



Why are there so many short jobs in LEED? An analysis of job tenure using LEED

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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. These 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 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. Any person who had access to the unit record data has certified that they have been shown, have read and have understood section 87 (relating to privacy and confidentiality) of the Tax Administration Act. A full discussion can be found in the *Linked Employer-Employee Data Project Privacy Impact Assessment* paper (Statistics NZ, 2003).

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Abstract

The main objective of this paper is to investigate the use of earnings spells in LEED as a measure of job tenure. The paper was motivated by whether LEED could be used to identify and describe seasonal employment patterns, which typically only last for a few months. The paper explores the extent to which employment relationships in LEED contain multiple job (earnings) spells and the impact on the tenure distribution if individual job spells, between an employer and employee, are joined together.

The study found that one in five jobs (21.1 percent) in LEED, as at March 2006, were repeat spells with the same employer and nearly half (44.4 percent) of repeat-job spells started following a single month of non-employment and only 16.2 percent of repeat spells occurred after a non-employment period of over 12 months. Imputing all non-employment periods as employment had a measurable, but not a particularly dramatic effect on the job tenure distribution. For example, the share of job spells with elapsed tenure of 12 months or less falls by only 10 percentage points from 48.1 percent to 38.0 percent, a decline of around 20 percent. A distinctive pattern among repeat-job spells was for an earnings spell to end in December and for a new spell to begin in February. Around a quarter of all repeat spells, separated by a single month, start in February, in particular, 63.1 percent of job spells in the education industry fall into this category.

It is likely that LEED-based measures of job tenure that define job spells as a contiguous set of months with non-zero earnings will bias downwards mean job tenure and raise the share of jobs that have only been going for a few months. There is some evidence that many repeat job spells are in fact continuing relationships between an employer and employee and not the beginning of a new job.

Keywords

LEED, Job tenure, employment spells

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1 Introduction

In New Zealand, firms in the horticulture and viticulture industries are finding it increasingly difficult to recruit a sufficient number of local workers, especially during the peak picking season, and are being forced to look offshore¹. The ongoing shortage of seasonal workers prompted the New Zealand Government to introduce the Recognised Seasonal Employment (RSE) programme. The aim of RSE is to help the horticulture and viticulture industries recruit workers from Pacific States.

The RSE programme, together with other Government initiatives designed to improve the supply of seasonal workers, have increased the need for information about seasonal workers, firms and industries in New Zealand to support policy decision making. To date most information has been gathered from small industry-specific surveys because existing data sources have not been suitable. For example, the New Zealand Household Labour Force Survey (HLFS) does not distinguish between workers by employment contract type (eg permanent employers as opposed to seasonal workers). Linked-Employer-Employee-Data (LEED) could potentially help fill the gap in information on seasonal employment patterns. The monthly reporting of earnings of all employees within New Zealand makes LEED ideal for summarising short employment spells that are associated with seasonal jobs.² However, a potential weakness of LEED is that the start and end dates of an employment spell are not directly observed (reported) and have to be imputed using earnings information.³ The main objective of this paper is to investigate the use of earnings spells in LEED as a measure of job tenure.

Statistics NZ and previous studies assume that a job in LEED begins when monthly earnings increase above zero and ends when monthly earnings drop back to zero. In other words a job in LEED consists of a contiguous set of months with non-zero earnings between an employer and employee that lasts at least one month. This means that an employment relationship that contains two or more earnings spells is interpreted in LEED as two or more separate job spells. This paper will attempt to answer two specific questions. First, to what extent do employment relationships in LEED contain multiple job (earnings) spells. And second, what is the impact on the tenure distribution if individual job spells, between an employer and employee, are joined together. In other words, are some of the 'short' jobs observed in LEED created by measuring the length of an individual job spell instead of an employment relationship?

¹ "Jobs crises hits Bay Kiwifruit Industry", *Bay of Plenty Times*, 22 March 2008, <http://www.bayofplentytimes.co.nz>. "Wine growers fear shortage of workers", *The Press*, 15 March 2008, <http://www.stuff.co.nz>.

² For examples of the mechanical identification of seasonal workers (ie not self-reported) see del Bono & Weber (2008), who use an administration data similar to LEED to summarise seasonal employment patterns in Austria, and de Raaf *et al* (2003) who used the Canadian Survey of Labour and Income Dynamics.

³ An employer can enter the start and end dates for an employee on the PAYE form, however, very few jobs in LEED have a start and end date.

There is some evidence that LEED may overestimate the number of 'short' duration jobs in the New Zealand economy. Statistics New Zealand report that 41.8 percent of jobs in LEED, at 31 March 2006, have been going for 12 months or less. When compared with other developed countries, New Zealand appears to have nearly twice as many jobs lasting less than one year. In the US, 24.4 percent of workers report being with their current employer for less than 12 months⁴, compared with 20.1 percent in Australia (employed for 12 months or less)⁵. The hypothesis is that LEED overestimates the number of short jobs when tenure is measured using individual job spells. Survey-based measures of job tenure (used in the US and Australia) are based on a respondent deciding when they began their current job. The assumption is that a survey-based measure of job tenure is likely to better capture the true length of a job because an individual will link together multiple earnings spells if they represent a continuous employment relationship.

Making comparisons between different collection and measurement methodologies is often difficult. As well as differences in the methodology used to define and measure a job between LEED and cross-sectional Labour Force (LF) surveys, other factors may exist that cause differences between LEED and survey-based measures of job tenure. For example, it is possible that LF surveys under-count relatively short jobs⁶. This could be due to the fact that LF surveys often focus on the main job (as is the case in the US and Australia), whereas LEED-based measures of job tenure typically use all wage and salary jobs. If main jobs are, on average, longer than secondary jobs, then LF surveys will contain fewer short jobs⁷. Another reason may be response bias in LF surveys. For example, individuals may be less likely to report short jobs and individuals in short jobs may be less likely to respond (eg immigrants on temporary work visas).

⁴ In the US job tenure information was obtained from the (annual) supplement to the January 2006 Current Population Survey (CPS) and is collected for each respondent's main job. In the January 2006 CPS supplement, job tenure was collected using the question: "How long has ... been working continuously for (fill in name of present employer)?".

⁵ In Australia job tenure information was obtained from the February 2006 Labour Mobility Survey, which is a supplement to the Australian Bureau of Statistics (ABS) monthly Labour Force Survey (LFS) and is collected for each respondent's main job.

⁶ Initial analysis of the first wave of the New Zealand Survey of Families Income and Employment (2002/03) suggests that around 30 percent of jobs have been going for 12 months or less (unpublished, Department of Labour).

⁷ If secondary (third and fourth etc) jobs are on average shorter than main jobs then this would bias downwards the number of estimated short jobs. We can provide a rough estimate on the effect of including secondary jobs on the LEED-based job tenure distribution. Statistics NZ reported that over the March 2006 year around 10 percent of jobs were held by workers with two or more jobs. The majority of workers in LEED with multiple-jobs have two jobs, therefore, let us assume that half of these jobs are secondary jobs, lasting 12 months or less, and the other half are a worker's main job that has been going for over 12 months. The effect on the job tenure distribution of using only main jobs would be to lower the share of jobs that have been going for 12 months or less by around five percentage points, from 41.8 percent to 36.8 percent. In other words the effect is relatively small, around a 10 percent decline.

Finally, the tenure distribution may also be sensitive to the reference month chosen. In New Zealand, the US and Australia tenure statistics are measured using the elapsed duration of jobs at a point-in-time. In New Zealand Statistics NZ select all jobs as at 31 March 2006, Australia's job tenure statistics were collected during February 2006 and during January 2006 in the US. There may be seasonal differences in job tenure patterns. For example, short jobs may be more common at certain times of the year (eg crop harvests). This is more likely when comparing New Zealand to Northern Hemisphere countries, but less likely with Australia. Another issue is whether job starts are evenly distributed across the year. If a particular month contains a disproportionate number of job starts then the number of jobs that have been going for a single month would rise if tenure were measured to that month.

Section 2 of this study introduces LEED and describes how it is used to measure job tenure. Section 3 examines the extent to which individual job spells are part of multiple-spell employment relationships and describes the characteristics of single-job spell and repeat-job spell employment relationships – in particular, the length of a non-employment period prior to a repeat spell with the same employer. Section 4 describes the tenure distribution of job spells compared with the tenure distribution when non-employment periods are imputed as periods of employment. Section 5 provides a summary.

