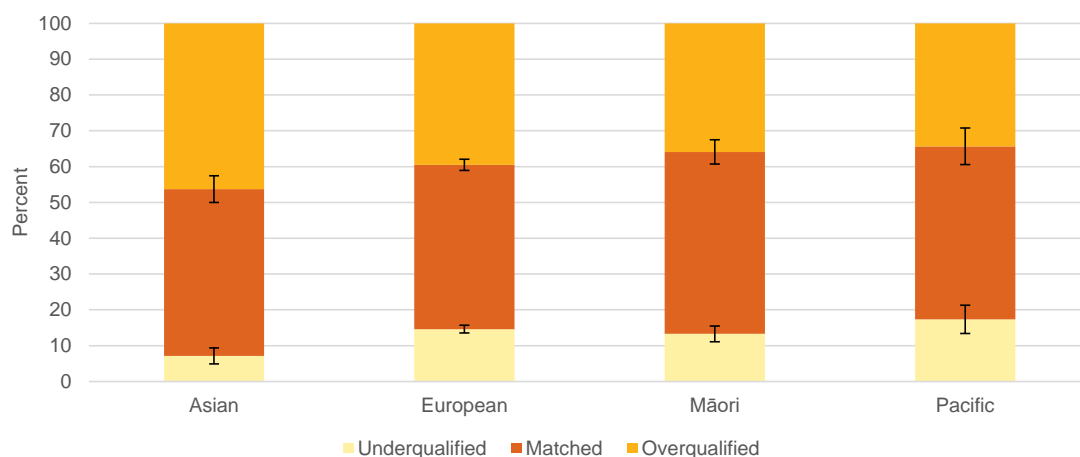
This section explores whether some groups of workers were more likely to be mismatched. For example, women may experience more mismatch than men, possibly as a result of having periods of time out of employment or discrimination by employers. Younger people and people with less work experience may have higher rates of mismatch. Similarly, recent immigrants may have greater mismatch if their overseas qualification are less recognised.

### No difference in rates mismatch rates by gender

There was no overall difference in qualification level match and mismatch rates between men and women. This suggests that differences in men's and women's labour force participation do not affect their rates of qualification match or mismatch.

### Few differences by ethnic group

The rates of qualification level match and mismatch were similar for European, Māori and Pacific. Asians were more likely than Europeans to be overqualified and less likely to be underqualified. Subsequent modelling indicates that the results for Asians are related to a higher proportion being more recent immigrants (see chapter 6).



**Figure 1**

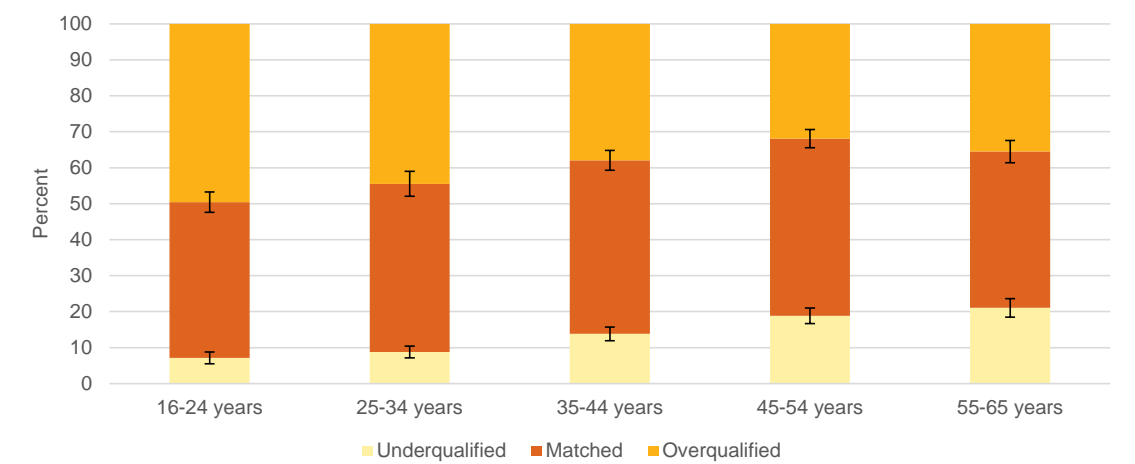
Proportion of people in employment who are underqualified, matched or overqualified by ethnic group

### Younger workers more likely to be overqualified

People aged 35 to 54 were most likely to be matched to the qualification level needed to get their type of job (49%) and those aged 16 to 24 or 55 to 65 were least likely to be matched (43%).

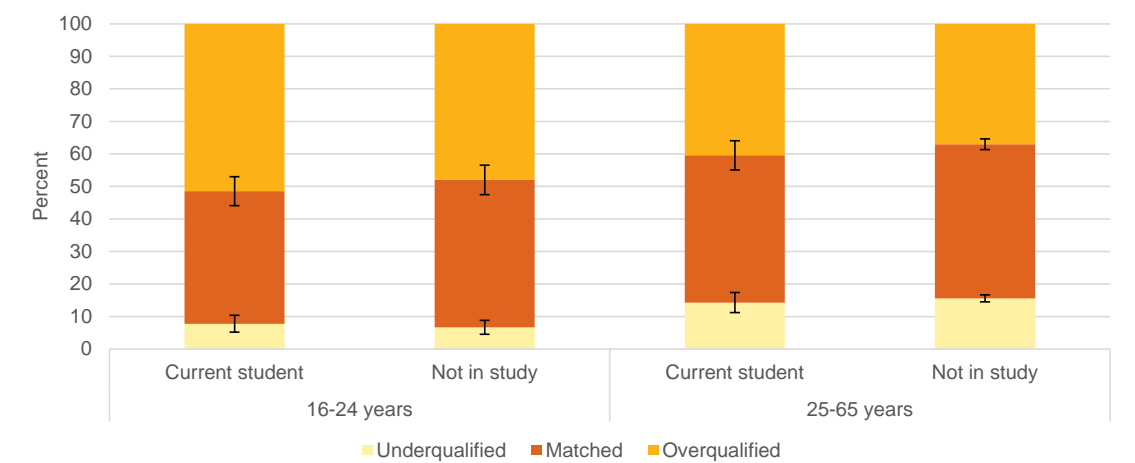
Young workers (aged 16 to 24) were more likely to be overqualified for their job than older workers (aged 45 to 54). This suggests that young people may be working in jobs they are overqualified for to build experience towards a better matched job. Workers aged 55 to 65 were slightly more likely to be overqualified for their jobs than workers aged 45 to 54.

Older workers (aged 45 to 65) were more likely to be underqualified for their jobs than younger workers (aged 16 to 35). This suggests that their experience was counted where they don't hold the qualification level currently needed to get their job. It may also reflect entry requirements for jobs increasing over time. Younger workers (aged under 35) were much less likely to be underqualified. This suggests that their qualification level is more important for getting jobs, as they can't signal their knowledge and skills through experience.



**Figure 2**  
Proportion of people in employment who are underqualified, matched or overqualified by age group

One reason that younger workers are more likely to be overqualified could be that more of them are working in low-skilled jobs while studying. Figure 3 below shows that being in study only makes a very small difference to rates of job match and mismatch. These results are based on the highest qualification that students have gained prior to study, rather than the qualification they are studying for. They are no more likely to be overqualified for their jobs than other people who are not studying with the same level of prior qualification.



**Figure 3**  
Proportion of people in employment who are underqualified, matched or overqualified by age group and study status

### People with fewer years of work experience more likely to be overqualified

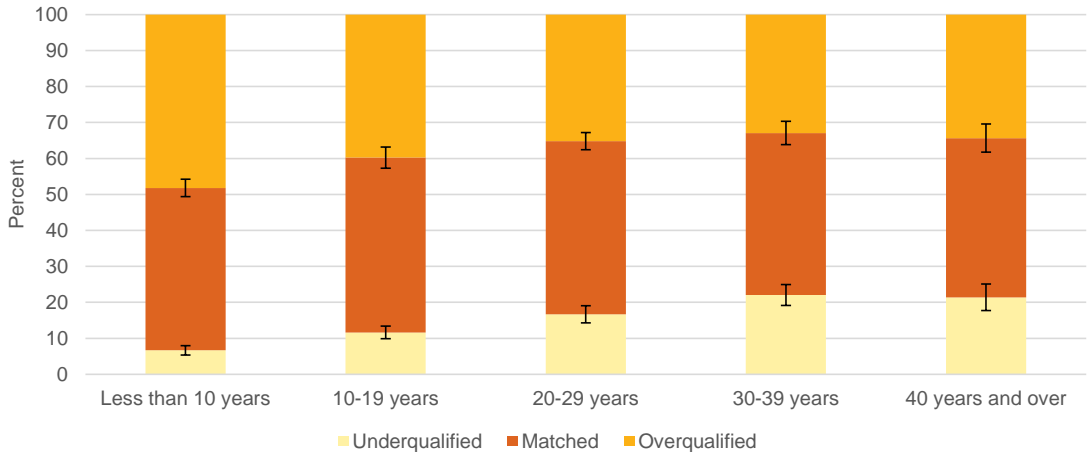
The number of years people have spent in employment provides a more accurate measure of work experience than age, in that it adjusts for breaks from work. Longer periods of time in



employment are associated with lower rates of overqualification and higher rates of underqualification.

People who had spent 30 or more years in employment were more likely to be underqualified for their jobs than people who have spent less than 10 years. As with age, this suggests that their experience may be counted where they don't hold the qualification level currently needed to get their job.

More experienced workers are less likely to be overqualified than less experienced workers. The proportions of under- and overqualification were the same after 30 years of work experience.

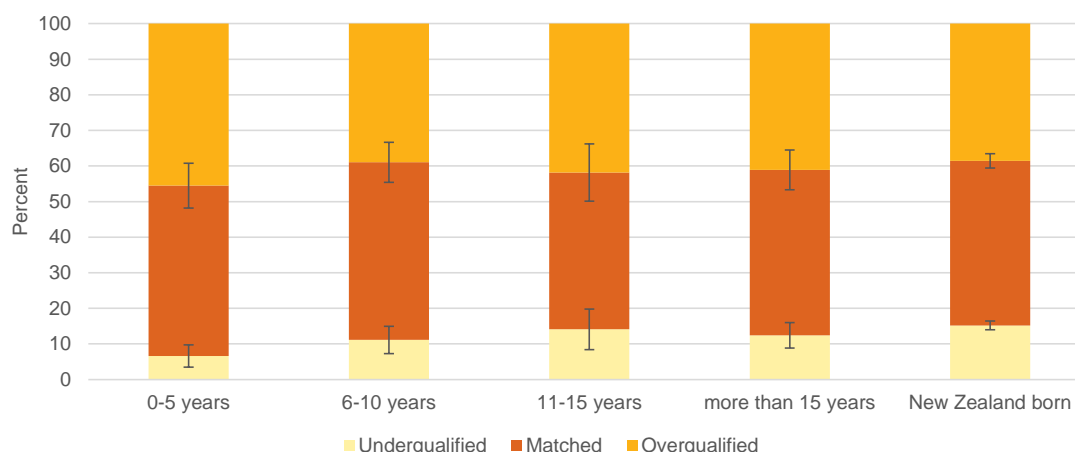


**Figure 4**  
Proportion of people in employment who are underqualified, matched or overqualified by years of work experience

### Recent immigrants less likely to be underqualified

People who immigrated to New Zealand less than five years before the Survey were less likely to be underqualified for their jobs than people who had been in New Zealand for more than 15 years or had been born in New Zealand. This suggests that they are more reliant on their qualification level to signal their skills, and any work experience prior to arriving in New Zealand is less recognised.

