

Department of Labour
TE TARI MAHI



Does Workplace-based Industry Training Improve Earnings?

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Statistics New Zealand and
New Zealand Department of Labour

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Access to the data used in this study was provided by Statistics NZ under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person or firm. The tables in this paper contain information about groups of people so that the confidentiality of individuals is protected.

The results are based in part on tax data supplied by Inland Revenue to Statistics NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information is published or disclosed in any other form, or provided back to Inland Revenue for administrative or regulatory purposes.

Any person who had access to the unit-record data has certified that they have been shown, have read and have understood section 81 of the Tax Administration Act 1994, which relates to privacy and confidentiality. Any discussion of data limitations or weaknesses is in the context of using the Linked Employer-Employee Database (LEED) for statistical purposes, and is not related to the ability of the data to support Inland Revenue's core operational requirements.

Careful consideration has been given to the privacy, security and confidentiality issues associated with using tax data in this project. A full discussion can be found in the *LEED Project Privacy Impact Assessment* paper (Statistics New Zealand, 2003).

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Abstract

In recent years, workplace-based industry training has been growing at a faster rate than other forms of tertiary education and training. Government and industry have substantially increased their investments in industry training. However, there is not much information available on whether training improves participants' skills, productivity, and labour market outcomes. In this paper, we examine the labour market outcomes of employees who left industry training during 2003–05. We use a new dataset constructed for the *Employment Outcomes of Tertiary Education Feasibility Study* (Statistics NZ, 2009) that assessed whether tertiary education and training data could be linked to Statistics New Zealand's Linked-Employer Employee Dataset (LEED).

Thirty-one percent of those who left industry training during 2003–05 gained a qualification. Thirteen percent gained a qualification at National Qualifications Framework (NQF) level 4 or above, 9 percent at level 3, and 9 percent at level 1 or 2.

We found that gaining a qualification at level 4 or higher improved participants' earnings. Their average monthly earnings were 7 percent higher than those of comparable non-participants 48 months after training started. The improvement in participants' earnings was evident from around 12 months after training started, while the greatest improvement occurred around the time training ended. The impact on average earnings varied considerably by age and sex. The earnings of males aged 15–24 years were 11 percent higher than those of comparable non-participants 48 months after training started. The earnings of males in other age groups improved between 1 and 4 percent, and the earnings of females improved 2 percent.

Gaining a qualification at level 3 improved the average earnings of males but not females. The average earnings of males were 2 percent higher than those of comparable non-participants 48 months after training started. Gaining a qualification at level 1 or 2, completing a limited credit programme, or gaining no qualification did not improve average earnings during the 48 months after training started. Employment rates were between 3 and 8 percent higher 24 months after training started for those who completed qualifications or limited credit programmes than for comparable non-participants.

Our analyses by the Industry Training Organisation (ITO) overseeing the training were generally consistent with the overall results. In most cases, differences between ITOs reflected the different demographic profile of learners associated with the various ITOs.

Our findings are based on comparing the earnings patterns of participants with those of non-participants who had very similar demographic characteristics and employment histories before training started, and are subject to some caveats.

We also examined the extent to which participants were retained by employers and within industries. We found that jobs ending with no immediate re-employment accounted for about 17 percent of training non-completions, and changing jobs accounted for a further 10 percent. Of those who completed their last training programme, about 75 percent were with the same employer at the start and end of the training period, and 50 percent were with the same employer 12 months after training ended. Of those who did not complete their last training programme, 25 percent were with the same employer 12 months later. Around 65 percent of those who completed their last training programme were employed in the same industry subgroup 12 months later.

Keywords

Tertiary education, training, industry training, workplace training, Linked Employer-Employee Data (LEED), employment, and earnings.

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Introduction

Industry training is formalised learning that occurs within the workplace, and provides employees with training that is linked to the National Qualifications Framework (NQF). It is part-funded by industry and by government. Industry Training Organisations (ITOs) are industry-owned bodies that work within their industry to identify skill and training needs. They set skill standards and develop qualifications that are relevant to the needs of industry. They arrange for the delivery of workplace-based learning and assessment, but do not deliver the training themselves. In 2007, the 39 ITOs received around \$200 million dollars from government and around \$65 million from industry, and brokered services for 37,000 businesses and 185,000 employees (Industry Training Federation, 2008).

Since 2000, workplace learning has grown at a faster rate than other forms of tertiary education and training. Both government and industry have expanded their investments in industry training, and it now constitutes a significant part of the tertiary education and training sector. In 2007, around 5 percent of the governments total investment in tertiary education and training was directed through ITOs. While the Tertiary Education Commission provides monitoring information, there is very little information available on the impact of workplace learning on participants' skills, productivity and labour market outcomes, and on firm productivity or workplace practices.

Curson (2004) examined issues of training programme non-completion, and concluded that worker turnover and the perceived quality and relevance of training contributed to non-completion. Mahoney (2009) focused on programme completion rates, and identified characteristics associated with successful completion.

The strongest associations were found to be with:

- the ITO/industry overseeing the training
- the training load, level, and proposed duration of the programme
- the age, location, and ethnicity of the learner.

A lack of quantitative information on outcomes from tertiary education and training has hampered research efforts to date. However, the successful integration of information on tertiary education and training with information from Statistics NZ's Linked Employer-Employee Database (LEED) provides a valuable new source of information on the labour market experiences of participants in tertiary education and training.

In this paper, we give an exploratory analysis of the labour market experiences of participants in industry training who ended their training during 2003–05. Our analysis uses data constructed for the *Employment Outcomes of Tertiary Education Feasibility Study* (Statistics NZ, 2009) that assessed whether education and training data could be linked to the LEED.

The industry training data includes information on:

- participation dates
- the ITO overseeing the training
- the type and level of programme
- the proposed duration of training
- the number and level of credits and certificates achieved each year.

Statistics New Zealand's Linked Employer-Employee Database (LEED) provides information on the earnings and other taxable income received by individuals each month, together with information on the firms that they worked for. LEED covers the period 1999–2008. The data enables workers and firms to be followed over time, and characteristics such as tenure and

turnover to be examined. For example, LEED enables the examination of the extent to which exits from industry training coincide with job losses or changes, and the extent to which learners who complete their industry training programmes remain with the same firm and within the industry.

Our analysis is based on a period of training undertaken by a learner, which may have involved participation in several programmes and the achievement of more than one qualification. We analyse the employment and earnings patterns of learners before, during, and after training, and compare these with the earnings patterns of non-participants with similar demographic and employment history before training started.

While we focus on the labour market outcomes of employees who participate in industry training, we acknowledge that industry training may have other impacts on workers and firms; for example, increased productivity, improved health and safety, and other workplace practices.

In the next section, we provide a brief overview of industry training in New Zealand. In section 3, we describe the data sources and the integrated dataset used in the analysis. In section 4, we present our analysis and results, and discuss issues and limitations. In section 5, we summarise our results and present our conclusions.

Industry training

Industry training is formalised learning that occurs within the workplace. It provides employees with training and learning that is linked to national qualifications through the NQF. Industry training is part-funded by both industry and government.

The Industry Training Act 1992 provided the framework for industry to control the development, implementation, and management of industry training programmes. Industry training organisations were created to:

- identify and respond to the skill needs of their industry
- develop skill standards and training programmes
- arrange for the delivery and assessment of workplace-based learning.

The Modern Apprenticeship programme operates under the Modern Apprenticeship Training Act 2000. Modern Apprenticeships are similar to industry training, but they are mainly for learners aged 16–21 years. Modern Apprenticeship Coordinators provide support to the apprentices. They help manage training arrangements in conjunction with the employer and the ITO.

In this paper, the term 'industry training' refers to the industry training and Modern Apprenticeship programmes combined, reflecting the structure of the administrative dataset. A separate analysis of Modern Apprenticeships is possible, and is an area for future research.

Learners participating in industry training undertake on-the-job and/or off-the-job learning that leads to a standards-based national qualification/s on the NQF. Training and assessment for NQF standards can occur in both modes of learning. Workplaces themselves may have dedicated training staff and materials that, along with an ITO-registered workplace assessor, can provide both on-the-job learning and assessment of a learner's skills against the prescribed competencies required for NQF standards. Off-the-job learning and assessment usually occurs at an accredited training provider such as a private training establishment (PTE) or institute of technology and polytechnic (ITP) that the ITO contracts to deliver relevant training and assessment.

Participants in industry training sign a training plan (or training agreement) with their employer and the relevant ITO at the beginning of their involvement in industry training. The

training agreement includes details of the learner's training programme/s and the obligations of the employer and learner to fulfil the training programme/s.

The training agreement details the:

- involvement of the ITO in training and assessment
- national qualification/s the learner will be undertaking
- standards and credits that make up the qualification
- overall duration of the programme
- minimum number of credits to be achieved by the learner each year.

The Tertiary Education Commission administers government funding of industry training. It receives information from ITOs for the purposes of funding and monitoring training provision. The commission does not collect details of individual training agreements, and so cannot determine their content, or measure progress towards the accomplishment of learning goals set out in agreements. However, the administrative data records various aspects of each programme the learner undertakes (including the programme start and end dates, type, expected duration, and the number of credits to be achieved). The administrative data also captures the number of credits and qualifications achieved at each level, in each programme, in each year. A training agreement may cover more than one training programme, and a training programme, while usually based on one qualification, may result in a learner gaining more than one qualification.

A learner will embark on one or more programmes as part of their training agreement. These may be undertaken concurrently or sequentially and there may be breaks in enrolment. A training programme consists of either a full NQF qualification¹ or a subset of a qualification called a 'limited credit programme'. The successful completion of a limited credit programme (typically between 20 and 40 credits) does not result in the achievement of a national qualification.²

Limited credit programmes enable employees to undertake formal learning on industry-specific standards, and can provide a pathway into formal learning for employees with low-level or no qualifications. Limited credit programmes are also used by employers to comply with health and safety regulations.

Industry training programmes (through the qualification associated with them) are assigned a level of between 1 and 7. Level 1–3 are equivalent to upper secondary (year 11, 12, and 13, respectively). Level 4 is higher than upper secondary, and is often associated with trades training. Many certificates and diplomas are level 5–6.

Of those learners who ended a period of industry training during 2003–05, 34 percent were undertaking programmes at each level 4, 35 percent at level 3, 25 percent at level 2, 5 percent at level 1, and 1 percent were at level 5 or 6.³

Those who gained a level 4 qualification typically achieved between 120 and 240 credits (120 credits are roughly equivalent of one academic year of full-time study). Those who

¹ Qualifications include National Certificates and National Diplomas.

² Of those who ended a period of training during 2003–05, around 11 percent were undertaking a limited credit programme. These learners did not undertake further training for at least 12 months, but they may have undertaken further training after that.

³ Note that the 39 ITOs vary considerably with respect to the numbers of learners enrolled, the type and level of programmes undertaken, and the achievement of learners in these programmes. For example, many ITOs do not offer limited credit programmes.

gained level 3 qualifications typically achieved between 60 and 120 credits, and those who gained level 1 or 2 qualifications typically achieved between 40 and 60 credits.

The proposed duration of training varied between 6 and 48 months and was related to the type and level of programme, as well as the intensity of training. Even among those who completed their training programmes, the proposed duration was often quite different from with actual duration. The proposed number of credits for a learner to achieve each year (referred to as the training load) also varied considerably. In some cases, recognition of prior learning, which is not always recorded in the data, may explain this.

The Tertiary Education Commission, Industry Training Federation, and Mahoney (2009) are all good sources of information on industry training.

Data description and data integration

This section briefly describes the two data sources used in our analysis: the industry training data and the LEED.

Industry training

The Tertiary Education Commission receives information on learners in industry training for the purposes of funding and monitoring training provision. The data is collected from ITOs on a quarterly basis. The data is summarised further to produce annual data, which we used in our analysis.

This data is consistent with that used by the Tertiary Education Commission to produce the *Industry Training 2006* report. Figures relating to trainee participation and achievement in 2006 matched exactly with the published figures for 2005 and 2006.⁴

The data used in our analysis covered the period 2001–06 and comprised annual data for all people participating in training in a given year. The data is structured around programme enrolments (whereby a learner can be enrolled in more than one programme and with more than one ITO in any given year).

The dataset included demographic information and other characteristics of the learner, as well as information on the training programmes they were undertaking. Demographic variables include age, sex, region, ethnicity, and highest previous qualification. Information on the training programme includes start and end dates, the ITO overseeing the training, programme type and level, the expected duration of training, the total number of credits to be achieved, and the actual number of credits and qualifications achieved by level.

Data issues

The wide variety of processes used by the 39 ITOs to collect and submit the data to the Tertiary Education Commission means that there is potential for data to be of variable quality and consistency. The Ministry of Education (Maloney, 2009) concluded that the data was robust enough for analytical purposes, and that the variables relating to credit and national qualification attainment were useful indicators of progression through learning and achievement.

Exit code has known data quality issues. Exit code indicates whether the programme was successfully completed or not (and takes the values completed, terminated, or missing). At the programme level, exit code is not recorded for the last enrolment record for around 13 percent of cases.

Learners may enrol in a number of programmes in pursuit of the learning outcomes set out in their training agreement. They may be enrolled in more than one programme at any given

⁴ During 2006, there were 176,064 participating trainees and as at 31 December 2006 there were 123,673 trainees. During 2006, 35,055 national certificates were completed and 3.8 million credits achieved.

time, or they may enrol in a series of programmes. In addition, when a programme changes in specification, the Tertiary Education Commission will reassign a new programme number, and this is recorded in the learner's record as a new enrolment in a new programme. The frequency of this practice is unknown, but in such cases, exit code is generally not populated. This adds a level of complexity to determining completion status based on the exit code variable.

The majority of learners are enrolled in only one programme over a training period.⁵ However, a substantial minority enrol in more than one programme. Among learners who exited industry training in 2005, 72 percent had been enrolled in one programme over the training period, 18 percent in two, 8 percent in three or four, and 1 percent in five or more programmes.

Our analysis is based on a period of training undertaken by a learner, which may involve participation in several programmes and the achievement of more than one qualification. We identify when a learner began and ended a period of industry training, and permit breaks of up to 12 calendar months.

We identify the last programme enrolment during the training period, and select this as the reference programme. If more than one programme ended at the end of the training period, then we select the one that corresponds to the highest qualification gained. If two or more programmes led to the same highest qualification (which could be none), we selected the one with the highest number of credits achieved. We use the reference programme to characterise the ITO, programme level, and completion status associated with the training period. At the 'learner training period' level, exit code is missing for the last programme record in 5 percent of cases. The missing rate varies quite substantially by ITO, with exit code missing in as few as 1 percent, and as many as 40 percent of cases.

Comparing exit code with the numbers of credits and qualifications achieved over the total training period suggests that not all credits or certificates may be being recorded. For example, those who completed a limited credit programme would be expected to have achieved at least 20 credits. However, 7 percent had no credits recorded and a further 6 percent had less than 20 credits recorded. Similarly, those who complete a National Certificate programme would be expected to have achieved at least 40 credits and a certificate. However, 1 percent had no certificate recorded, 7 percent had a certificate recorded but no credits recorded, and a further 6 percent had a certificate recorded, but fewer than 40 credits recorded. Some of these discrepancies may be due to credits awarded by transfer (from another qualification) or recognition of prior learning that is not captured.

Our main analyses focus on the highest qualification gained by the learner during the training period, not on the completion status associated with a particular programme.

Linked Employer-Employee Database (LEED)

Statistics NZ's Linked Employer-Employee Database (LEED) uses information from tax and statistical sources to construct a record of paid jobs. Since April 1999, all employers in New Zealand are required to file a monthly record with Inland Revenue (IRD) called an Employer Monthly Schedule (EMS), which lists all paid employees at that firm during the month, the earnings they received and the amount of tax that was deducted at source. Two types of recipients are covered by an EMS: those who have Pay-As-You-Earn (PAYE) tax deducted, who are employees; and those who pay withholding tax, who are a subset of the self-employed. Because the selection and coverage of which self-employed workers have tax withheld is unknown, we use only information on PAYE-deducted (employee) jobs.⁶ We use

⁵ The definition of training period we use ignores breaks in training of 12 calendar months or less.

⁶ In addition to regular firm-worker employment jobs being identified in the LEED, several other relationships involving PAYE tax deductions can also be identified by particular employer identifiers. These identifiers are: working-age social welfare taxable benefits, earnings-related accident compensation payments from the Accident Compensation Corporation (ACC), Student Allowance payments (SA), Paid Parental Leave (PPL) payments, and

all the available data on PAYE employee jobs in New Zealand during the nine March-years from April 1999 to March 2008.

Firms (employers) and workers (employees) are identified by unique confidentialised identifiers based on their respective IRD tax numbers. For workers, this represents a single identifier over time, enabling workers to be tracked longitudinally and across the firms that they work for. In the IRD data, employers are identified as the legal or administrative unit to which the EMS return relates, and do not equate to any consistent conception of a firm. That is, legal and/or other administrative changes can trigger a change in an employer's IRD identifier, with no effective change in the economic structure of the firm. Statistics NZ has used a range of administrative data to identify continuing enterprises even when IRD identifiers change. We use continuing enterprises, as defined in the Longitudinal Business Frame (Seyb, 2003) as our definition of firms.

Conceptually, the LEED covers the universe of PAYE employment relationships and earnings in New Zealand over the period. In addition, there is limited information on the characteristics of workers and firms: age, sex, and location of workers; and industry and location of firms.

A number of issues with the LEED data affect our analyses to varying extents:

- Around 2 percent of all employee-job records have missing or incorrectly coded IRD numbers. Where this occurs, individuals will appear not to be employed. This affects individual's employment history, creating false transitions between employment and non-employment.
- The presence of administrative churn in employer IRD numbers⁷ means that employer changes are overstated, leading to some artificial worker-turnover.
- LEED is structured around geographic units, with enterprises comprising one or more geographic units. Employees are linked to a single geographic unit. In cases where the enterprises comprise more than one geographic unit, employees are assigned to a geographic unit based on location (the unit the employee resides closest to) with further adjustments made to ensure the distribution of employees across geographic units is consistent with that reported by the enterprise in survey returns. Because industry and region are assigned at the geographic level in the Longitudinal Business Frame, the assignment of employees to the wrong geographic unit within an enterprise, leads to some employees being assigned the wrong industry and/or region.

For more information on LEED and the various repair processes used to create the data refer to the LEED documentation on Statistics NZ's website at:

www.stats.govt.nz/publications/workknowledgeandskills/guide-interpreting-the-leed-data.aspx.

The LEED data we use covers the period April 1999–March 2008. All earnings figures in this paper have been converted to constant March 2008 dollars using the Consumers Price Index.

Integrating LEED and industry training data

The industry training and LEED data were linked using name, date of birth, and sex information. The industry training data included the National Student Number (NSN), which

New Zealand Superannuation (NZS) retirement pensions. In what follows, we make a distinction between LEED earnings from employment-jobs and other LEED income from these other (non-employment) sources.

⁷ These occur when the Longitudinal Business Frame incorrectly records a business as having ceased operation and creates a new one, when in fact the business is an ongoing concern. LEED has 'repair' processes, which try to fix this by creating longitudinal links (permanent business numbers) across geographic units.

meant information from the National Student Index (NSI) on name, sex, and date of birth could be used for matching purposes.

The IRD data held by Statistics NZ includes their client register, which is a list of people who have had an IRD number assigned to them, and includes information on name and date of birth. The register will include anyone who receives wages and salary and has tax deducted by their employer, recipients of benefits, student allowances, and those who are self-employed. Students who take out student loans are also required to register with IRD, and will have an IRD number assigned to them. Tertiary students who have never been employed or received benefits, and have not taken out a student loan are unlikely to have an IRD number assigned to them. Many overseas students will be included in this group. Participants in industry training will generally be employed or self-employed while undertaking training, and were expected to be in LEED.⁸

The overall match rate for participants in industry training to individuals in LEED was 93 percent. Figure 1 shows that the match rate increased by around 1 percent over 2001–06. Based on the characteristics recorded in the industry training data, there was very little difference in the characteristics of those who matched to LEED and those who did not.

Up to 2 percent of matches are thought to be false-positive matches, whereby different individuals have been incorrectly linked together.

The companion Employment Outcomes of Tertiary Education Technical Report and Feasibility Assessment (Statistics NZ 2009) includes more information on linking the two data sources.

Analysis

This section describes our approach to investigating the labour market outcomes of participants in industry training.

Our analysis is based on a period of training undertaken by a learner, which we define to include breaks in participation of up to 12 calendar months. Learners may have participated in several programmes over that time and may have achieved more than one qualification. We consider all learners who started training during 2002–05 and ceased training during 2003–05 and determine the highest qualification achieved by the learners during the training period. We analyse the employment and earnings patterns of learners before, during, and after training, and compare these to the earning patterns of non-participants who had similar demographic and employment history before training started. We look at these patterns relative to the month training started, as well as the month training ended, and compare the changes in earnings over time for the two groups. We include analysis by highest qualification achieved, duration of training, the industry training organisation overseeing the training, and the age and sex of the learner. Finally, we use regression analysis to examine whether the impact of industry training varies by the characteristics of the learner or their employer.

Participation in industry training

This section briefly describes participation patterns in industry training over 2001–06, and discusses some issues with using the integrated dataset to look at this.

Figure 1 shows the:

- total number of learners who participated in industry training each month during 2001–06

⁸ Of learners, 2–3 percent were classified as self-employed or volunteers in the industry training data (on the basis of programme category code). We found that among those that were matched, around 4 percent were self-employed.

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- total number of learners who were classified as employees rather than as self-employed or volunteers each month (based on the learner category code in the industry training data)
- number of learners who were classified as employees who were matched to LEED each month
- number of learners who were classified as employees, who were matched to LEED, and who were employed in that month.

Figure 2 shows the:

- percentage of learners who were classified as employees rather than self-employed or volunteers each month
- percentage of learners who were classified as employees who were matched to LEED each month
- percentage of learners classified as employees, who were matched to LEED, and who were employed in that month.

The number of learners enrolled each month increased from approximately 70,000 to 130,000 over the period January 2001–December 2006. Around 98 percent of learners who were participating in training in any given month were classified as employees rather than as self-employed or volunteers. Ninety-four percent of these employees were matched to LEED. Between 85–90 percent of learners who matched to LEED were employed in the month that they were recorded as having participated in training.

Incorrect matches and missing IRD numbers in LEED will explain why some learners, who were recorded as participating in industry training in a given month, appear not to be employed in LEED in that month. Incorrect matches occur when the learner is matched to the wrong person in LEED and this is estimated to happen 1–2 percent of the time. Around 2 percent of employee-employer records in LEED are missing the individual's IRD number. This means that some people will appear not to be employed when they really are. Four percent of learners had no wage and salary employment recorded in LEED over the entire training period recorded in the data. In the financial year corresponding to the year training ended, the main source of income for 56 percent of these learners was self-employment. Twenty-one percent received no taxable income in the year. For the remainder, the main source of income was benefits (12 percent), wages and salary (7 percent), and other sources (4 percent). These learners were also more likely to be in particular industries, including the building and construction, and road transport industries.

There is also evidence that many of those who ceased training and had no exit code recorded had ceased employment long before the end of the calendar year (the default exit date used in our analysis). There is also evidence of an administrative lag of 3–6 months in the recording of training exits dates for those who completed or terminated their programmes of study.

To examine participation rates by industry over time, we restrict the learner population to those who matched to LEED, and were employed in any given month during the training period. Appendix table A1 presents estimated participation rates by industry. These rates have been adjusted to account for the match rates between the industry training participants and LEED in each month. Substantial differences in participation rates between industries are expected, as collectively the ITOs do not cover all industries or all subsectors within a particular industry. An individual ITO may focus on a particular industry, or more commonly, on particular subsector/s within an industry.

Analytical approach

This section describes how participation and training periods were defined, and how the study populations were selected.

Participation in industry training

We summarised participation in industry training on a monthly basis, which made it compatible with the monthly structure of the LEED data.

The industry training data records participation start and end dates. End dates were spread throughout the calendar year, with 22 percent occurring in the March quarter, 27 percent in the June quarter, and 26 percent in the September and December quarters. Forty percent of exits occur in the last month of each quarter, compared with 30 percent in each of the first two months of the quarter. This largely reflects the quarterly nature of the administrative data. A similar pattern is observed among start dates, which were spread throughout the calendar year. This spread combined with the fact that 20 percent of training periods lasted 6 months or less, means that analysis of participation and outcomes based on monthly data is preferable to one based on annual data. As LEED includes information on individual's earnings from each wages and salary job in each calendar month, we made use of the monthly structure of the LEED data and summarised participation in industry training on a monthly basis.

We defined participation in industry training based on both training status (from the industry training data) and employment status (from LEED). We refer to this as being 'training and employed'. To be defined as participating in a given month learners must have received some income from employment in the month in which they were recorded as being in training for at least one day.

This approach was adopted because 10–13 percent of participants in industry training in a given month were not employed according to LEED in that month (see figure 2). As discussed previously, incorrect matches and missing IRD numbers in LEED will explain some of this. Some learners are self-employed rather than wage and salary earners. The remainder seems likely to be due to administrative lags in the recording of training exits dates, after employment ceased.

Appendix figure A2 shows the training rate over time based on the training data alone (ie learners are not required to be employed while participating in training). Employment rates reach a maximum of 86 percent six months before training ended within the total population. Those who completed their programme of study had a maximum employment rate of 91 percent four months before training ending, while those who terminated their programme of study had a maximum employment rate of 83 percent six to nine months before training ending.

Defining participation based on training status and employment status means that the 4 percent of learners who had no wage and salary employment recorded in LEED over the training period are excluded from the study population.⁹ We also excluded participation spells where the learner was recorded as being a volunteer or self-employed, as opposed to a wage and salary earner in the industry training data. This was around 2–3 percent of learner training months (see figure 2).

Unit of analysis

As discussed in section 3.1, our analysis is based on a period of training undertaken by a learner. The industry training data is structured around programmes, with one record per learner-programme-ITO-year. We identify when a learner began and ended a period of industry training; 28 percent of learners who ended a period of training in 2005 were enrolled in more than one programme over the training period.

⁹ Around 50 percent were self-employed rather employees.

Completion status is recorded in the industry training data at the programme level. In around 13 percent of cases, exit code is missing in the last record for a programme. At the learner-training-period level, exit code is missing for around 5 percent of cases.

Defining the training period

We have defined participation in industry training based on training status and employment status in LEED. We define a training period based on the number of consecutive months employed and training, allowing for breaks of 12 months or less (which could arise because there was a break in enrolment, a break in employment, or both). Nineteen percent of training periods included a break in training of one calendar month or more. In most cases the break in training was only a few months. Twelve percent of training periods included breaks totalling between 1 and 3 months, 4 percent included breaks totalling between 4 and 6 months, and 3 percent included breaks totalling more than 6 months.

By construction, all training periods are preceded and followed by at least 12 months of no training. Of those who ended a period of industry training during 2003, 13 percent were training at some stage during the subsequent 12 months, that is, during the 13–24 months after training ended. Less than 1 percent of learners had more than one training period that ended during 2003–05.

The numbers of credits and qualifications achieved (by level) during the training period are calculated by summing over the programme-ITO-year records which fall within the training period.

Defining the reference programme

We identified the last programme enrolled in during the training period, and selected this as the reference programme. If more than one programme ended at the end of the training period, we select the one that corresponds to the highest qualification gained. If two or more programmes led to the same highest qualification (which could be none) we selected the one with the highest number of credits achieved. We associate some of the characteristics of the reference programme to the training period, including the ITO overseeing the programme, the programme category, and completion status.

Around 8 percent of training periods have exit code missing. This is a somewhat higher rate than the 5 percent obtained based on the training data alone. This is due to our treating exit code as missing if a learner ceased employment more than 12 months before training ended in the industry training data. Note that our main analysis focuses on the highest qualification achieved by the learner during the training period, and not the completion status associated with the reference programme.

The population of all learners 2000–06

The industry training data used in this analysis covered the period 2001–06, and LEED data the period April 1999–March 2008. The short data windows and the relatively long period of training undertaken by some learners impose some constraints on the study populations that we can construct. Ideally, we would like to identify a cohort of learners who started training during a particular period and then follow them through to exit, and then for some time after that. Our analysis suggests that 95 percent of learners would have ceased training within 6–7 years of starting.¹⁰ Hence, given the available data, any study population we select where we observe learners both before and after the training period will be biased toward shorter duration training periods.

Table 1 shows the distribution of training period start and end dates by calendar year, using all available years of data. Training periods that were ongoing in 31 December 2006 are included in the 2006 exit-year. Similarly, those who started training in 2001 or earlier are

¹⁰ Among those who started a period of training in 2002, 24 percent had exited within 12 months, 24 percent within 13–24 months, 14 percent within 2–34 months, 15 percent within 36–48 months, and 22 percent were still training 49 months later. This suggests that 95 percent of learners would have ceased training within 6–7 years of starting (were cessation corresponds to a break in training of at least 12 months).

included in the 2001 start-year. For those who started a training period in 2002 (and by definition were not training in the previous 12 calendar months), 73 percent had exited by 2005, while the remaining 27 percent exited in 2006 or later. For those who started a period of training in 2005, only 19 percent had exited by the end of 2005.

Appendix figure A1 shows the participation rate during the 48 months before and 60 months after training started for all those that started training during 2002–05. This includes training periods that were ongoing at the end of 2006. Those who started training in 2002 are observed in LEED for at least two years before and at least five years after training started, while those who started in 2005 are observed for five years before training started and two years afterwards. Everyone is training and employed in the start month, which is denoted in the figure as month (0). This shows the fall in participation rates over time, with 65 percent training and employed 12 months later, 47 percent 24 months later, 36 percent 36 months later, and 25 percent 48 months later. In the 12 months before training starts, employment increases from 75 percent to 100 percent. This highlights that a substantial minority of learners have only relatively recently become employed. The decrease in the employment rate in the months after training started is much more gradual than the increase in the months prior.

Selecting the study populations

We selected two study populations: all training periods that started during 2002–05 and ended during 2003–05 (the main study population); and all training periods that ended during 2003–05 (the exit study population).

Our main study population comprised all training periods that started during 2002–05 and ended during 2003–05 ($n=71,920$). The achievement of qualifications was not recorded in the data until 2003, and because this is a key variable in our analysis, we restricted the study population to those training periods that ended during the period 2003–05. The individual's in the main study population are observed in LEED for at least two years and nine months before training started and for at least two years and three months after training ended.

Appendix figure A1 shows the participation rate during the 48 months before and 60 months after training started for the main study population. This population has a training duration profile that is much shorter than that for all training periods that started during 2002–2005.

Most of our analysis and results are based on the main study population. We use this population to identify whether learners experience any earnings gains as a result of participating in training. For this group of learners we are able to examine earnings before, during and after the training period.

We define a second study population which comprises all training periods that ended during 2003–05 ($n=99,054$). This includes 27,130 who started training in 2001 or earlier. We refer to this as the 'exit study population'. The main study population is a subset of the exit study population. The exit study population is more representative of the total population of learners. It comprises all training periods that ended during 2003–05, including those that started before 2002. We do not know when training started and we do not observe earnings before training started for some of the learners in the exit study population.

The exit study population is used to describe the distribution of qualifications gained, and to examine the extent to which programme termination is associated with learners changing jobs or their jobs ending. It is also used in some additional analysis of the outcomes by duration of training.

Table 2 compares the demographic and programme characteristics of the two study populations. Overall, demographic characteristics look similar. However, the main study population has a higher proportion of females, those training at levels 1–3 (rather than at level 4), and those who achieved less than 120 credits. This is consistent with the main study population being skewed toward shorter duration training periods (by construction the main

study population comprises only those whose training period started during 2002–05 and ended during 2003–05.

Those who started training in 2001 or earlier (27,130) were much more likely to have achieved a level 4 or higher qualification, and less likely to have achieved a level 3 or lower qualification or no qualification. Of those who started a training period before 2002 and exited during 2003–05, 22 percent achieved a national qualification at level 4, 7 percent achieved at level 1–2, 3 percent achieved at level 1–2, and 68 percent achieved no qualification. Of those who started in 2002 or later and exited during 2003–05, 9 percent achieved a national qualification at level 4, 9 percent achieved at level 1–2, 11 percent achieved at level 1–2, and 71 percent achieved no qualification. Overall, half of those who achieved a national qualification at level 4+ during 2003–05, started training in 2001 or earlier.

Describing the main study population

Next, we describe the main study population in more detail. Table 3 includes information on learners and the training they undertook by the highest qualification they gained. For those who did not gain a national qualification we identify those whose last programme during the training period was a limited credit programme which was successfully completed.

Twenty-nine percent of last programmes were at level 4, 37 percent were at level 3, 28 percent were at level 2, 6 percent were at level 1, and 1 percent were at level 5–6.¹¹ The overall programme completion rate was 33 percent, while 29 percent achieved a qualification over the training period. Nine percent achieved a qualification at level 4 or above, 10 percent achieved a qualification at level 3, and 11 percent achieved a qualification at level 1 or 2. Twenty-nine percent of learners participated in training for 6 months or less, and 51 percent participated for one year or less. Duration varies by programme category and completion status or qualification gained. Seventy-six percent of those who completed limited credit programmes did so in 12 months or less, while 28 percent of those who gained level 4 qualifications did so within 12 months.

Those who achieved a qualification at level 4 were much more likely to be male, aged 20–24 years when they left training, and to be of European/Pakeha ethnicity. In comparison, those who achieved a qualification at level 1–2 were more likely to be female, aged 15–19 years when they left training, and not to be of European/Pakeha ethnicity. Those who completed limited credit programmes were more likely to be female and aged 35 or over. The prior employment history and earnings of learners also varied considerably. For those who went on to gain a qualification at level 1–2, average monthly earnings in the 6 months before training were around \$2,300, compared with \$3,100 for those who went on to gain a qualification at level 4, and \$2,600 for those who gained no qualification. (Average monthly earnings are calculated for each individual based only on the months they received some earnings.)

Note that the study population is skewed towards those who were training for shorter periods, and gained lower level qualifications. The overall completion rate for the main study population was the same for the exit study population at 33 percent. Qualification attainment was slightly lower with 29 percent achieving a qualification over the training period, compared with 31 percent in the exit study population. Nine percent achieved a national qualification at level 4 or above (substantially lower than the 13 percent in the exit study population), 10 percent achieved a national qualification at level 3, and 11 percent achieved a national qualification at level 1 or 2.

Describing the exit study population

This section describes the exit study population in more detail. This population is more representative of all learners and so is the preferred basis on which to calculate completion rate and qualification attainment (see table 4).

¹¹ Level 1–3 certificates are equivalent to upper secondary (year 11, 12, and 13, respectively). A level 4 certificate is higher than upper secondary and is often associated with trades training. Many certificates and diplomas are level 5–7.

Thirty-four percent of programmes undertaken by learners in industry training who ended a period of industry training during 2003–05 were at level 4, 35 percent were at level 3, 25 percent were at level 2, 5 percent were at level 1, and 1 percent were at level 5–6. Overall, 31 percent achieved a qualification over the training period. Thirteen percent achieved a qualification at level 4 or above, 9 percent achieved a qualification at level 3, and 9 percent achieved a qualification at level 1 or 2. Around one-third participated in training for less than a year. Duration varies by programme category and completion status or qualification gained, with 70 percent of those who completed limited credit programmes doing so in 12 months or less, while 14 percent of those who gained level 4 qualifications did so within 12 months.

Around 38 percent of those who stopped training and had not gained any qualifications had been enrolled for over two years.

Those who achieved a qualification at level 4 were much more likely to be male, aged 20–24, and to be of European/Pakeha ethnicity. In comparison, those who achieved a qualification at level 1–2 were more likely to be female, aged 15–19 years, and not to be of European/Pakeha ethnicity. Those who completed limited credit programmes were more likely to be female and aged 35 or over.

Descriptive analysis of employment and earnings

Next, we examine the wage and salary employment rate¹², training rate, and participation rate¹³ in the months before and after the training period started for the main study population (see the left-hand side of figure 3). Month (0) corresponds to the first month of training, month (+1) to the month after training started, and month (-1) the month before training started. By definition, all learners are training and employed in month (0).

Participation rates decline very rapidly in the main study population, with 46 percent employed and training 12 months later and 22 percent employed and training 24 months later. Employment rates 12 and 24 months after training started were 81 percent and 75 percent, respectively. Employment varied by completion status, with those who completed their programme having the highest employment rates before training starting and afterwards.

We observe the main study population before, during and after the training period, and so we are able to look at outcomes relative to the start month, as well as outcomes relative to the end month. The right-hand side of figure 3 shows the participation rate in the months before and after the training period ended, by completion status. Month (0) corresponds to the last month of training and month (+1) to the after training ended. By definition, all learners are training and employed in month (0). This highlights that a much greater proportion of those who did not complete their training ceased being employed around the time the training period ended. We look at this in more detail in the next subsection.

Jobs ending or changing

The right-hand side of figure 3 shows the employment rate in the months before and after the training period ended, by completion status, for the main study population. A much greater proportion of those who terminated their training programme had ceased being employed. Of those who completed, 88 percent were employed in the month immediately afterwards, compared with 69 percent of those who terminated their programme of study. Some of this is mechanical in so far as we have defined participation on the basis of being employed and training at the same time. This means participation ceases when employment ceases. Appendix figure A2 shows the loss of employment, when participation is defined solely based on training enrolment. Of those who completed their training programme, 87 percent were employed in the month immediately afterwards, compared with 72 percent of those who

¹² Income from self-employment is considered separately.

¹³ The participation rate (ie the 'training and employed' rate) is between 3–7 percentage points lower than the training rate in any given month following the first month.

terminated their programme of study. These results suggest that jobs ending could account for 17–19 percent of programme terminations.

A greater proportion of those who terminated their training programme had different jobs 6 months before training ended and 6 months afterwards. Of those who terminated their training programme, 32 percent had different jobs, compared with 22 percent of those who completed their programme of study. This suggests that changing jobs could account for around 10 percent of programme terminations.

Figure 3 also shows the percentage receiving income from self-employment¹⁴, those receiving income from self-employment and no earnings from wage and salary employment, those receiving income from welfare benefits, and those receiving income from welfare benefits and no income from employment, in the months before and after training ended

Employment was 19 percent percentage points lower for those who did not complete their training, while self-employment and benefit rates were both 5 percent higher. This suggests that while some of those who did not complete their training moved to self-employment or benefits most did not.

Average monthly earnings

Figure 3 shows that average monthly earnings¹⁵ increased more rapidly during the 48 months after training started for those who completed training. Average monthly earnings increased from \$2,890 around the time training starting to \$3,650 48 months after training started. (This corresponds to an average annual increase of 6.6 percent for those that completed their training.) In comparison, average earnings increased from \$2,820 to \$3,400 for those that terminated their training (an average annual increase of 5.1 percent). Note that average monthly earnings for those who completed were also higher during the 48 months before training started, but had more or less converged by the time training started.

Examining earnings changes relative to the month training ended (rather than when it started) reveals that average earnings growth was very similar for the two groups before training ended, but that earnings increased more for completers around the time training ended. Average monthly earnings for completers increased 7.5 percent over 12 months, compared with 5.2 percent among those that terminated their training programme.

Figure 4 shows that employment and earnings before the training started were very different for completers and non-completers by programme level (for those undertaking a national certificate programme) and programme category. Average monthly earnings were much higher before the training started for those who completed a programme at level 3 or 4, than for those who did not complete. In contrast, average monthly earnings for those who completed a national certificate programme at level 1 or level 2, or a limited credit programme, were lower before the training started than for those who did not complete their training programme. Employment rates before and after the training period started were much higher for completers than for non-completers across all programme levels.

Underlying differences between those that complete a programme of training and those that do not are likely to explain much of the observed differences in earnings over time. Thus, simply comparing the outcomes of completers versus non-completers, by programme type and level is not an appropriate basis for evaluating the impact of completion and qualification attainment on labour market outcomes.

¹⁴ In LEED, we can identify those receiving income for self-employment in a given tax year. We derived monthly indicators of self-employment by assuming learners are self-employed in all months of the tax-year in which they receive income from self-employment (including negative income). This will overstate the percentage of learners who were self-employed in any month.

¹⁵ Average monthly earnings are based only on learners who had some earnings in the month, and are expressed in March 2008 dollars.

In the next section, we compare the outcomes of participants in industry training to those of non-participants with similar demographic, employer and employment characteristics in LEED.

Comparing the outcomes of participants with non-participants

We are interested in understanding the impact of industry training on learner's labour market outcomes. Conceptually, we would like to compare the observed outcomes of the participants, with the outcomes they would have experienced had they not participated in industry training. As we are not able to observe what their outcomes would have been had they not participated in training, we rely instead on constructing a comparison group of non-participants to proxy the counterfactual outcomes. We attempt to match each learner to one or more individuals who did not participate in industry training during 2001–06. We can only match on the basis of characteristics we observe in LEED, which are limited to age, sex, prior employment, and earnings history of the individual; and the identity, industry, size, and location of the employer.

We do not know what influences an individual or employer to participate in industry training. There are likely to be a number of factors, including characteristics of the individual, the employer, or the job, or a combination of these. Some individuals will be more motivated to participate and complete training than others. The incentives and potential rewards of participating and completing will also vary. Some employers may require employees to participate, while others may not support or fund their employee's participation. In some cases, a particular job may require successful completion of programme (for example, it could be a health and safety or licensing requirement). Some professional bodies require members to be engaged in further training to retain accreditation. We know there are substantial differences across and within industries with respect to the level of training undertaken and the characteristics of those who participate in it. We are not able to match on many of the factors likely to influence individuals and employers' decisions to participate in industry training. So, any comparison group constructed solely based on characteristics observed in LEED has the potential to differ from the participant group in various ways. We can't know the extent to which our estimates are affected by this limitation. However, a comparison group constructed on this basis would clearly be inappropriate in cases where participation was a job requirement, or where nearly all employers and employees had or were participating in training in a given industry or sub-industry sector.

Differences in the likelihood of participating in training may well be associated with future employment and earnings prospects. So, it may be that participants would have experienced greater earnings growth than non-participants, even if they had not participated in training.

Match criteria

The main study population was matched on characteristics in the month training started. We used age in single years, sex, 4-digit industry, and firm size (five groupings) in the calendar month training started, the number of months employed during the 12 months before training started (within +/- 2 months), and average monthly earnings in the previous 12 months (within +/- 20 percent). Up to five non-participants were selected for each participant. Overall, 81 percent of learners were matched to at least one individual, and the average number of matches was just over three. In total, 237,200 non-participant records were selected. Those who were not matched to non-participants were more likely to have had less recent employment experience. Overall, the profile of the total population and the matched population are very similar (see table 7).

Outcomes by programme completion status

We start by comparing employment rates and average monthly earnings for learners with those of the matched comparison group, by completion status, in the months before and after training started (see figure 5).

Those who completed their last training programme were more likely to be employed over the next five years than those in the matched comparison group. Employment rates were 8 percent higher around 6 months after training started. Those who terminated their training programme had a very similar employment profile to the matched comparison group, while those for whom a completion status was not recorded were much less likely to be employed after training started. This is not surprising, and reflects that at least some programme terminations will be due to jobs ending.

Growth in average monthly earnings was slightly higher before training started for those who completed their last training programme, compared with the matched comparison group. Average earnings growth was similar in the 24 months after training started, then increased in months 24–48 after starting started.

Average monthly earnings were:

- 1 percent higher for learners 24 months before training started
- 2 percent higher 6 months before training
- 2 percent higher 12 after training started
- 3 percent higher 36 months after training started
- 4 percent higher 48 months after training started.¹⁶

Growth in average monthly earnings during the 12–48 months before training started was the same for those who terminated their last programme of training and those in the matched comparison group. Earnings growth during the 12 months before and after training started appeared to be slightly higher for learners, but 12 months after training started, earnings were the same and remained so.

For those for whom no completion status was recorded, average earnings growth during the 48 months before training started was similar to that for the matched comparison group. Growth in average earnings during the 12 months after training started was higher. However, employment rates were much lower, so compositional changes in who is employed over time may explain this.

Those that completed their programme of study are a very diverse group, and includes those that were training for less than 6 months and completed a limited credit programme (usually 20–40 credits), and those who were training for more than three years, achieved over 240 credits, and gained a level 4 qualification. In the next section, we examine outcomes by the highest qualification gained over the training period.

Outcomes by highest qualification gained

Figure 6 shows that the employment rates of those who achieved a qualification at any level were higher than those of the matched comparison group during the five years after training started. It could be that those who have greater job security or those who are more likely to stay in particular job, or have better subsequent employment prospects are more likely to participate in industry training. Alternatively, it maybe that participation in industry training leads to increased tenure or better subsequent employment prospects.

The average monthly earnings of learners were 1–2 percent higher before training started than those of learners in the matched comparison groups. That there are some differences is not surprising, as the matching criteria only matched average earnings over the 12 months before training starting to within plus or minus 20 percent. We compare the average monthly earnings of learners with those of comparable non-participants in a given month, and express this as a percentage difference. We compare changes in relative earnings over time.

¹⁶ We compare average monthly earnings for learners and the comparison group at a particular point in time, and express this as a percentage difference.

Does Workplace-based Industry Training Improve Earnings?

In most cases, the average earnings of non-participants dropped around the time training started. This partly reflects that more non-participants ceased employment after one or two months, and the last month will often reflect part-month earnings. Figure 6b presents results for participants and matched non-participants who were employed during the 12 months before training started, and the 12 months after training started. The average earnings profiles are very similar for the restricted and total populations. Our main results are based on the total population.

Our main results are based on the change in the average earnings of participants and non-participants from the time training started, compared with 48 months after training started. As well as comparing average earnings at these two time points, we compare earnings during the 12 months before training started with the 12 months after training started, and those 37–48 months after training started. Some judgement is needed, as differences in relative earnings in a particular month (in this case, the month training started, or the 48th month afterwards, may not always reflect the overall picture).

Level 4

The average monthly earnings of those who gained a qualification at level 4 were 2 percent higher during the 12 months before training started, and remained 2 percent higher during the first 12 months after training started. The average monthly earnings of learners increased relative to the comparison group from around 12 months after training started, and continued to increase throughout the next 48 months.

Average monthly earnings were:

- 2 percent higher during the 12 months before training started
- 2 percent higher 12 months after training started
- 5 percent higher 24 months after training started
- 7 percent higher 36 months after training started
- 9 percent higher 48 months after training started.

This equates to a relative increase of 7 percent over the 48 months after training started.

Average earnings were actually 4 percent higher the month training started, but given that earnings were 2 percent higher on average during both the 12 months before and 12 months after training started, this seems the most appropriate estimate of the difference in earnings when training started.

Average monthly earnings increased for learners from \$3,230 6 months before training started to \$4,020 48 months after training started (an average annual increase of 5.5 percent) compared with an increase of \$3,190 to \$3,700 for the comparison group (an average annual increase of 3.6 percent).

Level 3

The average monthly earnings of those who gained a qualification at level 3 were increasing relative to those of non-participants during the 12 months before training started. Average earnings were 1 percent higher 12 months before training started, 2 percent higher 6 months before training started, and 3 percent higher 3 months before training started.

Average monthly earnings were:

- 3 percent higher 3 months before training started
- 3 percent higher during the 12 months after training started
- 3 percent higher during the 13–24 months after training started
- 4 percent higher during the 25–48 months after training started

Does Workplace-based Industry Training Improve Earnings?

- 4 percent higher 48 months after training started.

This equates to relative increase of 1 percent over the 48 months after training started.

Average monthly earnings for those who gained a qualification at level 3 increased from \$3,190 6 months before training started to \$3,780 48 months after training started (an average annual increase of 4.1 percent) compared with an increase of \$3,130 to \$3,640 for the comparison group (an average annual increase of 3.6 percent). As noted above, much of this increase occurred during the 6 months before training started.

Level 1–2

Overall, the earnings of those who achieved level 1–2 qualifications were unchanged relative to those in the comparison group during the four years after training started. The average earnings for non-participants decreased around the time training started, while those of participants increased slightly. This likely reflects that more non-participants ceased employment after one or two months, and the last month often reflects part-month earnings. Figure 6b shows that for those employed in the 12 months before and after training started, the earnings of participants increased slightly relative to those of non-participants during the three months before training started.

Average monthly earnings were:

- 1–2 percent higher in the 12 months before training started
- 1–2 percent higher during the 12 months after training started
- 1 percent higher during the 13–24 months after training started
- 1 percent higher during the 25–36 months after training started
- 1 percent higher during the 37–48 months after training started.

The average earnings of learners did not increase relative to those of non-participants during the 48 months after training started.

Completed a limited credit programme

The average monthly earnings of those who completed a limited credit programme, but did not gain a national qualification, were increasing relative to those of non-participants during the 12 months before training started. Average earnings were 1–2 percent higher 12 months before training started, 2 percent higher 6 months before training started, and 4 percent when training started.

Average monthly earnings were:

- 2–3 percent higher during the 12 months before training started
- 4 percent higher when training started
- 3–4 percent higher during the 12 months after training started
- 3 percent higher during the 13–24 months after training started
- 2–3 percent higher during the 25–36 months after training started
- 2–3 percent higher during the 37–48 months after training started.

The average earnings of learners decreased very slightly relative to those of non-participants during the 48 months after training started.

Gained no qualification and did not complete a limited credit programme

The average monthly earnings of those who did not gain a qualification or complete a limited credit programme were increasing relative to those of non-participants during the 12 months

before training started. Average earnings were 1 percent higher 12 months before training started and 3 percent higher when training started.

Average monthly earnings were:

- 1–2 percent higher during the 12 months before training started
- 1–2 percent higher during the 12 months after training started
- 0–1 percent higher during the 13–24 months after training started
- 1 percent lower during the 25–36 months after training started
- 1 percent lower during 37–48 months after training started.

The average earnings of learners decreased slightly relative to those of non-participants 48 months after training started.

Outcomes by duration of training

The duration of training undertaken varied from one month to four years or more. Figure 7a shows the average monthly earnings of those who gained level 4 qualifications, before and after the training started by duration of the training period, for the main study population.

Of those who gained a level 4 qualification within the exit study population:

- 14 percent trained for 12 months or less
- 16 percent trained for 13–24 months
- 70 percent trained for more than 24 months.

For those in the main study population who gained a level 4 qualification the distribution is somewhat different (by construction):

- 28 percent trained for 12 months or less
- 29 percent trained between 13–24 months
- 26 percent 25–36 months
- 15 percent trained for between 37–48 months.

36–47 months

The average monthly earnings of those who were training for 36–47 months (only those who started training in 2002 and exited in 2005 are in this group) increased relative to the comparison group during the 36 months before training started. During the first 12 months after training started, relative earnings remained 3 percent higher, then started to increase, with the largest relative gain in earnings occurring during the 37–48 months after training started.

Average monthly earnings were:

- the same 12 months before training started
- 3 percent higher when training started
- 3 percent higher 12 months after training started
- 6 percent higher 24 months after training started
- 12 percent higher 36 months after training started
- 20 percent higher 48 months after training started.

This equates to a relative increase of 3 percent at 24 months, 9 percent at 36 months, and 17 percent over the 48 months after training started.

Average earnings were increasing for learners relative to those of non-participants before training started, with average earnings the same 12 months before training started, but 3 percent higher when training started. Given this, it is possible that the average earnings of learners would have increased more rapidly than for those in the comparison group had they not participated in training. We do not know to what extent the increase in average earnings is attributable to training, rather than other factors.

24–35 months

Those who were training for 24–35 months followed a similar pattern.

Average monthly earnings were:

- 3 percent higher when training started
- 1 percent higher 12 months after training started
- 5 percent higher 24 months after training started
- 11 percent higher 36 months after training started
- 11 percent higher 48 months after training started.

This equates to a relative increase of 4 percent at 24 months, and 10 percent over the 36 months after training started.

12–23 months

For those who achieved level 4 qualifications and trained for 12–23 months, average earnings increased relative to matched comparison group around 12–23 months after training started.

Average monthly earnings were:

- 3 percent higher when training started
- 2 percent higher 12 months after training started
- 4 percent higher 24 months after training started
- 4 percent higher during the 37–48 months after training started.

This equates to a relative increase of 1–2 percent over the 24 months after training started.

Less than 12 months

For those who achieved level 4 qualifications and trained for less than 12 months, average earnings increased slightly relative to the matched comparison group during the 12 months after training started, although relative earnings were otherwise the same before and after training started.

Average monthly earnings were:

- 2 percent higher 6 months before training started
- 2 percent higher when training started
- 4 percent higher 12 months after training started
- 4 percent higher 24 months after training started
- 3 percent higher during the 37–48 months after training started.

This equates to a relative increase of 2 percent over the 12 months after training started.