2 Data

Linked Employer-Employee Data (LEED)

LEED contains data on individuals' wage and salary earnings, self-employment earnings, income from Accident Compensation Corporation (ACC) earnings-related compensation, income from working-age benefits, and income from New Zealand Superannuation. Employment activity can be inferred on the basis of whether employee or self-employment income was received.

At the time this study was begun, the period covered by LEED was eight years, from 1 April 1999 to 31 March 2007. We have used all the currently available data, excluding self-employment earnings⁸. A limitation of using LEED to measure job tenure is that the maximum tenure observable will be equal to eight years, the number of years available in LEED for this study. The narrow study window in LEED also means that some jobs will have started before the first month in LEED and/or are still going on the last month in LEED. We will return to the issue of left and right censoring of job spells and how this impacts on measuring job tenure.

Most of the income data in LEED has a calendar-month reference period, due to the way the PAYE system operates. Employers are required to provide information to Inland Revenue on the tax numbers of their employees and their earnings each calendar month. The exact start or finish dates of jobs that begin or end during a calendar month are frequently not reported, which means that it

⁸ Individuals who are self-employed submit annual tax returns and it is not possible to identify how many months they worked during the year.

is not possible to tell exactly which individuals were employed on any given day during the month. In this paper, an individual is considered to be 'employed' with a particular firm in any calendar month in which they received any employee earnings.

Definition and selection of job spells

In this study we start by measuring job tenure using a method that is approximate⁹ to that used by Statistics New Zealand in the publication *Employment, Earnings and Income from LEED: 2006* (Statistics New Zealand, 2007). Statistics NZ defines a job spell in LEED as consisting of a set of contiguous months with non-zero earnings between a particular employer¹⁰ and employee. Statistics NZ imputes some one-month periods of non-employment as periods of employment. This was done when one month of non-employment occurred in between two periods of six successive months with the same employer. To calculate job tenure Statistics NZ selected all wage and salary jobs that were ongoing on 31 March 2006, which excludes all jobs that ended during March 2006¹¹. In this study we selected all jobs that received any earnings during March 2006, which includes all jobs that ended in March 2006. We define a job spell in the same way as Statistics NZ, but do not impute any periods of non-employment. Personal and firm characteristics are attached at the middle month of each job spell¹² and employees aged less than 15 years are excluded¹³.

For each job spell we also identify the first month that the employee received earnings from the employer. The distance between the first month of earnings observed in LEED, between an employer and employee, and the reference month (March 2006) is henceforth referred to as the employment relationship. Unlike job spells, employment relationships can contain non-employment periods, that is, at least one month with zero earnings. Table 1 (page 20) contains selected employer and employee characteristics for the sample of job spells active during March 2006. There was a total of 1,920,290 jobs that received positive earnings during March 2006. The average length of a job spell was 25.1 months, or just over two years, and job spells were part of an

⁹ LEED is an administration dataset and is continually being updated by new data from IRD. This includes additional months of earnings information, but also corrections to existing months. Therefore, it is not possible to replicate exactly the tenure distribution prepared in the past by Statistics NZ.

¹⁰ The employer in this case is a PBN (permanent business number). A PBN is a geographic unit or establishment and is attached to an enterprise. For multiple PBN enterprises Statistics NZ allocates employees across the PBNs. It is possible that any reallocation of employees may end ongoing employment relationships.

¹¹ Statistics NZ identifies jobs as ongoing at 31 March 2006 if an individual receives earnings in March and April 2006 from the same employer. Individuals aged less than 15 years as at 31 March 2006 are excluded.

¹² If the middle month is not an odd number, then the month is rounded up to the nearest whole number. For example if the middle point of the job spell lies between the fourth and fifth month then the fifth month is chosen.

¹³ The age of an individual is determined at the middle month of a job spell. Therefore, all individuals are aged 15 years and over in the reference month of March 2006, but may be aged less than 15 when the job spell began.

employment relationship that was, on average, around seven months longer (31.9 months).

Figure 1 (page 24) compares the elapsed job tenure distribution created for this study with the distribution produced by Statistics NZ. The horizontal axis groups job tenure into single month bands from one to 12 months and in multi-month bands thereafter¹⁴. The values greater than 12 months on the horizontal axis represent the upper limit of the tenure band, for example, 13–15 months, 16–18 months and so on. The vertical axis plots the number of job spells, in thousands, in each tenure band. The number of jobs within each multi-month tenure band represents the mean number of jobs in each month of the band. The solid line plots the distribution of jobs spells selected for this study and the dashed line plots the Statistics NZ distribution.

A total of 1,920,300 jobs reported earnings during March 2006, compared with 1,705,700 jobs that Statistics New Zealand identified as ongoing at 31 March 2006 (received earnings during March and April 2006). In most tenure bands there were fewer jobs in the Statistics NZ distribution; in particular, there were significantly fewer jobs (around a half) with tenure of one and two months. However, for jobs with tenure over six years there were more jobs in the Statistics NZ distribution, compared with the study distribution. The difference between the two distributions is most likely being driven by two factors. First, a disproportionate number of the jobs that ended during March 2006 may have only been going for one or two months, possibly because March is during the harvest season for many horticultural crops. Second, the imputation of one month periods of non-employment as employment by Statistics NZ may have led to a small net increase in the number of jobs with tenure greater than six years.

By selecting only ongoing jobs Statistics NZ may be underestimating the proportion of very short jobs (one and two months) in LEED. For example, Statistics NZ estimated that 41.8 percent of jobs have been going for 12 months or less, whereas using all jobs active during March 2006 the share of jobs with tenure of 12 month or less increases to nearly half (48.0 percent) of all job spells.

3 Employment relationships

Previous studies and official statistics produced by Statistics NZ have defined a job spell as a contiguous set of months with greater than zero earnings. If monthly earnings fall to zero then we assume the job has ended and if monthly earnings increase from zero then a new job has started. It is possible that this definition of a job is not flexible enough to capture all types of employer-employee relationships within LEED. A single continuous employment relationship could become divided into several job spells if it contains one or more months of zero earnings (non-employment). The division of existing employment relationships into several individual jobs spells could bias the job tenure distribution towards shorter jobs and may explain the relatively high

¹⁴ The specific grouping of months on the horizontal axis is necessary in order to compare the study's tenure distribution with the distribution produced by Statistics NZ.

proportion of short jobs in the LEED, compared with tenure distributions from cross-section surveys used in other countries (eg Australia, US).

There are several plausible reasons why an employment relationship may be ongoing but includes a non-employment period or periods. For example, a worker may not get paid in every month or at intervals greater than one month, take a period of unpaid leave, receive other payments in lieu of wages while they recover from an injury (eg ACC payments), or have an agreement with their employer where they do not work in every month (eg to look after their children during school holidays). In other words, within LEED there may be many different types of employment relationships that are only partially recognised (truncated) by defining jobs in terms of a set of contiguous months of non-zero earnings.

First, we will examine the extent to which job spells, in March 2006, are repeat spells with the same employer. Second, we will describe the characteristics of repeat-job spells, in particular the size of the non-employment period prior to the job spell in March 2008. The assumption is that it is more likely that an employment relationship is ongoing between an employer and employee if the repeated spell is separated by a few months compared with a few years.

Repeat-job spells

A repeat-job spell is part of a relationship between an employer and employee that contain two or more job spells, whereas a single-job spell has only one earnings spell¹⁵ Table 2 (page 21) presents selected statistics and characteristics for single and repeat-job spells. The first column contains statistics for single-job spells and repeat-job spells are summarised in columns 2–5. Column 2 contains statistics for all repeat-job spells, columns 3–5 divide repeat-job spells by the number of job spells in the employment relationship. 60.1 percent of repeat-job spells are part of an employment relationship with only two jobs spells (column 3), 18.0 percent are part of an employment relationship with three jobs spells (column 4) and 21.3 percent have four or more job spells in their employment relationship (column 5).

