



The Impact of Employment Experiences and Benefit-Spell Duration on Benefit-to-Work Transitions

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Note

The outputs shown in this paper have been compiled using input data that is largely in its 'raw' form. Limitations exist in the ability of the raw data to support statistical outputs, some of which are outlined in this paper. Investigations suggest that the effects of these limitations may be reduced using appropriate methods that are being developed. However, these methods have not been fully incorporated into the outputs in this document. As such, results shown are to be regarded as illustrative of potential only. This document is released to inform interested parties of ongoing research and to encourage discussion of work in progress.

Tables in this paper contain information about groups of people or firms so that the confidentiality of individuals is protected. All results based on the LEED data presented in this paper have been rounded: counts to the nearest 100, percentages to the nearest 1 percent, and average dollar amounts to the nearest \$10. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person or firm. The results are based in part on tax data supplied by Inland Revenue (IRD) to Statistics New Zealand under the Tax Administration Act. This tax data must be used only for statistical purposes and no individual information is provided back to IRD for administrative or regulatory purposes. 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 *Linked Employer-Employee Data Project: Privacy Impact Assessment* paper published on the Statistics New Zealand website at: www.stats.govt.nz.

IRD collects this data to support the efficient operation of the New Zealand taxation system, and its use as a base for the production of statistics places new and quite different demands on the data. Any discussion of data limitations or weaknesses is in the context of this latter use, and is not related to the ability of the data to support IRD's core operational requirements.

Abstract

This paper uses an experimental dataset under development at Statistics New Zealand, the Linked Employer-Employee Database (LEED), to examine labour market outcomes for individuals previously receiving welfare benefits. This data contains monthly information on individuals' benefit and earnings receipts over the three-year period from April 1999 to March 2002. In contrast to most administrative data used for benefit transition analyses, which can only identify benefit versus non-benefit states, the data used in this paper reveals whether or not an individual is employed both when they are on and off benefits. We exploit these features of the data to examine the labour market outcomes for the working-age population who ever receive benefits over the sample period, and focus on two broad issues. First, we provide a critical assessment of the adequacy of using off-benefit at a future point in time as a measure of a successful benefit-to-work transition, and compare it with the alternative in-employment measure. We find that off-benefit rates are typically 85-90 percent over the 18 months following a reference benefit-spell, compared to in-employment rates of only 55-60 percent. Also, for those who are off-benefit, women, older individuals and those living in Auckland, are less likely to be employed. Second, we examine the relationship between an individual's benefit-spell duration and their employment experience, both during their benefit-spell and prior to the spell, on their post-benefit labour market outcomes. We find that longer benefit-spell duration has a negative effect, and previous employment experiences have positive effects on subsequent outcomes.

1. Introduction

Studies that evaluate the effectiveness of active labour market programmes or examine benefit-to-work transitions typically rely on administrative data from state or federal benefit systems. This is true of both international literature (for example, Chay, Hoynes and Hyslop, 1999) and New Zealand research on the benefit system (for example, Gobbi and Rea, 2002; Mare, 2002; Wilson, 1999).¹ This data usually contains, at most, limited information on individuals' labour market outcomes when they are off-benefit. Thus, most analyses rely on an *off-benefit* measure as their criteria for a successful programme outcome or transition.

In contrast, an experimental dataset under development at Statistics New Zealand, the Linked Employer-Employee Database (LEED), provides comprehensive coverage of the universe of income recipients in each month over the three-year period from April 1999–March 2002 and separately identifies the amount of income received from social welfare benefits. Individuals (and firms) in LEED also have unique identifiers which enables longitudinal linking of their records to study benefit transitions. We exploit these features of LEED to examine labour market outcomes for the working-age population of New Zealand who ever receive benefits over the sample period.

Our analysis focuses on two broad issues. First, we undertake a critical assessment of the adequacy of using off-benefit at a future point in time as a measure of a successful benefit-to-work transition. In particular, we compare this measure with an alternative *in-employment* measure. We also consider future earnings levels as a secondary measure of successful transitions. Second, we examine the effect of an individual's benefit-spell duration and their employment experience – both during their benefit-spell and prior to the spell – on their post-benefit labour market outcomes. More specifically, we examine the extent to which spell-duration and employment experiences facilitate or hinder successful benefit-to-work transitions, as measured by our possible proxies.

In the next section we discuss the LEED project and the welfare benefit system in New Zealand over the sample period. We also discuss the selection criteria used to construct the samples for the analysis, and describe the main characteristics of the LEED data and resulting selected samples.

In section 3 we report the results of a descriptive 'event study' analysis of individuals' employment and conditional earnings outcomes in the months leading up to and after a benefit-spell for those who experience a single benefit-spell over the sample period. This analysis focuses both on the extent to which individuals are observed to be employed before and/or after their benefit-spells, and also on how these outcomes vary by the length of the benefit-spell. The results suggest that the employment rates before and after a benefit-spell are quite low: over the 18 months before a benefit-spell, the employment rate is typically 40–45 percent for those who have a right-censored spell, and 50–55 percent for those with an uncensored spell; while over the 18 months after a spell, the employment rate is about 55 percent for those with a left-censored spell, and 65 percent for those with an uncensored spell. We also find that individuals' post-spell employment rates and earnings are inversely related to the length of their benefit-spell. For example, those who have a 1–3 month spell have about 5 percent higher employment rates, and 6–9 percent higher earnings, than those who have a 7–12 month spell. Although we are wary of interpreting these

¹ Exceptions for New Zealand include Barker and Maloney (1998), which was a pilot study of linked tax and benefit system data to estimate hazard models of the benefit-to-work transitions, and Carroll and Wood (2003), which used the administrative LEED data used in this paper to present some preliminary analysis of benefit-to-work transition rates.

effects as reflecting a direct causal impact of duration on subsequent outcomes, that pre-spell employment and earnings appear to be only weakly related to spell-duration does provide some weight to such an interpretation.

Our main analysis, presented in Section 4, extends and formalises this descriptive analysis using a regression framework to control for other factors that may affect subsequent outcomes. In particular, we examine the robustness of the event study spell-duration results, and extend the analysis to examine the effects of individuals' pre- and within-spell employment experiences on their post-spell benefit, employment and earnings outcomes. This analysis focuses on individuals who both begin and end their first observed (*reference*) benefit-spell during the sample period, and may or may not have subsequent spells. While the off-benefit rate for this population is typically 85-90 percent over the 18 months following the end of the reference spell (except for a strong 12-month seasonal recidivism effect), we find that the employment rate is only 55–60 percent over this period. This suggests that off-benefit may provide a poor measure of a successful benefit-to-work transition. Also, for those who are off-benefit, women, older individuals and those living in Auckland are less likely to be employed. The basic findings concerning the relationship between spell-duration and subsequent outcomes from the event study in this analysis are statistically robust to controlling for age, gender, location, seasonal, and pre- and within-spell employment experiences. We also find that positive indicators of employment experience are positively related to post-spell labour market outcomes, and that these are stronger predictors of employment-based outcomes than the off-benefit outcome.

There are some important caveats to mention with regards to the analysis and results presented in this report. First and foremost, we emphasise that the analysis is very preliminary and, as such, the results should be interpreted as 'suggestive' rather than 'definitive' in nature. Second, the LEED data has some notable weaknesses that potentially affect the robustness and/or interpretation of our results. In particular, we are unable to identify different types of benefits in LEED and have limited socio-demographic information on beneficiaries and their families. Thus, our analysis can only focus on the broad population of beneficiaries, and is potentially quite blunt with regards to sub-populations of particular interest.

2. Data Description and Welfare Benefit Background

In this section we first provide a description of the LEED data to be used in the analysis. Following this, we give a brief background discussion of the New Zealand welfare benefit system over the sample period as it relates to the LEED data. We then outline the sample selection criteria adopted, and present and discuss the descriptive characteristics of the samples to be used.

The Linked Employer-Employee Database

This paper uses an experimental dataset under development at Statistics New Zealand called the Linked Employer-Employee Database (LEED). In this section we provide a brief description of LEED and the data for the purposes of the analysis in this paper.² All employers in New Zealand file a monthly record with Inland Revenue (IRD) called an Employer Monthly Schedule (EMS),

² See Kelly (2003) and Carroll and Wood (2003) for more detailed discussions of the LEED data.

which lists all employees at that firm in the last month, the amount of income they received, and the amount of tax that was deducted at source. Two types of recipients are covered by the 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 self-employed individuals. The recipients of most types of social welfare benefit are treated as employees in tax, and as such have PAYE deducted at source and appear on the EMS. These can be identified, as the IRD identifiers of the payers is known. Individuals and firms each have unique administrative identification numbers (IRD numbers) that can be used to track them longitudinally.³ LEED currently contains 36 months of linked employer-employee records, from April 1999 to March 2002.

In addition to the earnings information provided on the EMS, IRD's administrative records contain some basic demographic information on individuals and firms that can be merged with each unique employer-employee record. This data includes gender, age and address details for employees, and industry and address details for employers.⁴ This core data can also be used to create additional variables, such as the number of employees and the total payroll for all firms, the number of jobs held by all employees in a particular month and each individual's pattern of employment over the 36-month period. In addition, several important 'employee-employer' relationships are identified in the database. Of particular relevance for this study are the separate records for individuals receiving core social welfare benefits. These include Unemployment, Domestic Purposes, Sickness, Invalids, and Widows benefits.⁵

LEED has a number of limitations relevant to the research in this paper. First, as noted above, only a limited amount of demographic information is available for individuals: in particular, variables such as education and ethnicity are not available. Second, comprehensive information is not available on earnings from self-employment. Individuals who own their own business or who work as contractors may appear on the EMS of the firm that pays them, but many do not.⁶ We have decided to exclude these individuals from our analysis because we have a limited understanding about the selection mechanism that leads some self-employed to file an EMS.

Third, it is important to note that LEED only records an individual's taxable earnings received in a particular calendar month, which may or may not coincide with the employment period. For example, earnings may be received, and reported in LEED, in arrears of the period of

³ Some issues do exist here. About 1.3 percent of monthly records have either missing or invalid payee IRD numbers, of which about 40 percent can be imputed using matching procedures. In addition to these, 1.1 percent of monthly records have IRD numbers registered to businesses rather than to individuals as expected. These procedures are implemented by the Statistics New Zealand LEED development team and more information can be found on the Statistics New Zealand website: www.stats.govt.nz. All employee IRD numbers are anonymised in the data available to the research team. Employer IRD numbers are usually assigned uniquely to firms but can represent other administrative reporting units such as head offices or holding companies. The rules for transferring IRD numbers when firms change ownership are complex. While these issues are important, they have a very limited effect on the analyses undertaken in this paper.

⁴ Gender is actually derived from the title and names provided on the initial registration form. Date of birth is recorded on this initial form as well, but for privacy reasons we are only provided with an age variable. Similarly, actual addresses for firms and individuals are not provided to the researchers but are replaced with aggregated location variables. For example, in our analysis we control for location using the administrative level of regional council, of which there are 16 in New Zealand. Address records for individuals are not updated on a regular basis and are not available before June 2001. Industry and address records for firms are affected by the problem noted in the previous footnote; these can refer to head offices and holding companies. We use both the location and industry variables in our analysis but expect the problem with them to have no quantitative effect on our results. Documentation available on the Statistics New Zealand website discusses these issues in much more detail and describes future plans for further cleaning of this data.

⁵ In addition to this main-benefit identifier, there are also separate identifiers for all individuals receiving weekly earnings compensation from ACC, student allowances, and New Zealand superannuation. Social welfare benefits and ACC compensation are taxed at source and thus recorded on an EMS for IRD. Unique IRD numbers identify the social welfare agency (MSD) and ACC as the 'employer' for these payments and this is different from the IRD number used for their true employees. Unfortunately, the same IRD number is used for all main benefits and thus we cannot distinguish between these. We ignore records for student allowances and New Zealand superannuation payments in the analysis in this paper.

⁶ These records are separately identified in LEED and are referred to as 'withholding tax' as opposed to 'PAYE tax'. All individuals with self-employment income who earn income other than with tax deducted at source fill out a different form annually to figure out how much tax they owe. The Statistics New Zealand LEED development team is currently developing a methodology for integrating these annual income records with the core monthly LEED data.

employment. In addition, reported earnings can include one-off payments such as bonuses or redundancy pay, and do not include income earned 'under the table' (ie undeclared to IRD). Also, because calendar months have uneven numbers of days, earnings levels are affected by the timing of pay and the number of pay periods in a month.

Fourth, in months where individuals receive income from multiple payers, including from benefits or the Accident Compensation Corporation (ACC), it is not possible to identify whether the 'jobs' occur sequentially or concurrently. Although there are start and end date fields on the EMS forms, these are rarely completed, and are therefore unreliable. Income received in a particular month can also reflect work undertaken in the past or be lagged benefits or ACC payments.

Also, related to the last two issues, although employment earnings and benefit receipt are measured on a calendar monthly basis, individuals' underlying employment decisions and their benefit eligibility are determined on a continuous basis. Thus, receipt of earnings and/or benefit during a month does not distinguish between part-month versus full-month employment or benefit receipt. However, previous and subsequent month outcomes and the level of earnings or benefit received may provide useful information on this. In addition, multiple benefit-spells occurring within a calendar month will not be separately identified, although this is likely to occur rarely. Furthermore, when an individual receives both earnings and benefits in a given month, it is not possible to identify whether these were received sequentially or simultaneously – ie whether a benefit-spell precedes or follows an employment spell, or whether earnings are received while on the benefit.

The New Zealand Welfare Benefit System

The New Zealand social assistance system for the working-age population has three broad components. The first is tax transfer assistance administered and delivered by Inland Revenue (IRD) and/or Work and Income New Zealand (WINZ).⁷ The second component is a set of core welfare benefits granted on the basis of various categories of need.⁸ To be entitled to each of the core benefits, individuals must satisfy a residential requirement, an income test, and potentially face a stand-down period, as well as other benefit-specific requirements. The third component of assistance is supplementary benefits and discretionary assistance granted on the basis of need due to particular circumstances.⁹

Given the nature of the LEED data, the population of core beneficiaries forms the focus of our analysis. For practical and conceptual reasons, tax assistance and supplementary and discretionary benefit support are excluded from the analysis. For each of these, eligibility is generally not restricted to those receiving (core) welfare benefits. Also, tax assistance entitlement is determined on an annual (tax year) basis, and may be paid either as a single end-of-year tax credit by IRD, or on an ongoing fortnightly basis by WINZ. Thus, although there is some information in the LEED data on tax credits received by individuals, this only covers the selected sample of those who receive such support on an ongoing basis and excludes those who receive

⁷ WINZ ceased to exist as a separate agency on 1 September 2001, and became Work and Income, a service line of the Ministry of Social Development. As WINZ was the delivery agency over most of the period of analysis in this paper, we will use this reference in this section. Tax transfer assistance includes the Parental Tax Credit and the Child Tax Credit, which are not available to those receiving income-tested benefits; and Family Support and the Family Tax Credit, which are available irrespective of benefit receipt status.