There were no statistically significant differences by immigration status in the proportion of respondents who were matched or overqualified. The proportion of very recent immigrants (less than five years) who were overqualified is very close to being statistically significantly different (at 95% confidence) from the proportion for people who are New Zealand born.



**Figure 5**

Proportion of people in employment who are underqualified, matched or overqualified by years in New Zealand

These findings support the idea that immigrants may face a labour-market adjustment period when arriving in New Zealand and may take some time to find jobs that are matched to their qualifications. However, it suggests that, on average, the adjustment period is less than five years. This may differ for immigrants from different countries and with different cultural and language backgrounds. People whose first language was not English were more likely to be overqualified than those who had English as a first language. As with recent immigrants, this difference was not quite statistically significant.

## Who were mismatched workers?

The previous sections have looked at groups of people and what proportion of each group were matched or mismatched. For example, what proportion of younger people were overqualified. Because the size of each group varies, a group could have a very high rate of mismatch but only make up a small proportion of all mismatched workers.

This section looks at all people who were matched or mismatched and what proportion of each were in the different groups. It tests whether people who were overqualified or underqualified were predominantly in one group, such as younger age groups, than another, such as older age groups.

In Table 2 below each column shows the proportions of matched and mismatched workers by age, work experience and years in New Zealand. These are the characteristics that showed differences in rates of mismatch.

While younger people made up a larger proportion of overqualified workers than in the total workforce, 77% of overqualified workers were aged 25 and over, and a third were aged 45 to 65. There is a similar pattern with work experience, with 65% of overqualified workers having 10 years or more work experience, and 22% having 30 or more years' experience. The distribution of overqualified workers by immigration status was very similar to the total working population.

Older workers (aged 45 to 65 years) made up more than half of underqualified workers and less than 10% of underqualified workers were aged 16 to 24. Similarly, 40% of underqualified workers had 30 or more years of work experience, and only 14% had less than 10 years' experience. The majority of overqualified workers were born in New Zealand and the proportion who were recent immigrants was lower than for the total working population.

**Table 2**

Distribution of people in employment who are underqualified, matched and overqualified by age, work experience and years in New Zealand

		<b>Underqualified %</b>	<b>Matched %</b>	<b>Overqualified %</b>	<b>Total %</b>
Age	16-24 years	9	17	23	18
	25-44 years	34	43	44	42
	45-65 years	56	40	33	40
	Total	100	100	100	100
Work experience	Less than 10 years	14	28	35	29
	10-29 years	45	47	43	45
	30 or more years	40	25	22	26
	Total	100	100	100	100
Years in NZ	Up to 10 years	9	15	15	14
	10 or more years (immigrant)	13	14	15	14
	New Zealand born	78	71	70	71
	Total	100	100	100	100

People whose qualification level matched that needed to get their job had a very similar distribution across these groupings as the total working population. This suggests that none of these characteristics has a relationship to working in a job where your qualification level is matched to your job. However, these do have a relationship to whether you are more likely to be either underqualified or overqualified. This is explored further in Chapter 6.

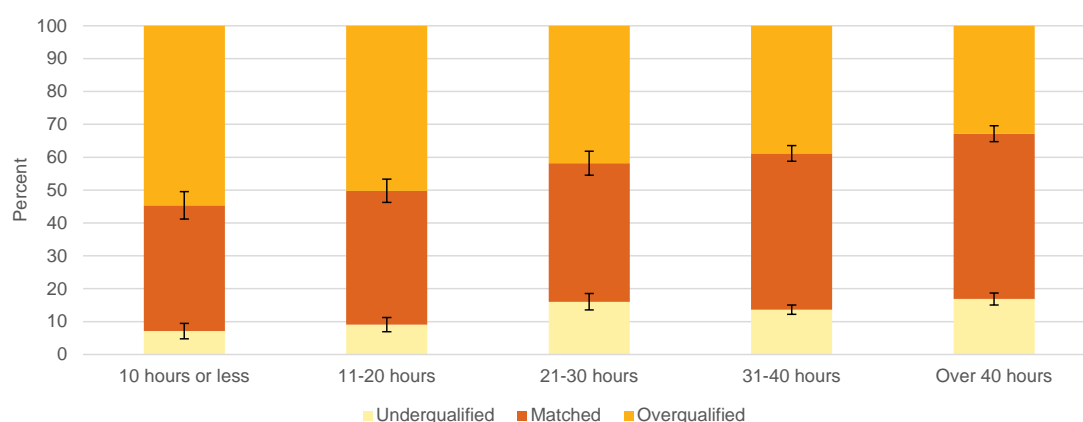
The analysis of mismatch using occupation skill levels (see Appendix 1) found there were very similar patterns of match and mismatch by individual characteristics. One exception was that according to the ANZSCO measure, males were more likely to be underqualified than females (31% compared with 26%).

### 3 HOW DO EMPLOYMENT CHARACTERISTICS RELATE TO QUALIFICATION LEVEL MISMATCH?

This section explores how much match and mismatch varies by the characteristics of employment. For example, is mismatch more prevalent in part-time work or in smaller-sized firms or for people living outside of main centres?

#### Part-time workers more likely to be overqualified

People who worked 10 hours or less per week were more likely to be overqualified for their job, and less likely to be underqualified. The rate of overqualification decreased with increased hours of work, while the rate of underqualification generally increased. People working full-time (30 hours or more) were more likely to be matched than those working part-time.

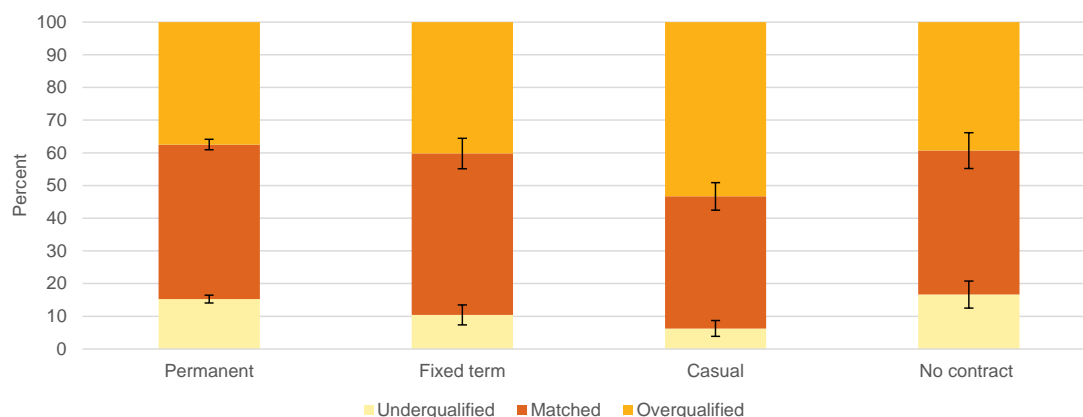


**Figure 6**

Proportion of people in employment who are underqualified, matched or overqualified by weekly hours of work

#### Casual workers more likely to be overqualified

People employed on casual contracts were more likely to be overqualified and less likely to be underqualified than other employees. The differences between other contract types were not statistically significant.

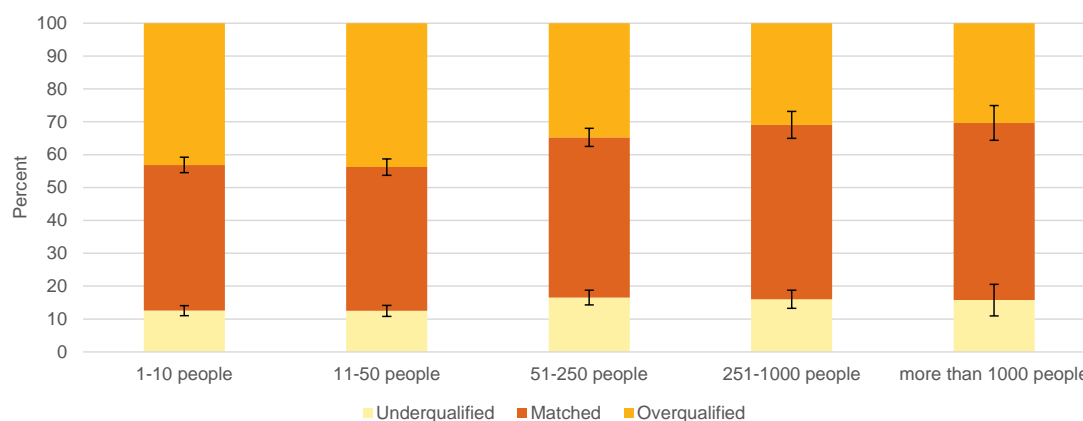


**Figure 7**

Proportion of people in employment who are underqualified, matched or overqualified by type of employment contract

## People working in smaller firms more likely to be overqualified

People who worked in smaller firms (up to 50 employees) were more likely to be overqualified, and slightly less likely to be underqualified, than people working in larger firms. The effect was not continuous across firm size. For firms with 50 or more staff there was no statistically significant difference in rates by the size of the firm. Similarly, there was no difference between very small firms, with up to 10 staff, and other small firms with up to 50 staff.



**Figure 8**

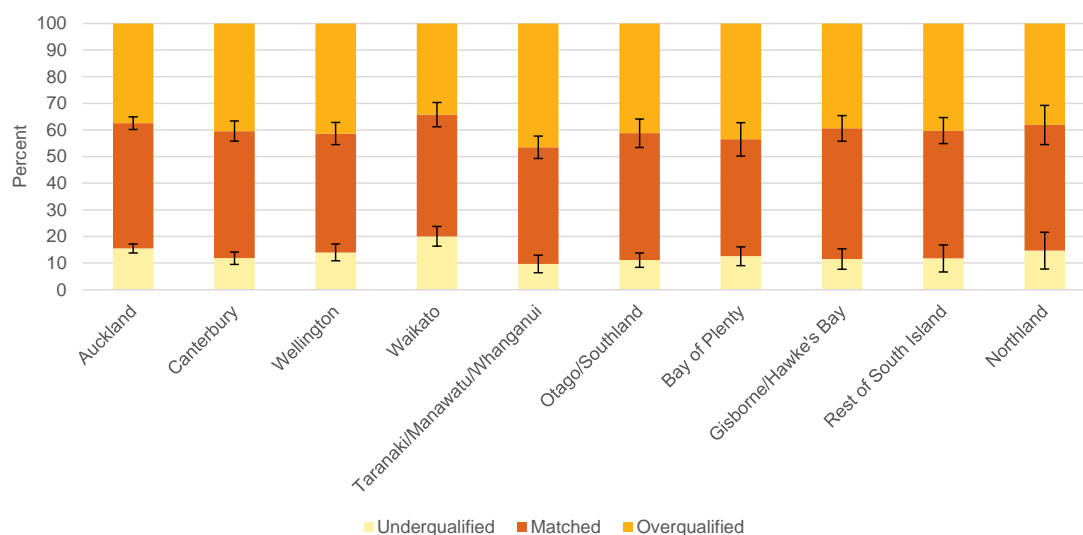
Proportion of people in employment who are underqualified, matched or overqualified by size of firm

## Where people live had almost no relationship to mismatch

One proposal for the high rate of mismatch in New Zealand has been that it is the result of the small size of the labour market, and a population that is spread out across the country. If this was a factor, we would expect to find differences in the rates of mismatch between large centres where there are more people and more jobs, particularly Auckland, and provincial and rural areas where there are fewer people and fewer jobs.