One in five (21.1 percent) job spells in March 2006 are repeat spells with the same employer. Repeat-job spells are just over half the length of single-job spells with average tenure of 15.5 months, compared with 27.7 months for a single-job spell. The average repeat-job spell is part of an employment relationship that contains 3.1 individual job spells, although the majority (60.1 percent) have only two job spells, a further fifth are part of an employment relationship with three spells and the remaining fifth have an average of 6.3 job spells within their employment relationship. The average length of the non-employment period, prior to a repeat-job spell observed in March 2006, was 7.2

¹⁵ Single-job spells may become part of multiple-spell employment relationships after March 2006 or be part of multiple-spell employment relationships, but the previous spell ended before April 1999 – the first month observed in LEED. Neither of these two issues is a problem as our focus is on repeat spells that have only been going for a few months and are separated from previous spells by a few months.

months, but the majority of non-employment periods lasted for one or two months. Nearly half (44.4 percent) of repeat-job spells started after only a single month of non-employment, three-quarters of non-employment periods lasted six months or less and only 16.2 percent lasted more than 12 months. A worker in a repeat-job spell has, on average, a relatively long relationship with their employer. The mean duration of an employment relationship with repeat-job spells was 47.7 months, which is nearly twice the length of a single-spell employment relationship.

The length of an employment relationship with two job spells is not much shorter compared with relationships that contain three or more job spells. An employment relationship with two job spells, compared with one, is 1.6 times longer, with three spells it is 1.8 times longer, and with four or more spells it is 2.1 times longer. However, the average size of an individual job spell and the non-employment period between job spells reduces with the number of job spells within an employment relationship. For employment relationships with four or more job spells, the mean length of a job spell and non-employment period is roughly half that of a two spell relationship. In other words, the more job spells within an employment relationship, the shorter the individual job spell and gap between job spells become.

Repeat job spells are disproportionately concentrated among females, older workers, small firms (less than six employees) and the industry sectors agriculture, forestry and fisheries; manufacturing; hospitality; education; and cultural and recreation services. In particular, repeat job spells make up over one-third of jobs spells among workers aged 65 years and over (42.1 percent) and within the agriculture, forestry and fisheries industry (37.1 percent) and the education industry (34.8 percent). Repeat-job spells in these three groups make up nearly half (44.7 percent) of all employment relationships with four or more job spells, but only a fifth of employment relationships with two job spells. Repeat-job spells are least common within the utilities, finance and insurance, and government and defence industry sectors (less than 10 percent of job spells).

Table 2 (page 21) suggests that repeat spells are relatively short, compared with single-job spells, but repeat-job spells are part of relatively long employment relationships; on average four years. Unsurprisingly, repeat-job spells are common within the agriculture, forestry and fisheries industries, which are associated with seasonal and temporary employment patterns, and among workers aged 65 years and over, who may be using temporary jobs to periodically supplement their retirement savings. Among these groups, repeat job spells are more likely to be part of employment relationships with four or more job spells. An interesting finding from table 2, which we will return to later, is that the education industry has the same share of repeat-job spells as the agriculture, forestry and fisheries industry. You do not necessarily associate the education industry with seasonal or temporary employment patterns. However, it is possible that some workers in the education industry are only employed or receive earnings during the academic year, which typically starts in February and ends in December. This hypothesis is further supported by the fact that

nearly three-quarters (71.0 percent) of repeat-job spells in the education sector are separated from the previous spell by one month.

The tenure distribution for repeat job spells is similar to that of single job spells, but with slightly more spells that have been going for a few months, as shown in figure 3 (page 26). The solid line in Figure 3 plots the tenure distribution for single job spells (solid line) and repeat-job spells (dashed line). Jobs spells are grouped along the horizontal axis into one month bands and the vertical axis measures the proportion of spells in each tenure band. Among repeat-job spells, around one-third (32.8 percent) have been going for two months or less and nearly two-thirds (60.9 percent) for 12 months or less, compared with 16.1 percent and just less than a half (44.7 percent) of single job spells.

Another difference is that the repeat job spell tenure distribution contains peaks at 2, 14, 26, 38, 50, 62 and 74 months that are not apparent in the single job spell distribution. These peaks are associated with relatively large increases in the share of spells that started after a single month of non-employment. In particular, around three-quarters (72.0–78.6 percent) of repeat-job spells with tenure 2, 14, 26 and 38 months are separated from the previous spell by one month. The job spells contained within the peaks in the repeat-job tenure distribution (figure 3) all started in February and most of the workers would have finished their last spell in December, did not work (received no earnings) from the firm during January, and started a new spell, with the same employer, in February. Repeat spells that start in February following a one month holiday break¹⁶ from their employer account for nearly one-fifth (18.1 percent) of repeat job spells. Holiday breaks are particular common within the education sector, accounting for 63.1 percent of repeat job spells.

Figure 4 (page 27) plots the share of all (single and repeat) job spells by the calendar month in which each spell started (solid line measured on the left-hand vertical axis) and the proportion of each start month's job spells that are repeat spells (dashed line measured on the right-hand vertical axis). Repeat-job spells were more likely to start in February (35.6 percent of all job spells) and March (26.5 percent of job spells), compared with other months (5.5–22.1 percent), which may help to explain why proportionally more repeat-job spells have been going for one and two months, compared with single-job spells. An interesting finding, shown in figure 4 (page 27), is that around 95 percent of job spells that begin in April are new employer-employee relationships, i.e. single job-spells.

Repeat-job spells are shorter compared with single-job spells, partly because a greater proportion start in February and March compared with single-job spells, therefore, many repeat-job spells have only been going for one or two months. Workers that return to previous employers are associated with seasonal industries (eg agriculture, forestry and fishing), however, around half are only separated by one month of non-employment from a previous spell and one-fifth

¹⁶ In New Zealand many workers combine the Christmas and New Year holidays with their annual summer holiday returning to work during and towards the end of January. The new academic year usually begins in the first week of February for school students and slightly later for Tertiary students (eg Universities typically start teaching in the first week of March).

may be due to holiday breaks during January, especially within the education industry. This could be due to not working during January (eg unpaid leave or they are only contracted for 11 months out of 12) or they may be working, but changes to the dates employees are paid over the Christmas and New Year holidays may mean they receive no pay during January. Therefore, these employees are inferred as not working in LEED.

4 Job tenure

The previous section has established that repeat job spells make up one-fifth of all jobs observed in LEED during March 2006 and that over half of these spells started after a single month of non-employment. In some cases such short gaps between job spells with the same employer may have been caused by contracting or pay roll arrangements over the Christmas and New Year holiday period. For example, within the Education industry it appears that some workers are contracted from the beginning of the academic year in February to the end in December, but remain with the same employer, and are not paid in the months of January.

The fact that a majority of repeat spells are only separated from a previous spell by a single month suggests that measuring tenure using job spells that consist of a contiguous set of months with non-zero earnings may over-estimate the number of employment relationships that genuinely last only a few months. This section begins by describing the tenure distribution for job spells in March 2006 and then examines the impact on the tenure distribution of imputing non-employment periods as employment.

Job spells (without imputation)

We begin by describing the job tenure distribution without any imputation of non-employment periods. Figure 2 (page 25) plots the elapsed tenure distribution for job spells active during March 2006. The horizontal axis measures tenure in months. The solid line plots the proportion of jobs in each single-month band and is measured on the left-hand vertical axis. The dashed line plots the cumulative proportion of jobs and is measured on the right-hand vertical axis. The tenure distribution in figure 2 has a peak in the proportion of jobs lasting one or two months, followed by a sharp decline in the share of jobs with tenure of three months and then a gradual decline from 3–83 months. The large increase in the share of jobs with tenure of 84 months (9.3 percent of all jobs) is a statistical artefact caused by the fact that jobs in LEED can only be followed for a maximum of 84 months prior to March 2006 (the reference month chosen for this study). Therefore, jobs with tenure of 84 months and jobs that have been going for more than 84 months have been grouped together as it is not possible to distinguish between them. Ignoring the spike at 84 months it is clear that the tenure distribution in figure 2 is skewed towards short jobs. Nearly a half (48.1 percent) of jobs had been going for 12 months or less and one in five jobs (19.8 percent) for two months or less.

