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TE TARI MAHI

Employer-funded education and training – who receives it?

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Disclaimers

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KEY POINTS

This paper analyses the level and distribution of employer-funded education and training that employees receive, using data collected by Statistics New Zealand in the first quarter of 2008.

Thirty-one percent of employees had received some employer-funded education or training in the previous 12 months. The measure incorporates all forms of formal education and training but not informal training (such as learning on the job).

Of those who studied or trained, 21 percent studied or trained for 1 day or less during the year as a whole, and two-thirds did so for 5 days or less, implying that most courses were relatively short.

Based on the survey results, a number of points can be made about the distribution of employer-funded learning:

- The rate of participation and the amount of training undertaken is similar for men and women.
- Europeans and Māori have similar rates of training, but Pacific and Asian employees are less likely to receive training funded by their employer.
- More highly educated workers are more likely to receive training than those with little education, and they also tend to undertake more hours of training.
- The more hours an employee works, the more likely he or she is to receive training.
- Employees who work for small organisations (those with 20 or fewer employees) are less likely to receive training than those who work for medium-sized or large organisations.
- Employees who work for publicly owned or non-profit organisations are more likely to receive training than those who work for private firms.

Objectives

This paper uses data collected in a recent Statistics New Zealand survey to shed new light on the level and distribution of work-based training in New Zealand.

The main objective is to identify the worker, job and enterprise characteristics that are associated with a higher or lower likelihood of receiving employer-funded education or training. Employees who undertake little education or training as adults are likely to be missing out on opportunities to maintain or upgrade their skills over their working lives.

Survey measure of education and training

All employees who were interviewed in the Survey of Working Life (a supplement to the Household Labour Force Survey) in the March 2008 quarter were asked if they had done any training courses or education that was paid for by their employer (in part or in full) in the last 12 months. If they said yes, they were also asked how many days of education or training they had undertaken in total during the year. The questions were designed to measure structured learning (i.e. courses) and not informal learning.

For brevity, we use the word 'training' as shorthand for 'employer-funded education and training'. The phrases 'receiving', 'participating in' and 'undertaking' education and training are also used interchangeably to mean the same thing.

Methods used in the research

The paper begins by describing the average training rates and training days of a range of different groups of employees. It then uses statistical models to estimate the direct effect of each personal, job and employer characteristic on the likelihood of receiving training, adjusting for the effects of other characteristics.

Results: Average training rate and days of training for all employees

Thirty-one percent of employees said they had received some employer-funded education or training in the 12 months prior to being interviewed. Of those who had studied or trained, 21 percent did so for 1 day or less and two-thirds did so for 5 days or less, indicating that the majority of employees participated in short courses. Nine percent had spent at least 1 month undertaking education or training with some employer funding.

Results: Variations in the likelihood of receiving training

Gender

The rate of participation in employer-funded training was quite similar for men and women. The amount of training undertaken was also similar.

Age

Among women, there was little variation in rates of training across the 25–64 age range. Among men, there were small age variations. Men aged 25–29 years were most likely to receive training. The likelihood declined at ages above this but was fairly stable across the 40–64 age range.

Young employees were as likely to study or train as mature and older employees, once an adjustment has been made for the effects of other characteristics.

Ethnic group

There was little difference between Europeans and Māori in rates of training participation, but Pacific employees of both genders and female Asian employees were less likely to receive training.

Educational attainment

More highly qualified workers were substantially more likely to receive employer-funded training than the less well qualified, and they also tended to undertake more hours of training.

Job duration

The likelihood of receiving employer-funded training was not greatly influenced by the amount of time an employee has been working for their employer, once an adjustment was made for the effects of other factors.

Hours of work

The more hours an employee worked, the more likely he or she was to receive employer-funded education or training. Employees who worked at least 45 hours a week had the highest training rates.

Union membership

Union members were more likely to receive training than non-unionised employees. However, the difference was only a few percentage points after an adjustment was made for other factors.

Occupation

Employees in more highly skilled occupations were more likely to study or train than employees in less skilled occupations.

Temporary employment

Males employed in temporary jobs were less likely to receive training that was paid for by their employer than males in permanent jobs. However, having a temporary employment relationship did not have a significant effect on the training of female employees after other characteristics were taken into account.

Type of organisation

Employees who worked for publicly owned or non-profit organisations were more likely to receive training than those who worked for privately owned firms, even when many other worker, job and employer characteristics were taken into account.

Size of the business

Employees who worked for small organisations (those with 20 or fewer employees) are less likely to receive training than those who worked for medium-sized or large employers, even when other worker, job and employer characteristics were taken into account.

Industry

Training participation rates varied across employees in different industries, even when other factors were taken into account. There are a variety of possible reasons for this including differences in technology and business strategy.

Limitations of the research

Only two education and training questions were included in the survey, and no information was gathered on the types of education or training undertaken. This means we are unable to analyse the distribution of different types of learning.

Implications

As in other countries, employed-funded education and training is unequally distributed across the workforce. Less skilled and less educated employees are less likely to receive further education and training than those with higher skills and education. Moreover, similar employees who work in different firms appear to have different opportunities for employer-funded education and training, depending on the characteristics of their employer.

This paper identifies the types of firms where training rates tend to be low and suggests possible explanations for some of these patterns. However, it also raises questions about the reasons why employers in different industries approach training differently. Broader investigation of the circumstances and skill demands of firms where training rates tend to be low would improve our understanding of the reasons for low training and the likely effectiveness of different policies to promote skill development at work.

Further investigation of the reasons why Pacific and Asian employees are less likely to receive employer-funded education and training than European and Māori employees would also be useful, as this training gap cannot be explained using the information available in the survey.

Further information

A more detailed summary of the main findings of the paper can be found in Section 6.

1. INTRODUCTION

Much of the education and training that is undertaken by working adults in developed nations is funded or sponsored by employers (OECD, 1999). Further education and training has the potential to enhance the skills and consequently the employability and earnings potential of employees and to increase the productivity of firms. In an increasingly technological and globalised economy, employees may need regular training to keep up with the changing requirements of their jobs. As the workforce gradually becomes older, the role of further education and training in keeping workforce skills up to date is also likely to increase.

This paper explores variations in the receipt of employer-funded education and training across the workforce, identifying which individuals and groups are most likely (or least likely) to receive further education or training with their employer's financial support. It analyses new data that were collected in the Survey of Working Life (SoWL). The SoWL collected detailed information on people's working arrangements, work conditions and job satisfaction. It was conducted as a supplement to Statistic New Zealand's Household Labour Force Survey in the March 2008 quarter.

The SoWL identified 31 percent of employees as having received some employer-funded education or training in the preceding 12 months. This paper looks at the characteristics of employees who participated in employer-funded education or training and aims to identify which characteristics were associated with lower/higher participation. Identifying groups of employees that have particularly low rates of participation in work-based learning may be helpful in identifying unmet needs that programmes to promote skills development in workplaces could take into account.

Past research findings for other countries suggest that employees who are regarded as being more likely to bring in larger returns to their employer from participating in training are more likely to receive training, such as younger employees, full-time employees and more highly educated employees. There is evidence that workers in occupations requiring a higher skill level are more likely to receive training. Public ownership has been linked to higher rates of employer-funded education and training, and there is evidence that employees in larger firms are also more likely to receive training.

This paper is structured in the following way:

- Section 2 reviews existing literature on the distribution of employer-funded or work-based training and the reasons for its unequal distribution. From the literature review, hypotheses were formed and the variables that are considered in the analysis were selected.
- Section 3 provides background information on the SoWL and its definition and measurement of employer-funded education and training.

- Section 4 describes the way in which average training rates and the volume of training vary across individuals with different demographic or job characteristics, using bivariate statistics.
- Section 5 examines the association between each individual characteristic and the likelihood of participation in training, using logistic regression models. This analysis is intended to shed light on the factors that influence participation.
- A summary of the main findings of the paper as a whole is given in Section 6.

2. LITERATURE REVIEW

Employees' participation in training has been described in the literature as varying by educational level, personal characteristics and job characteristics as well as the type of workplace in which an employee works. This section reviews the findings of a small selection of recent studies of work-based training patterns in other countries. The purpose is to develop hypotheses about the distribution of training, based on the evidence for countries that are similar to New Zealand, and to review the explanations that have been put forward to account for those distributional patterns. We conclude by summarising the findings of two previous New Zealand surveys that measured employee training.

Only research papers from economic journals were reviewed. These studies typically use survey data on employees' actual rates of participation in education or training as their main data source. A limitation is that the majority of these surveys do not include any information on the motivations and attitudes of employers or employees or the roles that employers and employees play in the decisions that are made about training. It is often assumed that employers determine the distribution of work-based training, but this is likely to be an over-simplification because, in some jobs, employees are able to initiate their own training.

2.1 International research

One of the main influences identified in the international literature on whether an employee participates in work-related training is the level of qualifications they have. Training and qualifications have been found to be complementary, with higher education linked to an increased likelihood that an employee will receive employer-funded training (Shields, 1998; OECD, 1999; Draca & Green, 2004). This relationship can be explained by educational level being an indicator of other skills and abilities that influence both learning ability and productivity at work. Employees with higher educational attainment are likely to be more experienced in undertaking formal learning, making further learning easier. Also, more highly educated employees are more likely to have a body of knowledge that can be easily extended or supplemented through further training. For these workers, the investment in training by the employer is likely to have higher returns than for less educated workers (Booth, 1991; Long, Ryan, Burke & Hopkins, 2000).

Age has been identified as a factor influencing participation in training, where the pattern generally observed in the literature is that younger workers receive the most training. For example, results from Shields's (1998) model of training incidence among full-time employees in the United Kingdom indicated that younger workers were more likely to receive training than older workers, when controlling for a number of individual and firm characteristics. It has been suggested that this pattern arises because older workers have a shorter working life ahead of them and therefore bring in smaller returns on the training investment than younger workers. However, it could also arise from age differences in the motivation to learn new skills, if older workers are less interested in participating in work-related training. Long et al. (2000) note that

young employees are more mobile and therefore a riskier training investment, and it might be expected that this would result in younger employees receiving less training than employees who are slightly older.

The literature suggests that gender could have an effect on the probability of receiving employer-funded education and training if employers regard women employees as likely to leave work to have children. Also, it may be perceived that women will have more family responsibilities after having children, which could possibly result in reduced hours of work or less interest in skill advancement or career progression at work. Both of these factors may lead to some employers seeing higher risks in training female employees. Long et al. (2000) describe having young dependent children and therefore greater family responsibilities as reducing participation in training for women. Also, Booth (1991) identified a lower training probability for women with children aged less than 16 years old.

Turning to job characteristics, the relationship between length of time in the job and participation in employer-funded training varies in the literature. While some research finds employees having higher participation at the start of their employment with a particular employer (for example, Shields, 1998), other studies report higher participation with increased tenure (Long et al., 2000). Shields explains the higher probability of receiving employer-funded training at the start of a job as being due to the new employee needing to be trained to gain the skills required for the job. In contrast, Draca and Green (2004) suggest that employees with a higher tenure are more likely to receive training as a reward for seniority or commitment within the firm.

Looking at hours worked and the type of job contract, the literature once again suggests that an employer's willingness to invest in training is affected by the expected returns from providing the training. Part-time employees may receive less training because they are expected to spend fewer hours at work than full-time employees over the same employment duration, yielding less benefit for the employer from the training investment. This relationship was observed by Draca and Green (2004) and Booth (1991) who found evidence that those in part-time jobs had a much lower training participation rate than those in full-time jobs.

Being on a temporary contract has also been identified as a factor lowering an employee's training probability (OECD, 1999; Draca & Green, 2004). It is suggested by Long et al. (2000) that employers will want to invest in employees who are more likely to stay with the firm. As employees on temporary contracts are less likely to have long-term ties to the firm, it could be expected they will receive less training.

Union membership is discussed in the literature as having a positive effect on training due to unions supporting the training demands of their members. Evidence of this positive relationship was found in results reported Booth (1991) and Shields (1998). However, union membership was found to have a significant negative association with training for women by Draca and Green (2004).

Prior research suggests that those employed in occupations that require a higher skill level are more likely to participate in employer-funded training (Draca & Green, 2004). This is likely to be a result of the fact that occupations requiring higher skills also require a higher level of training to maintain these skills. Occupational groups identified as having the highest training participation rates include professionals, managers and technicians, while employees in relatively unskilled jobs such as labouring tend to receive the least training (Gobbi, 1998).

The industry that an employee works in has also been identified as a factor that affects an employee's participation in employer-funded training. Shields (1998) reported that employees in public administration, education, health and social work and the utilities industry receive significantly more training than employees in manufacturing. It was also found that those employed in industries involved in research and development had a higher probability of receiving training.

Looking at workplace characteristics, it is often reported in the literature that those employed in the public sector receive more training than those employed in the private sector. The reasons for this are not entirely clear. It may be related to the fact that private-sector firms are profit-focused whereas public-sector firms focus more on the quality of outputs produced and services provided. Booth (1991) also discusses the concerns private firms may have of losing their workers to another firm after training and therefore losing their investment, concerns that could discourage training when profitability considerations are paramount.

Employees working in larger firms have been found to have higher participation in employer-funded training than employees working in small firms (Booth, 1991; Shields, 1998). It is suggested that employers in large firms provide more training because their scale allows them to provide training at a lower cost and more easily release workers from their normal duties for training. Long et al. (2000) also suggests that informal training can be more easily substituted for formal training in small firms, whereas large firms prefer formalised training to ensure that the necessary skills for the job are being obtained in an environment where there is greater distance between managers and employees. In addition, there may be more incentive for employees to participate in training within larger firms where more career opportunities are available.

The employee's willingness to undertake education or training also needs to be considered. Although this has not typically been measured in previous studies, differences in participation are likely to arise based on an employee's level of motivation to participate in training, for example, in taking up training offers or initiating the work-based training themselves. The 2005 Household, Income and Labour Dynamics in Australia (HILDA) survey identified that enhancing skills relevant to the current job, enhancing general skills and aiming for a promotion were common goals of training reported by individuals (Melbourne Institute of Applied Economic and Social Research, 2009). An employee's interest in skill enhancement and skill progression is also likely to be a factor in the provision of employer-funded education and training, as a signal to the employer of who will benefit the most from training.

2.2 New Zealand research

Two previous surveys in New Zealand have collected data from employees on their participation in employer-funded education and training: the Education and Training Survey 1996 and the Adult Learning and Life Skills Survey 2006. The results of the Education and Training Survey were analysed in Gobbi (1998). The education and training components of the Adult Learning and Life Skills Survey (ALL) 2006 were analysed in Dixon and Tuya (2010).

Gobbi's (1998) analysis of the 1996 Education and Training Survey showed that 48.3 percent of wage and salary earners had participated in education or employment-related training in the year to September 1996. Participation in education and training varied significantly across workers and was highest for younger people, people with higher qualifications and for European and 'other' ethnic groups (ethnicities that were neither European, Māori or Pacific peoples).

Analysis on employer support for education and training among wage and salary earners indicated there was a relatively high level of employer support. The most common form of employer support was for in-house training, with 23.2 percent of wage and salary workers participating in this kind of training. Employer support was higher for wage and salary earners participating in external training (73.6 percent) than for formal study (38.6 percent).

Employer support varied across different groups of wage and salary workers. The groups most likely to participate in in-house training or to receive support for their external training or formal study included full-time employees, older workers, workers with higher qualifications, those in higher skilled occupations and workers who had been working for their employer for a relatively long length of time. By industry, those employed in the mining and quarrying and the electricity, gas and water supply industries were the most likely to participate in education or training, while those employed in the construction and primary sectors were the most likely to receive employer support towards formal study.

Analysing the results of the ALL survey, Dixon and Tuya (2010) found that 23 percent of all employees had undertaken some study or training towards a qualification during the last 12 months, and 12 percent had done so with the help of employer funding (i.e. around half of the total). In addition, 36 percent of employees had taken a course or courses that were not linked to any qualification, and 26 percent had done so with employer funding (i.e. around 72 percent of the total). These results indicate that the majority of the formal learning that is undertaken by prime-aged employees is employer-sponsored. The overall average rate of participation in education or training courses that were funded by employers (considering both types of courses) was 35 percent.

In an analysis of the factors associated with further education and training, Dixon and Tuya (2010) found that there was little difference in the participation rates of workers with high, moderate or low levels of literacy skill when considering study or training towards a qualification. However, workers with higher levels of educational attainment, younger workers, Māori and workers at larger firms were

more likely to have studied or trained for a qualification than those who were less qualified, older, European or employed at small or medium-sized firms.

In contrast, participation in courses that were *not* linked to qualifications was strongly correlated with literacy skills: workers with relatively low literacy skills were far less likely to have participated than those with higher literacy skills. Courses that do not lead to qualifications are largely short courses funded by employers, suggesting that this type of training is unequally distributed across workers according to their English-language reading and writing skills. The study also found that workers of Pacific ethnicity, workers with no qualifications or school qualifications only and those employed at small firms were less likely to have undertaken courses that were not linked to formal qualifications than workers belonging to other ethnic groups, holding post-school qualifications already or working at larger firms.

3. DATA SOURCE AND DEFINITIONS

3.1 Introduction

This section provides background information about the Survey of Working Life (SoWL) and explains how employer-funded education and training was defined and measured in the SoWL. Definitions of other SoWL variables are given in Appendix 1.

3.2 Survey design and data collection

The SoWL was conducted as a supplement to Statistics New Zealand's Household Labour Force Survey (HLFS) in the March 2008 quarter. The SoWL was the first official survey in New Zealand to investigate people's work arrangements, working conditions and job satisfaction. The overall objective of the survey was to provide data that can be used to monitor changes in the employment conditions, working arrangements and job quality of employed people in New Zealand and to better understand the reasons for and implications of these employment patterns.