Very little evidence could be found that the location of where people lived<sup>6</sup> had a relationship to qualification level mismatch. The rates of match and mismatch were fairly consistent across regions, with only small differences. The rates of mismatch in Auckland were very similar to those in other parts of the country. The Taranaki/Manawatu/Whanganui regions had the highest rate of overqualification and lowest rate of underqualification. The Waikato region had the lowest rate of overqualification and highest rate of underqualification. Other differences between regions were not statistically significant.

<sup>6</sup> The Survey only collected information on where people lived and not where they worked. In most cases, people will live and work in the same region, although there is increasing commuting between the Waikato and Northland regions and Auckland. There is also commuting between rural and urban areas.



**Figure 9**

Proportion of people in employment who are underqualified, matched or overqualified by regional council

Note: Regions are sorted in descending order of number of 16- to 65-year-olds in employment.

Most regions have a mix of people living in urban and rural settings. We also looked at whether living in a rural or urban location had any relationship to mismatch and found very little difference between them.

## What kinds of employment were mismatched workers in?

This section looks at the proportions of matched and mismatched workers who are in each of the different types of employment discussed above. It looks at whether people who were over- or underqualified were predominantly in one group, such as part-time workers, than another, such as full-time workers.

In Table 3 below, each column shows the proportions of workers who were matched or mismatched by hours of work, type of employment contract and firm size. These are the characteristics that showed differences in rates of mismatch.

While part-time workers (up to 20 hours) made up a larger proportion of overqualified workers than in the total working proportion, the majority of overqualified workers were working in jobs that required at least 20 hours of work. Similarly, while they were less likely to be in jobs that required more than 40 hours a week of work, there was still nearly a third of workers working in these kinds of jobs.

Around 70% of all workers were in permanent employment contracts, regardless of match or mismatch status. While casual workers were more likely to be overqualified, they only made up 12% of all overqualified workers.

Nearly two-thirds of New Zealand workers are employed in smaller firms (up to 50 staff). The proportion of overqualified people was slightly higher than for total workers.

Underqualified workers were more concentrated in jobs that had longer working hours (more than 40 hours per week) than the total working population. They also had a higher proportion in permanent jobs, and in large firms.

Workers who were matched had similar hours of work as all workers, but had a slightly higher proportion working in larger firms than is the case for all workers. This suggests that hours of work and type of employment contract do not have a relationship to working in a job where your qualification level is matched to your job. However, they do have a relationship to whether you are more likely to be either over- or underqualified. This is explored further in Chapter 6.

**Table 3**

Distribution of people in employment who are underqualified, matched and overqualified by hours of work, employment contract and size of firm

		<b>Underqualified %</b>	<b>Matched %</b>	<b>Overqualified %</b>	<b>Total %</b>
Hours of work	Up to 20 hours	11	16	25	19
	20-40 hours	46	45	45	45
	Over 40 hours	43	38	29	35
	Total	100	100	100	100
Employment contract	Permanent	78	73	68	71
	Fixed-term	6	8	8	8
	Casual	4	8	12	9
	No contract	6	5	5	5
	Total	100	100	100	100
Firm size	Up to 50 people	56	59	68	62
	More than 50 people	44	41	31	37
	Total	100	100	100	100

The analysis of mismatch using occupation skill levels (see Appendix 1) found there were very similar patterns of match and mismatch by employment characteristics.

### Overqualified workers may perform slightly better in their work but had lower job satisfaction

The Survey also asked some questions on workers' perceptions of their job performance<sup>7</sup> and job satisfaction. These provide some insight to how match and mismatch relates to how well people think they can do their work, and their enjoyment of their jobs.

Around 90% of workers believed they had the skills to cope with more demanding duties than those they were required to perform in their current job. This proportion was slightly lower for people who were underqualified and slightly higher for people who were overqualified. The difference in rates between underqualified and overqualified workers was statistically significant.

Similarly, around 30% of workers thought they needed further training in order to cope well with their present duties. This proportion was slightly higher for people who were underqualified and slightly lower for people who were overqualified. This difference was also statistically significant.

<sup>7</sup> The job performance questions were asked in the Survey as a way of identifying people whose skills were well matched to their job. However, the questions did not perform as expected for this purpose. They still provide some insight into how well people think they can do their jobs. (Questions F\_Q07a and F\_Q07b)

**Table 4**

Proportions of people in employment who are underqualified, matched and overqualified by selected questions on job performance and satisfaction

	<b>Underqualified %</b>	<b>Matched %</b>	<b>Overqualified %</b>	<b>Total %</b>
Have skills to cope with more demanding duties	86	90	93	91
Need further training for current duties	35	32	27	30
Satisfied or extremely satisfied	85	81	76	79

These figures suggest that being over- or underqualified may only have a small impact, on average, on overall job performance. Underqualified people may bring other skills and experience to their job that compensate for their lower qualification. Overqualified people may not necessarily bring additional skills that are relevant or useable in the job.

People who were underqualified were somewhat more likely to be satisfied or extremely satisfied with their job, while those who were overqualified were somewhat less likely to be satisfied or extremely satisfied. These differences were statistically significant.

This suggests that any potential under-performance in the job by people who are underqualified is balanced by higher job satisfaction. On the other hand, any additional performance by people who are overqualified is also accompanied by lower job satisfaction.



## 4 HOW DOES MISMATCH VARY BY QUALIFICATION LEVEL AND FIELD OF STUDY?

This section explores how much match and mismatch varies by qualification level and field of study. For example, mismatch may be more prevalent for higher-level qualifications than lower-level qualification, or for people with qualifications in different fields.

### Differences by qualification level

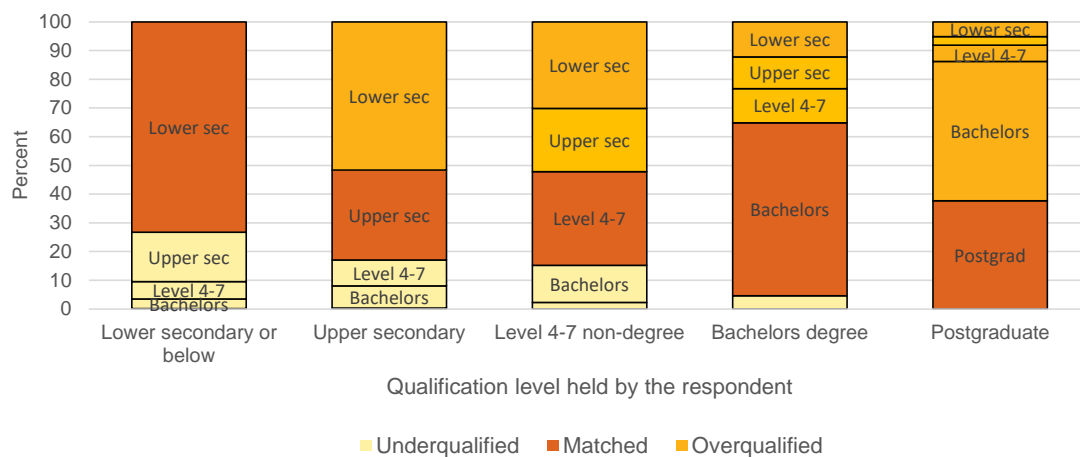
As discussed in the introduction (see page 10), match and mismatch by qualification level can be looked at with reference to:

- the qualification level **held by the respondent** and whether this is the same as the usual qualification level currently needed to get for the type of job they were in
- the usual qualification level currently **needed to get the type of job** and whether this is the same as the qualification level of the people in those jobs

These two approaches categorise workers in different ways, and provide different results due to the distribution of people by qualification level being different from the distribution of jobs by qualification requirement level.

### Two-thirds of overqualified workers held a school or Level 4 to 7 non-degree qualification

Figure 10 below shows match and mismatch by the qualification level held by the respondent. Each bar shows people who have the same qualification level. The bars are divided into the proportions in jobs by the qualification level needed to get their type of job.



**Figure 10**

Distribution of people in employment by highest qualification of respondent and the usual qualification level currently needed to get their job

People with upper secondary<sup>8</sup>, Level 4 to 7 non-degree and postgraduate qualifications were most likely to be working in a job they were overqualified for. People with bachelors degrees were least likely to be overqualified. Overqualified people with upper secondary through to bachelors

<sup>8</sup> Upper secondary covers Level 2 and 3 qualifications gained at school or post school.

degrees were spread evenly across the qualification levels of their jobs. Overqualified people with postgraduate qualifications were mostly working in jobs requiring a bachelors degree.

People with lower secondary or no qualifications were most likely to be working in a job that they were underqualified for. A few of them were working in jobs that needed bachelors degrees.

People with bachelors degrees were most likely to be working in jobs for which their qualification level was matched to the level needed to get the job.

Table 5 below shows that 64% of overqualified people had an upper secondary qualification or Level 4 to 7 non-degree qualification and 67% of underqualified people had no qualification or a school-level qualification.