Short jobs are often associated with particular types of workers, for example young workers and those employed in seasonal industries. Table 3 (page 22)

describes the elapsed job tenure distribution for workers grouped by gender, age, firm size and industry (1-digit ANSISC 96). The average length of a job in LEED during March 2006 was 25.7 months, or just over two years. There is not much variation in mean tenure across the different worker groups. Twenty-four out of the 30 groups have mean tenure of within six months of the national mean (21.9–32.1 months). The three groups with the smallest mean tenure are (in ascending order) 15- to 24-year-olds (12.6 months), the hospitality¹⁷ sector (14.0 months) and the agricultural, forestry and fisheries sector (15.3 months). The three groups with the highest average tenure (in ascending order) are 55- to 64-year-olds (33.5 months), 45- to 54-year-olds (33.6 months) and the utilities¹⁸ sector (37.6 months). The difference in mean job tenure between worker groups appears to reflect a greater disparity in the length of jobs that continue for more than 12 months. At the 10th and 25th percentile the range in job tenure is three and 12 months, respectively, whereas at the 50th, 75th and 90th percentiles the range in job tenure is 25, 45 and 51 months, respectively.

Females are more likely to be in shorter jobs than males. The mean tenure for females is 23.1 months and 27.0 months for males. The pattern across age groups appears to reflect how long an individual has been in the labour market. Older workers are much more likely to be in longer-term jobs. However, short jobs are still prevalent across all age groups, in particular workers aged 15–24 years and 65 years and over. For example, the 25th percentile for 15- to 24-year-olds and individuals aged 65 years and over is two months, compared with four to six months for prime-age workers aged 25–64 years.

There is relatively little variation in the tenure distribution by firm size. Employees in firms with less than 20 employees have, on average, been in their jobs for shorter periods (22.7–23.3 months) compared with employees in large firms of 20 employees or more (24.5–27.6 months). However, the difference in tenure among workers in different sized firms appears to be driven by the distribution of relatively long jobs, with appear to be concentrated in larger firms. For example, there is no difference in tenure at the 10th and 25th percentile across the firm size groups. At the 50th percentile, tenure ranges from 12–15 months, at the 75th percentile it ranges from 32–45 months and at the 90th percentile it ranges from 70–84 months.

There is more variation in tenure across industry groups, particularly in the distribution of long jobs. Except for the utilities sector, the 25th percentile ranges from 2–7 months. An interesting outlier is education. In most industries the tenure distribution appears to be skewed towards either short or long jobs. However, the education sector appears to have a large proportion of short and long jobs (similar to the older workers aged 65 years and over). Half of all jobs in the education sector have been going for 11 months or less, but 10 percent of jobs have been going for the entire study period (7 years).

¹⁷ The hospitality industry refers to the 1-digit ANZSIC group accommodation, cafes and restaurants (H5)

¹⁸ The utilities industry refers to the 1-digit ANZSIC group electricity, gas and water supply (D3).

The differences in job tenure across worker groups in table 3, a priori, follow expected patterns. For example, short jobs are associated with females, younger workers and industries that have seasonal labour demand, whereas males, older workers and jobs in non-seasonal industries are more likely to last longer. What is surprising is that job spells that have been going for only a few months are prevalent in all worker groups. For example, with the exception of the utilities industry, at least a quarter of jobs have tenure of seven months or less and one in 10 jobs have tenure of three months or less.

Employment relationships (with imputation)

In this section we will test the effect of imputing periods of non-employment between job spells. We begin by specifying an employment relationship from the first month of employment (non-zero earnings) observed in LEED between an employer and employee to the reference month of March 2006. In other words, we impute all inter-job spell periods of non-employment as employment. A job spell, defined above, can be thought of as the exact opposite in that it does not contain any imputation of non-employment periods. We then place a restriction on the length of a non-employment period that we impute as employment, for example, one-month periods only.

The purpose of systematically imputing non-employment periods of different lengths is twofold. First, it is not known how long monthly earnings can drop to zero before a return to greater than zero earnings signals the start of a new job and not the continuation of an existing employment relationship. Second, the period of zero monthly earnings will vary depending on why an employee has stopped being paid. For example, an employee may take a month off work to recover from an injury, or up to 12 months to care for a new child. Therefore, the number of months selected with zero earnings needs to be long enough to encompass all possible reasons why an individual may temporarily stop receiving earnings from a particular firm. By systematically imputing non-employment periods of increasing length and analysing changes in the tenure distribution (across different worker groups) we will hopefully gain an insight into why workers have multiple spells with the same employer.

Finally, if it is possible that the definition of a job spell may lead to the splitting up of existing employment relationships, then it is also possible that the creation of employment spells may lead to the joining together of one or more job spells, where an individual has left a firm and been rehired. LEED does not contain any direct information¹⁹ as to why an individual stops receiving earnings from a particular firm. Therefore, it is important to note that the decision on how many months of zero earnings to allow within an employment spell is arbitrary.

We start by imputing all non-employment periods as employment between employers and employees with multiple-job spells in LEED and measure the length of a job from the first month with greater than zero earnings to the March

¹⁹ A possible topic for further research on this issue would be to examine the LEED activity during non-employment periods (eg employed with another firm, receiving income from working age benefits etc) between job spells with the same employer.

2006; the reference month used in this study. Imputing all periods of non-employment raises mean job tenure by 27.1 percent from 25.1 months to 31.9 months and provides a lower (no imputation) and upper-bound estimate (imputation of all non-employment periods). Table 4 (page 23) summarises the effect of imputing all non-employment periods as employment across different worker groups. The first column contains the mean tenure of job spells active in March 2006 with no imputation. The second column measures mean tenure of job spells where all periods of non-employment have been imputed as employment (ie duration of the employment relationship). The third column contains the ratio of job tenure with imputation (column 2) over job tenure without imputation (column 1) and the fourth column records the share of job spells in each group that are repeat spells with the same employer.

Several groups of workers experience a relatively large increase in tenure when all non-employment periods are imputed as employment. Workers aged 65 years and over experienced the largest increase in tenure of 80 percent from 22.6 months to 40.5 months. Job spells in small firms, with one to five employees, experienced a 35 percent increase in tenure. Workers in the agriculture, forestry and fisheries; hospitality; education; and cultural and recreational industries experienced 78 percent, 41 percent, 44 percent and 34 percent increases in tenure, respectively. All these groups have above average shares of repeat-job spells. Not surprisingly, mean job tenure within groups with below average shares of repeat-job spells is less affected by imputing of non-employment periods as employment. For example, in the utilities industry sector, the finance and insurance industry sector and the government and defence industry sector tenure increased by 13 percent, 17 percent and 15 percent, respectively, following imputation of all non-employment periods. In other words, most job spells in these industries are observed in LEED as unique single-spell employment relationships.

Figure 5 (page 28) plots the cumulative change in tenure as a result of imputing non-employment periods of increasing length. Figure 5 contains separate plots for workers aged 65 years and over (long-dash) and workers in the Agriculture, Forestry and Fishing (short-dash), Hospitality (dash-dot) and Education (dot) industry sectors. These industry sectors were chosen because they all exhibited a relatively large increase in tenure as a result of imputing periods of non-employment (see table 3). All job spells are plotted using a solid line. The horizontal axis measures the maximum length of the period of inter-spell non-employment that is imputed as employment. The value 82 on the horizontal axis is equivalent to all non-employment periods being imputed²⁰ and zero represents no imputation (an individual job spell). The vertical axis measures the cumulative percentage growth in tenure. Growth in tenure has been indexed to one at zero months (no imputation).

Imputing a single month of non-employment as employment has the largest impact on average tenure for all the groups represented in figure 5. Across all job spells, in March 2006, average tenure increases by 8 percent from 24.5

²⁰ There are 84 months on LEED prior to March 2006, a repeat spell on one month must follow a spell of at least one month with a maximum of 82 months of non-employment in between

months to 26.5 months and accounted for around a third (29.6 percent) of the total rise in mean tenure when all non-employment periods are imputed. For individuals aged 65 years and over and workers in the education industry the increase in mean tenure is of similar magnitude (24.2 percent and 25.5 percent respectively). However, for workers aged 65 years and over this increase accounts for just under a third (30.4 percent) of the total increase in mean tenure, compared with just under two-thirds (60.4 percent) in the education industry. Among job spells in the agriculture, forestry and fishing and hospitality industries average tenure increased by 16.3 percent and 11.7 percent and accounts for around a fifth of the increase if all non-employment periods are imputed.