All eligible responding individuals in the March 2008 quarter HLFS who were employed in the reference week were asked to participate in the SoWL. The SoWL interviewed 14,510 employed people in New Zealand and had a response rate of 84 percent. Proxy responses from other members of the same household were not accepted (except under certain limited conditions). Interviews were carried out by phone or in person. The proxy response rate for the SoWL was 3 percent of responses.

3.3 Measures of education and training

Employer-funded education and training refers to any employment-related training that is partly or wholly paid for by the employer. This education or training can be organised by the employer or an external training provider, conducted in-house or externally and delivered by the company's own employees or external training providers. It does not include on-the-job training at an employee's desk or normal place of work or attendance at conferences.

In the SoWL, all employees were asked: "In the last 12 months, have you done any training courses or study that was paid for by your employer?". Employees who said "yes" were also asked how long they had spent on that study or training in the last 12 months. The time spent was recorded in categories ranging from '1 day or less' to '6 months or more'.

Information on employer-funded education or training was collected from all respondents who were employees at the time of the interview, but the survey did not measure how much time they had spent in employment over the 12-month reference period. The survey's measures of training participation rates and days spent in training are likely to be affected by any differences among individuals and groups in the amount of time that was spent in employment. For example, if many teenage employees were only working for part of the last year, this would have reduced their likelihood of receiving work-related training, contributing to a

lower training rate for teenagers than for other age groups (holding other factors constant).

The survey collected information on *any* employer-funded education and training undertaken in the last 12 months within all jobs an employee held. Job characteristics such as industry and occupation were only collected for the main job held at the time of the interview, however. This means that, in some cases, there will be discrepancies between the job characteristics used in the analysis and the characteristics of the job(s) in which the education or training was actually undertaken.

4. AVERAGE PARTICIPATION RATES AND THE VOLUME OF EDUCATION AND TRAINING

4.1 Introduction

This section presents descriptive statistics on employer-funded education and training, comparing average participation rates and the distribution of days spent on training across demographic and labour force groups. The statistics considered here are bivariate – the association between training and other characteristics is considered one variable at a time. The numbers discussed in this section are set out in Tables 1 and 2. The number of employees in each group and the underlying sample sizes are shown in Tables A1 and A2 in Appendix 2.

The purpose of this section is to give an initial picture of the training outcomes that are experienced by different groups of employees. We do not provide any interpretation of the patterns at this stage: that is left for later in the paper.

In Section 5, we consider the association between each characteristic and training participation using multivariate methods. These methods take into account the fact that many socio-economic and job characteristics are correlated with each other, and therefore an apparent relationship between one factor (such as age) and participation in training may be due to the indirect influence of other characteristics that are correlated with both age and training. The results given in Section 5 provide more robust evidence on the direct associations between each personal and job characteristic and the likelihood of receiving employer-funded training.

4.2 Average training rates and days spent in training

Employee characteristics

All employees

The average education and training participation rate was 31 percent, with 21 percent saying they had studied or trained for 1 day or less, and a further 47 percent for 2–5 days. Only 9 percent had studied or trained for 1 month or more.

Gender

Participation in employer-funded education and training was the same for males and females, both with a participation rate of 31 percent. There was little variation by gender in the time spent training. Around one-fifth of males and females had spent 1 day or less in training, almost half had spent 2–5 days training, 16 percent of males and 13 percent of females had spent between 6–10 days in training, and 17 percent of both males and females had spent 11 days or more training in the past 12 months.

Age

Employees aged 50–54 years had the highest rate of participation in employer-funded training at 37 percent, closely followed by the 30–34, 35–39 and 45–49 age groups, with participation rates of 35 percent. Employees aged 15–19 years

had the lowest participation rate at 14 percent, followed by those aged 65 years and older, with 18 percent having participated in employer-funded education or training. Employees aged 20–24 years also had a relatively low participation rate of 26 percent.

In terms of time spent training, younger employees spent more time training. A higher proportion of employees aged below 40 years had spent 1 month or more in education and training than employees aged 40 years and over.

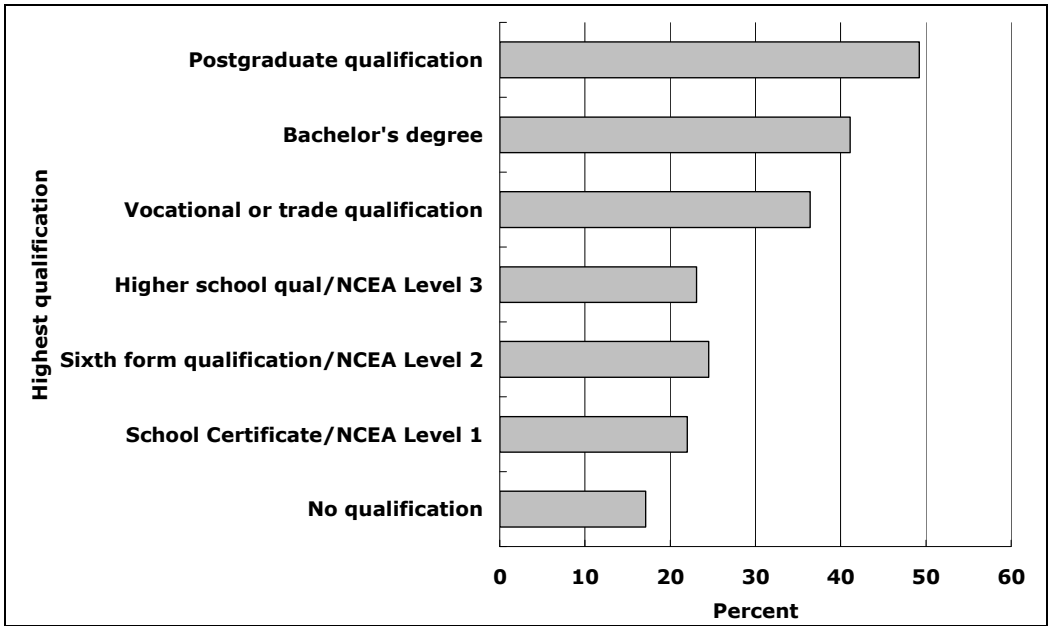
Ethnicity

The European only, Māori only and European/Māori ethnic groups all had similar participation rates to the population total of 31 percent. However, the Pacific only group had a notably lower participation rate of 18 percent. The Asian only group also had a lower rate than that for the total population, at 25 percent.

Education

As shown in Figure 1, participation in employer-funded education and training was strongly associated with whether an employee held a qualification and the level of their qualification(s). For those who had no qualification, the participation rate in employer-funded education and training was 17 percent. This compared with 22–24 percent for those with a school qualification only, 36 percent for employees with a vocational or trade qualification, 41 percent for employees with a bachelor's degree and 49 percent for employees with a post-school qualification.

Figure 1: Proportion of employees who participated in employer-funded education or training, by highest qualification



Those with a higher qualification also generally spent more time on training. One-third of employees with a post-school qualification who had participated in training during the past 12 months had undertaken 6 days or more of this

training, compared with around 28 percent with a school qualification only and 24 percent of those with no qualification.

Formal study status

As part of the quarterly HLFS, information is collected on whether respondents were studying towards a qualification at the time of the interview, and if so how long the qualification would take to complete. A respondent is defined as participating in formal study if they were studying towards a qualification that would take 3 months or more of full-time study to complete.

Employees who were participating in formal study at the time of the interview were more likely to have undertaken employer-funded education and training during the past 12 months than those employees who were not participating in formal study (39 percent compared with 31 percent). Also, those who were participating in formal study and had undertaken employer-funded education and training in the last 12 months were much more likely to have spent 1 month or more on employer-funded education and training (21 percent compared with 7 percent). Overall, 53 percent of employees doing formal study had undertaken 6 days or more training, compared with 29 percent of employees not doing formal study. It is likely that some of the formal study that these employees were enrolled in was employer-funded.

Parental status

Employees who were parents of dependent children had a higher participation rate in employer-funded education and training than non-parents. On average, 35 percent reported participation compared with 29 percent of employees who did not have dependent children.

The participation rates of sole parents and joint parents were compared. There was little difference in the participation rates of sole and partnered mothers or those of sole and partnered fathers. However, men with dependent children were more likely to have studied or undertaken training in the last 12 months than women with dependent children.

Birthplace

There was little variation in the participation in employer-funded education by whether an employee was born in New Zealand or overseas and, if they were born overseas, by how long they had been living in New Zealand. While participation was slightly higher for those born in New Zealand at 32 percent, participation rates were only slightly below the national average for those born overseas, with a rate of 30 percent for those who had lived in New Zealand for less than 5 years and 28 percent for those who had lived in New Zealand for 5 years or more.

Geographical area

Employees living in main urban areas, secondary and minor urban areas and rural areas all had very similar participation rates in employer-funded education and training of just over 30 percent. There were only small differences in time spent

training among employees who had participated in training, with employees from all areas most likely to have spent 5 days or less training.

Job characteristics

Job tenure

Participation in employer-funded education generally increased with time spent in the job. Of the employees who had been in their main job for less than 6 months, only 18 percent had received employer-funded training on average. This is fairly low when compared with the 31 percent of employees who had been in their job between 6 months and 3 years and received training, 34 percent of employees with tenure between 3–10 years and 37 percent of employees who had been in their job for 10 years or more. Correspondingly, those who had participated in training also had higher median tenure than those who had not (3.5 years compared with 2.5 years).

While there was higher participation in training for employees with a longer tenure, the time spent on training was not consistently higher, but varied across lengths of tenure.

Type of employment relationship

Participation in employer-funded education and training was almost twice as high for those who were permanent employees than for temporary employees, with participation rates of 32 percent and 18 percent respectively. However, this gap was more pronounced for males than females, with only 12 percent of male temporary employees having participated in employer-funded education and training compared with 23 percent of female temporary employees. The participation rates for permanent employees were similar at 33 percent for males and 32 percent for females.

Permanent employees who had received training also spent more time in training than temporary employees – 32 percent of permanent employees who had participated in training had spent 6 days or more doing study compared with 21 percent of temporary employees.

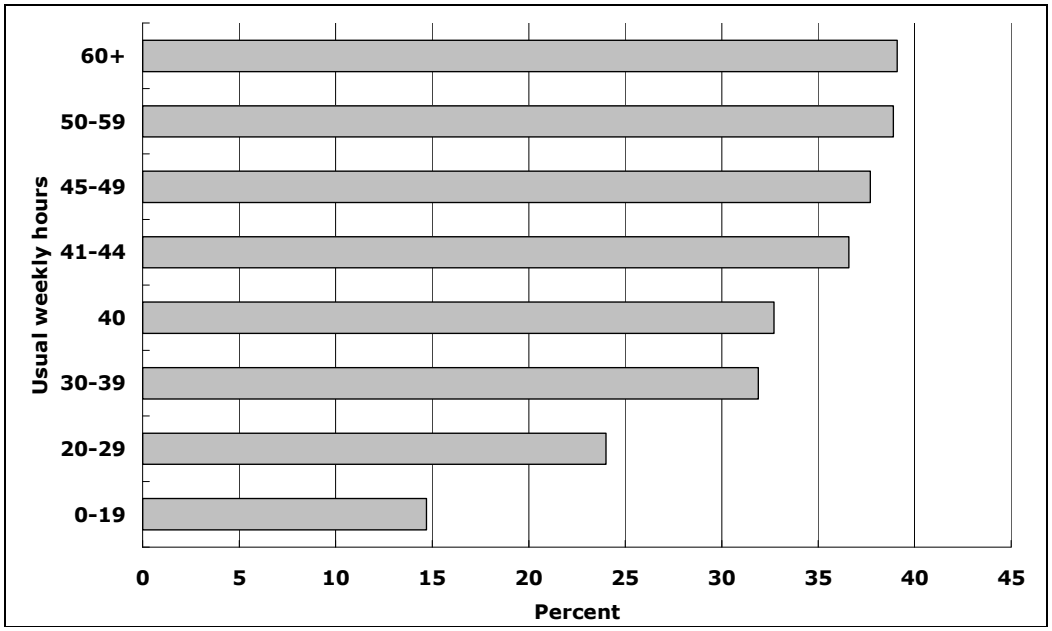
Hours worked

The participation rate in employer-funded education and training increased with the number of hours an employee usually worked per week in their main job. The participation rate jumped from 15 percent for employees who usually worked 0–19 hours per week to 24 percent among employees working 20–29 hours per week and increased to 32 percent for employees working 30–39 hours per week. From here, participation increased in smaller increments to reach 39 percent for employees working 60 hours or more per week (see Figure 2).

When tabulated by gender, females had higher average training rates than males in most hours-of-work categories, with the exception of 41–44 hours. The fact that men and women have similar average training rates overall is due to the fact that women are more likely to work part-time, offsetting the tendency for women to receive more training for a given level of hours.

While time spent training generally increased with hours worked, it tended to peak for those working 40–44 hours per week. While over half of all employees had spent up to 5 days training, this was most common for those working 0–19 hours, at 83 percent. Those working 41–44 hours and 50–59 hours had the highest proportion of employees who had spent more than 5 days in training, at 37 percent.

Figure 2: Proportion of employees who participated in employer-funded education or training, by hours per week



Working times and overall working pattern

Employees' overall working pattern was examined to see if participation in employer-funded education and training varied by whether an employee worked mainly in the daytime, mainly in the evening or mainly at night or worked changing shifts. Participation levels may be influenced by working-time patterns if employers are more likely to run training sessions at standard working times during the day, making it more difficult for workers with non-standard hours to attend. However, any association between working-time patterns and training rates could also be due to other factors such as occupational profile or industry.

Contrary to expectations, employees who worked a changing shift pattern had the highest participation in employer-funded education and training at 47 percent. Employees working mainly at night had the second highest rate of 33 percent, followed by those who worked mainly during the day, with a participation rate of 30 percent. The high participation for employees working mainly at night was driven by females, with 43 percent of female employees working mainly at night having participated in employer-funded education and training, compared with 23 percent of males. Those working mainly evenings had the lowest participation rate in employer-funded education and training of 19 percent; this was 12 percentage points below the rate for all employees of 31 percent.

The same pattern also emerged with time spent training. Those working changing shifts had the highest proportion of employees who had spent 6 days or more on training (36 percent) and those who worked evenings had the highest proportion of employees who had done 5 days of training or less (85 percent).

Occupation

Over half of employees in professional occupations had participated in employer-funded education and training in the past 12 months. The technicians and associate professionals and the legislators, administrators and managers occupational groups also had relatively high participation rates of 37 percent and 35 percent respectively (see Figure 3).

Figure 3: Proportion of employees who participated in employer-funded education or training, by occupation

The occupational group with the lowest participation in training was elementary occupations,[1] with a participation rate of 15 percent. The agricultural and fisheries group also had less than one-fifth of employees participating in employer-funded education or training (17 percent).

By gender, males employed in the clerks and plant and machine operators and assemblers occupational groups had higher participation in employer-funded education and training than females employed in these groups.

Occupations were also grouped into broad skill level. These groups were: highly skilled (legislators, administrators and managers, and professionals); skilled (technicians and associated professionals, and trades workers); semi-skilled

[1] The elementary occupations group includes labourers, caretakers, cleaners, messengers, refuse collectors, and packers and freight handlers.

(clerks, service and sales workers, and agricultural and fisheries workers); elementary occupations (plant and machine operators and assemblers, and elementary occupations).

Grouping the occupations into broad skill levels showed participation rates and time spent on training increased with the skill level of the occupation. Forty-five percent of employees in highly skilled occupations had participated in employer-funded education or training compared with 33 percent in semi-skilled occupations, 22 percent in skilled occupations and 21 percent in elementary skill level occupations.

Union membership

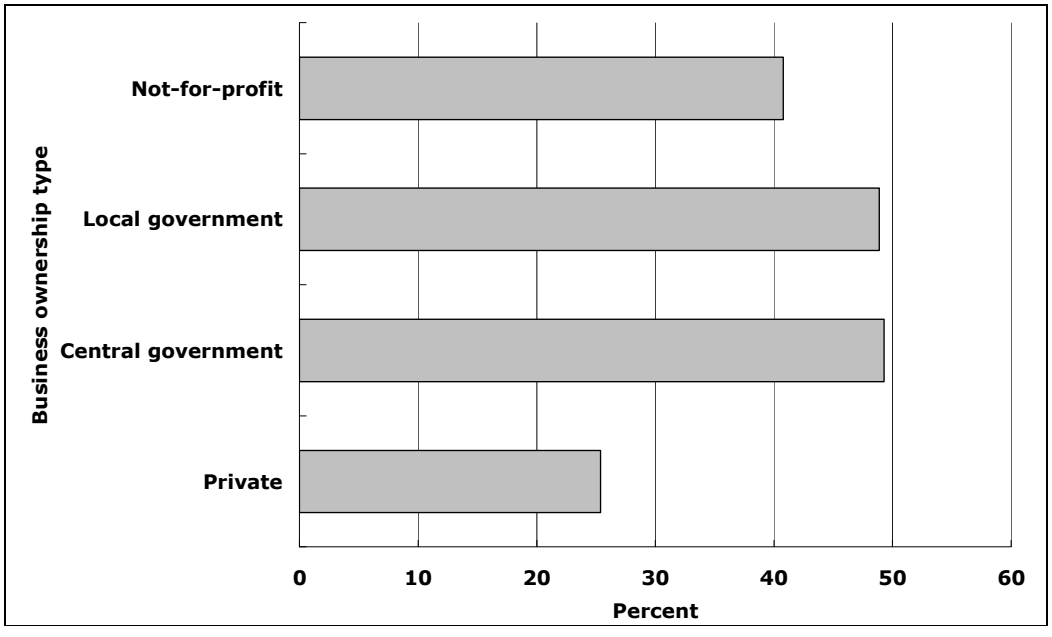
Union members had a much higher participation rate in employer-funded education and training than employees who were not members of a union (42 percent compared with 27 percent). As well as having higher participation, union members also spent slightly more time on training. Among those who had participated in employer-funded education and training, 33 percent of union members had spent more than 5 days on training compared with 30 percent of non-union members.