Employment after training ended

The proportion of learners employed after training ended declines quite considerably over time. For example, among those who trained for 37–48 months (and were largely employed over this time), only 74 percent were still employed 60 months later (12–24 months after training ended). Change in earnings over time could be affected by compositional changes in who is employed over time. To investigate this further we restricted the population to those who were employed for at least 20 out of 24 months after training ended. Seventy percent of those who achieved a level four qualification were employed for at least 20 out of 24 months after training ended. The average earnings profiles over time are very similar, as are relative earnings, demonstrating that average monthly earnings are not being affected by compositional changes in who is employed over time.

Overall results

Overall, the results show that learners who gained a level 4 qualification and who trained for a longer period experienced the greatest increase in average earnings. Results for those who gained level 3 or level 1–2 qualifications showed no variation by duration of training.

Outcomes by the number of credits achieved

Level 4

For those who gained a level 4 qualification, there is a strong relationship between duration of training and the number of credits achieved. For example, around 50 percent of those who trained for 36–47 months achieved more than 240 credits, while only 20 percent of those who trained for 24–35 months, and 10 percent of those who trained for 12–23 months achieved more than 240 credits.

More than 240 credits

Figure 7b shows that those who achieved more than 240 credits experienced the largest increase in earnings relative to the comparison group. Relative earnings were 2–3 percent higher 6 months before training started, 4 percent higher when training started, and 18–19 percent higher 48 months after training started. This group of learners generally had relatively low prior earnings and were very young on average.

120–239 credits

Relative earnings were 1–2 percent higher 6 months before training started, 4 percent higher when training started, and 5–6 percent higher 48 months after training started.

60–119 credits

Relative earnings were 1–2 percent higher 6 months before training started, 5 percent higher when training started, and 6–7 percent higher 48 months after training started. Note that these learners had much higher average earnings before training started than those who went on to achieve more than 240 credits.

Level 3

120–239 credits

Figure 7c shows that those who achieved between 120 and 239 credits experienced the largest increase in earnings relative to the comparison group. Relative earnings were 1 percent higher 6 months before training started, 5 percent higher when training started, and 7 percent higher 48 months after training started.

60–119 credits

Relative earnings were 2 percent higher 6 months before training started, 4 percent higher when training started, and 3 percent higher 48 months after training started.

40–59 credits

Relative earnings were 2 percent higher 6 months before training started, 3 percent higher when training started, and 5 percent higher 48 months after training started.

Overall results

Overall, the results show that among those who gained level 4 qualifications, those who gained the most credits experienced the greatest increase in average earnings. Among those who gained level 3 qualifications, there was no clear pattern. Results for those who gained level 1–2 qualifications showed no variation by duration of training.

Outcomes by the age and sex

In this section we examine whether the impact of training on average earnings varied by age and sex.

Table 8 compares the average earnings of participants relative to those of non-participants during the months before and after training started, by qualification level, age, and sex. The average earnings of participants and non-participants is expressed as ratio. For example, the first row of table 8 compares the average earnings of participants who gained a level 4 qualification, with those of matched non-participants. Average monthly earnings were:

- 1.6 percent higher 12 months before training started (column 2)
- 4.1 percent higher when training started (column 4)
- 8.6 percent higher 48 months after training started (column 9)
- 2.0 percent higher during the 12 months before training started (column 12)
- 2.3 percent higher during the 12 months after training started (column 12)
- 7.6 percent higher during the 37–48 months after training started (column 15).

Table 8 also includes the percentage change in relative earnings over the 48 months after training started. Our main results are based on this, as well changes in relative earnings during the 12 months before training started, the 12 months after training started, and the 37–48 months after training started. Some judgement is needed, as differences in relative earnings in a particular month may not always accurately reflect the overall picture.

We consider the variation by sex and age, within each highest qualification level.

Level 4

Figure 8a shows the average monthly earnings of those who gained level 4 qualifications before and after training started, by sex.

Males

Average earnings were 2 percent higher during the 12 months before training started. Average earnings continued to be 2 percent higher during the 12 months after training started, then increased over the next 36 months.

Average monthly earnings were:

- 2 percent higher during the 12 months before training started
- 3 percent higher when training started
- 2 percent higher during the 12 months after training started
- 4 percent higher 24 months after training started
- 7 percent higher 36 months after training started

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- 10 percent higher 48 months after training started.

This equates to a relative increase of 8 percent over the 48 months after training started.

Females

The average monthly earnings of females increased relative to the comparison group during the 6 months before training started. Average earnings were 1–2 percent higher during the 12 months before training started and 6 percent higher when training started. Average monthly earnings were 4 percent higher on average during the 12 months after training started, and then increased slightly over the next 36 months.

Average monthly earnings were:

- 2 percent higher during the 12 months before training started
- 6 percent higher when training started
- 4 percent higher during the 12 months after training started
- 5 percent higher during the 13–24 months after training started
- 6 percent higher during the 25–36 months after training started
- 6–7 percent higher 48 months after training started.

This equates to a relative increase of 2 percent over the 48 months after training started.

The impact of training on average earnings was much greater for males than for females, with average monthly earnings for males 8 percent higher than those of non-participants 48 months after training started, and average monthly earnings for females 2–3 percent higher.

Figure 8b shows the average monthly earnings of those who gained level 4 qualifications, before and after training started, by sex, by age when training started.

Males 15–19 years

The average monthly earnings of males aged 15–19 years increased relative to the comparison group during the 12 months before training started, with earnings the same 12 months before training started and 15 percent higher when training started. Average earnings remained 15 percent higher during the first 12 months after training started, then increase over the following 36 months.

Average monthly earnings were:

- 15 percent higher when training started
- 15 percent higher 12 months after training started
- 21 percent higher 24 months after training started
- 26 percent higher 36 months after training started
- 29 percent higher 48 months after training started.

This equates to a relative increase of 12 percent over the 48 months after training started.

Males 20–24 years

The average monthly earnings of males aged 20–24 years were around 5 percent higher when training started, and remained 5 percent higher during the 12 months after training started. The average monthly earnings of learners increased relative to the comparison group from around 12 months after training started, and continued to increase over the next 36 months.

Average monthly earnings were:

- 5 percent higher when training started
- 5 percent higher 12 months after training started
- 8 percent higher 24 months after training started
- 12 percent higher 36 months after training started
- 15 percent higher 48 months after training started.

This equates to a relative increase of 10 percent over the 48 months after training started.

Males 15–24 years

The average monthly earnings of males aged 15–24 years were around 8 percent higher during the 12 months before training started relative to the comparison group, and remained 8 percent higher during the 12 months after training started. The average monthly earnings of learners increased relative to the comparison group from around 12 months after training started, and continued to increase over the next 36 months.

Average monthly earnings were:

- 8 percent higher when training started
- 8 percent higher 12 months after training started
- 13 percent higher 24 months after training started
- 16 percent higher 36 months after training started
- 20 percent higher 48 months after training started.

This equates to a relative increase of 11 percent over the 48 months after training started.

Males 25–34 years

The average monthly earnings of males aged 25–34 years were around 1–2 percent higher during the 12 months before training started relative to the comparison group, and were the same 12 months after training started.

Average monthly earnings were:

- the same 12 months after training started
- 2 percent higher 24 months after training started
- 4 percent higher 36 months after training started
- 5 percent higher 48 months after training started.

This equates to a relative increase of 3 percent over the 48 months after training started.

Males 35–44 years

The average monthly earnings of males aged 35–44 years were around 1–2 percent higher during the 12 months before training started, and 1 percent higher during the 12 months after training started.

Average monthly earnings were:

- 1 percent higher during the 12 months after training started
- 3 percent higher 24 months after training started
- 5 percent higher 36 months after training started

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- 5 percent higher 48 months after training started.

This equates to a relative increase of 3 percent over the 48 months after training started.

Males 45 years and over

The average monthly earnings of males aged 45 years and over were the same as those of the comparison group during the 12 months before training started. Average monthly earnings remained very similar during the 12–24 months after training started, 1–2 percent higher during the 24–36 months after training started, and 1 percent higher 36–48 months after training started.

Average monthly earnings were:

- very similar when training started
- very similar 12 months after training started
- 1–2 percent higher 24 months after training started
- 1–2 percent higher 36 months after training started
- 1 percent higher 48 months after training started.

This equates to a relative increase of 1 percent over the 48 months after training started.

Females 15–19 years

The average monthly earnings of females aged 15–19 years increased substantially relative to the comparison group during the 6 months before training started, with average earnings very similar 6 months before training started, but 25 percent higher when training started. Average monthly earnings were 18 percent higher 12 months after training started, 18 percent higher 24 months after training started, and 16 percent higher 48 months after training started.

Average monthly earnings were:

- 25 percent higher when training started
- 18 percent higher 12 months after training started
- 18 percent higher 24 months after training started
- 16 percent higher 48 months after training started.

This equates to a relative decrease of 7 percent over the 48 months after training started. The absolute difference in average monthly earnings remained fairly constant (at around \$300 per month) over the 48 months.

Females 20–24 years

The average monthly earnings of females aged 20–24 years were 2 percent higher on average during the 12 months before training started. The average monthly earnings of learners increased relative to the comparison group during the 36 months after training started then declined after that.

Average monthly earnings were:

- 2 percent higher when training started
- 3 percent higher during the 12 months after training started
- 6 percent higher during the 25–36 months after training started
- 3 percent higher 37–48 months after training started
- 2 percent higher 48 months after training started.

Females 25–34 years

The average monthly earnings of females aged 25–34 years increased relative to the comparison group during the 6 months before training started, with average earnings 1 percent higher 6 months before training started, and 4 percent higher when training started. The average monthly earnings of learners increased relative to the comparison group during the 36 months after training started and then declined.

Average monthly earnings were:

- 4 percent higher when training started
- 4–5 percent higher during the 13–36 months after training started
- 1 percent higher 48 months after training started.

This equates to a relative decrease of 3 percent in average earnings over the 48 months after training started.

Females 35–44 years

The average monthly earnings of females aged 35–44 years increased relative to the comparison group during the 6 months before training started, with average earnings 4 percent higher on average during the 12 months before training started, and around 8 percent higher when training started. Average monthly earnings were between 6–8 percent higher during the 48 months after training started.

Average monthly earnings were:

- 8 percent higher when training started
- 6–8 percent higher during the 48 months after training started
- 7 percent higher 48 months after training started.

The average monthly earnings of learners had decreased slightly relative to those of non-participants 48 months after training started.

Females 45 years and over

The average monthly earnings of females aged 45 years and over were around 1 percent higher during the 12 months before training started relative to the comparison group.

Average monthly earnings were:

- 1 percent higher during the 12 months after training started
- 3 percent higher during the 13–24 months after training started
- 6 percent higher during the 25–36 months after training started
- 10 percent higher during the 37–48 months after training started.
- 10 percent higher 48 months after training started.

This equates to a relative increase in average earnings of 9 percent over the 48 months after training started.

Those employed in the 12 months before and after training started

In many cases, the average earnings of non-participants, and to a lesser extent, those of participants, dipped around the time training started. This likely reflects that a greater proportion of non-participants ceased employment after one or two months, and the last month will often reflect part-month earnings. Appendix figure A3 presents results for participants and matched non-participants who were employed during the 12 months before training started, and the 12 months after training started, by level, age, and sex. Results are

very similar for the restricted and total population, so we report results based on the total population.

Relationship between age, duration of training, and number of credits achieved

There was a moderately strong relationship between age, duration of training, and the number of credits achieved:

- Of those aged 15–19 years when they started training, around 80 percent trained for 24 or more months, and most gained between 120 and 320 credits, with around 180 credits on average.
- Of those aged 20–24 years when they started training, around 50 percent trained for 24 or more months, and most gained between 60 and 320 credits, with around 150 credits on average.

In comparison, only 30 percent of those aged over 24 years trained for 24 months or more, and most gained between 60 and 240 credits, and around 120 credits on average.

Overall results for those who gained level 4 qualifications

Overall, the impact of training on average earnings 48 months after training started were greatest for males aged 15–24 years and females aged 45 years and over. Smaller impacts were observed for males aged 25 years and over, while training appeared to have little or no impact on average earnings for females aged 15–44 years, 48 months after training started.

Average monthly earnings of males aged 15–24 years when training started were 11 percent higher than non-participants 48 months after training started. Average monthly earnings were 3 percent higher 48 months after training started for males aged between 25–44 years, and 1 percent higher for males aged 45 years and over.

Average monthly earnings of females aged 45 years and over were 9 percent higher than non-participants 48 months after training started. Females aged 20–34 years experienced an increase in average earnings relative to that of non-participants during the 24–36 months after training started of around 5 percent, but this had disappeared 48 months after training started. Females aged 15–19 years did not experience an increase in average earnings relative to that of non-participants during the 48 months after training started.

Males aged 15–19 years and females aged 15–19 years, 25–34 years, and 35–44 years, all experienced an increase in average earnings relative to that of non-participants during the 6 months before training started. Both males and females aged 15–19 years experienced an increase in average earnings relative to that of non-participants during the 6 months before training started. However, males experienced further earnings gains relative to those of non-participants, while females did not.

Of those who gained a level 4 qualification, 30 percent were males aged 15–24 years, 33 percent were males aged between 25–44 years, and 10 percent were males aged 45 years and over. Nine percent were females aged 15–24 years, 14 percent were females aged between 25–44 years, and 4 percent were females aged 45 years and over.

Level 3

Figures 9a and 9b show the average monthly earnings of those who gained level 3 qualifications by sex, and by sex and age. Overall, gaining a level 3 qualification had a small impact on participants' average earnings of around 1 percent.

Males

The average monthly earnings of males increased relative to those of non-participants during the 12 months before training started, with earnings 2 percent higher 12 months before training started, and earnings 3 percent higher when training started.

Average monthly earnings were:

- 3 percent higher when training started
- 3 percent higher during the 12 months after training started
- 3 percent higher 24 months after training started
- 4 percent higher 36 months after training started
- 5 percent higher 48 months after training started.

This equates to a relative increase of 2 percent over the 48 months after training started. Because average earnings were increasing relative to those of non-participants before training started, it's possible that earnings would have continued to increase relative to those of non-participants in the absence of training. This possibility is discussed further in the concluding section.

Females

The average monthly earnings of females were increasing relative to those of non-participants during the 12 months before training started, with earnings 1 percent higher 12 months before training started, and earnings 5 percent higher when training started.

Average monthly earnings were:

- 5 percent higher when training started
- 4 percent higher during the 12 months after training started
- 4 percent higher 24 months after training started
- 3 percent higher 36 months after training started
- 2 percent higher 48 months after training started.

Average earnings decreased relative to those of non-participants during the 48 months after training started.

Males 15–19 years

The average monthly earnings of males aged 15–19 years increased relative to those of the comparison group before training started, with average earnings the same 12 months before training started and 10 percent higher when training started.

Average monthly earnings were:

- 10 percent higher when training started
- 9 percent higher during the 12 months after training started
- 8–9 percent higher during the 13–36 months after training started
- 13 percent higher during the 37–48 months after training started
- 12 percent higher 48 months after training started.

Average earnings increased 2–3 percent relative to the comparison group 48 months after training started.

Males 20–24 years

The average monthly earnings of males aged 20–24 years increased relative to those of the comparison group before training started, with earnings 2 percent higher 12 months before training started, and 7 percent higher when training started.

Average monthly earnings were:

- 7 percent higher when training started
- 7 percent higher during the 12 months after training started
- 6 percent higher during the 13–24 months after training started
- 4 percent higher during the 25–36 months after training started
- 6–7 percent higher during the 37–48 months after training started
- 7 percent higher 48 months after training started.

Average earnings were unchanged relative to the comparison group 48 months after training started.

Males 25–34 years

The average monthly earnings of males aged 25–34 years were around 2 percent higher 12 months before training started, and 3 percent higher when training started.

Average monthly earnings were:

- 3 percent higher when training started
- 2 percent higher during the 12 months after training started
- 3 percent higher during the 13–24 months after training started
- 4 percent higher during the 25–36 months after training started
- 5 percent higher during the 37–48 months after training started
- 4 percent higher 48 months after training started.

This equates to a relative increase of 1–2 percent over the 48 months after training started.

Males 35–44 years

The average monthly earnings of males aged 35–44 years were 2 percent higher than those of non-participants during the 12 months before training started.

Average monthly earnings were:

- 2 percent higher when training started
- 3 percent higher 12 months after training started
- 4 percent higher 24 months after training started
- 4 percent higher 36 months after training started
- 4 percent higher 37–48 months after training started.

This equates to a relative increase of 2 percent over the 48 months after training started.

Males 45 years and over

The average monthly earnings of males age 45 years and over increased relative to those of non-participants during the 12 months before training started, with earnings the same 12 months before training started and 3 percent higher when training started.

Average monthly earnings were:

- 3 percent higher when training started
- 5 percent higher 12 months after training started
- 5 percent higher 24 months after training started

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- 6 percent higher 36 months after training started
- 7 percent higher 48 months after training started.

This equates to a relative increase of 4 percent over the 48 months after training started.

Females 15–19 years

The average monthly earnings of females aged 15–19 years increased substantially relative to those of the comparison group before training started, with average earnings 3 percent higher 12 months before training started, and 25 percent higher when training started.

Average monthly earnings were:

- 25 percent higher when training started
- 22 percent higher during the 13–24 months after training started
- 24 percent higher during the 25–36 months after training started
- 17 percent higher during the 37–48 months after training started
- 14 percent higher 48 months after training started.

Average earnings decreased relative to the comparison group over the 48 months after training started.

Females 20–24 years

The average monthly earnings of females aged 20–24 years increased relative to those of the comparison group before training started, with average earnings the same 12 months before training started, and 6 percent higher when training started.

Average monthly earnings were:

- 6 percent higher when training started
- 6 percent higher 12 months after training started
- 4 percent higher during the 13–24 months after training started
- 1 percent higher during the 24–36 months after training started
- the same during the 37–48 months after training started
- the same 48 months after training started.

Average earnings had decreased relative to those of the comparison group 48 months after training started.

Females 25–34 years

The average monthly earnings of females aged 25–34 years increased relative to those of the comparison group before training started, with average earnings 1 percent higher 12 months before training started, and 4 percent higher when training started.

Average monthly earnings were:

- 4 percent higher when training started
- 3 percent higher during the 12 months after training started
- 5 percent higher during the 13–24 months after training started
- 5 percent higher during the 25–36 months after training started
- 3–4 percent higher during the 37–48 months after training started
- 3 percent higher 48 months after training started.

Average earnings increased relative to those of the comparison group during the 12–35 months after training started, but declined after that, with average earnings unchanged relative to those of the comparison group 48 months after training started.

Females 35–44 years

The average monthly earnings of females aged 35–44 years were the same as those of non-participants relative to the comparison group during the 12 months before training started, and remained the same during the 36 months after training started.

Average monthly earnings were:

- the same when training started
- the same during the 36 months after training started
- 2 percent lower during the 37–48 months after training started.

Average earnings were largely unchanged relative to those of the comparison group during the 48 months after training started.

Females 45 years and over

The average monthly earnings of females aged 45 years and over were 3 percent higher on average than those of non-participants during the 24 months before training started, and 4 percent higher when training started.

Average monthly earnings were:

- 4 percent higher when training started
- 4 percent higher during the 12 months after training started
- 2 percent higher during the 13–24 months after training started
- 2 percent higher during the 25–48 months after training started.

Average earnings had decreased slightly relative to those of the comparison group 48 months after training started.

Overall results for those who gained level 3 qualifications

Overall, gaining level 3 qualifications increased participants' average earnings by 1 percent 48 months after training started relative to those of the comparison group. The impact of gaining level 3 qualifications varied by age and sex, with a larger impact for males aged 45 years and over (up 4 percent), a smaller impact for other males (up 2 percent), and no impact for females of all age groups. Overall, gaining level 3 qualifications increased the average earnings of males by 2 percent 48 months after training started.

Level 1–2

Figures 10a and b show the average monthly earnings of those who achieved qualification at level 1–2 by sex, and by age and sex. Training had no impact on earnings after training started for all age by sex sub-groups.

Left training without gaining a qualification

Appendix figure A4 compares the average monthly earnings profiles of those who left training without gaining a qualification by the level of the programme they were last enrolled in.

In most cases small differences between learners and non-participants are evident in the 6–12 months before and after training started. In the case of those undertaking level 3 or 4 programmes, these differences were smaller than those observed among learners who went on to complete a qualification at that level (see figure 6).

The differences in average earnings between learners who did not gain a qualification and those of comparable non-participants quickly disappeared, with no programme level group experiencing an increase in relative earnings 6–12 months after training started.

Outcomes relative to the month training ended

Next, we explore the impacts of industry training on average earnings around the time training ended. We present information on employment and earnings before and after the training period ended for the main study population in figure 11a. The last training month is the reference month (0).

One striking feature is the drop in employment immediately after the training period ended. Among those who gained a qualification, employment dropped to 85–88 percent, and among those who did not gain a qualification, employment dropped to 70 percent. Some of this is mechanical, and is in part a consequence of our decision to define participation based on concurrent employment. This means that participation in industry training ends when employment ends.

In figure 6, the average earnings of those who achieved a level 4 qualification increased relative to those of the comparison group from around 12 months after training started. It is clear from figure 11a that those who gained a level 4 qualification experienced a 4 percent increase in average monthly earnings (relative to the comparison group) around the time training ended. Average earnings were 4 percent higher 3 months before training ended, and 8 percent higher 3 months after training ended.

Those who gained a level 3 qualification experienced an increase in relative average earnings of 1 percent around the time training ended. Those who gained level 1 or 2 qualifications did not experience an increase in average earnings around the time training ended.

The large drop in employment immediately after training ended means that changes in average earnings around this time could be affected by compositional changes in who is employed. To investigate this, we restricted the population to those who are employed in the month after training ended. Figure 11b shows that average monthly earnings are very similar, demonstrating that changes in average earnings are not materially affected by compositional changes in who is employed around the time training ended. Those who gained a level 4 qualification experienced a 3 percent increase in average monthly earnings around the time training ended. (Average earnings were the same 48 months before training ended, 4 percent higher 3 months before training ended, and 7 percent higher 3 months after training ended.)

Those who gained level 3 may have experienced a very small increase (around 1 percent) in earnings around the time training ended. Those who gained level 1–2 qualifications did not experience an increase in relative average earnings around the time training ended.

Looking at outcomes relative to the end month, as opposed to the start month, gives the same estimates of impact on average earnings over the course of the training period. For example, for those who achieved a level 4 qualification, both approaches show that relative earnings increased by 7 percent during the four years and six months that included the training period.

Figures 12a and b show the average monthly earnings of those who achieved qualifications at level 4, by sex and age, in the months before and after training ended. For males aged 15–19 years, 20–24 years, 25–34 years, and 35–44 years average earnings increased 7 percent, 6 percent, 2 percent, and 3 percent, respectively, around the time training ended, while for those aged over 45 years, average earnings did not increase around the time training ended.

For females aged 15–19 years, earnings may have increased 1–2 percent around the time training ended, while for those aged 20–24 years, 25–34 years, 35–44 years, and 45 years

and over average earnings did not increase around the time training ended. Average monthly earnings for females by age group are subject to considerable month-to-month variation, which makes detecting a small increase around the time training ended difficult. Females aged 45 years and over experienced a 9 percent increase in relative earnings over the 48 months after training started. However, they did not experience an increase in average earnings around the time training ended.

Figures 13a and b show the average monthly earnings of those who achieved qualifications at level 3 by sex, and by age in the months before and after training ended. For males aged 25–34 and 35–44 years, earnings may have increased slightly around the time training ended, while for those aged 15–24 and over 45 years, average earnings did not increase. Average earnings did not change around the time training ended for females of all ages. These results are consistent with no or little changes in relative earnings during the 48 months after training started for most age by sex sub-groups. Males aged 45 years and over experienced a 4 percent increase in relative earnings over the 48 months after training started, however, they experienced no increase in average earnings around the time training ended.

Figure 14 shows the average monthly earnings of those who achieved qualifications at level 1–2 by sex. Average earnings did not change around the time training ended for males and females of all ages. These results are consistent with no changes in relative earnings during the 48 months after training started

As discussed previously, it is possible that average earnings may have increased more rapidly among learners, relative to the comparison group, for reasons other than their participation in training. There is some evidence of this among those who achieved a level 4 qualification and trained for three to four years, with relative earnings increasing before training for this group, and in the first 12 months after training started. However, there is no evidence of this among all those who achieved a level 4 qualification. Relative earnings are the same during the 12 months before training started and during the first 12 months after training started. Given the nature of industry training (whereby much of the learning is undertaken within the workplace, with credits and unit standards achieved incrementally over an extended period of time, sometimes several years), it seems likely that some learners would experience earnings gains during the training period, and not just at the point of completion.

For those who gained a qualification, an increase in average monthly earnings around the time training ended (relative to the comparison group) is likely to be directly attributable to training. Whereas a more gradual increase in earnings over the training period could be attributable to other factors. It seems unlikely that the observed increase in average monthly earnings around the time training ended is due to something other than the completion of training (and the gaining of a qualification).

Industry training may be acting to keep people in employment, or it could be a consequence of who decides to undertake training, whereby people in jobs that they or their employer expect to last longer are more inclined to train. It could be that employers are selecting 'better' employees to train. In some cases, the successful completion of training may be required to retain employment.

Industry Training Organisations

This section examines the extent to which the outcomes of learners varied depending on which industry training organisation oversaw the training and the level of qualification achieved. We do not identify specific ITOs in our analysis, as confidentiality rules do not permit information on individual entities to be disclosed.

Industry training covers the activities of around 40 ITOs, which vary considerably in size and the type of training offered, as well as the demographic profile of learners. The number of learners that left training during 2003–05 varied between 50 and nearly 10,000. There was considerable variation in the proportion of learners whose last programme was a limited

credit programme. Some ITOs had no learners undertaking limited credit programmes, while others had over 30 percent. The proportion of learners who left training and who achieved level 4 qualifications during the training period varied from zero to around 50 percent, and the proportion of learners who gained level 1 or 2 qualifications varied from zero to around 35 percent.

The demographic profile of learners varied considerably by ITO. While overall, 73 percent of those who gained level 4 qualifications were male, in some cases, over 90 percent of learners associated with a specific ITO were male. Overall, 19 percent of learners were aged 15–19 years. Several ITOs had less than 1 percent of learners in this age group, and others had over 25 percent. Differences in the demographic profile of learners explain much of the difference in the earnings profiles of learners. In section 4.5, we use regression analysis to explore differences by ITO, age, and sex further.

Our previous analysis showed that gaining a qualification at level 4 or above had a positive impact on learners' earnings, with average earnings increasing 7 percent relative to those of the comparable non-participants 48 months after training started. However there were substantial differences by age and sex, with impacts varying between zero and 11 percent. Analyses by ITO were generally consistent with the overall results and showed that training overseen by most ITOs had a positive impact on learners' earnings. However, training overseen by some ITOs appeared to have very little or no impact on the average earnings of learners.

Our analysis showed that gaining qualification at level 3 had a small positive impact on learners' earnings overall, with average earnings 1 percent higher relative to those of the comparison group, 48 months after training started. However, gaining a level three qualification improved the earnings of males but not females. Analyses by ITO were generally consistent with the overall results of little or no impact on learners' average earnings.

Our analysis showed that gaining a qualification at level 1 or 2 had no impact on learners' average earnings. Analyses by ITO were generally consistent with these results.

Our analysis showed that overall completing a limited credit programme had no impact on the average earnings of learners. Analysis by ITO suggests that training overseen by one ITO may have had a small positive effect on the learners' average earnings.

The demographic profile of learners varied considerably by ITO, and differences in the impact of training on learners' earnings largely reflect the different impacts of training by age and sex. Later, we use regression analysis to examine whether impacts vary by the characteristics of the learner and their employer, in particular, by age, sex, employer size, and the ITO overseeing the training.

Outcomes for the exit study population

The exit study population is more representative of the total population of learners. It comprises all training periods that ended during 2003–05, including those that started before 2002, and includes a large number of learners who achieved a level 4 qualification and were not included in our main study population.

We are interested in assessing whether the outcomes for those in the main study population were similar to those in the exit study population, to check whether our sample construction has biased results. If they are the same, this suggests that those who started training before 2002 and trained for longer than 24 months experienced similar earnings gains as those that started training during 2003–05 and trained for longer than 24 months.

Durations of four years or more are observed in the exit study population but not in the main study population, and there were substantially more training periods between 36–47 months in the exit study population. Given training seems only to have an impact on the earnings of those who achieve a qualification at level 4, we focus particularly on this group.

As we do not observe the training period start or prior earnings for everyone in the exit population, we are only able to compare outcomes relative to the month the training period ended. We constructed a new comparison group by matching on characteristics in the month the training period ended, using the same criteria as before. We used age in single years, sex, 4-digit industry, and firm size (five groupings) in the calendar month training started, the number of months employed during the 12 months before training started (within +/- 2 months), and average monthly earnings in the previous 12 months (within +/- 20 percent). One additional criterion was added, which was the number of months employed during the 24 months before training started had to be within +/- 4 months. This reflected that many learners were training and employed for several years before training ended. The overall match rate was 85 percent. Again, those who were unmatched were more likely to have had less recent employment history.

Matching the main study population and the exit population on the same basis (ie on characteristics in the month training ended) allows us to directly compare results for the two study populations. Appendix figure A5 presents information for the main study population and appendix figure A6 for the exit study population. We can also compare the main study population matched at start month (see figures 6 and 7b) with results based on matching at end month (appendix figure A5.)

Durations of 24 months or more are grouped together because durations greater than 24 months are censored in the exit study population (we don't know the training duration of learners who ceased training in January 2003 and started before 2001, only that it was more than 24 months).

Firstly, we consider the results for the main study population (see appendix figure A5). Despite matching on average monthly earnings in the 12 months before training ended, average income was 2–3 percent higher for the learners than for those in the matched comparison group.

We examine changes in relative earnings between participants and non-participants over time by qualification level.

Level 4

- average monthly earnings increased for those who achieved level 4 qualifications relative to those of the matched comparison group during the 60 months before training ended
- average earnings were the same 36 month before training ended, and increased gradually to be 3 percent higher 3 months before training ended
- average earnings increased by 4 percent around the time training ended.

Overall relative earnings increased from being 2–3 percent lower 48 months before training ended to 7 percent higher 6 months after training ended. This equates to an increase of 9 percent during the 48 months before training ended.

Level 3

Average monthly earnings increased slightly for those who achieved a level 3 qualification relative to those in the matched comparison group during the 36 months before training ended:

- average earnings were the same 36 month before training ended, and increased gradually to be 2–3 percent higher 3 months before training ended
- average earnings remained about 3 percent higher around the time training ended.

Level 1–2

The earnings of those who achieved a level 1 or 2 qualification or did not gain a qualification experienced no change in earnings relative to the comparison group.

Results for the exit study population are shown in appendix figure A6. These results are very similar, showing that those who gained level 4 qualifications in our main study population experienced a very similar improvement in average earnings as those in the exit study population. Average earnings increased by 3–4 percent around the time training ended in both populations. This shows that our results are not being biased downwards by the main study population having a greater proportion of training periods of shorter duration.

Results for those who gained level 4 qualifications by the duration of the training are also shown in appendix figure A5 for the main study population and appendix figure A6 for the exit study population. Again, the results are very similar and show that our results are not being biased downwards by the main study population having a greater proportion of training periods of shorter duration. The average earnings gain experienced by those who trained for more than 24 months (which includes a much greater proportion who trained for more than 36 months than the main study population) was very similar to that experienced by those who trained for between 24–35 months in the main study population.

The results are also very similar to those obtained in our main analysis based on matching learners at the month training started, rather than the month training ended. Both matching approaches show training had no impact on the average earnings of learners who achieved level 1–2 qualifications or no qualification,¹⁷ a small increase for those who achieved level 3 qualifications, and a 7–9 percent increase for those who achieved level 4 qualifications, over 52 months.

In conclusion, the results for the two study populations were very similar, which shows our results are not being biased downwards by the main study population having a greater proportion of training periods of shorter duration.

Retention of learners by employers and within industries

The retention of learners by employers and within industries is considered in this section.¹⁸ First, we examined retention during training by investigating whether individuals were with the same employer at the start and the end of the training period.¹⁹

- Around 83 percent of learners who completed their last training programme were with the same employer at the start and end of the training period.
- 69 percent of the comparison group matched to learners who completed their training programme were with the same employer at the start and end of the period.
- Around 64 percent of those who terminated their training programme were with the same employer at the start and end of the training period.
- 61 percent of the comparison group matched to learners who terminated their training programme were with the same employer at the start and end of the period.
- Overall, 71 percent of learners were with the same employer at the start and end of the training period, compared with 64 percent of the matched comparison group. This suggests that participation in training is associated with 7 percent higher employee retention during the training period; programme completion is associated

¹⁷ Conceptually we much prefer to match at start month.

¹⁸ Based on the main study population and the comparison group matched at start month.

¹⁹ Main employer 3 months before training ended was used rather than employer in the end month to allow for lags in the recording of programme termination following a change of job.

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with 14 percent higher employee retention during the training period; and programme non-completion is associated with 3 percent higher employee retention during the training period.

Next, we examined retention after training ended, by examining whether individuals were with the same employer 3 months before training ended as 12 months after training ended.

- Overall, around 40 percent of learners and 46 percent of the matched comparison group were with the same employer 12 months after training ended.
- Around 55 percent of learners who completed their training programme were with the same employer 12 months later (50 percent of the comparison group were with the same employer).
- 32 percent of those who terminated their training programme were with the same employer 12 months later (44 percent of the comparison group).
- 16 percent of learners who completed their last training programme and 28 percent of those who terminated their last training programme were not employed 12 months later.

These results suggest that completing training is associated with 5 percent higher employee retention after training ends; and non-completion is associated with 12 percent lower employee retention after training ends.

Finally, we examined whether individuals were with the same employer when training started and 12 months after training ended. Around 51 percent of learners who completed their training programme (and 44 percent of the matched comparison group) were with the same employer 12 months after training ended. Around 24 percent of those who terminated their training programme (and 37 percent of the matched comparison group) were with the same employer 12 months after training ended. Overall, 33 percent of learners and 39 percent of the matched comparison group were with the same employer 12 months after training ended. This indicates that completing a training programme is associated with 7 percent higher employee retention during and after training ends, and non-completion is associated with 13 percent lower employee retention during and after training ends.

Next, we examined whether individuals were employed within the same 2-digit industry at the start and the end of the training period. Around 89 percent of learners who completed their training (and 75 percent of the comparison group) were employed within the same industry at the start and end of the training period. Around 75 percent of those who terminated their training programme (and 68 percent of the comparison group) were employed within the same industry at the start and end of the training period. This indicates that completion is associated with 14 percent higher employee retention within industries during the training period; and non-completion is associated with 7 percent higher employee retention during the training period.

We also examined whether individuals were employed within the same industry subgroup (2-digit code) when training started and 12 months after training ended. Around 63 percent of learners who completed their training programme (and 55 percent of the comparison group) were employed within the same industry 12 months later. Around 39 percent of those who terminated their training programme (and 49 percent of the comparison group) were employed within the same industry 12 months later. This indicates that completing a training programme is associated with 8 percent higher employee retention within industries during and after training ends, and non-completion is associated with 10 percent lower employee retention within industries.

Administrative churn in the LEED data means that job turnover will be over-stated to some (currently unknown) degree.

Regression analysis

We use regression analysis to identify whether the impact of training, and gaining a qualification at a given level differ by age, sex, size of main employer, and the ITO overseeing the training.

We use annualised percentage change in individual's average monthly earnings over the 12 months before training started compared with 12 months after training ended, as the dependent variable. We only include individuals who were employed for at least 6 months in both time periods and who had at least one non-participant matched to them who was also employed in both time periods. This was 73 percent of those who gained level 4 qualifications, 80 percent of those who gained level 3 qualifications, and 76 percent of those who gained level 1–2 qualifications.

Appendix figure A7 shows employment rates and average monthly earnings in the months before and after training started for learners who were employed for at least 6 months out of the 12 months before training started, and for at least 6 months out of the 12 months after training ended. As expected, the employment rates are higher before and after training starts for this subgroup than for the total population (see figure 6). Average monthly earnings are around 4 percent higher for those that achieved a level 4 qualification, around 2 percent higher for those that achieved a level 3 qualification, and around 4 percent higher for those that achieved a level 1–2 qualification. However, the *relative earnings* of learners and the matched comparison group are unchanged, so restricting the population in this manner is unlikely to affect our analysis by highest qualification gained. In the case of some ITOs, restricting the analysis population reduced the number of learners by around half.

The ordinary least squares regression analysis estimates the average annualised percentage change in earnings over the training period for learners relative to the comparison group. This is conceptually different from our previous analyses, which are based on change in average earnings. The regression analysis reflects the average change, while our previous analyses were based on changes in averages.

Ignoring individual subscripts, the regression specification we used was:

$$Y = \alpha + X\beta + \varepsilon$$

Where Y is the dependent variable (the outcome variable of interest) and X includes *train*, a dummy variable equal to 1 if the individual participated in industry training, and equal to 0 if they come from the matched non-participant group, *duration(l)*, a dummy variable that equals 1 if the individual's training period (or the person with whom they are matched) is of length l months, where l takes the values: 1–11, 12–23, 24–35, 36–47, *credits(n)*, a dummy variable that equals 1 if the total number of credits achieved (or the person with whom they are matched) was n , where n takes the values: 0–39, 40–59, 60–119, 120–239, 240+. Similarly, *age*, *sex*, *employer size*, and *ITO* are other variables included in the model which may influence outcome, α is the model intercept, and ε is an error term to capture unobserved effects. We fitted a separate model for each qualification level (level 1–2, level 3, and level 4+).

The first models included *train*, *duration*, and *credits*, and the interaction of *train* with *duration* and *credits* in the vector of control variables X , allowing there to be systematic differences between the effect of training for individuals with different training durations and credit attainment. However, *duration*×*train*, *credits*×*train*, and *employer size*×*train*, were not significant at the 95 percent confidence level and were not included in the final model for any qualification level.

The final models included the *train* dummy variable in the vector of control variables X , allowing there to be systematic differences between individuals who participated in training and those that did not, as well as age, sex, and ITO. We focus on the coefficients associated with *train*, and the interactions of *train* with *age*, *sex*, *age*×*sex*, and *ITO*. These represent the effects of training on Y , and the extent to which these vary by age, sex, and ITO.

The final model was:

$$Y = \alpha + \beta_1 * train + \beta_2 * age + \beta_3 * sex + \beta_4 * ito + \beta_5 * age * sex + \beta_6 * train * sex + \beta_7 * train * age + \beta_8 * train * age * sex + \beta_9 * train * ito + \varepsilon$$

Many of the β_i denote several coefficients, corresponding to the number of categories used to specify the covariate minus one (to avoid collinearity). For example, β_2 denotes four coefficients associated the five age categories used in the regression.

An additional model was tested, which included *duration(I)*, where I took the values none, 1–11 months, 12–23 months, 24–35 months, 36–47 months. If the individual participated in training, then they took the value corresponding to the length of their training, if the individual was from the matched non-participant group, then they took the value *none*.

$$Y = \alpha + \beta_1 * duration + \beta_2 * age + \beta_3 * sex + \beta_4 * ito + \beta_5 * age * sex + \beta_6 * duration * sex + \beta_7 * duration * age + \beta_8 * duration * age * sex + \beta_9 * duration * ito + \varepsilon$$

As expected, the first model was much preferred over the second based on the AIC criterion, reflecting that duration of training is not a significant factor after controlling for age and sex.

Level 4

The average earnings of those who gained level 4 or higher qualifications increased 3.8 percent per annum during the training period, relative to those of the comparison group. Each year of training increased the average monthly earnings of learners, relative to those of the comparison group, by 3.8 percent. Training duration varied considerably, with 80 percent training for between 5 and 39 months, an average duration of 21 months, and a median duration of 19 months.

The impact on earnings varied considerably by the age and sex. The impacts were greatest for males aged 15–19 years (at the start of the training period), females aged 15–19 years, males aged 20–24 years, and females aged 30–39 years. Statistically significant positive impacts were observed for these groups at the 95 percent confidence level. The impacts were small and not statistically significant for all other groups; males aged 25–29 years, 30–39 years, and 40 years and over, and females aged 20–24 years, 25–29 years, and 40 years and over.

Males aged 15–19 years, experienced an annualised increase in average monthly earnings of 11.3 percent over the training period relative to those of non-participants. This compared with relative increases of:

- 5.4 percent for males aged 20–24 years
- 1.4 percent for males aged 25–29 years
- 0.8 percent for males aged 30+ years
- 6.8 percent for females aged 15–19 years
- 1.1 percent for females aged 20–24 years
- 3.8 percent increases for females aged 30–39 years
- 1.6 percent increase for females 40+ years.

Females aged 25–29 years experienced a decrease of 0.8 percent.

Fourteen percent of those who gained a level 4 qualification were aged 15–19 years when they started training. Training duration varied for this group, with most training between 12 and 48 months, and an average duration of 32 months.

Our earlier analysis shows that those aged 15–19 years experienced earnings growth relative to that of the comparison group during the 6 months to 12 months *before* training started. The specification of the dependent variable will lead to the impact of training for this age group being overestimated. Our previous analysis found that training had no impact on the average earnings of females aged 15–19 years.

The ITO effect was highly significant, with learners associated with several ITO experiencing smaller or greater gains than average.

Level 3

The average earnings of those who gained level 3 qualifications increased relative to those of the comparison group by 1.4 percent per annum during the training period. Training duration varied considerably with most learners training between 6 and 30 months, an average duration of 17 months, and a median duration of 16 months.

The impact of training on earnings was greatest for females aged 15–19 years, with an annualised increase in average monthly earnings (relative to that of non-participants) of 9.7 percent over the training period. Males aged 15–19 years, experienced an annualised increase in average monthly earnings (relative to that of non-participants) of 3.6 percent over the training period. The impacts were small and not statistically significant for all other age by sex subgroups.

Of those who achieved a level 3 qualification, 8 percent were aged 15–19 years when training started. Training duration varied considerably for 15–19 year olds, with most training between 12 and 36 months, an average duration of 22 months, and a median duration of 24 months.

Our earlier analysis shows that those aged 15–19 years experienced earnings growth relative to that of the comparison group during the 6 months to 12 months before training started. The specification of the dependent variable will lead to the impact of training for this age group being overestimated. Our previous analysis found training had a positive impact on the earnings of males aged 15–19 years, but not on females aged 15–19 years.

The ITO effect was significant, with learners associated with some ITO experiencing smaller or greater gains than average.

Level 1–2

Overall, the average earnings of those who gained a level 1 or 2 qualification were not statistically significantly different from those of the comparison group. The ITO effect was highly significant, with learners associated with some ITO experiencing smaller or greater gains than average.

Completed a limited credit programme

Overall, the average earnings of those who completed a limited credit programme increased 1.0 percent per annum relative to that of the comparison group during the training period. Training duration varied with around 50 percent training for 12 months or less, and 17 percent training for more than 24 months.

Completing a limited credit programme had a positive impact of the earnings of males aged 15–19 years (6.9 percent), females aged 15–19 years (7.6 percent), and females aged 40 years and over (2.9 percent). Four percent of those who completed a limited credit programme were aged 15–19 years, and 8 percent were females aged 40 years and over when training started.

The ITO effect was significant, with learners associated with some ITO experiencing smaller or greater gains than average.

Our earlier analysis shows that average earnings increased for those who completed a limited credit programme relative to those of the comparison group during the 12 months *before* training started. The specification of the dependent variable will lead to the impact of

training being overestimated. Our previous analysis found completing a limited credit programme had no impact on average earnings of males and females of all ages.

Summary

A regression analysis of the annualised percentage change in average monthly earnings over the 12 months before training started compared with the 12 months after training ended was conceptually different from our previous analyses. The regression analysis reflects the average change in earnings, while our previous analyses were based on changes in average earnings.

For those who achieved qualifications at level 4 or higher, average monthly earnings increased by 3.8 percent per annum during the training period relative to the comparison group. For those who achieved level 3 qualifications, average earnings increased by 1.4 percent.

Results were not particularly consistent with previous results based on a descriptive analysis of average earnings before and after training, by qualification level, age, and sex. This analysis showed that some groups of learners experienced earnings growth relative to the comparison group during the 6 months to 12 months *before* training started. Hence, the specification of the dependent variable resulted in the impact of training being overestimated for these groups, and this largely explains differences in our results.

The regression analysis confirmed that the impact of training on earnings varied considerably by the level of qualification gained, and by age and sex. The impacts varied to some extent by the industry training organisation overseeing the training. The duration of training, the number of credits achieved, and the size of main employer were not significant factors, once differences in age and gender were controlled for.

Conclusion

This paper provides an exploratory analysis of the labour market outcomes of employees who left industry training during 2003–05. It uses a new dataset constructed for the *Employment Outcomes of Tertiary Education Feasibility Study* that assessed whether education and training data could be linked to Statistics NZ's Linked Employer-Employee Dataset.

Our analysis is based on a period of training undertaken by a learner, which can include breaks in participation of up to 12 calendar months. Learners may have participated in several programmes over that time and may have achieved more than one qualification. We considered all learners who started training during 2002–05 and left during 2003–05, and focus on the highest qualification achieved by the learner during the training period.

We analysed the employment and earnings patterns of learners before, during, and after training, and compare these with the earnings patterns of non-participants who had similar demographic and employment history before training started. We looked at earnings patterns relative to the month training started, as well as the month training ended, and compared changes in earnings over time for participants and non-participants. We included analysis by the highest qualification achieved, duration of training, and the age and sex of the learner. We also used regression analysis to explore whether the impact of industry training varied by the characteristics of the learner, their employer, and the Industry Training Organisation overseeing the training.

The qualifications achieved by learners

Industry training covers the activities of around 40 ITOs. They vary considerably in terms of the number of learners and the demographic profiles of those learners, as well as in the type and level of training undertaken. Overall, participants in industry training were a very diverse group in terms of age, recent employment, and earnings history. Around 30 percent of learners who left industry training during 2003–05 were aged 15–24 years when training

ended, around 40 percent were aged 25–39 years, and the remaining 30 percent were over 40 years.²⁰ Earnings before training varied considerably with average earnings around \$2,700 per month, and 25th, 75th, and 90th percentiles of \$1,500, \$3,500, and \$4,600 respectively.²¹

One-third of programmes²² undertaken by learners were at level 4, one-third at level 3, one-quarter at level 2, five percent at level 1, and one percent at level 5 or 6. Around 11 percent of learners were undertaking limited credit programmes. Thirty-one percent of learners who left training during 2003–05 gained a qualification. Thirteen percent gained a qualification at National Qualifications Framework (NQF) level 4 or above, 9 percent at level 3, and 9 percent at level 1 or 2. A further 5 percent completed a limited credit programme.

Around 37 percent of learners participated in training for one year or less, and around 38 percent for more than two years. Duration varied by the level of the highest qualification gained. Sixty percent of those who completed level 1–2 qualifications trained for 12 months or less, 60 percent of those who completed level 3 qualifications trained for 24 months or less, and 70 percent of those who gained level 4 or higher qualifications trained for more than 24 months. Around 38 percent of those who stopped training during 2003–05, and who did not gain any qualifications, had been training for over two years.

Jobs ending or changing

Jobs ending or changing is likely to be a contributing factor to learners not completing their training programmes. We found that a greater proportion of those who terminated their training programme had ceased being employed, or had different employers around the time training ended. Jobs ending (with no immediate re-employment) accounted for around 17 percent of programme terminations, and changing jobs accounted for a further 10 percent. Around 5 percent had moved to self-employment, and 5 percent were in receipt of benefit.

The retention of learners by employers and industries during and after training also varied depending on whether training was completed or not. Around 50 percent of those who terminated their training programmes were with the same employer the following month and 25 percent were with the same employer 12 months later. Around 75 percent of those who completed their training programme were with the same employer in the following month, and 50 percent were with the same employer 12 months later. Overall, jobs ending or changing accounted for around one-quarter of non-completions.

Around 65 percent of learners who completed their training programme and 40 percent of those who terminated their training programme were employed in the same industry subgroup 12 months later. Overall, programme completion was associated with 10 percent higher employee retention within industries during and after training, and non-completion was associated with 10 percent lower retention within industries.

The impact of training on learners' earnings

The impact of training on participants' earnings varied considerably by the level of the qualification gained, and by the age and sex of the learner.

We found that learners who gained qualifications at level 3 or higher experienced an increase in average monthly earnings compared with those of non-participants who had

²⁰ Based on the exit study population (all those who left training during 2003–05). This population is more representative of all learners, and so is the preferred basis to profile learners and investigate qualification attainment.

²¹ Based on the main study population (all those who started training during 2002–05 and left training during 2003–05). Earnings before training are observed for this population, but not for everyone in the exit study population. Earnings are before tax and are expressed in March 2008 dollars.

²² The reference programme is the last programme undertaken during the training period. If more than one programme ended, the one which led to the highest qualification was selected (or if no programme resulted in a qualification being achieved, the programme with the most credits awarded was selected).

similar demographic and employment histories before training started, while the earnings of those who achieved qualifications at level 1–2, or completed a limited credit programme did not improve.

Gaining a qualification at level 4 or higher improved participants' average earnings by 7 percent 48 months after training started. The improvement in earnings experienced by those who gained a level 3 qualification was much less. The average earnings of males improved by 2 percent, but those of females had not improved 48 months after training started.

We do not know what the outcomes of participants would have been had they not participated in training, and because our findings are based on comparing the earnings patterns of participants with those of non-participants who had very similar demographic and employment history before training started, they are subject to some caveats (refer below).

Gaining a level 4 qualification

The average monthly earnings of those who gained qualifications at level 4 or higher were 2 percent higher than those of comparable non-participants during the 12 months *before* training started, and remained 2 percent higher during the 12 months after training started. Average earnings began to increase relative to those of non-participants from around 12 months after training started, with average earnings 5 percent higher 24 months after training started, 7 percent higher 36 months after training started, and 9 percent higher 48 months after training started. Overall, average earnings improved 7 percent over the 48 months after training started. Learners experienced a 3 percent increase in average monthly earnings around the time training ended, and this persisted for at least 24 months after training ended.

Those who trained for longer and/or gained more credits experienced the greatest improvement in average earnings. The average monthly earnings of those who trained for 36–47 months increased 17 percent over the 48 months after training started, compared with those of non-participants, while the relative average earnings of those who trained for 24–35 months improved by 9 percent during 36 months after training started. The earnings of those who trained for less than 24 months improved by 2 percent during the 24 months after training started compared with those of non-participants. The differences by duration are largely explained by differences in age, with the impacts of training greater for those aged 15–24 years, who were also more likely to train for longer. This is discussed further below. Differences in training duration not only reflect different training intensities, but also the recognition of prior learning. Recognition of prior learning is a key feature of industry training, which enables some learners to complete a training programme in a relatively short time.

The improvement in earnings experienced by those who gained qualifications at level 4 or higher varied considerably by age and sex, with the largest impact observed for males aged 15–24 years when training started. There were smaller impacts for males aged 25 years and over, and for females aged 45 years and over, and no impact for females aged 15–44 years.

The average monthly earnings of males aged 15–24 years when training started were 11 percent higher than comparable non-participants 48 months after training started. Average monthly earnings were 3 percent higher among males aged 25–44 years and 1 percent higher among males aged 45 years and over 48 months after training started. Average monthly earnings were 9 percent higher among females aged 45 years and over²³, while training appeared to have no impact on the earnings of females aged 15–44 years, 48 months after training started.

Of those who left training and gained level 4 qualifications during 2003–05²⁴, 30 percent were males aged 15–24 years, 43 percent were males aged 25 years and over, 22 percent were females aged under 45 years, and 4 percent were females aged 45 years and over.

²³ The relatively small number of females aged 45 years and over in our study population means that this estimate may not be reliable.

²⁴ Based on the main study population (all those who started training during 2002–05 and left training during 2003–05).

Employment was 8 percent higher among those who completed level 4 or higher qualifications during the 24 months after training started and 4 percent higher 48 months after training started. Employment was 8 percent higher for females 24 months after training started and 7 percent higher 48 months after training started. Employment was 8 percent higher for males 24 months after training started and 3 percent higher 48 months after training started. Gaining a qualification at level 4 or higher is associated with greater employment retention.

Gaining a level 3 qualification

The average monthly earnings of those who gained level 3 qualifications were 2–3 percent higher than those of the comparable non-participants during the 12 months before training started, and remained 3 percent higher during the 12 months after training started. Average earnings increased relative to those of non-participants, and were 4 percent higher 24 months after training started, and remained 4 percent higher 36–48 months after training started. Overall, average earnings improved 1 percent over the 48 months after training started. Learners did not experience an increase in average earnings around the time training ended.