⁸ The main core benefits are the Unemployment, Domestic Purposes, Sickness, Invalids, Widows, and Emergency benefits. In addition to these benefits, the Independent Youth Benefit and Transitional Retirement Benefits are also taxed and, as discussed below, recipients will appear in the LEED data.

⁹ Supplementary benefits and discretionary assistance include the Accommodation Supplement, Disability Allowance, Away from Home Allowance, Residential Care Subsidy, Special Benefit, Special Needs Grant, etc.

an end-of-year lump sum payment. In addition, broadly speaking, the supplementary benefits and discretionary assistance are both non-taxable, while the receipt of core benefits is subject to PAYE tax. As the LEED data includes only benefit payments that are subject to PAYE tax, it will provide good coverage of core benefit payments but no coverage of (non-taxed) supplementary and discretionary benefits.

The set of core benefits are intended to cover a broad range of situations. For example, the Unemployment Benefit provides welfare support during a period of unemployment, and thus has work-testing requirements and obligations. On the other hand, Sickness and Invalids Benefits are intended to provide welfare support for either temporary or lasting incapacity, and these and other benefits tend to have less stringent work-tested obligations for recipients. Ideally, the analysis here would focus either primarily on the Unemployment Benefit population who are expected to engage in job search or, because of the differences in job search obligations and expectations across the various benefits, separately on the different benefit types. However, as the information available in the LEED data does not enable us to separately identify different benefit types, our analysis is necessarily restricted to the full population of benefit recipients.¹⁰

Appendix Table A1 provides a summary of the core benefit population over the period of our study. This summary was provided by the Ministry of Social Development (MSD) from its benefit administrative database, for the months of April 1999, 2000, 2001 and 2002.¹¹ Panel A shows the distribution of core benefits by benefit type – across the two main benefits, the Domestic Purposes Benefit (DPB) and the Unemployment Benefit (UB), and other benefits – and by gender and age over these four years. Panels B–D of the table show the gender and age distributions of these three benefit-type populations.

Although the total number of benefit recipients fell about 6 percent over the period (probably reflecting the strengthening economy), this change masks quite different changes in recipients across the benefit types: the numbers of DPB and UB recipients fell 2 and 21 percent respectively, while the numbers on other benefits increased nearly 10 percent. As a result of these differences, the proportion of benefit recipients on UB fell from 39 to 33 percent, while the proportion on other benefits increased from 31 to 36 percent, and DPB recipients was pretty stable around 30–31 percent. The gender and age mixes of the benefit population also changed (becoming more female and older), mainly reflecting the differences across the type of benefit but also, to a lesser extent, changes within each type over time. For example, in terms of the gender mix, more than 90 percent of DPB recipients are female; around 70 percent of UB recipients are male. This proportion fell slightly over the period, and there are roughly equal numbers of males and females among the other benefit recipients. In terms of the age mix, DPB recipients are more likely prime-aged: 75 percent are aged 25–49, compared to around 50 and 45 percent of UB and other benefit recipients, respectively; while other benefit recipients tend to be older than UB recipients: about 35 percent compared to 20 percent are over 50 years.

To summarise, this description shows that the characteristics of the benefit population both varies quite significantly across the benefit types and has changed over the period of analysis. In particular, the UB component of the overall benefit population has fallen quite significantly. On the other hand, because UB recipients tend to have significantly shorter benefit-spells (for example, Wilson, 1999), so are less likely to have censored spells in the data, we expect that the selection criteria for our main analyses (described in the next subsection) will tend to result in an over-representation of UB recipients in the analysis.

¹⁰ At least within age- and gender-defined demographic groups.

¹¹ Note, the last month of our analysis sample is March 2002.

Sample Selection Criteria

For the reasons discussed earlier, there will be a substantial amount of heterogeneity in beneficiary (and employment) status, according to the amount of time spent on a benefit during any month, and this may or may not be well proxied by the amount of benefit income received during the month. We make the simplifying assumption that calendar months represent the relevant period for all decisions, and adopt the simple approach of defining an individual as being on-benefit in a month if they receive any benefit income during the month.¹² Similarly, we characterise individuals as being in-employment in a month if they receive any employment-based earnings and we treat any employment-related ACC payments as employment earnings. Thus, for the purposes of our analysis, an individual who receives both benefit income and employment earnings during a month is (implicitly) assumed to be receiving earnings while on benefit.¹³ We recognise that this approach is not ideal. There are a variety of feasible alternative approaches to defining effective monthly benefit and/or employment statuses according to the level of benefits and/or earnings received during the month, and also the patterns of receipt in adjacent months, etc. However, such alternatives would require substantially greater effort and (careful) judgement than our simple approach, with less obvious pros and cons, and the time constraints during the current phase of the research have precluded this.

Beyond this set of decisions, our analysis seeks to concentrate on the working-age population of individuals who are 'at risk' of receiving benefits. In particular, we select those aged between 15 and 65 over the entire period (ie those aged 15–62 in April 1999),¹⁴ and who ever receive benefit income during the 36-month sample period. In the next subsection, we briefly compare this population to the same aged population who never received benefit income over the period.

In addition to these sample selection criteria, the two main analyses we present below each involve further selection requirements. First, for the event study of labour market outcomes before and after a reference spell, in order to have a clearly defined reference spell, we select only individuals who have a single benefit-spell over the period and who do not receive benefit income for the entire 36-month period. Second, selecting a sample for the regression analysis of post-spell labour market outcomes involves a trade-off between having a more inclusive sample and having a more standardised pre-spell employment measure across individuals associated with this choice. In order to have a six-month pre-spell window available for each observation, we select only individuals whose first observed benefit-spell starts *after* month 6 (September 1999) of the period, and also ends sufficiently early in the period to still be in the sample at the requisite point after the end of this first spell (ie it ends at least 3, 6, 12 or 18 months before the end of the sample period, according to the time lag of the analysis). Again, in the next subsection we present some summary statistics for these samples to provide a sense of the impact of the various selection criteria.

¹² However, there are about 2,000 occurrences of \$0.01 monthly benefit receipt in the data, and a further 1,000 occurrences of less than \$1 payments, which we suspect may reflect some administrative marker rather than true or effective benefit receipt. Because of this, we recode benefit incomes of less than \$1 to zero, so long as doing so does not cause a break in an ongoing benefit spell (ie does not split a single spell into two or more spells). Applying this filter lead to about 2,500 individuals having a single (monthly) change to their benefit status, and a small number having 2–12 monthly changes made. These changes also resulted in about 600 individuals who ever received benefit over the 36-month period being reclassified as having no benefit receipt.

¹³ This may be a moot point for most of the subsequent analysis, as we largely concentrate on the separate binary outcomes of either on/off-benefit or in/out-of-employment, so the issue of sequential versus coincident benefit and employment states is less critical.

¹⁴ We recognise that using the full age range of the working-age population is susceptible to critique that the analysis and results will be confounded by spells on benefit in between periods of educational enrolment among the young, and by benefit spells associated with transition to retirement among older workers making (early) retirement decisions. For each of these cases, post-spell employment is unlikely to be either the main objective or outcome. However, we believe analogous issues exist from being unable to distinguish alternative benefit types, albeit for less easily identifiable individuals. For this reason, we have chosen to adopt very broad and inclusive sample selection criteria, and emphasise that the analysis is very preliminary. Also, Appendix Table 2 presents some results for analyses conducted separately for more narrowly defined age and gender groups.

Descriptive Statistics

We now present and discuss some of the descriptive statistics of the data as it pertains to the subsequent analysis. We begin by first comparing the sample characteristics of the 15–65 aged populations defined by whether or not individuals receive (any) benefit income over the sample period. As the population of those who receive any benefits is the focus of the paper, we next consider the characteristics of this population according to the types of benefit experience, defined by the number of separate spells and whether or not any spell is either left censored (in progress at the start of the period) or right censored (ongoing at the end of the period). Finally, we present and discuss summary statistics pertaining to, respectively, the samples used in the event study analysis and the regression analysis below.

Table 1 presents descriptive statistics on the population subsample who *ever* received benefit income over the 36 month period in panel A, and compares these to the characteristics of the subsample who *ever* received employment earnings but *never* received benefit income over the period in panel B. The first column describes the characteristics for the full sample in each panel, and the subsequent columns describe the characteristics of subsamples defined by gender and age in April 1999.¹⁵ Over the period, nearly 830,000 individuals receive benefit income, and a further 1,480,000 receive tax-withheld employment earnings but no benefit income.

Comparing the characteristics of the two samples in column 1, we see that those who ever receive benefits are, on average, younger (by 1.7 years) and more likely to be female (by 6 percentage points). They also have about half as many months of employment earnings over the 36-month period (roughly 14 versus 27), and have 1.5 fewer months over this period of neither benefits nor earnings (7.7 versus 9.2). As well, their average earnings when off-benefit (defined as months with employment earnings but no benefit income) are much lower than for those in the non-benefit sample (\$1,900 versus \$3,150).

A comparison of the subsamples in columns 2–7, defined by gender and age, shows that, controlling for age, females have more months in receipt of benefit and higher monthly benefit levels than males. Interestingly, within age group cells in both the ever-benefit and non-benefit samples, women have employment earnings in about as many months as men, but tend to have significantly lower earnings. Conditional on receiving benefits, we also see that older individuals are heavier ‘users’ of benefits (as measured by the number of months receiving benefit income over the period) than younger individuals and, conversely, have fewer months of employment earnings.

We next concentrate on the *ever-benefit* sample described in Table 1, which is the focus population for our subsequent analysis. Table 2 presents the characteristics for subsamples of this population stratified by whether or not any benefit-spell is censored (ie ongoing at the beginning or end of the sample period), and by the number of separate benefit-spells (defined by a break of at least one month between periods of benefit receipt) observed during the period. In particular, we distinguish eight subsamples by single and multiple spells, and by whether any spells are uncensored, left-censored (ie in progress at the start of the period), right-censored (ie ongoing at the end of the period), or both left- and right-censored. Almost 20 percent of individuals in the sample have a single uncensored spell, 9 percent have multiple uncensored spells, about 20 percent have only left-censored spells, about 20 percent have only right-censored spells, and 32 percent have left- and right-censored benefit experiences over the period.

¹⁵ Note, the 15–21, 22–47 and 48–62 age groups pertain to those aged 15–24, 22–50 and 48–65, respectively, over the three-year period April 1999 – March 2002.

Comparing the characteristics across the columns shows that, for a given ‘type’ of experience (ie uncensored, or left- and/or right-censored), those with single benefit-spells tend to be older and are more likely to be female than those who have multiple spells. Also, those with single spells tend to have higher benefit levels and, except for those with both left- and right-censored spells, spend less total time on-benefit. Unsurprisingly, the total observed number of months receiving benefit income is higher if either end of the period involves a censored spell, and more so if both ends involve a censored spell. Table 2 also shows a similar pattern in the average monthly benefit income received by ‘type’ of experience, and a reverse pattern for average monthly employment earnings.

We next describe the characteristics of the samples used for the event study analysis below, which uses only data on the single spell samples. We stratify each of these samples by the length of the benefit-spell (1–3 months, 4–6 months, 7–12 months and 13+ months), and describe the characteristics by the length of spells in Tables 3a, 3b and 3c for the uncensored, left-censored and right-censored samples, respectively. In the case of the uncensored sample, nearly half of individuals’ benefit-spells last 1–3 months, and about one-quarter last 4–6 months. In contrast, over half of the censored spells are observed to last for at least 13 months, while less than 20 percent are observed for 1–3 months. For all three samples, individuals with longer observed spells are generally older and, in the case of the censored samples, more likely to be female. Those with longer benefit-spells have more months with employment earnings and fewer months not observed in the LEED data, and also have lower benefit levels and higher earnings than those with shorter spells.

The latter rows in Tables 3a, 3b and 3c present the employment rates and average earnings over various six-month periods before and after the observed benefit-spell. These statistics summarise the results to be presented in the event study analysis discussed below, and will be discussed in greater detail at that point. It is interesting to note here, though, that the employment rates are generally on the order of 45–55 percent during the 18 months before the spell begins, and 55–65 percent during the 18 months after the spell ends, while earnings tend to be both higher and increasing after the spell than before.¹⁶

Our second analysis below uses regression methods to generalise the event study analysis of benefit-spell duration and labour market outcomes. Table 4 presents summary statistics of the characteristics of this sample. Again, we stratify this sample by the length of the reference benefit-spell (1–2 months, 3 months, 4–6 months, 7–12 months, and 13+ months duration), and describe the characteristics of these subsamples in columns 1–5 respectively.¹⁷ As in Table 3, Table 4 shows that individuals with shorter spells are generally younger.

We have constructed several variables to characterise the pre- and within-spell employment experiences of individuals, and these are summarised in Table 4. First, individuals with shorter durations are more likely to have been employed immediately prior to the benefit-spell (nearly 60 percent of those with 1–2 month spells, compared to less than 50 percent of those with 3-month spells, around 45 percent of those with spells lasting 4–12 months, and 40 percent of those with spells lasting longer than one year). However, the number of months with employment earnings during the six months prior to the spell is quite similar across the various duration groups (between 2.5 and 3 months). As a proxy for the (inverse) benefit-to-earnings replacement ratio,

¹⁶ Note that the samples these figures are based on vary according to when the benefit-spell starts or ends, and how long the spell lasts.

¹⁷ We separate the ‘short’, 1–3 month, spells into 1–2 months and 3 months here because the 1–2 month spells are likely to be confounded at both ends of the spell by partial months, whereas the 3-month (and longer) spells will generally have at least one month which is purely a ‘benefit month’. This issue is discussed further below.

the ratio of average pre-spell earnings to average spell-benefits declines with increasing duration, although some of this may be due to the impact of partial month benefit payments, which will affect shorter durations especially.

Two variables have been constructed to characterise an individual's employment experience during their benefit-spell. These are indicator variables for whether the individual has employment earnings, first during each month, and second, if not then during any month of the benefit-spell, excluding the first and last months of the spell. As the intent of these variables is to measure the concurrent (partial) employment while on benefits, we have omitted the first and last months of the spell in the construction of these variables because of the confounding effects of moving from and to employment respectively in these months. As a result, both of these variables take value zero for 1- and 2-month spells, and the second takes value zero for 3-month spells. Table 4 shows that the fraction of individuals with employment earnings in *each* month of their spell declines, while the fraction with earnings in *any* month and the combined fraction increase with the spell length. These results are probably not surprising given that the criteria for the first is typically more stringent and the second less stringent for longer spells.