Earlier in the paper we reported that the majority of repeat-job spells in the education industry were separated by a single month of non-employment periods. Unsurprisingly, imputing non-employment periods greater than one month has little further effect on the tenure distribution within the education industry. For the other three groups in figure 5, the imputation of non-employment periods greater than one month has a relatively large impact on the job tenure distribution, in particular within the agriculture, forestry and fishing industry. However, in all cases imputing one-month periods still has the single biggest impact in terms of raising mean job tenure.

Figure 6 (page 29) compares the tenure distribution for job spells (solid line) and employment relationships (dashed line). The vertical axis measures the share of all spells in each tenure band. The horizontal axis uses the same set of tenure bands used in figure 1. The employment relationship tenure distribution is skewed more to the right (compared with the job tenure distribution) with fewer spells with tenure of 1–12 months and an increase in the share of spells with tenure over 24 months. In particular, there is a relatively large decline, of about one-third, in the share of spells with tenure 1–2 months from 19.8 percent to 12.8 percent and the proportion of spells with tenure of 73–84 months increases by 50.0 percent from 12.0 percent to 18.0 percent²¹. There is a visual shift in the tenure distribution between job spells and employment relationships. However, the employment relationship tenure distribution is still weighted towards jobs that have been going for a few months, even when all inter-spell non-employment periods are imputed as employment. Just under 40 percent (38.0 percent) of employment relationships have been going for only 12 months or less, compared with half (48.1 percent) of job spells. This still appears high compared with job tenure distributions from overseas cross-section surveys, where around a quarter of jobs have elapsed tenure of 12 months or less.

5 Summary

The main objective of this paper is to investigate the use of earnings spells in LEED as a measure of job tenure. The paper was motivated by whether LEED could be used to identify and describe seasonal employment patterns, which typically only last for a few months. A concern with using a LEED-based measure of job tenure is that employment relationships that contain several

²¹ Most of this increase is within the tenure band 84 months and over.

earnings spells will be observed in LEED as a series of short job spells. A comparison of LEED-based measures of job tenure with other countries suggested that New Zealand appears to have twice as many 'Short' jobs that have been going for 12 months or less compared with the US and Australia. The paper addressed two questions. First, to what extent do employment relationships in LEED contain multiple job (earnings) spells. And second, what is the impact on the tenure distribution if individual job spells, between an employer and employee, are joined together.

The study found that one in five jobs (21.1 percent) in LEED, as at March 2006, were repeat spells with the same employer. In other words, the relationship between the employer and employee consisted of more than one earnings spell. An average repeat job spell had been going for just over a year (15.5 months), but was part of an employment relationship with an elapsed tenure of nearly five years (47.7 months). Nearly half (44.4 percent) of repeat-job spells started following a single month of non-employment and only 16.2 percent of repeat spells occurred after a non-employment period of over 12 months.

However, when all non-employment periods, between individual job spells with the same employer, were imputed as employment the effect on the job tenure distribution is measurable, but not particularly dramatic (see figure 6). For example, the share of job spells with elapsed tenure of 12 months or less falls by only 10 percentage points from 48.1 percent to 38.0 percent, a decline of around 20 percent. It is likely that individual job spells that are separated by a non-employment period of a few years are in fact two individual jobs and not a single employment relationship. Not surprisingly, the effect on the tenure distribution reduces when the length of a non-employment period that is imputed is shortened. For example, if non-employment periods of one year or less are imputed, the share of job spells with elapsed tenure of 12 months or less falls by 8 percentage points from 48.1 percent to 40.1 percent, a decline of around 16 percent. Half of this decline is caused by imputing one month non-employment periods.

A distinctive pattern among repeat-job spells is for an earnings spell to end in December and for a new spell to begin in February. Around a quarter of all repeat spells start in February following a one month break in January. In particular, 63.1 percent of job spells in the education industry fall into this category. This pattern may be caused by contracting arrangements or payroll processes over the Christmas and New Year holidays.

It is likely that LEED-based measures of job tenure that define job spells as a contiguous set of months with non-zero earnings will bias downwards mean job tenure and raise the share of jobs that have only been going for a few months. There is some evidence that many repeat job spells are in fact continuing relationships between an employer and employee and not the beginning of a new job. For example, the fact that a half of repeat-job spells are separated from the previous spell by a single month and that many of these single month non-employment periods occur during January (a traditional month for summer holidays in New Zealand).

An additional finding is that LEED-based measures of job tenure may be sensitive to the reference month chosen. Around 45 percent of jobs in March 2006 started during February, March and April with most repeat spells beginning in February and March. Even if many of these jobs continue for more than one or two months, the effect on the elapsed job tenure distribution is to increase the share of 'short' jobs.

LEED-based job tenure statistics produced by Statistics NZ include the imputing of one month non-employment periods that occur between two job spells of at least six months. Approximately half of repeat-job spells (10 percent of all job spells) that started following a single month of non-employment would have been imputed by Statistics NZ. More importantly, the imputation conducted by Statistics NZ would have had no effect on job spells that had been going for less than six months, in particular, the many two-month job spells in the education industry that started in February following a one-month earnings break. Statistics NZ do not impute non-employment periods when producing LEED-based measures of job turnover. It is possible that the existence of holiday breaks may bias upwards LEED-based measures of job turnover for the March quarter. Overall the imputation of non-employment periods did not have a large effect on the tenure distribution. However, it is possible that the magnitude of the effect on the tenure distribution from imputing non-employment periods may vary across sub-groups (eg where the share of repeat-job spells is relatively large).

Further work should be conducted to better understand whether non-employment periods should be imputed. LEED could be used to identify what workers are doing in-between jobs with the same employer. LEED contains information on income-testing benefits, ACC and NZ Superannuation payments, as well as earnings from other employers. This information could be used to provide a richer picture of multiple-job spell employment relationships and help to identify continuing employment relationships as opposed to relationships that have come to an end.

Table 1

Selected employer and employee characteristics for all job spells

	Job spells
Job tenure (months)	25.14
Employment relationship (months)	31.96
Male	49.9%
Female	50.1%
<i>Age group</i>	
15–24 years	21.7%
25–34 years	23.0%
35–44 years	24.4%
45–54 years	19.3%
55–64 years	9.7%
65 years+	1.9%
<i>Firm size (number of employees)</i>	
1–5	14.5%
6–9	24.6%
20–9	18.8%
50–9	12.5%
100+	29.7%
<i>Industry sector</i>	
Agriculture/Forestry/Fishing	5.8%
Mining	0.3%
Manufacturing	13.3%
Utilities	0.3%
Construction	6.1%
Wholesale	6.0%
Retail	12.0%
Hospitality	6.0%
Transport/storage	4.0%
Communication	1.3%
Finance/insurance	2.6%
Property/business	13.9%
Government/defence	3.9%
Education	8.7%
Health/community	9.6%
Cultural/recreational	2.7%
Personal/other/missing	3.7%
Observations	1,920,290

Notes: The sample of jobs includes all spells that received any earnings during March 2006 and excludes employees aged less than 15 years (at the middle month of the spell). A job spells is a set of contiguous months with non-zero earnings between an employee and employer (PBN).