The impact of training on average earnings varied by sex, with a positive impact observed for males, but not for females 48 months after training started. The average monthly earnings of males were 2 percent higher than those of comparable non-participants 48 months after training started. Of those who gained level 3 qualifications, 63 percent were male.

There was some variation by age, with average monthly earnings 2 percent higher among males aged 15–19 years, 25–34 years, and 35–44 years, and 4 percent higher among males aged 45 years and over. There was no impact for males aged 20–24 years when training started.

The average monthly earnings of females increased relative to those of non-participants during the 12 months before training started, with earnings 1 percent higher 12 months before training started and 5 percent higher when training started. Average earnings were 4 percent higher during the 24 months after training started, 3 percent higher 36 months after training started, and 2 percent higher 48 months after training started. Average earnings decreased relative to those of non-participants during the 48 months after training started. Training had no impact on the earnings of females in any age group.

Employment was 8 percent higher among those who completed qualifications 24 months and 48 months after training started, with no differences between males and females. Gaining a level 3 qualification was associated with greater employment retention.

Gaining a level 1–2 qualification

Those who gained level 1–2 qualifications experienced no improvement in average earnings during the 48 months after training started. The average monthly earnings of participants were unchanged relative to those of comparable non-participants after training started. Gaining a level 1–2 qualification had no impact on the average earnings of any age by sex subgroup.

Employment was 5 percent higher among those who completed qualifications during the 24 months after training started and 3 percent higher 48 months after training started. Gaining a level 1–2 qualification was associated with greater employment retention.

Completing a limited credit programme

Those who completed a limited credit programme, but did not gain a national qualification, experienced no improvement in earnings during the 48 months after training started. The average monthly earnings of participants were unchanged relative to those of comparable non-participants after training started. Completing a limited credit programme had no impact on the average earnings of any age by sex subgroup.

Employment rates were 3 percent higher 12 months after training started, 3 percent higher 24 months after training started, and 6 percent higher 48 months after training started. Completing a limited credit programme was associated with greater employment retention.

Gaining no qualification

Those who did not gain a national qualification and did not complete a limited credit programme did not experience an improvement in average earnings relative to comparable non-participants' during the 48 months after training started. This was the case for all age by sex subgroups.

Employment rates were 2 percent lower 12 months after training started, 4 percent lower 24 months after training started, and 3 percent lower 48 months after training started. Our analysis of employment retention found that jobs ending (with no immediate re-employment) accounted for around 17 percent of programme terminations.

The effect of training varied to some extent by the ITO overseeing the training

Analyses by the Industry Training Organisation (ITO) overseeing the training were generally consistent with the overall results. In most cases, differences between ITOs reflected the different demographic profile of learners associated with the various ITOs, and that the improvement in average earnings experienced by those who gained level 3 or higher qualifications was greatest for younger males, with little or no improvement evident for females in most age groups.

Regression analysis

A regression analysis confirmed that the impact of training on earnings varied considerably by the level of qualification gained, and by age and sex. The duration of the training, and the number of credits achieved were not significant factors once controls for qualification level, age, and sex were included. The impact of training on average earnings varied to some extent by the industry training organisation overseeing the training. The size of main employer was not a significant factor.

Discussion and caveats

We do not know what the outcomes of participants would have been, had they not participated in industry training. Comparing the earnings patterns of learners before, during, and after training with those of non-participants who had similar demographic and employment history before training started means our findings are subject to various assumptions and caveats. Various characteristics of the individual, the employer, and the job will influence employers' and individuals' decisions to participate in industry training. The incentives and potential rewards of participating in and completing training will also vary. In some cases, a particular job may require successful completion of a programme (for example, it could be a health and safety or licensing requirement). We know there are substantial difference across and within industries with respect to the level of training being undertaken and the characteristics of participants. We are not able to match on many of the characteristics likely to influences individuals' and employers' decisions to participate in industry training. Hence, any comparison group of non-participants constructed solely on the basis of characteristics observed in LEED has the potential to differ from the participant group in a number of important ways. We can't know the extent to which our estimates are affected by this limitation.

It is possible that earnings may have increased more rapidly for learners (relative to the comparable non-participants) for reasons other than their participating in training. There is some evidence of this among males aged 15–24 years when training started, with relative earnings increasing before training started for this group, and in the first 12 months after training started. However, there is little evidence of this among all those who achieved a level 4 qualification, with relative earnings the same during the 12 months before training started and the 12 months after training started. Given the nature of industry training (much of the learning is undertaken within the workplace, with credits and unit standards achieved incrementally over an extended period of time, sometimes several years), it seems likely that

participating in training would have a positive impact on learners' earnings during the training period, and not just at the point training was completed.

While a gradual increase in average earnings over the training period could be due to factors other than training, an increase in average earnings around the time training ended (relative to the comparison group) seems very likely to be directly attributable to training. Those who gained level 4 qualifications experienced a 3 percent increase in average monthly earnings around the time training ended, and it seems unlikely that this would be due to something other than the completion of training and the gaining of a qualification. Those who gained qualifications below level 4 did not experience an increase in average monthly earnings around the time training ended.

In many cases, training and gaining a qualification appears to have little or no impact on participants' average earnings. Among those who gain level 4 or higher qualifications, the impacts on earnings are much greater for males aged 15–24 years when training started, than for other males. If wage increases do reflect productivity increases, then we may expect greater increases among younger learners, as older learners have already attained a certain level of competency, and industry training may be just be adding skills around the margin. Recognition of prior learning, a unique feature of industry training, means that employees gain formal recognition of skills they already possess. In some cases, employers will already be rewarding these skills, and so there will be no impact on earnings. In other cases, formal recognition of skills may result in learners experiencing an increase in earnings.

For some groups, average earnings increase *before* training starts, rather than afterwards. It could be that employers are selecting 'better' employees to train, and/or that they are rewarding employees for participating in training before training even starts. This could occur if employers find recruiting suitably skilled or trained workers difficult, and they hire new employees who require training, but remunerate them as if they are trained already, and in cases where an employee is an established worker who requires further training.

Employment rates were higher among those who gained a qualification or completed a limited credit programme after training started, than among the comparable non-participants. Industry training may be acting to keep learners in employment, or this could be a consequence of who decides to undertake training, whereby people in jobs that they or their employer expect to last longer are more inclined to train.

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Tables

Table 1

Number and percentage of training periods during 2001–2006 By start year and end year

Start year	End year						Total
	2001	2002	2003	2004	2005	2006 or ongoing	
2001 or earlier	23,500 30.2	16,930 21.7	13,990 18.0	7,700 9.9	5,450 7.0	10,280 13.2	77,850
2002	...	4,600 13.3	9,350 27.1	5,940 17.2	5,320 15.4	9,280 26.9	34,490
2003	...	...	6,610 17.5	9,590 25.3	7,020 18.5	14,660 38.7	37,870
2004	...	...	...	7,940 19.5	10,400 25.5	22,430 55.0	40,770
2005	...	...	...	...	9,750 19.3	40,740 80.7	50,490
2006	...	...	...	...	...	48,670 100.0	48,670
Total	23,500	21,530	29,950	31,170	37,940	146,060	290,140

Note: Training periods that were active on 31 December 2006 are included in the 2006 end year.

Symbol: ... not applicable

Table 2
Continued

Characteristics of the main study population and exit study population

	Main study population Training period started during 2002–05 and ended during 2003–05	Exit study population Training period ended during 2003–05
Number		
Learners	71,920	99,050
Percentage		
Age (years)		
15–19	11.5	8.9
20–24	21.0	22.1
25–29	14.8	14.9
30–34	12.8	12.9
35–39	10.9	11.1
40–44	9.9	10.3
45–49	7.7	8.0
50–54	5.5	5.7
55–59	3.6	3.7
60–64	1.5	1.6
65+	0.5	0.5
Sex		
Female	36.0	31.7
Male	64.0	68.3
Ethnicity		
European/Pakeha	63.2	65.6
Maori	16.9	16.8
Pacific	6.7	5.0
Other	5.1	6.9
Not stated	8.1	5.7
Highest previous qualification		
None	16.4	16.4
5th form (or 12 credits at NQF level 1)	13.7	13.5
6th form (or 12 credits at NQF level 2)	9.6	9.4
7th form (or 12 credits at NQF level 3)	5.3	4.8
Sub-degree (National Certificate, Trade Certificate, National Dipolma)	12.8	12.1
Degree	5.5	4.5
Not specified	36.2	38.8
Start year		
2001 or earlier	...	27.4
2002	28.7	20.8
2003	32.3	23.4
2004	25.5	18.5
2005	13.6	9.8
Exit year		
2003	22.2	30.2
2004	32.6	31.5
2005	45.2	38.3
Training period		
1–6 months	28.6	20.8
7–12 months	22.5	16.3
13–24 months	30.8	24.9
25–36 months	13.1	38.0
37–48 months	5.1	...
Training duration		
1–6 months	30.4	22.1
7–12 months	23.6	17.3
13–24 months	29.9	25.7
25–36 months	11.7	34.9
37–48 months	4.3	...

Table 2
Continued

Characteristics of the main study population and exit study population

	Main study population	Exit study population
	Training period started during 2002–05 and ended during 2003–05	Training period ended during 2003–05
Percentage		
Total number of credits (all programmes)		
None	30.7	27.1
1–19	13.8	14.0
20–39	18.2	16.9
40–59	14.5	13.1
60–119	14.2	15.1
120–239	6.4	9.3
240+	2.1	4.4
Total number of certificates (all programmes)		
None	70.6	69.2
1	23.8	24.1
2	3.7	4.2
3	1.5	1.7
4+	0.5	0.8
Highest qualification gained during the training period		
None	70.6	69.2
Level 1–2	11.1	9.0
Level 3	9.5	9.1
Level 4+	8.9	12.8
Programme category		
Limited credit programme	13.2	10.9
National certificate programme	86.8	89.1
Programme funding source		
Industry training	96.1	96.2
Modern apprenticeships	3.9	3.8
Programme level		
1	5.5	4.9
2	28.3	24.7
3	36.9	35.0
4+	29.4	35.4
Proposed programme duration		
1–6 months	8.6	6.5
7–12 months	38.9	33.3
13–24 months	30.0	30.5
25–36 months	12.0	14.0
37–48 months	8.2	11.9
49+ months	2.3	3.8
Programme exit code		
Completed	33.2	33.0
Terminated	58.0	58.5
Missing	8.8	8.5
Proposed number of credits (programme)		
20–39	12.9	10.6
40–59	25.7	22.0
60–119	39.2	38.2
120–239	12.7	15.5
240+	9.5	13.6
Total number of credits achieved (programme)		
None	34.8	33.0
0–19	14.6	15.4
20–39	18.2	17.1
40–59	13.9	12.2
60–119	12.3	12.3
120–239	4.5	6.6
240+	1.7	3.3

Table 2
Continued

Characteristics of the main study population and exit study population

	Main study population	Exit study population
	Training period started during 2002–05 and ended during 2003–05	Training period ended during 2003–05
Percentage		
Industry		
Agriculture, fishing and forestry	12.2	12.0
Mining	0.5	0.7
Manufacturing	18.1	20.2
Electricity and gas	0.5	0.9
Construction	10.1	11.8
Wholesale trade	4.4	4.1
Retail trade	14.6	13.0
Accommodation and restaurants	5.4	4.3
Transport and storage	5.8	5.8
Communications	0.7	0.8
Finance	1.2	1.2
Business and property	6.6	6.3
Government	4.0	3.7
Education	1.7	1.7
Health and community services	7.6	7.0
Culture and recreation	3.7	3.2
Personal and other	2.8	3.3

Does Workplace-based Industry Training Improve Earnings?

Table 3

Characteristics of the main study population
By highest qualification gained

	Highest qualification gained					Total
	No qualification		Level of qualification			
	Did not complete a limited credit programme	Completed a limited credit programme	Level 1–2	Level 3	Level 4+	
Number						
Learners	45,810	4,940	7,950	6,820	6,400	71,920
Percentage						
Age (years)						
15–19	13.0	5.2	18.8	3.3	4.5	11.5
20–24	21.4	11.1	21.6	18.7	27.8	21.0
25–29	15.4	10.7	12.6	15.1	15.9	14.8
30–34	12.9	11.8	10.1	15.3	13.4	12.8
35–39	10.8	11.7	9.3	12.8	10.9	10.9
40–44	9.3	12.8	9.3	12.5	9.9	9.9
45–49	7.0	12.8	7.7	8.9	7.6	7.7
50–54	4.9	10.7	5.4	6.6	4.9	5.5
55–59	3.1	7.7	3.5	4.5	3.3	3.6
60–64	1.4	3.9	1.0	1.8	1.0	1.5
65+	0.5	1.1	0.2	0.3	0.4	0.5
Sex						
Female	31.7	61.4	47.8	36.9	26.2	36.0
Male	68.3	38.6	52.2	63.1	73.8	64.0
Ethnicity						
European/Pakeha	61.4	65.1	58.5	68.5	77.1	63.2
Maori	19.0	11.5	17.0	13.0	10.6	16.9
Pacific	7.2	7.9	5.0	6.2	4.4	6.7
Other	5.0	6.1	7.2	4.5	2.4	5.1
Not stated	7.4	9.5	12.3	7.9	5.5	8.1
Highest previous qualification						
None	17.6	19.2	11.3	19.1	10.0	16.4
5th form (or 12 credits at NQF level 1)	13.9	10.3	14.1	13.3	16.0	13.7
6th form (or 12 credits at NQF level 2)	9.3	6.4	9.5	9.5	13.6	9.6
7th form (or 12 credits at NQF level 3)	5.0	3.8	6.6	5.7	6.2	5.3
Sub-degree (National Certificate Trade Certificate, National Diploma)	12.1	12.2	11.2	13.5	18.8	12.8
Degree	5.5	6.3	4.1	6.3	4.1	5.5
Not specified	36.1	41.6	42.9	32.2	31.0	36.2
Start year						
2002	29.4	13.8	19.0	32.9	42.0	28.7
2003	31.6	30.6	34.4	34.4	33.8	32.3
2004	26.6	31.9	23.9	23.3	16.8	25.5
2005	12.4	23.6	22.7	9.4	7.4	13.6
End year						
2003	23.6	24.6	21.8	17.7	15.6	22.2
2004	31.9	35.5	31.0	39.6	30.1	32.6
2005	44.5	40.0	47.2	42.8	54.3	45.2
Training period						
1–6 months	26.2	57.0	43.6	20.5	13.6	28.6
7–12 months	23.9	20.2	23.7	18.5	16.6	22.5
13–24 months	32.6	19.7	23.6	37.6	28.5	30.8
25–36 months	12.6	2.9	7.3	19.0	25.4	13.1
37–48 months	4.7	0.3	1.9	4.4	15.9	5.1
Training duration						
1–6 months	28.4	58.3	45.2	21.2	14.7	30.4
7–12 months	25.1	20.6	24.5	20.0	18.2	23.6
13–24 months	31.3	18.5	22.6	39.2	28.2	29.9
25–36 months	11.2	2.4	6.1	16.2	24.9	11.7
37–48 months	4.0	0.2	1.6	3.6	14.1	4.3

Does Workplace-based Industry Training Improve Earnings?

Table 3
ContinuedCharacteristics of the main study population
By highest qualification gained

	Highest qualification gained					Total
	No qualification		Level of qualification			
	Did not complete a limited credit programme	Completed a limited credit programme	Level 1–2	Level 3	Level 4+	
Percentage						
Total number of credits achieved (all programmes)						
None	43.2	7.6	14.8	5.7	5.4	30.7
1–19	19.6	6.4	3.8	2.3	2.9	13.8
20–39	17.9	73.3	4.8	6.8	6.6	18.2
40–59	8.3	8.7	56.3	17.2	8.8	14.5
60–119	8.3	3.6	15.7	50.7	24.1	14.2
120–239	2.4	0.3	4.5	16.1	32.7	6.4
240+	0.3	0.1	0.3	1.3	19.6	2.1
Total number of certificates achieved (all programmes)						
None	100.0	100.0	...	...	...	70.6
1	...	...	92.6	77.2	70.0	23.8
2	...	...	5.6	18.7	14.1	3.7
3	...	...	0.9	2.8	12.8	1.5
4+	...	...	1.0	1.2	3.1	0.5
Highest qualification achieved						
None	100.0	100.0	...	...	...	70.6
Level 1–2	...	...	100.0	...	...	11.1
Level 3	...	...	...	100.0	...	9.5
Level 4+	...	...	...	...	100.0	8.9
Programme category						
Limited credit programme	7.8	100.0	99.0	5.3	5.7	13.2
National certificate programme	92.2	0.0	1.0	94.7	94.3	86.8
Programme funding source						
Industry training	95.8	100.0	99.0	97.7	90.8	96.1
Modern apprenticeships	4.2	0.0	1.0	2.4	9.2	3.9
Programme level						
1	5.4	2.7	16.7	0.3	0.2	5.5
2	27.9	32.4	72.3	2.1	1.0	28.3
3	36.3	54.4	6.9	93.5	4.2	36.9
4+	30.4	10.5	4.1	4.2	94.6	29.4
Proposed number of credits (programme)						
20–39	7.5	99.4	75.9	0.1	0.1	12.9
40–59	23.0	0.5	16.9	5.1	5.1	25.7
60–119	44.3	0.0	2.2	18.6	9.6	39.2
120–239	14.7	0.0	1.6	68.6	28.7	12.7
240+	10.5	0.0	0.0	6.4	27.8	9.5
Proposed programme duration						
1–6 months	6.7	6.4	27.7	4.9	4.8	8.6
7–12 months	31.6	93.7	54.2	47.1	20.8	38.9
13–24 months	35.1	0.0	14.9	39.5	25.1	30.0
25–36 months	15.2	0.0	1.5	6.8	16.8	12.0
37–48 months	8.7	0.0	1.6	1.3	27.0	8.2
49+ months	2.8	0.0	0.2	0.4	5.5	2.3
Programme exit code						
Missing	12.4	...	2.1	4.7	2.9	33.2
Completed	0.5	100.0	87.8	89.0	89.1	58.0
Terminated	87.2	...	10.1	6.3	8.1	8.8

Does Workplace-based Industry Training Improve Earnings?

Table 3
Continued

Characteristics of the main study population
By highest qualification gained

	Highest qualification gained					Total
	No qualification		Level of qualification			
	Did not complete a limited credit programme	Completed a limited credit programme	Level 1-2	Level 3	Level 4+	
Percentage						
Industry						
Agriculture, fishing and forestry	16.2	1.1	5.8	2.2	11.1	12.2
Mining	0.7	0.1	0.1	0.2	0.3	0.5
Manufacturing	17.7	16.7	22.3	17.3	17.5	18.1
Electricity and gas	0.6	0.1	0.0	0.4	1.0	0.5
Construction	11.1	2.8	3.5	8.9	17.4	10.1
Wholesale trade	4.8	3.3	4.3	4.8	1.9	4.4
Retail trade	11.6	12.3	37.4	10.5	13.4	14.6
Accommodation and restaurants	4.6	13.8	8.7	3.6	2.2	5.4
Transport and storage	5.5	1.7	1.7	16.2	5.5	5.8
Communications	0.8	0.2	0.8	1.3	0.1	0.7
Finance	1.0	0.2	0.5	4.8	0.8	1.2
Business and property	7.6	4.4	4.5	6.9	3.8	6.6
Government	2.9	3.0	0.5	7.4	12.8	4.0
Education	1.8	1.2	0.7	1.8	2.0	1.7
Health and community services	6.1	34.5	5.8	5.2	2.6	7.6
Culture and recreation	3.5	4.0	2.8	7.5	2.7	3.7
Personal and other	3.4	0.5	0.7	1.3	4.8	2.8
Mean						
Age when training started (years)	38.5	30.9	30.4	33.6	30.9	31.6
Age when training ended (years)	39.0	32.0	31.3	34.9	32.6	32.8
Training period (months)	7.9	14.7	10.9	16.6	21.4	14.6
Training duration (months)	7.6	13.9	10.3	15.9	20.6	13.9
Number of credits achieved	27.0	19.0	51.0	79.0	142.0	42.0
Number of certificates achieved	...	...	1.1	1.3	1.5	0.4
Percentage						
Those with no earnings in the 6 months before training started	2.9	9.4	3.6	5.4	6.6	7.7
Mean						
Average monthly earnings in the 6 months before training started						
Mean	2,710	2,680	2,310	3,120	3,120	2,730
p10	970	840	550	1,130	1,020	830
p25	1,560	1,530	1,130	1,980	1,820	1,550
p50	2,350	2,450	2,210	3,070	2,890	2,510
p75	3,560	3,450	3,220	4,070	4,130	3,560
p90	4,820	4,600	4,070	4,980	5,330	4,690

Table 4

Characteristics of the exit study population
By highest qualification gained

	Highest qualification gained					Total
	No qualification		Level of qualification			
	Did not complete a limited credit programme	Completed a limited credit programme	Level 1–2	Level 3	Level 4+	
Number						
Learners	63,260	5,270	8,880	9,000	12,650	99,050
Percentage						
Age						
15–19	10.1	4.9	17.0	3.3	3.1	8.9
20–24	20.3	11.2	21.0	18.7	39.0	22.1
25–29	15.0	10.8	12.7	15.1	17.4	14.9
30–34	13.3	12.1	10.8	15.3	11.0	12.9
35–39	11.5	11.7	9.8	12.8	8.8	11.1
40–44	10.4	12.9	9.7	12.5	7.7	10.3
45–49	7.9	12.6	8.2	8.9	5.7	8.0
50–54	5.6	10.8	5.5	6.6	3.8	5.7
55–59	3.5	7.5	3.6	4.5	2.4	3.7
60–64	1.7	3.8	1.1	1.8	0.7	1.6
65+	0.6	1.1	0.2	0.3	0.3	0.5
Sex						
Female	29.4	59.6	45.3	36.9	18.2	31.7
Male	70.6	40.4	54.7	63.1	81.8	68.3
Ethnicity						
European/Pakeha	63.1	65.4	58.5	68.5	80.7	65.6
Maori	19.1	11.5	17.5	13.0	10.1	16.8
Pacific	6.1	7.6	4.9	6.2	3.1	5.0
Other	5.3	6.3	7.3	4.5	2.1	6.9
Not stated	6.4	9.2	11.7	7.9	4.1	5.7
Highest previous qualification						
None	17.5	18.5	12.0	19.1	10.8	16.4
5th form (or 12 credits at NQF level 1)	13.3	10.2	13.6	13.3	16.0	13.5
6th form (or 12 credits at NQF level 2)	8.7	6.4	9.2	9.5	14.3	9.4
7th form (or 12 credits at NQF level 3)	4.4	3.7	6.3	5.7	5.7	4.8
Sub-degree (National Certificate Trade Certificate, National Diploma)	11.5	12.1	11.1	13.5	14.6	12.1
Degree	4.6	6.3	3.8	6.3	2.5	4.5
Not specified	39.4	42.6	43.6	32.2	35.8	38.8
Start year						
2001 or earlier	27.6	6.2	10.5	24.2	49.4	27.4
2002	21.3	13.0	17.0	24.9	21.3	20.8
2003	22.9	28.8	30.8	26.1	17.1	23.4
2004	19.3	29.9	21.4	17.7	8.5	18.5
2005	9.0	22.2	20.3	7.1	3.7	9.8
						0.0
Exit year						
2003	33.5	27.4	24.1	23.7	23.9	30.2
2004	29.7	34.4	31.2	38.5	34.0	31.5
2005	36.7	38.1	44.7	37.8	42.1	38.3
Training period						
1–6 months	19.0	53.5	39.0	15.5	6.9	20.8
7–12 months	17.3	18.9	21.2	14.0	8.4	16.3
13–24 months	26.8	19.4	22.3	30.5	15.4	24.9
25+ months	36.9	8.2	17.6	40.0	69.3	38.0
Training duration						
1–6 months	20.6	54.8	40.5	16.0	7.5	22.1
7–12 months	18.4	19.4	22.0	15.2	9.3	17.3
13–24 months	27.6	19.2	22.0	32.8	16.6	25.7
25+ months	33.4	6.6	15.5	36.0	66.7	34.9

Table 4
Continued

Characteristics of the exit study population
By highest qualification gained

	Highest qualification gained					Total
	No qualification		Level of qualification			
	Did not complete a limited credit programme	Completed a limited credit programme	Level 1–2	Level 3	Level 4+	
Percentage						
Total number of credits						
(all programmes)						
1–19	38.5	7.6	13.4	4.8	3.8	27.1
20–39	20.1	7.0	3.7	2.4	2.3	14.0
40–59	17.9	71.8	5.4	6.5	4.6	16.9
60–119	8.8	8.9	53.3	16.3	5.8	13.1
120–239	10.1	4.0	18.2	49.0	18.4	15.1
240+	3.9	0.6	5.4	18.8	36.2	9.3
240+	0.7	0.2	0.5	2.3	29.0	4.4
Total number of certificates						
(all programmes)						
None	100.0	100.0	...	...	...	69.2
1	...	...	92.3	76.4	69.7	24.1
2	...	...	5.8	17.0	16.8	4.2
3	...	...	0.9	3.5	10.4	1.7
4+	...	...	1.0	3.2	3.2	0.8
Highest qualification achieved during the training period						
None	100.0	100.0	...	...	...	69.2
Level 1–2	...	...	100.0	...	...	9.0
Level 3	...	...	...	100.0	...	9.1
Level 4+	...	...	...	...	100.0	12.8
Programme category						
Limited credit programme	6.7	100.0	3.4	5.4	4.3	10.9
National certificate programme	93.3	0.0	96.6	94.6	95.7	89.1
Programme funding source						
Industry training	96.5	100.0	98.9	97.3	90.4	96.2
Modern apprenticeships	3.5	0.0	1.1	2.8	9.6	3.8
Programme level						
1	5.0	3.1	16.3	0.3	0.3	4.9
2	25.5	32.3	71.2	2.0	0.9	24.7
3	35.5	53.0	7.0	92.6	3.9	35.0
4+	34.0	11.6	5.6	5.1	94.9	35.4
Proposed number of credits (programme)						
20–39	6.4	99.1	72.6	5.2	4.0	10.6
40–59	20.4	0.6	18.7	17.6	6.5	22.0
60–119	43.7	0.2	3.3	67.2	19.8	38.2
120–239	17.3	0.0	2.0	7.8	27.5	15.5
240+	12.3	0.0	0.0	2.0	42.2	13.6
Proposed programme duration						
1–6 months	5.0	6.2	25.5	4.1	2.5	6.5
7–12 months	28.2	93.7	52.8	40.4	14.8	33.3
13–24 months	36.1	0.1	17.0	40.7	17.4	30.5
25–36 months	16.2	0.0	2.4	11.0	19.2	14.0
37–48 months	9.9	0.0	2.0	3.2	40.3	11.9
49+ months	4.6	0.0	0.3	0.5	5.8	3.8
Programme exit code						
Missing	12.0	...	2.2	4.4	2.1	33.0
Completed	0.7	100.0	86.0	88.1	90.1	58.5
Terminated	87.4	...	11.8	7.5	7.8	8.5

Table 4
Continued

Characteristics of the exit study population
By highest qualification gained

	Highest qualification gained					Total
	No qualification		Level of qualification			
	Did not complete a limited credit programme	Completed a limited credit programme	Level 1–2	Level 3	Level 4+	
Percentage						
Industry						
Agriculture, fishing and forestry	15.7	1.1	6.3	2.6	9.0	12.0
Mining	0.8	0.2	0.2	0.3	0.5	0.7
Manufacturing	19.5	17.6	24.6	20.7	21.4	20.2
Electricity and gas	1.1	0.2	0.1	0.4	1.2	0.9
Construction	11.5	2.9	4.4	10.7	22.8	11.8
Wholesale trade	4.4	3.5	4.2	5.1	2.3	4.1
Retail trade	10.3	12.8	34.2	9.6	14.3	13.0
Accommodation and restaurants	3.7	13.5	8.0	3.1	1.6	4.3
Transport and storage	5.8	1.7	1.9	15.1	3.8	5.8
Communications	0.9	0.2	0.7	1.3	0.1	0.8
Finance	1.0	0.3	0.5	3.9	0.8	1.2
Business and property	7.2	4.2	4.6	6.7	3.6	6.3
Government	2.9	3.2	0.7	6.3	8.2	3.7
Education	1.8	1.3	0.8	1.6	2.0	1.7
Health and community services	6.2	32.9	5.3	4.9	2.9	7.0
Culture and recreation	3.1	3.7	2.7	6.5	2.0	3.2
Personal and other	4.1	0.7	0.8	1.4	3.5	3.3

Does Workplace-based Industry Training Improve Earnings?

Table 5

Percentage and total number of learners

Exit study population

By end year and training period

End year	Training period					Total Number
	1–12 months	13–24 months	25–36 months	37–48 months	49+ months	
	Percent					
2005	37.3	22.7	16.1	12.5	11.5	37,940
2004	1–12 months	13–24 months	25–36 months	37+ months		31,170
	39.3	25.4	15.0	20.3	...	
2003	1–12 months	13–24 months	25+ months			29,950
	34.5	27.3	38.3	...	...
2003–05	1–12 months	13–24 months	25+ months			99,050
	37.1	24.9	38.0	...	...

Table 6

Percentage and total number of learners

Main study population

By end year and training period

End year	Training period				Total
	1–12 months	13–24 months	25–36 months	37–48 months	
	Percent				
2005	43.5	26.5	18.8	11.3	32,510
2004	52.2	33.7	14.1	...	23,440
2003	64.7	35.4	...	...	15,970
2003–05	51.0	30.8	13.1	5.1	71,920

Does Workplace-based Industry Training Improve Earnings?

Table 7

Percentage of the study population matched to at least one non-participant

	Match rate	Match status		Total
		Unmatched	Matched	
Total	81.0	13,660	58,250	71,920
Percent				
Age (years)				
15–19	78.6	19.7	16.9	17.4
20–24	81.6	18.2	18.9	18.7
25–29	79.6	15.5	14.1	14.4
30–34	80.7	12.6	12.4	12.4
35–39	82.0	10.2	10.8	10.7
40–44	82.7	8.6	9.6	9.5
45–49	83.8	6.1	7.4	7.2
50–54	83.7	4.3	5.2	5.0
55–59	82.6	2.9	3.2	3.1
60–64	78.7	1.4	1.2	1.2
65+	66.3	0.5	0.2	0.3
Sex				
Female	83.8	31.3	37.8	36.5
Male	79.4	68.8	62.2	63.5
Industry of main employer				
Agriculture, fishing and forestry	71.3	20.4	11.9	13.5
Mining	44.8	1.6	0.3	0.5
Manufacturing	81.6	18.0	18.7	18.5
Electricity and gas	72.6	0.8	0.5	0.5
Construction	79.5	10.1	9.1	9.3
Wholesale trade	78.5	4.4	3.8	3.9
Retail trade	88.8	9.1	16.8	15.3
Accommodation and restaurants	88.4	3.3	6.0	5.5
Transport and storage	80.5	5.5	5.4	5.4
Communications	82.3	0.6	0.6	0.6
Finance	89.8	0.5	1.1	1.0
Business and property	78.0	6.5	5.4	5.6
Government	91.0	1.9	4.5	4.0
Education	76.4	1.6	1.2	1.3
Health and community services	90.2	4.0	8.6	7.7
Culture and recreation	65.7	8.3	3.7	4.6
Personal and other	76.1	3.3	2.4	2.6
Size of main employer				
1–5	82.8	10.2	11.5	11.3
6–9	70.2	9.1	5.0	5.8
10–19	73.5	12.1	7.8	8.7
20–49	77.4	14.4	11.6	12.2
50–99	78.4	10.1	8.6	8.9
100–249	77.1	11.8	9.3	9.8
250–999	78.9	22.1	19.3	19.9
1000+	91.8	10.2	26.7	23.5
Number of months employed in the 12 months before training started				
No months	58.9	13.5	4.6	6.2
1–3 months	44.1	13.8	2.6	4.7
4–6 months	52.4	19.9	5.1	8.0
7–9 months	58.5	20.3	6.7	9.3
10–11 months	82.7	9.4	10.5	10.3
12 months	92.9	23.0	70.5	61.5
Average monthly earnings in the 12 months before training started				
Less than \$1,000	65.9	26.5	12.0	14.8
\$1,000 – <\$1999	76.0	31.8	23.6	25.2
\$2,000 – <\$2999	83.8	22.1	26.8	25.9
\$3,000 – <\$3999	89.7	10.2	20.8	18.8
\$4,000 – <\$4999	90.5	4.8	10.7	9.6
\$5,000 – <\$6999	87.0	3.5	5.6	5.2
\$7,000 or more	72.1	0.6	0.4	0.4
Mean				
Age (years)	...	30.9	31.8	31.6
Male	...	68.8	62.2	63.5
Number of months employed in the 12 months before training started	...	6.8	10.5	9.8
Average monthly earnings in the 12 months before training started	...	2,040	2,700	2,590

Does Workplace-based Industry Training Improve Earnings?

Table 8

The impact of training on participants' average earnings
By highest qualification, age, and sex

			Months before training started			Month training started	Months after training started					Months before training started		Months after training started				Change during the 6 months before training started (percentage)	Impact over the 6–48 months after training started (percentage)	Impact over the 48 months after training started (percentage)	
Qualification	Sex	Age	24	12	6		6	12	24	36	48	13–24	1–12	1–12	13–24	25–36	37–48				
Level 4+	Total	Total	1.013	1.016	1.011	1.041	1.014	1.025	1.050	1.070	1.086	1.005	1.020	1.023	1.038	1.058	1.076	3	7	4	
		Females	Total	1.017	1.017	1.000	1.068	1.023	1.049	1.064	1.064	1.053	1.001	1.021	1.040	1.048	1.056	1.058	7	3	-1
		Males	Total	1.013	1.017	1.015	1.034	1.010	1.017	1.044	1.071	1.096	1.008	1.020	1.017	1.033	1.058	1.082	2	8	6
		Females	15–19 years	0.941	0.985	1.029	1.250	1.203	1.174	1.178	1.150	1.155	0.929	1.053	1.216	1.183	1.179	1.158	21	-4	-8
		Females	20–24 years	1.074	1.049	0.994	1.068	0.993	1.040	1.069	1.047	1.017	1.052	1.022	1.031	1.031	1.060	1.027	7	2	-5
		Females	15–24 years	1.046	1.022	0.994	1.107	1.035	1.068	1.093	1.069	1.073	1.018	1.021	1.068	1.066	1.083	1.069	11	4	-3
		Females	25–34 years	1.011	1.013	1.009	1.056	1.024	1.046	1.065	1.047	1.007	1.010	1.024	1.043	1.053	1.043	1.027	5	-2	-5
		Females	35–44 years	1.049	1.022	1.001	1.081	1.052	1.106	1.084	1.070	1.063	1.011	1.028	1.070	1.081	1.054	1.069	8	1	-2
		Females	45+ years	1.020	1.014	0.992	1.040	1.014	1.010	1.041	1.085	1.094	0.998	1.008	1.007	1.028	1.067	1.095	5	8	5
		Males	15–19 years	0.949	0.989	1.054	1.147	1.154	1.143	1.219	1.255	1.286	0.967	1.055	1.149	1.194	1.246	1.293	9	11	12
		Males	20–24 years	1.087	1.037	1.050	1.066	1.048	1.057	1.109	1.119	1.173	1.069	1.046	1.054	1.092	1.122	1.148	2	12	10
		Males	15–24 years	1.041	1.016	1.042	1.084	1.074	1.078	1.140	1.163	1.218	1.033	1.040	1.076	1.120	1.159	1.201	4	13	12
		Males	25–34 years	1.027	1.014	1.010	1.027	1.002	1.001	1.023	1.037	1.047	1.016	1.015	1.007	1.013	1.028	1.040	2	5	2
		Males	35–44 years	1.028	1.024	1.016	1.020	1.016	1.025	1.030	1.059	1.053	1.016	1.017	1.020	1.027	1.046	1.054	0	4	3
		Males	45+ years	1.009	1.010	0.988	1.010	0.994	1.013	1.022	1.035	1.024	1.002	1.005	1.009	1.016	1.015	1.016	2	3	1
	Level 3	Total	Total	1.004	1.013	1.018	1.039	1.030	1.030	1.037	1.043	1.039	1.006	1.018	1.031	1.034	1.038	1.040	2	1	0
			Females	Total	0.992	1.010	1.019	1.053	1.038	1.034	1.045	1.037	1.021	1.000	1.021	1.039	1.038	1.035	1.021	3	-2	-3
		Males	Total	1.011	1.017	1.021	1.035	1.031	1.031	1.036	1.048	1.050	1.011	1.020	1.031	1.035	1.042	1.053	1	2	1
		Females	15–19 years	1.035	1.034	1.067	1.246	1.238	1.204	1.252	1.224	1.143	1.058	1.097	1.233	1.217	1.236	1.167	17	-8	-8
		Females	20–24 years	0.995	1.011	1.033	1.066	1.071	1.059	1.034	0.995	1.002	1.014	1.026	1.067	1.040	1.012	0.998	3	-7	-6
		Females	15–24 years	0.992	1.003	1.032	1.099	1.093	1.073	1.073	1.045	1.034	1.007	1.031	1.088	1.065	1.054	1.037	6	-5	-6
		Females	25–34 years	0.995	1.013	1.011	1.050	1.020	1.028	1.067	1.064	1.032	1.006	1.019	1.033	1.052	1.052	1.035	4	1	-2
		Females	35–44 years	0.969	1.000	1.004	1.011	1.012	1.009	1.003	1.000	0.977	0.975	1.003	1.008	1.003	0.999	0.980	1	-4	-3
		Females	45+ years	1.035	1.034	1.028	1.055	1.043	1.036	1.014	1.019	1.034	1.031	1.028	1.037	1.021	1.018	1.018	3	-1	-2
		Males	15–19 years	0.978	0.989	1.026	1.115	1.091	1.048	1.055	1.120	1.117	0.976	1.027	1.090	1.076	1.093	1.131	9	2	0
		Males	20–24 years	1.042	1.022	1.056	1.076	1.076	1.070	1.041	1.044	1.071	1.033	1.049	1.068	1.059	1.042	1.067	2	0	0
		Males	15–24 years	1.038	1.018	1.051	1.085	1.075	1.055	1.039	1.068	1.088	1.025	1.046	1.067	1.057	1.055	1.090	3	1	0
		Males	25–34 years	1.006	1.024	1.021	1.036	1.022	1.022	1.034	1.050	1.039	1.016	1.023	1.027	1.029	1.041	1.050	1	2	0
		Males	35–44 years	1.024	1.019	1.016	1.021	1.024	1.028	1.036	1.037	1.033	1.013	1.016	1.025	1.032	1.039	1.038	0	1	1
		Males	45+ years	1.008	1.005	1.011	1.027	1.043	1.050	1.051	1.058	1.068	1.009	1.010	1.041	1.050	1.052	1.059	2	2	4

Does Workplace-based Industry Training Improve Earnings?

Table 8
Continued

The impact of training on participants' average earnings
By highest qualification, age, and sex

			Months before training started			Month training started	Months after training started					Months before training started		Months after training started				Change during the 6 months before training started (percentage)	Impact over the 6–48 months after training started (percentage)	Impact over the 48 months after training started (percentage)
			24	12	6		6	12	24	36	48	13–24	1–12	1–12	13–24	25–36	37–48			
Level 1–2	Total	Total	1.022	1.015	1.013	1.043	1.009	1.014	1.018	1.007	1.012	1.015	1.020	1.015	1.013	1.013	1.012	3	0	-3
	Females	Total	1.034	1.017	1.008	1.063	1.021	1.015	1.018	1.001	0.996	1.034	1.024	1.024	1.015	1.013	1.003	5	-2	-6
	Males	Total	1.011	1.016	1.020	1.048	1.006	1.015	1.023	1.014	1.022	1.011	1.021	1.013	1.015	1.016	1.020	3	2	-2
	Females	15–19 years	1.067	1.002	1.034	1.148	1.087	1.064	1.077	1.032	1.028	1.028	1.043	1.094	1.058	1.065	1.047	11	-5	-10
	Females	20–24 years	1.052	1.042	1.003	1.092	1.067	1.031	0.992	0.960	0.946	1.046	1.032	1.063	0.999	0.972	0.941	9	-11	-13
	Females	15–24 years	1.075	1.027	1.012	1.108	1.056	1.028	1.024	0.987	0.985	1.048	1.033	1.058	1.014	1.008	0.992	10	-7	-11
	Females	25–34 years	1.025	1.019	1.028	1.036	1.016	0.999	1.015	0.992	0.973	1.006	1.025	1.008	1.011	1.003	0.992	1	-4	-6
	Females	35–44 years	1.012	1.010	1.001	1.046	1.029	1.029	1.027	1.015	0.998	1.008	1.019	1.033	1.021	1.028	1.009	5	-3	-5
	Females	45+ years	1.020	1.001	0.987	1.054	1.017	1.019	1.017	1.020	1.067	1.010	1.016	1.023	1.032	1.024	1.043	7	5	1
	Males	15–19 years	1.023	0.998	1.041	1.183	1.081	1.077	1.065	1.060	1.044	1.001	1.050	1.115	1.067	1.047	1.054	14	-3	-12
	Males	20–24 years	1.013	1.031	1.033	1.078	1.030	1.036	1.024	1.017	1.033	1.020	1.043	1.034	1.023	1.011	1.014	4	0	-4
	Males	15–24 years	1.022	1.022	1.041	1.118	1.040	1.044	1.038	1.034	1.040	1.023	1.048	1.057	1.034	1.024	1.032	7	0	-7
	Males	25–34 years	1.012	1.009	1.027	1.037	1.016	1.031	1.026	1.006	1.001	1.014	1.018	1.021	1.024	1.020	1.007	1	-2	-4
	Males	35–44 years	1.026	1.028	1.010	1.034	1.024	1.024	1.032	1.019	1.033	1.017	1.017	1.022	1.024	1.024	1.023	2	1	0
	Males	45+ years	1.001	1.008	1.004	1.027	1.016	1.022	1.015	0.997	1.019	1.004	1.009	1.017	1.022	1.010	1.018	2	0	-1

Figures

Figure 1

The number of learners participating in industry training during 2001–07

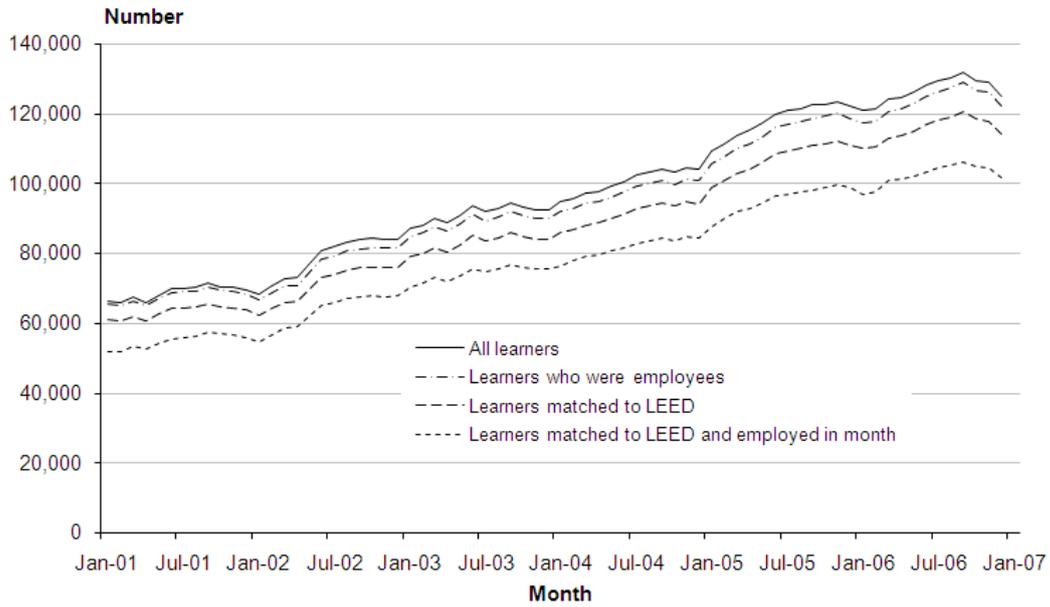


Figure 2

Match rate and employment rate for learners during 2001–07

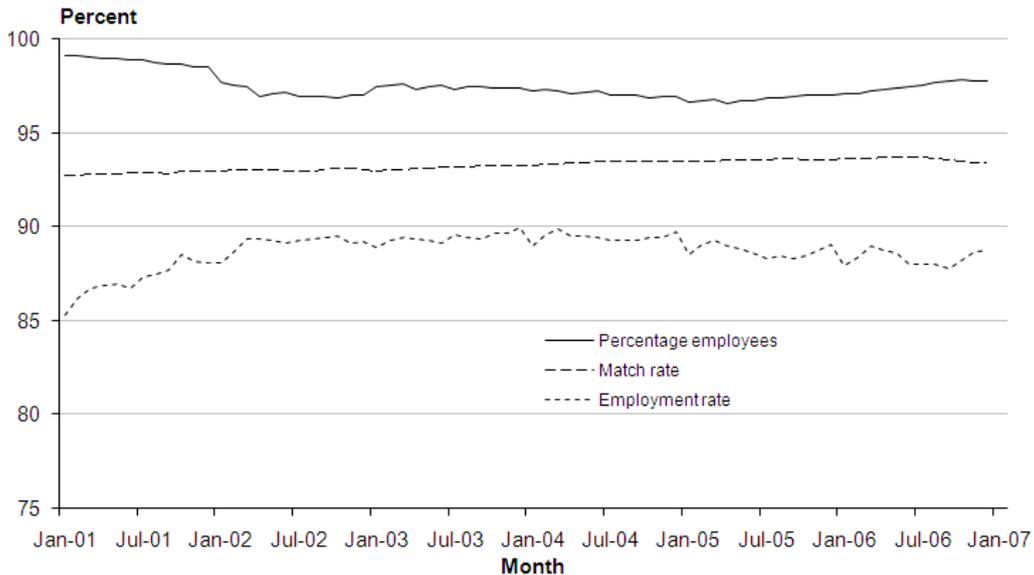


Figure 3

The percentage of learners employed, receiving benefits, self-employed, and average monthly earnings
By programme exit code

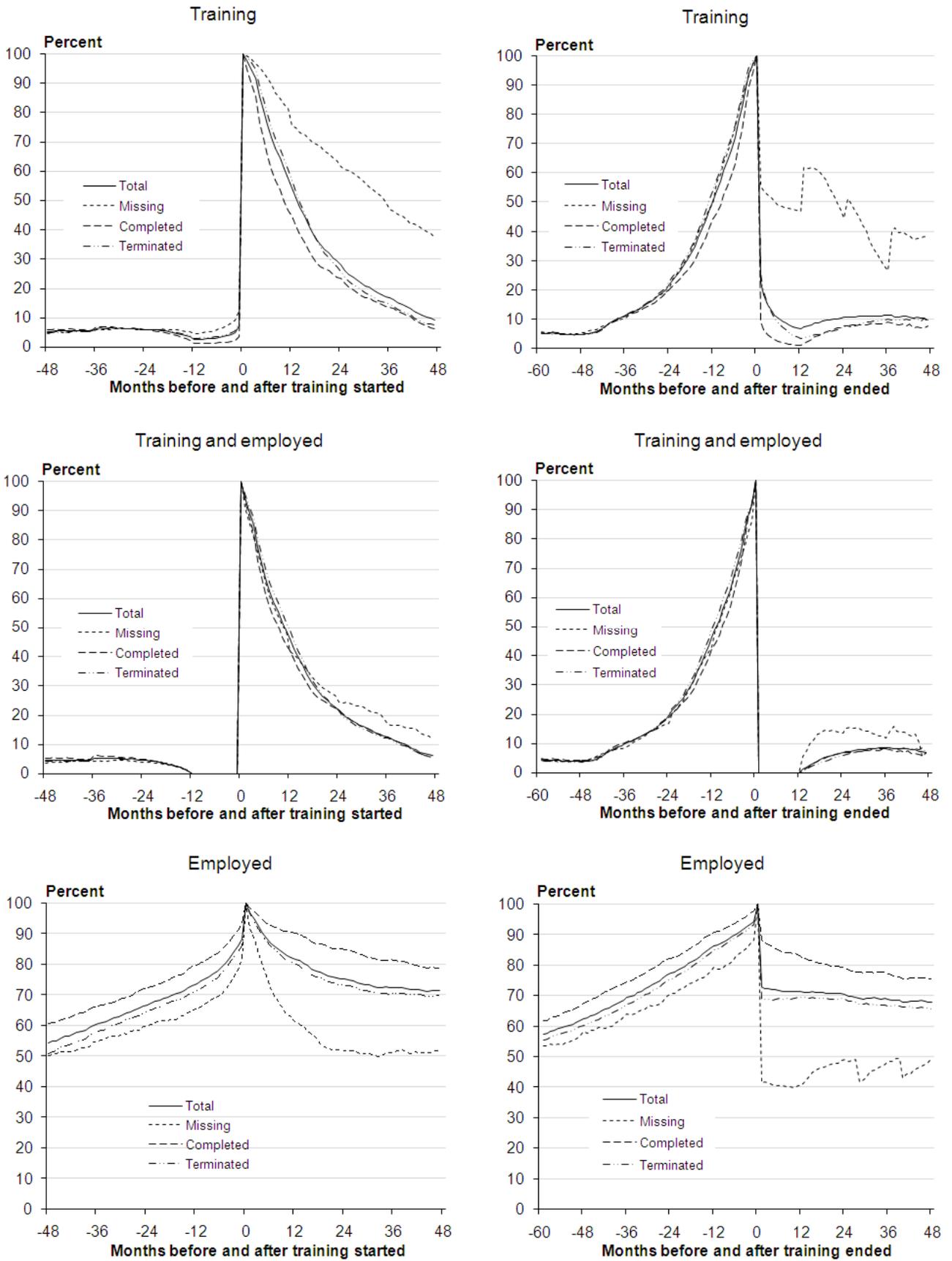


Figure 3
Continued

The percentage of learners employed, receiving benefits, self-employed, and average monthly earnings
By programme exit code