Table 4 also summarises the post-spell outcomes of interest in the subsequent regression analysis. This shows that the fraction of individuals who are off-benefit tends to decline with time since the end of the spell (from 90 percent after three months to 84 percent after 18 months). There is also a strong apparent 12-month seasonal pattern of returning to benefit, particularly for those with three-month reference spells – for example, for this group, roughly 90 percent are off-benefit after three and six months, and 85 percent after 18 months, but only 66 percent are off-benefit after 12 months! There is also quite a strong decline in off-benefit rates as the spell duration increases – for example, those with 7–12 month spells are about 6 percent less likely to be off-benefit three months after the end of the reference spell than those with 1–3 month spells, and this difference increases with time since the end of the spell. Table 4 also shows similar patterns across the spell-length groups in the fractions in-employment, and the monthly earnings conditional on employment, at various times after the end of the spell. However, the magnitudes of the duration differences are slightly smaller than for the off-benefit measure. A major focus of the regression analysis is to examine how robust these raw/unadjusted duration patterns in the outcome measures are to other factors that may vary systematically by spell length

3. An Event Study Analysis of Labour Market Outcomes

The first analysis of the benefit-to-work transition process consists of an 'event study' of labour market outcomes around a single benefit-spell. In particular, for individuals who experience a single benefit-spell over the period, we stratify the uncensored, left- and right-censored samples according to the (observed) duration of the spell over the sample period. We then estimate the average employment rates and monthly earnings of individuals during the months both before and/or after their benefit-spell for each subsample. The employment rate of individuals in the months leading up to the start of their benefit-spell is used to characterise the extent to which new benefit-spells are sourced from the cessation of employment as opposed to originating from a non-employment state. Similarly, the employment rate in the months following the end of a benefit-spell characterises the extent to which individuals leave the benefit for employment as

opposed to other reasons, and an assessment of how good a proxy being *off-benefit* is for being *in-employment*.

Differences in pre- and post-spell employment rates across the subgroups stratified by both the length of the spell and whether or not it was censored may reflect a combination of (at least) three factors. First, the heterogeneity of individuals on different types of benefit may be correlated with the spell length and/or whether the spell is censored. For example, individuals receiving the unemployment benefit are likely to be both more able and, with a work-test requirement, more obliged to work than those receiving either sickness or invalids benefits (also Domestic Purposes Benefit), and therefore more likely both to have a shorter spell on benefit *and* to move into employment. Second, there is also likely to be individual heterogeneity within a given benefit type that is correlated with spell length – for example, individuals with short duration unemployment benefit-spells may be more likely to find employment than those with longer duration independently of the spell duration. Both of these types of heterogeneity are likely to be reflected in different employment rates *both* pre- and post-spell for groups with different durations. The third factor is the possibility that the length of the benefit-spell itself has a *direct* impact on an individual's employment propensity – for example, if individuals lose motivation the longer they remain on the benefit, or their skill set atrophies so that they become less attractive to employers. This factor only affects the post-spell employment propensity and, if present, we would expect to see the post-spell employment rate to be relatively lower for longer-duration groups, compared to their pre-spell employment rates.

Analogous factors may also be expected to cause differences in pre- and post-spell monthly earnings across the various groups defined by benefit-spell duration and/or whether the spell is censored. In addition, differences in earnings will reflect a combination of differences in the numbers of hours worked (ie employment intensity), and differences in the (effective) hourly wage rate paid for employment, which, in turn, may reflect differences in human capital characteristics and job choice.

Figure 1 shows the employment rates for the respective subgroups, covering the period from 22 months prior to the beginning of the benefit-spell to 22 months following the end of the spell.¹⁸ Panel A graphs the employment rates for individuals with single uncensored spells of 1–3 months, 4–6 months, 7–12 months and 13+ months; while panel B presents analogous graphs for censored spells with the same (observed) duration groups.¹⁹ We have included two vertical lines in each figure: the left line corresponds to the first month of the benefit-spell, and the right line corresponds to the last month of the spell.

There are several interesting and suggestive findings to note from Figure 1. First, the employment rates for these groups when off-benefit are substantially lower than 100 percent. In fact, prior to the beginning of a spell, the employment rate of those with right-censored spells is typically on the order of 40–50 percent, while for those with uncensored spells it is 5–10 percent higher in any month. The post-spell employment rates are somewhat higher than pre-spell rates: typically 50–60 percent for those with left-censored spells, and 60–70 percent for those with uncensored spells. This suggests that a large fraction of beneficiaries arrive from non-employment states, and

¹⁸ Note that, for each subgroup shown, the actual sample used to calculate the employment rate and average earnings will vary across the period shown, according to the necessary selection criteria in each month. For example, the selection criteria in month 22 prior to a spell requires that the spell did not start until at least month 23 (February 2001) of the sample period; similarly, selection in month 22 following the end of a spell requires that the spell had ended by month 14 (May 2000) of the period. As the extreme months are more strictly selected, the estimates presented may be less reliable for these months than for the period(s) close to the start and end of the benefit spell. In addition, any trends that may be apparent in these figures may be the result of non-random selection issues across these monthly samples, rather than reflecting actual trends for a fixed sample.

¹⁹ Note that, because of censoring, the true spell durations for these groups will be longer than the observed durations.

a slightly smaller, though still substantial, fraction leave the benefit to a non-employment state. There are several interpretations and explanations for these low employment rates. On the one hand, they may reflect either a given fraction of the samples either coming from or going to (sustainable) employment, or a larger fraction of the sample achieving employment at different points in time but not able to sustain the employment. On the other hand, the measured non-employment rates may be partly attributable to the LEED data not covering self-employment states and/or errors in the data that affect the ability to track individuals longitudinally. These results may also reflect more on- or off-benefit transitions triggered by changes in the individual's spouse's outcomes, rather than their own.

Second, there is a noticeable drop in the employment rate in the months leading up to the beginning of the benefit-spell. The drop appears to start gradually from around 12 months prior, and then accelerates from around three months prior, so that the employment rate in the month the spell begins is typically in the order of 30 percent. At least part of the late drop in employment rate before benefit receipt begins is likely to be due to a stand-down period applied for many benefit recipients. The employment rate following the end of a spell is reasonably stable over time, although the rates for the 13+ month duration groups increase steadily over the first year or so following the end of the spell.

Third, employment rates tend to be higher for individuals who experience shorter benefit-spells, and these differences appear to be greater after, rather than before, the spell. The post-spell employment rate differences are particularly noticeable during the initial 6–12 months after the spell ends. For example, during this period, the employment rate differences for individuals who experienced a 1–3 month spell was typically 2–3 percent higher than for those who had a 4–6 month spell which, in turn, was 2–3 percent higher than for those with a 7–12 month spell and, again, this was 2–3 percent higher than the employment rate for those with benefit-spells longer than one year. In contrast, the pre-spell employment rates by length of spell are comparatively close. This is especially so for those with uncensored spells, except for the 13+ month duration group, whose employment rate is consistently 5 percent lower than the other groups. For the right-censored groups, the employment rate for the 1–3 month duration group is 1–2 percent higher than the other groups in the 6–12 months before the spell begins. Over the longer term, the post-spell employment rates of the different duration groups tend to converge, due to both a slow fall in the employment rate for the shorter duration groups and a slow rise in the employment rate for the longer duration groups.

In Figure 2 we graph the average monthly earnings²⁰, conditional on being employed in a month, for each of these subgroups. Figure 2 is organised in the same way as Figure 1. Again there are several interesting findings from Figure 2. First, the patterns of earnings differences by spell-duration are analogous to those for employment rates in Figure 1. In particular, there is little systematic difference in average earnings pre-spell across the different spell length groups,²¹ while the shorter duration benefit recipients enjoyed higher earnings in the period after the spell. The pattern of differences is somewhat clearer for individuals with uncensored spells, but is still apparent for the left-censored spell groups too.

Second, while pre-spell average earnings are roughly constant (around \$2,000–\$2,200 per month) over the period before the benefit-spell begins, post-spell earnings show a steady increase over time. After the spell ends, average real earnings start at about the same level as pre-spell earnings, and then increase about 10 percent over the subsequent 18–22 months.

²⁰ Earnings values are expressed in December 2003 quarter values, adjusted for inflation using the CPI.

²¹ The largest difference in the pre-spell earnings appears to be the right-censored spells of 4–6 months duration during the period being \$50–\$100 lower than the other right-censored duration groups.

Interestingly, and in contrast to the employment rates, average earnings for those with censored and uncensored spells appear to be reasonably comparable. This may be at least partly due to differential selection effects on the censored and uncensored group populations associated with the different employment rates across these groups. That is, the lower employment rate for the censored group suggests that a more select – in terms of their earnings ability – subgroup of this population may be working.

Third, there is again a substantial dip in average earnings around the beginning (and to a lesser extent the end) of a spell. This dip, presumably, largely reflects partial-month earnings associated with the fall in employment rates before the start of the spell.

In the context of the earlier discussion about the factors creating heterogeneity in the labour market outcomes across different duration groups, Figures 1 and 2 suggest that the duration of a benefit-spell does have a significant direct impact on the post-spell outcomes both for employment and earnings.

4. Regression Analysis of Post-Spell Labour Market Outcomes

The second analysis of the benefit-to-work transition process that we consider extends and formalises the graphical event-study analysis presented above. We adopt a multivariate regression framework to analyse the associative effects of a variety of factors on several labour market outcomes of interest. This analysis has a dual focus: first, we focus on the adequacy of the *off-benefit* state outcome as a proxy for a successful transition to work; and, second, we focus on the (associative) effects of individuals' benefit-spell duration and their employment experiences, both before and during the benefit-spell, on post-spell labour market outcomes. The analysis includes controls for the age, gender and regional location characteristics of individuals, and also includes a full set of monthly dummy variables to control for any seasonal effects.²² Parallel sets of analyses are conducted for the various outcomes at each of 3, 6, 12 and 18 months following the end of the first observed benefit-spell.

To address the robustness of 'off-benefit' outcome analysis, we compare the results for this outcome with those based on the 'in-employment' outcome using a full sample of benefit recipients. Furthermore, we supplement this with an analysis of the in-employment outcome for the subset of those who are off-benefit at the relevant point in time – ie for this analysis we drop those who have returned to benefits, and focus on the bivariate outcome of being in-employment versus not-observed in the LEED data. Finally, we also consider the employment earnings for those who are in employment.

To address the analysis of the effects of spell duration and pre- and within-spell employment experience on the subsequent outcomes, we make the following judgements. First, because of the confounding effect of transitions from and to work, respectively, during the first and last months of the spell, our benefit-spell employment experience measure excludes these months.

²² Specifically, we include dummy variables for the five-year age groups (15–19, ..., 55–59, and 60–65) measured in the last month of the observed spell, for female, for 12 regions based on regional council areas (Northland, Auckland, Waikato, Bay of Plenty, Hawke's Bay / Gisborne, Taranaki / Wanganui, Wellington, West Coast / Tasman / Nelson / Marlborough, Canterbury, Otago, and Southland), and for a full set of monthly seasonal effects.

This means that the spell-employment experience is set to zero for individuals with one- and two-month spells in the analysis and, as will be seen, the duration effects for such individuals will potentially be confounded by unmeasured employment effects. We characterise benefit-spell employment experience using two mutually exclusive dummy variables: first, for whether the individual has earnings in *each* of the intervening months of their spell ('Employed in all months'); and second, if not, for whether the individual has earnings in *any* of the months ('Employed in some months').

Second, we measure the pre-spell employment experience over the six-month period prior to the first receipt of benefit during the period. We characterise the pre-spell experience with three variables: first, a dummy variable for whether the person had employment earnings in either the first month of the benefit-spell or the month prior to this ('Employed in previous month'), as a measure of whether the individual transitioned into benefit receipt from employment; second, the number of months over the six months prior to the spell that they had earnings ('Number of months employed'), as a measure of their prior employment experience; and third, the ratio of their average monthly pre-spell earnings to their average monthly benefit during their benefit-spell ('Average earnings/average benefits'), as a measure of their relative returns to employment vis à vis benefit.²³

In order to limit the extent of repetition in the discussion of the results of this analysis, we present the results for the outcomes 12 months after the end of spell in some detail here, and briefly discuss how the results for the other post-spell outcomes differ from the 12-month results. All the results we present are based on single equation ordinary least squares (OLS) regressions. OLS has been used for the three binary outcomes in preference to the more standard practice of using non-linear alternatives such as Logit or Probit models because of the relative ease of obtaining estimated probability effects associated with the various factors of interest, which is the natural scale to use for interpreting the results (at least in terms of the magnitudes of the estimated effects).²⁴ However, we have re-estimated some of the models presented here using Logit specifications, and the signs of the effects are unchanged. In addition, the fact that the mean outcomes for the three outcome variables are generally not too close to the 0 or 1 extremes of the range (in the range 0.7–0.9 for off-benefit, and 0.55–0.65 for the in-employment outcomes), gives us confidence that OLS results are likely to be robust and comparable to those obtained using Logit or Probit models.

Off-Benefit Outcome 12 Months After Spell Ends

We begin with the analysis of the off-benefit outcome 12 months after the initial spell ends, and present the results for five alternative specifications in Table 5. The dependent variable in this analysis is a dummy variable that equals 1 if the individual receives zero benefit income 12 months following the end of their first observed spell in the LEED data, and is equal to 0 otherwise (ie if they receive some benefit income in that month). It is important to clarify that this outcome is a point-in-time measure, rather than a period measure – ie it measures whether the individual is off-benefit 12 months after their spell ends, not, for example, whether they have been off-benefit over the full 12-month window following the end of their spell. All specifications include individual-specific controls (for age, gender and regional location). The raw 12-month benefit recidivism rate, as measured by the fraction of the sample who are on-benefit 12 months after

²³ Average pre-spell earnings is measured over the months with earnings, and is set to zero for those with no earnings. This variable combines pre- and during-spell information.

²⁴ All the analysis and estimation for this project has been conducted using SAS which, to the best of our knowledge, does not offer a straightforward option for obtaining estimated probability effects in either Logit or Probit models.

their spell ends, is 26.3 percent. This provides a lower bound on the fraction who returned to the benefit status at some time during this 12-month period.

The first specification, reported in column 1, includes the spell-duration indicators for 1, 2, 3, 4–6, 7–12, and 13+ month durations. We omit the 3-month duration indicator, so that the coefficients pertaining to the other spell durations measure the duration effects relative to the 3-month spell. The results for this model find that, conditional on the demographic variables and seasonal factors,²⁵ individuals with very short duration spells (one and two months) are more likely to be off-benefit 12 months after their spell ends than those with longer durations, but the duration-profile effect is reasonably flat beyond two-month durations.

We next add individuals' benefit-spell employment characteristics for those with at least three months duration to the regression, and present the results in column 2 of Table 5. In this specification, being employed in all or some of the months while on benefit (excluding the first and last months) are associated, respectively, with a 6 and 4 percent higher probability of receiving no benefit in 12 months' time. Including these variables has little impact on the estimated duration effects for the 4–6, 7–12, and 13+ durations, but the estimates for the 1- and 2-month duration effects are, respectively, 2 percent larger and 3.4 percent smaller than reported in column 1.

The third specification, reported in column 3, includes the pre-spell experience variables. Better employment experiences as measured by each of these variables (employed before the spell, the number of months employed, and average earnings relative to average benefits) are associated with better future off-benefit outcomes. Also, including these variables results in lower effects of the benefit-spell employment experience, reflecting the fact that pre- and during-benefit-spell experiences are positively correlated, but has little impact on the estimated duration effects.