**Table 5**

Distribution of underqualified, matched and overqualified people by highest qualification held

	<b>Underqualified</b> %	<b>Matched</b> %	<b>Overqualified</b> %	<b>Total</b> %
Lower secondary or below	36	30	NA	19
Upper secondary	31	17	33	25
Level 4-7 non-degree	26	17	31	24
Bachelors degree	7	28	19	21
Postgraduate	NA	9	17	11
Total	100	100	100	100

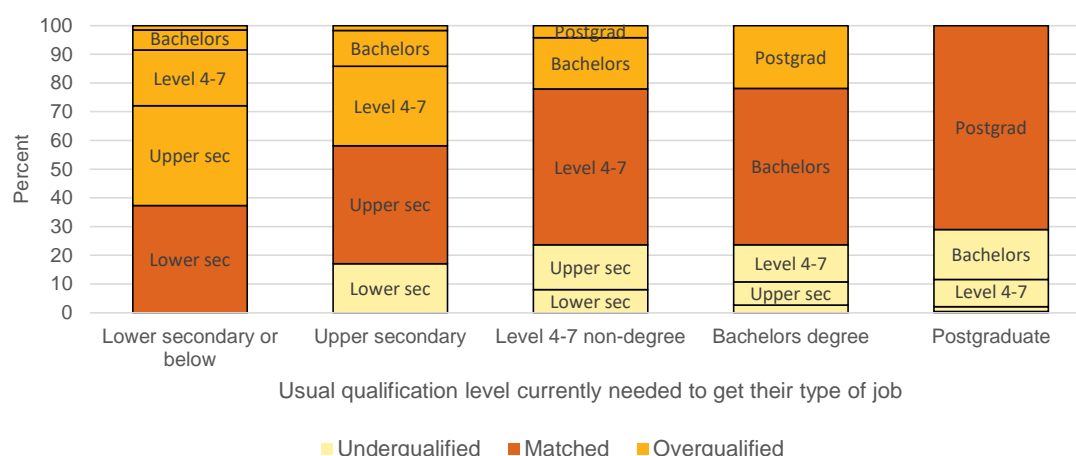
## Four out of five overqualified workers were working in jobs that needed no more than a school qualification

Figure 11 below shows match and mismatch by the usual qualification level currently needed to get the job. Each bar shows people in jobs that needed the same qualification level to get and is divided into the proportion of people that hold different levels of qualification.

Jobs needing a lower-secondary qualification or below were most likely to be filled by an overqualified person, followed by jobs that needed an upper-secondary qualification. These overqualified workers covered all higher levels of qualification.

The proportion of underqualified workers was fairly similar across job qualification levels. They generally held qualifications one or two levels below those needed to get the job.

Jobs requiring Level 4 to 7 non-degree qualifications and bachelors degrees were most likely to have workers who were matched by qualification level.



**Figure 11**  
Distribution of people in employment by the usual qualification level currently needed to get their job and highest qualification level of respondent

Table 6 below shows that 79% of people who were overqualified worked in jobs that needed no qualification or a school qualification only and 52% of people who were underqualified worked in jobs that needed a bachelors degree or higher.

**Table 6**  
Distribution of people in employment who are underqualified, matched and overqualified by the usual level qualification currently needed to get their type of job

	Underqualified %	Matched %	Overqualified %	Total %
Lower secondary or below	NA	30	59	37
Upper secondary	23	17	20	19
Level 4-7 non-degree	24	17	8	14
Bachelors degree	40	28	13	24
Postgraduate	12	9	NA	6
Total	100	100	100	100

Fewer jobs needed school and Level 4 to 7 non-degree qualifications than there were people with these qualifications in work

The match and mismatch patterns by respondents and job entry requirements varied because the distribution of people by highest qualification was different from the distribution of people by the qualification needed to get their job.

More than a third of jobs needed no qualification or a lower secondary school qualification to enter. However, there were only 19% of people in employment with qualifications below upper secondary. This means that almost half of these jobs needed to be filled by people with higher qualifications.

**Table 7**

Distribution of people in employment by highest qualification level held and the usual qualification level currently needed to get their type of the job

	Distribution		Ratio
	Qualification held by respondent %	Qualification needed to get the job %	
Lower secondary or below	19	37	0.51
Upper secondary	25	19	1.31
Level 4-7 non-degree	24	14	1.66
Bachelors degree	21	24	0.90
Postgraduate	11	6	1.88
Total	100	100	

A ratio below 1.00 indicates a shortage of people for jobs at that qualification level and a ratio above 1.00 indicates a surplus of people for jobs at that qualification level.

One in four people in employment had a Level 4 to 7 non-degree qualification as their highest qualification, but only one in seven jobs needed this qualification level to get the job. This means that people with Level 4 to 7 non-degree qualifications were more likely to be mismatched.

A third of people held a bachelors degree or postgraduate qualification and a third of jobs needed these levels of qualification. However, there was a higher proportion of people with postgraduate qualifications (11%) than jobs needing qualifications at this level to enter (6%).

The data does not support the proposal that mismatch is largely driven by an oversupply of people with bachelors degrees. The proportion of people with bachelors degrees was slightly lower than the proportion of jobs needing a bachelors degree to enter. People with bachelors degrees and jobs needing bachelors degrees had the highest rates of match.

The data does suggest that some mismatch was due to people with postgraduate qualifications being overqualified for their jobs. There were nearly twice as many people with postgraduate jobs as jobs that needed this level to get the job. Around 60% of workers with postgraduate qualifications were overqualified for their job.

The larger area of mismatch occurs for below degree level. People with these qualifications were more likely to be working in jobs they were overqualified for, and jobs needing these qualifications are more likely to be filled by overqualified workers. The vast majority of overqualified workers are working in jobs that only needed a school-level qualification at most.

### Occupational skill levels estimated higher-level qualifications needed for jobs below bachelors level

The analysis of mismatch using the occupational skill levels showed that these provide higher estimates of the qualification requirements of jobs below bachelors level (see Appendix 1). It also showed that the distribution of jobs by skill levels was very close to the distribution of workers by qualification level. This suggests that employers may regard the qualification requirements for jobs below degree level to be higher than workers' perceptions of the qualification level needed to get their type of job.

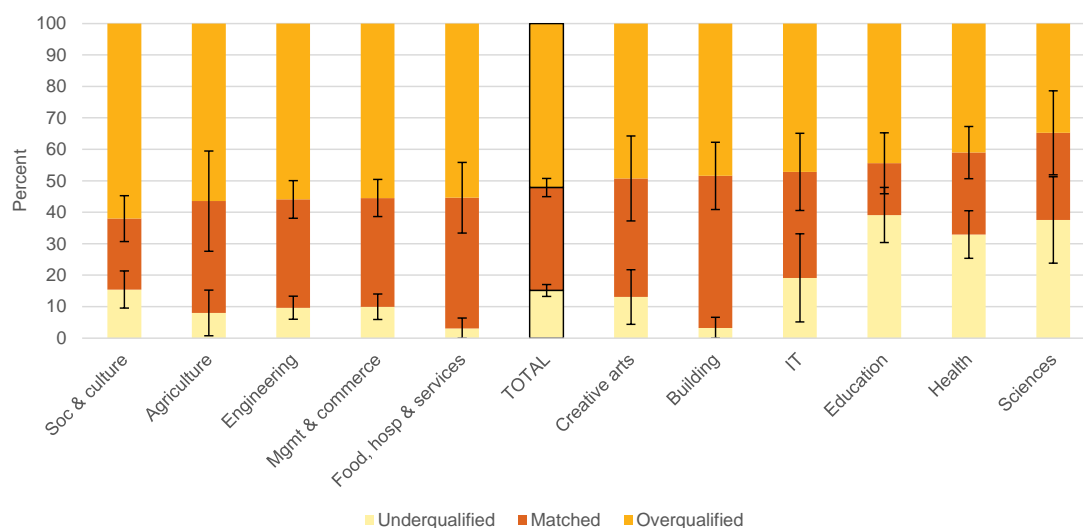
## Differences by field of study

The following analysis looks at how qualification level mismatch varied by field of study at Level 4 to 7 non-degree and bachelors levels. These two levels were chosen because they had sufficient numbers of workers to provide reliable estimates, and field of study is meaningful for the qualifications. The number of workers with postgraduate qualifications is not sufficient to provide reliable estimates. Upper secondary qualifications include a large proportion of school qualifications that don't have an obvious main field of study.

The analysis examines whether mismatch at these levels was concentrated in some fields more than others. The analysis looks at the qualification level held by the respondent, and for each field of study, what proportion of respondents were working in jobs they were over- or underqualified for. This shows the extent to which people with qualifications in those levels and fields are likely to find a job matching their level of study. It doesn't necessarily mean that the occupation they are in matches their field of study or not.<sup>9</sup>

### People with society and culture qualifications at Level 4 to 7 most likely to be overqualified for their job

On average, 52% of people with Level 4 to 7 non-degree qualifications were working in jobs they were overqualified for. Figure 12 below shows that workers with qualifications in society and culture<sup>10</sup> were most likely to be working in jobs they are overqualified for, while those with science qualifications were least likely to be in jobs they are overqualified for. People with qualifications in health, education and science were more likely to be working in jobs they were underqualified for. In health and education this was likely to include older workers who entered these professions when entry qualification levels were lower.



**Figure 12**

Distribution of people in employment holding Level 4 to 7 non-degree qualifications who were underqualified, matched or overqualified by field of study

Note: The figure is sorted by the proportion of people who were overqualified, in descending order. 'Building' includes architecture.

<sup>9</sup> Looking at the data by the level of qualification needed for the job provided information that was difficult to interpret, without also taking occupation into account. For instance, it showed what proportion of people in jobs needing a bachelors degrees who had science qualifications were over or underqualified, but didn't allow conclusions to be drawn about what proportion of people in jobs needing science degrees were over or underqualified.

<sup>10</sup> The most common narrow fields within Society and Culture at Level 4 to 7 non-degree are social work, te reo Māori and law.

Table 8 below shows the proportion of mismatched and matched workers with Level 4 to 7 non-degree qualifications by field of study. Just over half of underqualified workers had qualifications in education, health or engineering. Just over half of overqualified workers had qualifications in engineering, management and commerce, or society and culture.

**Table 8**

Distribution of people in employment holding Level 4 to 7 non-degree qualifications who were underqualified, matched or overqualified by field of study

	<b>Underqualified %</b>	<b>Matched %</b>	<b>Overqualified %</b>	<b>Total %</b>
Engineering	15	25	25	24
Management & commerce	11	17	17	16
Society & culture	10	7	12	10
Health	19	7	7	9
Education	22	4	7	9
Building	2	12	8	8
Food, hospitality & personal services	2	10	8	8
Agriculture	2	5	5	5
Physical and natural sciences	10	3	3	4
Information technology	4	4	3	4
Creative arts	3	4	3	3
Mixed field programmes	0	1	1	1
<b>Total</b>	<b>15</b>	<b>25</b>	<b>25</b>	<b>24</b>

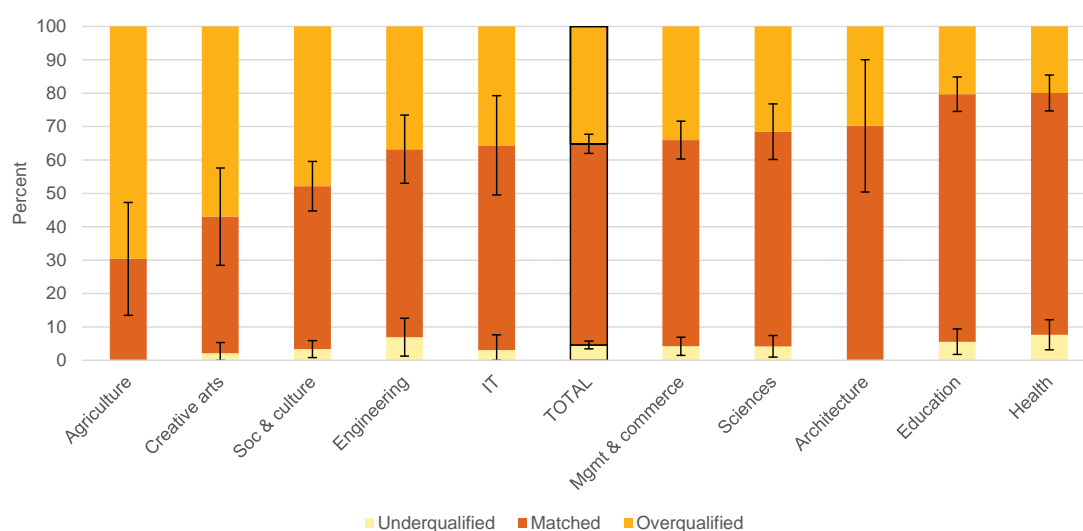
### People with health and education bachelors degrees most likely to be working in jobs needing a bachelors degree

On average, 60% of people with bachelors degrees were working in types of jobs that needed this qualification level to get.