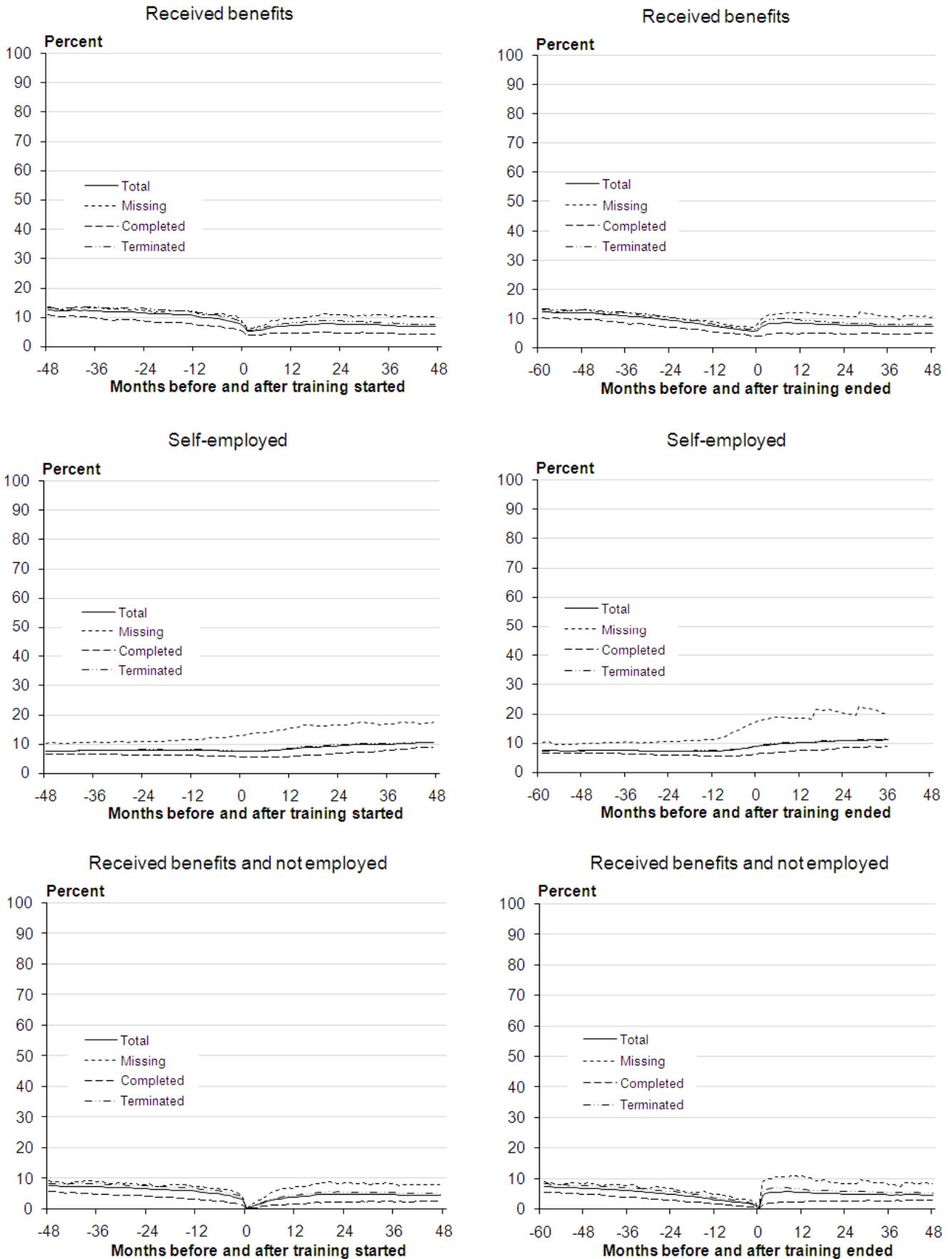


Figure 3
Continued

Employment rate and average monthly earnings
By programme exit code

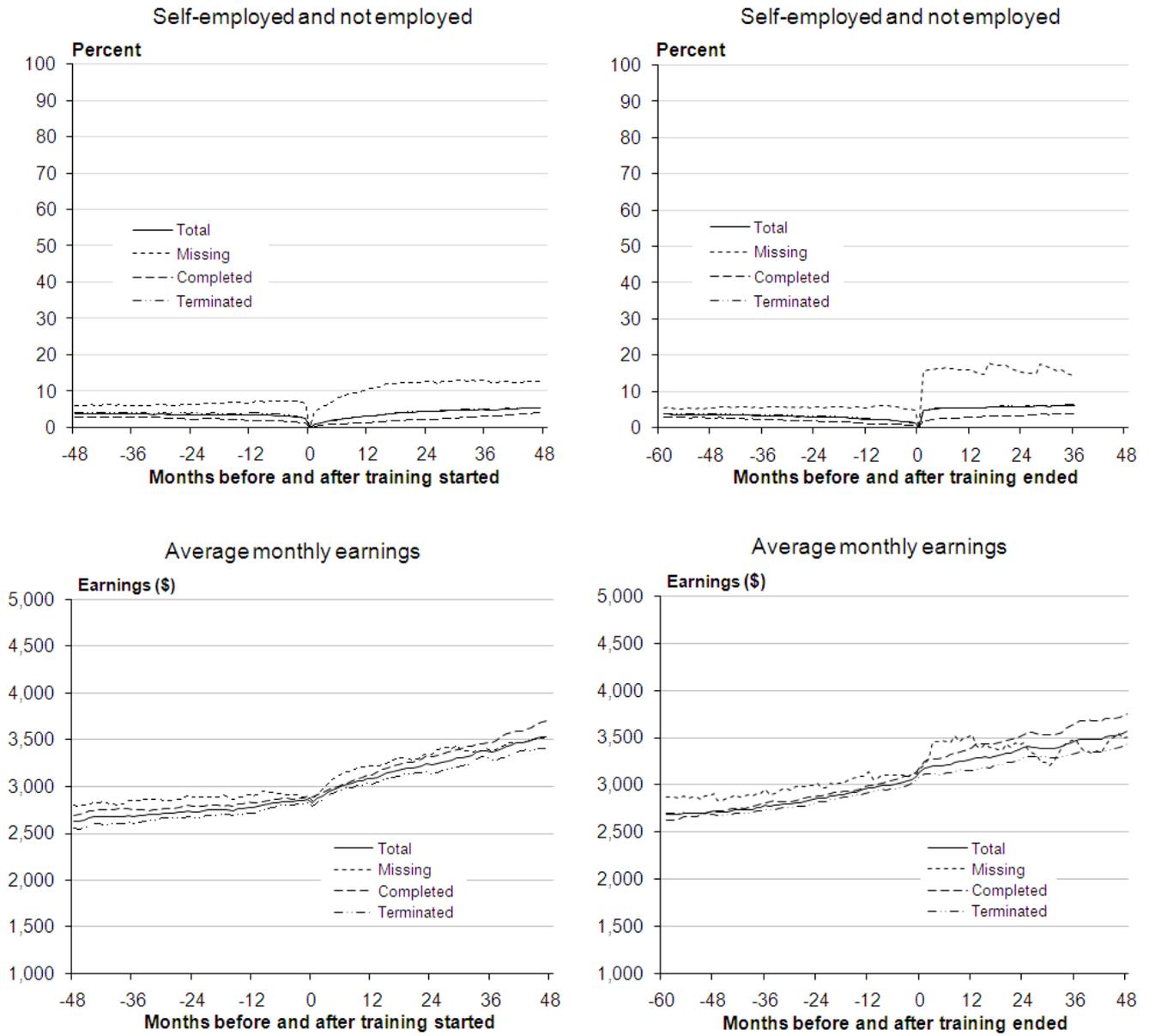


Figure 4

Employment rate and average monthly earnings
By programme level and programme exit code

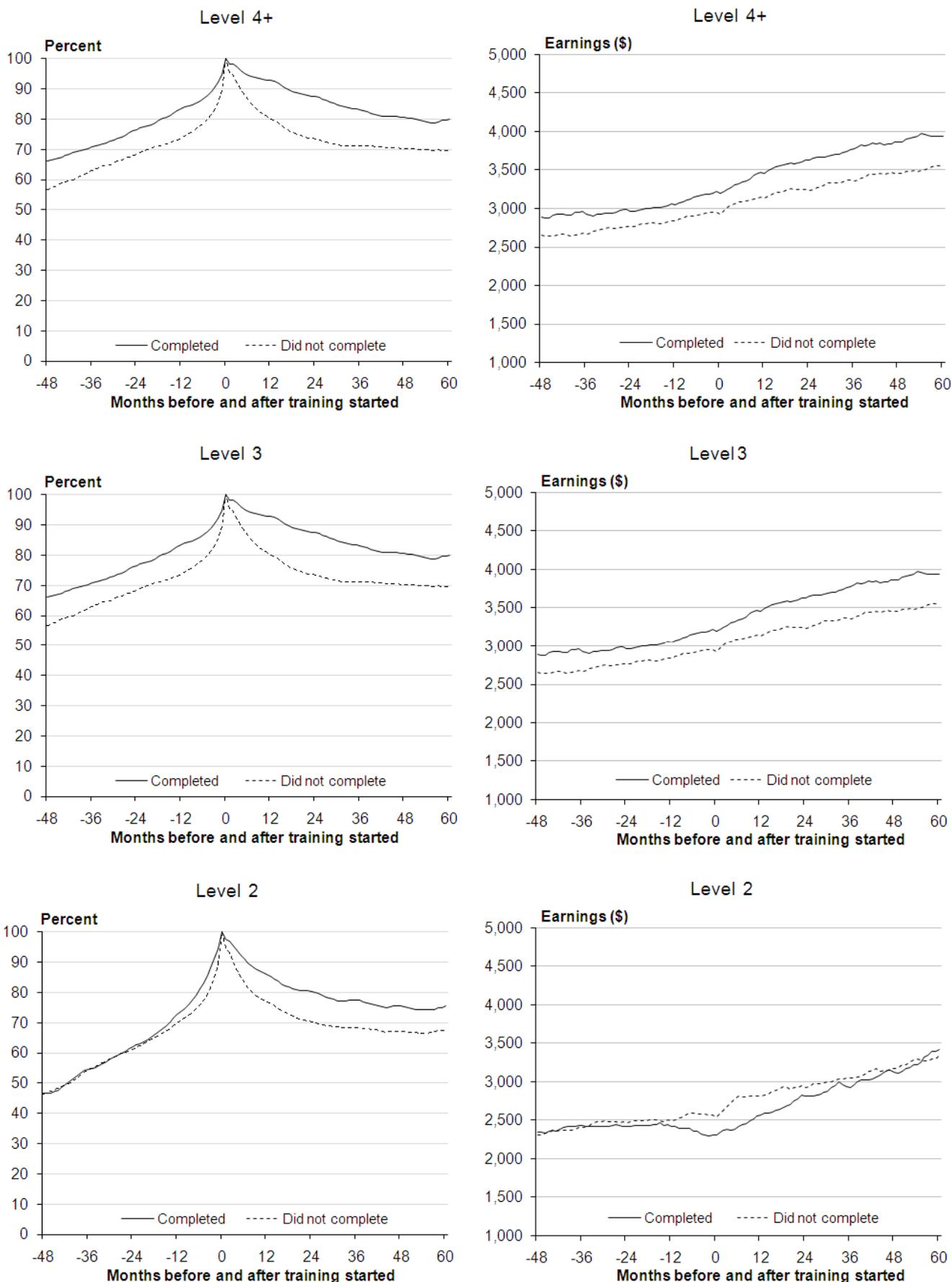


Figure 4
Continued

Employment rate and average monthly earnings
By programme level and programme exit code

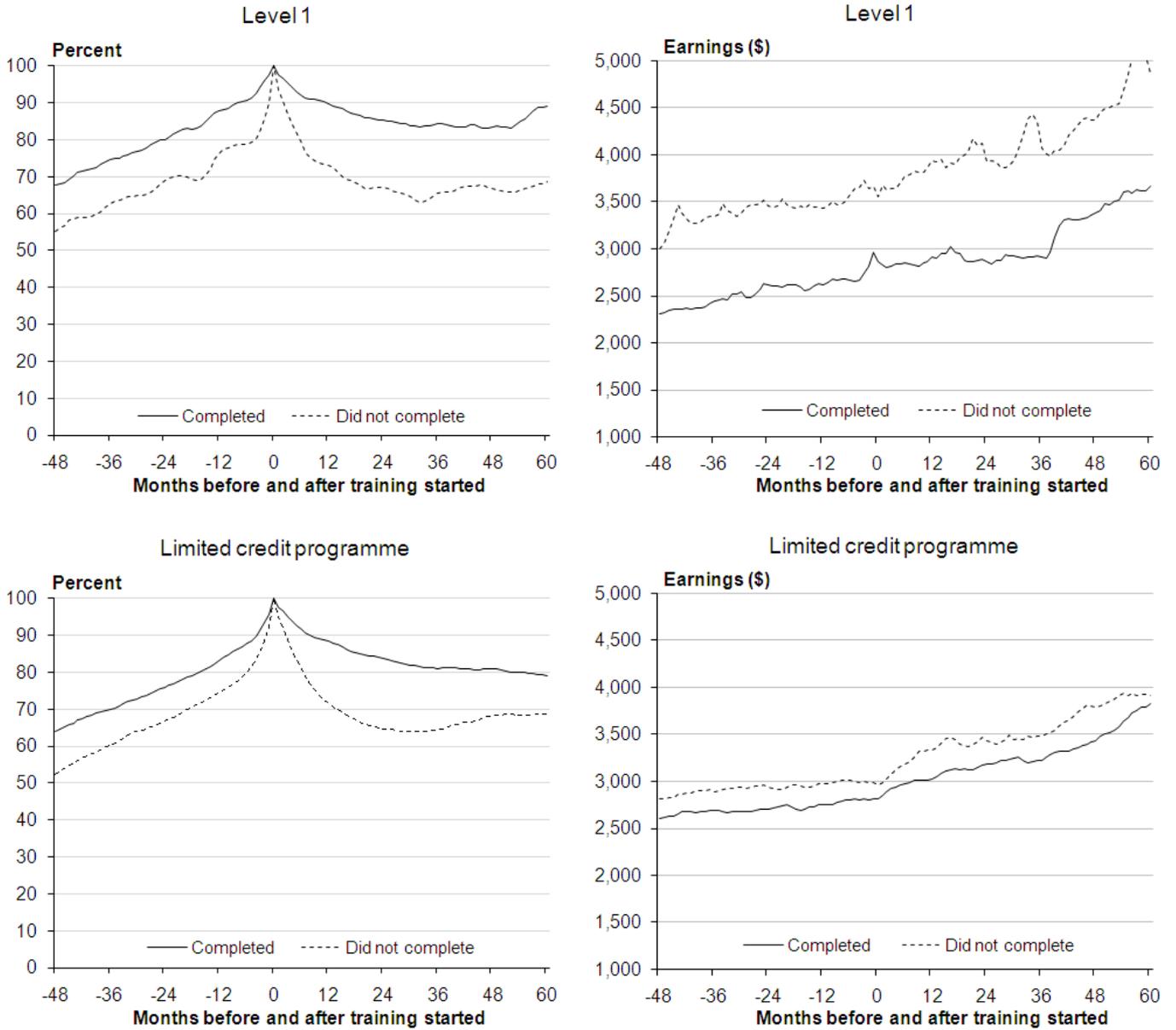


Figure 5

Employment rate and average monthly earnings
By programme exit code

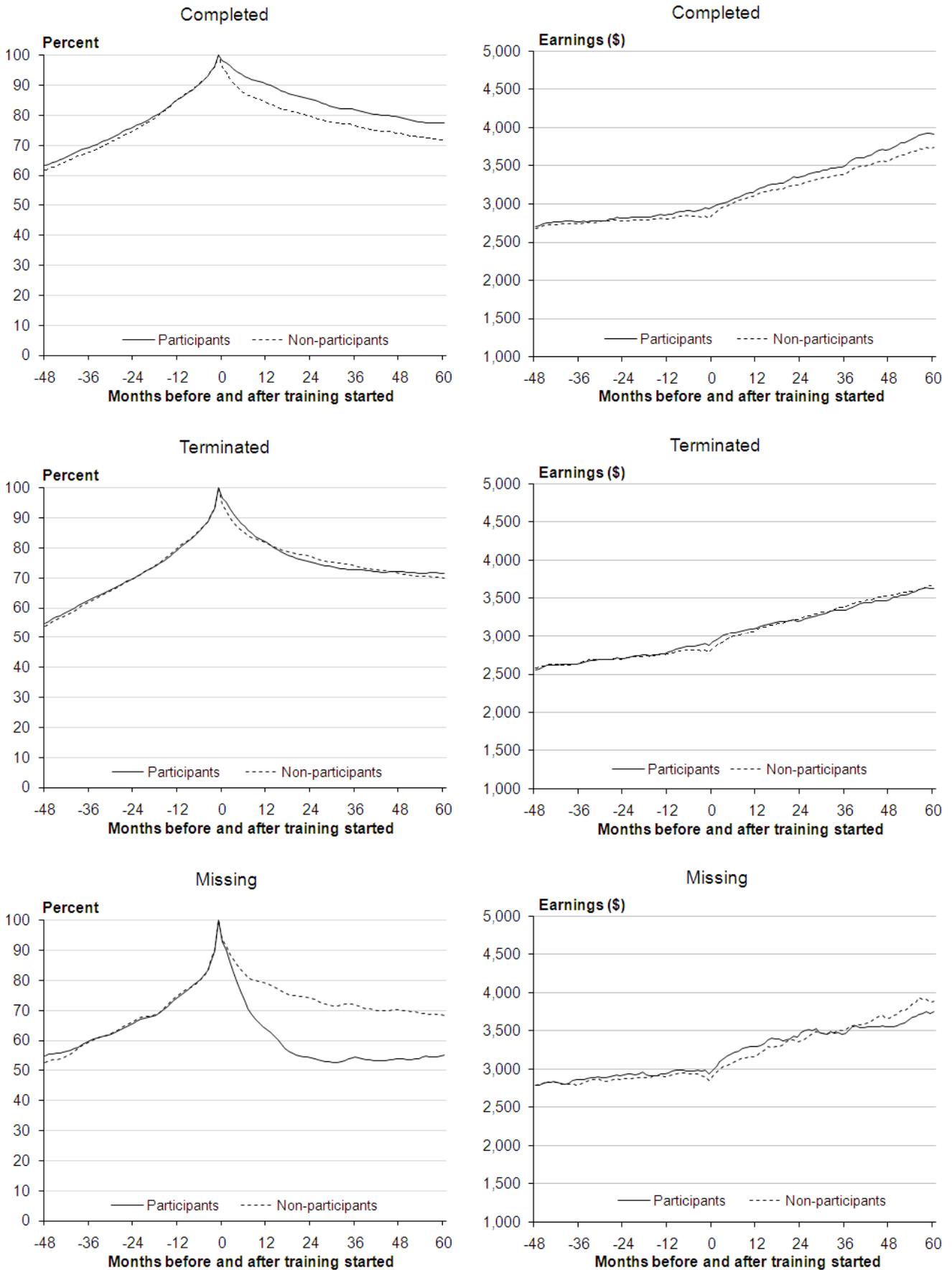


Figure 5
Continued

Employment rate and average monthly earnings
By programme exit code

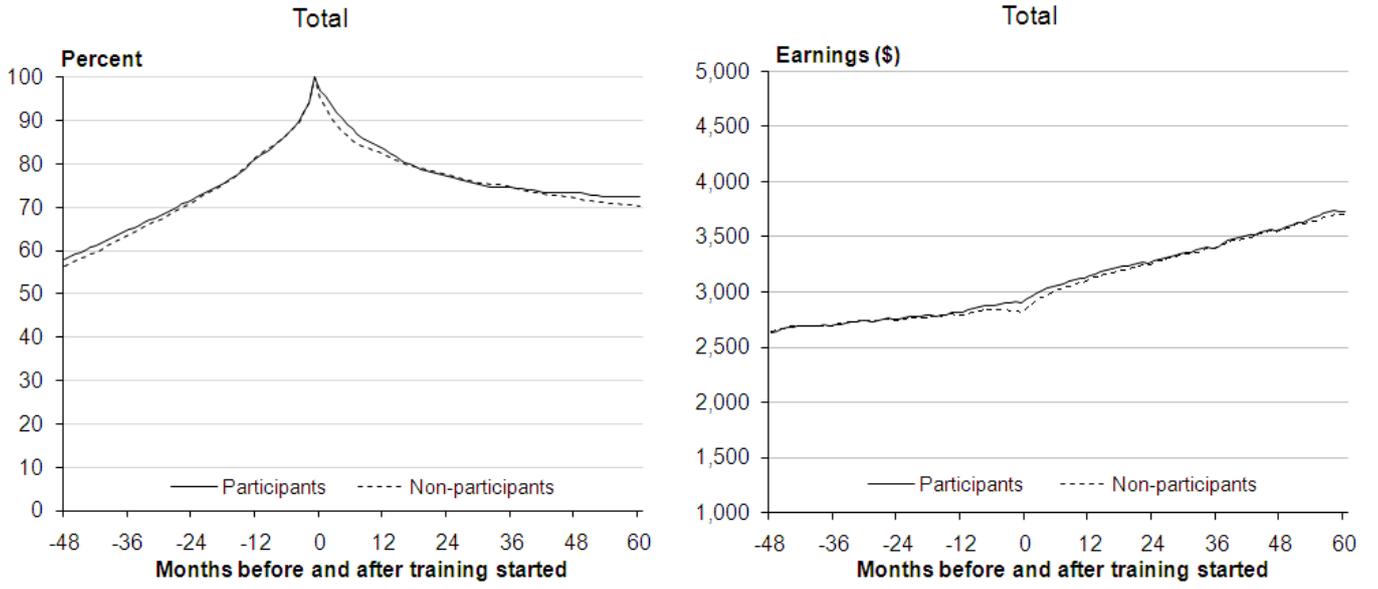


Figure 6

Employment rate and average monthly earnings
By highest qualification gained

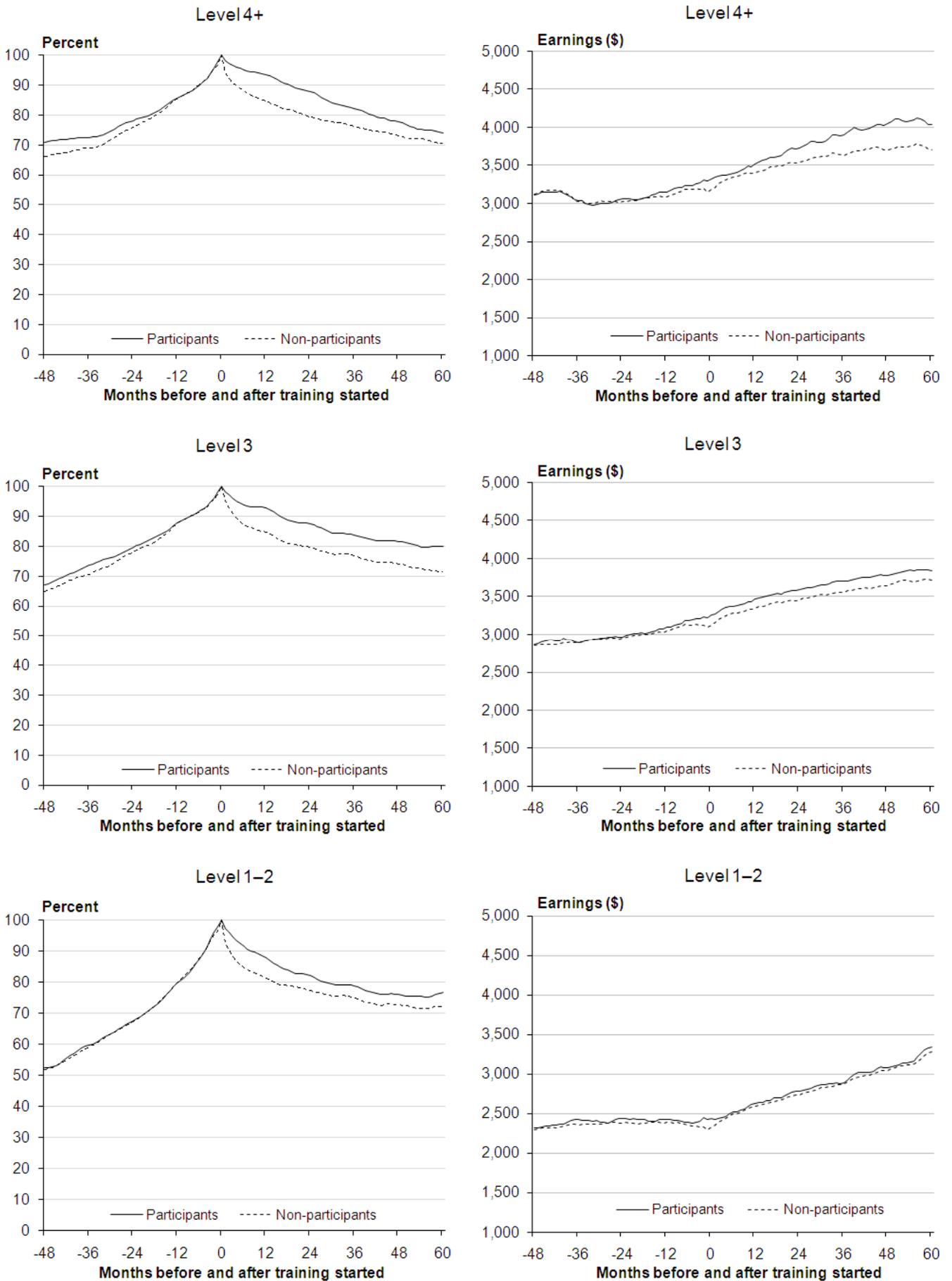


Figure 6
Continued

Employment rate and average monthly earnings
By highest qualification gained

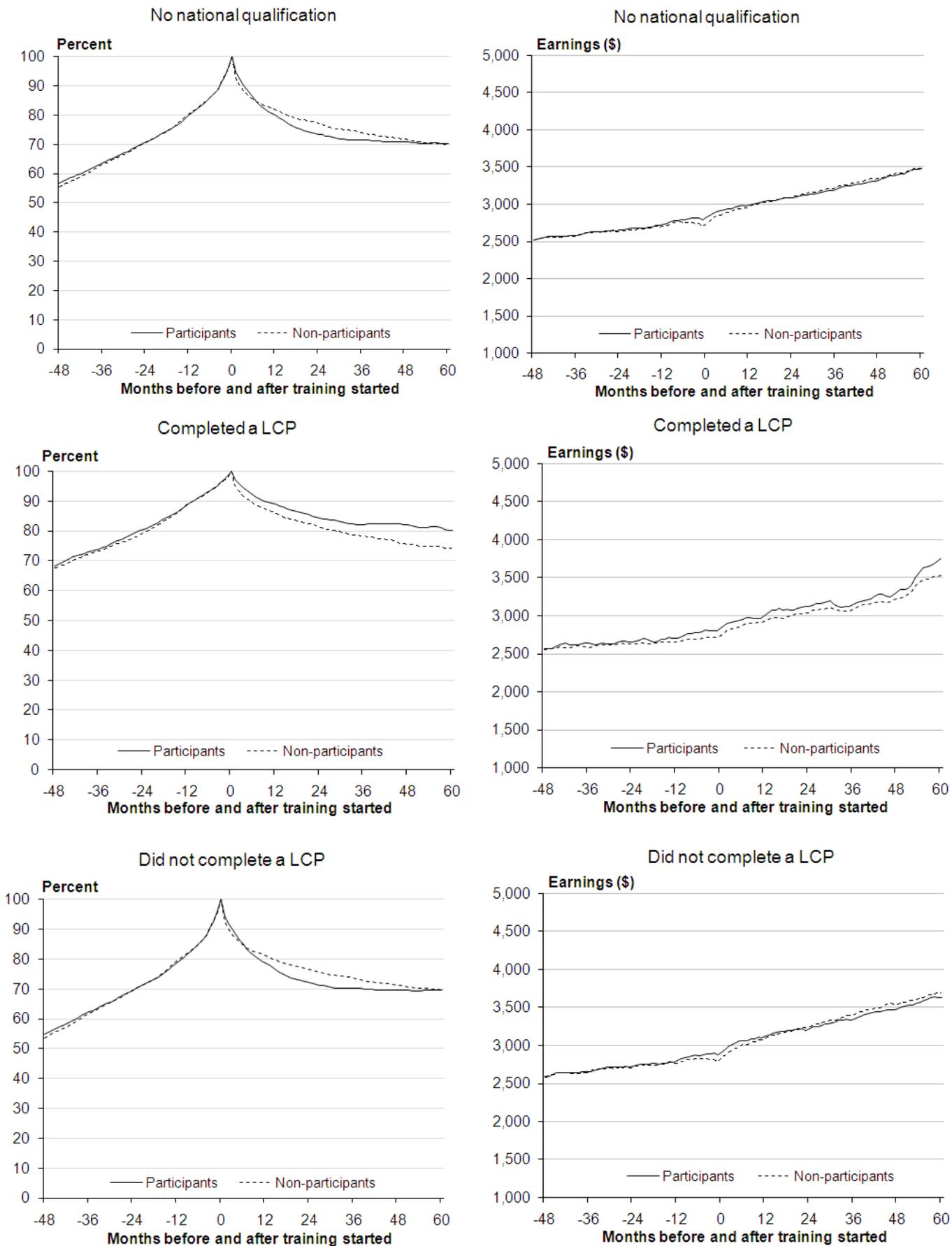


Figure 6b

Employment rate and average monthly earnings
 Those employed in the 12 months before and after training started
 By highest qualification

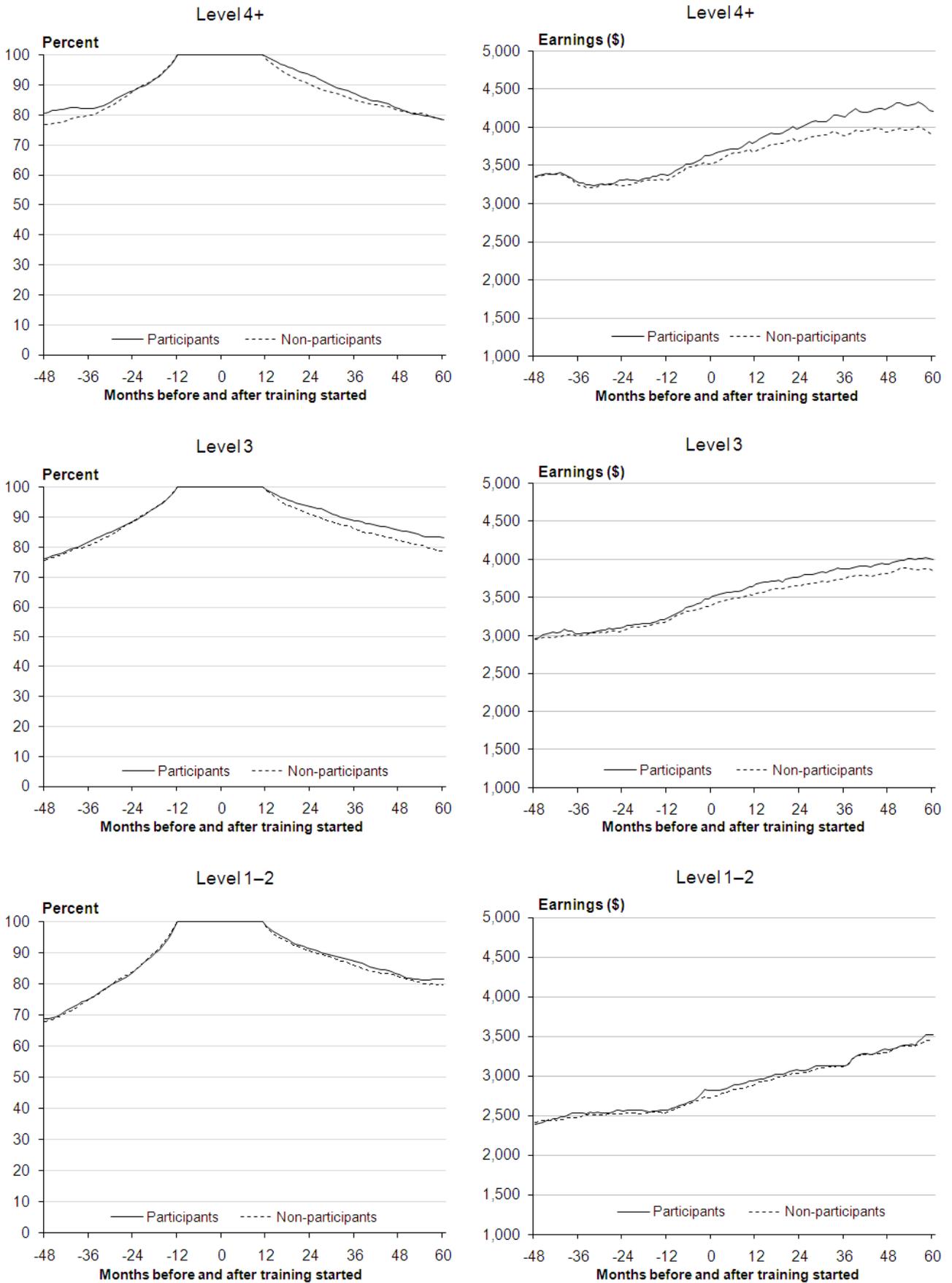


Figure 6b
Continued

Employment rate and average monthly earnings
Those employed in the 12 months before and after training started
By highest qualification

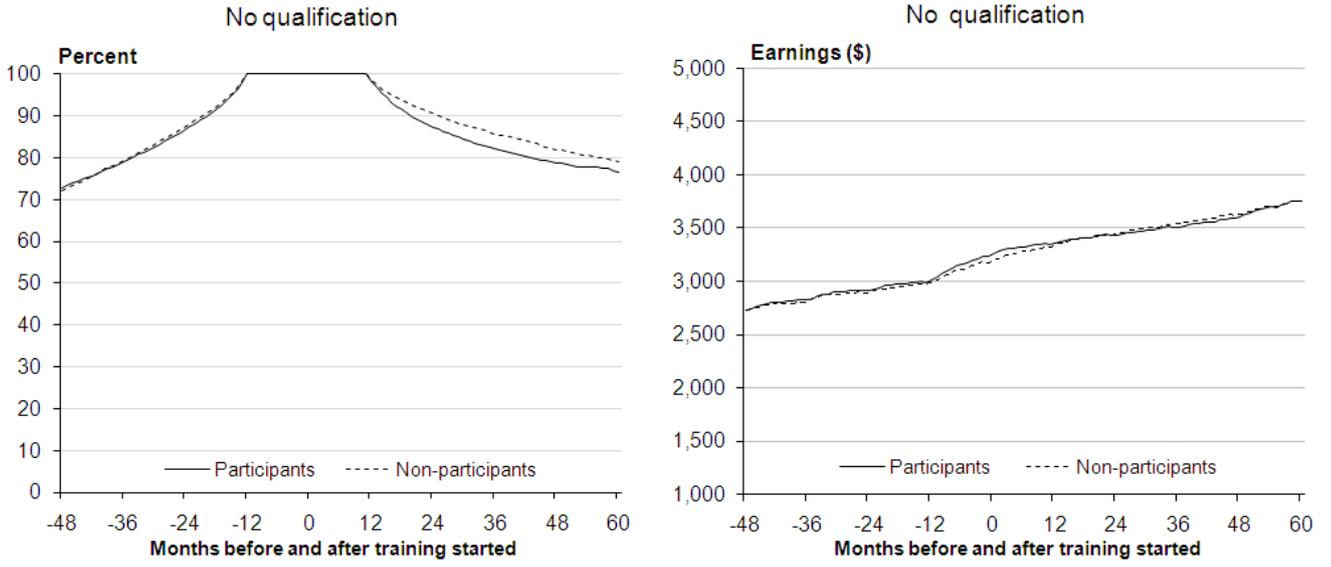


Figure 7a

Employment rate and average monthly earnings
 Highest qualification gained at level 4+
 By training duration

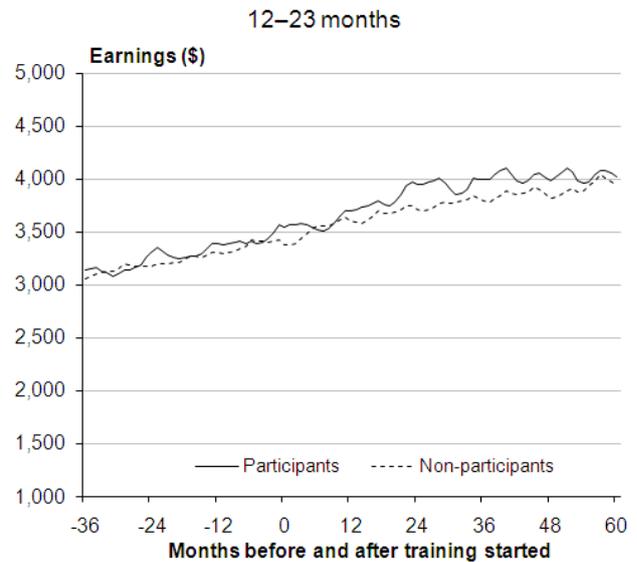
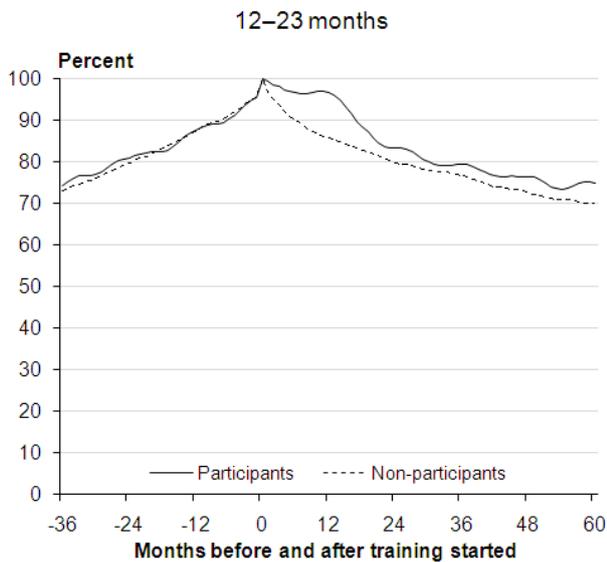
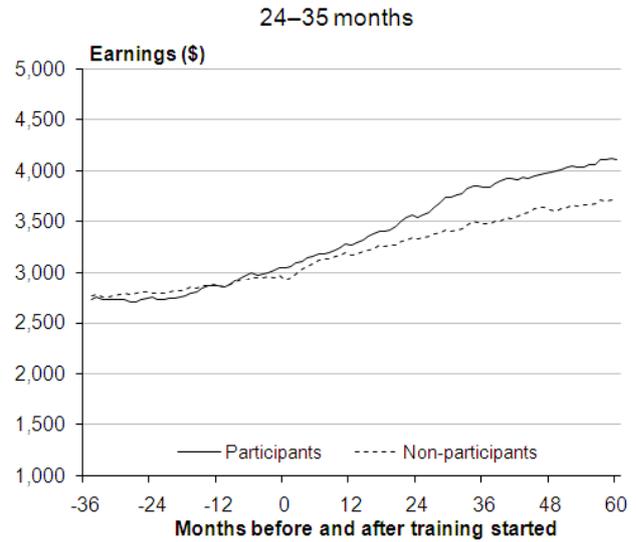
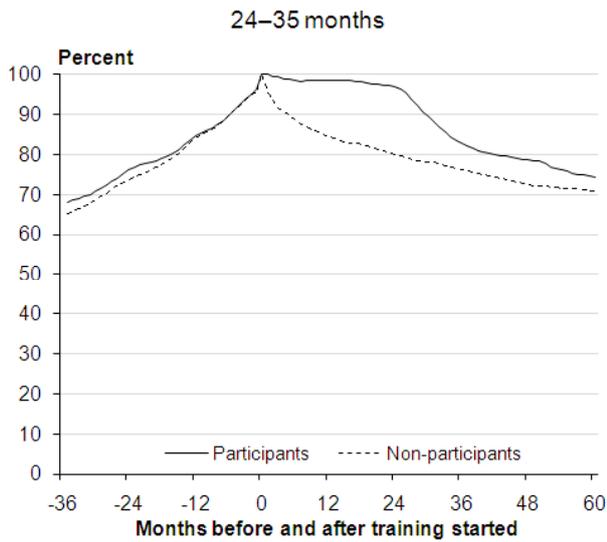
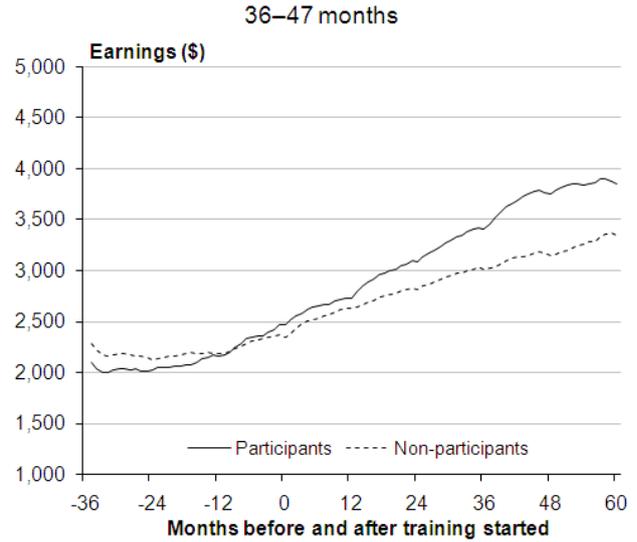
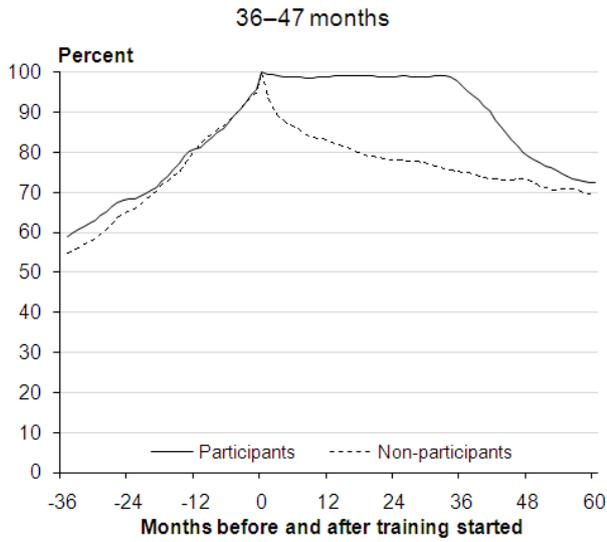


Figure 7a
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 4+
By training duration

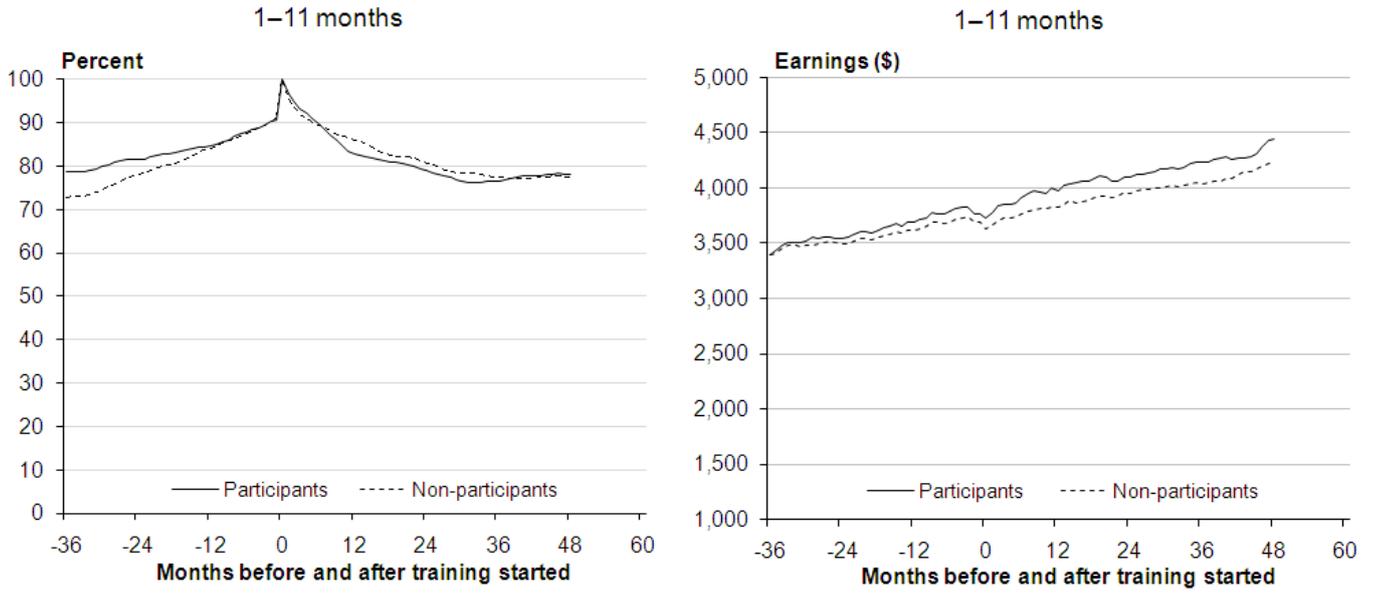


Figure 7b

Employment rate and average monthly earnings

Highest qualification gained at level 4+

By the number of credits achieved

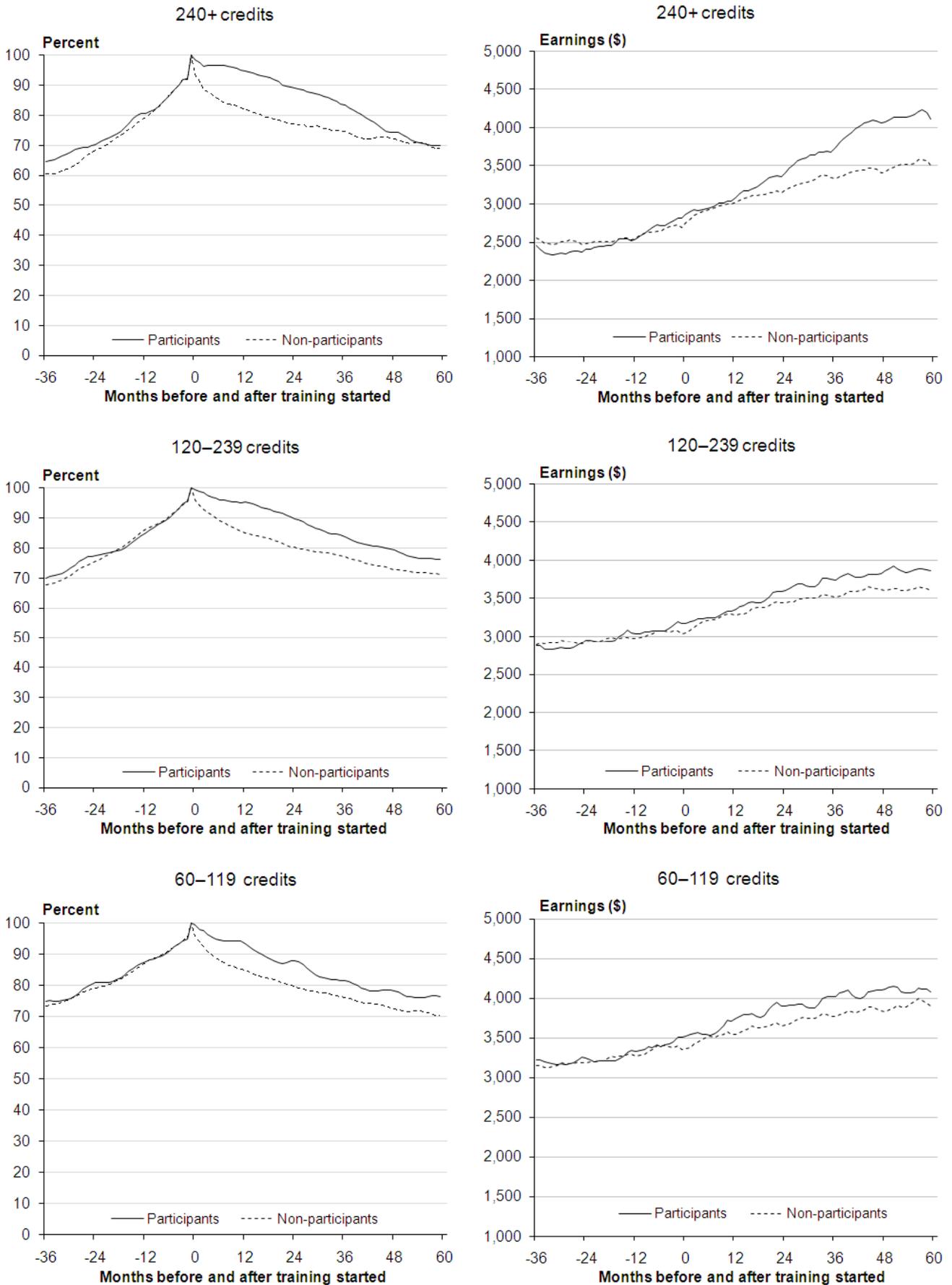


Figure 7c

Employment rate and average monthly earnings

Highest qualification gained at level 3

By the number of credits achieved

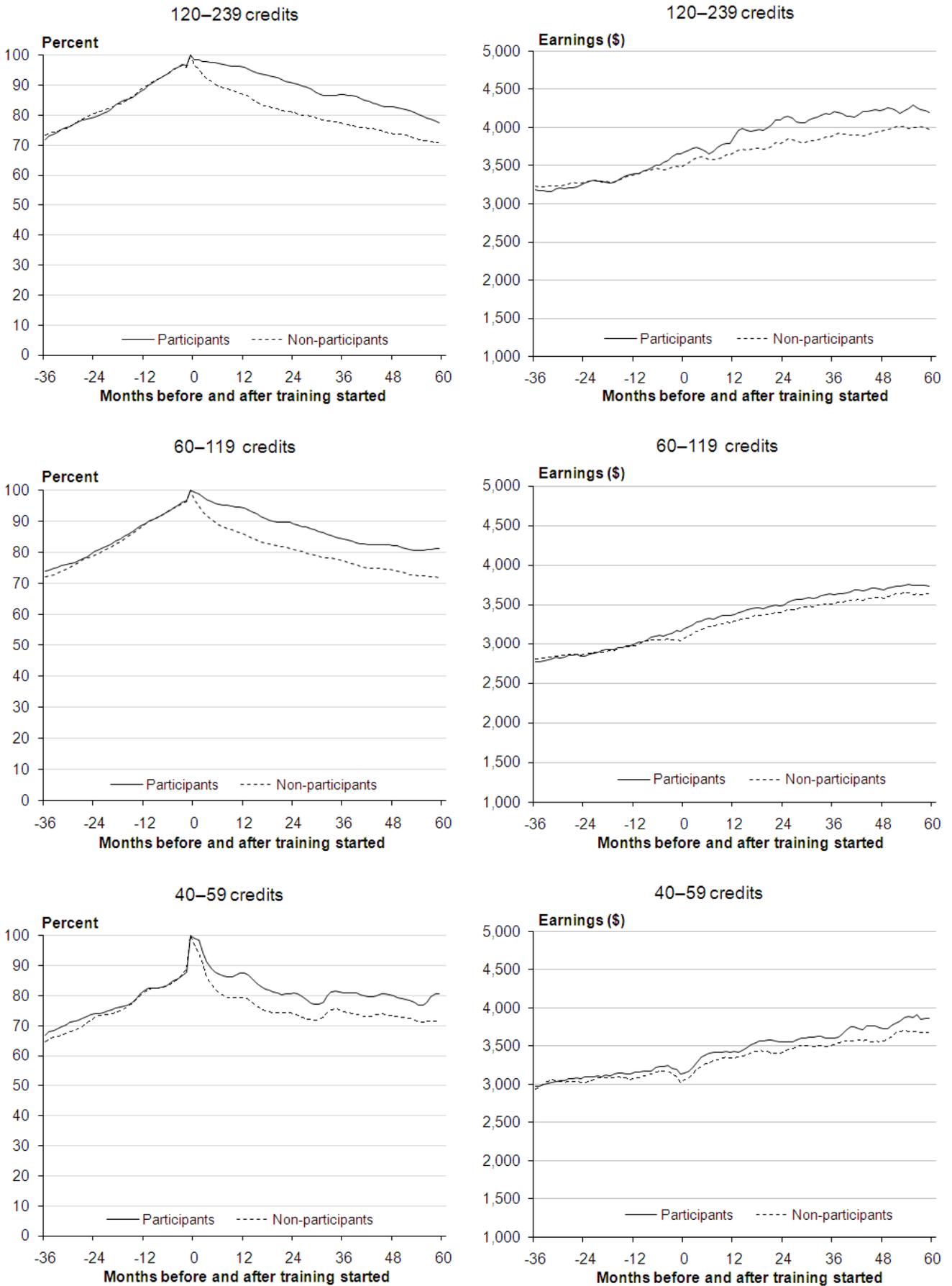


Figure 8a

Employment rate and average monthly earnings
Highest qualification gained at level 4+
By sex