In order to allow the employment effects to vary with the duration of the benefit-spell, the specification in column 4 of Table 5 includes interactions between the duration indicators and each of the employment experience variables. These interaction terms are reported in panel B of Table 5, and have important effects. First, the resulting (main) duration effects are now close to those in column 1. Second, the main within-spell employment effects are lower than in column 3.²⁶ The interaction effects on the 'employed in all months' variable are positive and significant, particularly for the longer duration spells (7–12 and 13+ months), indicating that the spell-employment effects are relatively stronger for these groups. The interaction effects for the 'employed in some months' variable are also positive but not statistically significant.

Third, the estimated pre-spell employment effects across the different duration groups tell a complicated story. The 'previous month' employment effect for 3-month durations suggests that those entering their benefit-spell from employment are no more likely to be off-benefit 12 months after their spell ends. In contrast, the number of pre-spell months with earnings, and the average earnings to average benefit ratio, have relatively stronger effects on the probability of being off-benefit for those with 3-month spells than estimated in column 3. The corresponding interaction effect of the 'previous month' employment variable with 1-month spells is positive and strong, suggesting that such individuals are 4 percent more likely to be off-benefit 12 months after their

²⁵ Seasonality appears to be particularly strong for the off-benefit outcome measured after 12 months. This is reflected partly in the lower fraction off-benefit 12 months later (74 percent), than after 3, 6, and 18 months (90, 85 and 84 percent, respectively), and also in the very strong estimated seasonal effects, especially for January and February. A significant component of this seasonal pattern may be due to the annual flows of tertiary students on and off the unemployment benefit at the beginning and end of the summer recess.

²⁶ Note, the 'employed in all months' main effect measures the effect for individuals with 3-month spells, while the 'employed in some months' main effect measures the effect for individuals with 13+ month spells.

spell ends compared to individuals with 3-month spells who came from employment. The other duration interactions are small and statistically insignificant. In contrast, the duration interaction effects of 'number of months' employed pre-spell are negative, implying that each month of pre-spell earnings is associated with a -0.4 to -0.9 percent lower probability of being off-benefit after 12 months than those with 3-month spells. The duration interactions with the average earnings to benefit ratio are each insignificant.

For the final specification reported in column 5, we drop individuals with 1- and 2-month benefit-spells from the analysis as a check of the robustness of the results to these observations with unmeasured spell employment effects. The results of this exercise are almost identical to those in column 4.

Other Outcomes 12 Months After Spell Ends

We next consider the results for the other labour market outcomes at 12 months following the end of the benefit-spell, summarised in Table 6. The results presented in Table 6 are based on the analogous regression specification to that reported in column 4 of Table 5 for the off-benefit outcome, and include the spell-duration variables, pre- and within-spell employment variables, and their interactions with the duration indicators.

Panel A of Table 6 presents the estimates of the duration effects for each of the three outcomes: in-employment, in-employment conditional on being off-benefit, and the logarithm of monthly earnings, as well as the estimates for the off-benefit outcome repeated from column 4 of Table 5. First, the results for the two employment outcomes show that, relative to individuals with 3-month benefit-spells, those with longer spells have a lower probability of being in employment 12 months after the end of such a spell and, conditional on being employed, tend to have lower earnings. Furthermore, such negative effects tend to increase with the duration of the spell.²⁷ Second, the duration effects on employment are smaller in the first model that simply focuses on in-employment versus not (ranging from 2 percent for those with 4–6 month spells to 10 percent for those with 13+ month spells), than in the second model that excludes those on-benefit (ranging from 4 percent for 4–6 month spells to 11 percent for 13+ month spells), because some individuals receiving benefits also have employment earnings. Third, the earnings of individuals with 4–6, 7–12 and 13+ month spells are 6-7 percent lower than the earnings of individuals with 3-month spells.²⁸

Panels B, C and D of Table 6 present both the main employment variable effects and the effects of these interacted with each of the duration indicators for the in-employment, in-employment conditional on being off-benefit, and log(earnings) outcomes, respectively. First, the main employment effects indicate that both within-spell and pre-spell employment experiences are associated with positive subsequent employment outcomes, and the estimated effects are roughly the same irrespective of whether those on-benefit are included in the analysis.

Second, the duration interaction effects of being 'employed in all months' of the spell are positive, increasing with duration and, apparently, quite large. That is, relative to those with 3-month spells, an individual employed in all months of a 4–6 month spell is 6 percent more likely to be employed 12 months later; and the corresponding estimates for those with 7–12 month and 13+ month spells are 16 percent and 28 percent, respectively. In contrast, the 'some employment' duration

²⁷ The estimates for the 1- and 2-month duration effects are also negative, suggesting perverse short-duration effects associated with the subsequent employment outcome. However, as discussed above, comparing the effects for these durations is difficult because they are confounded by the absence of benefit-spell employment effects for 1- and 2-month spells.

²⁸ Note, throughout the discussion we will refer to the 'log-point' coefficient estimates as 'percentage' effects: for large effects these should be appropriately interpreted as approximate.

interactions are negative: those with this characteristic with a 4–6 month benefit-spell are 9 percent less likely to be employed after 12 months than those with a 3-month spell; while those with a 7–12 month spell are 6 percent less likely to be employed. One explanation for these findings may be that those employed ‘continuously’ throughout a relatively long benefit-spell exhibit quite a strong attachment to the workforce, despite being on-benefit, and, consequently, are likely to have earnings subsequently.

Third, the main pre-spell employment interactions of interest are those to do with being employed (immediately) prior to the benefit-spell. The effect of this factor is strongly positive for those with short (1- and 2-month) spells, and negative for those with longer (at least four-month spells): relative to those with 3-month spells, individuals who have earnings prior to 1- and 2-month spells are about 30 percent and 6 percent, respectively, more likely to be employed 12 months later, while the corresponding prior employment effects on subsequent employment for those with longer spells (at least four months) are estimated to be about -5 percent.

The pre- and within-spell employment effects on log(earnings) in panel D are less systematic than on the employment outcomes. For example, the main effect associated with ‘employed in all months’ is significantly negative, while the effect of ‘employed in some months’ is positive but not significant. However, the ‘employed all months’ effect is again significantly positive for those with long (greater than six months’ duration) spells, and the interactions with the ‘employed some months’ are small and insignificant. Similarly, for the pre-spell variables, the main effect associated with ‘employed in previous month’ is negative, while the number of months employed in the six months before the spell, and the average pre-spell earnings to average spell benefits are both positively associated with subsequent earnings. The main interactions of note here, again, involve the (immediately) prior employment indicator: these are all positive and statistically significant for the 1-, 2- and 13+ duration interactions, indicating that those with 3-month spells have lower earnings 12 months after their spell ends, on average, than those with these duration spells.²⁹

Finally, we have re-estimated this specification for each of the four outcomes, separately by gender, and by gender and three age groups. The main coefficient estimates from these regressions are presented in Appendix Table A2. By and large, the estimates are broadly similar for males and females, and appear to be slightly stronger for prime-aged (25–49) groups than for the younger-aged (15–24) groups.

Outcomes at Other Lags After Benefit-Spell Ends

We now turn to the corresponding results for the four outcomes of interest measured at different points after the end of the benefit-spell. The results for the outcomes at three, six and 18 months following a spell are presented in Tables 7, 8 and 9, respectively. These tables are organised analogously to Table 6. In particular, the results are based on the same specification as that reported in column 4 of Table 5; panel A contains the duration coefficient estimates for each of the four outcomes; and panels B–E contain the employment experience effects associated with, respectively, off-benefit, in-employment, in-employment conditional on being off-benefit, and the logarithm of monthly earnings.

We begin by discussing the off-benefit outcome results. First, for the three- and six-month results, the 4–6, 7–12, and 13+ duration coefficients are negative, increasing with duration, and stronger at six months than at three months. That is, on average, those with 4–6 month spells are 2

²⁹ In fact, the estimated interaction coefficients imply a U-shaped profile of the effect of entering benefit from employment on subsequent earnings.

percent and 4 percent less likely to be off-benefit after three and six months, respectively, than those with 3-month spells; the corresponding effects for those with 7–12 month spells are 6 and 11 percent less likely after three and six months, and those with 13+ month spells are 7 and 13 percent less likely to be off-benefit after three and six months. The estimates after 18 months are less significant and show little systematic effects: only the 4–6 month coefficient is statistically significant, and the magnitude of the effect is -3 percent. Taken together with the results for 12 months after, these findings suggest that spell duration has quite a strong impact on the subsequent off-benefit outcome initially, but any impact wears off over the 12–18 months after leaving the benefit.

Second, with regards to the within-spell and pre-spell employment effects, the results suggest that the employment effects on the off-benefit outcome tend to strengthen with the period since the end of the reference spell. There are no significant main effects on the off-benefit outcome three months after the spell ends; while after six months the ‘employed all months’ and ‘employed in the previous month’ effects are significant and positive; and both of these and the ‘employed some months’ effects are positive and significant 18 months after the spell ends. Furthermore, there are few significant interactions at three months while, at six months, the duration interactions with the ‘employed all months’ variable are positive and significant, and the ‘employed previous month’ interaction estimates show this effect declines with the spell duration, and these effects are stronger at 18 months.

Next, we consider the results for the two in-employment outcomes (according to whether the on-benefit observations are included or excluded). First, analogous spell-duration patterns to those for the off-benefit outcome are found, but they tend to be less strong. The patterns are also somewhat weaker for the in-employment analyses that exclude individuals who are back on benefit. Second, the pre- and during-spell employment effects are similar to those found for the analysis of in-employment outcome 12 months after the reference spell ends (Table 6), and are comparable irrespective of the in/exclusion of those who are on-benefit. The employment effects tend to be much stronger for the in-employment outcome than for the off-benefit outcome for each post-spell period.

Finally, we discuss the earnings results. As with the employment outcomes, the duration effects are strong at short lags (three and six months) since the end of the reference spell, but become weaker with the time since the end of the reference spell. Similarly, the employment effects on subsequent earnings are generally quite strong, but again weaken with the time since leaving the reference benefit-spell.

Discussion

The analysis presented in this paper addresses two broad questions. First, to what extent is the off-benefit measured outcome a good proxy for, and/or indicator of, a successful labour market transition from benefit status to employment? Second, what are the (associative) impacts of the length of a benefit-spell and both the pre- and during-spell employment experiences on individuals’ post-spell labour market outcomes? Although we emphasise that the analysis is very preliminary and the interpretation of the results subject to several strong caveats, we believe several interesting results have been found. We discuss how these relate to each of these broad questions in turn.

With regards to the robustness of the off-benefit outcome measure of successful benefit-to-work transitions, the data used in the regression analysis shows that the fraction of individuals whose status is off-benefit following the end of a benefit-spell falls from 90 percent after three months to

84 percent after 18 months.³⁰ However, the employment rate over the 18 months following the end of a benefit-spell is only 55–57 percent in any month. This suggests there is potentially a strong distinction between the off-benefit and in-employment outcomes as measures of successful labour market transitions.

To explore this issue further, in Table 10 we present the estimated coefficients on the demographic and regional location variables from the regressions of the in-employment versus not-observed outcome. These results show that, for those who are off-benefit, women, older individuals and those living in Auckland are less likely to be employed. More specifically, women are 1–2 percent less likely to be employed than males; individuals (30–55) are typically 2–3 percent less likely to be employed than those aged 20–24, while those aged 55–59 and 60–65 are, respectively, 7 and 20 percent less likely to be employed; and those living in Auckland are generally 2–10 percent less likely to be employed. While the gender and age differences tend to fall with time since the end of the reference spell, the regional differences increase quite strongly, from 2–6 percent after three months to 5–10 percent after 18 months.

However, there are several caveats associated with a conclusion that off-benefit is a poor proxy for measuring successful benefit-to-work transitions, which this analysis has been unable to address. First, the LEED data only has earnings information on employees paying PAYE tax, and does not include self-employed workers. Second, as the type of benefit received by an individual is not identified in the LEED data, it is not possible to identify the sub-population of beneficiaries who would be targeted for (successful) transitions into work. Third, the LEED data (still) contain errors in individual identifiers, due to either missing and/or incorrect IRD numbers on the EMS. Each of these issues is likely to reduce the measured employment rate of individuals relative to their (unobserved) true employment, and thus lower the measured concordance between the off-benefit and in-employment outcomes.

We now turn to the second issue of the effects of spell duration and employment experiences on subsequent post-spell outcomes. To help summarise the large quantity of output from the regression analysis, we have graphed the sets of regression-adjusted effects (from the main specifications discussed above), separately for each outcome and each covariate, and for each duration-group across the four time-lag regressions (three, six, 12, and 18 months). These graphs are shown in Figures 3–8, where each figure has four graphs corresponding to the four outcome variables. Although there is quite a lot of variation in the results, some general patterns seem apparent.

First, spell-duration effects seen in the event study employment and earnings graphs – whereby those who have a longer spell length generally have worse subsequent outcomes – largely remain in the regression results after controlling for other factors, and are roughly constant over the time since the end of the reference spell (summarised in Figure 3). For example, those who experience 4–6 month benefit-spells have about a 2 percent lower employment rate over the 3–18 months after their spell ends than those with 3-month spells; and the effects for 7–12 and 13+ month spells are 4 percent lower and about 9–10 percent lower employment rates, respectively. The estimates for the off-benefit outcome are roughly comparable, but are a lot less systematic than obtained for the in-employment outcome.

Second, Figures 4 and 5 summarise the within-spell employment experience effects. These show that the effect on either the off-benefit or in-employment outcomes are generally positive, and increasing in the duration of the spell. The impacts are much larger on in-employment than off-

³⁰ There is also a strong seasonal pattern in benefit receipt, with the benefit-recidivism rate peaking after 12 months at 26 percent, implying the fraction off-benefit at 12 months is only 74 percent.

benefit. In addition, the effect on the off-benefit outcome tends to increase with the time since the end of the spell, while the effect on employment decreases monotonically over this time horizon. In contrast to the off-benefit and in-employment outcomes, the effects on subsequent earnings are typically negative, especially for the early months after the benefit-spell ends, although tend to become zero or positive over time.

Third, the pre-spell employment effects summarised in Figures 6 and 7, are less clear. The immediate pre-spell employment indicator is a positive predictor of off-benefit and in-employment outcomes for those who experience short (1–3 months) benefit-spells, but has little systematic or robust effect on subsequent outcomes of those with longer spells. It is also a strong positive predictor of earnings (about 25 percent) for those whose benefit-spell lasts only one month, but has negative earnings effects for those with longer spells.

The number of months with employment earnings in the six months leading up to the reference spell systematically predicts higher post-spell employment rates of 2–5 percent per month of employment and, as with the within-spell employment effects, this effect declines over time. The effects on the subsequent off-benefit outcome also tend to be positive but not universally so, and are much smaller and less systematic than for employment outcome. The effects on (log) earnings are also positive and tend to be larger for those who experience longer benefit-spells, and the estimates imply roughly 1–3 percent higher earnings per month of pre-spell employment. That the employment effects discussed here are generally stronger for the in-employment than off-benefit outcome is probably not really surprising, given that employment experiences are strongly serially correlated, so that past experience is likely to be a better predictor of subsequent employment than subsequent benefit outcomes.