Employer characteristics

Business ownership type

The rate of employee participation in employer-funded education and training in government-owned organisations was double the participation rate in the private sector (49 percent compared with 25 percent). This was true of both central government and local government. Those employed in the non-profit sector also had a high participation rate at 41 percent (see Figure 4).

Figure 4: Proportion of employees who participated in employer-funded education or training, by business ownership type



Employees in the government sector who had participated in training had also spent more time in training than those in the private sector. Sixty-one percent of central government employees had spent less than 6 days training, 17 percent had spent 6–10 days and 21 percent had spent more than 10 days training. This compares with 71 percent of private sector employees having spent up to 5 days training, 13 percent having spent 6–10 days and 14 percent having spent more than 10 days training.

Size of enterprise

The participation rate in employer-funded education and training steadily increased with the size of the enterprise (or non-profit organisation) in which an employee worked. Employees working in enterprises employing up to four employees had the lowest participation rate of 21 percent. This increased in increments to reach 33 percent for enterprises with 20–47 employees and 43 percent for enterprises with 500 or more employees. The average participation rate for those working in small enterprises (0–19 employees) was below that for all employees at 23 percent.

Time spent training shows a more varied pattern. Employees working in organisations with 500 or more employees were most likely to have spent more than 5 days training, with 40 percent of employees who had participated in training having done so. However, the variations in time spent by participants across the other firm size groups do not show a clear pattern.

Industry

Employees working in the electricity, gas and water supply industry and government administration and defence industry had the highest rates of participation in employer-funded education and training (53 percent and 51 percent respectively). Those employed in the health and community services industry, mining industry and education industry also had relatively high participation in training, with over 45 percent having participated. Participation was lowest for those in the accommodation, cafés and restaurants industry (12 percent), followed by those in the retail trade industry (20 percent).

Employees who received training in the accommodation, cafés and restaurants industry had also spent less time in training than those working in most other industries. Over 80 percent of employees who had participated in training in both the accommodation, cafés and restaurants industry and wholesale trade industry had spent 5 days or less on education or training in the last 12 months. At the other end of the scale, almost one-third of employees in the personal and other services industry who received training had spent 11 days or more on this training. Employees working in the finance and insurance industry had also spent a comparatively high amount of time on training, with 21 percent of employees who had participated in training having spent 11 days or more in training.

Men had higher rates of training than women within many industries. However, women were more likely than men to be working in the industry groups that have the highest training rates overall (government administration and defence, education, and health and community services).

4.3 Summary

This section has presented descriptive statistics on the average training rates and distribution of days spent training of different groups of employees. Some of the most striking patterns include the following:

- The average training rate of teenage and youth employees was well below that of prime-age and older employees.
- The Pacific and Asian ethnic groups had substantially lower rates of participation in employer-funded education and training than the total population (18 percent, 25 percent and 31 percent respectively).
- Participation was higher among employees who held a qualification and increased with the level of the highest qualification.
- Participation in training generally increased with time spent in the job and with hours worked.
- By occupational group, employees in professional occupations had the highest rate of training (51 percent), while employees in the elementary occupations group had the lowest (15 percent).
- The rate of training was higher among permanent employees than temporary employees, higher among members of a union than non-members and higher among employees who worked a changing shift pattern than those with other working-time patterns.
- The average participation rate for employees in government-owned organisations was almost double that of employees in the private sector (49 percent compared with 25 percent).
- The participation rate steadily increased with the size of the organisation in which an employee worked.

The direct association between each characteristic and the likelihood of receiving employer-funded training, controlling for the effects of other factors, is explored in the following section. Full results of the analysis are summarised in Section 6.

5. WHO RECEIVES EDUCATION AND TRAINING? – A MULTIVARIATE ANALYSIS

5.1 Introduction

When looking at the relationship between a particular characteristic and an outcome such as training, it is useful to control for the confounding effects of other factors that may be correlated with both the characteristic of interest and the outcome. In this section, logistic regression models are used to estimate the direct relationship between each demographic, job or enterprise characteristic and the probability of receiving employer-funded education and training, adjusting for other factors.

The regression models used are described in Section 5.2. The results obtained are presented in Section 5.3. The main findings of this section are summarised briefly in Section 5.4. Section 6 provides a more comprehensive summary of this paper's findings, bringing together the ideas and results of the literature review, descriptive statistics and modelling results.

5.2 Regression models

The dependent variable in all regressions is whether or not the individual participated in employer-funded education and training in the past 12 months.

The regression models that we present and discuss below were estimated for males and females separately. Although this approach does not allow us to explore any male-female differences in the likelihood of training that might exist, there is no evidence in the descriptive statistics of a gender gap in average training rates.[2]

The range of explanatory variables included in the regressions was based on findings from the literature. They include factors that are believed to influence the probability of receiving employer-funded training in economic theory (such as age, educational attainment, job tenure and hours of work) as well as factors that have been found to be correlated with differences in training probabilities in prior research such as ethnicity and parental status.

The following explanatory variables were used:

- Age (defined using 5-year age groups).
- Ethnicity (using indicator variables for five main ethnic groups).
- Highest qualification (using indicators for seven prioritised qualification groups).
- Whether the individual was a parent of dependent children.
- Immigration status (using four indicator variables for whether born in New Zealand or length of time lived in New Zealand).

[2] This was confirmed when we re-estimated the models described below using the survey data for both males and females and included an additional indictor variable to capture any gender effects.

- Indicators for whether the individual lived in one of the main urban areas, a minor urban area, a provincial centre or a rural location.
- Tenure (length of time in main job, defined using eight duration groups).
- An indicator for temporary employment.
- Usual hours worked per week in main job (defined using 8 bands).
- Union membership.
- Occupational group, using one-digit NZSCO 1999 categories.
- Overall working-time pattern (whether worked mainly in the daytime, evening or night or changing shifts).
- The business ownership of the employer (public, private or non-profit).
- Industry, using one-digit ANZSIC 1996 groups.
- The size of the employer (number of employees).

Each categorical variable was modelled using a set of dummy variables. In each case, we omitted the subcategory whose rate of participation in employer-funded education and training was closest to the all-sample average of 31 percent. For example, 40–44 year olds are the omitted age group. When considering the effects of each explanatory variable, the omitted group is the reference group against which the results for the other groups should be evaluated.[3]

Marginal effects were calculated from the regression coefficients, and these are reported in Table 3 (for males) and Table 4 (for females). The regression coefficients and their standard errors are shown in Tables A3 and A4 in Appendix 2. The marginal effects show the difference in the probability of participating in employer-funded training between different levels of a particular characteristic, while controlling for the effects of the other characteristics that are included in the model.

Marginal effects that are positive indicate that the group in question was more likely to have received training than the reference group. Marginal effects that are negative indicate that the group in question was less likely to have received training than the reference group. For example, the first number in the first column of Table 3 (0.037) indicates that males in the 15–19 age group were estimated to have a 3.7 percentage point higher training rate than males in the 40–44 age group (the reference age group, whose marginal effect is shown as zero in the table). Marginal effects that are statistically significant at the 95 percent confidence level are marked with an asterisk. In this example, the marginal effect is not significantly different from zero, meaning that the 3.7 percentage point difference is not large enough to be statistically reliable, given sample sizes.

Several variations of the core regression model were estimated. The first three specifications incorporated different combinations of industry and business

[3] Because the logit model is non-linear, the marginal effect of each independent variable is not constant, as in a linear regression model. Rather, it varies according to the values of all the other independent variables that are included in the model. In this paper, we adopt the conventional approach to reporting the marginal effects of each independent variable by evaluating the probabilities at the sample averages for all other independent variables.

ownership type – two variables that are closely related – with the aim of providing insights into the average effects of each and the interactions between them. The fourth specification included occupational groups defined at a more detailed level than in the first three models. In the fifth specification, the sample was restricted to employees who had been working for their current employer for at least a year.

We discuss the results of the first model in detail and then comment only on notable differences in results obtained when the specification was altered.

5.3 Results

Initial specification

The first columns of Tables 3 and 4 show the marginal effects obtained when we estimated regressions using the full sample of all male and all female employees, and including all explanatory variables listed above except industry.

As noted, a positive marginal effect indicates a higher likelihood of participating in training compared with the reference group, while a negative marginal effect indicates a lower probability of participating in training. We focus mainly on the marginal effects that were statistically significant at the 95 percent confidence level.

Age

Among male employees, the estimated probability of receiving employer-funded education and training increased slightly with age until 25–29 years and then decreased slightly. The estimated probability of participating in training for males aged 25–29 years was 7.4 percentage points higher than that of the reference age group, 40–44 year olds. However, this is the only age group to show a statistically significant difference in the probability of receiving training, compared with 40–44 year olds. There is very little difference in the probability of receiving training over the 40–64 age range.

For females, there were no statistically significant differences in the probability of participating in employer-funded education or training across age groups. Unlike the pattern for male employees, the profile of marginal effects by age was relatively flat, indicating little relationship between age and training. Although the estimated training probability for the 65–69 age group was 8.1 percentage points lower than that of 40–44 year olds, this result was not statistically significant.

The marginal effects for 15–19 year olds and 20–24 year olds indicate that these age groups have a similar likelihood of receiving training to prime-aged employees once the effects of other correlated characteristics are controlled for. This contrasts with the pattern found in the descriptive statistics (Section 4), which show a much lower average training rate for teenagers, in particular, and to a lesser extent for 20–24 year olds. Further investigation of factors influencing the regression parameters for these age groups indicates that lower education, fewer hours of work and the occupational and industry distribution of teenage

workers are all significant factors contributing to the lower average training rate found in the descriptive statistics.

Ethnicity

By ethnic group, male employees who identified with a Pacific ethnic group were the least likely to receive training, with a training probability that was 11.0 percentage points lower than that of the omitted ethnic group, Europeans. All of the other male ethnic groups were not significantly more or less likely to receive training than Europeans.

For females, women of a Pacific ethnicity also had the lowest training probability (estimated to be 9.0 percentage points less than the European-only group). Women belonging to an Asian ethnic group also had a significantly lower probability of participating in training (being 8.5 percentage points less likely to participate than Europeans).

As shown below, the training differentials estimated for Pacific employees and female Asian employees do not vary much across our alternative specifications. Including detailed industry groups or detailed occupational controls does not reduce their size appreciably. The survey evidence is unable to shed much light on the reasons for these ethnic group effects. Drawing on external evidence, it seems reasonable to suggest that English language barriers could be playing some role. Results from the Adult Learning and Life Skills Survey 2006 indicate that 61 percent of Pacific peoples in the New Zealand workforce and 82 percent of Asian peoples in the workforce speak English as a second or 'alternative' language.[4] Results from the same survey indicate that ESOL speakers tend to have poorer English-language reading and writing skills, which could affect their chances of being offered training or their ability to take up those opportunities. Almost 75 percent of people aged 25–65 with English as a second language had literacy scores below the overall mean score for the New Zealand population (Earle, 2009, p.11). Differences in employment continuity could also be making a contribution to the lower training of Pacific and Asian employees if employees in these ethnic groups are less likely to work on a full-year basis. (This is relevant because the survey measure of employer-funded education and training records all instances in the last 12 months.)

Education

The probability of receiving training is correlated with the qualification level an employee holds. Male employees with a teacher's, nurse's or technician's certificate or diploma were the group most likely to participate in training, with a training probability 10.8 percentage points higher than that of males holding any other type of post-school certificate or diploma (the reference educational group). Male employees with a post-graduate degree also had a significantly higher estimated training probability (7.6 percentage points higher than the reference group). However, for females, there were no significant differences among employees holding post-school qualifications.

[4] Based on an unpublished analysis of Adult Literacy and Life Skills survey data by one of the authors.

Male employees with no school or post-school qualifications had the lowest training probability, 11.6 percentage points below that of male employees with a certificate or diploma. Male employees whose highest qualification was School Certificate/NCEA level 1 were also significantly less likely to have participated in training than the reference group.

The tendency for less qualified employees to undertake less education or training was even more pronounced for females. Female employees with no school or post-school qualification were 13.3 percentage points less likely to participate than the reference group, while those with School Certificate/NCEA level 1 or an upper secondary school qualification were 7.8 percentage points and 7.0 percentage points less likely respectively.

These educational patterns among both males and females are consistent with the idea that educational attainment might be seen as a proxy for an employee's ability to learn and use new skills quickly and may therefore be used as an indicator of who might give the largest return from participating in training. Another likely cause of the relationship is that more highly educated employees are more likely to request or initiate their own workplace training. British evidence of this is given in Johnson, Sawicki, Pearson, Lindsay, McQuaid and Dutton (2009). Moreover, any variations across jobs in the need for continuing training to maintain job-related skills that are not fully captured by the occupational and industry indicators in these regression models could give rise to a pattern of differences in the likelihood of training by educational group.

Other demographic characteristics

Fathers of dependent children had an estimated training probability that was 5.1 percentage points higher than that of non-parents. Also, male employees from a minor urban area had a higher training probability than those from a major urban area, by 6.9 percentage points. The reasons for these differences are not known. It is possible that men with and without children and men living in different geographical areas differ on some other characteristics that are not included in the model (such as unmeasured skills or differences in continuity of employment during the year), and that these other characteristics are related to the likelihood of participating in further education or training. Parental status and geographical area were not significantly associated with the likelihood of training in the female results.

Job tenure

Turning to job characteristics, we find that both male and female employees with less than 6 months' tenure in their job had a significantly lower probability of participating in employer-funded education and training than employees with longer tenure. Male employees with tenure of less than 1 month were 17.1 percentage points less likely to participate than those with tenure of 1–3 years. Females with less than 1 month's tenure were 15.3 percentage points less likely to participate than those with tenure of 1–3 years.

Unfortunately, these results do not provide robust evidence that job tenure affects participation in training because we are unable to tell whether employees

with less than 6 months' tenure had worked for the same number of weeks in the year before the interview as those in the reference group. The lower training probability for the low tenure groups could be entirely due to the fact that many of these workers were not in paid work before starting their current job (reducing their exposure to training opportunities over the reference year as a whole). This means we cannot be sure that the recency of their recruitment is the cause of their lower training. There is little difference in the estimated training probabilities of employees in the other tenure categories from 6 months upwards.

Hours worked and employment arrangements

Looking at hours worked and type of employment relationship, the results indicate that male employees working fewer than 20 hours a week were 13.8 percentage points less likely to receive employer-funded training than those working 40–44 hours. Male employees working 45–60 hours were more likely to train, with those working 45–50 hours having the highest estimated training probability, 6.1 percentage points higher than that of employees working 40–44 hours.

Similar to the pattern for males, female employees working fewer than 30 hours a week were significantly less likely to receive training than those working 40–44 hours. Females working less than 20 hours had the lowest training probability and were 13.5 percentage points less likely to participate in training than those working 40–44 hours per week. There were no significant differences for females working longer hours.

This pattern of a higher predicted training probability for employees working longer hours or full-time as opposed to part-time is consistent with results obtained in previous studies. The pattern is consistent with the theory that firms will provide training to workers they expect to get a higher return from, although there are other possible explanations.

Males who were employed in temporary jobs were 13.3 percentage points less likely to receive training than males in permanent jobs. The effect of temporary employment on training for women, in contrast, is quite small and not statistically significant. In other analyses of Survey of Working Life data, we have found large differences in training rates across different types of temporary job, with fixed-term employees reporting higher rates of training than casual and seasonal employees (Dixon, 2009). It is also the case that men who work in temporary jobs are more likely to be employed in casual or seasonal jobs than female temporaries (who are more likely to be employed in fixed-term jobs). These compositional patterns help to explain the gender variations that are reported here.

Union membership and working-time patterns

Looking at other aspects of working times and type of employment, the estimated training probability for male union members was 4.6 percentage points higher than that of non-union members. For female union members, it was 6.9 percentage points higher. The estimated training probabilities were also higher for employees working changing shifts than for employees working mainly in the

daytime (the reference group) by 12.7 percentage points for males and 9.0 percentage points for females. It should be noted that employees who work a changing shift pattern are not a large group, making up only 5 percent of all employees in the workforce. Estimates of union membership vary, from around 21 percent of employees to 30 percent (Dixon, 2009, p.35).

It is possible that unions have a direct effect on training rates through collective bargaining, although we have not found any published New Zealand evidence on this. Johnson et al. (2009) discuss the effects of unions on training in Britain and suggest that unions can raise training opportunities by working in partnership with employers to implement workplace training programmes and encourage worker participation or by negotiating training-related benefits (such as paid leave for training) through collective bargaining (ibid, p.53).

An alternative explanation for the higher training of union members and shift workers is that both these patterns are due, at least in part, to the occupational make-up of these groups. In more detailed analysis of the survey data, using two-digit occupational group coding, we found that shift work was common among life science and health professionals and among personal and protective services workers, while union membership was most common among life science and health professionals and teaching professionals. These are occupations that tend to have higher than average participation rates in employer-funded education and training. Later in this section, we consider whether including more detailed occupational controls in the regression model reduces the size of the shift work and union membership effects on training appreciably.

Occupation

Professionals were the only major occupational group found to be significantly more likely to participate in training than the reference group of legislators, administrators and managers. Male professionals were 7.9 percentage points more likely to participate, while female employees were 8.7 percentage points more likely.