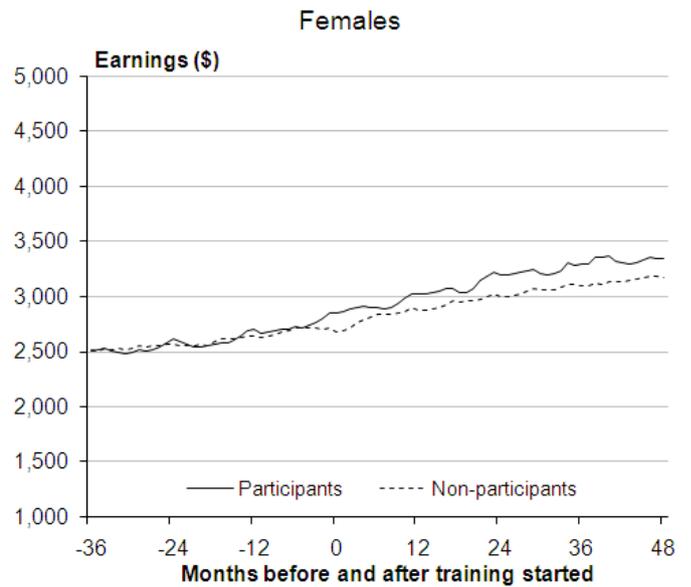
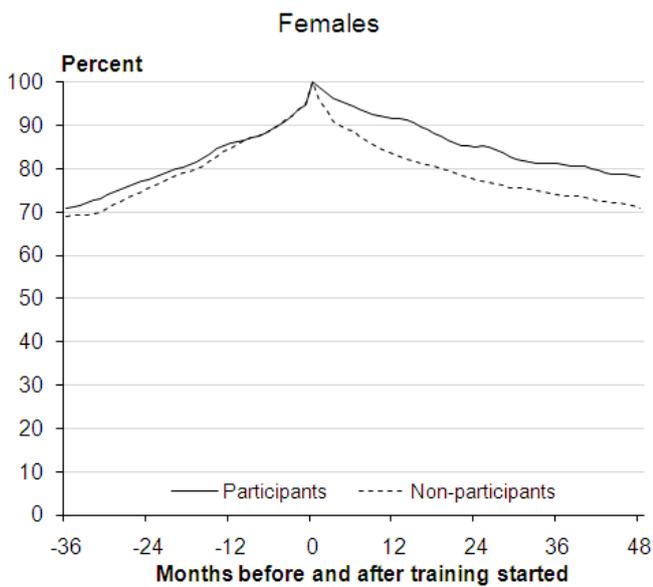
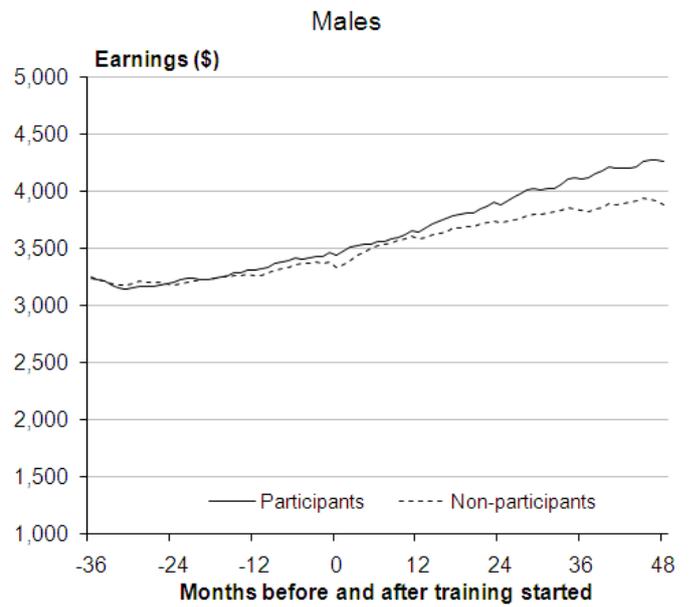
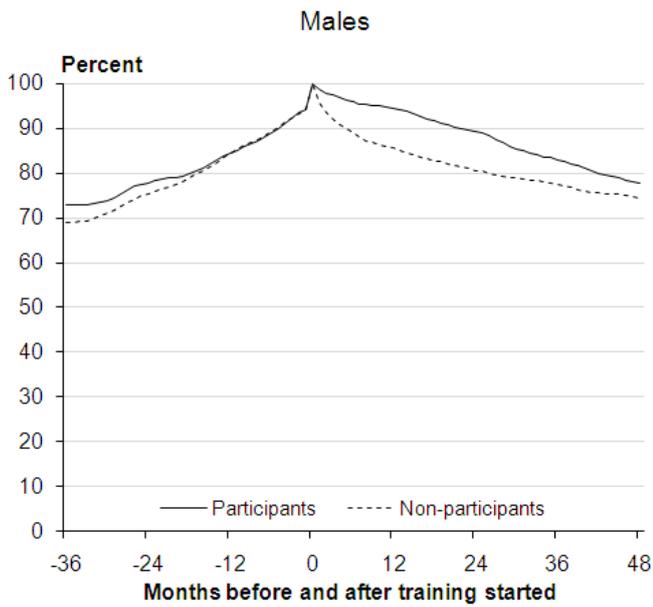


Figure 8b

Employment rate and average monthly earnings

Highest qualification gained at level 4+

By sex and age

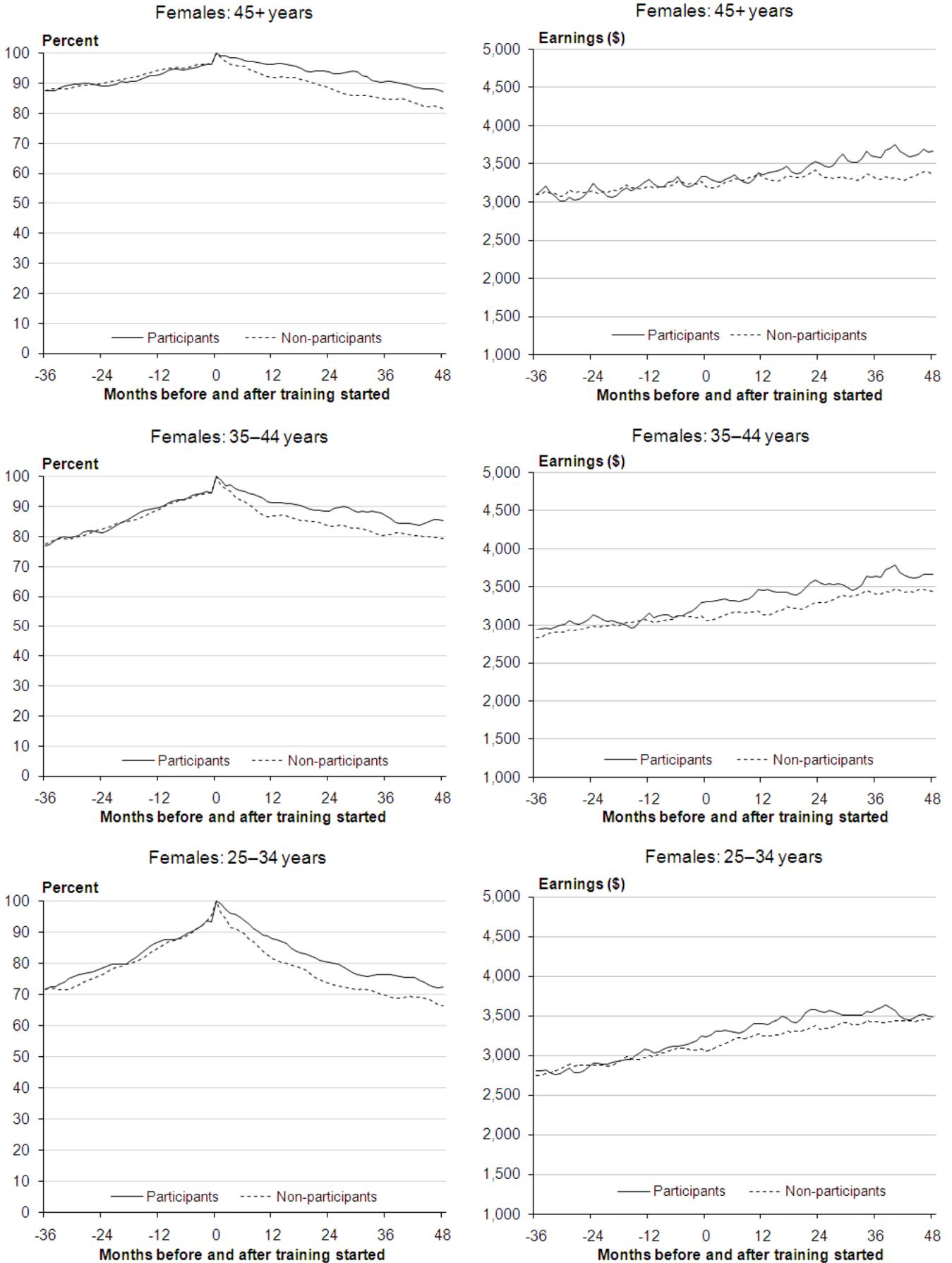


Figure 8b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 4+
By sex and age

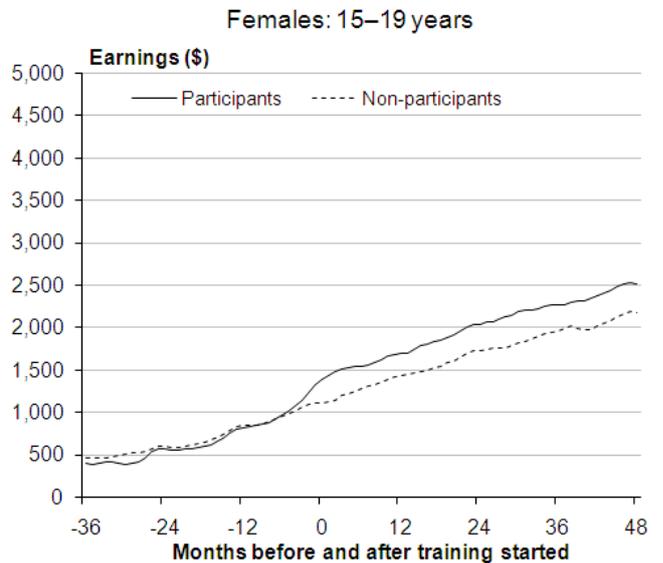
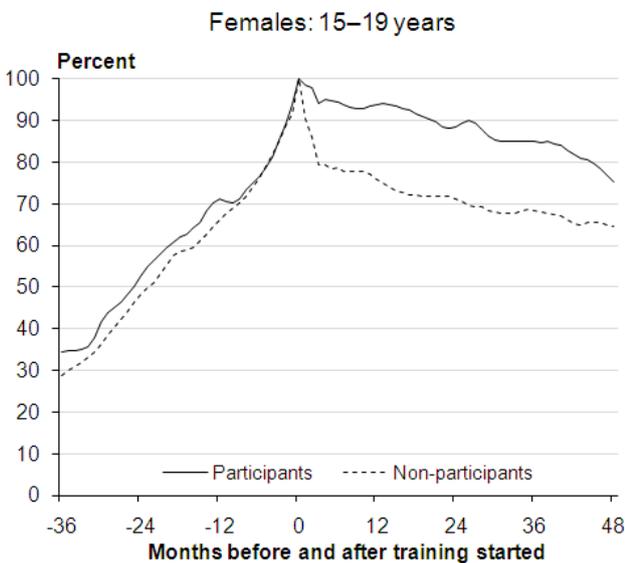
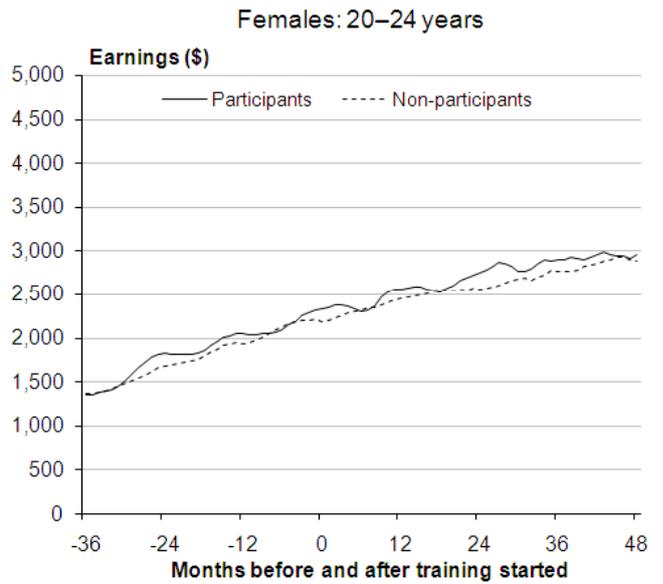
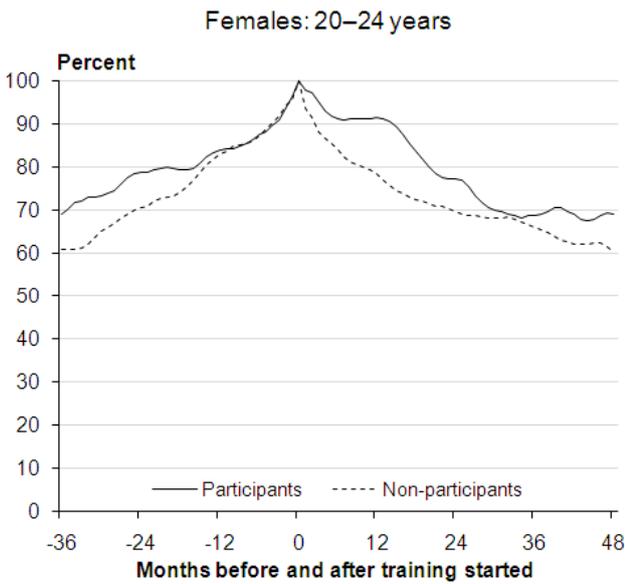
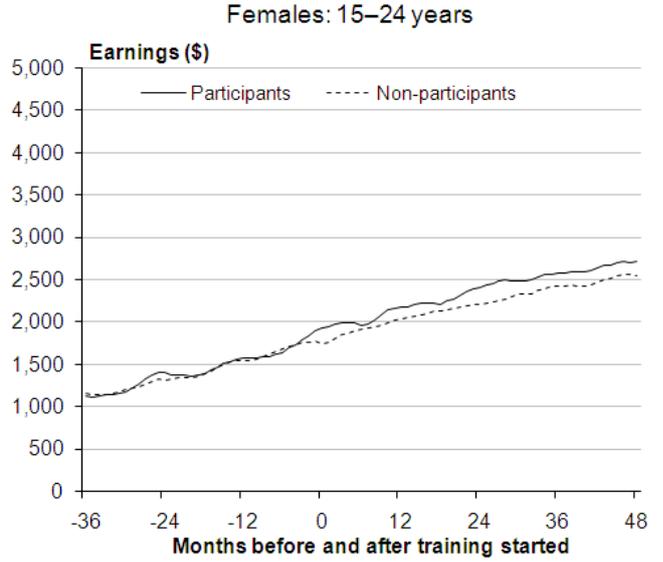
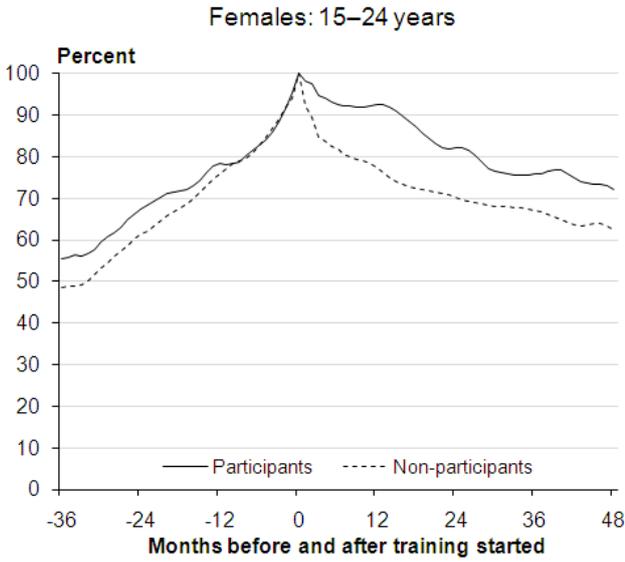


Figure 8b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 4+
By sex and age

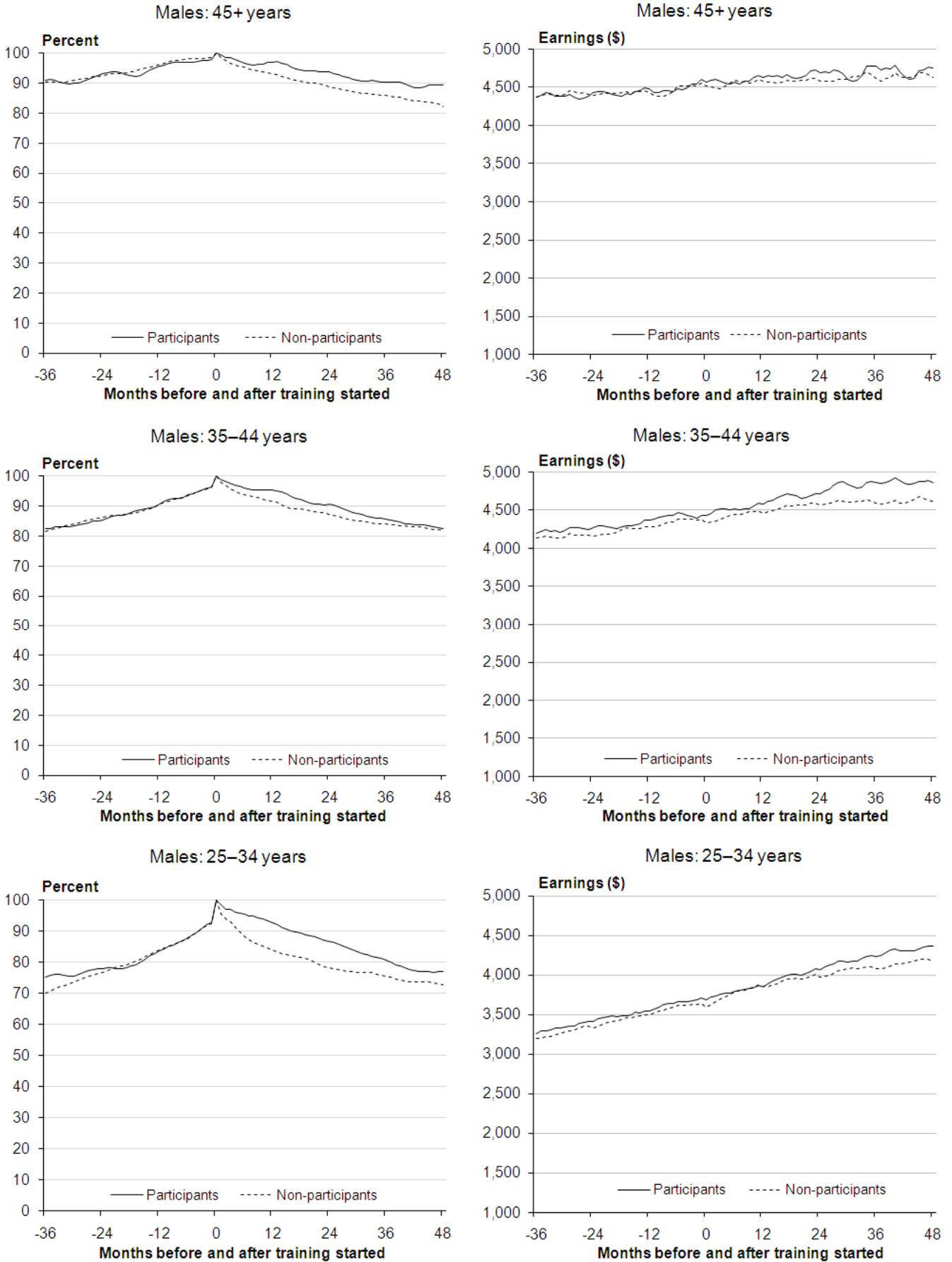


Figure 8b
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Employment rate and average monthly earnings
Highest qualification gained at level 4+
By sex and age

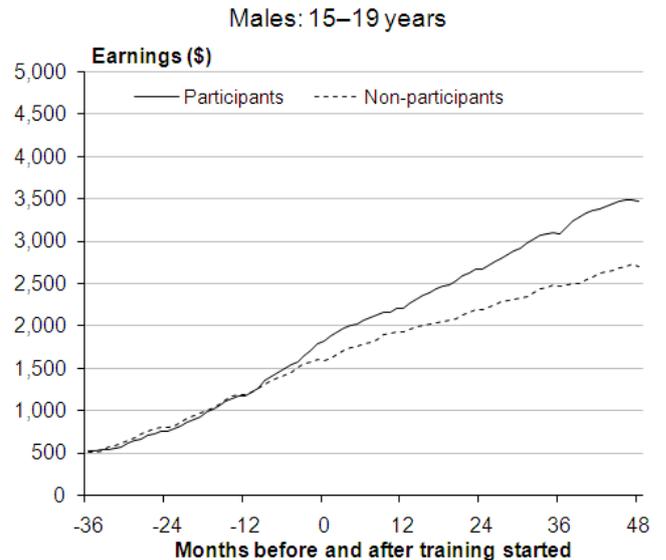
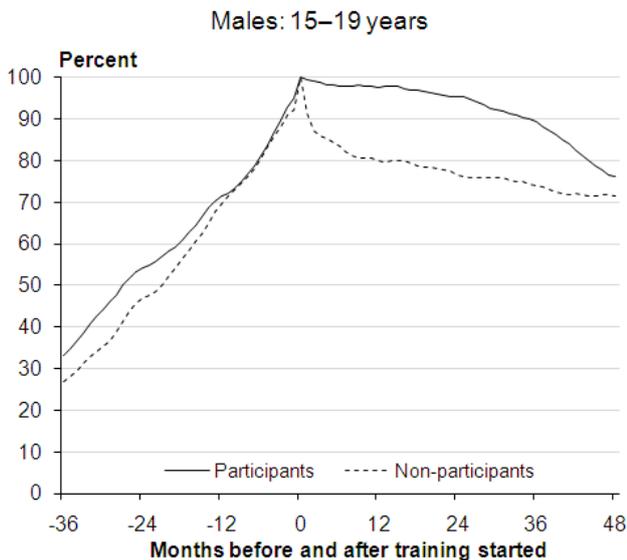
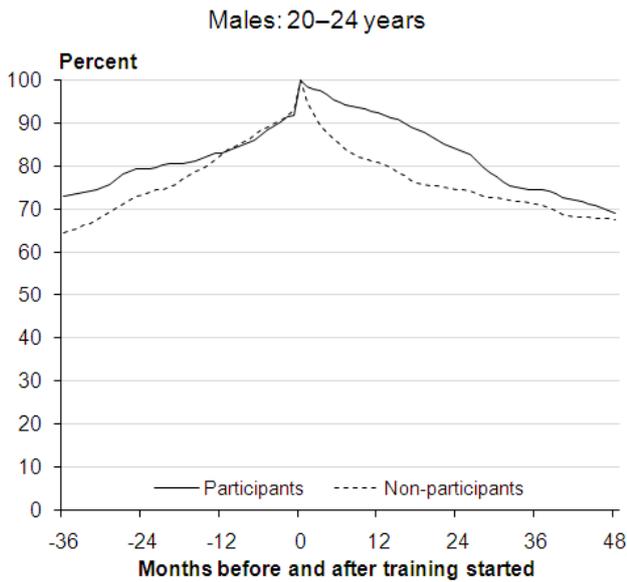
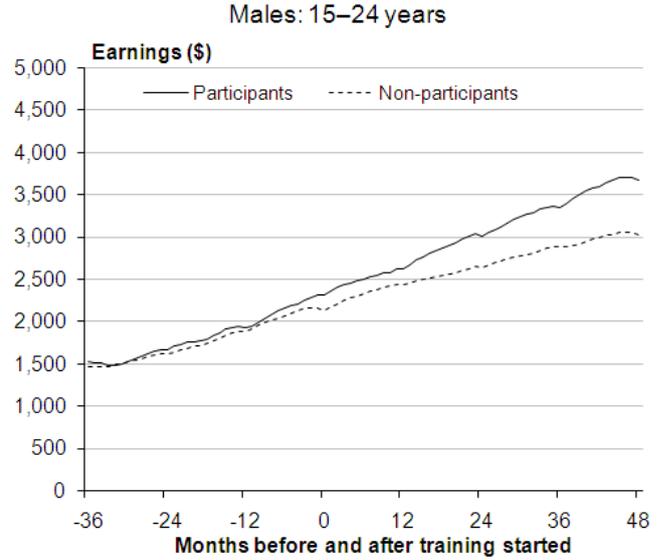
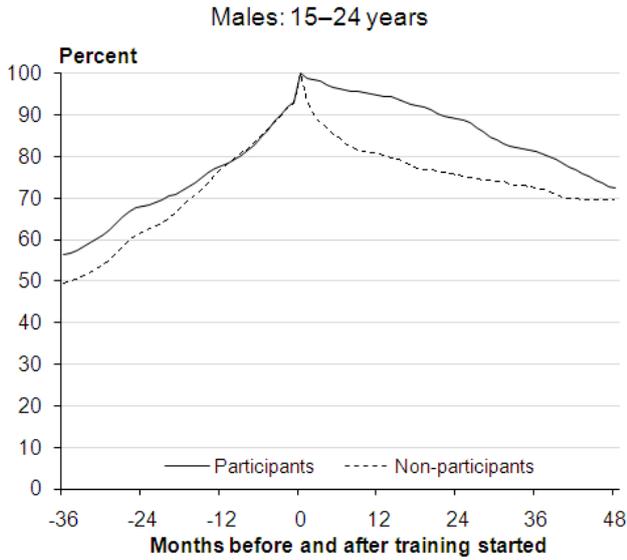


Figure 9a

Employment rate and average monthly earnings
 Highest qualification gained at level 3
 By sex

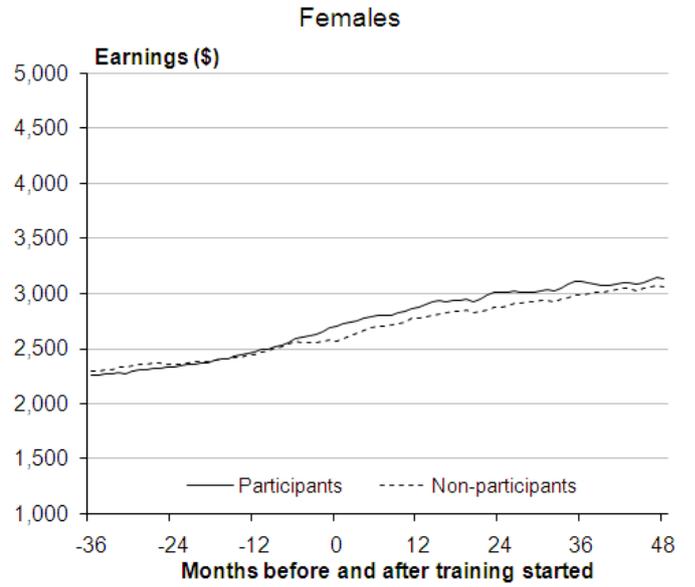
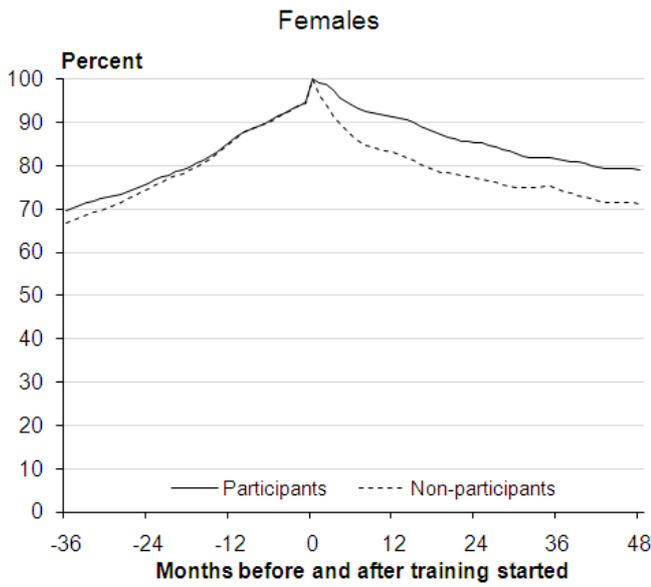
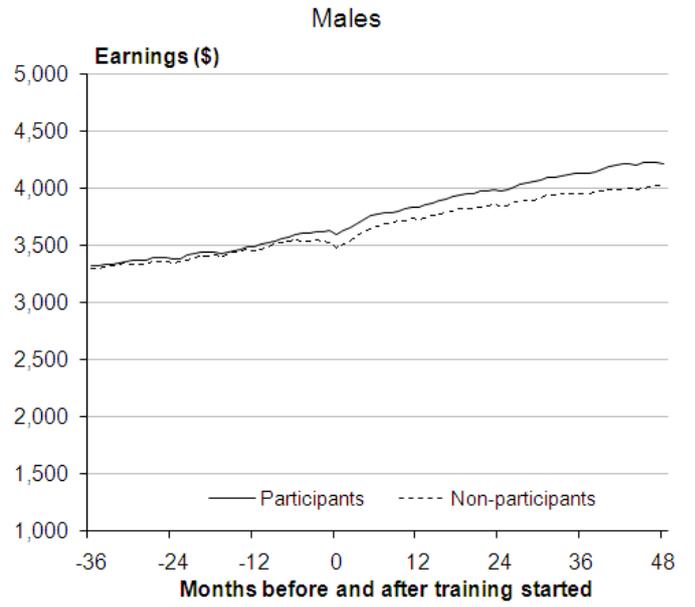
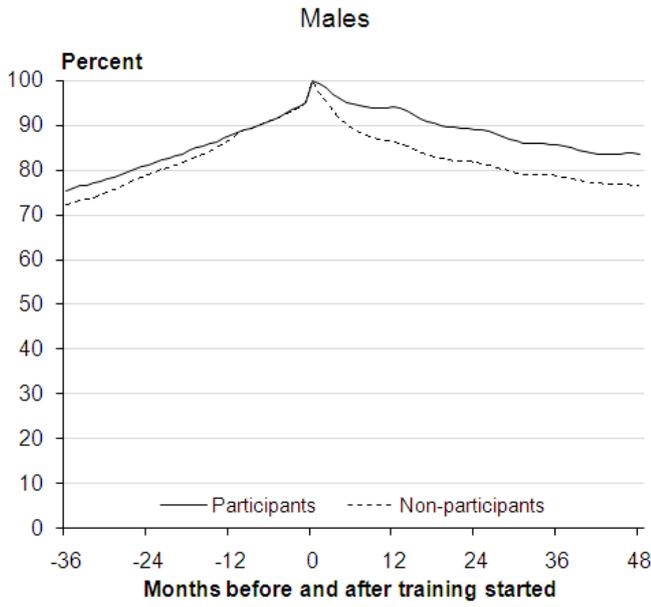


Figure 9b

Employment rate and average monthly earnings

Highest qualification gained at level 3

By sex and age

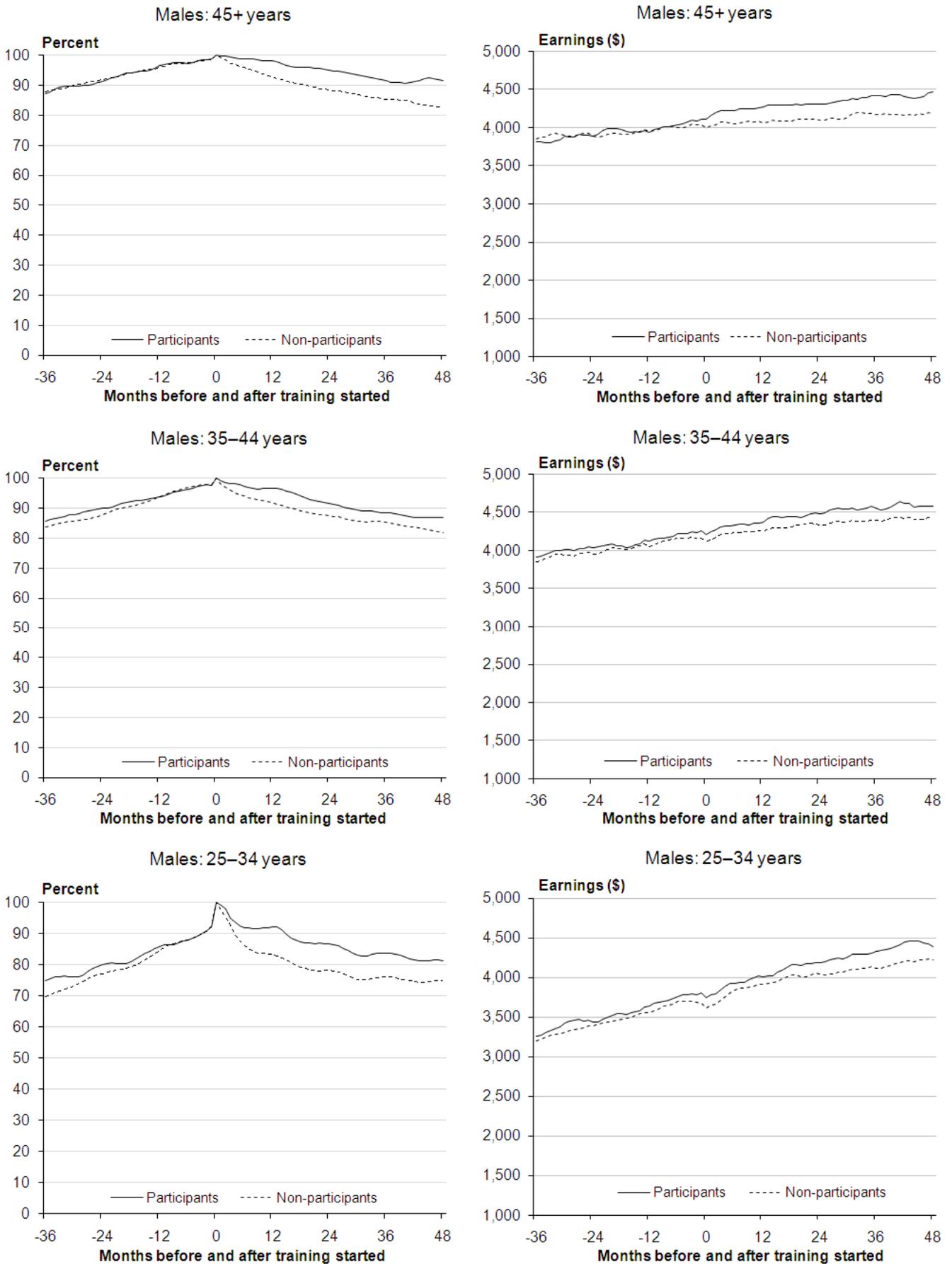


Figure 9b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 3
By sex and age

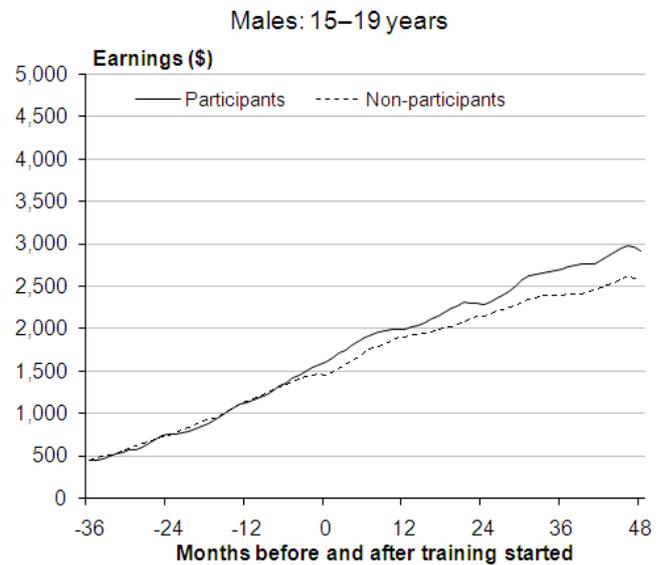
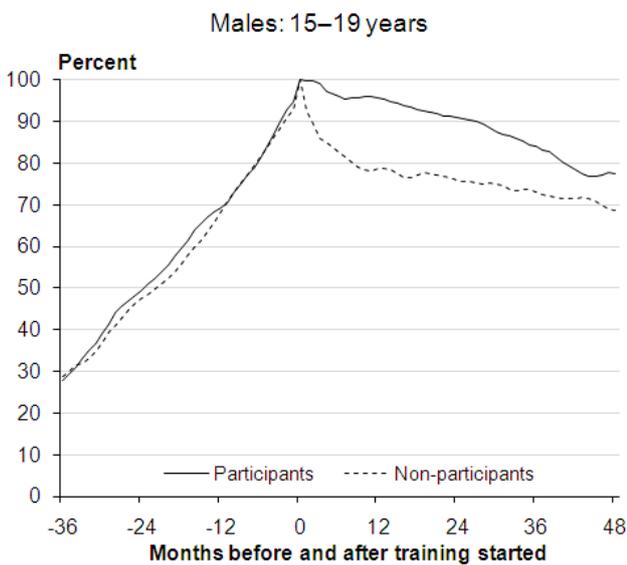
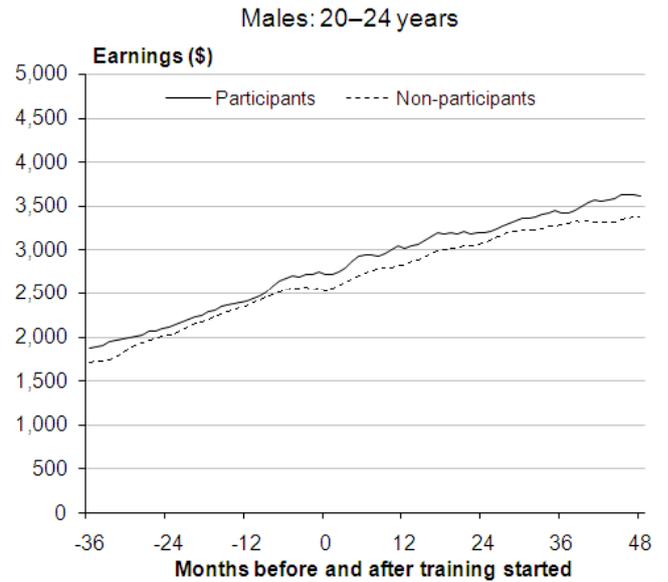
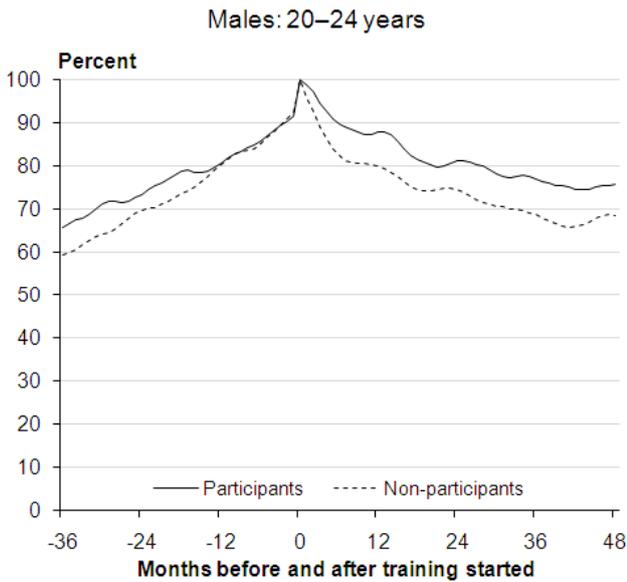
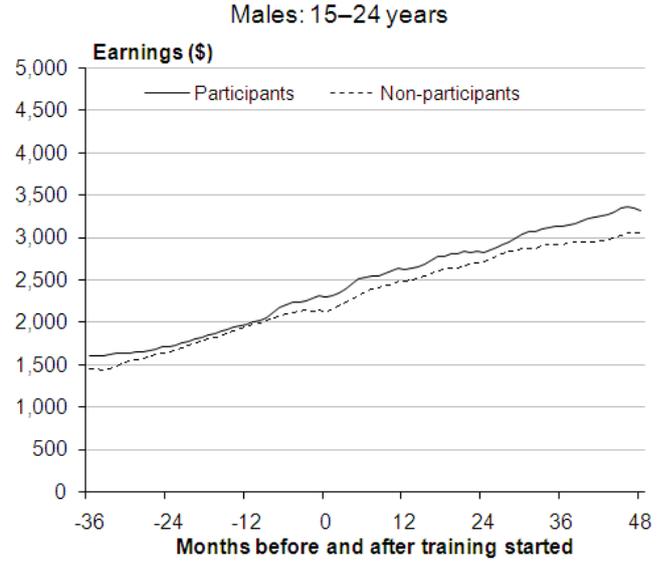
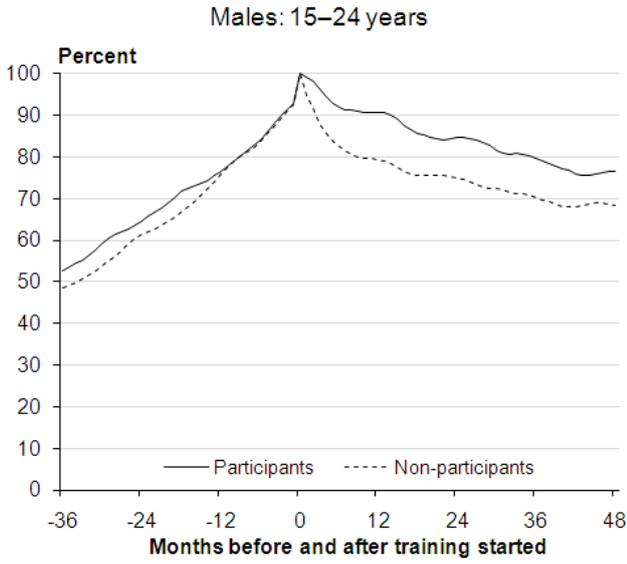


Figure 9b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 3
By sex and age

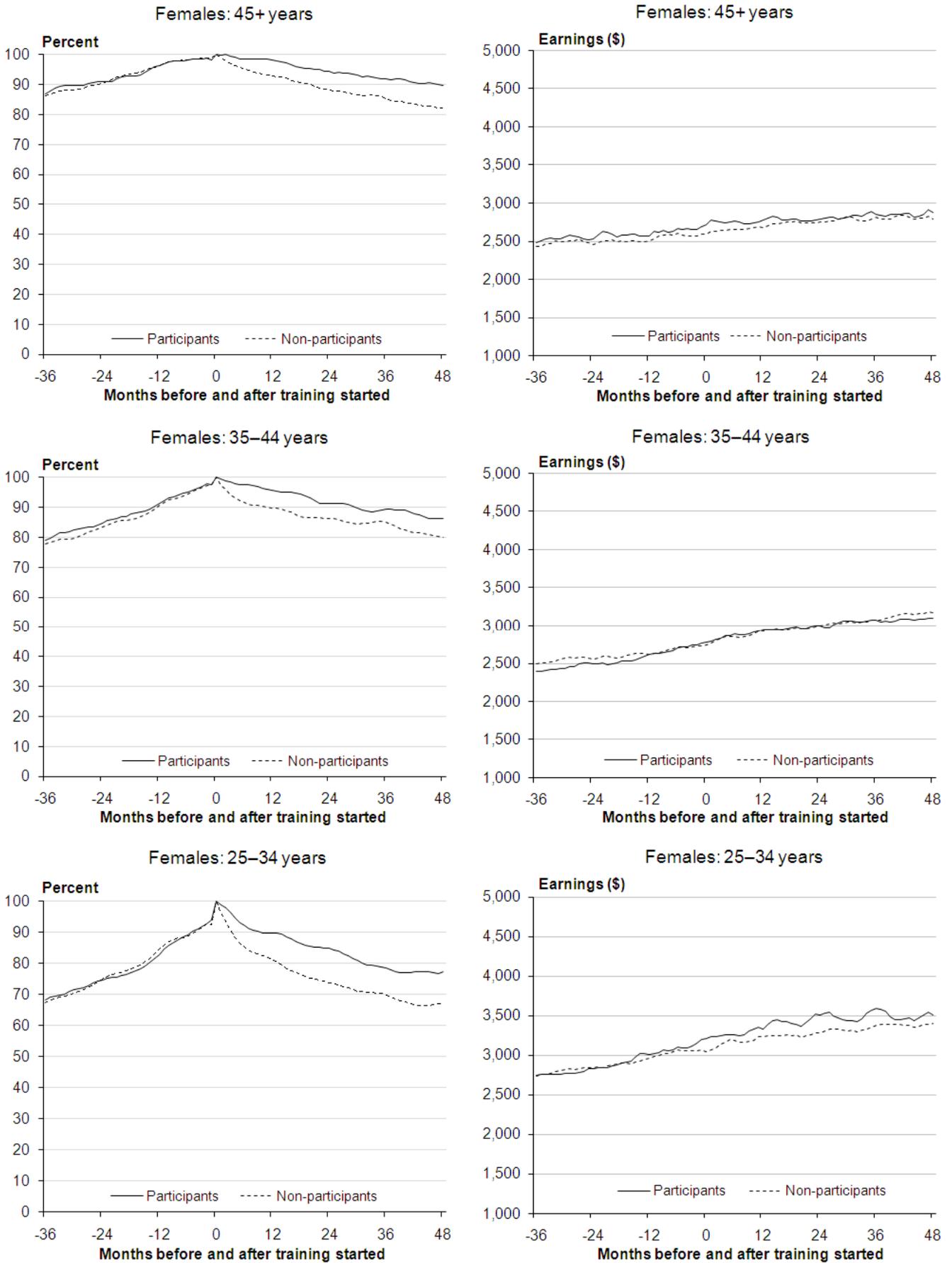


Figure 9b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 3
By sex and age

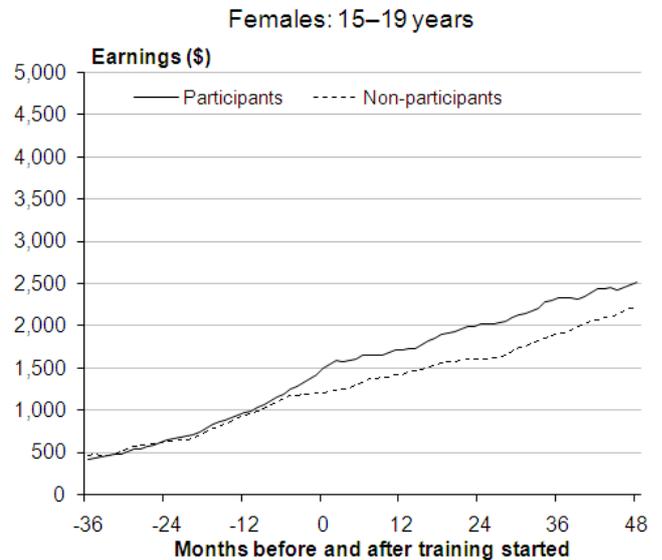
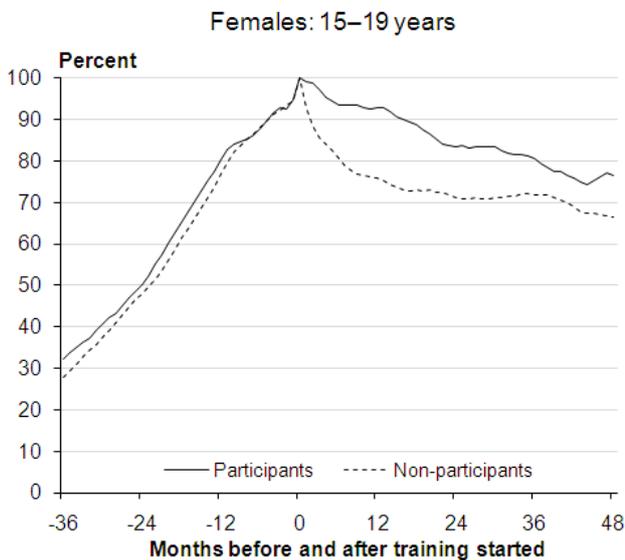
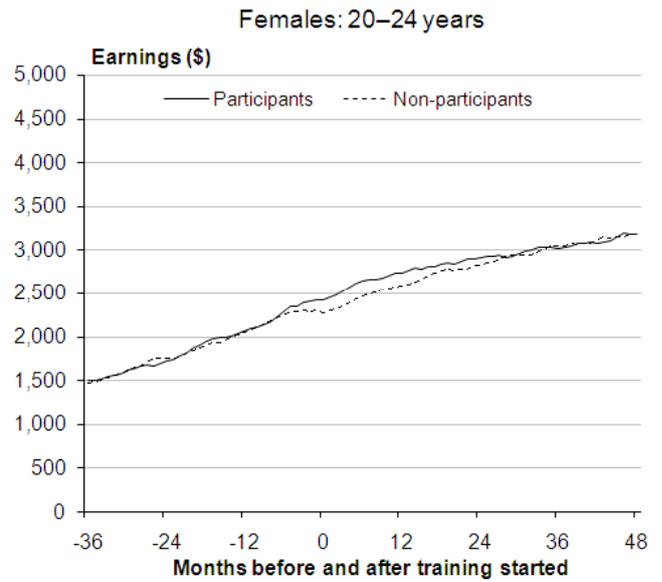
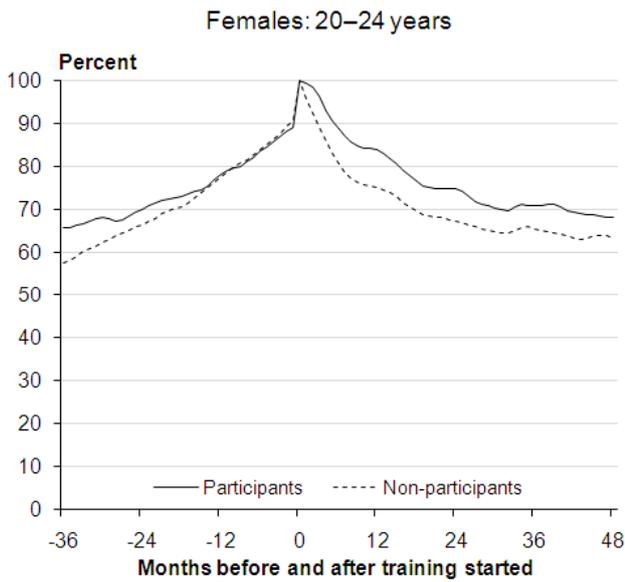
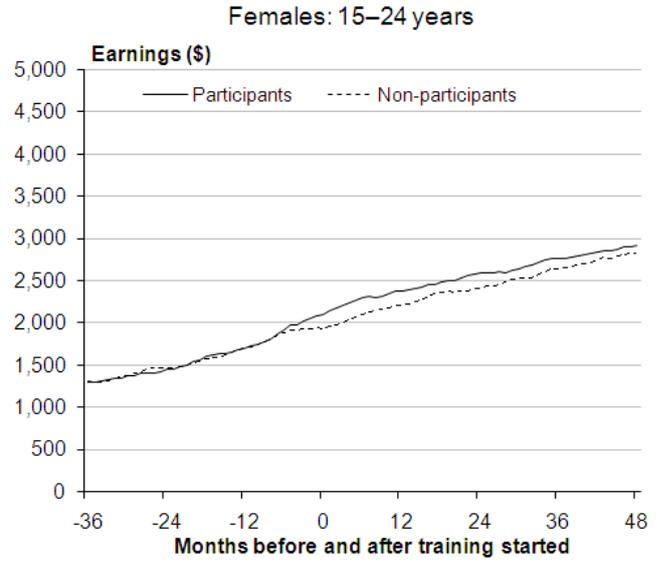
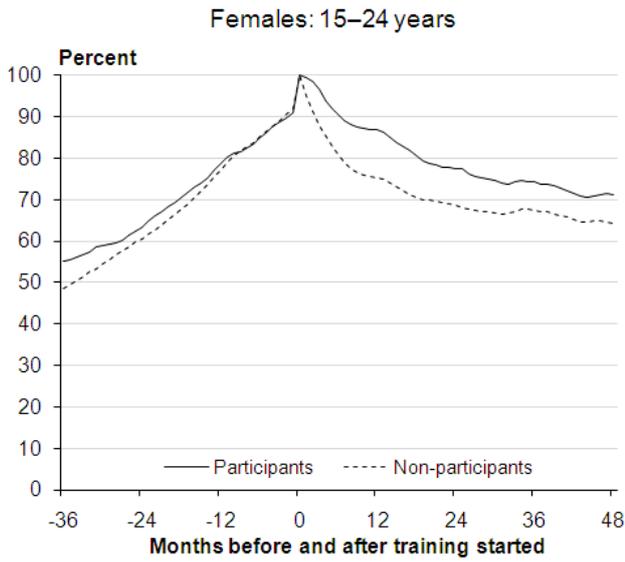


Figure 10a

Employment rate and average monthly earnings
Highest qualification gained at level 1 or 2
By sex