Finally, the ratio of average pre-spell earnings to average spell benefits has positive effects on each of the off-benefit, in-employment and earnings outcomes (see Figure 8). The effects are nearly zero for those with 1 month spells, generally increase with spell duration,³¹ and are roughly constant across the time since the end of the reference spell.

³¹ The relative effect for those with 7–12 month spells seems particularly large: a 1 percent increase in the ratio for this group translates into nearly a 1 percent increase in the employment rate, and about a 3.5 percent increase in subsequent earnings. These estimates are two to three times greater than those for the other duration groups.

5. Concluding Discussion

This paper presents the results from a preliminary analysis of benefit-to-work transitions using monthly data from Statistics New Zealand's developmental LEED project. The analysis has focused on two sets of issues which the LEED data can shed some light on. First, it has examined how the standard measure of a successful benefit-to-work transition, *off-benefit*, compares to alternative, more direct, measures of employment success, *in-employment*, and conditional earnings, that are available in the LEED data. Simple descriptions of the data suggest that large fractions of individuals both enter and leave the benefit for non-employment states. In particular, for our main analysis sample, while the off-benefit rate is typically 85–90 percent over the 18 months following the end of the reference spell, we find that the average employment rates are in the order of only 55–60 percent over this period. Although there are caveats around the interpretation of these findings – such as to whether in-employment is a relevant measure of a successful off-benefit transition from some types of benefits, the coverage of employment states and random (measurement) errors in individuals' identifiers over time in the LEED data – the discrepancy between these two measures suggests that the off-benefit outcome may be a relatively poor indicator of a successful benefit-to-work transition. Furthermore, we find that, for those who are off-benefit, being employed versus not observed in the LEED data varies systematically by demographic and location characteristics, with women, older individuals and those living in Auckland being significantly less likely to be employed than their counterparts.

The second focus of the analysis has been on the effects of individuals' benefit-spell length, and their pre-spell and within-spell employment experiences, on their subsequent post-spell labour market outcomes. We find quite striking evidence of apparent negative duration effects on post-spell outcomes. After controlling for individual characteristics and their employment experiences, we estimate that those who experience a benefit-spell longer than six months are 5–10 percent less likely to be off-benefit, 4 percent (for 6–12 month spells) and 10 percent (for 13+ month spells) less likely to be in-employment, and have 10–15 percent lower earnings than those who experience a 3-month spell. The post-spell duration differences are noticeably higher than analogous pre-spell differences, which suggest the effects are not simply due to duration-group heterogeneity. Probably less surprisingly, we also find positive effects of employment experiences on successful post-spell outcomes. However, we suspect that the latter findings may reflect associative rather than causal effects, as we are less confident about controlling for the unobserved differences between those who do and do not have positive employment experiences.

Although the analysis and results presented here are very preliminary in their nature, we believe they are suggestive of some quite interesting patterns in the gross benefit-to-work transitions. We believe it also provides a useful demonstration of the potential for policy-related research under the LEED project. We envisage several extensions to this current work to enhance the quality of the analysis and robustness of the results, of which we mention two here. First, the analysis of the employment experience effects on post-spell outcomes could be improved by making better use of the employer-employee linked information to identify employer changes for those who have employment, and relating these changes to subsequent outcomes. Second, a medium term objective is to pursue an additional link with the Ministry of Social Development's administrative benefit database to provide a much richer set of information on benefit types and demographics relevant to the benefit eligibility. This would enable individuals on benefits subject to work-test

requirements to be identified, and facilitate a more focused analysis of benefit-to-work transitions on the relevant populations.

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Table 1

Characteristics of Ever-benefit and Non-benefit Samples

Variable	Females Aged			Males Aged			
	All	15-21	22-47	48-62	15-21	22-47	48-62
A: Ever-benefit Sample							
Average Age	33.8	18.3	32.8	55.0	18.3	32.7	55.3
Fraction Female	0.54	1	1	1	0	0	0
No. Months With Benefit	19.1	15.0	21.0	24.8	12.8	17.6	23.5
No. Months With Earnings	13.9	15.3	14.3	10.3	16.0	14.7	9.4
No. Months Not Observed	7.7	9.7	6.9	6.1	10.8	7.7	6.4
Mean Benefits	700	610	820	720	520	660	680
Mean Earnings	1,510	1,040	1,340	1,260	1,290	1,960	2,170
Mean Earnings (No Benefit)	1,900	1,220	1,810	1,800	1,470	2,370	2,880
Fraction of Sample	100.0	11.7	31.9	10.3	10.5	26.7	8.9
No. Observations	828,900	96,900	264,200	85,200	87,300	221,500	73,700
B: Non-benefit Sample							
Average Age	35.5	17.9	34.3	53.2	17.9	34.0	53.5
Fraction Female	0.48	1	1	1	0	0	0
No. Months With Earnings	26.8	22.1	26.6	29.3	22.3	27.7	29.1
No. Months Not Observed	9.2	13.9	9.4	6.7	13.7	8.3	6.9
Mean Earnings	3,160	1,270	2,650	2,530	1,560	4,130	4,550
Fraction of Sample	100.0	6.7	32.0	9.5	7.7	34.2	10.0
No. Observations	1,483,700	99,200	474,900	140,300	113,900	507,400	148,000

Notes: Because of the large sample sizes and rounding employed, standard errors have not been included, but most differences are statistically significant at conventional significance levels. Age is at 1 April 1999. All benefits and earnings values are in December quarter 2003 values, adjusted using the CPI. Mean benefits and earnings are conditional on benefit receipt and employment, respectively.

Table 2

Variable	Characteristics of Benefit Sample, by Type of Benefit Experience									
	Uncensored Spells		Left-Censored Spells		Right-Censored Spells		Left- and Right-Censored Spells			
	Single	Multiple	Single	Multiple	Single	Multiple	Single	Multiple	Single	Multiple
Average Age	30.1	28.4	36.3	31.7	34.1	29.3	39.6	33.4		
Fraction Female	0.48	0.45	0.55	0.45	0.57	0.49	0.64	0.52		
No. Months With Benefit	6.2	10.5	15.1	17.3	15.0	16.8	36	27.7		
No. Months With Earnings	19.4	18.9	16.2	18.3	12.1	13.9	6.1	11.9		
No. Months Not Observed	12.7	11.1	9.3	7.1	12.0	10.3	0	3.9		
Mean Benefits	520	510	710	620	730	630	920	760		
Mean Earnings	1,960	1,600	1,730	1,580	1,620	1,350	640	1,160		
Mean Earnings (No Benefit)	2,070	1,770	2,060	1,880	1,920	1,590	...	1,580		
Fraction of Sample	19.8	8.8	13.8	7.3	12.3	6.1	23.2	8.8		
No. Observations	163,900	73,000	114,000	60,700	102,100	50,500	191,900	72,700		

Notes: Because of the large sample sizes and rounding employed, standard errors have not been included, but most differences are statistically significant at conventional significance levels. Age is at 1 April 1999. All benefits and earnings values are in December quarter 2003 values, adjusted using the CPI. Mean benefits and earnings are conditional on benefit receipt and employment, respectively.

Symbol: ... not applicable

Table 3a

Characteristics of Single Uncensored Spells

Variable	Length of Spell				
	All	1-3 Months	4-6 Months	7-12 Months	13+ Months
Average Age	30.1	28.8	29.7	31.1	33.7
Fraction Female	0.48	0.49	0.48	0.47	0.49
No. Months	6.2	2.1	4.8	9.0	19.3
With Benefit					
No. Months	19.4	21.1	19.9	18.3	14.2
With Earnings					
No. Months	12.7	13.9	13.3	12.0	8.2
Not Observed					
Mean Benefits	520	420	530	620	700
Mean Earnings	1,960	2,050	2,000	1,880	1,650
Mean Earnings (No Benefit)	2,070	2,100	2,100	2,040	1,970
Employed 13-18 Months	0.53	0.54	0.52	0.50	0.47
Before Benefit	{64,900}	{38,300}	{15,400}	{9,300}	{1,900}
Employed 7-12 Months	0.53	0.54	0.53	0.52	0.49
Before Benefit	{89,700}	{47,800}	{20,600}	{14,900}	{6,300}
Employed 1-6 Months	0.47	0.48	0.47	0.47	0.43
Before Benefit	{132,300}	{66,200}	{30,800}	{21,400}	{13,900}
Employed 1-6 Months	0.65	0.68	0.65	0.62	0.58
After Benefit	{127,700}	{60,700}	{31,200}	{22,700}	{13,200}
Employed 7-12 Months	0.65	0.67	0.64	0.62	0.60
After Benefit	{99,600}	{51,000}	{25,300}	{16,900}	{6,400}
Employed 13-18 Months	0.64	0.66	0.63	0.61	0.60
After Benefit	{67,800}	{37,000}	{18,200}	{11,100}	{1,600}
Earnings 13-18 Months	1,890	1,870	1,900	1,940	1,900
Before Benefit					
Earnings 7-12 Months	1,950	1,920	1,950	2,020	1,980
Before Benefit					
Earnings 1-6 Months	1,870	1,800	1,890	1,940	2,060
Before Benefit					
Earnings 1-6 Months	2,130	2,180	2,120	2,060	1,960
After Benefit					
Earnings 7-12 Months	2,280	2,330	2,260	2,180	2,110
After Benefit					
Earnings 13-18 Months	2,470	2,520	2,460	2,330	2,220
After Benefit					
No. Observations	163,900	76,900	37,000	28,100	21,900

Notes: Because of the large sample sizes and rounding employed, standard errors have not been included, but most differences are statistically significant at conventional significance levels. Age is at 1 April 1999. Cell sizes in brackets {}. All benefits and earnings values are in December quarter 2003 values, adjusted using the CPI. Mean benefits and earnings are conditional on benefit receipt and employment respectively. Before and after employment rates are conditional on being observable during each period.

Table 3b

Characteristics of Single Left-censored Spells

Variable	Length of Spell				
	All	1-3 Months	4-6 Months	7-12 Months	13+ Months
Average Age	36.3	33.6	33.5	34.9	38.4
Fraction Female	0.55	0.51	0.49	0.53	0.58
No. Months With Benefit	15.1	1.9	4.9	9.6	24.3
No. Months With Earnings	16.2	20.9	19.8	17.9	13.0
No. Months Not Observed	9.3	14.2	13.3	12.0	5.6
Mean Benefits	710	480	640	720	810
Mean Earnings	1,730	2,230	2,030	1,840	1,410
Mean Earnings (No Benefit)	2,060	2,310	2,190	2,070	1,900
Employed 1-6 Months After Benefit	0.55 {99,900}	0.62 {20,800}	0.59 {13,900}	0.55 {21,400}	0.51 {43,900}
Employed 7-12 Months After Benefit	0.57 {84,800}	0.60 {20,800}	0.59 {13,900}	0.55 {21,400}	0.54 {28,800}
Employed 13-18 Months After Benefit	0.56 {71,400}	0.59 {20,800}	0.57 {13,900}	0.55 {21,400}	0.54 {15,300}
Earnings 1-6 Months After Benefit	2,000	2,160	2,060	1,980	1,890
Earnings 7-12 Months After Benefit	2,150	2,290	2,170	2,100	2,070
Earnings 13-18 Months After Benefit	2,270	2,400	2,300	2,180	2,170
No. Observations	114,000	20,800	13,900	21,400	57,900

Notes: Because of the large sample sizes and rounding employed, standard errors have not been included, but most differences are statistically significant at conventional significance levels. Cell sizes in brackets {}. Age is at 1 April 1999. All benefits and earnings values are in December quarter 2003 values, adjusted using the CPI. Mean benefits and earnings are conditional on benefit receipt and employment, respectively. Before and after employment rates are conditional on being observable during each period.

Table 3c

Characteristics of Single Right-censored Spells

Variable	Length of Spell				
	All	1-3 Months	4-6 Months	7-12 Months	13+ Months
Average Age	34.1	30.2	30.9	34.9	36.1
Fraction Female	0.57	0.53	0.53	0.55	0.59
No. Months With Benefit	15.0	2.0	4.8	9.4	24.1
No. Months With Earnings	12.1	16.0	14.9	13.3	9.5
No. Months Not Observed	12.0	18.6	17.5	15.4	7.0
Mean Benefits	730	550	650	750	810
Mean Earnings	1,620	1,800	1,650	1,710	1,510
Mean Earnings (No Benefit)	1,920	1,850	1,730	1,870	2,030
Employed 13-18 Months Before Benefit	0.45 {63,900}	0.47 {17,700}	0.46 {14,300}	0.43 {17,700}	0.43 {14,200}
Employed 7-12 Months Before Benefit	0.44 {76,700}	0.46 {17,700}	0.46 {14,300}	0.43 {17,700}	0.43 {27,000}
Employed 1-6 Months Before Benefit	0.40 {89,700}	0.42 {17,700}	0.39 {14,300}	0.40 {17,700}	0.39 {40,000}
Earnings 13-18 Months Before Benefit	1,970	1,990	1,870	1,990	2,030
Earnings 7-12 Months Before Benefit	1,930	1,940	1,800	1,970	1,980
Earnings 1-6 Months Before Benefit	2,080	2,010	1,880	2,110	2,180
No. Observations	102,100	17,700	14,300	17,700	52,400

Notes: Because of the large sample sizes and rounding employed, standard errors have not been included, but most differences are statistically significant at conventional significance levels. Cell sizes in brackets {}. Age is at 1 April 1999. All benefits and earnings values are in December quarter 2003 values, adjusted using the CPI. Mean benefits and earnings are conditional on benefit receipt and employment, respectively. Before and after employment rates are conditional on being observable during each period.