Among male employees, agriculture and fishery workers were significantly less likely to participate in employer-funded education and training than the reference group, by 8.9 percentage points, and were the least likely of all occupational groups to participate. Among females, the differences were relatively larger, with the estimated training probability being lowest for female trades workers (18.4 percentage points lower than for legislators, administrators and managers), closely followed by plant and machine operators and assemblers, agriculture and fishery workers, and elementary occupations (14.8 percentage points, 14.3 percentage points and 14.1 percentage points lower respectively). These differences in estimated training probabilities are likely to reflect differences in the skill requirements of occupations, which influence the benefits of workforce training to both employers and employees.

Business ownership type

Employees working in private firms were less likely to receive employer-funded training than those working in the non-profit and government sectors. Those

working in non-profit firms were the group that was most likely to receive employer-funded education or training, with estimated training probabilities 15.4 percentage points (males) and 12.0 percentage points (females) higher than those of employees at private firms. For government employees, the estimated likelihood of employer-funded education or training was 6–7 percentage points higher than that of private sector employees.

Approximately two-thirds (67 percent) of employees in the survey worked in private sector firms, while 18 percent worked in public sector organisations and 7 percent in non-profit organisations. Business ownership data were not available for 8.5 percent of employees.

Economic theory suggests that employers who are profit-oriented will not provide training unless they anticipate profit-related benefits from the training. Public sector managers may use different decision criteria, leading to different outcomes. There are a range of other plausible explanations for the private/non-private gap in workforce training. For example, the higher frequency of training in public and non-profit organisations could simply reflect a higher concentration of employment in certain types of service provision that have high workforce training needs. We explore this idea below when we incorporate both industry and business ownership type in an alternative model specification.

Business size

Employees of smaller firms – those with less than 20 employees – are less likely to participate in training. In the male results, the training probability was lowest for male employees in firms of less than five employees, 10.4 percentage points lower than that of employees in the reference group (firms with 20–49 employees). Males in the 5–9 employee size group also had a lower estimated training probability. Similarly, female employees working at firms with less than 20 workers were significantly less likely to study or train than those at medium-sized or larger firms. In the male results, the likelihood of receiving training was highest for male employees in firms of 100 people or more, although this was not significantly different from the estimated likelihood for employees of medium-sized firms.

As background information, it is worth noting that 39 percent of all employees were employed in firms with less than 20 employees, 12 percent were employed in firms with 20–49 employees and 40 percent were employed in firms with 50 or more employees.

Production technologies differ by size of firm, and this is likely to have implications for firms' training needs. If larger firms are more capital-intensive or use more complex production methods, this could lead to a higher level of training. Other possible explanations for the size effect on training are that larger firms have advantages of scale that reduce training costs and make it easier to release workers from their jobs for training, they are more likely to deliver their workforce training through formal courses rather than informally and they have greater expertise in human resource management, raising their awareness of the benefits of training.

Alternative model including industry controls

To identify the effects of industry on training, a second model was estimated that included industry as an explanatory variable rather than business sector. The marginal effects estimated from this specification are shown in the second columns of Tables 3 and 4.

For most variables in the model, the estimated marginal effects are very similar to the initial set of results for both males and females. Some small differences are apparent. For example, among males, there are no longer any significant differences in training probabilities by occupation. Also, the higher training probability for employees holding a post-graduate degree is no longer significant. The positive effects of working in the evening or at night on the probability of training are increased, with female employees who work mainly at night 14.0 percentage points more likely to receive training than female employees who work mainly in the daytime (the reference group).

Looking at the pattern of marginal effects by industry, male employees working in the accommodation, cafés and restaurants industry were least likely to have trained, 19.7 percentage points less likely than males in the reference industry group, which is property and business services. Males working in personal and other services had the highest likelihood of having trained and were 13.1 percentage points more likely to have done so than males in property and business services.

Like males, females employed in health and community services were more likely to have trained than employees in property and business services (by 9.4 percentage points). However, female employees in government administration and defence had the highest estimated training probability. Females employed in accommodation, cafés and restaurants; communication services; construction; agriculture, forestry and fishing; and retail trade all had significantly lower training probabilities than the reference group, property and business services.

Industry effects on training rates have been found in many prior studies, even when variations in related factors like occupational structure and size are taken into account. The industry effects are typically attributed to differences in production technologies or business strategies that influence the profitability of workforce training or its perceived benefits.

Alternative model including both industry and business ownership controls

In a third specification, both industry and business ownership controls were included by interacting the two. The results of this model are shown in the third columns of Tables 3 and 4.

Industries were divided between those with a significant level of both private ownership *and* public or non-profit ownership and those in which one ownership type predominates. Industries where just one ownership type predominates were modelled in the same way as before, using a single dummy variable. In the industries with split ownership patterns, a dummy variable was included for each

of the private and non-private components. The industries in which both private firms and non-private organisations are well represented are manufacturing; transport and storage; communication services; property and business services; education; health and community services; cultural and recreational services; and personal and other services. The omitted industry group in this specification is privately owned property and business services.

Considering the marginal effects obtained for industries with both private sectors and public/non-profit sectors, we find that, in general, employees in public/non-profit organisations are more likely to report that they received training in the last 12 months. There are some exceptions, however. In the male regression, employees in the public/non-profit component of both the property and business services and education industries report *less* training than employees in the private component of those industries. This is also the case for females in property and business services (those in the private sector were more likely to train).

This analysis suggests that public or non-profit ownership tends to be associated with the higher likelihood of receiving training *within* industries, but exceptions to this general pattern can occur. Furthermore, within industries, the gap between public and private sector training probabilities is generally lower than the gap estimated earlier for all industries, because industry composition 'explains' some of the public/private training gap.

Model with detailed occupation controls

A discussed earlier, the significantly higher training probabilities found in the main set of results for union members and shift workers could possibly be explained by the occupational composition of these groups. To explore this hypothesis, we extended the model by including more detailed occupational group controls, using indicator variables for occupation defined at the two- or three-digit level (39 groups in total). Results are shown in the fourth columns of Tables 3 and 4.

For most variables, the marginal effects obtained after the inclusion of detailed occupational group controls were very similar to the results obtained in the initial specifications. However, with the extra control for detailed occupation, the effect of union membership on training for males is smaller and no longer significant, indicating that the union effect found earlier was partly due to the occupational composition of male union members. The effect of working in the public sector is also smaller and no longer significant, which also suggests that the occupational characteristics of employees in this sector are partly driving the higher training participation rate.

Female union members remain significantly more likely to participate in training than non-members, with little change in the marginal effect of union membership. However, the marginal effect of being a shift worker on the likelihood of having trained is smaller and now insignificant. This indicates that the occupational composition of female shift workers is contributing to the higher training probability initially found among female shift workers.

Restricting the sample to employees with job tenure of at least 1 year

One of the limitations of the Survey of Working Life is that no information was gathered on the number of weeks that each individual had worked during the 12-month period over which training was measured. This means we are not able to control for the effects of any differences among survey respondents in weeks worked when estimating the effects of other characteristics on training. In response to this problem, we explored the impact of differences in employment continuity by restricting the estimation sample to employees with job tenure of at least 1 year. Groups with typically shorter tenure that are likely to be particularly affected by this restriction include temporary employees, part-time employees, 15–24 year olds and employees whose highest qualifications were at school level and below.

The results obtained from this specification are shown in the final columns of Tables 3 and 4. The marginal effects for males show a similar pattern as in the full-sample model, with larger marginal effects for age, ethnicity, qualifications and hours worked. In the male results, the negative effect of temporary employment on the likelihood of training was weaker than previously, while the effect of part-time employment was stronger, indicating that the probability of receiving training was higher for temporary employees who had been in continuous employment for a year or more but lower for part-time employees. The marginal effect for public sector employees increased strongly, indicating an even higher training probability among those with at least 1 year of tenure relative to private sector employees.

Restricting the female sample to employees with at least 1 year of job tenure did not have much impact on the estimated differences in training probabilities by personal and job characteristics. As for male employees, the training probability of temporary employees increases slightly while that of employees working less than 30 hours per week decreases slightly. The probability of receiving training also increased for public sector employees but not as sharply as for males.

5.4 Summary

In this section, regression models were used to explore the relationship between each demographic, job or employer characteristic and the probability of receiving employer-funded education and training, controlling for the effects of other factors. The findings include the following:

- For the most part, age is not significantly associated with the likelihood of training once the effects of other factors have been taken into account, although men aged 25–29 were more likely to study or train than men in other age groups.
- Employees who identified with a Pacific ethnic group were least likely to receive training. Asian women were also significantly less likely to train than European women.
- Participation in training was strongly correlated with the qualification level an employee held. Employees with no qualifications or school qualifications only

were less likely to study or train than those with post-school qualifications, and this pattern is more pronounced for females than for males.

- Employees working part-time were significantly less likely to undertake training then those working full-time. Those who worked relatively long hours were also more likely to study or train that those working 40–44 hours, and these differences were significant for men.
- Males in temporary jobs were less likely to participate in employer-funded education and training than those in permanent jobs, while no significant difference was identified for females.
- Union members had a higher rate of participation than non-union members. This union membership effect was reduced but not eliminated by including detailed occupational group controls.
- Employees who were working a changing shift pattern were more likely to participate in training than those who mainly worked during the daytime. This effect was reduced but not eliminated by the inclusion of further controls for detailed occupation.
- Those in professional occupations were most likely to participate in employer-funded education and training, among all occupational groups, while agriculture and fisheries workers were least likely.
- By industry, those working in accommodation, cafés and restaurants were least likely to receive training. Females working in government administration and defence had the highest training likelihood, while for males, employees in personal and other services were most likely to have undertaken training.
- Employees working in private firms were less likely to receive employer-funded training than those working in the government or non-profit sectors. Employees in the non-profit sector had the highest training probability.
- Employees working in smaller firms were less likely to participate in training than employees in medium-sized and larger firms.

A more comprehensive summary of the findings of the research as a whole can be found in Section 6.

6. SUMMARY OF THE MAIN FINDINGS AND DISCUSSION

6.1 Introduction

This paper has explored variations in the rate of participation in employer-funded education and training across employees, using data collected in Statistics New Zealand's Survey of Working Life (SoWL) 2008. The overall objective was to identify the worker, job and enterprise characteristics that are associated with a lower or higher likelihood of undertaking work-based training.

This section brings together the main findings of the literature review and the data analyses of Sections 4 and 5. Under each subheading, the key overall finding is given first, in italics. The main findings of each step taken in the analysis are then summarised – reviewing what was found in previous studies (Section 2), describing the pattern of variation found in average training rate statistics (Section 4) and estimating the direct effects of the characteristics of interest through regression models (Section 5). The regression results are the basis for drawing an overall conclusion on the effect of each characteristic on the likelihood of participating in employer-funded education or training.

Section 6.2 summarises the main findings. Limitations of the study are noted in Section 6.3, while Section 6.4 discusses implications. For brevity, we use the word 'training' as shorthand for 'employer-funded education and training'. The phrases 'receiving', 'participating in' and 'undertaking' education or training are also used interchangeably to mean the same thing.

6.2 Summary of main findings

Overall incidence of training and quantity undertaken

Thirty-one percent of employees said they had received some employer-funded education or training in the 12 months before their interview. Of those who studied or trained, 21 percent did so for 1 day or less and two-thirds did so for 5 days or less. Therefore, the majority of employees reported participating in short courses, and 9 percent had spent at least 1 month undertaking education or training courses.

Gender

The rate of participation in employer-funded training was similar for men and women.

Some studies of employer-funded training in the international literature have reported a lower rate of training for women than men, while others have not found a significant gender difference. The descriptive statistics in this paper showed that 31 percent of both male and female employees received training. In

addition, there was no evidence in the regression analysis of a significant gender difference in the average likelihood of receiving training.[5]

Age group

Training rates do not vary much by age for women. Among men, there is evidence of a small gradient in the likelihood of receiving training, which peaks in the 25–29 age group and then declines, but remains fairly stable over the 40–64 age range.

Previous studies undertaken internationally have generally reported that training is negatively associated with age – older employees tend to receive less than younger employees.

In this study, the descriptive statistics on *average* training rates indicate that teenagers were only half as likely to receive training as prime-aged employees. Youth workers (those aged 20–24) also had a lower average training rate. However, after an adjustment is made for the effects of other characteristics that are correlated with age, such as education, occupation and hours of work, youth employees were not significantly less likely to receive training than employees in the 'prime' age groups. The lower average training rate of teenage and youth employees is due in large part to their lower educational attainment, tendency to work in part-time jobs and over-representation in occupations and industries that have relatively low training rates.

The regression results show that the likelihood of training did not vary much over the 25–64 age range, especially for women. For men, there is evidence of some age variation, with the likelihood of training peaking in the 25–29 age group and then declining somewhat. However, there was little variation in the likelihood of training within the 40–64 age range.

Ethnic group

There was little difference between Europeans and Māori in rates of training participation, but Pacific employees of both genders and female Asian employees were less likely to receive training.

Studies undertaken in other countries have found ethnic differences in rates of workplace training that persist when differences in other correlated personal characteristics, such as education, are controlled for.

In the descriptive statistics, the European, Māori and European/Māori ethnic groups all had similar average participation rates at around 31 percent. The participation rate of Pacific employees was 18 percent and that of Asian employees was 25 percent.

[5] As noted below, part-time employees are less likely to receive training than full-time employees, and women are more likely to work part-time than men. Counteracting this is the fact that full-time employed women are more likely to study or train than full-time employed men.

Adjusting for the effects of other correlated factors reduces the size of these differences, but Pacific and Asian employees continue to have a lower likelihood of training than Europeans and Māori. The adjusted differences remain sizeable and are statistically significant for Pacific employees of both genders and for Asian women but not Asian men.

We are not able to fully explain the lower training of Pacific and Asian employees using the information available in the survey. It is possible that English language barriers play some role, as a high proportion of both Pacific and Asian peoples are immigrants from non-English speaking countries. Unmeasured differences in employment continuity could also be a factor if employees in these ethnic groups are less likely to work on a full-year basis than employees in other ethnic groups.

Educational attainment

More highly qualified workers were more likely to receive employer-funded training than the less well qualified, and they also tended to receive more hours of training.

Past studies of the distribution of employer-funded training have invariably found a higher rate of training among more highly educated employees. There are a number of reasons why existing educational attainment and further education tend to be complementary. For example, people who already have a high level of education may find further learning easier or may need to undertake learning activities more often during their working life to maintain or update their knowledge base.

This pattern is evident in the descriptive statistics for New Zealand. The participation rate for employees with no qualifications was lowest at 17 percent. It was highest for employees with a post-graduate degree or a teacher's, nurse's or technician's certificate, at 49 percent.

Adjusting for the effects of other personal and job characteristics reduces the size of the educational differences, reflecting the fact that workers with higher qualifications tend to be employed in jobs that have high training rates for multiple reasons. However, the variations in training by level of education remain substantial. For example, we estimate that males with a post-graduate degree were around 11–14 percentage points more likely to have undertaken some education or training during the previous year than males with lower school qualifications only.

Job duration

Employees with higher job tenure had higher training rates on average, but there was no clear evidence that tenure influences the likelihood of training once an adjustment was made for the effects of other factors.

Prior research evidence on the relationship between length of time in the job and participation in employer-funded training is mixed. While some studies have found that employees receive more training at the start of their employment with a particular employer, other studies report higher training with increased tenure.

In the descriptive statistics on *average* training rates by tenure, training increased with the time spent in the job. Employees in the highest tenure group had the highest average rate of training.

After adjusting for the effects of other characteristics, however, there was no clear evidence that job tenure affects participation in training. There is little difference in the estimated training probabilities of employees in different tenure categories from 6 months upwards. Although the regression results indicate that employees who had been in their jobs for less than 6 months were significantly *less* likely to have trained in the last year, this could be entirely due to the fact that many of these short-tenure workers were not in paid work before starting their current job, reducing their opportunities for work-based training over the year as a whole. This means we cannot be sure that their lack of tenure with their current employer is the cause of their lower training.

Temporary versus permanent employment relationship

Males employed in temporary jobs were less likely to receive training that was paid for by their employer than males in permanent jobs. Temporary employment does not have a significant effect on the training likelihood of female employees after other characteristics are taken into account.

Prior studies conducted in other countries have found that temporary employees are less likely to receive work-based training than permanent employees. Average training rates calculated from the SoWL indicate permanent employees of both genders were more likely to receive training than temporary employees, although this difference was much larger among men than among women.

Much of the gap in average training rates between temporary and permanent employees can be explained by differences in age, education, hours of work, occupation and industry. After adjusting for these and other characteristics, there was no longer any significant difference between the training probabilities of women in temporary and permanent jobs. However, the regression adjustment did not fully eliminate the difference in training likelihood between men in temporary versus permanent jobs.

There are large differences in training rates across different types of temporary job, with fixed-term employees reporting higher training than casual and seasonal employees (Dixon, 2009). Men who work in temporary jobs are more likely to be in casual or seasonal jobs than females who work in temporary jobs, and these compositional patterns help to explain the gender variations reported here.

Hours of work

The more hours an employee worked, the more likely he or she was to receive employer-funded education or training.

Prior studies have consistently found that part-time employees are less likely to receive training than full-time employees. This is commonly attributed to the fact

that the return to the employer on any expenditure on training will be greater if an employee works more hours.

In the descriptive statistics for New Zealand, the average participation rate was 15 percent for employees who usually worked 0–19 hours per week, 24 percent for those working 20–29 hours per week, 33 percent for those working 40 hours a week and 39 percent for those working 50 hours per week or more.

After adjusting for the effects of other characteristics, some significant differences are still evident in the likelihood of training by hours worked. The regression results indicate that people who usually worked 0–19 hours per week were about 12–14 percentage points less likely to have trained than those working 40–44 hours, while men who worked more than 45 hours a week were 5–7 percentage points more likely to have trained than those working 40–44 hours.