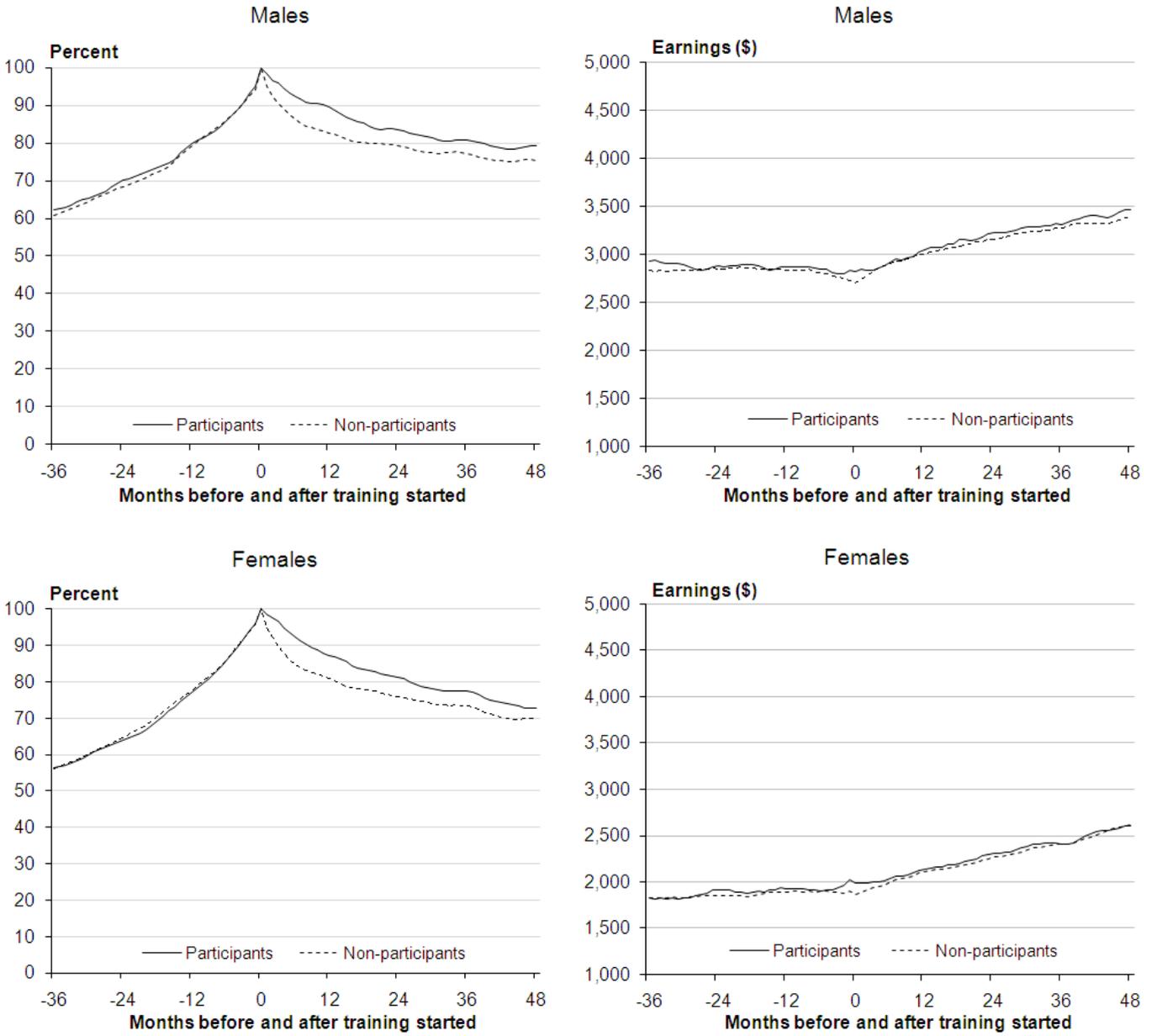


Figure 10b

Employment rate and average monthly earnings

Highest qualification gained at level 1 or 2

By sex and age

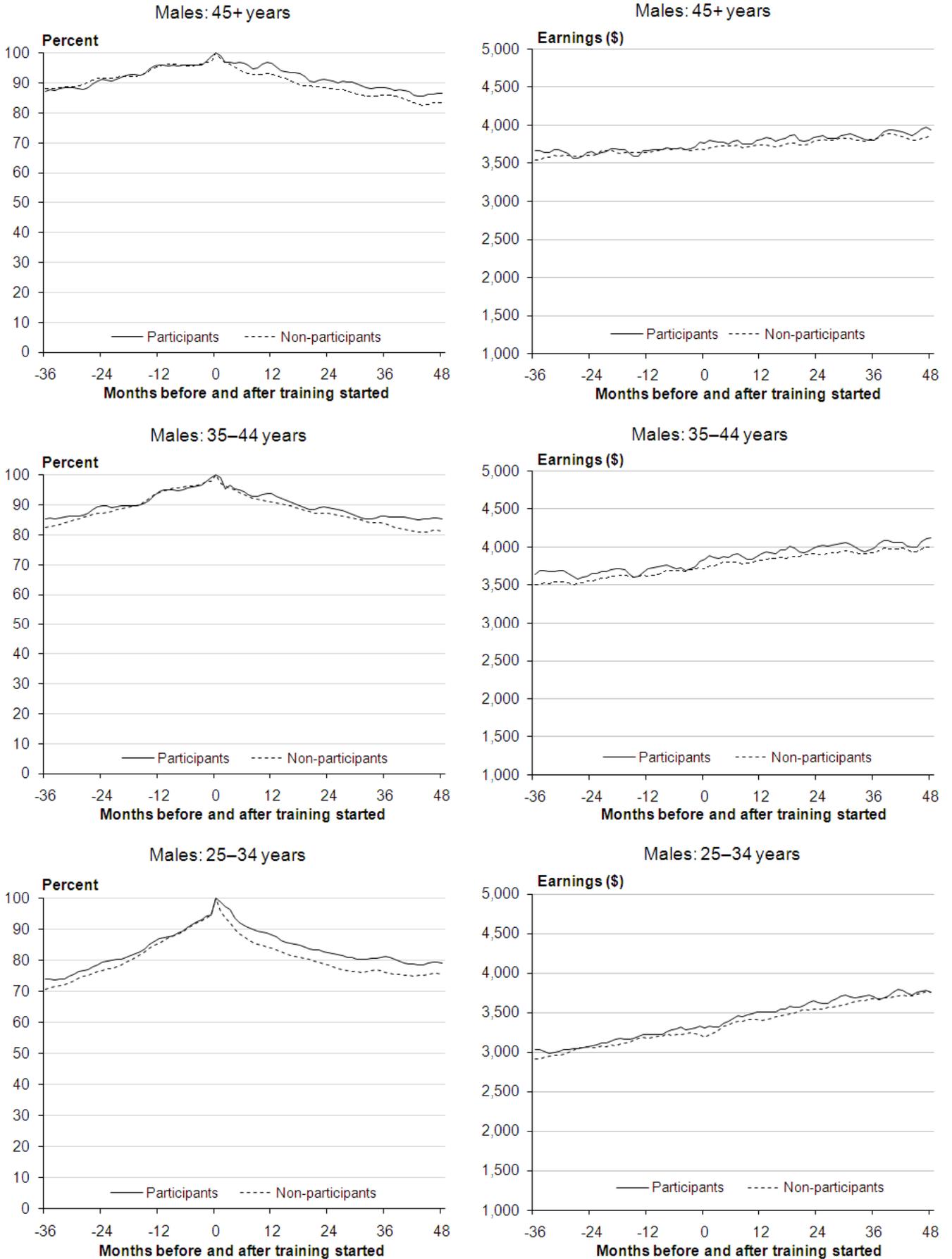


Figure 10b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 1 or 2
By sex and age

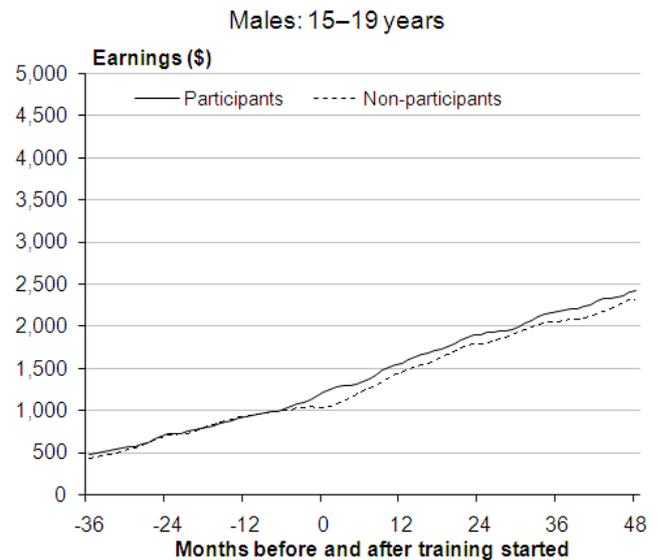
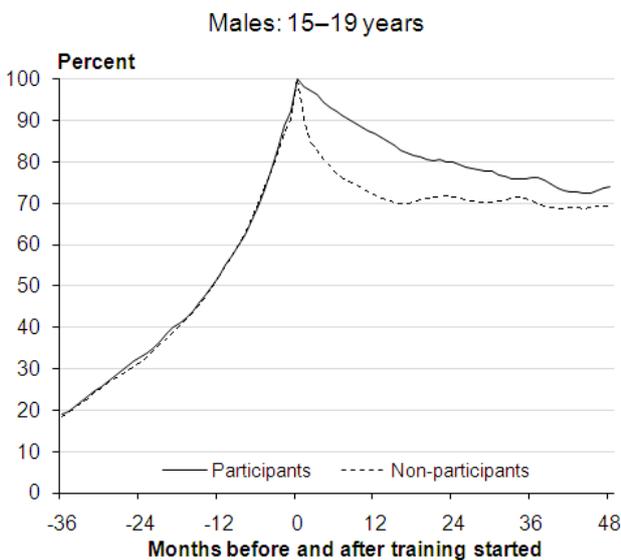
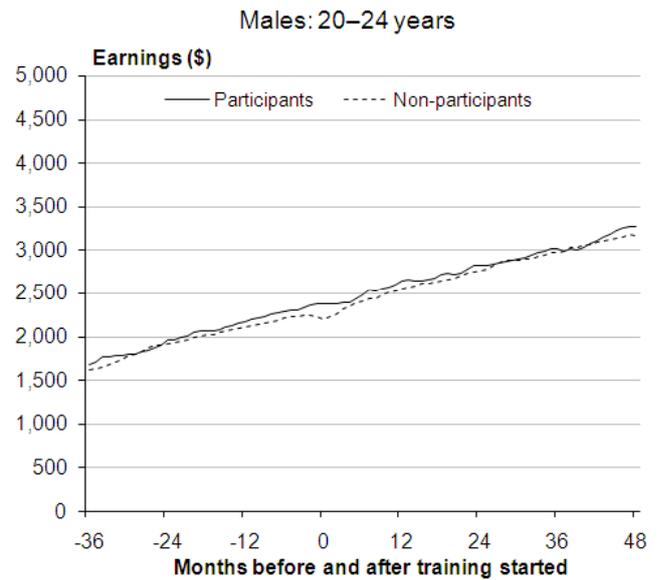
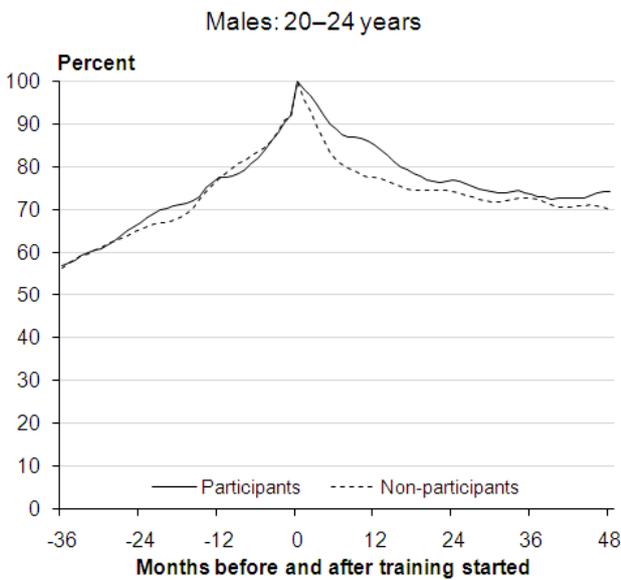
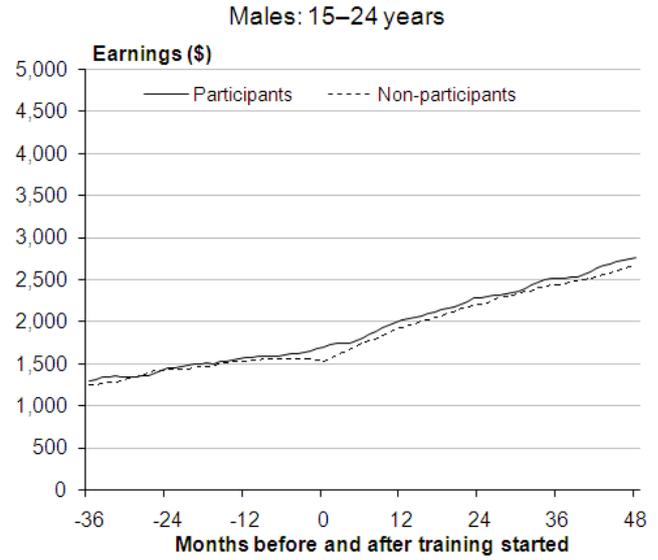
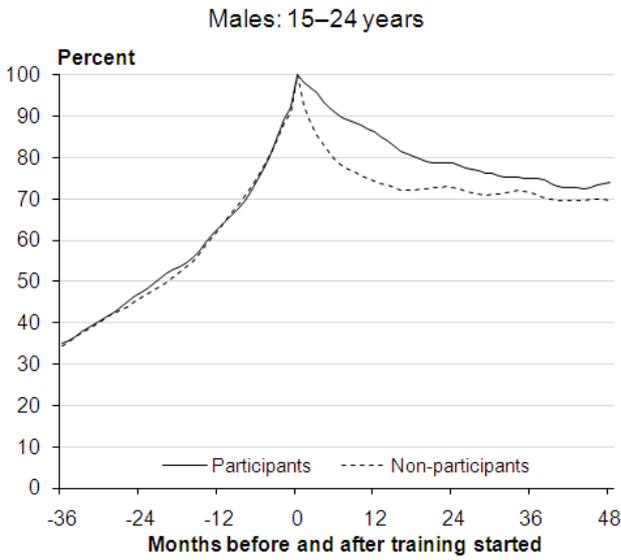


Figure 10b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 1 or 2
By sex and age

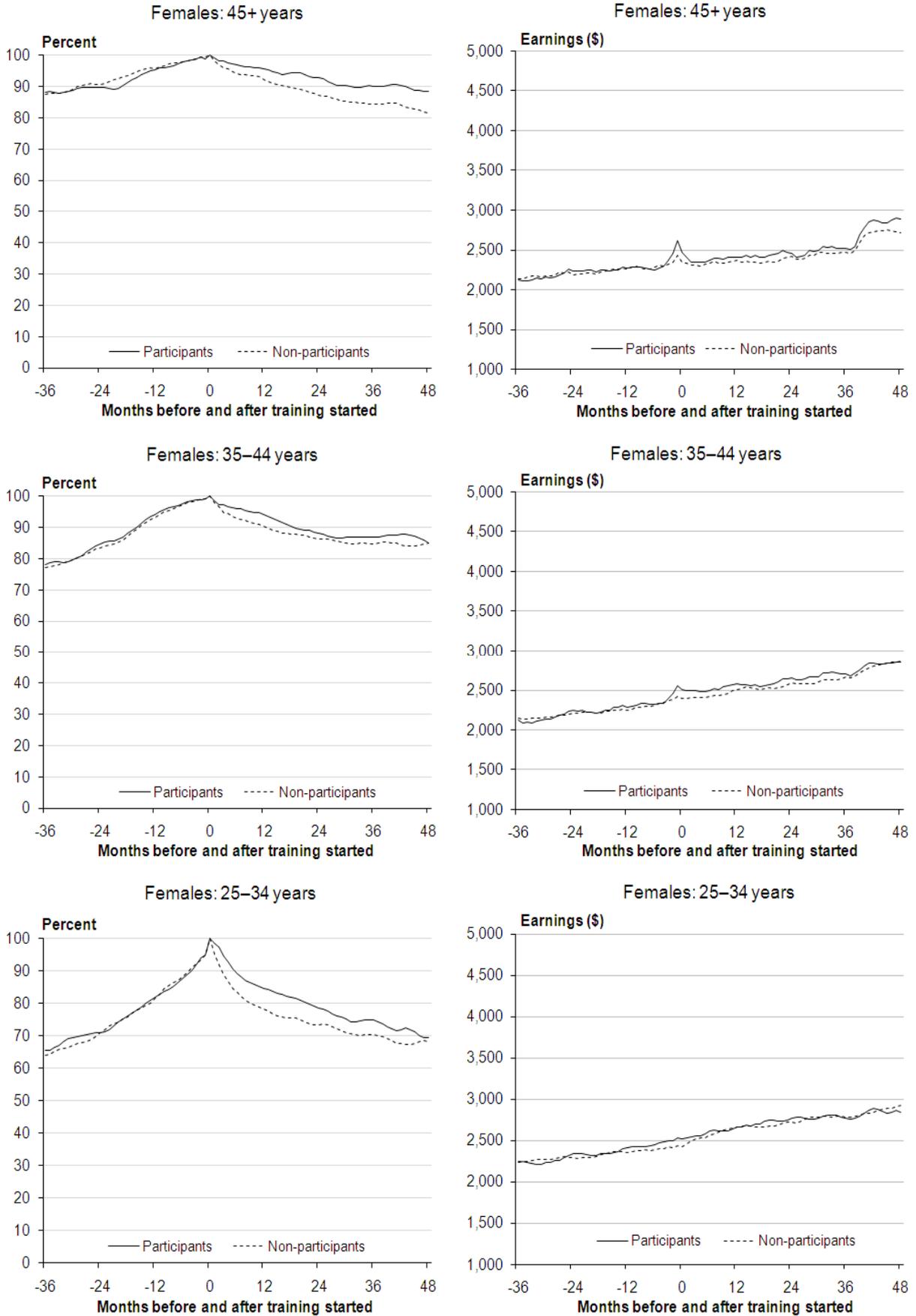


Figure 10b
Continued

Employment rate and average monthly earnings
Highest qualification gained at level 1 or 2
By sex and age

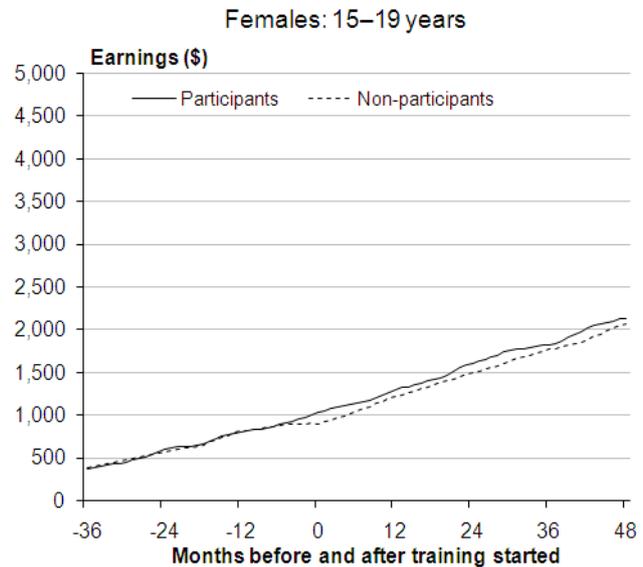
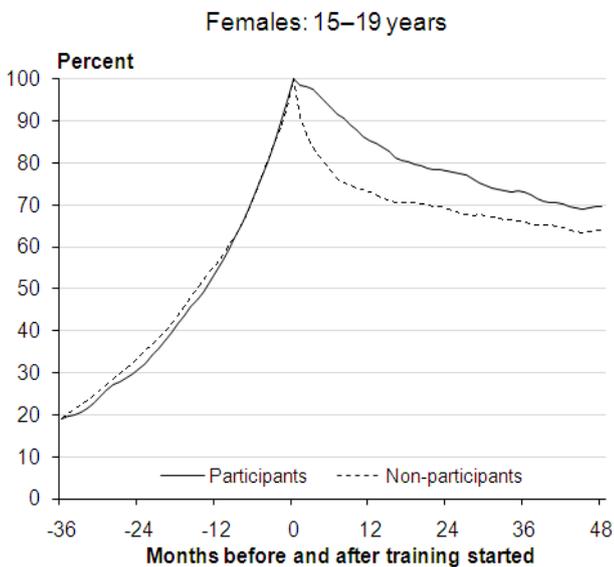
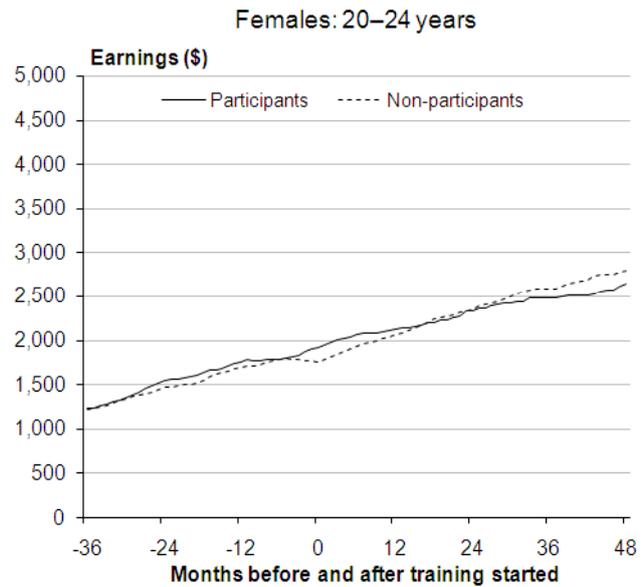
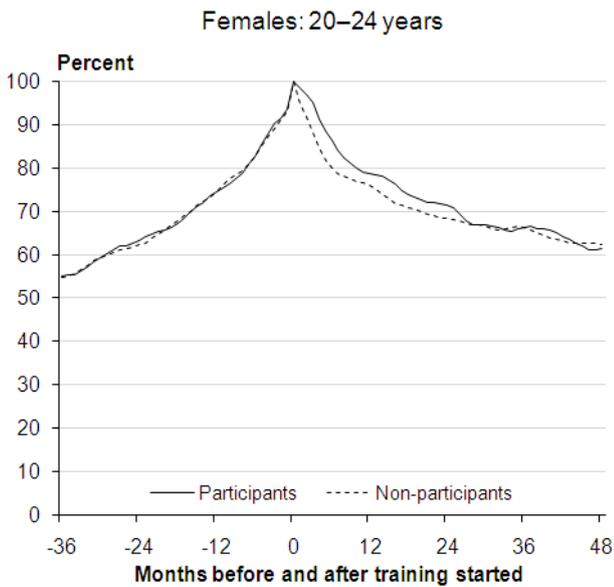
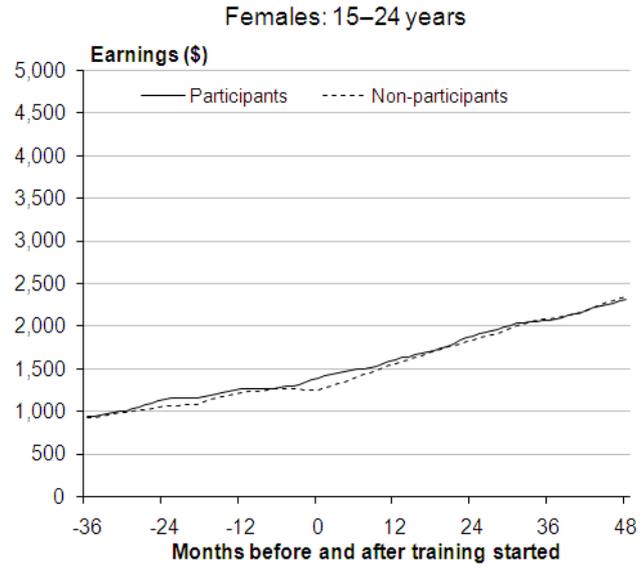
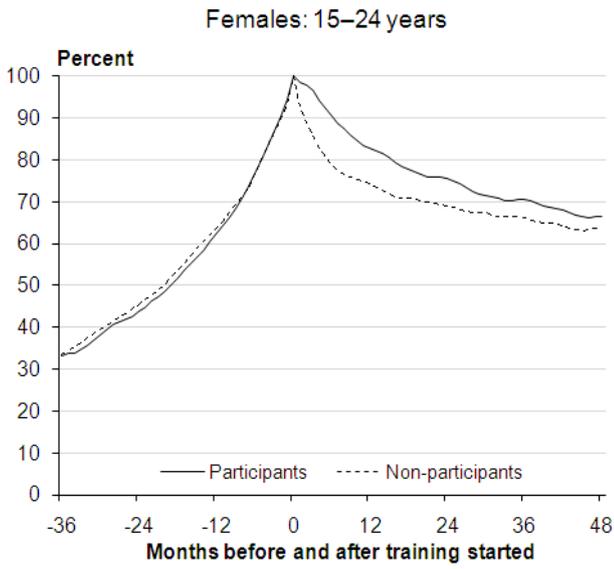


Figure 11a

Employment rate and average monthly earnings
 In the months before and after training ended
 By highest qualification gained

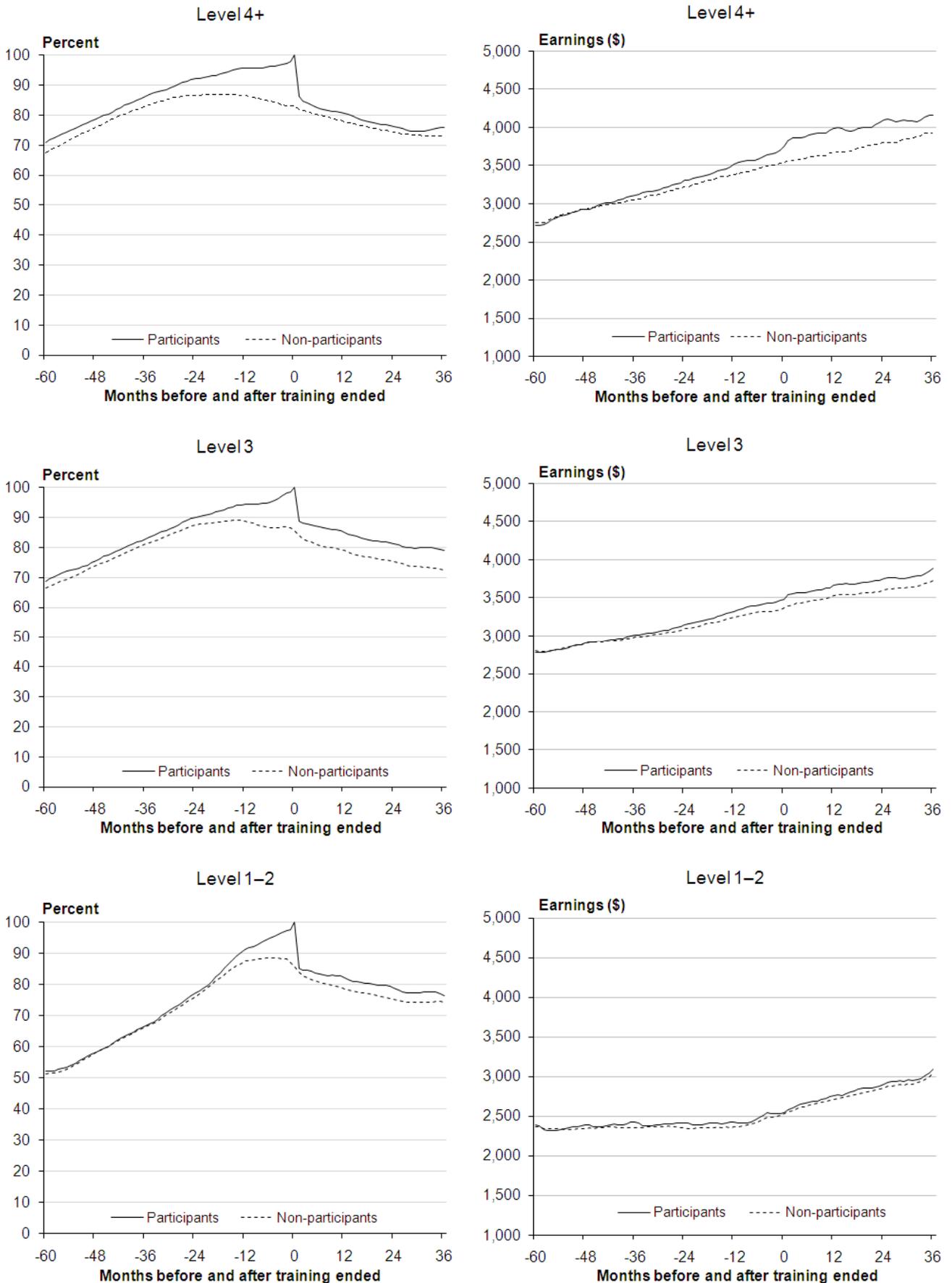


Figure 11a
Continued

Employment rate and average monthly earnings
In the months before and after training ended
By highest qualification gained

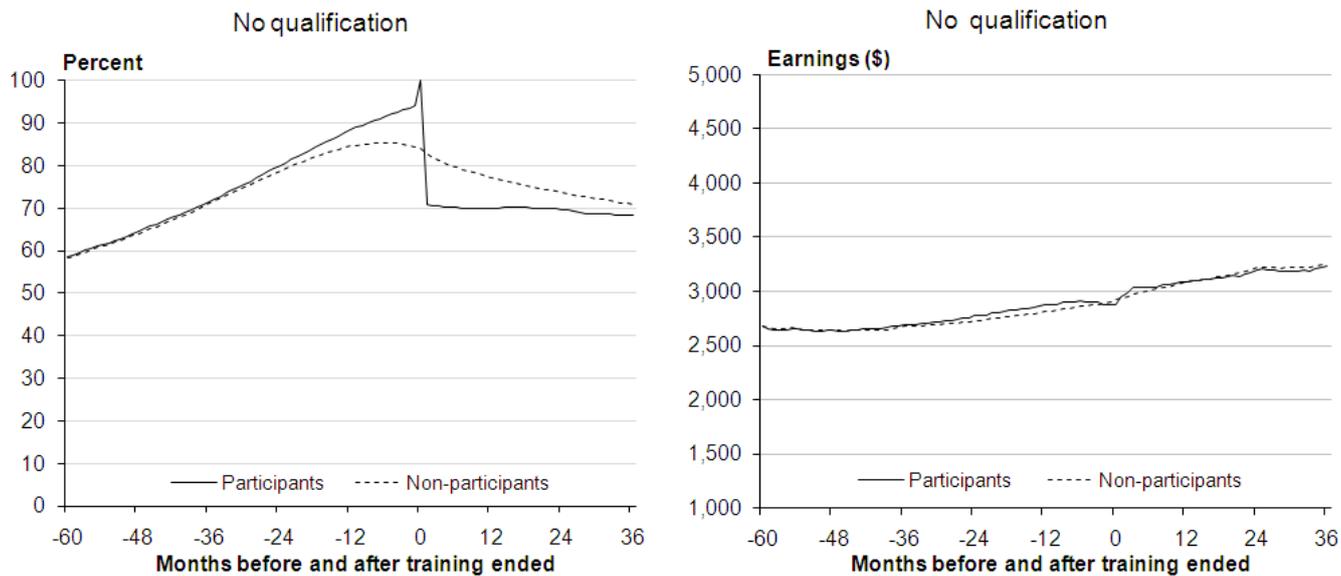


Figure 11b

Employment rate and average monthly earnings
 Those employed in the months after training ended
 By highest qualification gained

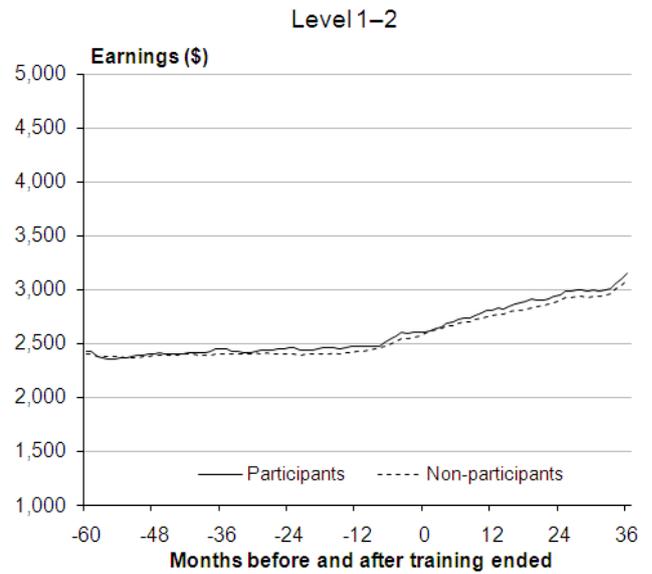
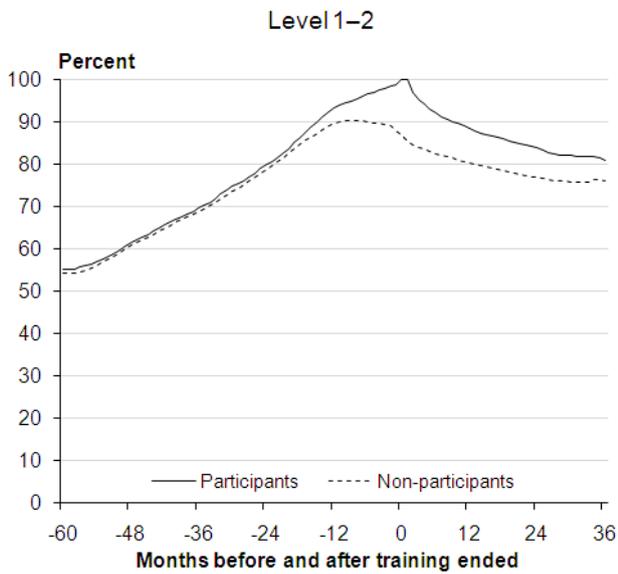
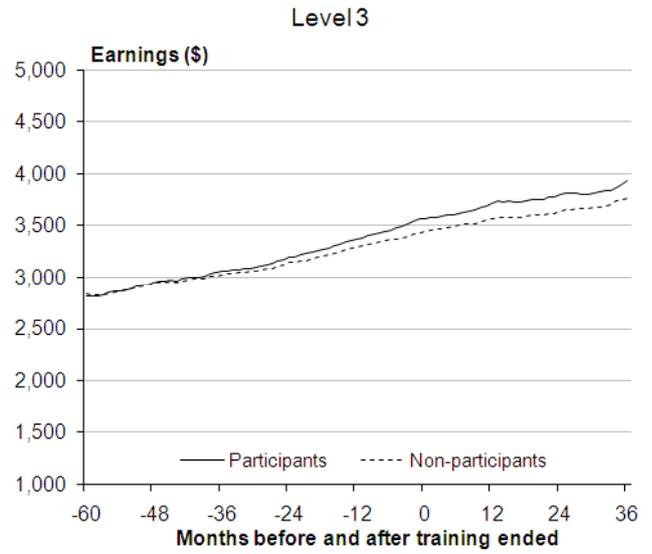
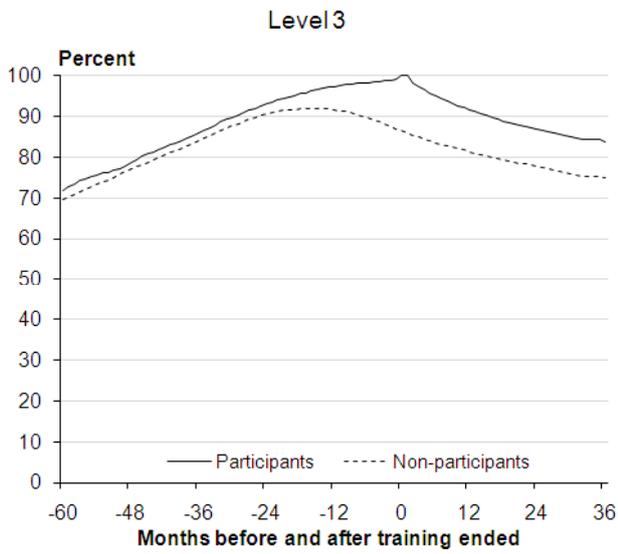
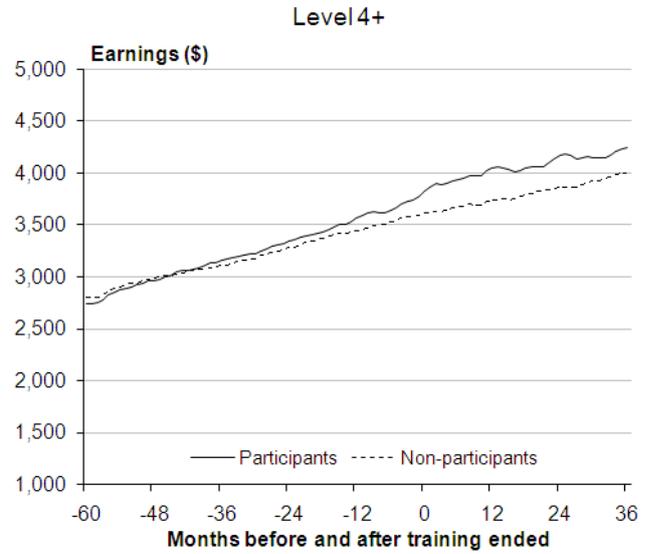
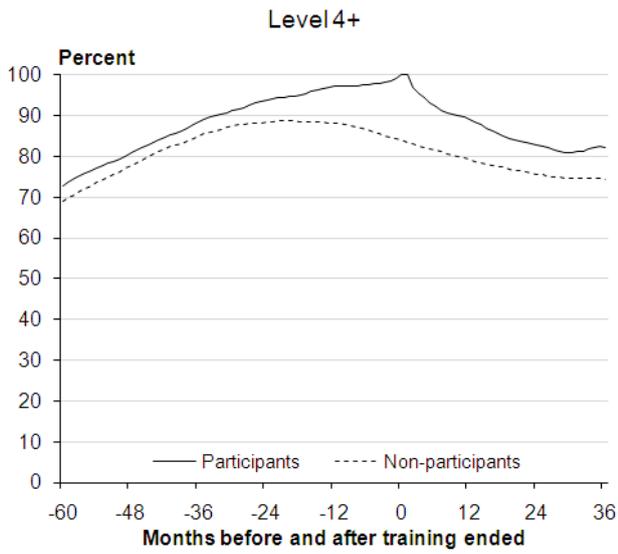


Figure 11b
Continued

Employment rate and average monthly earnings
Those employed in the months after training ended
By highest qualification gained

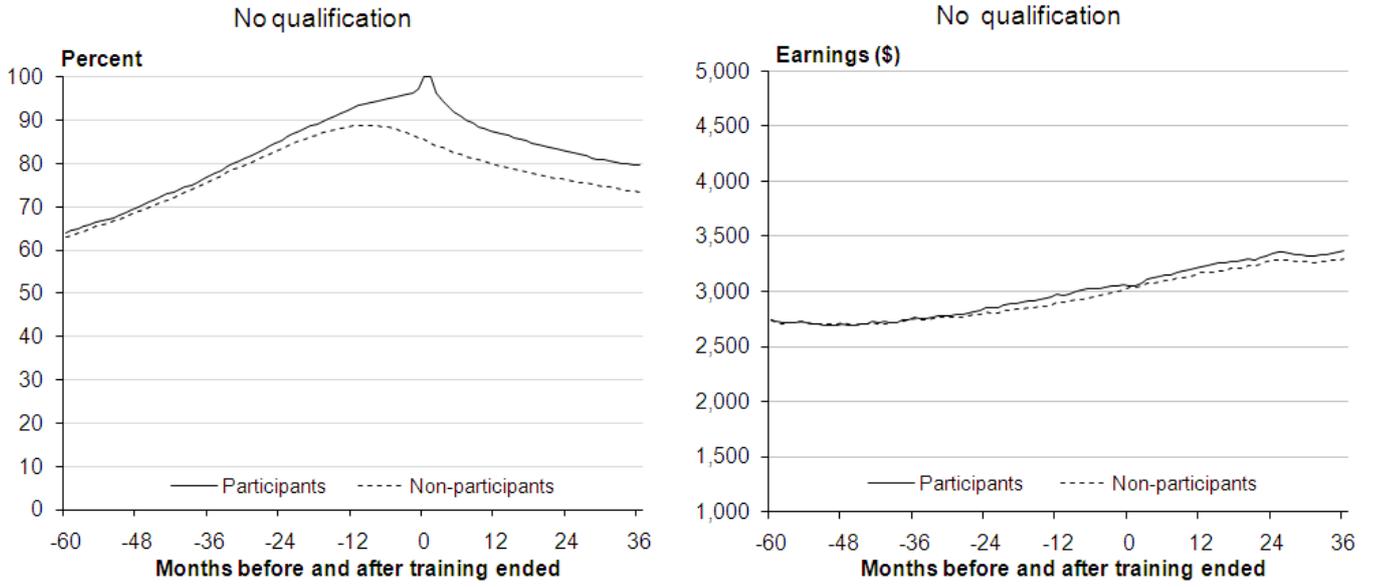


Figure 12a

Employment rate and average monthly earnings

Those employed after training ended
 Highest qualification gained at level 4+
 By sex

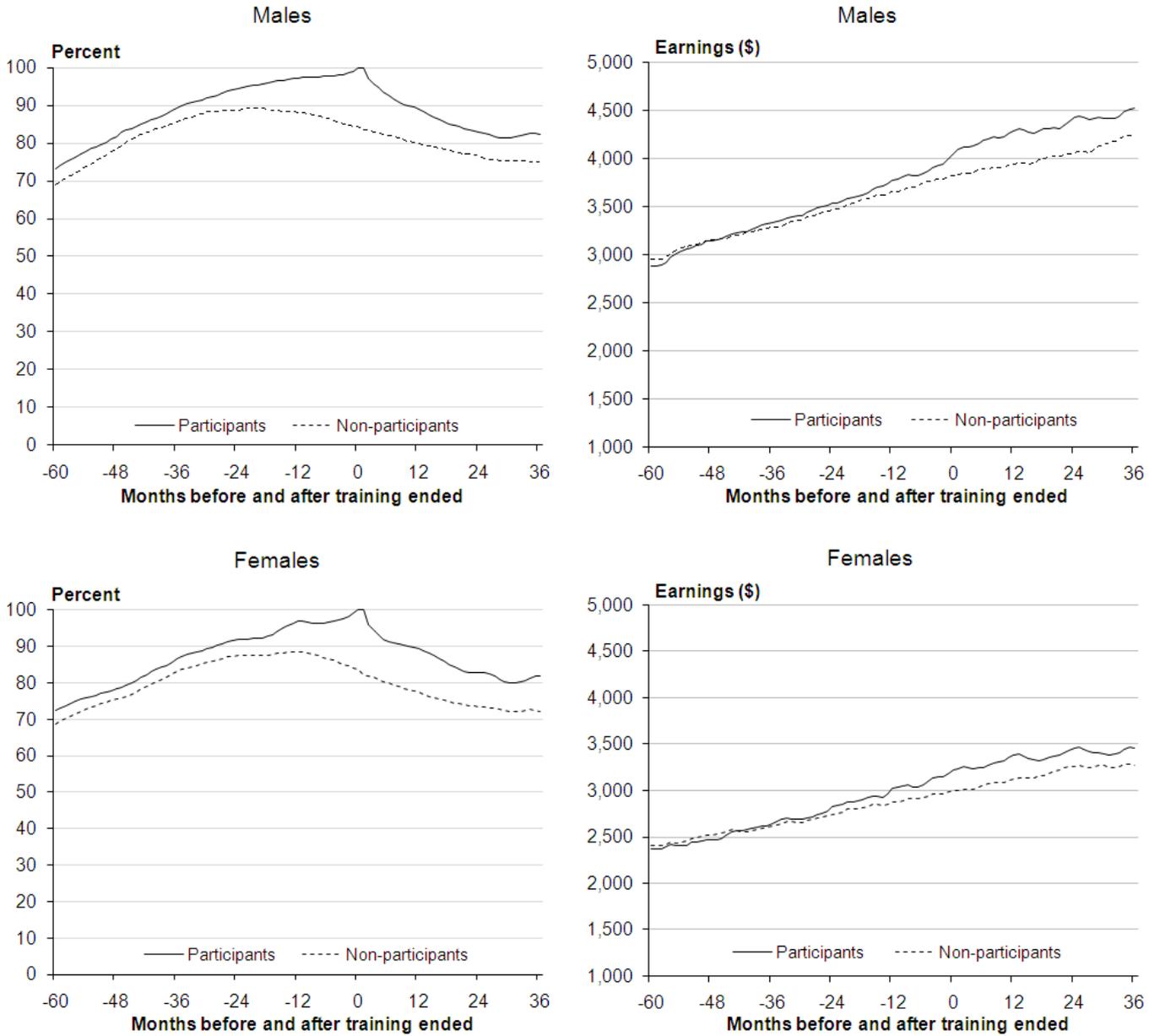


Figure 12b

Employment rate and average monthly earnings

Those employed after training ended
 Highest qualification gained at level 4+
 By sex and age

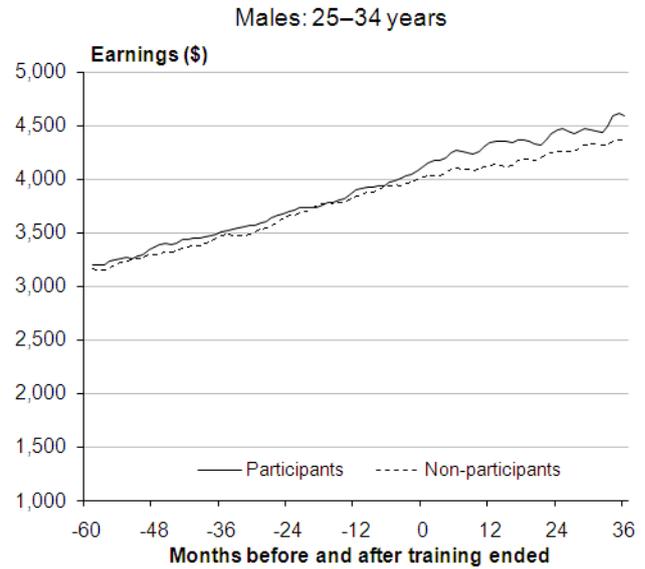
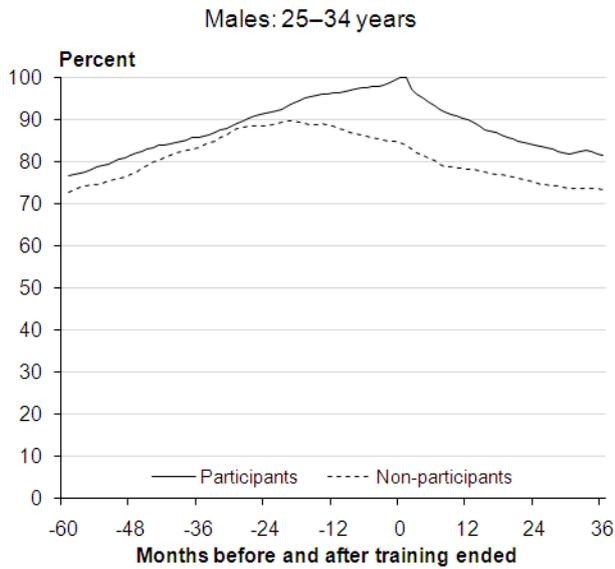
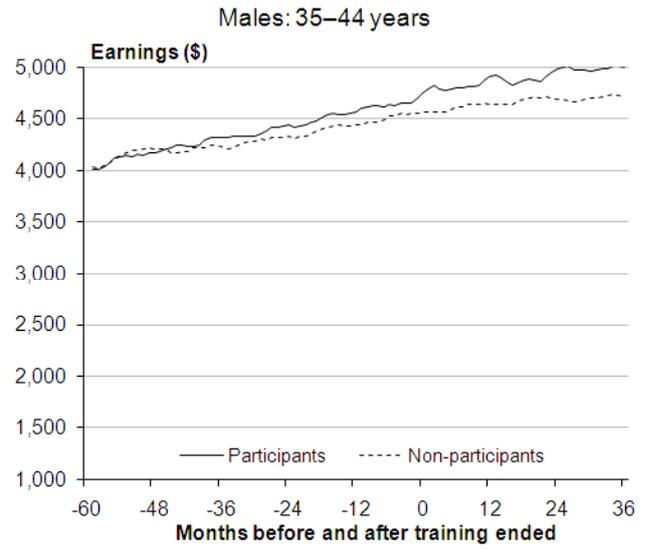
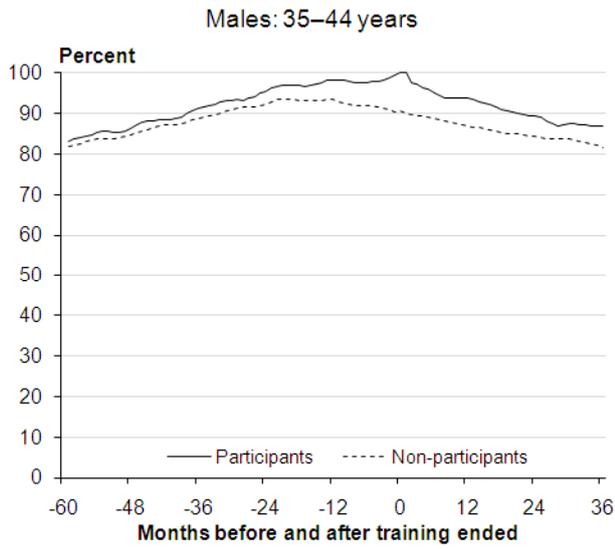
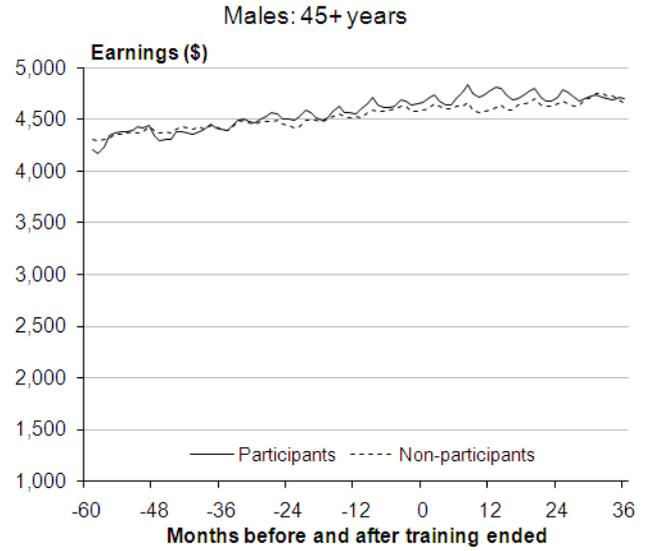
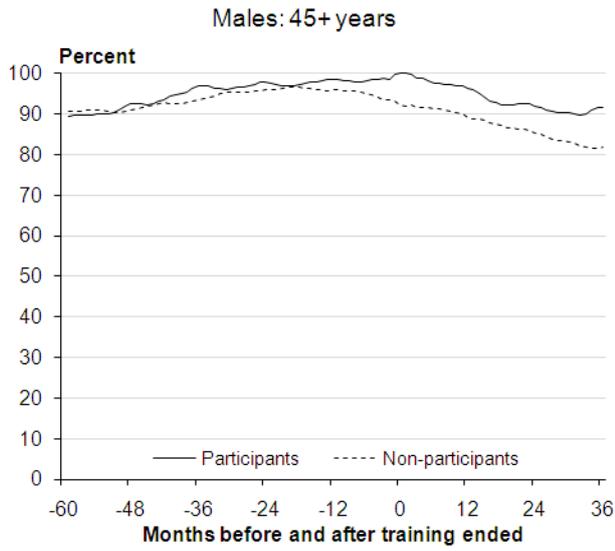


Figure 12b
Continued

Employment rate and average monthly earnings
Those employed after training ended
Highest qualification gained at level 4+
By sex and age