Table 2

Selected employer and employee characteristics for single and repeat job spells

	Single job spells	Repeat job spells				
		All	2 spells	3 spells	4+ spells	
Job spell tenure (months)	27.74	15.48	18.23	14.16	8.80	
Employment tenure (")	27.74	47.73	43.31	49.32	58.87	
Number of job spells	1.00	3.10	2.00	3.00	6.32	
Mean gap between spells	.	7.11	8.42	6.17	4.19	
Female	48.8%	53.9%	(22.8%)	52.6%	55.5%	56.3%
Male	51.2%	46.1%	(19.4%)	47.4%	44.5%	43.7%
<i>Age group</i>						
15–24 years	22.6%	18.4%	(17.9%)	19.1%	18.3%	16.3%
25–34 years	23.3%	21.9%	(20.1%)	23.4%	22.6%	17.2%
35–44 years	24.4%	24.3%	(21.1%)	24.4%	25.1%	23.3%
45–54 years	19.1%	19.8%	(21.7%)	19.2%	19.1%	22.0%
55–64 years	9.2%	11.8%	(25.6%)	11.1%	11.3%	14.1%
65 years+	1.4%	3.8%	(42.8%)	2.7%	3.6%	7.1%
<i>Firm size (number of employees)</i>						
1–5	13.6%	17.7%	(25.9%)	16.4%	17.6%	21.5%
6–19	24.5%	25.0%	(21.5%)	24.9%	25.1%	25.0%
20–49	19.1%	17.7%	(19.9%)	18.2%	17.3%	16.6%
50–99	12.9%	11.0%	(18.6%)	11.7%	10.7%	9.1%
100+	29.9%	28.7%	(20.4%)	28.7%	29.4%	27.8%
<i>Industry</i>						
Agriculture/forestry/fishing	4.6%	10.2%	(37.4%)	7.2%	10.3%	18.4%
Mining	0.3%	0.2%	(14.2%)	0.2%	0.2%	0.1%
Manufacturing	13.1%	14.0%	(22.3%)	15.0%	14.3%	11.2%
Utilities	0.4%	0.1%	(8.7%)	0.2%	0.1%	0.0%
Construction	6.2%	5.8%	(20.2%)	6.4%	5.7%	4.2%
Wholesale	6.5%	4.3%	(15.0%)	4.8%	3.8%	3.1%
Retail	12.8%	8.8%	(15.5%)	10.3%	8.0%	5.2%
Hospitality	6.0%	6.1%	(21.6%)	6.5%	6.4%	4.8%
Transport/storage	4.0%	3.8%	(20.1%)	3.7%	3.7%	4.0%
Communication	1.4%	0.7%	(11.3%)	0.8%	0.6%	0.4%
Finance/insurance	2.9%	1.2%	(9.7%)	1.4%	1.0%	0.7%
Property/business	14.3%	12.3%	(18.8%)	12.9%	12.0%	11.2%
Government/defence	4.5%	1.8%	(9.7%)	2.2%	1.5%	1.0%
Education	7.2%	14.3%	(34.6%)	12.2%	15.4%	19.2%
Health/community	9.5%	10.0%	(22.0%)	10.4%	10.7%	8.4%
Cultural/recreational	2.5%	3.2%	(25.1%)	2.7%	3.1%	4.5%
Personal/other/missing	3.8%	3.3%	(18.6%)	3.3%	3.2%	3.3%
Observations	1,514,380 (78.9%)	405,910 (21.1%)		245,410 (12.8%)	73,770 (3.8%)	86,730 (4.5%)

Notes: The sample of jobs includes all spells that received any earnings during March 2006 and excludes employees aged less than 15 years (at the middle month of the spell). The first column contains statistics for single-job spells and repeat-job spells are summarised in columns 2–5. Column 2 contains statistics for all repeat-job spells, columns 3–5 divide repeat-job spells by the number of job spells in the employment relationship. 60.1 percent of repeat-job spells are part of an employment relationship with only two jobs spells (column 3), 18.0 percent are part of an employment relationship with three jobs spells (column 4) and 21.3 percent have four or more job spells in their employment relationship (column 5).

Table 3

Job tenure distribution statistics for selected worker groups

	Mean	Percentile					Obs
		10th	25th	50th	75th	90th	
Male	23.29	1	3	12	34	74	958,440
Female	26.99	2	5	15	42	84	961,850
<i>Age group</i>							
15–24 years	12.70	1	2	6	16	33	416,690
25–34 years	21.98	1	4	12	31	62	442,220
35–44 years	29.25	2	6	18	48	84	468,070
45–54 years	33.79	2	6	23	62	84	370,150
55–64 years	33.53	2	6	22	62	84	186,910
65 years+	22.33	1	2	10	33	82	36,260
<i>Firm size (number of employees)</i>							
1–5	22.68	1	4	12	32	71	277,820
6–19	23.47	1	4	12	34	74	471,720
20–49	24.67	1	4	13	37	81	361,130
50–99	25.94	2	4	14	39	84	239,740
100+	27.70	1	4	15	45	84	569,880
<i>Industry sector</i>							
Agriculture/Forestry/Fishing	15.48	1	2	5	19	50	110,470
Mining	26.82	2	5	17	42	84	4,850
Manufacturing	32.26	2	7	21	56	84	255,010
Utilities	37.21	4	12	28	63	84	5,910
Construction	24.68	2	5	14	36	73	117,140
Wholesale	28.81	2	7	18	45	84	116,120
Retail	21.92	2	4	12	31	65	229,970
Hospitality	14.01	1	2	6	17	37	114,990
Transport/storage	27.72	2	5	17	43	84	76,430
Communication	27.53	2	7	16	42	84	24,290
Finance/insurance	27.83	3	7	17	43	83	49,050
Property/business	22.14	1	3	11	32	67	266,050
Government/defence	30.31	1	5	18	51	84	75,240
Education	24.84	1	2	12	38	84	167,450
Health/community	29.05	2	6	17	48	84	184,740
Cultural/recreational	22.87	1	3	12	33	74	51,230
Personal/other/missing	29.28	2	6	17	48	84	71,360
Total	25.15	1	4	13	38	83	1,920,290

Note: The sample of jobs includes all spells that received any earnings during March 2006 and excludes employees aged less than 15 years (at the middle month of the spell). The utilities industry refers to the 1-digit ANZSIC group electricity, gas and water supply (D3) and the hospitality industry refers to the 1-digit ANZSIC group accommodation, cafes and restaurants (H5)

Table 4

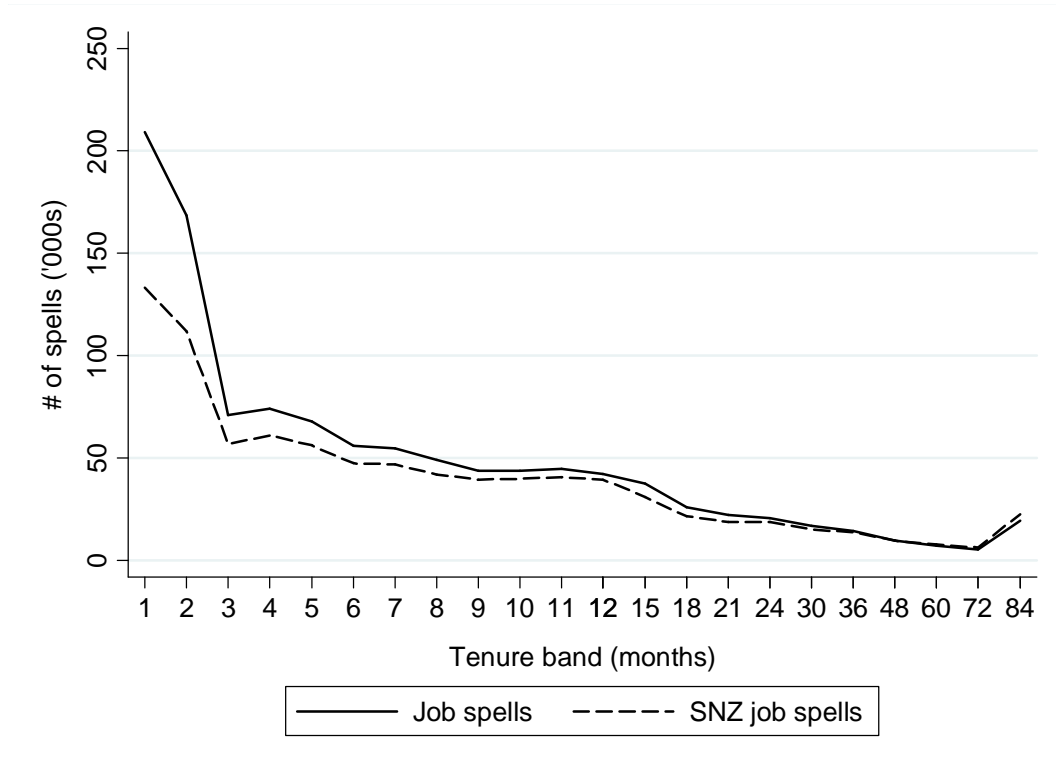
Comparison of job spell and employment relationship tenure for selected employer and employee groups