Table 4

Characteristics of Regression Sample by Length of Reference Spell

Variable	Length of Spell					
	All	1-2 Months	3 Months	4-6 Months	7-12 Months	13+ Months
Average Age at Last Month of Spell	30.4	29.9	28.5	30.0	32.0	34.4
Fraction Female	0.49	0.49	0.51	0.49	0.48	0.49
Employed immediately Prior to spell	0.50	0.59	0.48	0.46	0.44	0.40
No. Months Employed 6 months prior	2.71	2.96	2.50	2.66	2.73	2.51
Average Pre-earnings/ Average Spell-benefits	0.56	1.13	0.37	0.35	0.28	0.23
Employed in Each ⁽¹⁾ Spell Month	0.35	0.63	0.37	0.24	0.14	0.08
Employed in Some ⁽¹⁾ Spell Months	0.17	0.00	0.00	0.23	0.42	0.53
Off-Benefit 3 months after spell	0.90 {194,900}	0.91 {58,100}	0.93 {39,400}	0.90 {50,300}	0.86 {31,200}	0.84 {15,800}
Off-Benefit 6 months after spell	0.85 {179,000}	0.88 {54,300}	0.89 {37,700}	0.85 {47,100}	0.77 {27,900}	0.75 {12,000}
Off-Benefit 12 months after spell	0.74 {141,700}	0.78 {45,600}	0.66 {33,600}	0.75 {38,700}	0.74 {19,300}	0.67 {4,500}
Off-Benefit 18 months after spell	0.84 {89,800}	0.86 {31,300}	0.85 {23,500}	0.82 {26,300}	0.75 {8,700}	... {0}
In-Employment 3 months after spell	0.57 {194,900}	0.62 {58,100}	0.54 {39,400}	0.56 {50,300}	0.56 {31,200}	0.51 {15,800}
In-Employment 6 months after spell	0.55 {179,000}	0.60 {54,300}	0.53 {37,700}	0.55 {47,100}	0.54 {27,900}	0.50 {12,000}
In-Employment 12 months after spell	0.57 {141,700}	0.60 {45,600}	0.55 {33,600}	0.56 {38,700}	0.55 {19,300}	0.50 {4,500}
In-Employment 18 months after spell	0.56 {89,800}	0.59 {31,300}	0.55 {23,500}	0.54 {26,300}	0.55 {8,700}	... {0}
Employment Earnings 3 months after spell	1,920 {111,000}	2,040 {35,900}	1,850 {21,100}	1,900 {28,300}	1,880 {17,600}	1,790 {8,100}
Employment Earnings 6 months after spell	1,960 {99,300}	2,080 {32,500}	1,860 {19,800}	1,940 {25,800}	1,920 {15,100}	1,830 {6,000}
Employment Earnings 12 months after spell	2,040 {80,400}	2,150 {27,400}	1,900 {18,500}	2,030 {21,500}	2,020 {10,700}	1,880 {2,300}
Employment Earnings 18 months after spell	2,180 {50,500}	2,290 {18,500}	2,100 {12,800}	2,130 {14,300}	2,130 {4,800}	... {0}
No. Observations	216,800	64,600	44,700	53,500	34,100	19,900

Notes: Because of the large sample sizes and rounding employed, standard errors have not been included, but most differences are statistically significant at conventional significance levels. Cell sizes in brackets {}. All benefits and earnings values are in December quarter 2003 values, adjusted using the CPI. Benefit and employment earnings are conditional on benefit receipt and employment, respectively.

⁽¹⁾ These variables are mutually exclusive in the sense that the 'some months' variable is zero if 'all months' variable is 1. Also, because of the confounding effects of moving from or to employment, they exclude the first and last months from the calculation.

Symbol: ... not applicable

Table 5

Off-Benefit 12 Months After the End of a Benefit-Spell

A: Alternative Specifications – Main Effects					
	Model				
	(1)	(2)	(3)	(4)	(5)
Spell Duration:					
1 Month	0.072 (0.004)	0.092 (0.004)	0.081 (0.005)	0.075 (0.007)	...
2 Months	0.057 (0.004)	0.023 (0.004)	0.032 (0.004)	0.054 (0.007)	...
4-6 Months	0.025 (0.003)	0.023 (0.004)	0.023 (0.004)	0.028 (0.005)	0.027 (0.005)
7-12 Months	0.003 (0.004)	-0.001 (0.004)	0.000 (0.004)	-0.003 (0.006)	-0.010 (0.007)
13+ Months	-0.022 (0.007)	-0.029 (0.007)	-0.027 (0.007)	-0.030 (0.012)	-0.037 (0.012)
During Spell:					
Employed in All Months	...	0.056 (0.003)	0.038 (0.004)	0.022 (0.006)	0.021 (0.006)
Employed in Some Months	...	0.040 (0.004)	0.031 (0.004)	0.026 (0.014)	0.026 (0.015)
Pre-spell:					
Employed in Previous Month	...	...	0.009 (0.003)	0.001 (0.007)	0.003 (0.007)
No. Months Employed	...	...	0.005 (0.001)	0.010 (0.001)	0.009 (0.001)
Avg Earnings/Avg Benefits	...	...	0.001 (0.000)	0.002 (0.001)	0.002 (0.001)
R-squared	0.048	0.051	0.052	0.052	0.053
B: Model 4 Duration Interactions					
	Duration				
	1	2	4-6	7-12	13+
During Spell:					
Employed in All Months	...	...	0.015 (0.008)	0.071 (0.012)	0.054 (0.027)
Employed in Some Months	...	...	0.010 (0.015)	0.016 (0.016)	...
Pre-spell:					
Employed in Previous Month	0.041 (0.011)	0.012 (0.010)	-0.004 (0.010)	-0.001 (0.012)	-0.003 (0.021)
No. Months Employed	-0.009 (0.002)	-0.007 (0.002)	-0.004 (0.002)	-0.006 (0.002)	-0.001 (0.004)
Avg Earnings/Avg Benefits	-0.002 (0.001)	0.000 (0.001)	-0.001 (0.001)	0.001 (0.003)	0.001 (0.003)

Notes: Standard errors are given in parentheses. The dependent variable is an indicator for whether the individual receives no benefit income 12 months after their first observed spell ends. OLS standard errors are in parentheses. All specifications include controls for age, gender, regional location and seasonal effects – see text for details. The number of observations used are 141,700 in columns (1)–(4), and 96,200 in column (5). The mean of the dependent variable is 0.74 in columns (1)–(4), and 0.72 in column (5).

Symbol: ... not applicable

Table 6

Other Outcomes 12 Months After the End of a Benefit-Spell

A: Spell Duration Effects				
	Off-Benefit	In-Employment	In-Employment Versus Not-observed	Log(Earnings)
1 Month	0.075 (0.007)	-0.084 (0.008)	-0.142 (0.009)	-0.147 (0.024)
2 Months	0.054 (0.007)	-0.103 (0.008)	-0.098 (0.009)	0.158 (0.021)
4-6 Months	0.028 (0.005)	-0.020 (0.005)	-0.041 (0.006)	-0.057 (0.016)
7-12 Months	-0.003 (0.006)	-0.037 (0.007)	-0.053 (0.008)	-0.071 (0.021)
13+ Months	-0.030 (0.012)	-0.101 (0.013)	-0.108 (0.015)	-0.067 (0.044)
R-squared	0.052	0.128	0.130	0.097
No. Observations	141,700	141,700	104,400	80,400
Mean Dep Variable	0.74	0.57	0.64	7.32

Table 6
Continued

Other Outcomes 12 Months After the End of a Benefit-Spell

B: Employment Effects on In-Employment						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.143 (0.006)	...	...	0.061 (0.009)	0.162 (0.013)	0.278 (0.029)
Employed in Some Months	0.262 (0.016)	...	...	-0.092 (0.017)	-0.056 (0.017)	...
Pre-spell:						
Employed in Previous Month	0.058 (0.008)	0.269 (0.012)	0.060 (0.011)	-0.052 (0.011)	-0.051 (0.013)	-0.046 (0.023)
No. Months Employed	0.036 (0.001)	-0.008 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.012 (0.002)	-0.019 (0.004)
Avg Earnings/Avg Benefits	0.002 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.005 (0.003)	0.001 (0.004)
C: Employment Effects on In-Employment vs Not-observed						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.114 (0.007)	...	...	0.060 (0.010)	0.154 (0.014)	0.245 (0.033)
Employed in Some Months	0.277 (0.019)	...	...	-0.108 (0.020)	-0.069 (0.020)	...
Pre-spell:						
Employed in Previous Month	0.039 (0.009)	0.311 (0.014)	0.066 (0.013)	-0.043 (0.012)	-0.052 (0.015)	-0.019 (0.027)
No. Months Employed	0.035 (0.002)	-0.006 (0.002)	0.002 (0.002)	0.004 (0.002)	-0.006 (0.003)	-0.015 (0.005)
Avg Earnings/Avg Benefits	0.002 (0.001)	-0.002 (0.001)	0.000 (0.001)	0.000 (0.001)	0.005 (0.004)	-0.001 (0.004)
D: Employment Effects on Log(Earnings)						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	-0.070 (0.015)	...	...	-0.008 (0.022)	0.068 (0.031)	0.079 (0.070)
Employed in Some Months	0.027 (0.047)	...	...	0.010 (0.049)	0.008 (0.051)	...
Pre-spell:						
Employed in Previous Month	-0.102 (0.020)	0.325 (0.033)	0.043 (0.027)	-0.007 (0.027)	-0.003 (0.032)	0.098 (0.058)
No. Months Employed	0.020 (0.003)	-0.019 (0.005)	-0.014 (0.005)	0.013 (0.005)	0.008 (0.006)	-0.004 (0.011)
Avg Earnings/Avg Benefits	0.008 (0.002)	-0.006 (0.002)	-0.001 (0.002)	-0.003 (0.003)	0.023 (0.008)	-0.001 (0.007)

Notes: Standard errors are given in parentheses.
Symbol: ... not applicable

Table 7

Outcomes Three Months After the End of a Benefit-Spell

A: Spell Duration Effects						
	Off-Benefit	In-Employment	In-Employment Versus Not-observed	Log(Earnings)		
1 Month	-0.023 (0.004)	-0.115 (0.006)	-0.123 (0.007)	-0.239 (0.025)		
2 Months	-0.006 (0.005)	-0.156 (0.007)	-0.147 (0.007)	0.248 (0.019)		
4-6 Months	-0.019 (0.003)	-0.013 (0.005)	-0.010 (0.005)	-0.067 (0.015)		
7-12 Months	-0.060 (0.004)	-0.035 (0.005)	-0.022 (0.006)	-0.115 (0.018)		
13+ Months	-0.066 (0.005)	-0.097 (0.007)	-0.088 (0.007)	-0.161 (0.026)		
R-squared	0.020	0.220	0.231	0.117		
No. Observations	194,900	194,900	175,000	111,000		
Mean Dep Variable	0.90	0.57	0.59	7.26		
B: Employment Effects on Off-Benefit						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.002 (0.004)	0.013 (0.005)	0.020 (0.007)	-0.001 (0.011)
Employed in Some Months	-0.007 (0.005)	0.002 (0.006)	0.012 (0.007)	...
Pre-spell:						
Employed in Previous Month	0.009 (0.005)	0.007 (0.007)	-0.009 (0.006)	0.003 (0.006)	-0.009 (0.007)	-0.015 (0.009)
No. Months Employed	-0.001 (0.001)	-0.001 (0.001)	0.003 (0.001)	-0.001 (0.001)	0.004 (0.001)	0.004 (0.002)
Avg Earnings/Avg Benefits	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	-0.003 (0.002)	0.001 (0.002)

Table 7
Continued

Outcomes Three Months After the End of a Benefit-Spell

C: Employment Effects on In-Employment						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.225 (0.005)	...	...	0.076 (0.008)	0.180 (0.010)	0.325 (0.016)
Employed in Some Months	0.341 (0.008)	...	...	-0.094 (0.009)	-0.049 (0.010)	...
Pre-spell:						
Employed in Previous Month	0.035 (0.007)	0.443 (0.010)	0.121 (0.009)	-0.041 (0.009)	-0.048 (0.010)	-0.044 (0.013)
No. Months Employed	0.053 (0.001)	-0.027 (0.002)	-0.007 (0.002)	-0.007 (0.002)	-0.022 (0.002)	-0.029 (0.002)
Avg Earnings/Avg Benefits	0.002 (0.001)	-0.002 (0.001)	0.000 (0.001)	0.000 (0.001)	0.007 (0.003)	0.001 (0.003)
D: Employment Effects on In-Employment Versus Not-observed						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.219 (0.006)	...	...	0.071 (0.008)	0.168 (0.011)	0.311 (0.017)
Employed in Some Months	0.349 (0.008)	...	...	-0.100 (0.010)	-0.058 (0.010)	...
Pre-spell:						
Employed in Previous Month	0.033 (0.007)	0.462 (0.011)	0.117 (0.010)	-0.048 (0.009)	-0.059 (0.011)	-0.045 (0.014)
No. Months Employed	0.055 (0.001)	-0.029 (0.002)	-0.008 (0.002)	-0.006 (0.002)	-0.021 (0.002)	-0.030 (0.003)
Avg Earnings/Avg Benefits	0.002 (0.001)	-0.002 (0.001)	0.000 (0.001)	0.000 (0.001)	0.009 (0.003)	0.001 (0.003)
E: Employment Effects on Log(Earnings)						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	-0.193 (0.013)	...	...	0.019 (0.019)	0.120 (0.025)	0.092 (0.039)
Employed in Some Months	-0.041 (0.025)	...	...	0.025 (0.029)	0.013 (0.030)	...
Pre-spell:						
Employed in Previous Month	-0.221 (0.018)	0.433 (0.031)	0.012 (0.024)	0.086 (0.024)	0.151 (0.027)	0.193 (0.035)
No. Months Employed	0.034 (0.003)	-0.034 (0.005)	-0.012 (0.004)	-0.002 (0.004)	-0.014 (0.005)	-0.017 (0.006)
Avg Earnings/Avg Benefits	0.012 (0.002)	-0.011 (0.002)	-0.003 (0.002)	-0.004 (0.002)	0.024 (0.007)	-0.003 (0.007)

Notes: Standard errors are given in parentheses.
Symbol: ... not applicable

Table 8

Outcomes Six Months After the End of a Benefit-Spell

A: Spell Duration Effects						
	Off-Benefit	In-Employment	In-Employment Versus Not-observed	Log(Earnings)		
1 Month	-0.006 (0.005)	-0.089 (0.007)	-0.102 (0.007)	-0.283 (0.025)		
2 Months	-0.011 (0.006)	-0.126 (0.007)	-0.115 (0.008)	0.213 (0.020)		
4-6 Months	-0.037 (0.004)	-0.018 (0.005)	-0.012 (0.005)	-0.075 (0.016)		
7-12 Months	-0.111 (0.005)	-0.037 (0.006)	-0.009 (0.006)	-0.117 (0.019)		
13+ Months	-0.128 (0.006)	-0.091 (0.008)	-0.064 (0.009)	-0.156 (0.030)		
R-squared	0.036	0.184	0.201	0.117		
No. Observations	179,000	179,000	151,800	99,300		
Mean Dep Variable	0.85	0.56	0.59	7.27		
B: Employment Effects on Off-Benefit						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.011 (0.004)	...	...	0.025 (0.006)	0.062 (0.009)	0.031 (0.014)
Employed in Some Months	0.009 (0.007)	...	...	0.000 (0.008)	0.003 (0.009)	...
Pre-spell:						
Employed in Previous Month	0.015 (0.006)	0.014 (0.009)	0.001 (0.008)	0.002 (0.008)	-0.020 (0.009)	-0.032 (0.012)
No. Months Employed	-0.002 (0.001)	0.000 (0.002)	0.001 (0.001)	-0.001 (0.001)	0.007 (0.002)	0.011 (0.002)
Avg Earnings/Avg Benefits	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.002)	0.003 (0.003)