Figure 13 below shows that workers with degrees in agriculture, creative arts, and society and culture were more likely to be working in jobs that needed a lower qualification level. The high rate of overqualification in agriculture may reflect that many jobs and roles in the sector don't have specific qualification entry requirements. Nonetheless having a tertiary qualification may be valuable to their work. Only 2% of people with bachelors degrees had qualifications in agriculture.

Those with degrees in health and education were more likely to be working in jobs that their qualification was matched to. These sectors have quite regulated entry to occupations.

There were very few workers with bachelors degrees working in jobs that needed a postgraduate qualification (i.e. were underqualified), irrespective of field of study.



**Figure 13**

Distribution of people in employment holding bachelors degrees who were underqualified, matched or overqualified by field of study

Note: 'Architecture' includes building. 'Food, hospitality and personal services' is not shown as numbers are very small.

Table 9 below shows the proportion of mismatched and matched workers with bachelors degrees by field of study. Over half of underqualified workers had qualifications in management and commerce, health, and education. Nearly half of overqualified workers had qualifications in society and culture, and management and commerce.

**Table 9**

Distribution of people in employment holding bachelors degrees who were underqualified, matched or overqualified by field of study

	Underqualified %	Matched %	Overqualified %	Total %
Management & commerce	20	22	21	22
Society & culture	14	16	27	20
Education	15	15	7	13
Health	20	15	7	12
Sciences	9	11	9	10
Engineering	13	8	9	8
Information technology	4	6	6	6
Creative arts	2	3	8	5
Architecture	0	2	2	2
Agriculture	0	1	3	2
Food, hospitality & personal services	3	1	1	1
Total	15	25	25	24

## 5 HOW ARE SKILLS RELATED TO QUALIFICATION LEVEL MISMATCH?

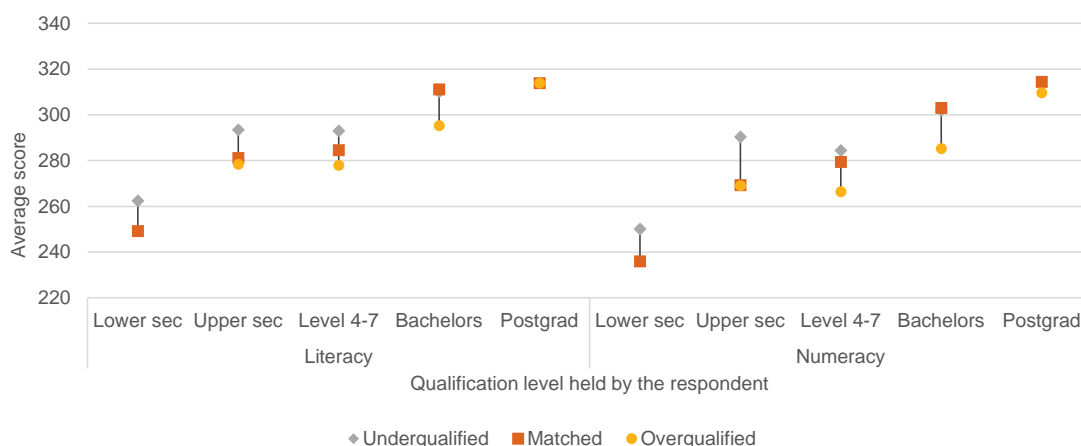
This section explores how literacy and numeracy skills vary for people who are matched or mismatched by qualification level. For example, do people working in a job they are underqualified for have the same level of skills as those in similar jobs who are matched? Literacy and numeracy are core skills needed in most jobs. However, they are not the only skills required in employment, and in many jobs may not be the main skills required.

People working in jobs they were overqualified for had similar skills to those with the same qualification level working in jobs they were matched to

Figure 14 below shows the average literacy and numeracy score for people who were underqualified, matched or overqualified by the qualification held by the respondent. It compares the skills of people with the same level of qualification by whether they were overqualified, matched or underqualified for their job.

In general, for people with the same level of qualification, those who were in jobs that they were overqualified for had similar literacy and numeracy skills as those who were matched. One exception was people with bachelors degrees who were overqualified. They had lower literacy and numeracy skills (on average) than those whose qualification was matched. Overqualified people with a Level 4 to 7 non-degree qualification also had lower numeracy skills than those whose qualification was matched.

This suggests that overqualified people, with qualifications below degree level, are generally not working in lower skilled jobs because they have lower literacy and numeracy skills than others with the same qualification level. However, people with degrees who are working in lower skilled jobs do, on average, have lower skills than others with degrees.



**Figure 14**

Average literacy and numeracy of people in employment by highest qualification of respondent and whether they were underqualified, matched or overqualified

People who worked in jobs that they were underqualified for, who had qualifications below degree level, had higher literacy and numeracy skills (on average) than those whose qualification was matched to their job. There was no difference in average skill levels for those with degrees and above.



This suggests that for underqualified people, with qualifications below degree level, their higher skills may compensate for their lower qualification levels.

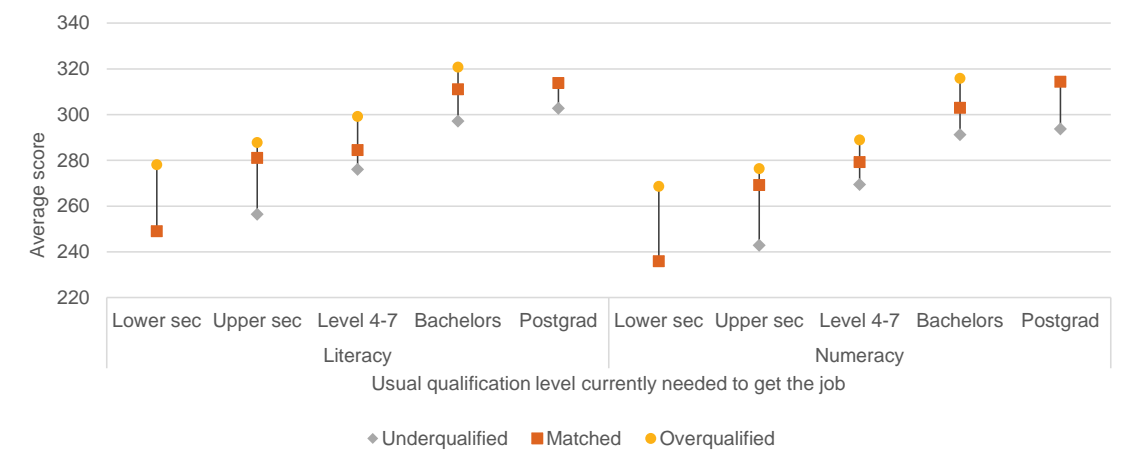
### Overqualified people brought more skills to the job, while underqualified people brought less skill

Figure 15 below shows the average literacy and numeracy scores for people who were underqualified, matched or overqualified by the usual qualification level needed to get the job. It compares people in jobs that needed the same level of qualification to enter, by whether their qualification made them overqualified, matched or underqualified.

People in jobs that needed the same level of qualification to enter had higher literacy and numeracy skills (on average) if they were overqualified. This was true for all levels of qualifications.

People who were underqualified for the job had lower literacy and numeracy skills (on average) than people who were well matched within the same job. This was true across all levels of qualification.

This suggests that for jobs with any given qualification level requirement, overqualified people brought a higher level of literacy and numeracy skill to the job (on average), while underqualified people brought less skill to the job (on average).



**Figure 15**  
Average literacy and numeracy of people in employment by the usual qualification level currently needed to get the job and whether they were underqualified, matched or overqualified

## 6 HOW MUCH DID WORKER CHARACTERISTICS, JOB CHARACTERISTICS AND SKILLS EXPLAIN MISMATCH?

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The previous chapters have established that over- and underqualification were related to:

- age and work experience
- length of time in New Zealand
- hours of work
- firm size
- qualification level
- field of study
- literacy and numeracy skills.

They have also established that over- and underqualification was not related to gender, ethnic group or where people lived.

This suggests that mismatch is, at least in part, connected with transitions into the labour market. It is also connected with the types of jobs and employers, and in some cases, to the relative literacy and numeracy skill levels of workers.

This section looks at how much of the variation in match and mismatch can be explained by these variables. That is, can most of the reasons for match and mismatch be attributed to these kinds of differences, or were they just some of the reasons why people were matched or mismatched.

To do this, a set of logistic regression models were built to look at how much explanation could be provided as each of these variables were taken into account. The models were developed by adding each variable to see how much of the difference was explained. We started with qualification level and field of study, and then added characteristics of workers, characteristics of jobs and literacy or numeracy skills. Literacy and numeracy skills were tested in separate models as they are highly correlated with each other.

Four models were run. One looked at all three outcomes together (underqualified, matched or overqualified), and then separate models were run to look at factors relating just to underqualification, being matched and overqualification (see the Appendix for more details of the modelling strategy).

Table 10 below shows the increases in explanatory power of the models as each variable was added. The values show the proportion of variance explained by the model. A value of 100% would mean that the variables perfectly predict the outcome, and a value of near to zero indicates that variable explain very little of the variation in outcomes. 'NS' indicates that the variable was not statistically significant.

The overall message from these results is that the combination of qualification, personal characteristics, job characteristics and skills account for no more than about a quarter of the variation in outcomes. This means that while these factors are related to over- and underqualification, they do not tell the whole story. This is consistent with the findings in the previous chapters that showed that match and mismatch occurs across all groups.

**Table 10**

Proportion of variance explained by models for over- and underqualification

	<b>Combined model</b>	<b>Underqualified</b>	<b>Matched</b>	<b>Overqualified</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Qualification level	8.9	5.6	9.1	3.2
Field of study	13.0	10.3	10.2	5.2
Age	17.2	16.3	NS	8.4
Hours of work	20.5	17.1	12.9	12.6
Firm size	22.3	19.1	NS	14.3
Literacy skill	25.4	20.6	14.8	17.6
Numeracy skill	25.7	22.0	13.9	17.8

The figures in the table are the maximum R-squared values (expressed as a percentage) as each variable is added to the model. See the Appendix for further details.