Union membership

Union members tended to receive more training than non-union members. However, the difference was relatively small when other factors were taken into account, at around 3–4 percentage points for men and 5–7 percentage points for women.

Union membership effects have been reported in overseas studies of work-based training. In the SoWL results, union members had a much higher *average* training rate than employees who were not members of a union (42 percent compared with 27 percent).

One would expect any differences in average training rates between union members and non-unionised employees to be mainly due to differences in other correlated characteristics, such as occupation, industry and business ownership sector. Further analysis supports this view. Adjusting for the effects of other characteristics (including two-digit occupational group) reduces the size of the union/non-union training differential substantially. However, a small difference remains. We estimate that union membership is associated with higher training likelihood of 3–4 percentage points for men and 5–7 percentage points for women.

These results suggest that unions may raise workplace training, perhaps through collective bargaining or perhaps through the role of unions in promoting training within workplaces. An alternative explanation is that union members differ from non-unionised employees on some other dimensions that are correlated with education and training, but were not measured in the survey.

Occupation

Employees in more highly skilled occupations were more likely to study or train than employees in less skilled occupations.

Substantial occupational variations in employer-funded training have been identified in prior research. This reflects the fact that workers in jobs that require

high levels of knowledge or skills are more likely to require life-long training to maintain or update their knowledge and skills.

In this study, average training rates varied widely by occupational group. More than half of all employees in professional occupations had undertaken employer-funded study and training in the past 12 months. The group with the lowest participation rate was the elementary occupations group, at 15 percent.

Some sizeable though smaller occupational variations were found in the regression-adjusted estimates of the effects of occupation. Occupational differences in training were stronger among females than males. For both men and women, employees in professional occupations were most likely to train.

Business ownership type

Employees who worked for publicly owned or non-profit organisations were more likely to receive training than those who worked for privately owned firms.

The average training rates calculated in this study show that employees who worked for central government or local government organisations were almost twice as likely to have trained in the last year as those working for private sector firms. Employees who worked for non-profit organisations had the highest average rate of participation.

Adjusting for the effects of other correlated characteristics dramatically reduces the size of the private/public training gap but does not completely eliminate it. Our final estimates indicate that men who worked for government organisations (both central and local) were 4–6 percentage points more likely to have undertaken training than their private sector counterparts, while women who worked for government organisations were 7–8 percentage points more likely to have undertaken training.

The New Zealand results are in line with British and Australian evidence. The higher level of training in public and non-profit organisations could be due to the concentration of employment in particular types of service provision that have higher staff training needs, to public/private differences in training budgets and the allocation of training expenditures or to other factors that have not been included in this analysis.

Size of the enterprise

Employees who work for small organisations (those with 20 or fewer employees) are less likely to receive training than those who work for medium-sized or large organisations.

Most prior studies of the distribution of employer-financed training have found organisational size effects, suggesting that larger firms (and larger non-profit organisations) provide a greater level of training to their employees.

The average rate of training ranged from 21 percent for employees in firms with 0–4 employees to 43 percent for employees in firms with 500 or more employees.

The regression estimates indicate that, after taking other factors into account, the likelihood of having received training continues to differ substantially by firm size, although the gap between the smallest and largest firm size categories is much smaller (around 12 percentage points).

Production technologies differ by size of firm, and this is likely to have implications for a firm's training needs. If larger firms are more capital-intensive or use more complex production methods, this could lead to a higher level of training. Other explanations that have been put forward for the size effect are that larger firms have advantages of scale that reduce training costs and make it easier to release workers from their jobs for training, they are more likely to deliver their workforce training through formal courses rather than informally and they have greater expertise in human resource management, raising their awareness of the benefits of training.

Industry

The industry that an employee works in may influence their likelihood of receiving training.

Industry effects on training rates have been found in many prior studies, even when variations in occupational structure, firm size and other easily measured factors are taken into account. These industry effects may be due to differences in production technologies and business strategies that influence the need for or the profitability of staff training.

There is evidence of some significant industry differences in training probabilities in this study's regression estimates, which include controls for differences in firm size and occupational structure. Employees in the accommodation, cafés and restaurants industry were least likely to have studied or trained, while employees in health and community services, personal services, and government administration had some of the highest likelihoods of studying or training.

Summary

Consistent with the evidence from the literature, an employee's level of education and hours worked and the industry, ownership and size of the firm or organisation they work for have emerged as factors that are strongly correlated with participation in employer-funded education and training. Lower participation rates in employer-funded education and training were identified for male and female employees with no qualifications and for employees who worked less than 20 hours a week. Employees in the private sector were less likely to receive training than employees in the public and non-profit sectors. The likelihood of training was also found to increase with enterprise size.

Significant differences in training probabilities among different occupations also emerged, showing the distribution of training possibly depending on the skill requirements of the job. Union members had a higher training likelihood than non-union members, although the difference was relatively small after other factors were taken into account.

Employees who identified with the Pacific peoples ethnic group and the Asian ethnic group were less likely to receive employer-funded education and training than employees of other ethnicities. The lower participation among Pacific peoples was significant for both males and females when controlling for other demographic and job-related characteristics, while the lower training rate among Asian employees was only significant for females.

6.3 Limitations of the research

One of the main limitations of this study arises from the fact that the measure of education and training used in the survey was a simple question that did not distinguish between different types of training. From a policy perspective, it would be useful to be able to separately analyse patterns of participation in courses that are offered by publicly funded tertiary education institutions, industry training programmes that are delivered in workplaces with the help of government funding and courses that have no public funding. Other evidence suggests that these different types of education and training are likely to be distributed in quite different ways. Low skilled workers are more likely to participate in publicly subsidised industry training programmes, reflecting the objectives and content of these programmes, while more highly skilled workers are more likely to receive training that is solely funded by employers.

Another important limitation is that the information gathered in the survey does not shed any light on the motivations of employees and employers or the decision processes that led to the training patterns that were recorded in the survey. Both employers and employees may influence the level and allocation of employer-funded education and training. Johnson et al. (2009) provide a useful recent review of the British evidence on the intrinsic and extrinsic motivators that influence the demand for education and training.

6.4 Implications

As in other countries, employed-funded education and training is unequally distributed across the workforce. Less skilled and less educated employees are less likely to receive or undertake further education and training than those with higher skills and education. Although the likelihood of undertaking employer-funded education and training does not differ a great deal by gender or age group, there are some puzzling ethnic group disparities. Further investigation of the reasons why Pacific and Asian employees are less likely to receive employer-funded education and training than European and Māori employees would be useful. In general, policy initiatives to promote workplace learning should consider the issues associated with promoting participation among under-represented groups.

The disparities in training rates across different types of firm suggest that employees who are otherwise similar have different opportunities for employer-funded education and training, depending on the characteristics of their employer. This raises questions about the reasons why employers in different industries or areas of the economy approach training differently. While this paper has identified the types of firms where training rates tend to be low, broader investigation of the circumstances and skill demands of those firms would

improve our understanding of the reasons for low training and, hence, the likely effectiveness of different policies to promote skill development at work.

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TABLES

Table 1: Employer-funded education and training undertaken in the last 12 months, by employee characteristics

	Proportion of employees who received employer-funded study or training in last 12 months			Distribution of participants by the duration of training undertaken					
	Total	Males	Females	1 day or less	2 to 5 days	6 to 10 days	11 days to less than 1 month	1 month or more	Total[1]
Employee characteristic	Percent			Row percent					
Total all employees	30.9	31.3	30.5	20.9	46.5	14.6	8.3	8.5	100
Sex									
Male	31.3	31.3		21.1	45.3	15.8	9.9	7.2	100
Female	30.5		30.5	20.7	47.8	13.3	6.6	9.9	100
Age group[2] (years)									
15–19	13.6	14.0	13.2	36.3	33.6	12.3	12.0	S	100
20–24	25.5	23.4	27.9	20.8	39.2	13.3	12.3	13.6	100
25–29	33.0	34.0	31.7	19.4	43.0	16.4	9.9	9.8	100
30–34	35.5	37.9	32.8	16.0	47.1	16.5	7.1	11.4	100
35–39	34.8	37.9	31.3	18.1	45.9	13.5	9.4	12.2	100
40–44	32.2	33.7	30.7	23.6	44.8	15.8	9.1	6.5	100
45–49	35.2	34.5	35.7	22.2	48.1	13.7	7.8	8.1	100
50–54	36.6	36.2	36.9	20.8	52.8	14.0	5.2	5.3	100
55–59	32.3	30.4	34.2	17.1	52.4	16.9	6.3	4.8	100
60–64	29.2	29.3	29.1	24.5	53.7	10.5	5.4	S	100
65-69	18.9	20.0	17.9	38.7	41.7	S	S	S	100
70-74	16.8	S	S	S	S	S	S	S	100
Ethnic group									
European only	32.3	32.7	31.8	20.7	47.5	15.0	7.8	7.9	100
Māori only	31.8	32.9	30.5	19.2	38.9	13.7	11.9	12.2	100
Pacific peoples only	18.0	18.1	17.8	24.3	39.5	11.8	12.2	11.6	100
Asian only	25.0	27.1	22.6	20.8	41.1	18.0	9.4	10.0	100
European/Māori	30.3	31.0	29.8	25.8	44.1	9.7	9.5	10.5	100
Other	29.3	24.6	34.5	17.6	55.3	8.4	7.3	8.2	100
Highest qualification									
No qualification	17.1	18.5	15.5	38.5	36.2	10.9	7.2	5.4	100
School Certificate/NCEA Level 1	22.0	22.4	21.7	29.2	42.8	13.9	7.0	5.6	100
Sixth form qualification/NCEA Level 2	24.5	26.3	23.0	21.1	50.4	12.6	11.9	3.6	100
Higher school qual/NCEA Level 3	23.1	27.3	18.9	21.2	47.0	18.7	9.0	3.4	100
Other school qualification nec	17.5	12.8	20.8	24.7	54.6	S	S	S	100
Vocational or trade qualification	36.4	35.4	37.5	19.9	47.3	13.7	7.6	10.1	100
Teacher, nursing or technicians certificate	49.5	51.4	48.9	16.2	54.4	13.1	6.9	7.3	100
Other certifcate or diploma	34.2	34.4	33.9	20.8	45.5	13.9	7.8	10.7	100
Bachelor's degree	41.1	39.8	42.4	14.9	51.5	18.0	5.8	9.3	100
Postgraduate qualification	49.2	48.9	49.6	14.2	42.9	15.8	11.8	13.0	100
Other post-school qualification nec	33.3	36.4	29.8	18.7	45.9	12.9	16.0	5.2	100
Participating in formal study last week									
Yes	38.6	41.4	35.6	12.3	33.2	13.8	18.3	20.6	100
No	31.0	31.2	30.8	21.4	48.0	14.8	7.3	7.3	100

Continued on next page.

Table 1: Employer-funded education and training undertaken in the last 12 months, by employee characteristics (continued)

	Proportion of employees who received employer-funded study or training in last 12 months			Distribution of participants by the duration of training undertaken					
	Total	Males	Females	1 day or less	2 to 5 days	6 to 10 days	11 days to less than 1 month	1 month or more	Total[1]
Employee characteristic	Percent			Row percent					
Parent of dependent children									
Sole mother of dependent child/ren	30.0		30.0	17.9	42.3	12.5	6.8	18.9	100
Sole father of dependent child/ren	36.5	36.5		25.8	33.8	23.5	S	S	100
Mother of dependent child/ren, two parent family	31.6		31.6	20.5	50.3	12.0	7.9	8.5	100
Father of dependent child/ren, two parent family	37.9	37.9		19.3	46.9	16.1	9.4	7.5	100
Not parent of dependent child/ren	28.9	27.8	30.1	21.6	45.9	14.6	8.1	8.2	100
Birthplace									
New Zealand	31.7	32.1	31.4	20.8	46.7	14.4	8.8	8.1	100
Overseas – lived in NZ for < 5 years	29.6	31.0	28.0	23.6	44.5	14.4	7.6	7.5	100
Overseas – lived in NZ for 5 years to < 10 years	28.0	24.2	33.1	24.3	43.0	15.0	6.8	9.9	100
Overseas – lived in NZ for 10 years or more	28.0	30.5	25.3	18.6	47.5	15.8	5.4	11.6	100
Area type									
Main urban	30.8	31.0	30.5	20.6	45.9	14.7	8.6	8.8	100
Secondary/minor urban	31.6	34.2	28.9	23.2	46.1	14.4	7.2	8.2	100
Rural	31.3	30.2	32.4	20.4	50.7	14.0	7.6	7.1	100

(1) Not specified is included in the totals only.

(2) People aged over 74 are included in the totals only.

S = suppressed for confidentiality reasons.

Nec= not elsewhere classified.

Note: Variable definitions are given in Appendix 1.

Table 2: Employer-funded education and training undertaken in the last 12 months, by job and employer characteristics

	Proportion of employees who received employer-funded study or training in last 12 months			Distribution of participants by the duration of training undertaken					
	Total	Males	Females	1 day or less	2 to 5 days	6 to 10 days	11 days to less than 1 month	1 month or more	Total[(1)]
Characteristic of main job or employer	Percent			Row percent					
Total all employees	30.9	31.3	30.5	20.9	46.5	14.6	8.3	8.5	100
Characteristcs of main job									
Tenure									
Less than 1 month	12.1	10.2	13.7	31.3	39.3	S	13.8	S	100
1 to less than 6 months	20.0	20.5	19.5	21.5	43.5	15.0	9.4	7.0	100
6 months to less than 1 year	31.2	33.6	29.0	28.0	39.2	13.4	10.6	8.5	100
1 to less than 3 years	30.6	30.0	31.1	21.1	45.7	14.5	8.5	9.2	100
3 to less than 5 years	33.7	35.0	32.4	19.7	46.6	14.8	7.3	10.3	100
5 to less than 10 years	33.6	32.8	34.6	19.0	48.3	13.3	9.0	9.2	100
10 to less than 15 years	37.4	38.0	36.9	18.4	46.3	19.3	7.3	7.7	100
15 years or more	37.3	37.1	37.7	20.5	52.6	13.8	6.1	5.9	100
Employment relationship									
Temporary employee	18.0	12.1	22.7	30.5	48.5	8.7	6.1	6.2	100
Permanent employee	32.3	33.1	31.5	20.3	46.4	14.9	8.4	8.7	100
Usual hours worked per week									
0-19	14.7	10.3	16.5	36.2	47.2	7.0	4.4	4.8	100
20-29	24.0	21.2	24.7	32.8	43.9	12.0	5.2	5.5	100
30-39	31.9	32.3	31.7	16.6	50.4	15.4	6.9	9.3	100
40	32.7	30.3	35.6	18.2	45.4	15.6	9.3	10.2	100
41-44	36.6	37.2	35.5	20.5	41.7	17.9	8.4	10.3	100
45-49	37.7	36.7	40.6	20.2	50.8	14.0	8.0	5.9	100
50-59	38.9	35.5	49.5	18.7	42.0	17.7	10.6	9.0	100
60+	39.1	36.8	51.6	22.4	51.3	9.7	9.7	6.2	100
Overall work pattern									
Mainly daytime	30.5	30.8	30.2	20.3	46.9	14.9	8.3	8.5	100
Mainly evening, 7pm–11pm	18.7	16.7	20.4	42.1	42.4	7.9	S	S	100
Mainly night, 11pm–5am	33.5	23.1	43.4	26.7	42.8	S	S	S	100
Changing shifts	47.2	48.8	44.8	20.9	40.9	14.0	10.5	11.5	100
Other pattern	31.0	32.2	29.6	S	65.5	S	S	S	100
Union member									
Union member	41.5	39.8	43.1	18.4	46.8	15.7	8.0	9.2	100
Not union member	26.6	28.4	24.6	22.6	46.4	13.6	8.6	8.0	100
Occupation									
Legislators, administrators and managers	35.2	35.2	35.1	13.7	52.8	17.2	6.9	8.2	100
Professionals	51.0	47.6	53.5	12.1	50.1	18.0	9.1	8.8	100
Technicians and associate professionals	37.4	37.4	37.4	21.8	42.6	16.2	7.7	10.5	100
Clerks	22.1	29.8	20.0	28.0	48.2	9.8	6.4	7.3	100
Service and sales workers	24.0	27.0	22.3	26.7	40.5	10.5	9.0	12.3	100
Agriculture and fishery workers	17.2	18.6	14.0	36.5	37.2	10.0	12.5	S	100
Trades workers	25.6	26.4	S	24.6	42.8	10.7	13.0	7.4	100
Plant and machine operators and assemblers	24.5	26.5	14.9	36.1	42.4	11.4	5.7	3.8	100
Elementary occupations	15.4	18.5	11.0	32.1	44.3	16.0	S	S	100

Continued on next page.