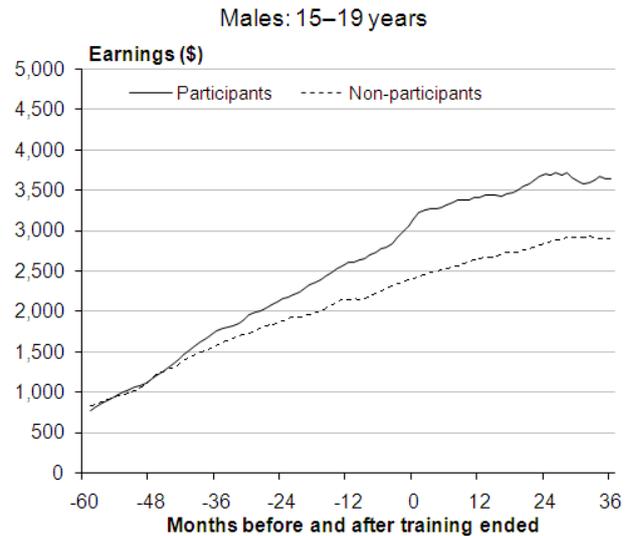
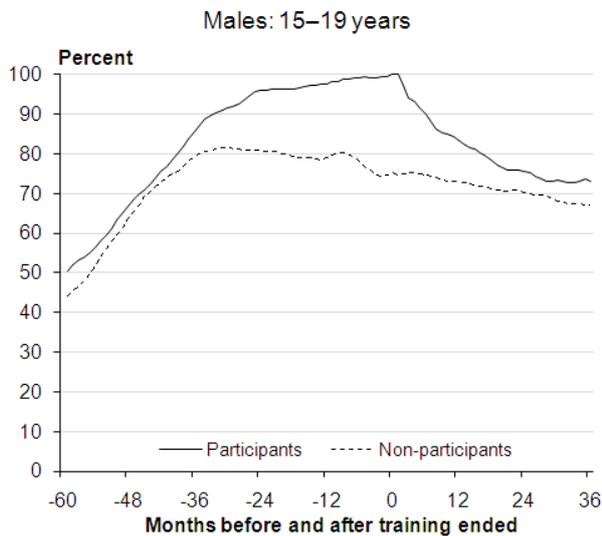
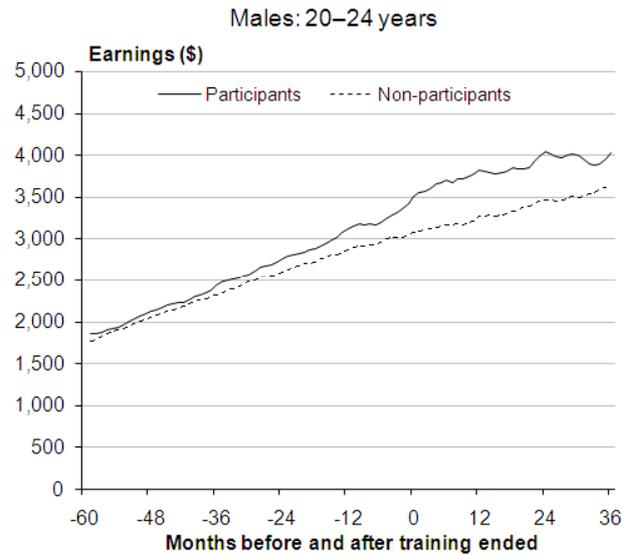
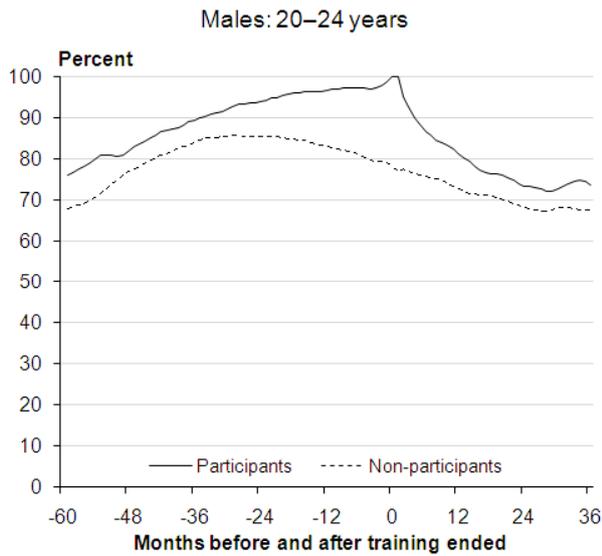
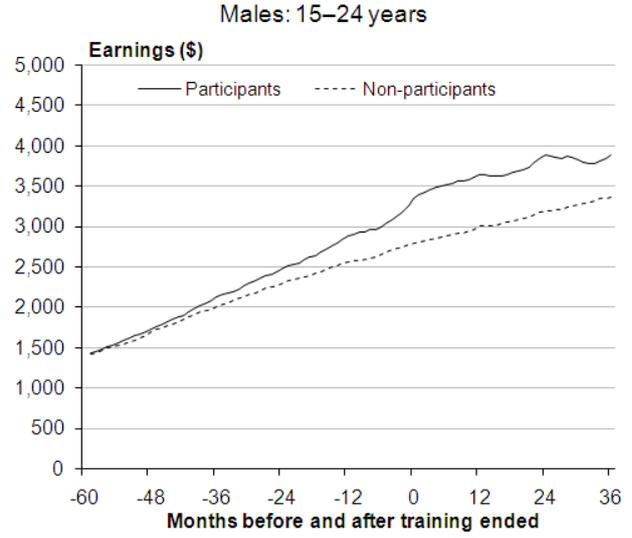
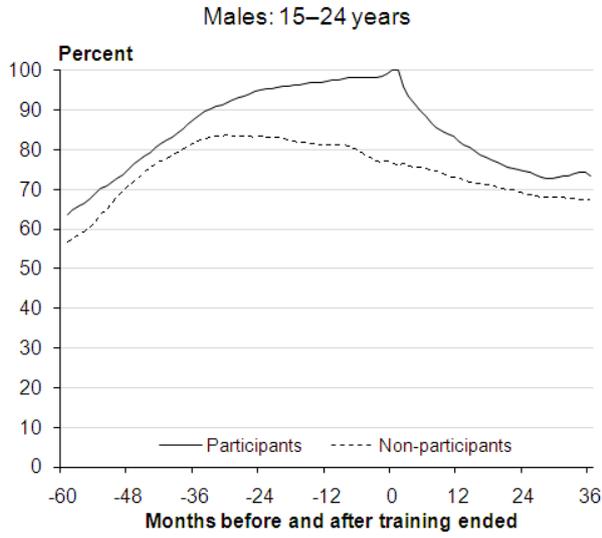


Figure 13a

Employment rate and average monthly earnings

Those employed after training ended
 Highest qualification gained at level 3
 By sex

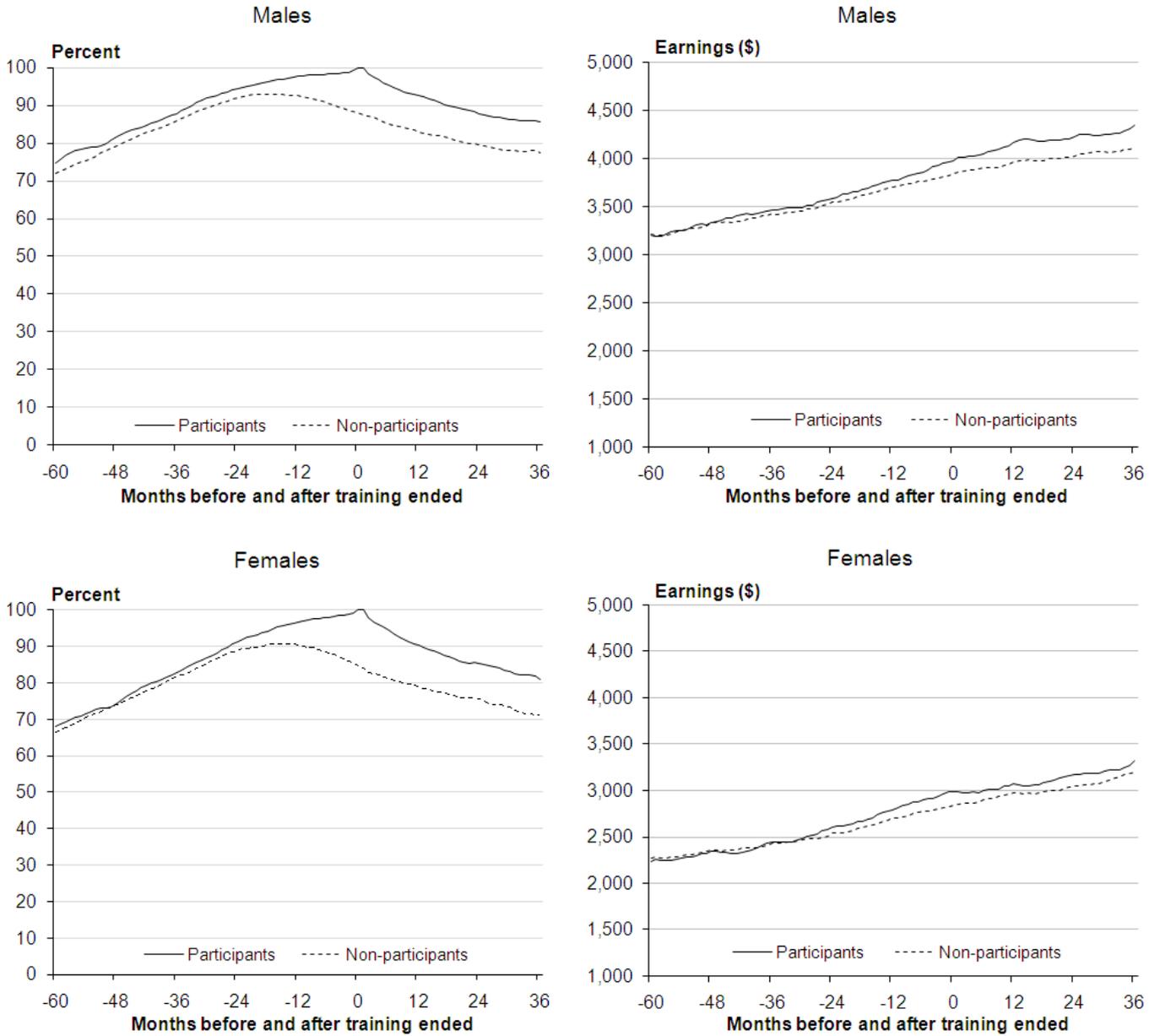


Figure 13b

Employment rate and average monthly earnings

Those employed after training ended
 Highest qualification gained at level 3
 By sex and age

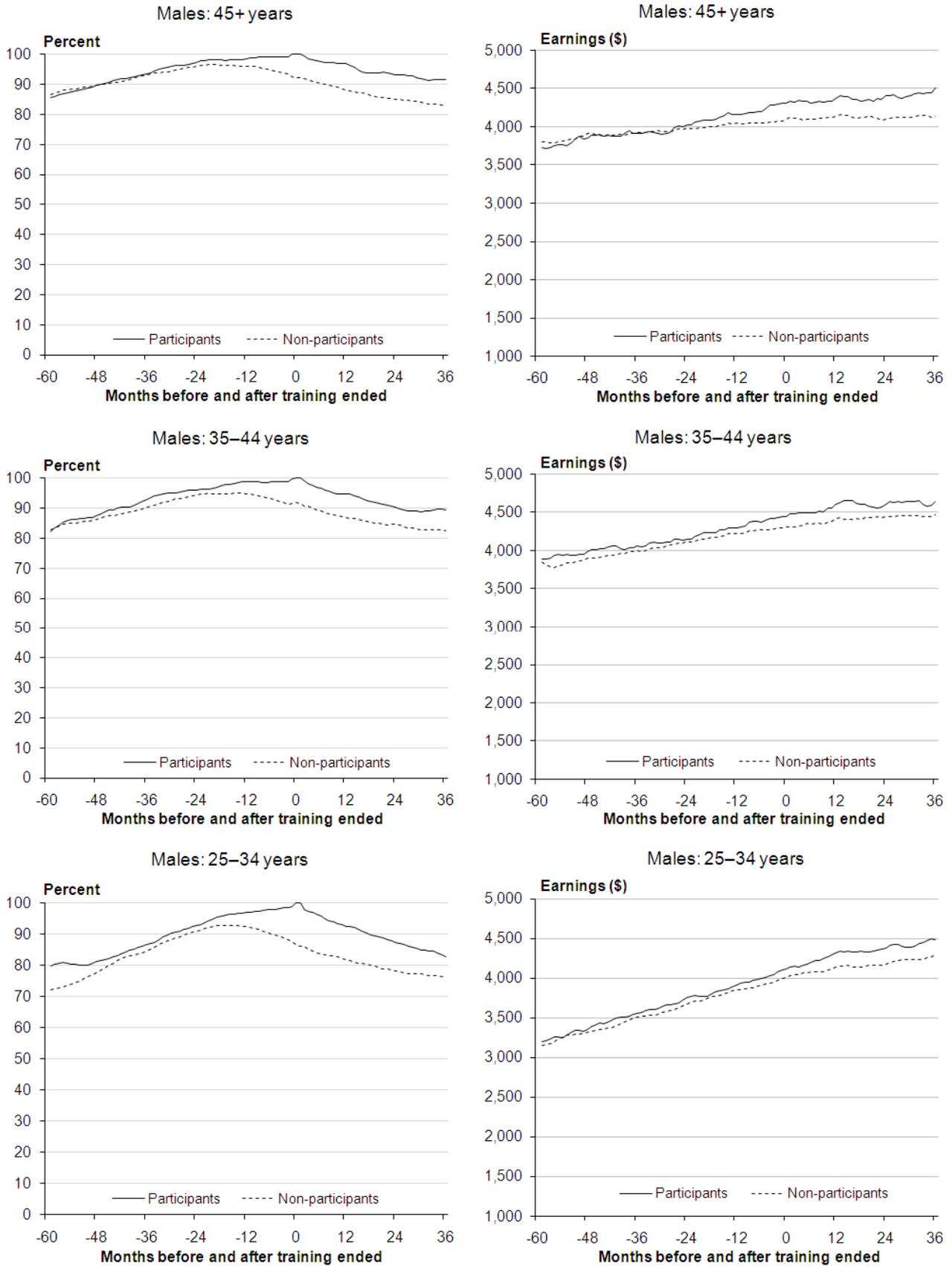


Figure 13b
Continued

Employment rate and average monthly earnings
Those employed after training ended
Highest qualification gained at level 3
By sex and age

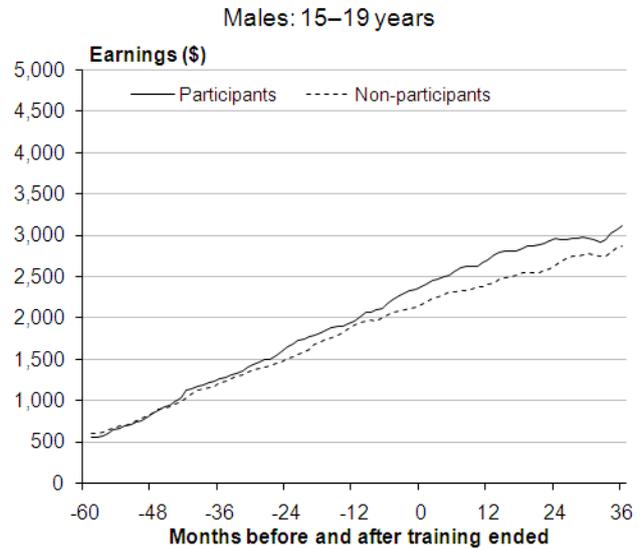
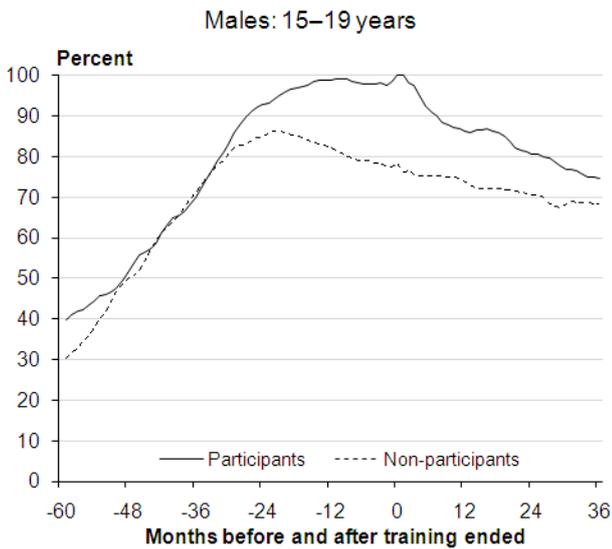
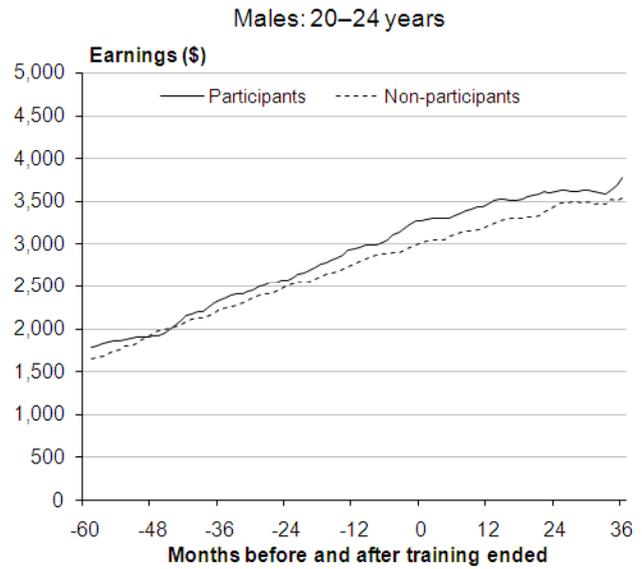
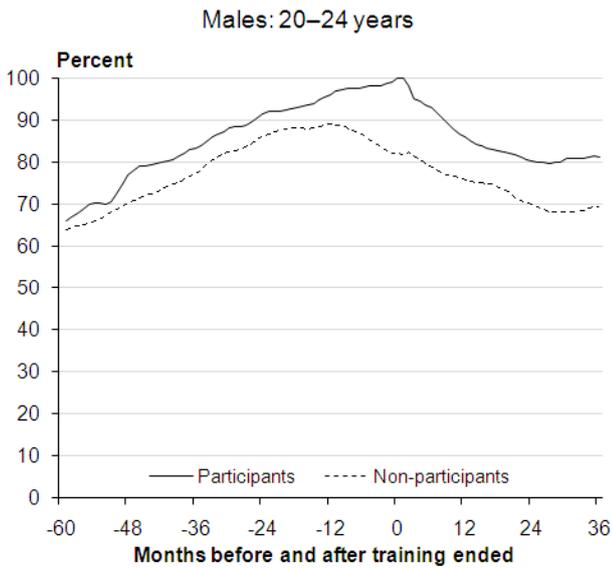
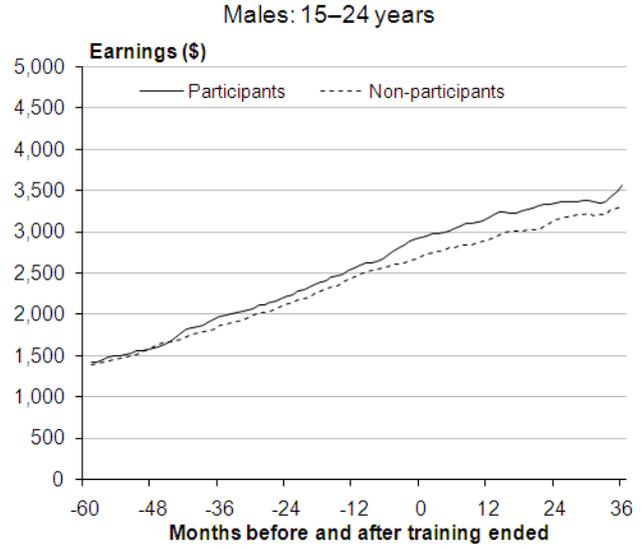
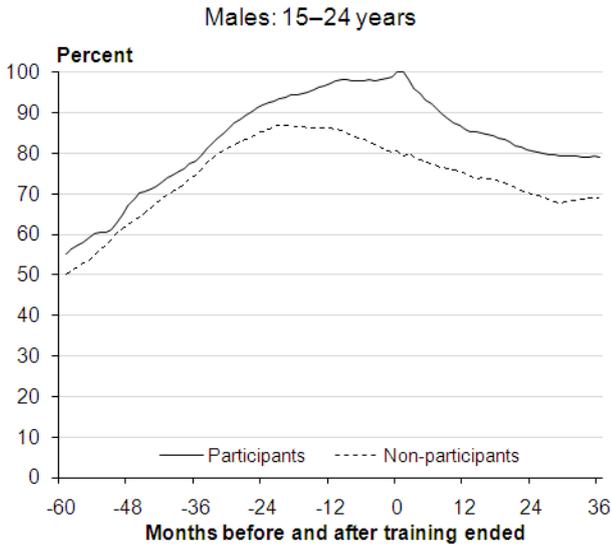
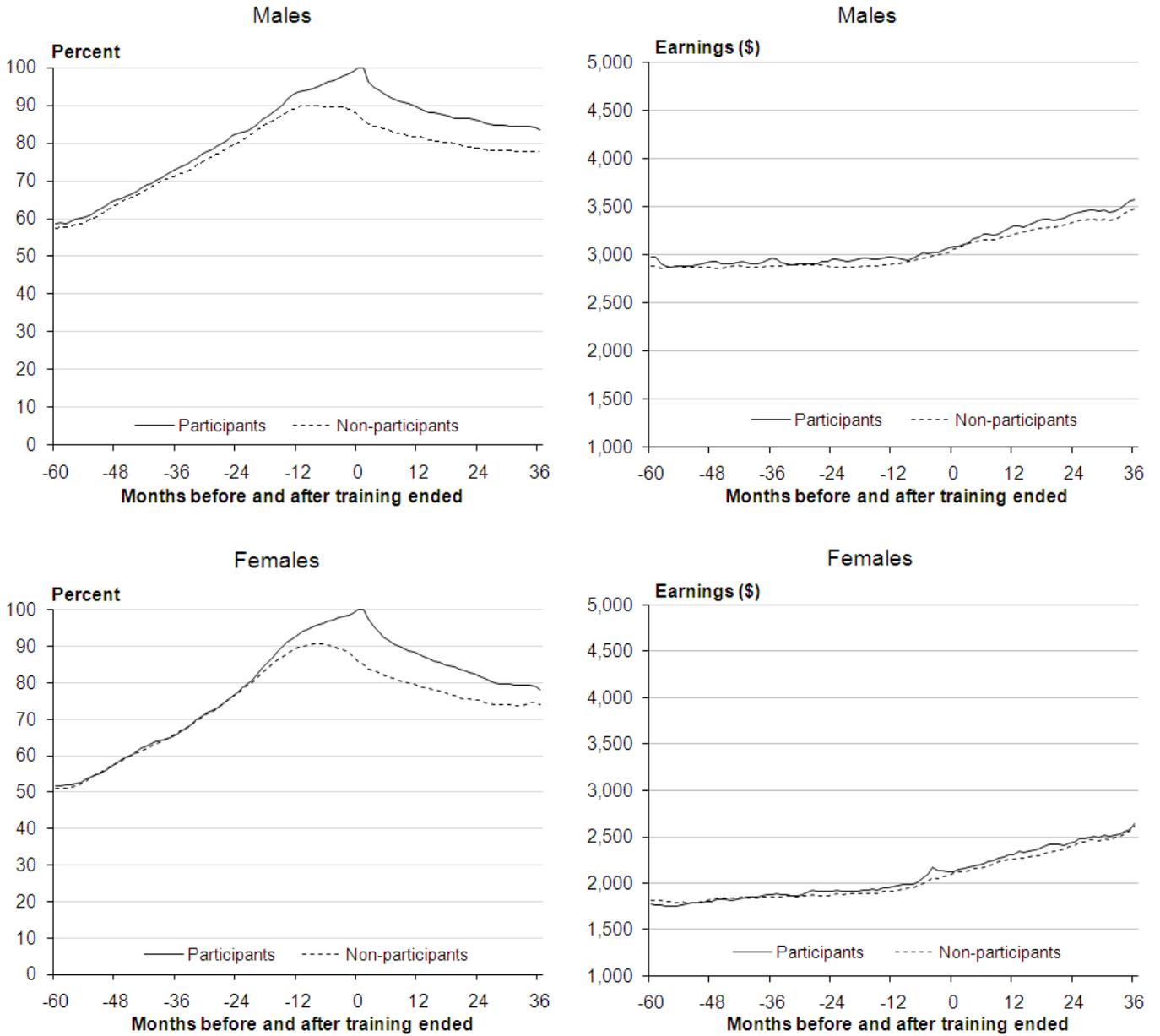


Figure 14

Employment rate and average monthly earnings

Those employed after training ended
 Highest qualification gained at level 1 or 2
 By sex



Appendix

Table A1

Percentage of employees participating in industry training
Adjusted for match rate
By month

	Mar-01	Jun-01	Sep-01	Dec-01	Mar-02	Jun-02	Sep-02	Dec-02	Mar-03	Jun-03	Sep-03	Dec-03
Percentage												
Industry												
Agriculture, fishing and forestry	8.3	8.6	9.3	7.9	8.5	10.8	11.3	9.9	10.7	11.4	11.9	9.5
Mining	20.8	21.0	24.5	22.4	24.8	25.9	28.6	26.8	27.1	27.2	27.5	25.3
Manufacturing	6.2	6.8	7.1	6.7	6.7	7.9	8.1	7.7	8.3	8.8	9.0	8.8
Electricity and gas	21.2	21.9	21.3	21.1	18.9	20.9	21.2	21.4	18.6	18.8	19.7	20.6
Construction	11.9	12.1	12.4	11.5	12.0	12.7	13.2	12.5	13.8	14.0	14.0	12.9
Wholesale trade	2.6	2.1	2.2	2.0	2.3	2.4	2.2	2.3	2.6	2.8	3.0	2.9
Retail trade	2.8	2.9	2.9	2.7	3.1	3.5	3.4	3.5	3.7	4.1	4.2	3.7
Accommodation and restaurants	1.5	1.7	1.8	1.6	1.6	1.8	1.8	1.9	1.9	2.1	2.4	1.9
Transport and storage	4.5	4.7	4.6	4.5	4.6	5.5	6.0	5.7	6.5	6.3	5.7	5.4
Communications	1.9	2.1	2.2	2.1	2.0	2.0	1.8	1.8	1.7	1.7	1.6	1.5
Finance	0.7	0.6	0.6	0.6	0.7	0.9	0.7	0.8	1.0	1.1	1.2	2.0
Business and property	1.8	1.8	1.8	1.9	1.9	2.0	2.0	1.9	2.0	2.1	2.2	2.1
Government	2.7	2.8	2.9	2.8	3.3	3.5	3.4	3.6	4.1	4.4	4.5	4.1
Education	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.0	1.0	1.0
Health and community services	1.7	1.9	2.0	1.9	2.0	2.2	2.4	2.2	2.5	2.6	2.3	2.5
Culture and recreation	3.9	4.9	6.1	3.5	3.4	4.2	6.2	4.0	4.3	5.5	6.4	4.8
Personal and other	5.0	4.8	4.6	4.3	4.5	4.6	4.5	4.3	4.7	4.6	4.3	4.0

Does Workplace-based Industry Training Improve Earnings?

Table A1
Continued

Percentage of employees participating in industry training
Adjusted for match rate
By month

	Mar-04	Jun-04	Sep-04	Dec-04	Jan-05	Mar-05	Jun-05	Sep-05	Mar-06	Jun-06	Sep-06	Dec-06
Percentage												
Industry												
Agriculture, fishing and forestry	10.2	10.8	11.5	9.6	10.1	10.3	10.9	9.5	10.0	10.2	10.8	9.3
Mining	26.3	29.7	31.0	29.1	28.6	30.1	30.2	28.3	30.2	33.8	35.0	35.9
Manufacturing	9.2	9.6	9.9	9.8	10.6	11.5	11.8	11.5	11.3	11.5	11.7	11.1
Electricity and gas	19.4	19.8	19.3	19.3	20.1	20.3	20.3	16.9	18.3	18.1	17.5	16.7
Construction	13.9	14.6	14.7	13.9	15.4	15.9	16.3	15.6	16.5	16.9	17.1	16.2
Wholesale trade	3.0	3.1	3.2	3.0	3.1	3.2	3.6	3.3	3.2	3.6	3.8	3.4
Retail trade	3.8	3.9	4.0	3.6	3.7	3.9	3.6	3.5	3.7	3.8	3.9	3.5
Accommodation and restaurants	2.4	2.4	3.0	3.4	4.3	5.2	5.3	5.6	5.8	6.4	6.1	5.3
Transport and storage	5.6	5.6	5.8	5.4	5.8	6.1	6.5	6.0	5.9	5.9	6.3	5.2
Communications	1.6	1.4	1.6	1.5	1.8	1.7	1.7	1.4	1.3	1.4	1.3	1.3
Finance	1.2	1.2	1.1	1.0	1.0	1.1	0.9	1.0	1.2	1.2	1.1	1.1
Business and property	2.1	2.1	2.1	2.0	2.1	2.2	2.3	2.3	2.3	2.5	2.6	2.3
Government	4.5	4.5	4.7	4.6	5.0	5.3	5.5	6.1	6.1	6.3	6.6	6.4
Education	1.1	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.0
Health and community services	2.9	3.0	3.1	3.0	3.6	3.5	3.5	3.5	3.6	3.9	4.3	4.0
Culture and recreation	4.7	5.4	5.8	4.8	5.0	5.7	6.2	5.1	5.3	6.1	7.0	6.0
Personal and other	3.8	4.2	4.4	4.4	5.1	5.4	5.8	6.0	7.0	7.6	8.0	7.7

Figure A1

The percentage of learners participating in training

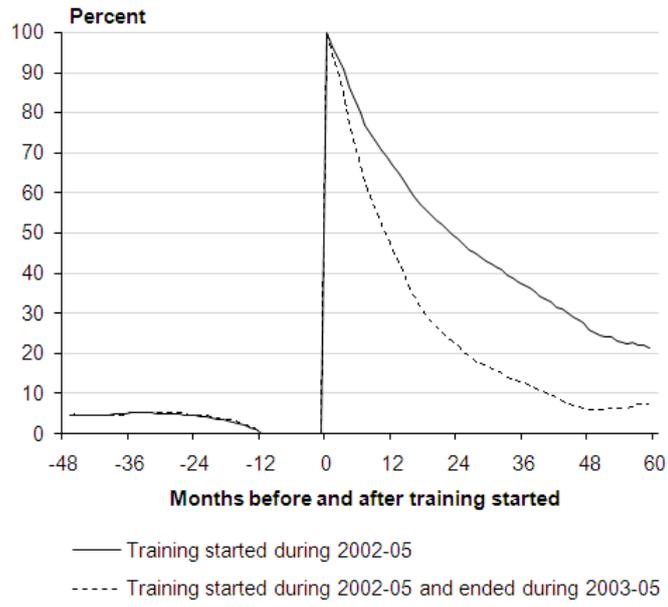


Figure A2

Percentage training, employed, training and employed

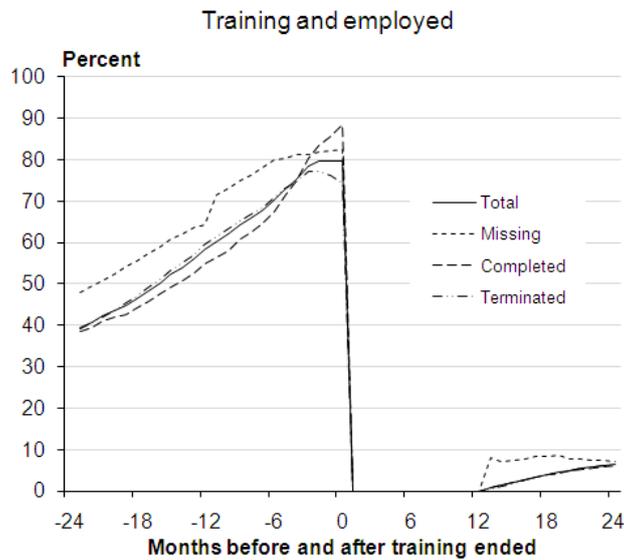
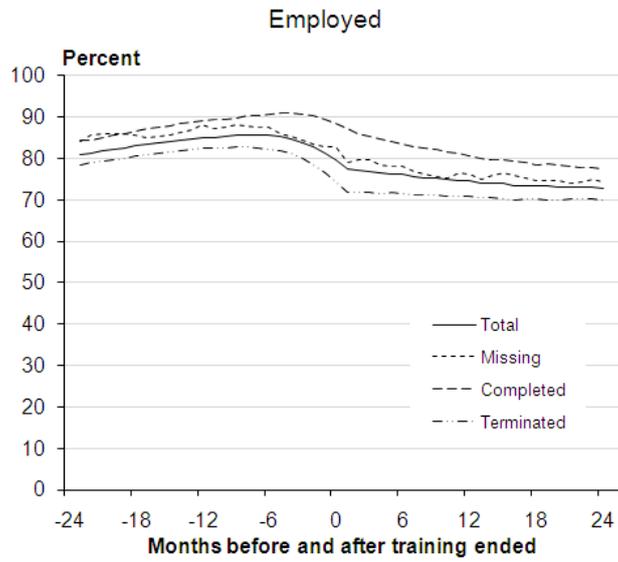
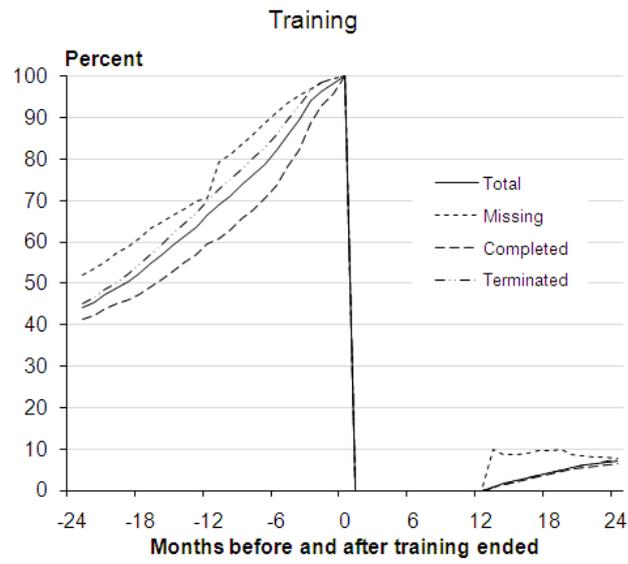


Figure A3

Employment rate and average monthly earnings
 Those who were employed during the 12 months before and after training started
 Highest qualification gained level 4+
 By sex

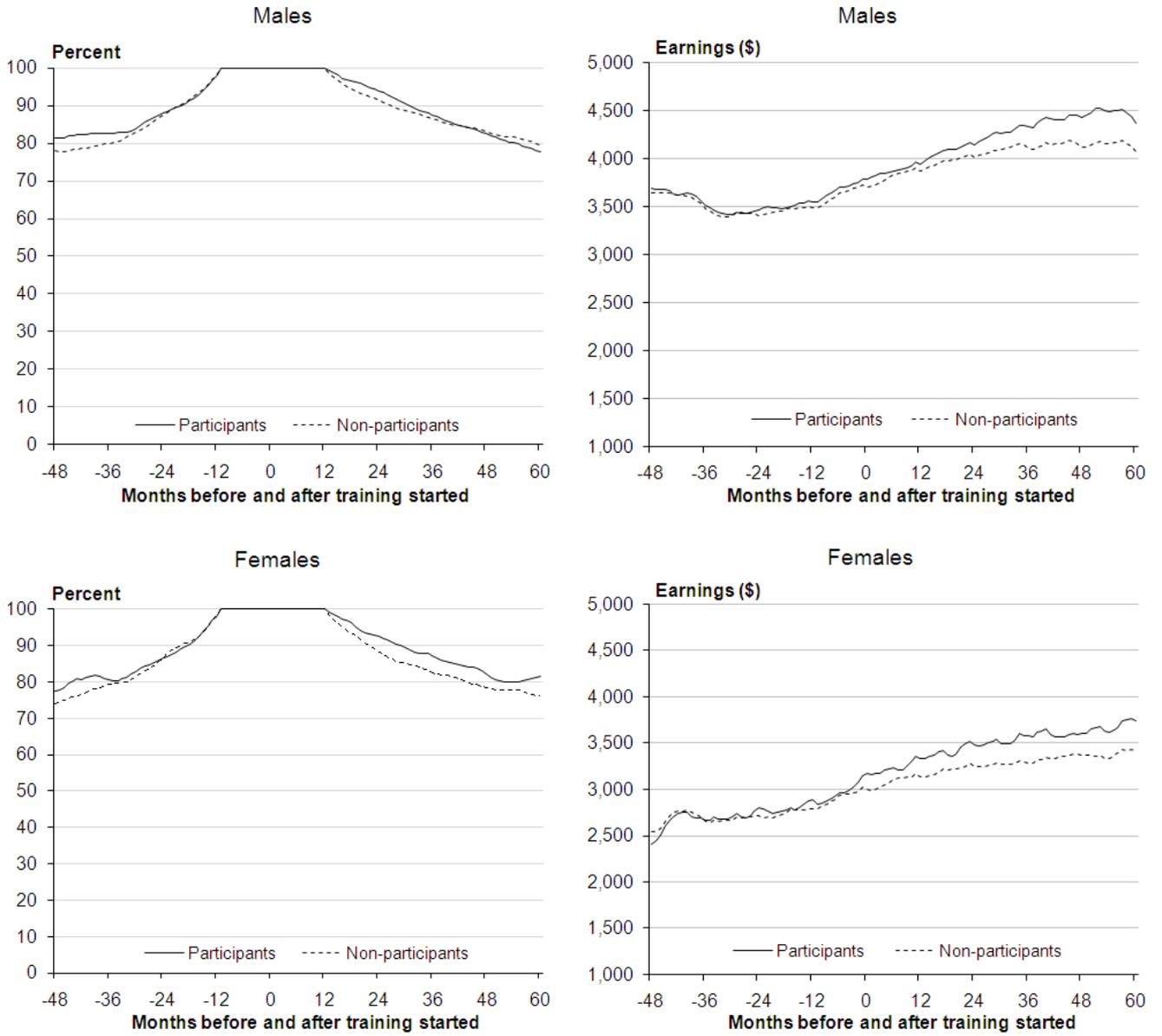


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 4+
By sex and age

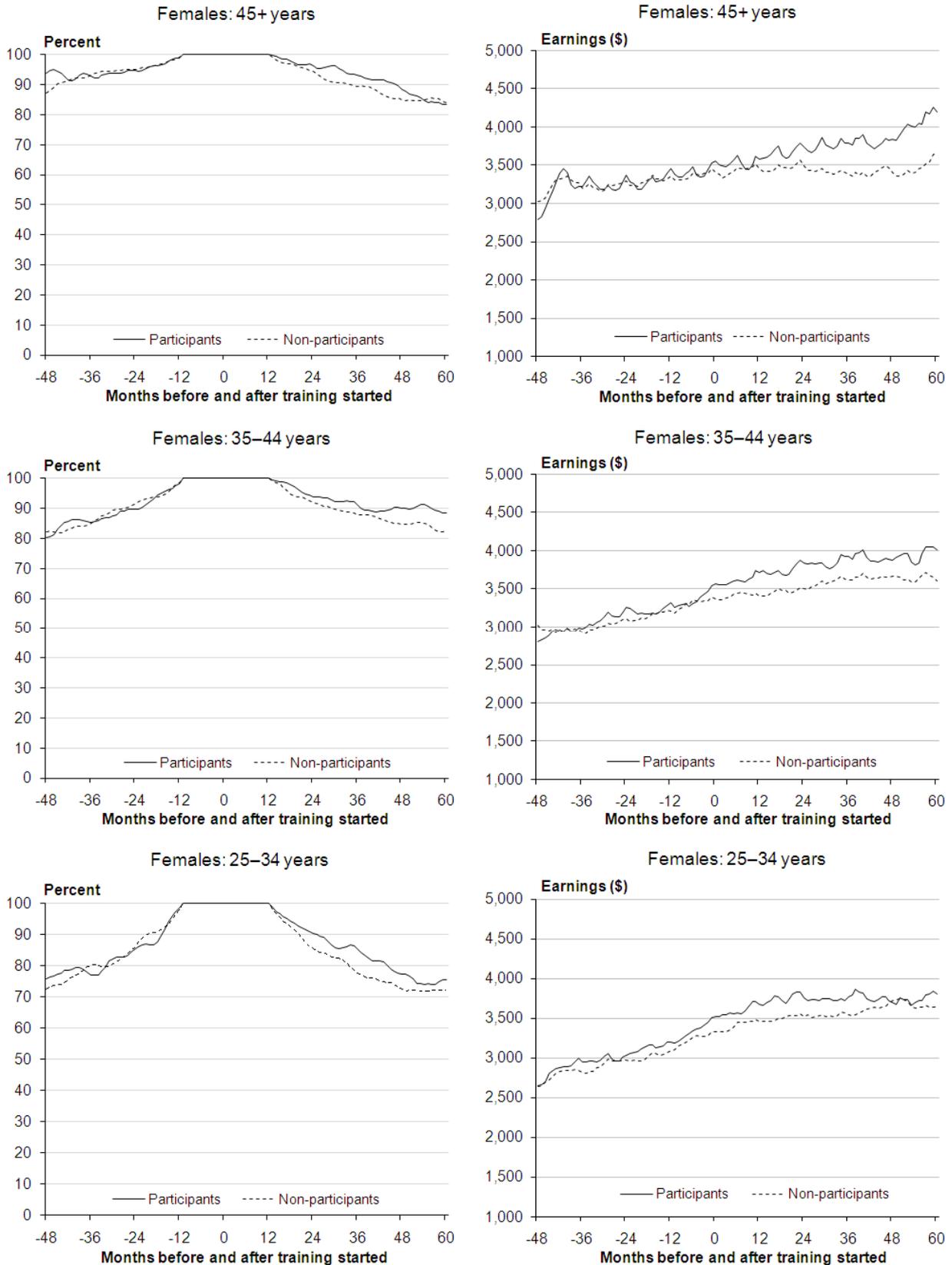


Figure A3
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Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 4+
By sex and age

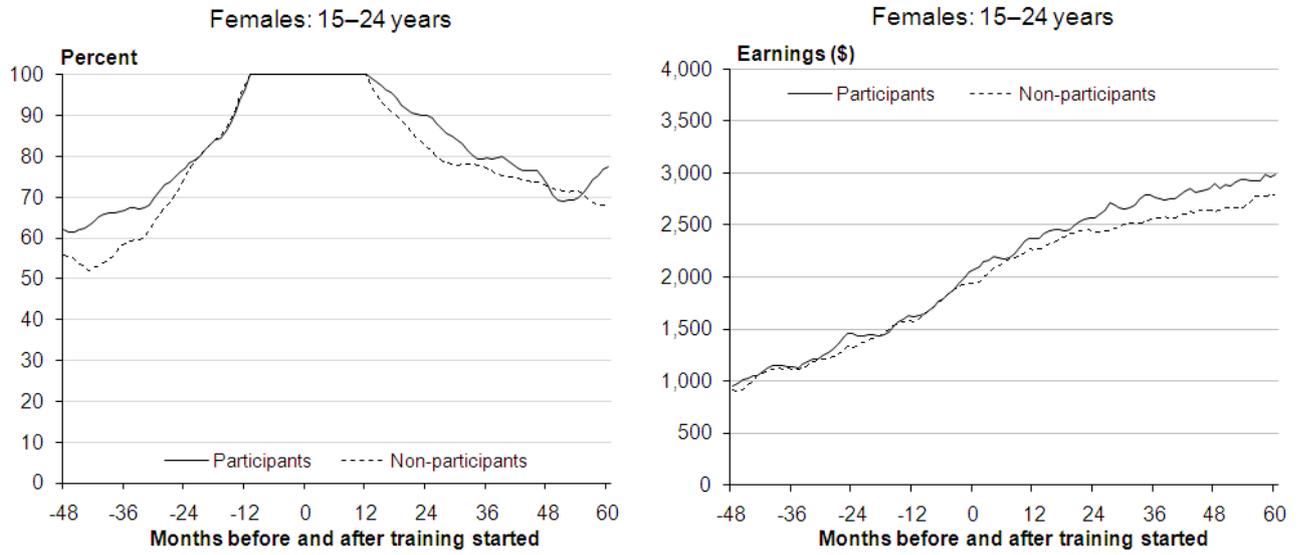


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 4
By sex and age

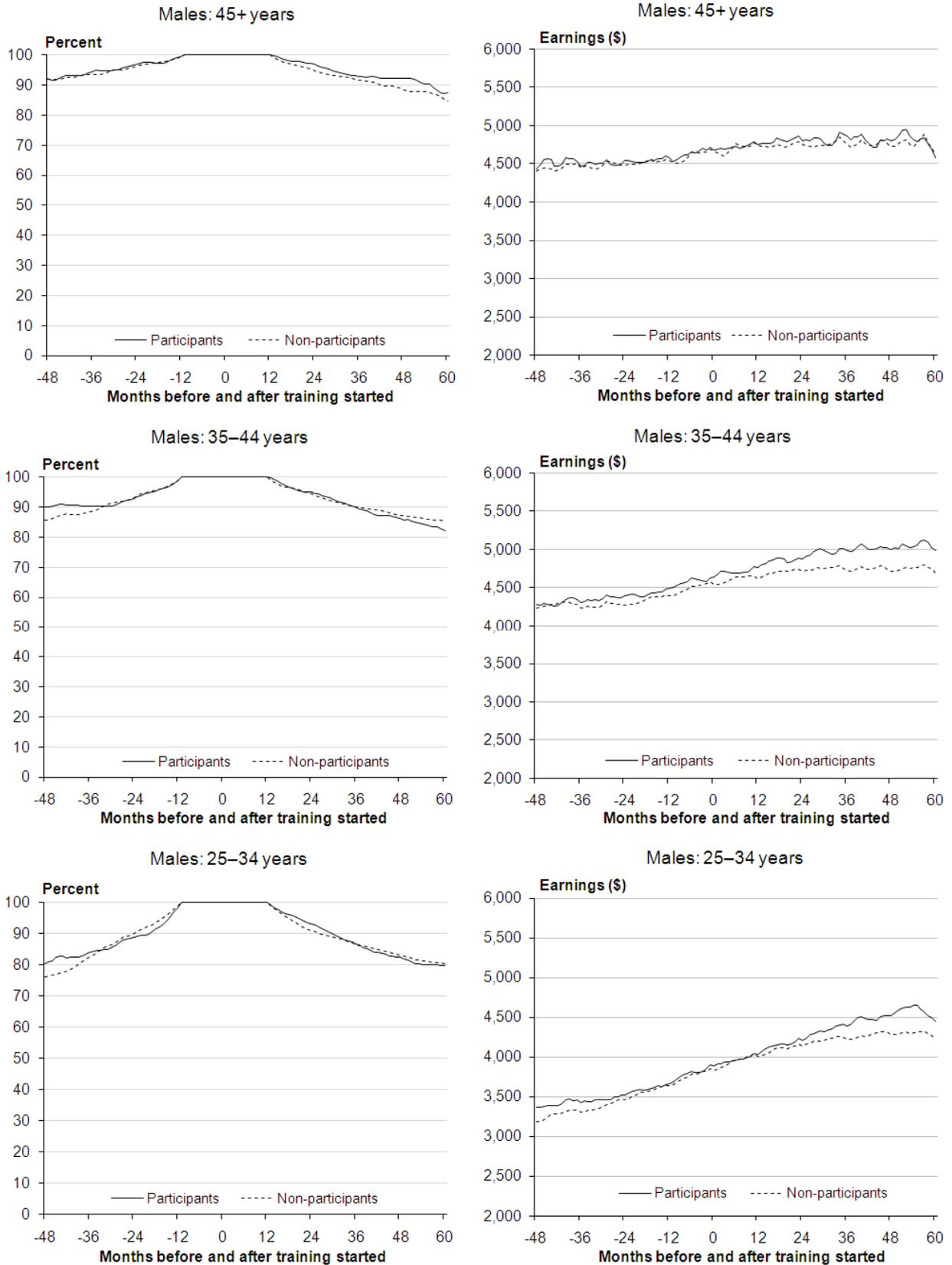


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 4
By sex and age

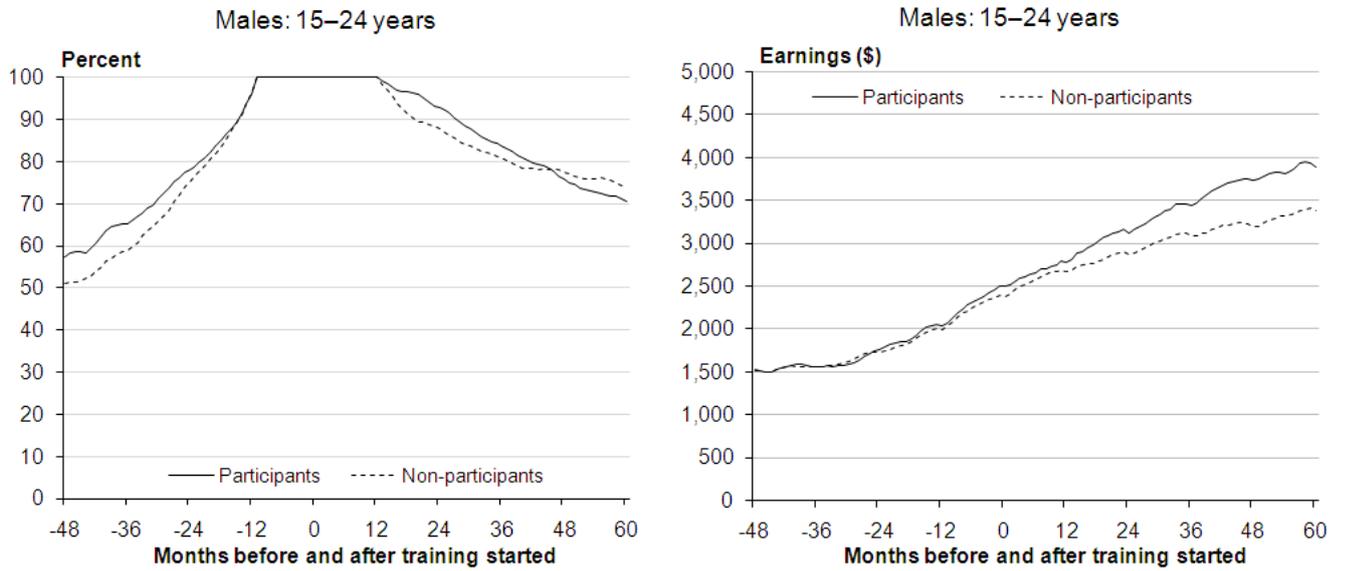


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 3
By sex

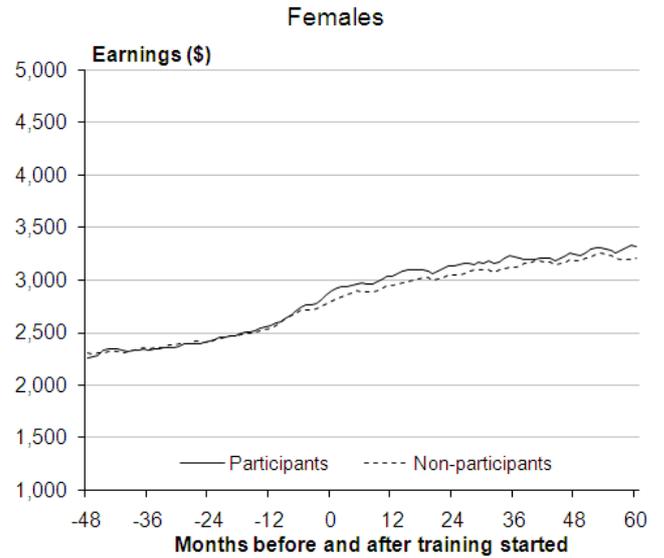
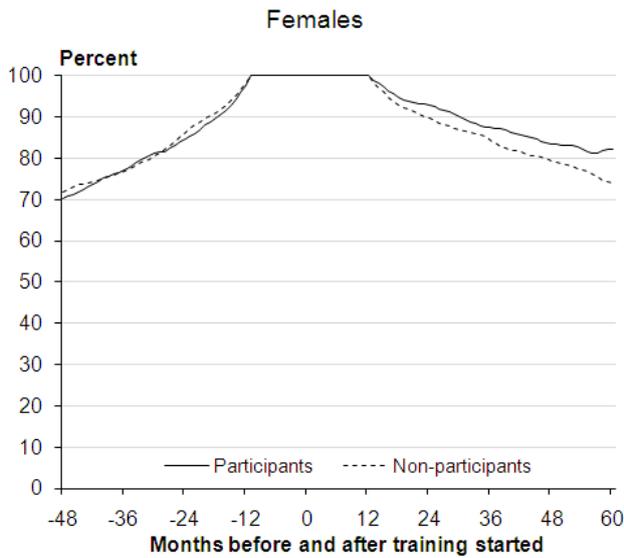
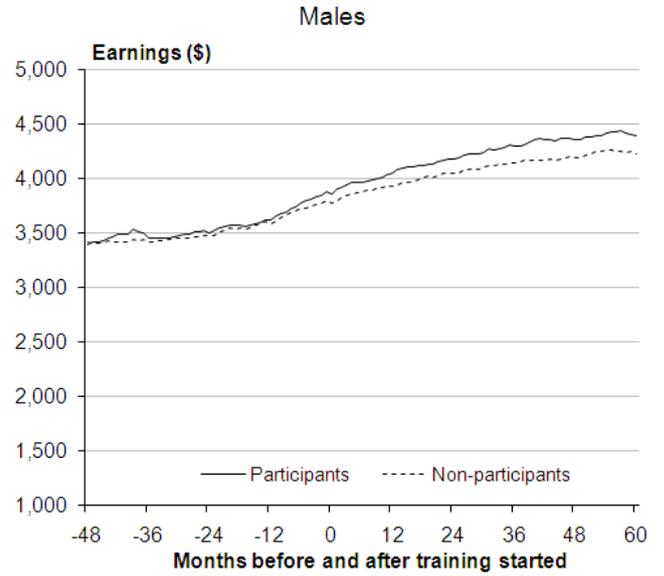
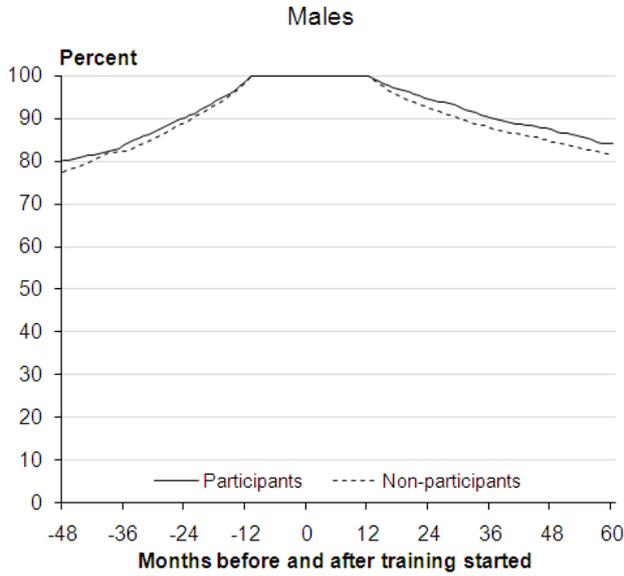