Table 8
Continued

Outcomes Six Months After the End of a Benefit-Spell

C: Employment Effects on In-Employment						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.180 (0.006)	...	...	0.077 (0.008)	0.191 (0.011)	0.310 (0.018)
Employed in Some Months	0.284 (0.009)	...	...	-0.076 (0.011)	-0.042 (0.011)	...
Pre-spell:						
Employed in Previous Month	0.037 (0.007)	0.329 (0.011)	0.077 (0.010)	-0.025 (0.010)	-0.049 (0.011)	-0.058 (0.015)
No. Months Employed	0.052 (0.001)	-0.017 (0.002)	-0.002 (0.002)	-0.009 (0.002)	-0.022 (0.002)	-0.023 (0.003)
Avg Earnings/Avg Benefits	0.002 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.008 (0.003)	0.001 (0.003)
D: Employment Effects on In-Employment Versus Not-observed						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	0.175 (0.006)	...	...	0.065 (0.009)	0.159 (0.012)	0.282 (0.020)
Employed in Some Months	0.305 (0.010)	...	...	-0.091 (0.012)	-0.054 (0.012)	...
Pre-spell:						
Employed in Previous Month	0.029 (0.007)	0.359 (0.012)	0.071 (0.010)	-0.027 (0.010)	-0.053 (0.012)	-0.053 (0.017)
No. Months Employed	0.056 (0.001)	-0.020 (0.002)	-0.003 (0.002)	-0.008 (0.002)	-0.023 (0.002)	-0.026 (0.003)
Avg Earnings/Avg Benefits	0.001 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.008 (0.003)	-0.001 (0.003)
E: Employment Effects on Log(Earnings)						
		1	2	4-6	7-12	13+
During Spell:						
Employed in All Months	-0.172 (0.014)	...	...	0.031 (0.020)	0.141 (0.027)	0.130 (0.045)
Employed in Some Months	-0.020 (0.029)	...	...	0.033 (0.032)	-0.001 (0.034)	...
Pre-spell:						
Employed in Previous Month	-0.206 (0.019)	0.480 (0.032)	0.043 (0.026)	0.088 (0.026)	0.121 (0.029)	0.127 (0.040)
No. Months Employed	0.033 (0.003)	-0.030 (0.005)	-0.013 (0.005)	-0.003 (0.005)	-0.011 (0.005)	-0.011 (0.007)
Avg Earnings/Avg Benefits	0.013 (0.002)	-0.012 (0.002)	-0.004 (0.002)	-0.006 (0.003)	0.017 (0.007)	-0.005 (0.007)

Notes: Standard errors are given in parentheses.
Symbol: ... not applicable

Table 9

Outcomes 18 Months After the End of a Benefit-Spell

A: Spell Duration Effects					
	Off-Benefit	In-Employment	In-Employment Versus Not-observed	Log(Earnings)	
1 Month	0.019 (0.007)	-0.099 (0.009)	-0.115 (0.010)	-0.213 (0.029)	
2 Months	0.005 (0.008)	-0.080 (0.010)	-0.073 (0.010)	0.130 (0.026)	
4-6 Months	-0.028 (0.005)	-0.027 (0.007)	-0.018 (0.007)	-0.081 (0.020)	
7-12 Months	0.008 (0.008)	0.010 (0.010)	0.012 (0.012)	0.030 (0.030)	
R-squared	0.027	0.105	0.111	0.092	
No. Observations	89,800	89,800	75,100	50,500	
Mean Dep Variable	0.84	0.56	0.61	7.39	
B: Employment Effects on Off-Benefit					
		1	2	4-6	7-12
During Spell:					
Employed in All Months	0.017 (0.006)			0.033 (0.009)	0.060 (0.015)
Employed in Some Months	0.051 (0.009)			-0.018 (0.011)	
Pre-spell:					
Employed in Previous Month	0.028 (0.007)	0.023 (0.012)	-0.003 (0.011)	-0.004 (0.010)	-0.040 (0.014)
No. Months Employed	0.002 (0.001)	-0.003 (0.002)	0.000 (0.002)	-0.002 (0.002)	0.001 (0.003)
Avg Earnings/Avg Benefits	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.005 (0.004)

Table 9
Continued

Outcomes 18 Months After the End of a Benefit-Spell

C: Employment Effects on In-Employment					
		1	2	4-6	7-12
During Spell:					
Employed in All Months	0.098 (0.008)	...	...	0.065 (0.011)	0.181 (0.019)
Employed in Some Months	0.182 (0.011)	...	...	-0.046 (0.014)	...
Pre-spell:					
Employed in Previous Month	0.050 (0.010)	0.219 (0.015)	0.046 (0.014)	-0.042 (0.013)	-0.053 (0.018)
No. Months Employed	0.035 (0.002)	-0.003 (0.003)	0.003 (0.003)	-0.002 (0.002)	-0.017 (0.003)
Avg Earnings/Avg Benefits	0.000 (0.001)	0.000 (0.001)	0.002 (0.001)	0.002 (0.002)	0.007 (0.005)
D: Employment Effects on In-Employment Versus Not-observed					
		1	2	4-6	7-12
During Spell:					
Employed in All Months	0.092 (0.008)	...	...	0.054 (0.012)	0.143 (0.021)
Employed in Some Months	0.188 (0.013)	...	...	-0.057 (0.015)	...
Pre-spell:					
Employed in Previous Month	0.042 (0.010)	0.228 (0.016)	0.039 (0.014)	-0.048 (0.014)	-0.054 (0.021)
No. Months Employed	0.038 (0.002)	-0.003 (0.003)	0.003 (0.003)	0.000 (0.003)	-0.017 (0.004)
Avg Earnings/Avg Benefits	0.000 (0.001)	0.000 (0.001)	0.003 (0.002)	0.004 (0.002)	0.014 (0.006)
E: Employment Effects on Log(Earnings)					
		1	2	4-6	7-12
During Spell:					
Employed in All Months	-0.083 (0.018)	...	...	0.027 (0.027)	0.088 (0.045)
Employed in Some Months	0.071 (0.031)	...	...	-0.008 (0.036)	...
Pre-spell:					
Employed in Previous Month	-0.081 (0.024)	0.315 (0.040)	0.001 (0.034)	-0.008 (0.033)	0.025 (0.046)
No. Months Employed	0.020 (0.004)	-0.011 (0.007)	-0.003 (0.006)	0.007 (0.006)	-0.007 (0.008)
Avg Earnings/Avg Benefits	0.004 (0.002)	-0.003 (0.003)	0.002 (0.003)	0.004 (0.004)	0.035 (0.013)

Notes: Standard errors are given in parentheses.
Symbol: ... not applicable

Table 10

	Time Since End-of-Reference Spell			
	3 months	6 months	12 months	18 months
Female	-0.020 (0.002)	-0.015 (0.002)	-0.015 (0.003)	-0.008 (0.003)
Age:				
15–19	-0.021 (0.003)	-0.010 (0.003)	0.038 (0.004)	0.024 (0.005)
25–29	-0.001 (0.003)	-0.001 (0.004)	-0.013 (0.004)	-0.009 (0.005)
30–34	-0.033 (0.004)	-0.025 (0.004)	-0.035 (0.005)	-0.030 (0.006)
35–39	-0.043 (0.004)	-0.034 (0.004)	-0.039 (0.005)	-0.032 (0.007)
40–44	-0.025 (0.005)	-0.023 (0.005)	-0.021 (0.006)	-0.013 (0.008)
45–49	-0.027 (0.005)	-0.020 (0.006)	-0.016 (0.007)	-0.002 (0.009)
50–54	-0.037 (0.006)	-0.030 (0.006)	-0.027 (0.007)	-0.027 (0.010)
55–59	-0.074 (0.006)	-0.072 (0.007)	-0.076 (0.009)	-0.071 (0.012)
60–65	-0.223 (0.007)	-0.222 (0.008)	-0.192 (0.012)	-0.156 (0.017)
Regional Council:				
Northland	0.017 (0.006)	0.018 (0.007)	0.044 (0.009)	0.069 (0.011)
Waikato	0.029 (0.004)	0.034 (0.004)	0.060 (0.005)	0.057 (0.006)
Bay of Plenty	0.020 (0.005)	0.024 (0.005)	0.054 (0.006)	0.052 (0.008)
Hawke's Bay, Gisborne	0.035 (0.005)	0.032 (0.006)	0.076 (0.007)	0.070 (0.008)
Taranaki	0.058 (0.007)	0.053 (0.007)	0.094 (0.009)	0.090 (0.011)
Manawatu, Wanganui	0.036 (0.005)	0.039 (0.005)	0.070 (0.006)	0.066 (0.007)
Wellington	0.048 (0.004)	0.059 (0.004)	0.084 (0.005)	0.104 (0.006)
West Coast, Tasman, Nelson, Marlborough	0.058 (0.007)	0.056 (0.007)	0.094 (0.008)	0.091 (0.010)
Canterbury	0.039 (0.003)	0.039 (0.004)	0.064 (0.005)	0.068 (0.005)
Otago	0.026 (0.005)	0.026 (0.005)	0.051 (0.006)	0.059 (0.007)
Southland	0.064 (0.007)	0.046 (0.008)	0.106 (0.009)	0.103 (0.012)

Notes: Standard errors are given in parentheses. The omitted age group is 20–24 and the omitted regional council is Auckland.

Table A1

Summary of Core Benefits, 1999–2002

	1999	2000	2001	2002
A: All Core Benefits				
Benefit type:				
DPB	30.3	30.4	30.8	31.5
UB	39.1	38.1	35.6	32.7
Other	30.7	31.5	33.6	35.8
Gender:				
Female	54.1	55.1	55.8	57.0
Male	45.9	44.9	44.2	43.0
Age:				
16-24	22.4	21.1	20.2	19.3
25-49	57.5	56.9	56.3	55.8
50-64	19.0	20.7	22.1	23.4
Totals	368,425	361,748	355,356	345,987
B: Domestic Purposes Benefit				
Gender:				
Female	91.0	91.2	91.1	91.0
Male	9.0	8.8	8.9	9.0
Age:				
16-24	18.3	18.2	18.1	18.0
25-49	75.9	75.8	75.7	75.5
50-64	5.8	6.0	6.2	6.5
Totals	111,529	110,017	109,475	109,057
C: Unemployment Benefit				
Gender:				
Female	30.0	31.4	31.6	32.9
Male	70.0	68.6	68.4	67.1
Age:				
16-24	31.3	29.5	28.3	27.7
25-49	51.3	50.9	50.0	48.4
50-64	17.1	19.2	21.3	23.3
Totals	143,916	137,908	126,488	113,218
D: Other Benefits				
Gender:				
Female	48.3	48.9	48.9	49.0
Male	51.7	51.1	51.1	51.0
Age:				
16-24	15.0	13.8	13.5	12.6
25-49	47.2	45.9	45.3	45.3
50-64	34.6	36.8	37.6	38.4
Totals	112,980	113,823	119,393	123,712

Notes: The summary data for this table were provided by MSD, and pertain to April months. The main entries in the table are (column) percentages of the relevant totals in each panel, and do not sum to 100 because the age groupings are not exhaustive.

Table A2a

		Off-Benefit 12 Months After the End of a Benefit-Spell, by Gender and Age									
		All	All Males	Males 15-24	Males 25-49	Males 50-65	All Females	Females 15-24	Females 25-49	Females 50-65	
Spell Duration:											
1 Month	0.075 (0.007)	0.083 (0.010)	0.033 (0.016)	0.105 (0.014)	0.144 (0.032)	0.067 (0.010)	0.029 (0.016)	0.095 (0.013)	0.030 (0.034)		
2 Months	0.054 (0.007)	0.066 (0.010)	0.040 (0.016)	0.090 (0.015)	0.078 (0.043)	0.041 (0.010)	0.032 (0.015)	0.048 (0.015)	0.025 (0.046)		
4-6 Months	0.028 (0.005)	0.032 (0.007)	0.025 (0.011)	0.035 (0.010)	0.041 (0.026)	0.025 (0.007)	0.025 (0.011)	0.020 (0.010)	0.023 (0.028)		
7-12 Months	-0.003 (0.006)	0.003 (0.009)	-0.015 (0.014)	0.011 (0.012)	0.010 (0.029)	-0.007 (0.009)	-0.021 (0.016)	-0.004 (0.013)	-0.041 (0.031)		
13+ Months	-0.030 (0.012)	-0.037 (0.016)	-0.074 (0.029)	-0.026 (0.022)	-0.035 (0.044)	-0.022 (0.017)	-0.052 (0.029)	-0.007 (0.023)	-0.079 (0.048)		
During Spell:											
Employed in All Months	0.022 (0.006)	0.019 (0.008)	0.038 (0.012)	0.002 (0.012)	0.000 (0.034)	0.027 (0.008)	0.025 (0.011)	0.029 (0.013)	0.035 (0.037)		
Employed in Some Months	0.026 (0.014)	0.023 (0.019)	0.075 (0.034)	-0.001 (0.026)	0.007 (0.060)	0.035 (0.021)	0.080 (0.035)	0.021 (0.030)	-0.071 (0.068)		
Pre-spell:											
Employed in Previous Month	0.001 (0.007)	0.001 (0.010)	0.002 (0.015)	-0.009 (0.015)	0.015 (0.047)	0.001 (0.011)	0.014 (0.014)	-0.020 (0.017)	-0.018 (0.057)		
No. Months Employed	0.010 (0.001)	0.012 (0.002)	0.013 (0.003)	0.010 (0.003)	0.018 (0.008)	0.007 (0.002)	0.010 (0.003)	0.003 (0.003)	0.005 (0.010)		
Avg Earnings/Avg Benefits	0.002 (0.001)	0.003 (0.007)	0.017 (0.006)	0.003 (0.001)	-0.001 (0.003)	0.001 (0.001)	0.020 (0.010)	0.000 (0.002)	0.004 (0.003)		
R-squared	0.052	0.049	0.059	0.041	0.032	0.057	0.072	0.039	0.030		
No. Observations	141,700	71,700	31,200	34,600	5,900	70,000	33,100	31,500	5,400		
Mean Off-Benefit	0.74	0.74	0.71	0.77	0.76	0.73	0.70	0.77	0.75		

Notes: Standard errors are given in parentheses.