Table 2: Employer-funded education and training undertaken in the last 12 months, by job and employer characteristics (continued)

	Proportion of employees who received employer-funded study or training in last 12 months			Distribution of participants by the duration of training undertaken					
Characteristic of main job or employer	Total	Males	Females	1 day or less	2 to 5 days	6 to 10 days	11 days to less than 1 month	1 month or more	Total[(1)]
	Percent			Row percent					
Characteristcs of employer									
Business ownership									
Private	25.4	27.7	22.6	25.0	46.4	13.4	7.3	6.8	100
Central government	49.3	49.6	49.1	15.4	45.6	16.5	10.4	10.2	100
Local government	48.9	53.6	42.6	14.3	59.5	12.9	6.0	6.8	100
Not-for-profit	40.8	39.1	41.7	16.1	41.2	18.3	8.5	14.4	100
Not classified	26.2	27.1	27.0	18.6	49.1	13.2	8.9	8.9	100
Size of enterprise									
0 to 4 employees	20.9	22.1	21.5	20.9	46.3	12.8	7.5	11.2	100
5 to 9 employees	23.3	24.2	23.8	18.3	46.5	15.2	9.8	9.5	100
10 to 19 employees	26.9	29.1	27.7	24.0	47.1	15.1	8.0	5.5	100
20 to 49 employees	33.2	32.8	32.0	24.8	48.1	13.5	6.5	5.7	100
50 to 99 employees	33.9	33.1	35.0	20.5	48.0	12.9	6.4	10.2	100
100 to 499 employees	35.2	39.3	30.7	22.1	48.5	12.5	7.8	7.7	100
500 or more employees	42.7	42.1	42.8	19.1	40.8	18.6	10.3	10.2	100
Not classified	26.0	25.4	26.7	19.3	49.1	12.9	8.7	8.6	100
Industry									
Agriculture, forestry & fishing	17.5	19.7	13.1	30.8	43.7	11.1	10.4	S	100
Mining	47.6	50.9	S	S	62.8	S	S	S	100
Manufacturing	23.5	24.8	20.3	29.4	43.1	12.6	7.7	6.3	100
Electricity, gas & water supply	52.7	57.0	S	S	63.1	S	S	S	100
Construction	25.8	27.3	14.2	29.3	45.8	8.9	8.1	5.9	100
Wholesale trade	25.9	28.5	20.7	27.7	54.1	12.9	S	S	100
Retail trade	19.7	24.6	15.6	29.5	44.3	13.4	6.7	6.0	100
Accommodation, cafes & restaurants	11.5	8.7	13.0	37.2	43.7	S	S	S	100
Transport & storage	31.9	29.7	37.0	28.6	46.1	10.2	4.8	10.1	100
Communication services	25.9	33.1	14.2	24.0	33.7	19.1	20.6	S	100
Finance & insurance	35.3	41.7	31.1	6.5	44.2	25.9	8.3	12.2	100
Property & business services	31.9	37.2	26.8	17.7	48.4	16.4	7.1	9.9	100
Government administration & defence	51.1	51.5	50.9	14.3	51.4	15.9	11.3	5.9	100
Education	45.8	46.5	45.5	13.9	50.7	16.2	8.7	8.7	100
Health & community services	47.4	55.3	45.7	17.1	44.0	16.1	7.8	12.0	100
Cultural & recreational services	27.0	26.0	28.3	27.0	50.8	11.3	S	S	100
Personal & other services	40.7	55.2	29.6	16.8	38.3	12.7	16.7	15.4	100

(1) Not specified is included in the totals only.

S = suppressed for confidentiality reasons.

Note: Variable definitions are given in Appendix 1.

Table 3: Marginal effect estimates from regression models – male employees

	Regression model				
	Business sector controls	Industry controls	Business sector and industry interactions	Detailed occupation controls	1 year tenure restriction
	Marginal effects				
Personal characteristics					
15-19 years old	0.037	0.050	0.051	0.064	0.031
20-24 years old	0.025	0.035	0.033	0.037	0.048
25-29 years old	0.074 **	0.080 **	0.083 **	0.075 **	0.087 **
30-34 years old	0.063	0.067	0.066	0.064	0.079 **
35-39 years old	0.043	0.046	0.041	0.043	0.050
40-44 years old	0.000	0.000	0.000	0.000	0.000
45-49 years old	0.009	0.008	0.002	0.011	0.010
50-54 years old	0.031	0.041	0.032	0.030	0.059
55-59 years old	-0.012	-0.010	-0.008	0.000	0.000
60-64 years old	-0.010	-0.010	-0.006	-0.010	-0.019
65-69 years old	-0.044	-0.040	-0.046	-0.044	-0.063
European only	0.000	0.000	0.000	0.000	0.000
Māori only	0.020	0.016	0.021	0.012	0.032
European / Māori	-0.011	-0.001	0.002	-0.021	-0.016
Pacific peoples only	-0.110 **	-0.109 **	-0.113 **	-0.121 **	-0.118 **
Asian only	-0.035	-0.027	-0.028	-0.032	-0.036
Other ethnicity	-0.034	-0.027	-0.024	-0.033	-0.018
Post-graduate degree	0.076 **	0.053	0.055	0.086 **	0.051
Degree	0.018	0.012	0.013	0.013	0.029
Teachers/nurses/technicians cetificate or diploma	0.108 **	0.105 **	0.106 **	0.114 **	0.111 **
Other certifcate or diploma	0.000	0.000	0.000	0.000	0.000
Upper secondary school qualification	-0.035	-0.028	-0.034	-0.035	-0.048
School certificate or NCEA level 1	-0.061 **	-0.058 **	-0.058 **	-0.058	-0.122 **
No qualification	-0.116 **	-0.111 **	-0.110 **	-0.110 **	-0.133 **
Not parent of dependent child/ren	0.000	0.000	0.000	0.000	0.000
Parent of dependent children	0.051 **	0.052 **	0.052 **	0.051 **	0.050 **
Born in New Zealand	0.000	0.000	0.000	0.000	0.000
Born overseas, in NZ for less than 5 years	-0.085	-0.087	-0.081	-0.096	-0.102
Born overseas, in NZ for 5-10 years	-0.104	-0.092	-0.085	-0.107	-0.134 **
Born overseas, in NZ for more than 10 years	-0.076	-0.075	-0.067	-0.080	-0.057
Main urban area	0.000	0.000	0.000	0.000	0.000
Minor urban area	0.069 **	0.075 **	0.079 **	0.068 **	0.062 **
Rural area	0.029	0.033	0.039	0.027	0.006
Job characteristics					
Less than 1 month	-0.171 **	-0.164 **	-0.163 **	-0.176 **	
1-6 months	-0.081 **	-0.075 **	-0.074 **	-0.078 **	
6 months to less than 1 year	0.037	0.039	0.042	0.036	
1 year to less than 3 years	0.000	0.000	0.000	0.000	0.000
3 years to less than 5 years	0.018	0.026	0.026	0.015	0.013
5 years to less than 10 years	-0.030	-0.024	-0.024	-0.028	-0.035
10 years to less than 15 years	0.012	0.027	0.028	0.013	0.010
15 years or more	-0.013	-0.003	-0.009	-0.010	-0.017
Permanent employee	0.000	0.000	0.000	0.000	0.000
Temporary employee	-0.133 **	-0.127 **	-0.126 **	-0.137 **	-0.095 **
Works up to 19 hours per week	-0.138 **	-0.131 **	-0.131 **	-0.123 **	-0.186 **
Works 20-less than 30 hours per week	-0.069	-0.062	-0.067	-0.062	-0.075
Works 30-less than 40 hours per week	0.022	0.016	0.025	0.042	0.047
Works 40-less than 45 hours per week	0.000	0.000	0.000	0.000	0.000
Works 45-less than 50 hours per week	0.061 **	0.067 **	0.066 **	0.058 **	0.068 **
Works 50-less than 60 hours per week	0.052 **	0.059 **	0.063 **	0.053 **	0.077 **
Works 60 hours plus per week	0.058	0.065	0.077	0.063	0.070
Non-union member	0.000	0.000	0.000	0.000	0.000
Union member	0.046 **	0.042 **	0.039	0.036	0.030
Legislators, administrators and managers	0.000	0.000	0.000	0.000	0.000
Professionals	0.079 **	0.059	0.060		0.071 **
Technicians and associate professionals	0.035	0.025	0.029		0.014
Clerks	-0.011	-0.010	0.007		0.015
Service and sales workers	-0.012	-0.024	-0.026		-0.007
Agriculture and fishery workers	-0.089 **	-0.074	-0.069		-0.103 **
Trades workers	-0.029	-0.006	-0.003		-0.025
Plant and machine operators and assemblers	-0.036	-0.010	-0.001		-0.030
Elementary occupations	-0.059	-0.051	-0.046		-0.055
Mainly daytime working pattern	0.000	0.000	0.000		0.000
Mainly evening work, 7pm–11pm	-0.050	-0.005	-0.002	-0.037	-0.100
Mainly night work, 11pm–5am	-0.034	-0.009	-0.006	-0.020	-0.025
Changing shift working pattern	0.127 **	0.141 **	0.117 **	0.111 **	0.147 **

Continued on next page.

Table 3: Marginal effect estimates from regression models – male employees (continued)

	Regression model				
	Business sector controls	Industry controls	Business sector and industry interactions	Detailed occupation controls	1 year tenure restriction
	Marginal effects				
Employer characteristics					
Private sector	0.000		0.000	0.000	0.000
Public sector	0.063 **			0.036	0.101 **
Not for profit sector	0.120 **			0.093 **	0.126 **
0-4 employees	-0.104 **	-0.114 **	-0.119 **	-0.110 **	-0.126 **
5-9 employees	-0.098 **	-0.107 **	-0.103 **	-0.100 **	-0.116 **
10-19 employees	-0.039	-0.045	-0.044	-0.043	-0.029
20-49 employees	0.000	0.000	0.000	0.000	0.000
50-99 employees	-0.002	0.002	0.003	-0.003	0.016
100-499 employees	0.032	0.025	0.028	0.043	0.019
500 plus employees	0.026	-0.005	-0.014	0.018	-0.011
Agriculture, forestry and fishing		-0.064			
Mining		0.044			
Manufacturing		-0.110 **			
Electricity, gas and water supply		0.140			
Construction		-0.056			
Wholesale trade		-0.060			
Retail trade		-0.041			
Accommodation, cafes and restaurants		-0.199 **			
Transport and storage		-0.074 **			
Communication services		-0.018			
Finance and insurance		0.015			
Property and business services		0.000			
Government administration and defence		0.102			
Education		0.020			
Health and community services		0.124 **			
Cultural and recreational services		-0.045			
Personal and other services		0.131 **			
Private sector firms, by industry					
Agriculture, forestry and fishing			-0.075		
Mining			0.038		
Manufacturing			-0.118 **		
Electricity, gas and water supply			0.134		
Construction			-0.062		
Wholesale trade			-0.065		
Retail trade			-0.047		
Accommodation, cafes and restaurants			-0.191 **		
Transport and storage			-0.136 **		
Communication services			0.042		
Finance and insurance			0.006		
Property and business services			0.000		
Education			0.108		
Health and community services			0.037		
Cultural and recreational services			-0.100		
Personal and other services			0.042		
Public sector organisations, by industry					
Manufacturing			-0.092		
Transport and storage			0.068		
Communication services			-0.181		
Property and business services			-0.126		
Government administration and defence			0.092		
Education			0.005		
Health and community services			0.160 **		
Cultural and recreational services			0.017		
Personal and other services			0.202 **		

** indicates that the marginal effect was statistically significant at the 95 percent confidence level. Each number represents the marginal effect of a movement between the selected and the reference level of the explanatory variable on the probability of having received employer-funded study and training in the past 12 months. This is estimated holding the effects of other explanatory variables constant at their mean levels. The 70–74 age group has been controlled for in the analysis, but the marginal effect obtained is not shown due to the small sample size. 'Not specified' and 'other' categories for all characteristics have been controlled for in the analysis. The base model estimates (coefficients and standard errors) are given in Appendix 2, Table A3.

Table 4: Marginal effect estimates from regression models – female employees

	Regression model				
	Business sector controls	Industry controls	Business sector and industry interactions	Detailed occupation controls	1 year tenure restriction
	Marginal effects				
Personal characteristics					
15-19 years old	-0.030	0.001	0.003	-0.006	-0.078
20-24 years old	0.002	0.013	0.019	0.012	0.020
25-29 years old	-0.009	-0.009	-0.008	-0.009	0.018
30-34 years old	-0.003	-0.007	-0.005	-0.004	-0.017
35-39 years old	-0.024	-0.025	-0.026	-0.028	-0.027
40-44 years old	0.000	0.000	0.000	0.000	0.000
45-49 years old	0.015	0.016	0.013	0.005	0.028
50-54 years old	0.016	0.010	0.011	0.009	0.019
55-59 years old	0.005	-0.002	-0.001	-0.001	0.016
60-64 years old	-0.014	-0.023	-0.023	-0.021	0.003
65-69 years old	-0.081	-0.079	-0.078	-0.085	-0.088
European only	0.000	0.000	0.000	0.000	0.000
Māori only	-0.020	-0.011	-0.017	-0.011	-0.011
European / Māori	-0.019	-0.017	-0.016	-0.019	-0.007
Pacific peoples only	-0.090 **	-0.084 **	-0.088 **	-0.092 **	-0.095 **
Asian only	-0.085 **	-0.078 **	-0.081 **	-0.079 **	-0.112 **
Other ethnicity	-0.004	0.007	0.005	-0.005	-0.038
Post-graduate degree	-0.001	0.000	0.000	0.015	-0.001
Degree	-0.016	-0.017	-0.019	-0.015	0.002
Teachers/nurses/technicians cetificate or diploma	0.024	0.010	0.015	0.008	0.038
Other certifcate or diploma	0.000	0.000	0.000	0.000	0.000
Upper secondary school qualification	-0.070 **	-0.067 **	-0.068 **	-0.064 **	-0.091 **
School certificate or NCEA level 1	-0.078 **	-0.073 **	-0.072 **	-0.070 **	-0.086 **
No qualification	-0.133 **	-0.126 **	-0.124 **	-0.125 **	-0.144 **
Not parent of dependent child/ren	0.000	0.000	0.000	0.000	0.000
Parent of dependent children	0.018	0.019	0.016	0.017	0.022
Born in New Zealand	0.000	0.000	0.000	0.000	0.000
Born overseas, in NZ for less than 5 years	0.079	0.098	0.102	0.076	0.079
Born overseas, in NZ for 5-10 years	0.151	0.171	0.171	0.153	0.194
Born overseas, in NZ for more than 10 years	0.027	0.045	0.045	0.031	0.011
Main urban area	0.000	0.000	0.000	0.000	0.000
Minor urban area	0.010	0.014	0.016	0.010	0.013
Rural area	0.046	0.052 **	0.050	0.043	0.044
Job characteristics					
Less than 1 month	-0.153 **	-0.147 **	-0.147 **	-0.153 **	
1-6 months	-0.095 **	-0.095 **	-0.094 **	-0.093 **	
6 months to less than 1 year	0.008	-0.002	0.003	0.006	
1 year to less than 3 years	0.000	0.000	0.000	0.000	0.000
3 years to less than 5 years	-0.001	0.000	0.001	0.001	0.000
5 years to less than 10 years	-0.022	-0.023	-0.024	-0.022	-0.022
10 years to less than 15 years	-0.008	-0.010	-0.010	-0.014	-0.002
15 years or more	-0.015	-0.012	-0.015	-0.013	-0.009
Permanent employee	0.000	0.000	0.000	0.000	0.000
Temporary employee	-0.030	-0.023	-0.028	-0.024	-0.025
Works up to 19 hours per week	-0.135 **	-0.131 **	-0.130 **	-0.141 **	-0.163 **
Works 20-less than 30 hours per week	-0.115 **	-0.111 **	-0.111 **	-0.119 **	-0.141 **
Works 30-less than 40 hours per week	-0.037 **	-0.037 **	-0.036	-0.041 **	-0.037
Works 40-less than 45 hours per week	0.000	0.000	0.000	0.000	0.000
Works 45-less than 50 hours per week	0.015	0.021	0.019	0.014	0.004
Works 50-less than 60 hours per week	0.031	0.043	0.038	0.032	-0.002
Works 60 hours plus per week	0.097	0.094	0.098	0.080	0.114
Non-union member	0.000	0.000	0.000	0.000	0.000
Union member	0.069 **	0.056 **	0.053 **	0.062 **	0.069 **
Legislators, administrators and managers	0.000	0.000	0.000	0.000	0.000
Professionals	0.087 **	0.055	0.052		0.098 **
Technicians and associate professionals	0.007	-0.018	-0.022		0.008
Clerks	-0.114 **	-0.125 **	-0.129 **		-0.131 **
Service and sales workers	-0.048	-0.049	-0.043		-0.048
Agriculture and fishery workers	-0.143 **	-0.105 **	-0.108		-0.130 **
Trades workers	-0.184 **	-0.174 **	-0.178 **		-0.169 **
Plant and machine operators and assemblers	-0.148 **	-0.144 **	-0.145 **		-0.172 **
Elementary occupations	-0.141 **	-0.136 **	-0.144 **		-0.150 **
Mainly daytime working pattern	0.000	0.000	0.000		0.000
Mainly evening work, 7pm–11pm	0.009	0.027	0.038	0.017	0.057
Mainly night work, 11pm–5am	0.109	0.140 **	0.138 **	0.075	0.127
Changing shift working pattern	0.090 **	0.097 **	0.097 **	0.059	0.118 **

Continued on next page.