	Mean tenure (months)		Ratio	Repeat Spells %	Obs
	Job spells	Emp. spells			
Male	23.29	30.62	1.32	22.8%	958,440
Female	26.99	33.30	1.23	19.4%	961,850
<i>Age group</i>					
15–24 years	12.70	16.48	1.30	17.9%	416,690
25–34 years	21.98	28.22	1.28	20.1%	442,220
35–44 years	29.25	36.26	1.24	21.1%	468,070
45–54 years	33.79	41.69	1.23	21.7%	370,150
55–64 years	33.53	43.55	1.30	25.6%	186,910
65 years+	22.33	41.00	1.84	42.8%	36,260
<i>Firm size (number of employees)</i>					
1–5	22.68	30.59	1.35	25.9%	277,820
6–19	23.47	30.17	1.29	21.5%	471,720
20–49	24.67	31.02	1.26	19.9%	361,130
50–99	25.94	31.95	1.23	18.6%	239,740
100+	27.70	34.72	1.25	20.4%	569,880
<i>Industry sector</i>					
Agriculture/forestry/fishing	15.48	27.53	1.78	37.4%	110,470
Mining	26.82	31.66	1.18	14.2%	4,850
Manufacturing	32.26	40.45	1.25	22.3%	255,010
Utilities	37.21	40.26	1.08	8.7%	5,910
Construction	24.68	30.87	1.25	20.2%	117,140
Wholesale	28.81	33.85	1.18	15.0%	116,120
Retail	21.92	26.76	1.22	15.5%	229,970
Hospitality	14.01	19.67	1.40	21.6%	114,990
Transport/storage	27.72	34.59	1.25	20.1%	76,430
Communication	27.53	31.41	1.14	11.3%	24,290
Finance/insurance	27.83	31.14	1.12	9.7%	49,050
Property/business	22.14	27.63	1.25	18.8%	266,050
Government/defence	30.31	34.09	1.13	9.7%	75,240
Education	24.84	35.60	1.43	34.6%	167,450
Health/community	29.05	36.63	1.26	22.0%	184,740
Cultural/recreational	22.87	30.81	1.35	25.1%	51,230
Personal/other/missing	29.28	35.14	1.20	18.6%	71,360
Total	25.15	31.96	1.27	21.1%	1,920,290

Notes: The sample of jobs includes all spells that received any earnings during March 2006 and excludes employees aged less than 15 years (at the middle month of the spell). The column 'Emp. spells' refers to the mean duration of an employer-employee (employment) relationship where all non-employment periods are imputed as employment. The column 'Ratio' contains the ratio of mean job spell tenure over mean employment relationship tenure.

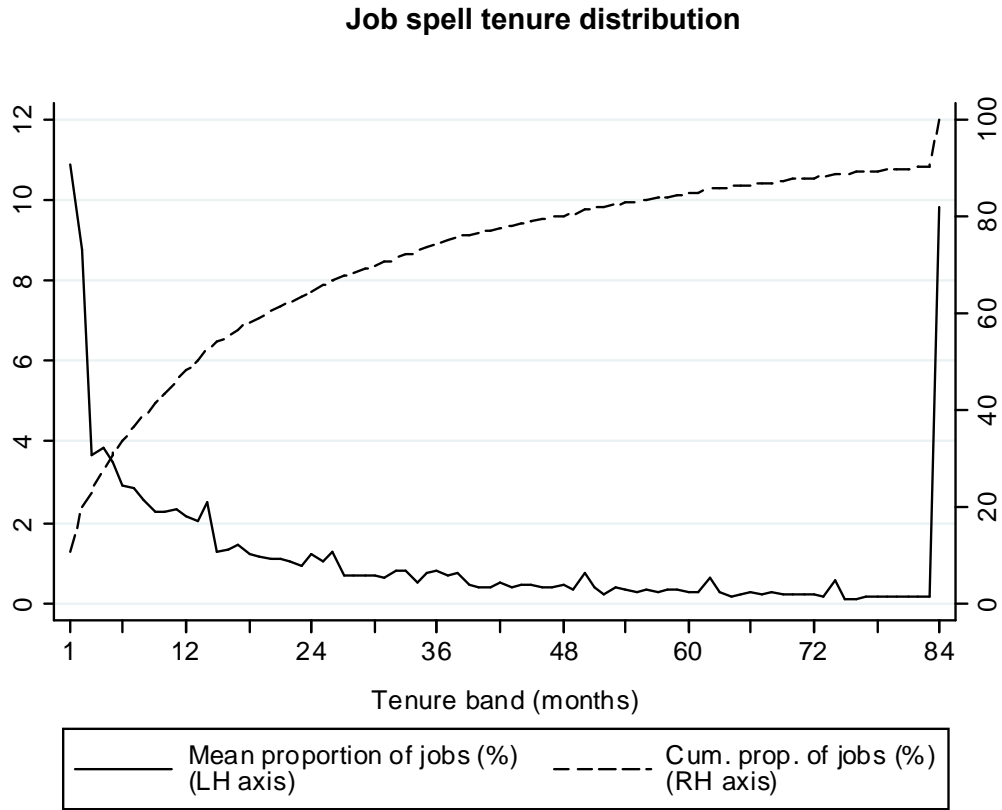
Figure 1

Comparison of LEED tenure distribution with the published Statistics New Zealand LEED job tenure distribution



Note: The LEED tenure distribution (solid line) includes all jobs with greater than zero earnings in March 2006. The Statistics NZ LEED tenure distribution (dashed lined) includes all jobs ongoing as at 31 March 2006 (greater than zero earnings in March and April 2006). Both tenure distributions exclude employees aged less than 15 years. The horizontal axis groups job tenure into single month bands from 1–12 months and in multi-month bands thereafter. The values greater than 12 months on the horizontal axis represent the upper limit of the tenure band, for example, 13–15 months, 16–18 months and so on. The number of jobs spells within tenure bands greater than 12 months have been divided by the number of months within the band.

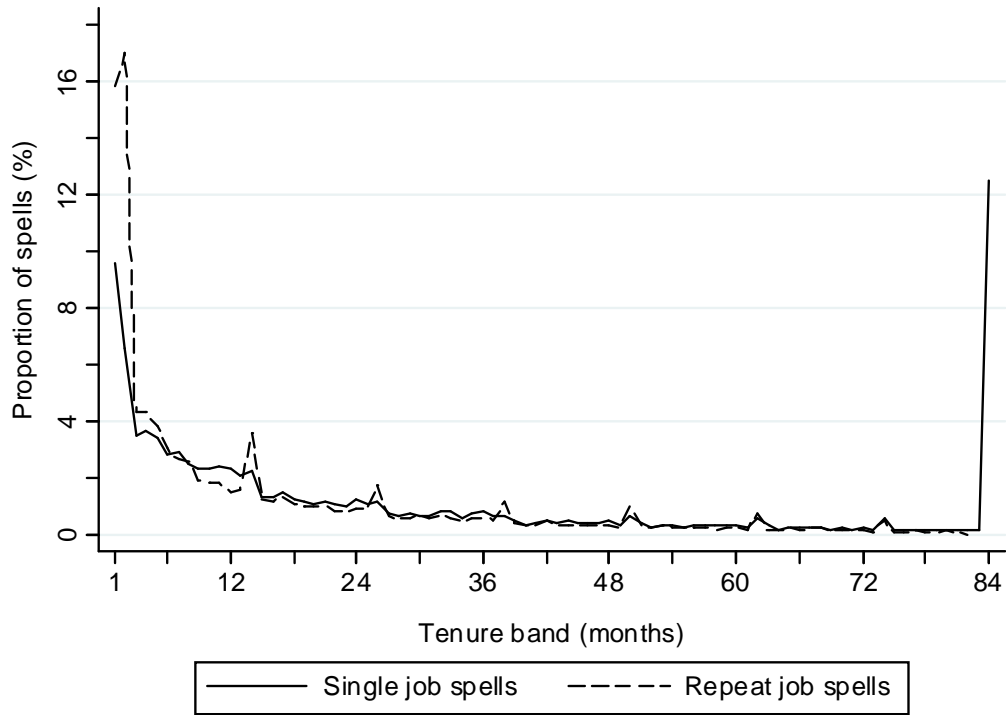
Figure 2



Note: The tenure distribution includes all jobs with greater than zero earnings in March 2006 for employees aged 15 years and over. Job spells are grouped along the horizontal axis into one month tenure bands. The tenure band 84 months groups job and employment spells with tenure of 84 months and over.