The qualification level of the respondent accounted for less than 10% of the variation. Adding in field of study accounted for up to 13% of the variation. Both age and work experience were statistically significant. However, they are highly correlated, so using them together in the same model is not recommended. Age had slightly higher explanatory power and explained a further 4% of the variance.

The two statistically significant job-related variables were hours of work and firm size, which explained a further 5% of the variation. Literacy and numeracy skills had similar explanatory power, adding a further 4% of explanatory power.

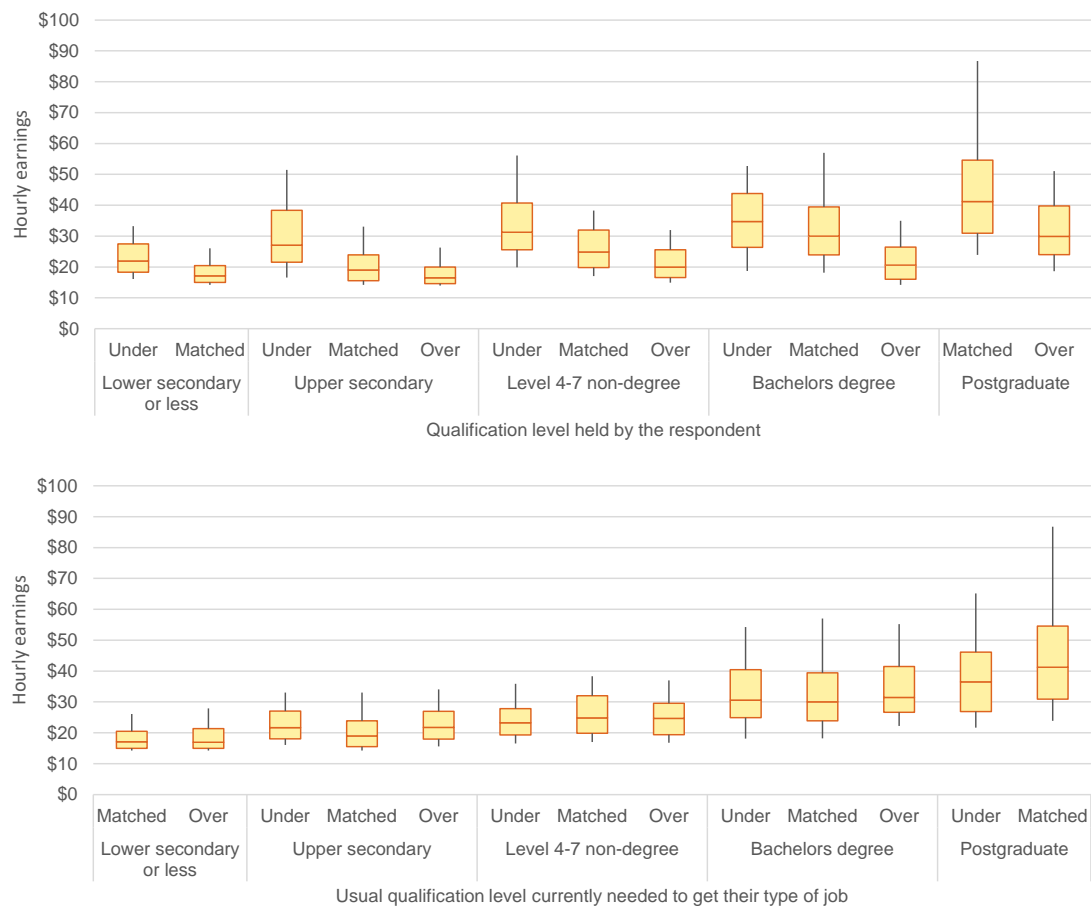
These variables only explained about 14% of the variation among people who were matched to their job, with qualification level providing most of this explanation. They were better at explaining underqualification than overqualification.

## 7 HOW DID MISMATCH AFFECT EARNINGS?

This section explores how hourly earnings varied for people who were matched or mismatched. For example, did people who were underqualified for their job earn less than those who were matched?

Overqualified people earned less, and underqualified people more, than other people with the same qualification level

The top graph in Figure 16 below looks at mismatch by the qualification level of the respondents. It shows that people who worked in jobs that they were overqualified for generally earned less than people with the same qualification level working in jobs where their qualification was matched. Similarly, people who worked in jobs that they were underqualified for generally earned more than people with the same qualification level working in jobs where their qualification was matched.



**Figure 16**

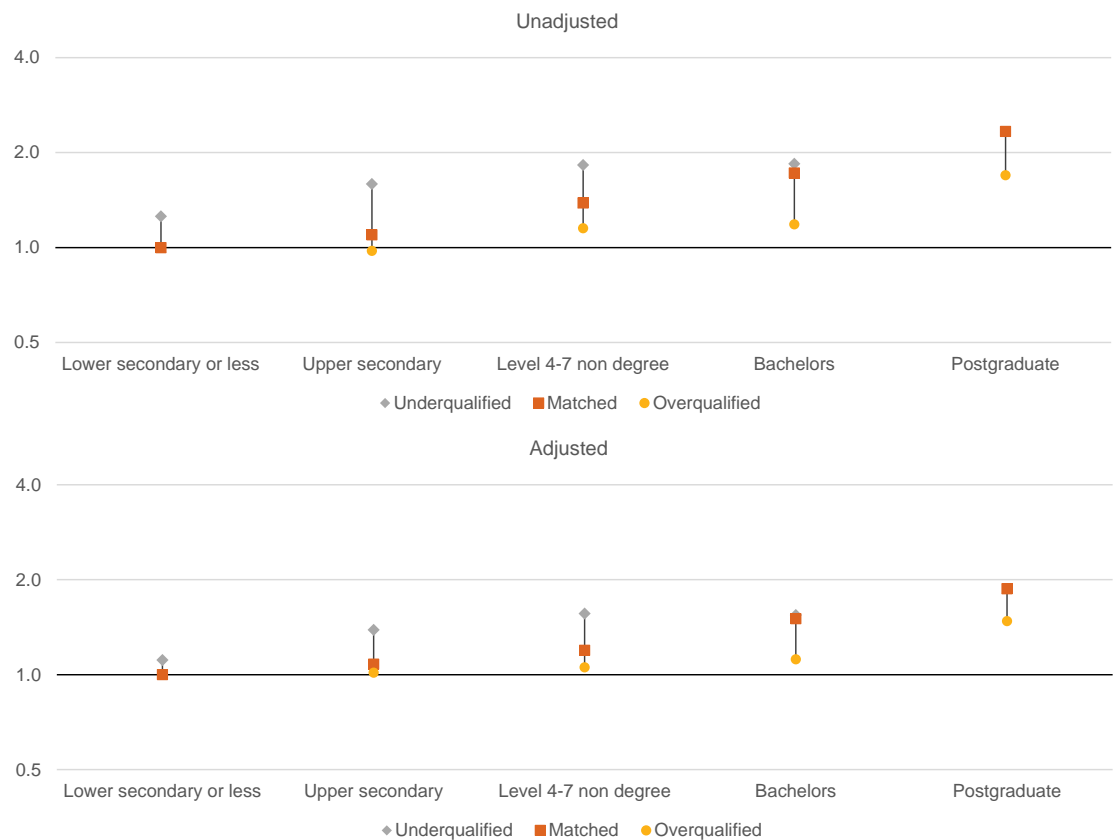
Distribution of hourly earnings by highest qualification of respondent (top) and the usual qualification level currently needed to get the job (bottom) and whether underqualified, matched or overqualified.

The ends of the bottom and top whiskers indicate the 10<sup>th</sup> and 90<sup>th</sup> percentiles. The bottom and top of the box indicate the 25<sup>th</sup> and 75<sup>th</sup> percentiles. The middle line indicates the median (50<sup>th</sup> percentile). Fifty percent of each group have earnings in the range of the box. Eighty percent of each group have earnings within the range of the whiskers. Earnings have not been adjusted for differences such as age, gender, work experience or skills.

This suggests, from an individual's point of view, there was a penalty for working in jobs that needed a lower qualification than the person held, and an advantage to working in jobs that needed a higher qualification than the person held.

Figure 17 below shows the premiums in hourly wages by the qualification held by the respondent and qualification match or mismatch. These premiums are relative to a matched person with a lower secondary qualification or below. The top graph shows the premium unadjusted for personal and job characteristics and the bottom one is adjusted for differences between people and jobs (see Appendix 2 for details of the models).

Adjusting for individual and job characteristics reduced the differences between qualification levels, but did not remove the differences due to mismatch. Even after adjusting for personal and job characteristics, people who were working in jobs they were overqualified for earned less than those with the same qualification level that were matched to their jobs. People who were underqualified earned more, on average, if they have qualifications below degree level.



**Figure 17**  
 Premiums in hourly earnings by qualification held by the respondent and whether underqualified, matched or overqualified  
 Note: Premiums are compared to people with lower secondary or below who are matched. 1.0 represents the same income, 2.0 represents twice the income and 0.5 represents half the income.

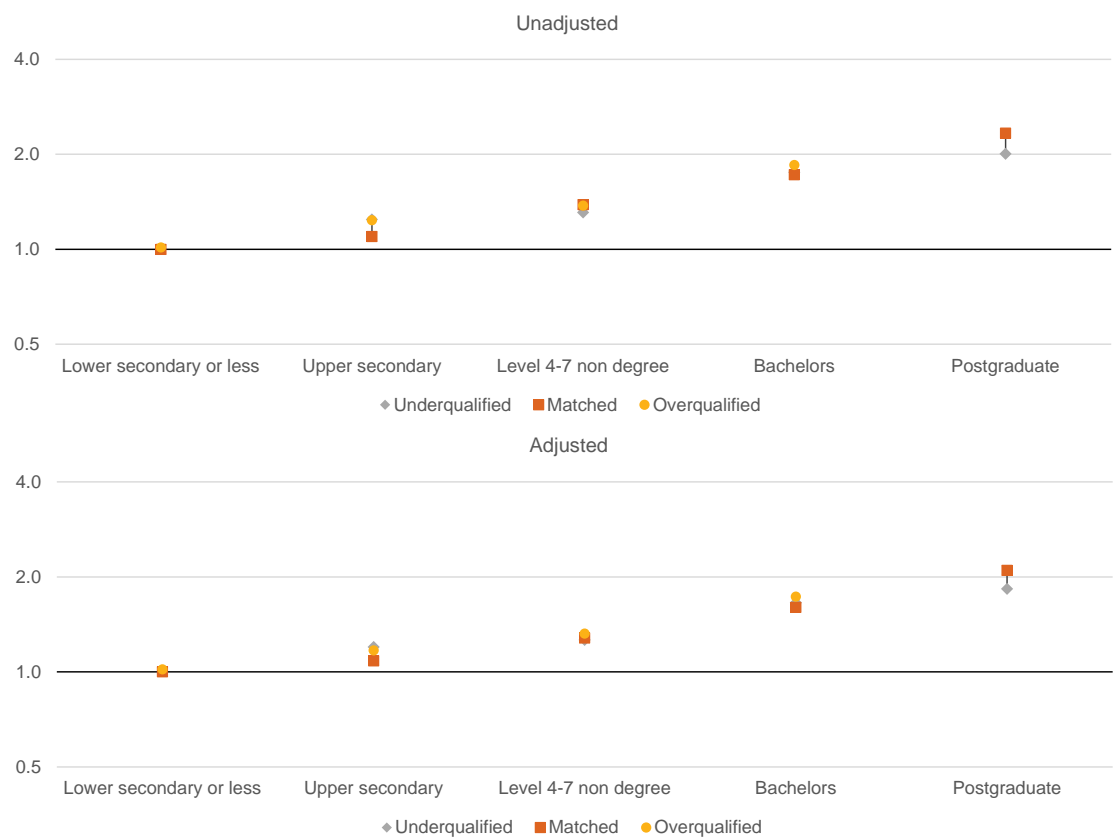
### People get paid for the job they do, not for the qualification they hold

The bottom graph in Figure 16 above looks at mismatch by the qualification level needed to get the job. There was very little difference in the range of earnings within jobs requiring the same qualification level by whether people are under- or overqualified or matched.