Table 4: Marginal effect estimates from regression models – female employees (continued)

	Regression model				
	Business sector controls	Industry controls	Business sector and industry interactions	Detailed occupation controls	1 year tenure restriction
	Marginal effects				
Employer characteristics					
Private sector	0.000		0.000	0.000	0.000
Public sector	0.067 **			0.077 **	0.082 **
Not for profit sector	0.154 **			0.144 **	0.143 **
0-4 employees	-0.083 **	-0.090 **	-0.086 **	-0.085 **	-0.090 **
5-9 employees	-0.057 **	-0.061 **	-0.055 **	-0.060 **	-0.094 **
10-19 employees	-0.064 **	-0.067 **	-0.061 **	-0.065 **	-0.076 **
20-49 employees	0.000	0.000	0.000	0.000	0.000
50-99 employees	-0.017	-0.031	-0.032	-0.026	-0.046
100-499 employees	-0.007	-0.014	-0.015	-0.015	-0.053
500 plus employees	0.033	0.001	-0.008	0.007	-0.018
Agriculture, forestry and fishing		-0.095 **			
Manufacturing		-0.052			
Construction		-0.099 **			
Wholesale trade		-0.042			
Retail trade		-0.076 **			
Accommodation, cafes and restaurants		-0.119 **			
Transport and storage		0.085			
Communication services		-0.112 **			
Finance and insurance		0.023			
Property and business services		0.000			
Government administration and defence		0.132 **			
Education		0.055			
Health and community services		0.094 **			
Cultural and recreational services		0.017			
Personal and other services		0.015			
Private sector firms, by industry					
Agriculture, forestry and fishing			-0.104 **		
Manufacturing			-0.053		
Construction			-0.106		
Wholesale trade			-0.052		
Retail trade			-0.092 **		
Accommodation, cafes and restaurants			-0.137 **		
Transport and storage			0.052		
Communication services			-0.109		
Finance and insurance			0.016		
Property and business services			0.000		
Education			-0.065		
Health and community services			0.044		
Cultural and recreational services			-0.033		
Personal and other services			-0.054		
Public sector organisations, by industry					
Manufacturing			0.029		
Transport and storage			0.124		
Communication services			-0.133		
Property and business services			-0.052 **		
Government administration and defence			0.125 **		
Education			0.067 **		
Health and community services			0.106		
Cultural and recreational services			0.023		
Personal and other services			0.090		

** indicates that the marginal effect was statistically significant at the 95 percent confidence level. Each number represents the marginal effect of a movement between the selected and the reference level of the explanatory variable on the probability of having received employer-funded study and training in the past 12 months. This is estimated holding the effects of other explanatory variables constant at their mean levels. The 70–74 age group has been controlled for in the analysis, but the marginal effect obtained is not shown due to the small sample size. 'Not specified' and 'other' categories for all characteristics have been controlled for in the analysis. The base model estimates (coefficients and standard errors) are given in Appendix 2, Table A4.

APPENDIX 1: VARIABLE DEFINITIONS

This appendix provides information on variables that are used in the paper, focusing on the variables that may not be self-explanatory.

Ethnic group

Respondents to the Household Labour Force Survey are able to specify up to 14 ethnic groups that they are affiliated with. Their overall ethnic group is determined on the basis of all their responses. For example, the 'European only' group represents people who specified a European ethnic group and no other. The 'European/Māori' group includes people who gave these two ethnic groups and no other. The 'Pacific only' group represents people who specified any of the Pacific ethnic groups (Samoan, Cook Island, Tongan, Niuean, Tokelauan, Fijian) but no non-Pacific ethnic group. Similarly, the 'Asian only' group comprises people who identified with one or more Asian ethnicities but no non-Asian ethnic group. The final 'other categories' group includes everyone who gave responses or combinations of responses that are not covered by preceding categories.

Highest qualification

Highest qualification was classified using seven main categories and two residual categories for people whose responses could not be fully classified. The main categories are:

- post-graduate degree
- bachelor's degree
- teacher's/nurse's/technician's certificate or diploma
- any other post-school certificate or diploma
- upper secondary school qualification
- School Certificate or NCEA level 1
- no qualification.

The residual categories are 'other school qualification' and 'other post-school qualification':

- The 'other school qualification' category includes overseas school qualifications and any school qualifications that could not be classified by level.
- The 'other post-school qualification' category includes people who said they had a post-school qualification but did not provide enough details for it to be classified

Formal study

Information on participation in formal study is collected every quarter as part of the Household Labour Force Survey questionnaire. Formal study is defined as studying towards a qualification that takes 3 or more months of full-time study (involving 20 or more hours per week) to complete.

Parent of dependent children

The parental status variable uses the concept of a dependent child. A dependent child is a child who is either aged under 16 or aged 16–17 and not employed full-time.

Area type

Main urban areas are towns and cities with at least 30,000 residents. Minor urban areas are towns with at least 1,000 residents but less than 30,000. The rural category includes rural centres that have less than 1,000 residents and geographical areas with lower population densities.

Industry

Industry was classified using the ANZSIC 1996 classification

Occupation

Occupation was classified using the NZSCO99 classification.

Business ownership type

The 'business ownership type' variable indicates whether the respondent worked for a private sector firm, a government sector organisation or non-profit organisation in their main job. It was derived by matching each respondent to a specific business identity appearing on Statistics New Zealand's Business Frame, using the information they gave on the name and address of their employer. The Business Frame is a business register containing data on the characteristics of all businesses that meet certain size and economic significance criteria, including their employee numbers and business type.

Nine percent of respondents could not be linked to any business on the Business Frame, either because their employer was too small to be recorded on the Business Frame or because the details they gave were too vague. These respondents are shown in the 'not classified' category.

Temporary employment relationship

Permanent employees were defined in the Survey of Working Life as employees who are guaranteed continuing work. Temporary employees are employees who do not have a permanent employment relationship. They may have been hired for a specific time period or until the completion of a specific project, to temporarily replace another worker, to fill a seasonal job or to work only when needed by their employer.

Union member

The Survey of Working Life included a question that asked employees what type of employment agreement they were on (collective or individual) and, in a separate question, asked whether they were a member of a union. All employees who responded that they were on a collective employment agreement were automatically counted as union members. Employees on other types of employment agreements were asked whether they were a member of a union.

Job tenure

The survey's measure of job tenure was derived from a question on the duration of time the respondent had worked for their employer in their main job. The wording of the question did not specify that the work under consideration must have been continuous and unbroken. Some people may have referred to the date

when they first began working for their current employer even if they had not worked continuously.

Size of enterprise

An enterprise is a legally defined business entity that may have one or more establishments.

The 'size of enterprise' variable was derived by matching each respondent to a specific business identity appearing on Statistics New Zealand's Business Frame, using the information they gave on the name and address of their employer. The Business Frame is a business register containing data on the characteristics of all businesses that meet certain size and economic significance criteria.

The number of employees was defined by the enterprise's rolling mean employee count. The rolling mean employee count is a 12-month moving average of the monthly employment count.

Nine percent of respondents could not be linked to any business on the Business Frame, either because their employer was too small to be registered or because the details they gave were too vague. These respondents are shown in the 'not classified' category.

APPENDIX 2: ADDITIONAL TABLES

Table A1: Sample sizes and population estimates, by employee characteristics

	Sample sizes			Number of employees (000)		
	Males	Females	Total	Males	Females	Total
Total all employees	5630	6310	11940	890.5	852.7	1743.2
Sex						
Male	5630		5630	890.5		890.5
Female		6310	6310		852.7	852.7
Age group[4] (years)						
15–19	370	440	820	70.8	70.7	141.5
20–24	460	460	920	102.4	87.4	189.7
25–29	560	560	1120	109.2	89.8	199.0
30–34	570	600	1180	91.4	82.9	174.4
35–39	670	750	1420	103.1	94.1	197.2
40–44	670	780	1450	98.3	97.2	195.5
45–49	680	860	1540	97.8	106.9	204.7
50–54	570	730	1300	79.6	88.5	168.2
55–59	500	550	1040	69.4	69.9	139.3
60–64	390	400	790	45.3	43.9	89.2
65-69	150	140	280	16.4	17.2	33.5
70-74	40	30	70	4.7	3.3	8.1
Ethnic group						
European only	4170	4690	8860	662.8	638.9	1301.7
Māori only	340	410	750	46.6	43.9	90.5
Pacific peoples only	280	270	550	35.7	29.3	65.1
Asian only	390	410	800	75.5	68.5	144.0
European/Māori	270	330	600	39.9	43.6	83.5
Other	180	190	370	30.1	27.9	57.9
Highest qualification						
No qualification	1150	1220	2370	158.5	146.1	304.6
School Certificate/NCEA Level 1	410	560	970	67.5	71.1	138.6
Sixth form qualification/NCEA Level 2	310	450	760	53.7	65.1	118.8
Higher school qual/NCEA Level 3	330	400	730	63.3	64.3	127.6
Other school qualification	120	170	290	18.8	26.8	45.6
Vocational or trade qualification	2060	2010	4070	304.0	263.2	567.2
Teacher, nursing or technicians certificate	140	500	640	17.9	63.8	81.7
Other certifcate or diploma	1920	1510	3430	286.1	199.4	485.5
Bachelor's degree	660	850	1520	122.0	124.2	246.2
Postgraduate qualification	340	380	720	62.1	56.5	118.5
Other post-school qualification	230	240	460	35.8	31.9	67.8
Participating in formal study						
Yes	370	430	790	67.8	63.8	131.6
No	5110	5670	10790	793.3	757.7	1551.0
Parent of dependent children						
Sole mother of dependent child/ren		530	530		61.6	61.6
Sole father of dependent child/ren	100		100	13.7		13.7
Mother of dependent child/ren, two parent family		1770	1770		231.3	231.4
Father of dependent child/ren, two parent family	1980		1980	297.8		297.8
Not parent of dependent child/ren	3550	4010	7560	579.0	559.7	1138.7
Birthplace						
New Zealand	4300	5010	9310	665.8	658.5	1324.4
Overseas – lived in NZ for < 5 years	350	340	690	61.7	52.0	113.7
Overseas – lived in NZ for 5 years to < 10 years	310	260	570	55.0	41.6	96.6
Overseas – lived in NZ for 10 years+	660	700	1360	107.3	100.3	207.6
Area type						
Main urban	4210	4700	8910	688.5	652.8	1341.2
Secondary/Minor urban	820	920	1740	97.2	94.1	191.3
Rural	600	680	1280	104.9	105.8	210.7

S = suppressed for confidentiality reasons. People aged over 74 are included in the totals only.

Variable definitions are given in Appendix 1.

Table A2: Sample sizes and population estimates, by job characteristics

	Sample sizes			Number of employees (000)		
	Males	Females	Total	Males	Females	Total
Total all employees	5630	6310	11940	890.5	852.7	1743.2
Tenure						
Less than 1 month	180	240	430	29.4	34.3	63.7
1 to less than 6 months	620	780	1400	104.1	109.2	213.3
6 months to less than 1 year	390	520	900	68.4	73.3	141.7
1 to less than 3 years	1280	1540	2820	210.3	219.5	429.9
3 to less than 5 years	850	940	1790	138.4	129.9	268.4
5 to less than 10 years	1060	1110	2170	159.3	140.9	300.1
10 to less than 15 years	490	540	1030	73.0	68.5	141.5
15 years or more	770	630	1390	107.0	76.1	183.1
Employment relationship						
Temporary employee	480	690	1170	72.7	91.0	163.6
Permanent employee	5140	5600	10740	814.9	760.3	1575.2
Usual hours worked per week						
0-19	390	1210	1600	70.1	165.6	235.7
20-29	190	960	1160	30.3	128.9	159.2
30-39	460	1240	1690	75.3	159.5	234.8
40	1990	1830	3820	315.7	254.5	570.2
41-44	480	260	740	69.8	35.1	104.9
45-49	910	340	1240	139.6	46.8	186.4
50-59	790	290	1080	124.8	41.0	165.8
60+	370	90	460	56.5	10.5	66.9
Union member						
Union member	1670	2210	3890	244.1	281.1	525.2
Not union member	3900	4020	7920	635.3	561.0	1196.3
Occupation						
Legislators, administrators and managers	700	570	1280	129.6	84.1	213.7
Professionals	800	1300	2100	131.2	177.2	308.4
Technicians and associate professionals	560	830	1390	94.9	115.6	210.6
Clerks	340	1370	1700	52.1	191.4	243.5
Service and sales workers	620	1410	2030	108.5	188.9	297.4
Agriculture and fishery workers	350	170	520	51.4	22.9	74.3
Trades workers	950	50	1000	142.9	6.7	149.7
Plant and machine operators and assemblers	910	230	1140	122.0	25.2	147.2
Elementary occupations	410	370	770	57.1	39.8	96.9
Overall work pattern						
Mainly daytime	4950	5600	10550	783.5	761.2	1544.7
Mainly evening, 7pm–11pm	180	260	440	31.7	36.7	68.4
Mainly night, 11pm–5am	80	90	170	10.1	10.6	20.7
Changing shifts	340	290	640	54.7	35.6	90.3
Other pattern	70	70	140	9.8	8.6	18.4
Business type						
Private	4060	3760	7820	644.1	515.1	1159.3
Central government	640	1290	1930	102.7	174.6	277.3
Local government	150	120	260	20.2	15.2	35.4
Not for profit	280	660	930	41.6	81.2	122.7
Not classified	510	490	1000	81.9	66.6	148.5

Continued on next page.

Table A2: Sample sizes and population estimates, by job characteristics (continued)

	Sample sizes			Number of employees (000)		
	Males	**Females**	**Total**	**Males**	**Females**	**Total**
Size of enterprise						
0 to 4 employees	1040	1100	2130	170.7	153.0	323.7
5 to 9 employees	540	650	1190	86.2	88.1	174.3
10 to 19 employees	580	660	1240	93.4	85.9	179.3
20 to 49 employees	720	750	1470	112.0	104.5	216.5
50 to 99 employees	480	520	1000	72.8	65.3	138.1
100 to 499 employees	920	920	1840	139.6	125.7	265.3
500 or more employees	840	1220	2060	134.2	163.6	297.8
Not classified	510	500	1010	81.6	66.5	148.2
Industry						
Agriculture, forestry & fishing	380	200	580	56.0	27.1	83.0
Mining	40	S	50	4.9	S	5.7
Manufacturing	1250	540	1790	182.4	71.4	253.8
Electricity, gas & water supply	60	S	70	8.4	1.5	9.9
Construction	630	100	730	96.1	12.9	108.9
Wholesale trade	380	200	580	58.5	28.7	87.1
Retail trade	640	920	1560	107.8	129.6	237.4
Accommodation, cafes & restaurants	150	390	540	29.3	52.0	81.3
Transport & storage	350	140	500	50.7	21.5	72.2
Communication services	100	90	180	19.2	11.9	31.1
Finance & insurance	130	240	370	24.8	37.9	62.7
Property & business services	450	610	1060	82.4	84.3	166.7
Government administration & defence	220	330	550	36.8	46.6	83.4
Education	320	870	1190	44.7	113.3	158.0
Health & community services	200	1260	1460	32.9	153.2	186.1
Cultural & recreational services	130	130	270	24.1	19.3	43.4
Personal & other services	200	270	470	30.0	39.3	69.3

S = suppressed for confidentiality reasons.

Variable definitions are given in Appendix 1.

Table A3: Logistic regression model estimates of the effects of individual characteristics on participation in employer-funded education and training – male employees