Figure 3

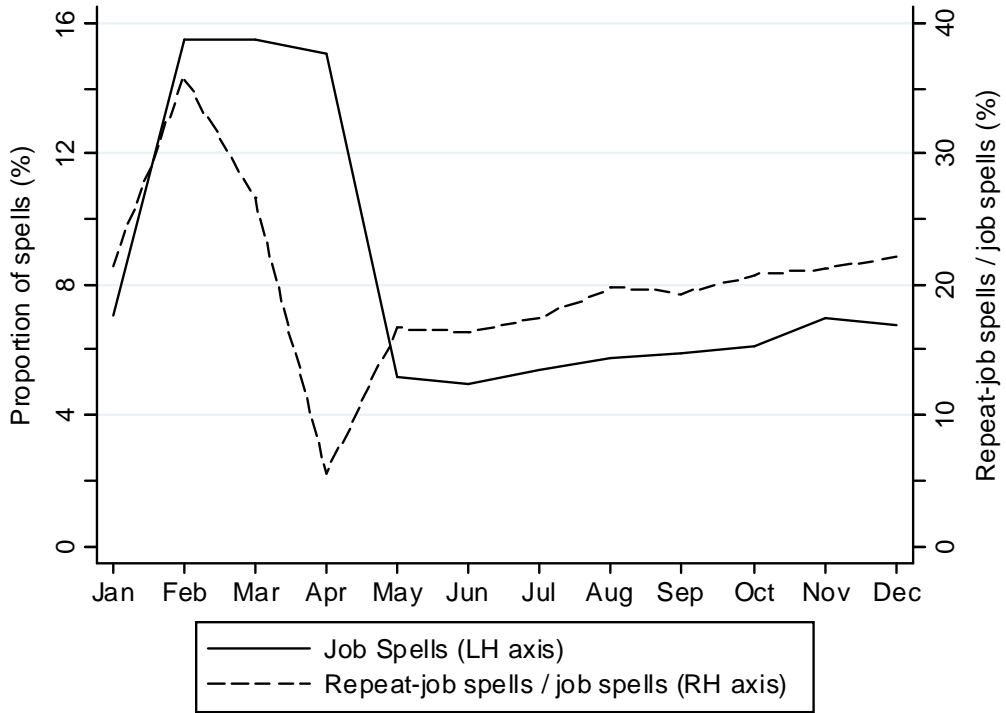
Tenure distribution for single and repeat job spells



Note: The single and repeat-job spell tenure distributions include all jobs with greater than zero earnings in March 2006 for employees aged 15 years and over. Job spells are grouped along the horizontal axis into one month tenure bands. The tenure band 84 months groups job and employment spells with tenure of 84 months and over.

Figure 4

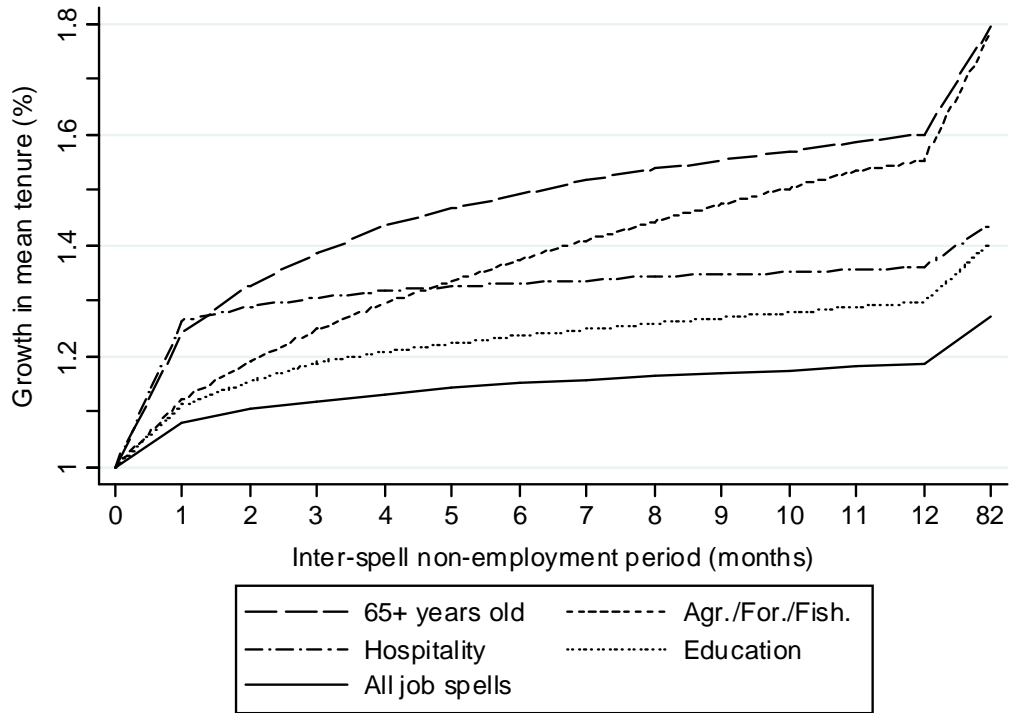
Proportion of job spells by start month and share of monthly job starts that are repeat spells



Note: The sample of jobs have greater than zero earnings in March 2006 for employees aged 15 years and over.

Figure 5

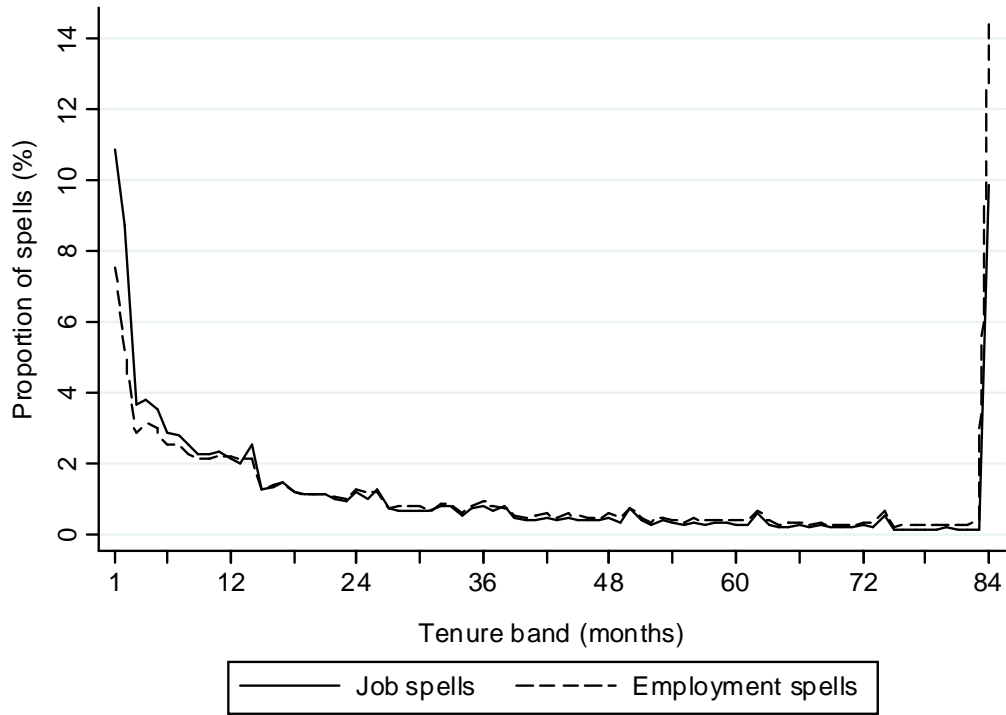
Relationship between mean tenure and maximum size of inter-spell non-employment period imputed as employment



Note: The sample of jobs have greater than zero earnings in March 2006 for employees aged 15 years and over.

Figure 6

Job tenure distribution with employment relationship tenure distribution compared with all inter-spell non-employment periods imputed as employment



Note: The tenure distributions include all job spells (solid line) and employment (relationships) spells (dashed line) with greater than zero earnings in March 2006. The horizontal axis groups job tenure into single month bands from 1–84 months. The tenure band 84 months groups job and employment spells with tenure of 84 months and over.

References

del Bono, E. & Weber, A. (2008). "Do wages compensate for anticipated working time restrictions? Evidence from seasonal employment in Austria", *Journal of Labour Economics*, 26:1, 181–221.

de Raaf, S., Kapsalis, C. & Vincent, C. (2003) "Seasonal work and employment insurance use", *Perspective on Labour and Income*, 4:9, 5–11.

Statistics New Zealand (2007). *Employment, Earnings and Income Statistics from LEED: 2006*. Statistics New Zealand, Wellington.