Figure 18 below shows the premiums in hourly wages by the qualification level needed to get the job and qualification match or mismatch. These premiums are relative to a well-matched person with a lower secondary qualification or below. The top graph shows the premium unadjusted for individual and job characteristics and the bottom one is adjusted for differences between people and jobs. The results confirm that there is little difference in hourly earnings within jobs requiring the same qualification level.

In the adjusted model, only characteristics of jobs were statistically significant. Once the qualification level needed for the job, and field of study, were taken into account, differences between workers, including gender, did not affect the level of earnings. The adjustment reduced the differences between qualification levels but did not change the effect of mismatch.

This analysis shows that given the qualification level needed to get a job, the qualification held by the person in the job has no consistent relationship to their earnings. It may be that pay is more strongly related to the qualifications needed for the job than to the qualifications of the person in the job. It may also be the case that while qualifications are useful for entry to employment, but once in employment, other factors, not measured in this report, influence differences in earnings.



**Figure 18**  
 Premiums in hourly earnings by the usual qualification level currently needed to get the job and whether underqualified, matched or overqualified

Note: Premiums are compared to people with lower secondary or below who are matched. 1.0 represents the same income, 2.0 represents twice the income and 0.5 represents half the income.

The analysis of mismatch using occupational skill levels showed a similar pattern of earnings by qualification level required for the job and mismatch (see Appendix 1). In jobs needing Level 4 and above qualifications according to occupational skill levels, overqualified people were paid slightly higher and underqualified people paid slightly less.

## 8 CONCLUSION

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The high rate of qualification level mismatch in New Zealand raised concern about possible negative impacts on workers and employers, and overall economic performance.

The information in this report suggests that employers may benefit from having overqualified workers, while bearing a cost from underqualified workers. Overqualified workers can bring higher levels of knowledge and skill to the job and may have slightly better job performance. They do this for similar pay to other workers. On the other hand, underqualified workers bring lower skills to the job, on average, and may have slightly lower job performance, but are still paid the same as other workers. This suggests that the higher rate of overqualification, compared with underqualification, in New Zealand can be beneficial to employers.

From a worker's perspective, however, overqualification can come with a cost. Their skills and knowledge may be under-utilised, they may have slightly lower job satisfaction and they earn less than other people with the same qualification level. This suggests they may not be getting the full value from their education in terms of employment and income. On the other hand, people working in jobs they are underqualified for can experience benefits. Their skills are likely to be fully utilised, they may have slightly higher job satisfaction and earn more than other people with the same qualification level. This suggests that the higher rate of overqualification, compared with underqualification, in New Zealand is a cost to workers.

The information in the report also suggests that a major factor in the extent of mismatch in New Zealand is the difference between the number of people with each qualification level and the number of jobs requiring those levels of qualification. This affects people with Level 4 to 7 non-degree qualifications the most. The data doesn't support the proposal that mismatch is mostly driven by too many people holding bachelors degrees and above.

The comparison of the workers' perspective of the qualification level needed to get their jobs with employers' perspectives of the skills needed for occupations (as captured in ANZSCO) suggests that employers may consider that some jobs need a higher qualification than people in the jobs consider them to need. This difference is greatest below degree level.

Some mismatch is due to people making transitions into, and within, the labour market. Younger people, and new immigrants, are more likely to experience mismatch. Mismatch is also more prevalent for people working part-time, in casual work and in smaller firms. Differences in skills and field of study between people with the same qualification level may also explain some mismatch. However, these differences only explain a small part of the overall variation in match and mismatch.

There are also several factors which do not affect mismatch. There is no difference in mismatch by gender, even though men and women have different patterns of labour market participation. Similarly, rates of mismatch are largely the same across ethnic groups. Similarly, there is very little variation by where people live, so it doesn't appear to be affected much by differences in regional labour markets and job opportunities.

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## APPENDIX 1: QUALIFICATION LEVEL MISMATCH USING OCCUPATIONAL SKILL LEVELS

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### The ANZSCO skill levels

The Australia New Zealand Standard Classifications of Occupations (ANZSCO) includes a mapping of occupations to skill levels (Australian Bureau of Statistics, 2009). These skill levels are assigned on the basis of the qualification needed to perform the job, previous experience and the amount of on the job training. The skill levels are informed by employer advice. They are also set the same across Australia and New Zealand, and don't take into account any within-occupation differences between the two countries.

The main difference between the skill levels and qualification levels used in the main part of this report is that bachelors and postgraduate qualifications are combined in skill level 1. The other four skill levels map to the other qualification levels used in this report. Combining bachelors and postgraduate qualifications together changes the estimates for match and mismatch, as it removes mismatch between bachelors and postgraduate jobs.

### Occupational skill levels estimate more people to be underqualified and fewer to be overqualified

Table 11 below compares the match and mismatch estimates from the Survey and the skill levels using consistent categories of qualification level. Both provide similar estimates of people who are matched to their jobs. The occupational skill levels has a higher estimate of people who are underqualified and lower estimate of people who are underqualified.

**Table 11**

Comparison of match and mismatch rates using ANZSCO skill levels and self-reported job requirements in the Survey of Adult Skills

	<b>ANZSCO skill levels</b>	<b>Survey self-reported</b>
	<b>%</b>	<b>%</b>
Overqualified	26	34
Matched	45	53
Underqualified	29	13
	100	100

### Occupational skill levels tend to be higher than self-reports for jobs below degree-level

Table 12 below compares the proportion of people in jobs by the ANZSCO skill levels and by the self-reported job requirements in the Survey of Adult Skills. The top part of the table shows the proportion of people in each self-reported qualification level by the skill level assigned to their occupation. There is fairly strong agreement between the two approaches at bachelors and above, with 80% of people who identified their job as requiring a bachelors and above qualification in occupations classified as requiring this qualification level. There is less agreement below degree-level. The ANZSCO skill levels generally map the jobs across the same or next higher qualification level as the self-reported level in the Survey.

The bottom part of the table shows the proportion of people in each ANZSCO skill level by the self-reported qualification level. Again, there is fairly strong agreement at bachelors level and above, with 71% of people in jobs assigned this level via ANZSCO identifying that their job needed this qualification level to get. There is also fairly strong agreement for jobs assigned the lowest ANZSCO skill level, with only 22% of people self-reporting that a higher qualification is needed. For jobs that are assigned upper secondary or Level 4 to 7 non-degree via ANZSCO, more than half of the people in these jobs considered that a lower qualification level was needed to get the job.

**Table 12**

Comparison of proportion of people in employment by ANZSCO skill levels and self-reported job requirements in the Survey of Adult Skills

Usual qualification level currently needed to get the job (Survey of Adult Skills)					
ANZSCO skill level	Lower secondary or below %	Upper secondary %	Level 4-7 non-degree %	Bachelors and above %	Total
Column percentages					
Lower secondary or below (1)	39	13	7	2	18
Upper secondary (2)	33	40	19	5	24
Level 4-7 non-degree (3,4)	20	35	43	13	24
Bachelors and above (5)	8	13	30	80	33
Total	100	100	100	100	100
Row percentages					
Lower secondary or below (1)	78	14	5	3	100
Upper secondary (2)	51	31	12	6	100
Level 4-7 non-degree (3,4)	31	27	26	16	100
Bachelors and above(5)	9	7	13	71	100
Total	37	19	14	30	100

In summary, the ANZSCO skill levels and self-reported qualifications requirements in the Survey provide similar results for jobs needing a bachelors level qualification or higher. This suggests there is general agreement across workers and employers as to what jobs need this qualification level. It also suggests that the occupational groupings that underlie the ANZSCO skill levels more clearly identify jobs that need a bachelors or above.

The area where there is significant difference is in jobs needing qualifications below degree-level. Self-reports in the Survey tend to state the qualification level needed as lower than the ANZSCO skill levels. Some of this may be due to differences in jobs within occupations. That is, not all jobs in the same occupation need the same qualification level, and that occupations at these skill levels are not as clearly defined by qualification requirements. It also suggests that employers may have a higher estimate of the qualification needed for the job than workers who are doing the job.

### Distribution of jobs by skill levels closely matches distribution of workers by qualification level

Table 13 below shows that the distribution of people in jobs by ANZSCO skill level is very close to the distribution of people in employment by the qualifications they hold. Unlike the self-reported

measure, there is no overall mismatch between the qualifications held by workers and the jobs assigned that qualification level (see Table 7).

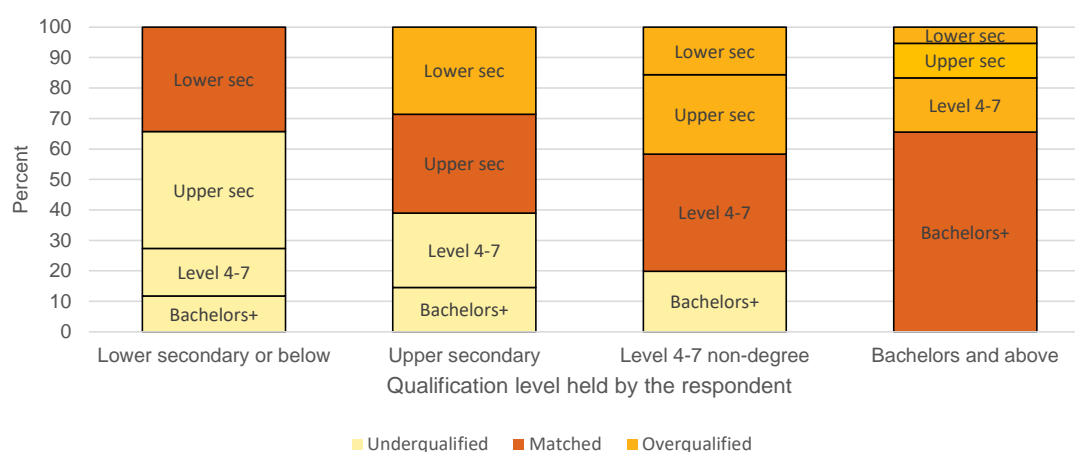
However, the ANZSCO skill levels still show considerable mismatch within qualification levels. As shown in Figure 19 below, around a third of people with qualifications below degree level are in jobs with an ANZSCO skill level that matches their qualification.