	Regression model									
	Business sector controls		Industry controls		Business sector and industry interactions		Detailed occupation controls		1 year tenure restriction	
	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error
Personal characteristics										
15-19 years old	0.178	0.235	0.240	0.233	0.246	0.255	0.302	0.236	0.141	0.309
20-24 years old	0.123	0.182	0.172	0.187	0.158	0.227	0.180	0.181	0.215	0.206
25-29 years old	0.347 **	0.163	0.377 **	0.166	0.391 **	0.177	0.354 **	0.166	0.386 **	0.180
30-34 years old	0.295	0.156	0.319	0.157	0.311	0.179	0.305	0.159	0.353 **	0.169
35-39 years old	0.205	0.141	0.224	0.145	0.199	0.134	0.206	0.144	0.228	0.154
45-49 years old	0.044	0.144	0.041	0.145	0.008	0.135	0.055	0.146	0.047	0.154
50-54 years old	0.148	0.155	0.198	0.157	0.156	0.160	0.147	0.157	0.265	0.166
55-59 years old	-0.059	0.174	-0.051	0.177	-0.039	0.164	0.001	0.177	-0.001	0.185
60-64 years old	-0.049	0.187	-0.049	0.193	-0.028	0.194	-0.049	0.190	-0.089	0.203
65-69 years old	-0.230	0.291	-0.211	0.291	-0.241	0.307	-0.230	0.290	-0.315	0.314
Māori only	0.097	0.153	0.079	0.152	0.105	0.164	0.058	0.154	0.146	0.169
European / Māori	-0.055	0.160	-0.007	0.157	0.010	0.153	-0.106	0.162	-0.077	0.182
Pacific peoples only	-0.630 **	0.193	-0.632 **	0.198	-0.655 **	0.199	-0.713 **	0.196	-0.625 **	0.222
Asian only	-0.182	0.182	-0.139	0.186	-0.141	0.190	-0.164	0.184	-0.173	0.205
Other ethnicity	-0.173	0.227	-0.137	0.227	-0.123	0.216	-0.168	0.231	-0.086	0.263
Post-graduate degree	0.354 **	0.162	0.253	0.168	0.262	0.170	0.400 **	0.170	0.230	0.177
Degree	0.088	0.127	0.059	0.129	0.065	0.133	0.063	0.129	0.131	0.136
Teachers/nurses/technicians cetificate or dip.	0.489 **	0.215	0.481 **	0.221	0.483 **	0.231	0.518 **	0.234	0.482 **	0.233
Upper secondary school qualification	-0.176	0.139	-0.141	0.141	-0.172	0.162	-0.180	0.140	-0.234	0.151
School certificate or NCEA level 1	-0.320 **	0.165	-0.306 **	0.166	-0.307 **	0.151	-0.308	0.169	-0.645 **	0.190
No qualification	-0.635 **	0.118	-0.611 **	0.118	-0.606 **	0.130	-0.603 **	0.116	-0.689 **	0.134
Parent of dependent children	0.250 **	0.086	0.258 **	0.087	0.255 **	0.088	0.252 **	0.087	0.232 **	0.093
Born overseas, in NZ for less than 5 years	-0.465	0.386	-0.483	0.400	-0.442	0.466	-0.538	0.408	-0.527	0.427
Born overseas, in NZ for 5-10 years	-0.582	0.401	-0.513	0.414	-0.472	0.463	-0.606	0.423	-0.724 **	0.440
Born overseas, in NZ for more than 10 years	-0.405	0.369	-0.402	0.384	-0.355	0.396	-0.431	0.393	-0.276	0.404
Minor urban area	0.325 **	0.099	0.353 **	0.100	0.372 **	0.102	0.321 **	0.100	0.281 **	0.107
Rural area	0.139	0.129	0.162	0.133	0.188	0.123	0.133	0.128	0.028	0.142
Job characteristics										
Less than 1 month	-1.113 **	0.266	-1.061 **	0.269	-1.060 **	0.263	-1.179 **	0.272		
1-6 months	-0.434 **	0.158	-0.401 **	0.164	-0.399 **	0.156	-0.422 **	0.158		
6 months to less than 1 year	0.176	0.165	0.189	0.166	0.204	0.164	0.173	0.166		
3 years to less than 5 years	0.088	0.122	0.125	0.122	0.128	0.136	0.075	0.121	0.062	0.122
5 years to less than 10 years	-0.150	0.113	-0.122	0.115	-0.123	0.128	-0.144	0.114	-0.166	0.115
10 years to less than 15 years	0.061	0.148	0.131	0.148	0.136	0.156	0.062	0.149	0.044	0.149
15 years or more	-0.065	0.137	-0.015	0.137	-0.044	0.137	-0.049	0.140	-0.079	0.140
Temporary employee	-0.775 **	0.168	-0.741 **	0.172	-0.734 **	0.163	-0.813 **	0.172	-0.491 **	0.202
Works up to 19 hours per week	-0.816 **	0.236	-0.772 **	0.232	-0.772 **	0.231	-0.717 **	0.236	-1.103 **	0.325
Works 20-less than 30 hours per week	-0.370	0.239	-0.333	0.247	-0.360	0.258	-0.330	0.248	-0.380	0.291
Works 30-less than 40 hours per week	0.106	0.147	0.078	0.155	0.121	0.147	0.203	0.148	0.213	0.156
Works 45-less than 50 hours per week	0.290 **	0.100	0.319 **	0.103	0.315 **	0.103	0.277 **	0.101	0.306 **	0.109
Works 50-less than 60 hours per week	0.250 **	0.111	0.284 **	0.112	0.300 **	0.120	0.253 **	0.113	0.344 **	0.120
Works 60 hours plus per week	0.273	0.179	0.306	0.180	0.363	0.200	0.298	0.183	0.311	0.172
Union member	0.221 **	0.094	0.204 **	0.094	0.190	0.105	0.177	0.097	0.139	0.100
Professionals	0.370 **	0.139	0.282	0.144	0.285	0.158			0.318 **	0.152
Technicians and associate professionals	0.170	0.158	0.122	0.161	0.142	0.138			0.065	0.167
Clerks	-0.053	0.196	-0.051	0.202	0.034	0.209			0.067	0.204
Service and sales workers	-0.059	0.162	-0.125	0.176	-0.135	0.176			-0.033	0.181
Agriculture and fishery workers	-0.487 **	0.198	-0.403	0.250	-0.371	0.274			-0.532 **	0.218
Trades workers	-0.146	0.144	-0.030	0.150	-0.016	0.151			-0.118	0.156
Plant and machine operators & assemblers	-0.181	0.152	-0.049	0.159	-0.003	0.151			-0.145	0.163
Elementary occupations	-0.314	0.202	-0.268	0.203	-0.242	0.202			-0.271	0.235
Mainly evening work, 7pm–11pm	-0.264	0.250	-0.025	0.255	-0.008	0.291	-0.194	0.270	-0.518	0.308
Mainly night work, 11pm–5am	-0.173	0.307	-0.047	0.313	-0.031	0.333	-0.102	0.309	-0.119	0.337
Changing shift work pattern	0.573 **	0.162	0.636 **	0.169	0.534 **	0.219	0.509 **	0.162	0.632 **	0.172
Employer characteristics										
Public sector	0.298 **	0.131					0.177	0.140	0.448 **	0.131
Not for profit sector	0.543 **	0.169					0.428 **	0.180	0.546 **	0.188
0-4 employees	-0.565 **	0.150	-0.637 **	0.149	-0.667 **	0.177	-0.610 **	0.151	-0.651 **	0.168
5-9 employees	-0.541 **	0.162	-0.603 **	0.162	-0.577 **	0.195	-0.557 **	0.164	-0.603 **	0.175
10-19 employees	-0.198	0.150	-0.232	0.151	-0.231	0.157	-0.223	0.152	-0.137	0.164
50-99 employees	-0.012	0.168	0.011	0.169	0.013	0.181	-0.015	0.168	0.073	0.179
100-499 employees	0.154	0.139	0.125	0.143	0.139	0.155	0.206	0.139	0.089	0.150
500 plus employees	0.128	0.146	-0.026	0.147	-0.070	0.167	0.087	0.152	-0.050	0.156

Continued on next page.

Table A3: Logistic regression model estimates of the effects of individual characteristics on participation in employer-funded education and training – male employees (continued)

	Regression model									
	Business sector controls		Industry controls		Business sector and industry interactions		Detailed occupation controls		1 year tenure restriction	
	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error
Agriculture, forestry and fishing			-0.341	0.263						
Mining			0.209	0.412						
Manufacturing			-0.599 **	0.176						
Electricity, gas and water supply			0.625	0.384						
Construction			-0.296	0.194						
Wholesale trade			-0.319	0.204						
Retail trade			-0.212	0.199						
Accommodation, cafes and restaurants			-1.422 **	0.331						
Transport and storage			-0.402 **	0.218						
Communication services			-0.094	0.304						
Finance and insurance			0.073	0.262						
Government administration and defence			0.468	0.230						
Education			0.097	0.211						
Health and community services			0.560 **	0.242						
Cultural and recreational services			-0.236	0.278						
Personal and other services			0.589 **	0.244						
Private sector industry groupings										
Agriculture, forestry and fishing					-0.411	0.266				
Mining					0.180	0.430				
Manufacturing					-0.652 **	0.169				
Electricity, gas and water supply					0.602	0.422				
Construction					-0.331	0.184				
Wholesale trade					-0.351	0.230				
Retail trade					-0.243	0.197				
Accommodation, cafes and restaurants					-1.342 **	0.392				
Transport and storage					-0.830 **	0.274				
Communication services					0.200	0.375				
Finance and insurance					0.028	0.236				
Education					0.490	0.494				
Health and community services					0.179	0.562				
Cultural and recreational services					-0.571	0.367				
Personal and other services					0.202	0.373				
Public sector organisations, by industry										
Manufacturing					-0.520	0.517				
Transport and storage					0.318	0.405				
Communication services					-1.277	1.000				
Property and business services					-0.766	0.528				
Government administration and defence					0.427	0.242				
Education					0.024	0.255				
Health and community services					0.707 **	0.293				
Cultural and recreational services					0.082	0.458				
Personal and other services					0.879 **	0.343				
Model summary statistics										
Number of observations	5619		5619		5619		5619		4430	
Log-likelihood	-3100.6		-3054.5		-3037.6		-3045.9		-2533.0	
Psuedo R^2	0.113		0.126		0.131		0.128		0.105	

** indicates that the coefficient was statistically significant at the 95 percent confidence level.

The 70–74 age group has been controlled for in the analysis, but the estimates obtained are not shown due to the small sample size.

'Not specified' and 'other' categories for all characteristics have been controlled for in the analysis.

Table A4: Logistic regression model estimates of the effects of individual characteristics on participation in employer-funded education and training – female employees

	Regression model									
	Business sector controls		Industry controls		Business sector and industry interactions		Detailed occupation controls		1 year tenure restriction	
	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error
Personal characteristics										
15-19 years old	-0.161	0.240	0.007	0.256	-0.400	0.355	-0.030	0.247	-0.400	0.355
20-24 years old	0.009	0.183	0.068	0.187	0.098	0.188	0.059	0.186	0.095	0.222
25-29 years old	-0.046	0.158	-0.048	0.157	-0.040	0.140	-0.048	0.160	0.084	0.183
30-34 years old	-0.018	0.149	-0.038	0.151	-0.028	0.149	-0.019	0.150	-0.079	0.171
35-39 years old	-0.127	0.150	-0.134	0.151	-0.137	0.147	-0.149	0.151	-0.131	0.168
45-49 years old	0.075	0.138	0.080	0.140	0.066	0.154	0.026	0.140	0.131	0.153
50-54 years old	0.079	0.150	0.049	0.152	0.056	0.148	0.048	0.152	0.088	0.164
55-59 years old	0.027	0.171	-0.009	0.171	-0.006	0.179	-0.005	0.171	0.077	0.190
60-64 years old	-0.073	0.186	-0.121	0.187	-0.119	0.189	-0.111	0.186	0.013	0.200
65-69 years old	-0.466	0.297	-0.454	0.292	-0.447	0.323	-0.493	0.294	-0.459	0.314
Māori only	-0.106	0.151	-0.056	0.156	-0.090	0.169	-0.055	0.154	-0.053	0.174
European / Māori	-0.101	0.171	-0.088	0.173	-0.084	0.208	-0.102	0.174	-0.031	0.191
Pacific peoples only	-0.524 **	0.218	-0.490 **	0.219	-0.516 **	0.240	-0.540 **	0.226	-0.501 **	0.236
Asian only	-0.479 **	0.179	-0.440 **	0.180	-0.463 **	0.187	-0.446 **	0.181	-0.597 **	0.210
Other ethnicity	-0.022	0.210	0.036	0.209	0.028	0.221	-0.028	0.213	-0.189	0.256
Post-graduate degree	-0.003	0.164	-0.002	0.164	0.000	0.173	0.076	0.165	-0.003	0.185
Degree	-0.085	0.121	-0.091	0.123	-0.098	0.120	-0.081	0.124	0.007	0.138
Teachers/nurses/technicians cetificate or dip.	0.121	0.139	0.049	0.139	0.076	0.131	0.043	0.144	0.174	0.155
Upper secondary school qualification	-0.382 **	0.134	-0.369 **	0.136	-0.374 **	0.140	-0.349 **	0.137	-0.463 **	0.152
School certificate or NCEA level 1	-0.436 **	0.154	-0.412 **	0.159	-0.405 **	0.185	-0.390 **	0.156	-0.442 **	0.168
No qualification	-0.777 **	0.123	-0.738 **	0.125	-0.723 **	0.136	-0.730 **	0.123	-0.765 **	0.137
Parent of dependent children	0.090	0.090	0.099	0.091	0.082	0.094	0.086	0.091	0.105	0.102
Born overseas, in NZ for less than 5 years	0.378	0.519	0.462	0.525	0.481	0.517	0.364	0.519	0.353	0.594
Born overseas, in NZ for 5-10 years	0.686	0.526	0.775	0.534	0.771	0.544	0.697	0.527	0.830	0.592
Born overseas, in NZ for more than 10 years	0.134	0.500	0.225	0.506	0.223	0.504	0.153	0.500	0.050	0.562
Minor urban area	0.052	0.103	0.074	0.103	0.080	0.115	0.053	0.104	0.060	0.117
Rural area	0.225	0.118	0.259 **	0.119	0.245	0.128	0.212	0.119	0.204	0.129
Job characteristics										
Less than 1 month	-1.005 **	0.245	-0.967 **	0.245	-0.962 **	0.250	-1.022 **	0.241		
1-6 months	-0.540 **	0.140	-0.542 **	0.142	-0.538 **	0.151	-0.532 **	0.142		
6 months to less than 1 year	0.042	0.142	-0.008	0.144	0.018	0.147	0.032	0.144		
3 years to less than 5 years	-0.004	0.117	0.002	0.120	0.006	0.130	0.004	0.118	0.000	0.119
5 years to less than 10 years	-0.116	0.114	-0.119	0.116	-0.127	0.120	-0.114	0.115	-0.106	0.117
10 years to less than 15 years	-0.043	0.146	-0.050	0.148	-0.053	0.147	-0.074	0.147	-0.011	0.150
15 years or more	-0.080	0.145	-0.062	0.146	-0.078	0.154	-0.066	0.147	-0.044	0.150
Temporary employee	-0.157	0.136	-0.122	0.138	-0.147	0.147	-0.128	0.138	-0.123	0.173
Works up to 19 hours per week	-0.787 **	0.128	-0.765 **	0.131	-0.759 **	0.147	-0.838 **	0.129	-0.893 **	0.150
Works 20-less than 30 hours per week	-0.665 **	0.118	-0.646 **	0.120	-0.644 **	0.140	-0.694 **	0.120	-0.755 **	0.135
Works 30-less than 40 hours per week	-0.196 **	0.097	-0.198 **	0.099	-0.189	0.112	-0.219 **	0.099	-0.181	0.108
Works 45-less than 50 hours per week	0.075	0.161	0.106	0.160	0.095	0.155	0.070	0.158	0.018	0.183
Works 50-less than 60 hours per week	0.154	0.163	0.211	0.161	0.191	0.200	0.159	0.166	-0.011	0.177
Works 60 hours plus per week	0.451	0.243	0.445	0.244	0.458	0.251	0.380	0.247	0.499	0.291
Union member	0.344 **	0.086	0.283 **	0.086	0.267 **	0.097	0.312 **	0.089	0.322 **	0.097
Professionals	0.424 **	0.138	0.272	0.144	0.259	0.148			0.445 **	0.154
Technicians and associate professionals	0.036	0.144	-0.092	0.149	-0.114	0.158			0.039	0.159
Clerks	-0.636 **	0.137	-0.711 **	0.141	-0.739 **	0.150			-0.673 **	0.152
Service and sales workers	-0.252	0.147	-0.261	0.157	-0.228	0.172			-0.235	0.165
Agriculture and fishery workers	-0.931 **	0.273	-0.634 **	0.331	-0.658	0.373			-0.726 **	0.298
Trades workers	-1.385 **	0.484	-1.282 **	0.485	-1.328 **	0.526			-1.026 **	0.507
Plant and machine operators & assemblers	-0.968 **	0.257	-0.947 **	0.274	-0.960 **	0.292			-1.035 **	0.288
Elementary occupations	-0.900 **	0.244	-0.865 **	0.248	-0.934 **	0.278			-0.859 **	0.278
Mainly evening work, 7pm–11pm	0.048	0.210	0.136	0.224	0.188	0.245	0.087	0.222	0.258	0.248
Mainly night work, 11pm–5am	0.505	0.280	0.638 **	0.283	0.630 **	0.297	0.359	0.291	0.553	0.314
Changing shift work pattern	0.423 **	0.165	0.460 **	0.172	0.457 **	0.181	0.286	0.182	0.519 **	0.201
Employer characteristics										
Public sector	0.328 **	0.109					0.379 **	0.116	0.378 **	0.121
Not for profit sector	0.708 **	0.123					0.668 **	0.126	0.628 **	0.140
0-4 employees	-0.463 **	0.143	-0.513 **	0.142	-0.483 **	0.121	-0.481 **	0.143	-0.461 **	0.163
5-9 employees	-0.312 **	0.152	-0.334 **	0.154	-0.298 **	0.143	-0.329 **	0.151	-0.485 **	0.172
10-19 employees	-0.349 **	0.151	-0.375 **	0.151	-0.335 **	0.141	-0.359 **	0.150	-0.386 **	0.170
50-99 employees	-0.088	0.155	-0.167	0.154	-0.170	0.140	-0.135	0.159	-0.226	0.180
100-499 employees	-0.036	0.133	-0.074	0.136	-0.077	0.127	-0.077	0.136	-0.263	0.153
500 plus employees	0.163	0.132	0.004	0.135	-0.041	0.147	0.037	0.140	-0.089	0.147

Continued on next page.

Table A4: Logistic regression model estimates of the effects of individual characteristics on participation in employer-funded education and training – female employees (continued)

	Regression model									
	Business sector controls		Industry controls		Business sector and industry interactions		Detailed occupation controls		1 year tenure restriction	
	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error	Coef.	Std error
Agriculture, forestry and fishing			-0.566 **	0.309						
Manufacturing			-0.282	0.188						
Construction			-0.592 **	0.322						
Wholesale trade			-0.226	0.247						
Retail trade			-0.424 **	0.170						
Accommodation, cafes and restaurants			-0.724 **	0.233						
Transport and storage			0.402	0.248						
Communication services			-0.691 **	0.356						
Finance and insurance			0.116	0.213						
Government administration and defence			0.610 **	0.193						
Education			0.273	0.153						
Health and community services			0.454 **	0.146						
Cultural and recreational services			0.084	0.288						
Personal and other services			0.078	0.220						
Private sector industry groupings										
Agriculture, forestry and fishing					-0.623 **	0.312				
Manufacturing					-0.291	0.197				
Construction					-0.648	0.349				
Wholesale trade					-0.289	0.265				
Retail trade					-0.521 **	0.179				
Accommodation, cafes and restaurants					-0.865 **	0.255				
Transport and storage					0.254	0.349				
Communication services					-0.669	0.548				
Finance and insurance					0.083	0.221				
Education					-0.365	0.276				
Health and community services					0.218	0.178				
Cultural and recreational services					-0.175	0.510				
Personal and other services					-0.301	0.362				
Public sector organisations, by industry					0.144	1.236				
Manufacturing					0.571	0.594				
Transport and storage					-0.871	0.489				
Communication services					-0.290	0.496				
Property and business services					0.579 **	0.168				
Government administration and defence					0.326 **	0.148				
Education					0.502 **	0.167				
Health and community services					0.116	0.341				
Cultural and recreational services					0.426	0.349				
Personal and other services										
Model summary statistics										
Number of observations	6296		6296		6296		6296		4749	
Log-likelihood	-3289.2		-3258.8		-3253.1		-3250.1		-2578.3	
Psuedo R^2	0.151		0.159		0.160		0.161		0.149	

** indicates that the coefficient was statistically significant at the 95 percent confidence level.

The 70–74 age group has been controlled for in the analysis, but the estimates obtained are not shown due to the small sample size.

'Not specified' and 'other' categories for all characteristics have been controlled for in the analysis.