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 3
By sex and age

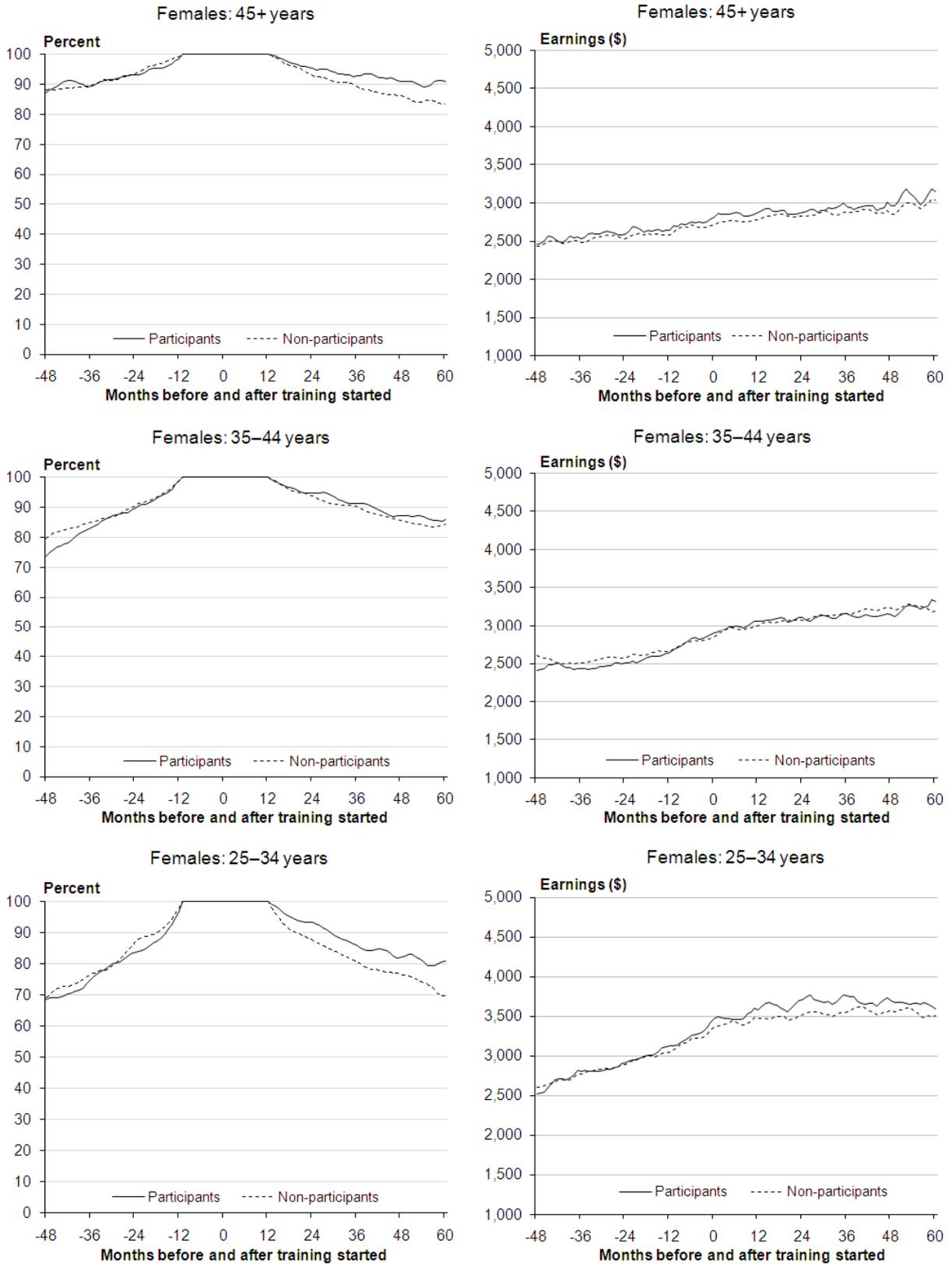


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 3
By sex and age

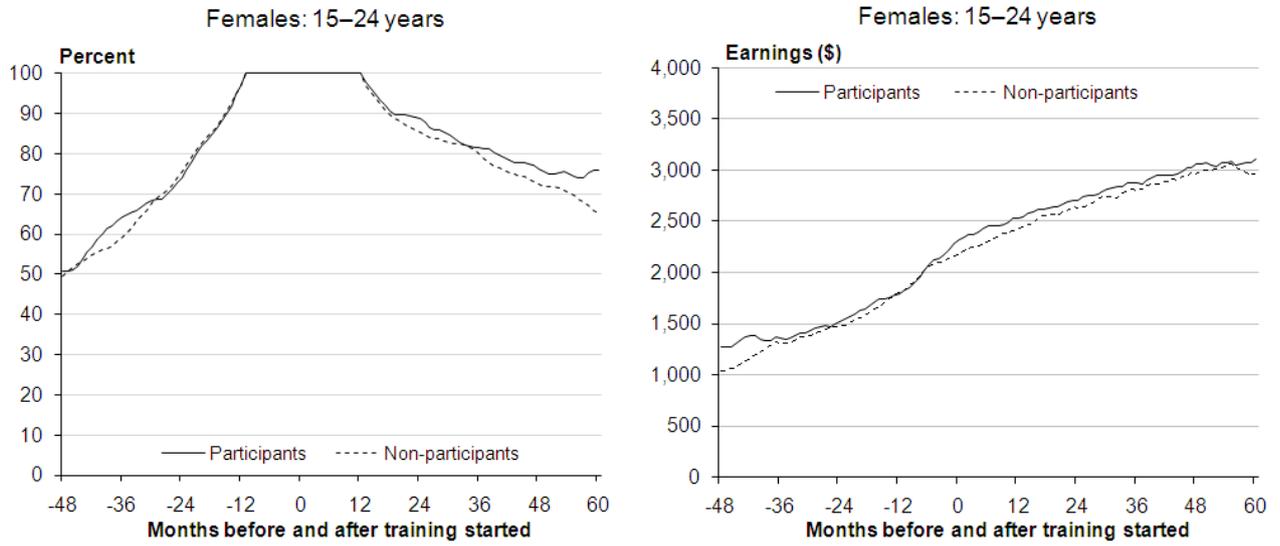


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 3, by sex and age

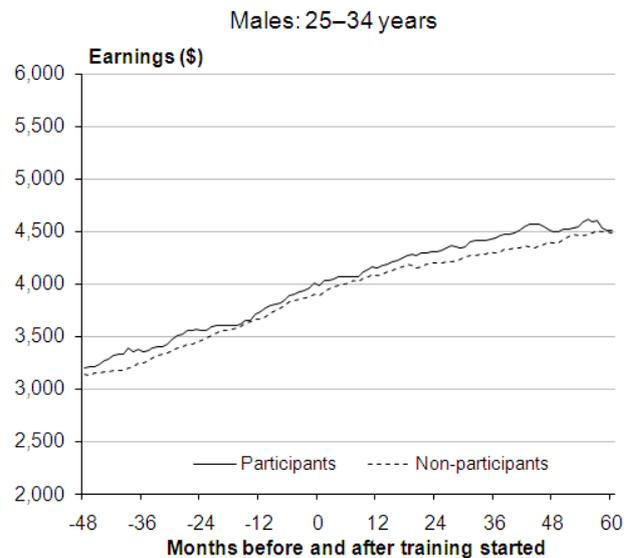
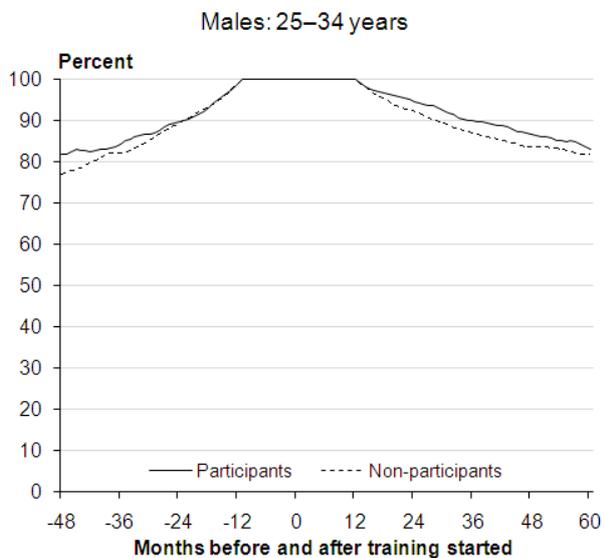
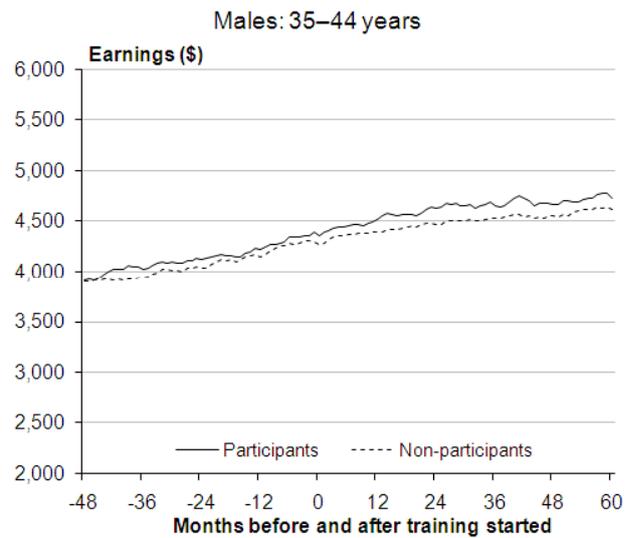
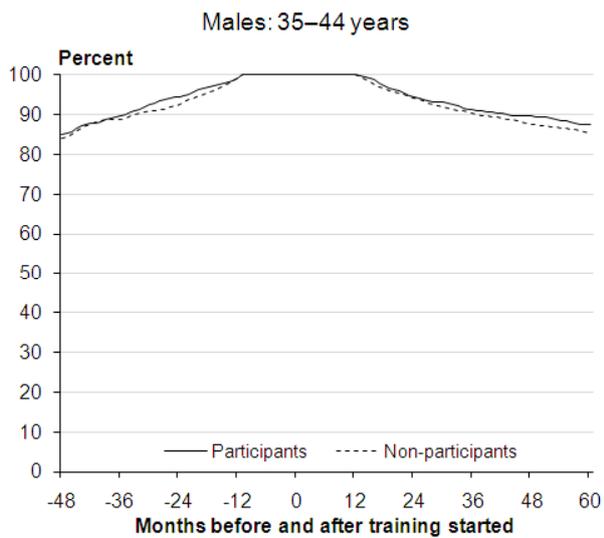
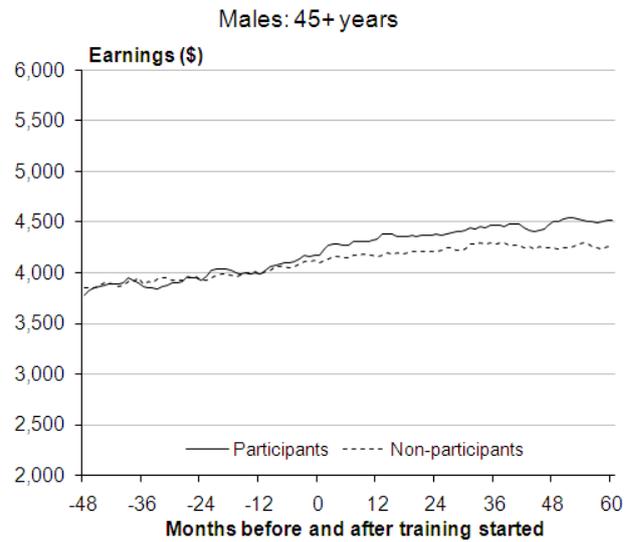
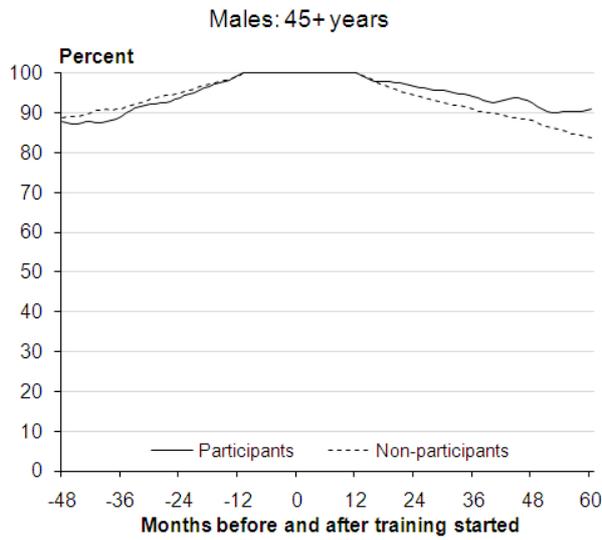


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 3
By sex and age

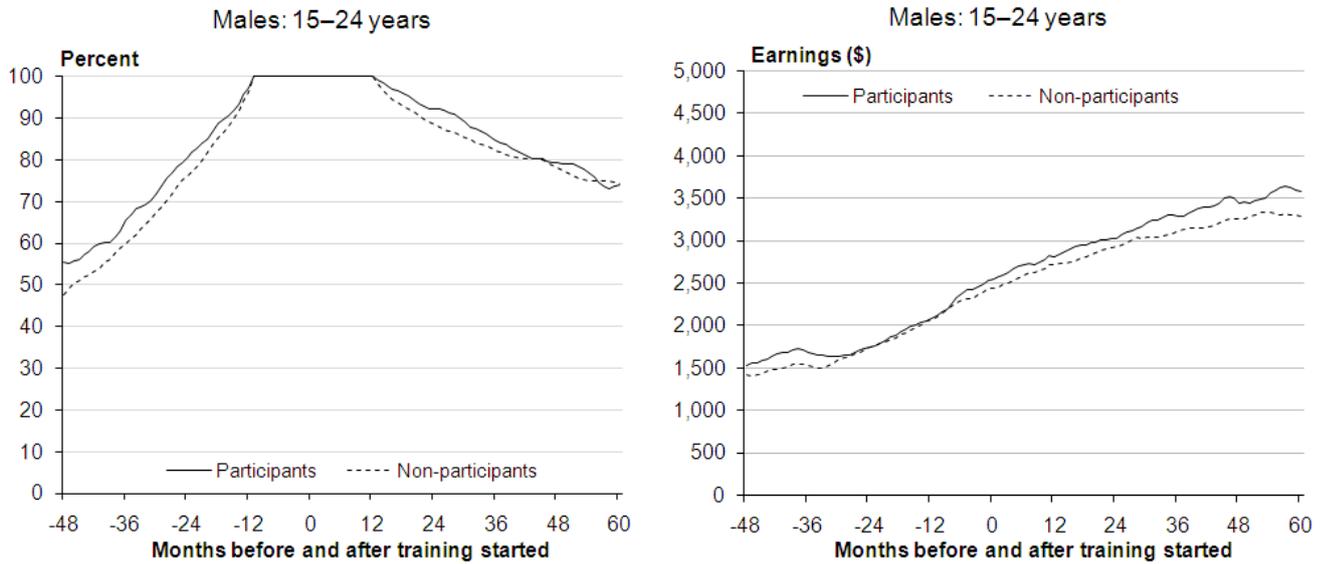


Figure A3
Continued

Employment rate and average monthly earnings
Those who were employed during the 12 months before and after training started
Highest qualification gained level 1 or 2
By sex

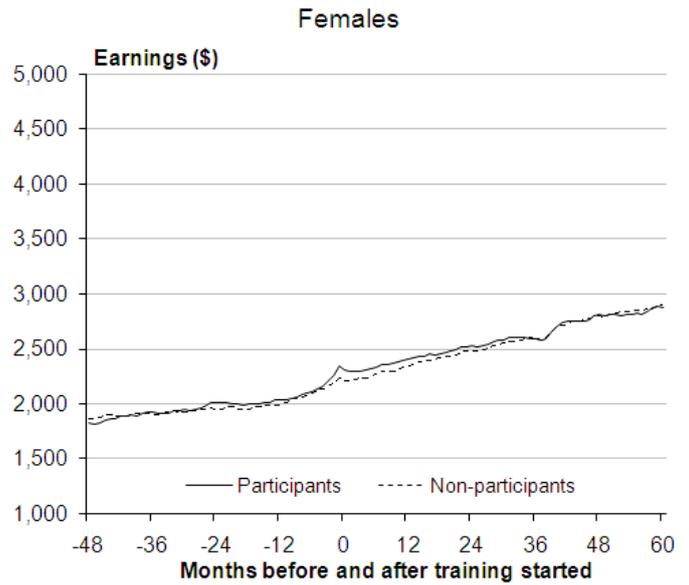
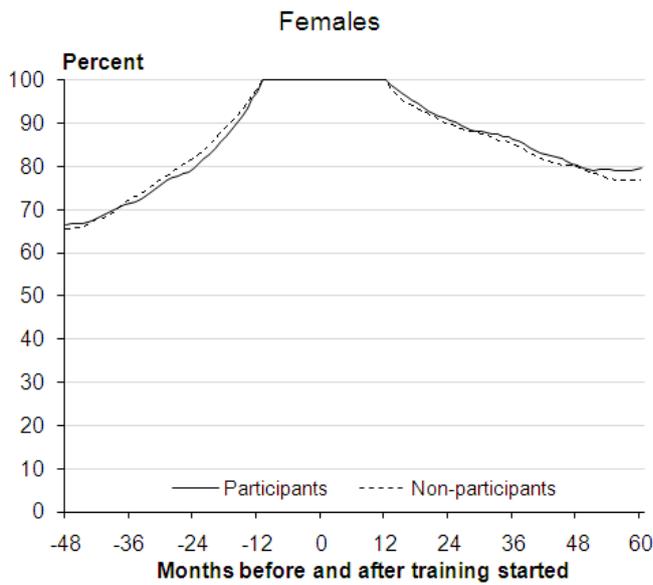
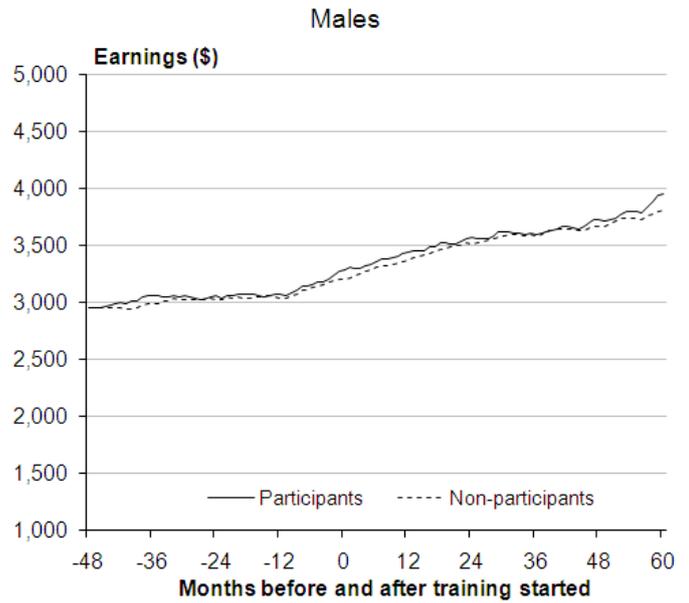
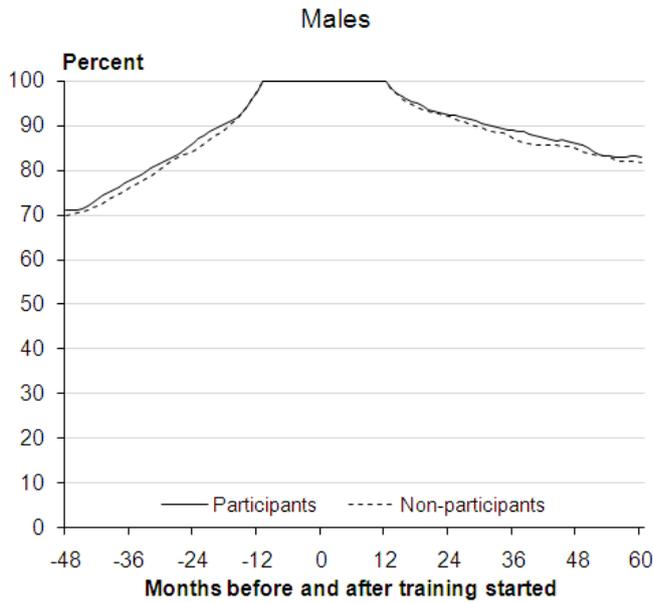


Figure A4

Employment rate and average monthly earnings
 Those who did not gain a qualification
 By programme level

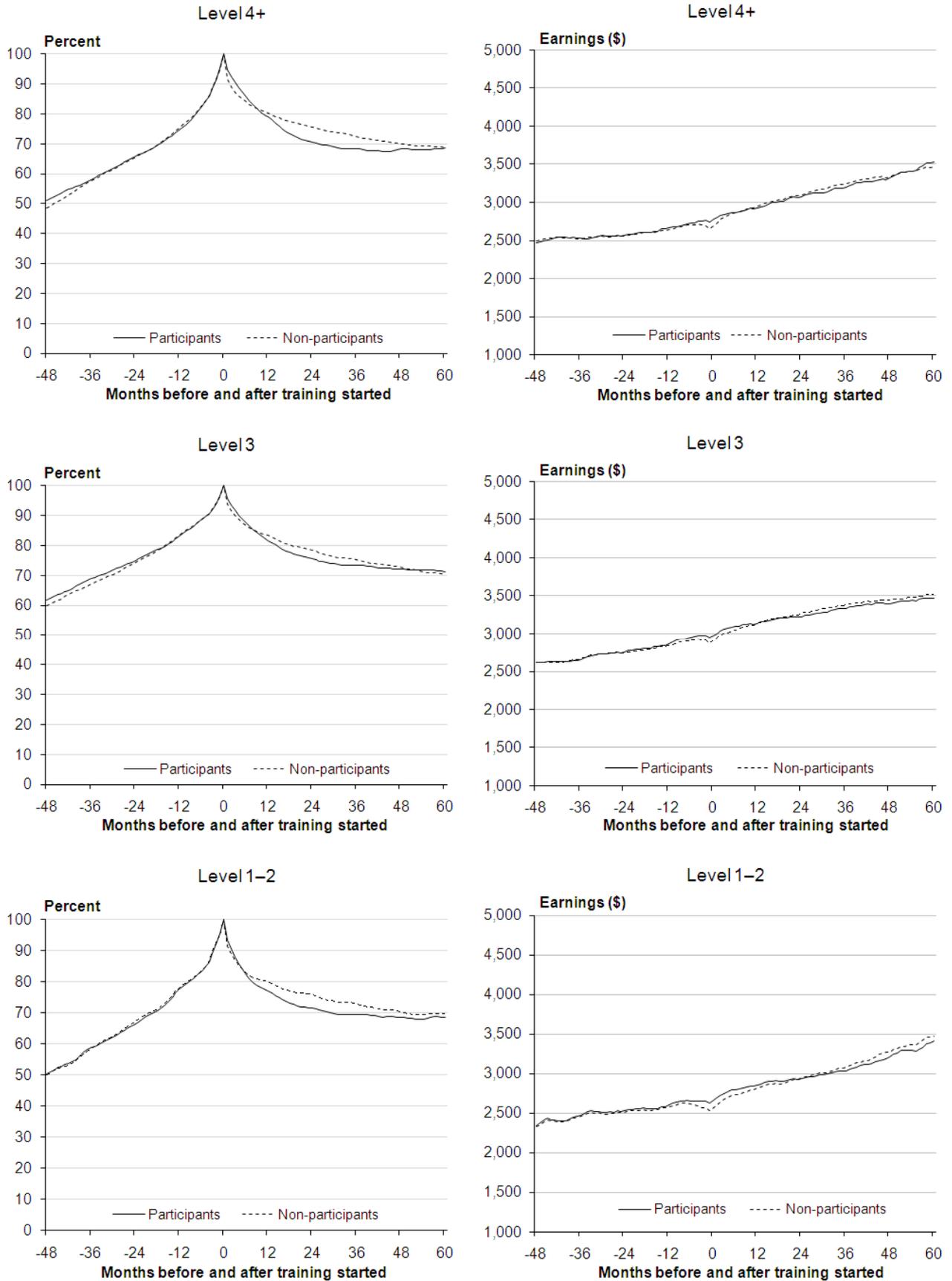


Figure A5

Employment rate and average monthly earnings
 Main study population
 Matched when training ended
 By highest qualification gained

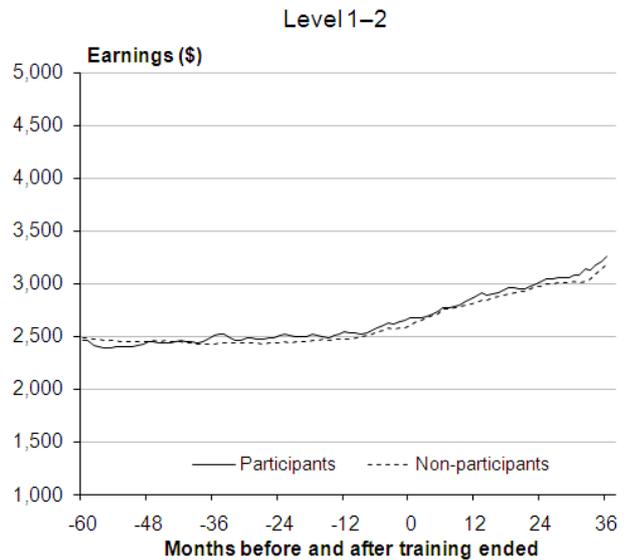
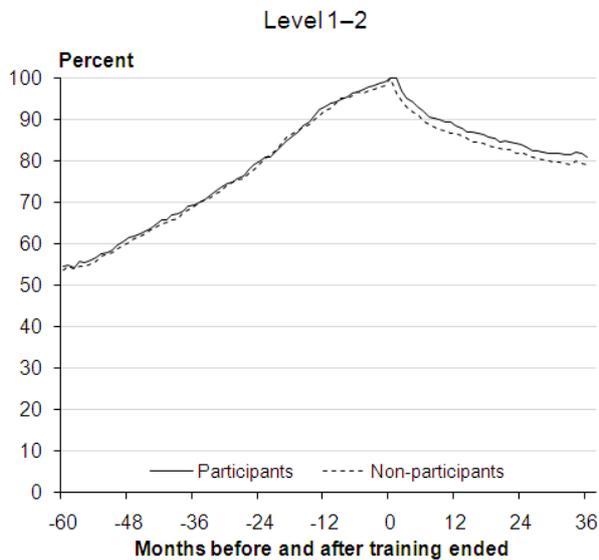
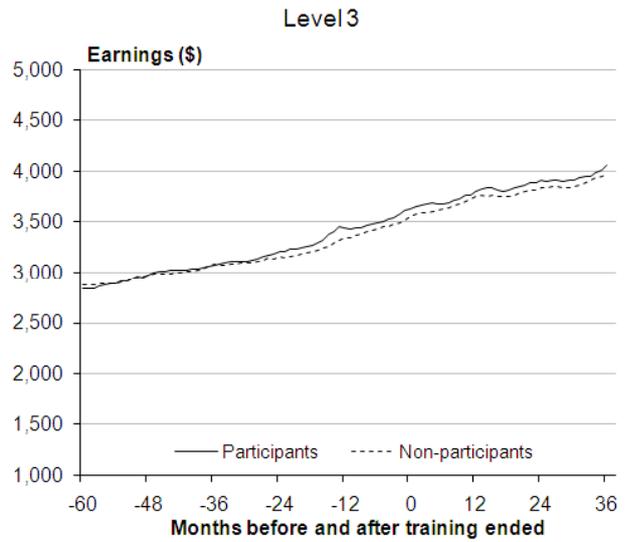
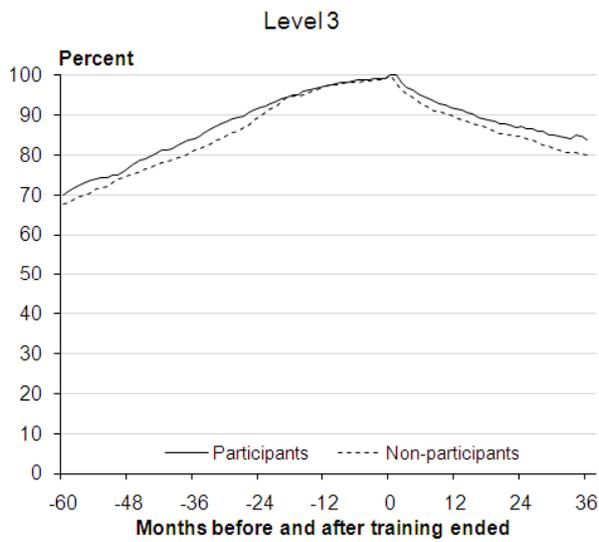
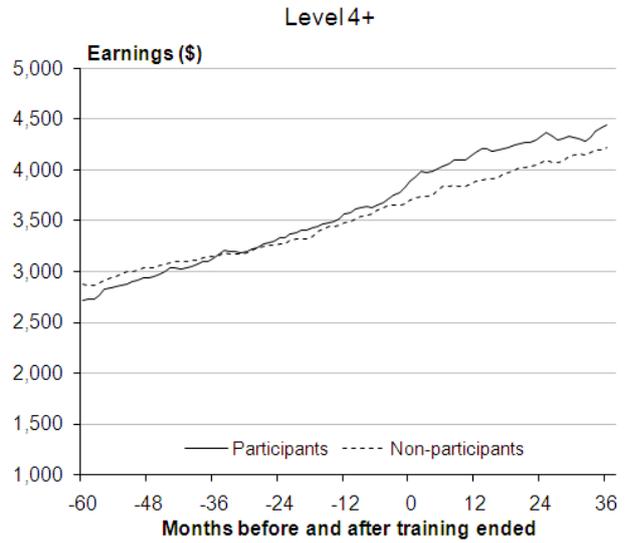
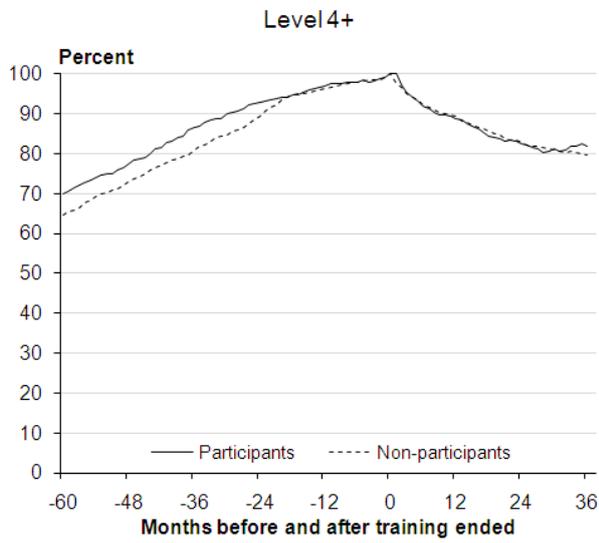


Figure A5
Continued

Employment rate and average monthly earnings
Main study population
Matched when training ended
By highest qualification gained

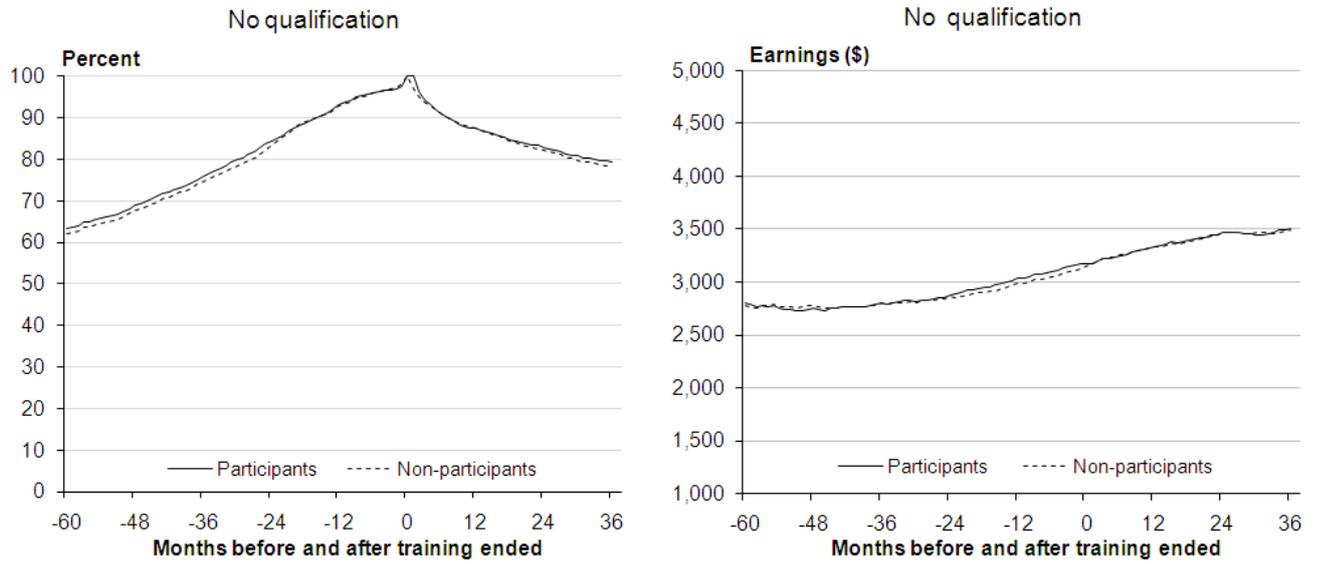


Figure A5
Continued

Employment rate and average monthly earnings

Main study population
Matched when training ended
Highest qualification gained level 4+
By training duration

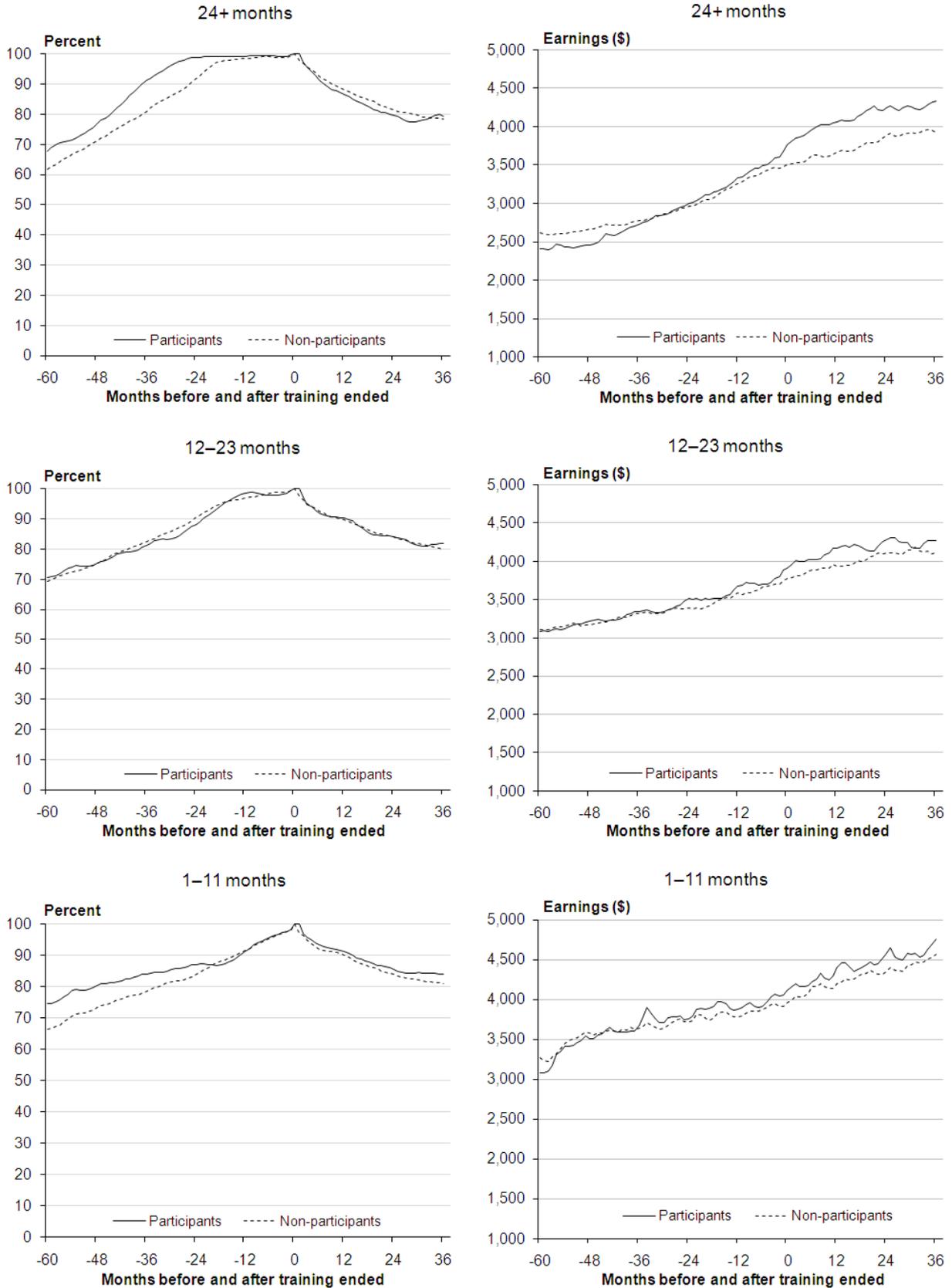


Figure A6

Employment rate and average monthly earnings
 Exit study population
 Matched when training ended
 By highest qualification gained

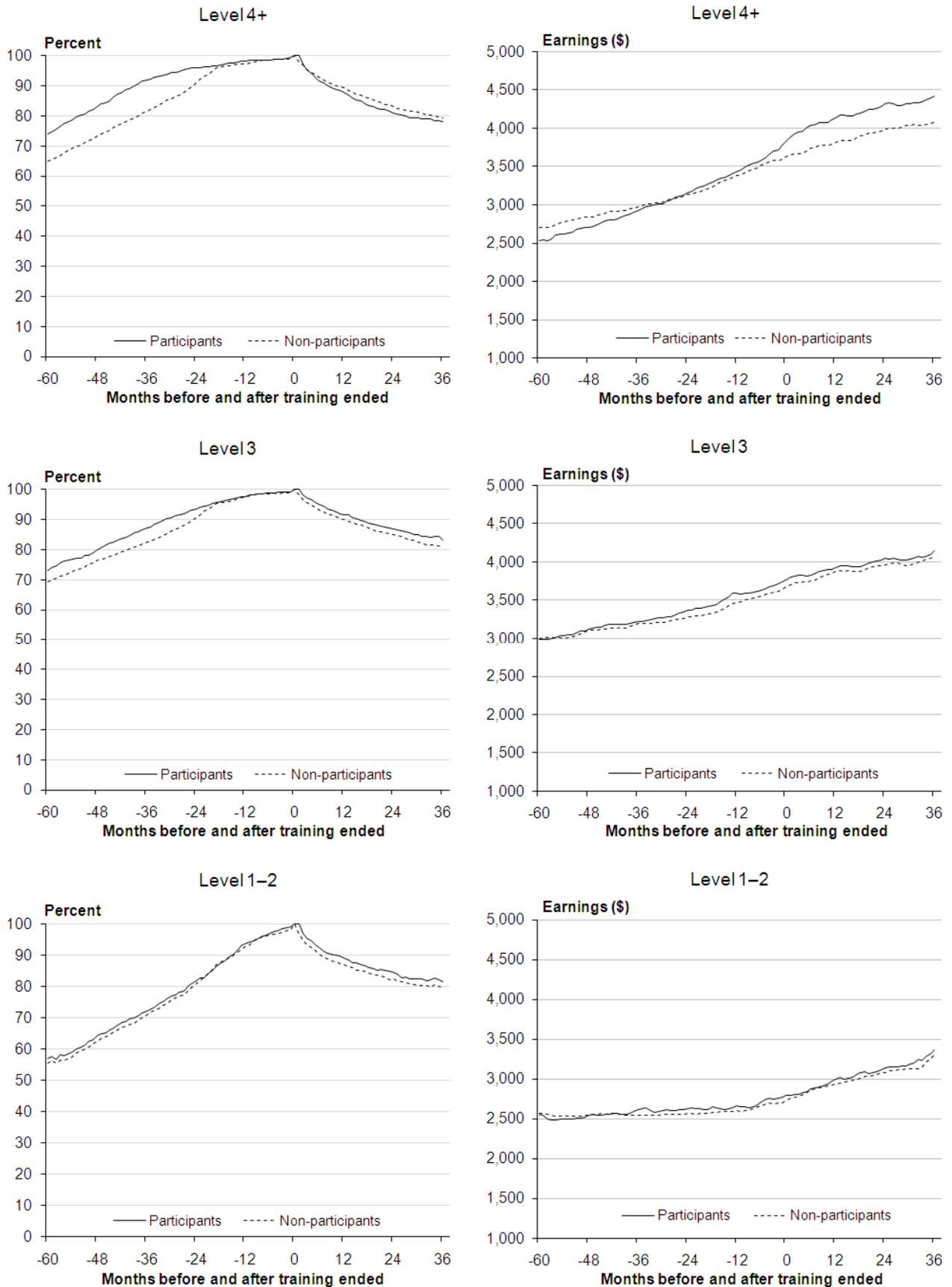


Figure A6
Continued

Employment rate and average monthly earnings
Exit study population
Matched when training ended
By highest qualification gained

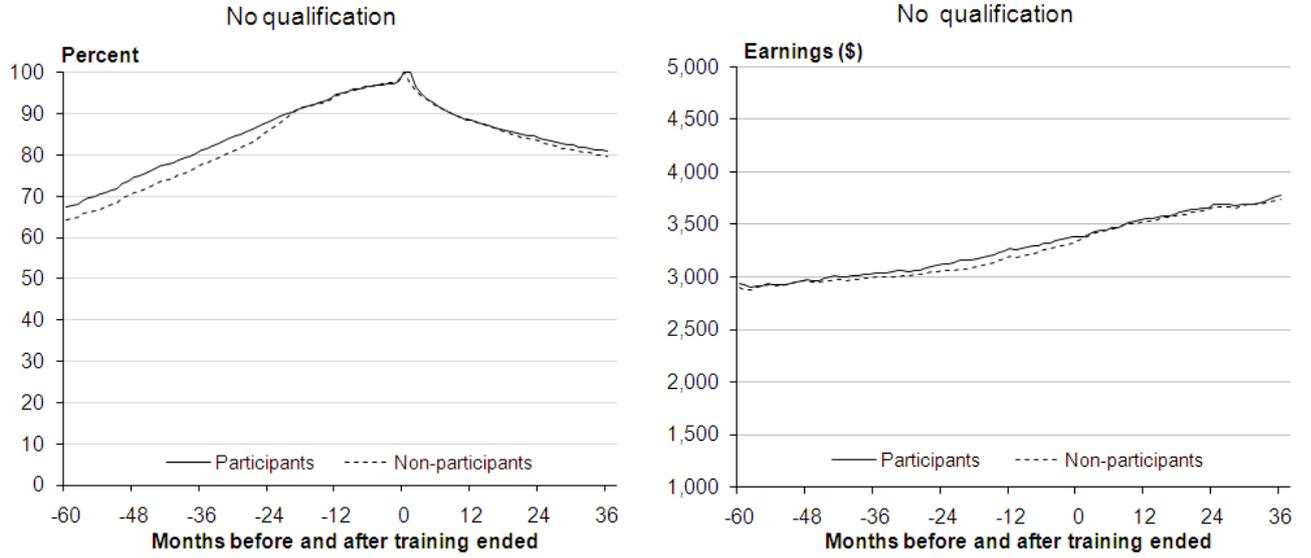


Figure A6
Continued

Employment rate and average monthly earnings
Exit study population
Matched when training ended
Highest qualification gained level 4+
By training duration

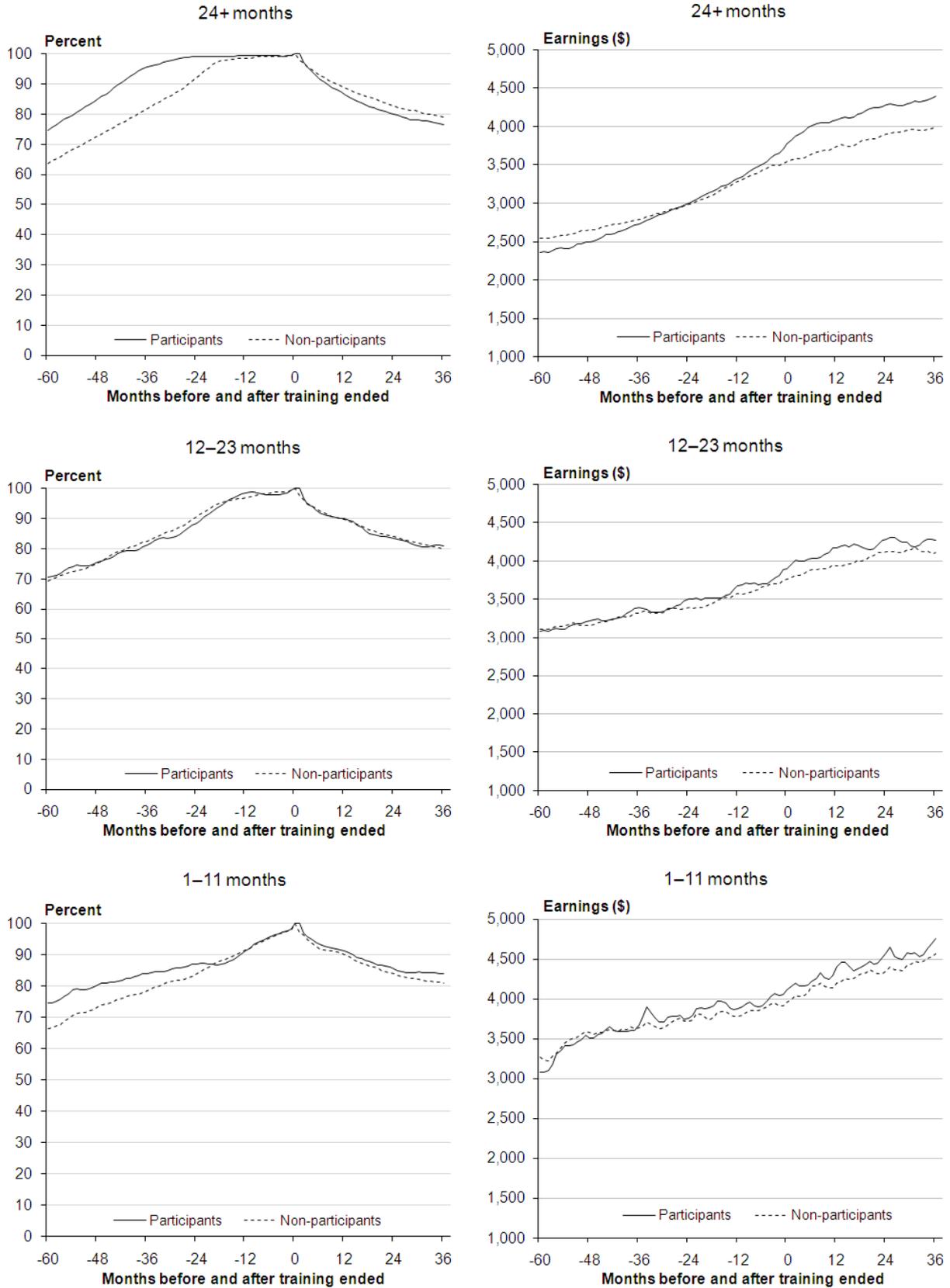


Figure A7

Employment rate and average monthly earnings
 Those employed before training started and after training ended

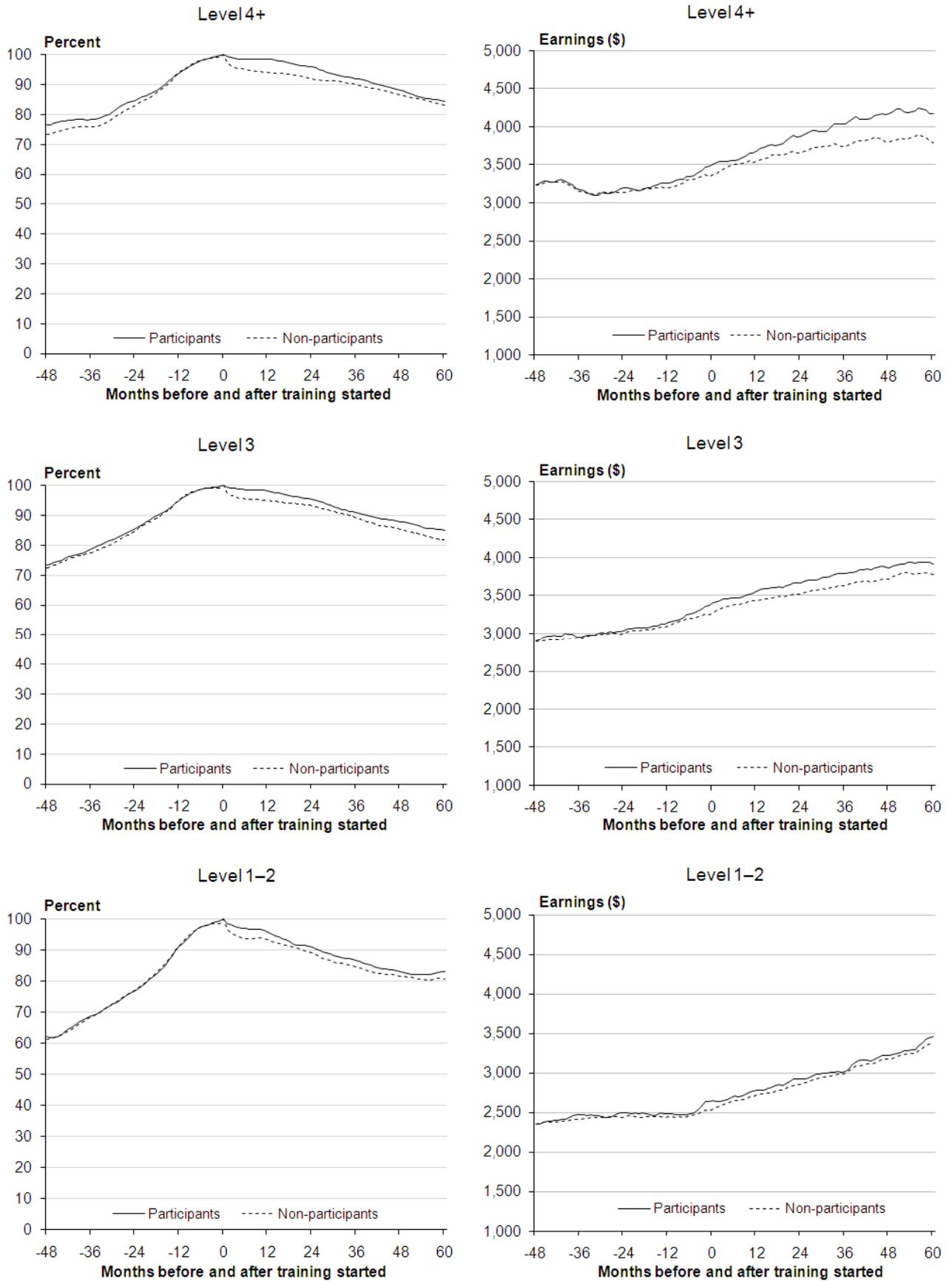


Figure A7
Continued

Employment rate and average monthly earnings
Those employed before training started and after training ended