**Table 13**

Distribution of people in employment by highest qualification held and ANZSCO skill level of the job

	Distribution		Ratio
	Qualification held by respondent %	ANZSCO skill level of job %	
Lower secondary or below (1)	19	18	1.03
Upper secondary (2)	25	24	1.03
Level 4-7 non-degree (3,4)	24	24	0.99
Bachelors and above (5)	32	33	0.97
Total	100	100	

A ratio below 1.00 indicates a shortage of people for jobs at that qualification level and a ratio above 1.00 indicates a surplus of people for jobs at that qualification level.



**Figure 19**

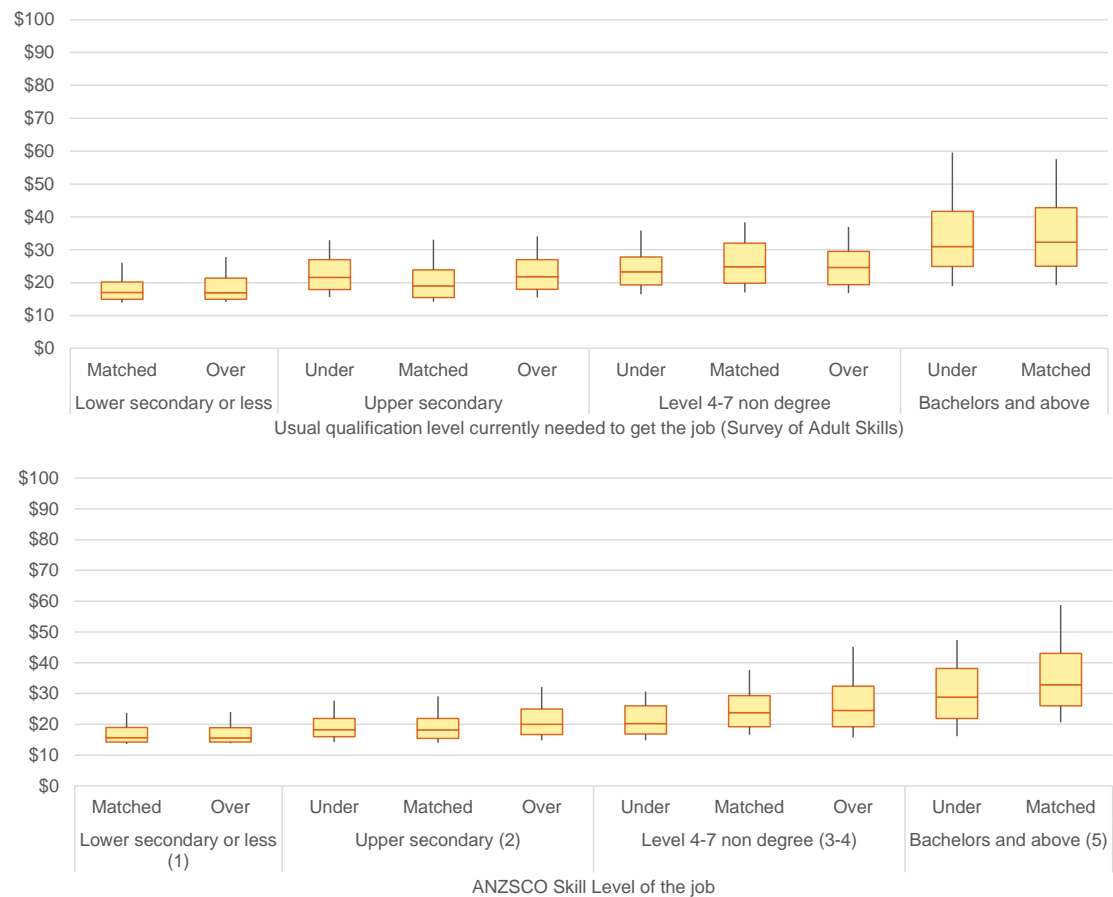
Distribution of people in employment by highest qualification of respondent and ANZSCO skill level of the job

## Patterns of mismatch by worker and job characteristics similar for skill levels and self-reports

The patterns of match and mismatch by individual and job characteristics using the ANZSCO skill levels were very similar to the patterns using the self-reported measure from the Survey. In both cases, the same groups were less likely to be underqualified or overqualified. One exception was that, according to the ANZSCO measure, males were more likely to be underqualified than females (31% compared with 26%), whereas no differences were found by gender using the self-reported measure.

### Patterns of earnings are similar for skill levels and self-reports

The qualification level mismatch measure from ANSZCO also showed a very similar distribution of skills by qualification level and mismatch as the self-reported measure from the Survey. However, it did show slightly different distributions of income, when comparing the qualification levels needed for the job.



**Figure 20**

Distribution of hourly earnings by the usual qualification level needed to currently get the job (top) and ANZSCO Skill Levels and whether underqualified, matched or overqualified

The ends of the bottom and top whiskers indicate the 10<sup>th</sup> and 90<sup>th</sup> percentiles. The bottom and top of the box indicate the 25<sup>th</sup> and 75<sup>th</sup> percentiles. The middle line indicates the median (50<sup>th</sup> percentile). Fifty percent of each group have earnings in the range of the box. Eighty percent of each group have earnings within the range of the whiskers. Earnings have not been adjusted for differences in age, gender, work experience or skills.

Figure 20 above compares the distribution of hourly earnings using the qualification needed for the job from the Survey and the ANZSCO skill level categories. The results are similar for people in jobs requiring qualifications up to upper secondary. In jobs requiring Level 4 and above qualifications, according to the Survey, there is almost no difference in earnings by qualification level match or mismatch. In jobs requiring Level 4 and above qualifications according to ANZSCO over qualified people are paid slightly higher and under qualified people paid slightly less. Overall, the ANZSCO skill levels of jobs had a similar correlation to hourly earnings as the self-reported job requirements in the Survey.<sup>11</sup>

<sup>11</sup> The correlation coefficient for the Survey self-reported levels was 0.55, compared with 0.54 for the ANZSCO skill levels. This is based on the R<sup>2</sup> values from a log-linear model of hourly earnings to qualification level.

## APPENDIX 2: DATA DEFINITIONS

### Survey questions

The Survey of Adult Skills asked the following question:

D\_Q12a: Talking about your current job: If applying today, what would be the usual [level of] qualifications, if any, that someone would need to GET this type of job?

This is part of a panel of questions that asks respondents about their 'current job'. This is defined as the job they were doing during the previous week. Nearly all of the questions in this section are specific to the person and their employer. This is the only one that asks the respondent to consider themselves having 'a type of job'. This means they are probably thinking wider than their own specific job, but narrower than an entire occupational group. In many cases they are likely to be thinking about people they know who have very similar jobs.

The response to this question was compared with the qualification level of the respondent collected in the Survey.

### Match measures

The qualification level of the respondent was compared to the qualification level needed to get their job. The comparison was across five grouped levels of qualification. These groupings are shown in Table 14 below along with the corresponding levels and qualification types in the New Zealand Qualifications Framework (NZQF) and the International Standard Classification of Education 1997 (ISCED).

**Table 14**

Mapping of qualification level groupings to New Zealand Qualifications Framework (NZQF) and the International Standard Classification of Education 1997 (ISCED)

Grouping used in this report	NZQF levels and types	ISCED levels
Lower secondary or below	No formal qualification Level 1 certificate (school and post school)	No formal qualification ISCED 1 and 2 ISCED 3C shorter than 2 years
Upper secondary	Level 2 certificate (school and post school) Level 3 certificate (school and post school)	ISCED 3A and 3B ISCED 3C 2 years or more
Level 4 to 7 non-degree	Level 4 to 6 certificate Level 5 to 7 diploma	ISCED 4A, 4B and 4C ISCED 5B
Bachelors	Level 7 graduate diploma and certificate Level 7 bachelor's degree Level 8 bachelor honours degree	ISCED 5A bachelor degree
Postgraduate	Level 8 postgraduate diploma and certificate Level 9 master's degree Level 10 doctoral degree	ISCED 5A master degree ISCED 6

Where the respondent's own qualification was at the same level as that needed to get the job, they are categorised as well matched. Where the respondent's qualification is lower, they were categorised as underqualified. Where the respondent's qualification is higher, they were categorised as overqualified.

This measure is sensitive to the number groupings of levels of qualification. If levels are combined into fewer groups, then more people will be categorised as matched. If levels are split into more groups, then fewer people will be categorised as matched.

## People in employment

The analysis is restricted to people who were in employment, excluding self-employed, and had valid responses to the questions about their highest educational qualification and the qualification currently needed to get their job. According to the Survey, 76% of 16- to 65-year-olds were in employment. After excluding self-employed, the proportion was 63%. Of these 98% had valid responses to both sets of questions.

## Mismatch models

The models for mismatch discussed in chapter 6 were logistic regressions.

The first model was a generalised logistic regression that had the three states of underqualified, matched and overqualified as the outcome. This model was used to select the variables. Variables were added that were shown to have a statistically significant relationship (at the 95% level) to match or mismatch in the descriptive analysis. Where variables were highly correlated with each other, the one with the largest explanatory power was retained in the model. The variables with high correlation to each other were age and work experience, and Asian ethnic group, years in New Zealand and English as a first language. Literacy skills and numeracy skills were added separately at the end of the model building process.

The variables selected for the generalised logistic regression model were then tested in three two-level logistic regression models. These tested being underqualified vs other workers, being matched vs other workers and being overqualified vs other workers. Only variables that were statistically significant at the 95% level were retained in each of these models.

The statistic reported from these models is the maximum R-squared value. This is an estimate of the amount of variation explained by the models. If the R-squared value is 100% it means that the variables perfectly explain the outcome. If the R-squared value is close to zero, then the variables explain almost nothing about the outcome.

People with postgraduate qualifications and below upper secondary qualifications were excluded from the modelling, as these people can only be in two of the three states. For example, a person with a postgraduate qualification cannot be underqualified for their job. They can only be either matched or overqualified.

## Earnings models

The models for hourly earnings discussed in chapter 7 were log-linear models. Qualification match was interacted with qualification level. The unadjusted estimates were from models that only included qualification level and mismatch. These show the effect of mismatch without adjusting for differences in individual and job characteristics or skills. The adjusted estimates are from models that also included individual and job characteristics and skills.

The full model for earnings by the qualification held by the recipient included field of study, years in New Zealand, gender, English as a first language, hours worked, contract type, firm size, region and literacy skills.

The full model for earnings by the usual qualification level currently needed to get the job included field of study, hours worked, contract type and firm size.