Table A2b

		In-Employment 12 Months After the End of a Benefit-Spell, by Gender and Age									
		All	All Males	Males 15-24	Males 25-49	Males 50-65	All Females	Females 15-24	Females 25-49	Females 50-65	
Spell Duration:											
1 Month	-0.084 (0.008)	-0.088 (0.011)	-0.054 (0.017)	-0.103 (0.015)	-0.069 (0.033)	-0.079 (0.010)	-0.074 (0.017)	-0.058 (0.015)	-0.116 (0.032)		
2 Months	-0.103 (0.008)	-0.097 (0.011)	-0.091 (0.017)	-0.090 (0.017)	-0.191 (0.044)	-0.108 (0.011)	-0.067 (0.016)	-0.131 (0.017)	-0.288 (0.044)		
4-6 Months	-0.020 (0.005)	-0.022 (0.008)	-0.014 (0.012)	-0.033 (0.011)	0.040 (0.026)	-0.019 (0.008)	-0.010 (0.012)	-0.014 (0.011)	-0.037 (0.026)		
7-12 Months	-0.037 (0.007)	-0.020 (0.010)	0.031 (0.016)	-0.047 (0.014)	0.009 (0.029)	-0.057 (0.010)	-0.014 (0.017)	-0.058 (0.014)	-0.061 (0.029)		
13+ Months	-0.101 (0.013)	-0.086 (0.018)	-0.078 (0.031)	-0.090 (0.024)	-0.023 (0.045)	-0.117 (0.018)	-0.118 (0.031)	-0.086 (0.025)	-0.147 (0.045)		
During Spell:											
Employed in All Months	0.143 (0.006)	0.150 (0.009)	0.142 (0.013)	0.148 (0.013)	0.256 (0.035)	0.136 (0.009)	0.100 (0.012)	0.168 (0.014)	0.251 (0.035)		
Employed in Some Months	0.262 (0.016)	0.228 (0.021)	0.229 (0.037)	0.206 (0.029)	0.349 (0.061)	0.307 (0.023)	0.278 (0.037)	0.316 (0.033)	0.331 (0.065)		
Pre-spell:											
Employed in Previous Month	0.058 (0.008)	0.039 (0.011)	0.034 (0.016)	0.050 (0.017)	0.008 (0.048)	0.078 (0.011)	0.071 (0.015)	0.086 (0.018)	0.001 (0.055)		
No. Months Employed	0.036 (0.001)	0.039 (0.002)	0.032 (0.003)	0.042 (0.003)	0.066 (0.008)	0.032 (0.002)	0.029 (0.003)	0.033 (0.003)	0.060 (0.010)		
Avg Earnings/Avg Benefits	0.002 (0.001)	0.001 (0.001)	-0.005 (0.006)	0.001 (0.001)	-0.001 (0.003)	0.003 (0.002)	0.007 (0.011)	0.002 (0.002)	0.003 (0.003)		
R-squared	0.128	0.124	0.083	0.144	0.264	0.135	0.080	0.162	0.338		
No. Observations	141,700	71,700	31,200	34,600	5,900	70,000	33,100	31,500	5,400		
Mean Dep Variable	0.57	0.56	0.58	0.56	0.51	0.57	0.60	0.55	0.51		

Notes: Standard errors are given in parentheses.

Table A2c

In-Employment Versus Not-Observed 12 Months After the End of a Benefit-Spell, by Gender and Age

	All	All Males	Males 15-24	Males 25-49	Males 50-65	All Females	Females 15-24	Females 25-49	Females 50-65
Spell Duration:									
1 Month	-0.142 (0.009)	-0.147 (0.012)	-0.103 (0.020)	-0.159 (0.017)	-0.113 (0.036)	-0.137 (0.012)	-0.134 (0.020)	-0.113 (0.016)	-0.156 (0.037)
2 Months	-0.098 (0.009)	-0.101 (0.013)	-0.091 (0.019)	-0.100 (0.018)	-0.185 (0.048)	-0.094 (0.013)	-0.037 (0.019)	-0.131 (0.019)	-0.257 (0.050)
4-6 Months	-0.041 (0.006)	-0.045 (0.009)	-0.037 (0.014)	-0.057 (0.012)	0.040 (0.031)	-0.038 (0.009)	-0.032 (0.014)	-0.031 (0.013)	-0.054 (0.031)
7-12 Months	-0.053 (0.008)	-0.035 (0.011)	0.030 (0.019)	-0.068 (0.015)	0.009 (0.034)	-0.073 (0.012)	-0.002 (0.021)	-0.082 (0.016)	-0.073 (0.035)
13+ Months	-0.108 (0.015)	-0.093 (0.021)	-0.069 (0.041)	-0.099 (0.028)	-0.017 (0.054)	-0.124 (0.022)	-0.106 (0.040)	-0.088 (0.029)	-0.193 (0.055)
During Spell:									
Employed in All Months	0.114 (0.007)	0.125 (0.010)	0.106 (0.015)	0.129 (0.015)	0.250 (0.038)	0.103 (0.010)	0.056 (0.014)	0.149 (0.016)	0.181 (0.040)
Employed in Some Months	0.277 (0.019)	0.262 (0.025)	0.234 (0.047)	0.248 (0.034)	0.362 (0.072)	0.299 (0.027)	0.254 (0.047)	0.314 (0.038)	0.263 (0.078)
Pre-spell:									
Employed in Previous Month	0.039 (0.009)	0.020 (0.013)	-0.006 (0.019)	0.049 (0.019)	0.031 (0.054)	0.058 (0.013)	0.039 (0.018)	0.072 (0.021)	0.065 (0.064)
No. Months Employed	0.035 (0.002)	0.038 (0.002)	0.031 (0.003)	0.039 (0.004)	0.065 (0.010)	0.033 (0.002)	0.026 (0.003)	0.036 (0.004)	0.056 (0.011)
Avg Earnings/Avg Benefits	0.002 (0.001)	0.001 (0.001)	-0.003 (0.006)	0.001 (0.001)	0.001 (0.003)	0.004 (0.002)	0.001 (0.012)	0.002 (0.003)	0.003 (0.003)
R-squared	0.130	0.128	0.075	0.153	0.294	0.135	0.065	0.166	0.355
No. Observations	104,400	53,100	22,100	26,500	4,500	51,300	23,000	24,200	4,100
Mean Dep Variable	0.64	0.64	0.66	0.63	0.58	0.63	0.68	0.60	0.57

Notes: Standard errors are given in parentheses.

Table A2d

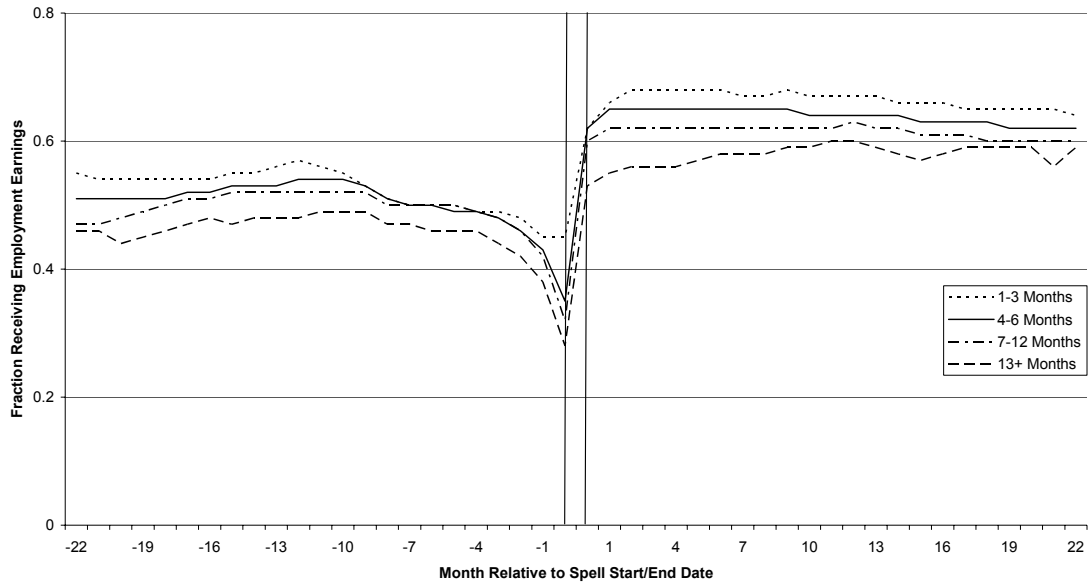
		Log(Earnings) 12 Months After the End of a Benefit-Spell, by Gender and Age									
		All	All Males	Males 15-24	Males 25-49	Males 50-65	All Females	Females 15-24	Females 25-49	Females 50-65	
Spell Duration:											
1 Month	-0.147 (0.024)	-0.141 (0.033)	-0.322 (0.050)	0.060 (0.047)	-0.175 (0.140)	-0.143 (0.036)	-0.067 (0.052)	-0.209 (0.051)	-0.293 (0.156)		
2 Months	0.158 (0.021)	0.189 (0.027)	0.137 (0.041)	0.240 (0.039)	0.140 (0.118)	0.111 (0.031)	0.051 (0.042)	0.151 (0.047)	0.293 (0.141)		
4-6 Months	-0.057 (0.016)	-0.063 (0.021)	-0.075 (0.032)	-0.065 (0.030)	0.194 (0.095)	-0.056 (0.024)	-0.040 (0.034)	-0.090 (0.036)	0.133 (0.107)		
7-12 Months	-0.071 (0.021)	-0.041 (0.027)	-0.066 (0.041)	-0.037 (0.038)	0.099 (0.108)	-0.117 (0.033)	-0.052 (0.050)	-0.217 (0.048)	-0.014 (0.125)		
13+ Months	-0.067 (0.044)	-0.063 (0.056)	-0.075 (0.096)	-0.101 (0.074)	0.104 (0.176)	-0.079 (0.068)	-0.017 (0.104)	-0.174 (0.096)	-0.128 (0.281)		
During Spell:											
Employed in All Months	-0.070 (0.015)	-0.097 (0.020)	-0.097 (0.030)	-0.107 (0.028)	0.000 (0.077)	-0.035 (0.022)	0.020 (0.030)	-0.085 (0.035)	-0.190 (0.090)		
Employed in Some Months	0.027 (0.047)	0.002 (0.059)	0.052 (0.105)	-0.034 (0.076)	0.038 (0.183)	0.077 (0.075)	0.124 (0.115)	0.030 (0.108)	0.055 (0.267)		
Pre-spell:											
Employed in Previous Month	-0.102 (0.020)	-0.077 (0.026)	-0.104 (0.039)	-0.056 (0.037)	-0.123 (0.120)	-0.136 (0.029)	-0.150 (0.039)	-0.152 (0.048)	-0.050 (0.146)		
No. Months Employed	0.020 (0.003)	0.013 (0.005)	0.020 (0.007)	0.001 (0.007)	0.062 (0.022)	0.025 (0.005)	0.027 (0.007)	0.018 (0.008)	0.051 (0.027)		
Avg Earnings/Avg Benefits	0.008 (0.002)	0.007 (0.002)	0.050 (0.016)	0.008 (0.002)	-0.002 (0.006)	0.009 (0.003)	0.076 (0.026)	0.008 (0.004)	0.008 (0.006)		
R-squared	0.097	0.100	0.073	0.047	0.058	0.075	0.086	0.043	0.073		
No. Observations	80,400	40,500	18,000	19,400	3,000	39,900	19,800	17,300	2,800		
Mean Dep Variable	7.32	7.45	7.24	7.63	7.60	7.20	7.08	7.33	7.23		

Notes: Standard errors are given in parentheses

Figure 1

Employment Rates Before and After Benefit-Spells

A: Uncensored Spells



B: Censored Spells

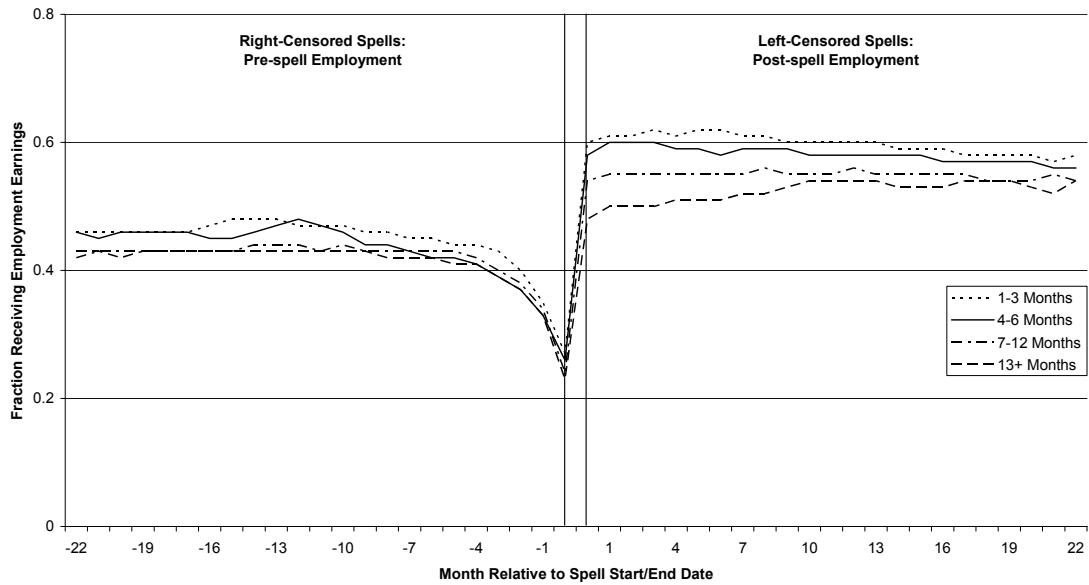
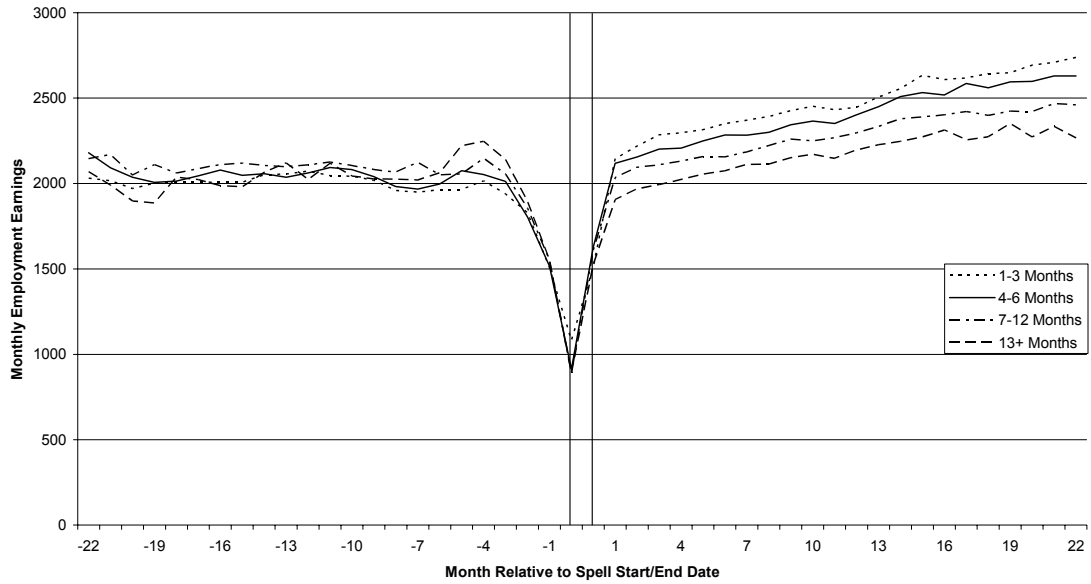


Figure 2

Employment Earnings Before and After Benefit-Spells

A: Uncensored Spells



B: Censored Spells

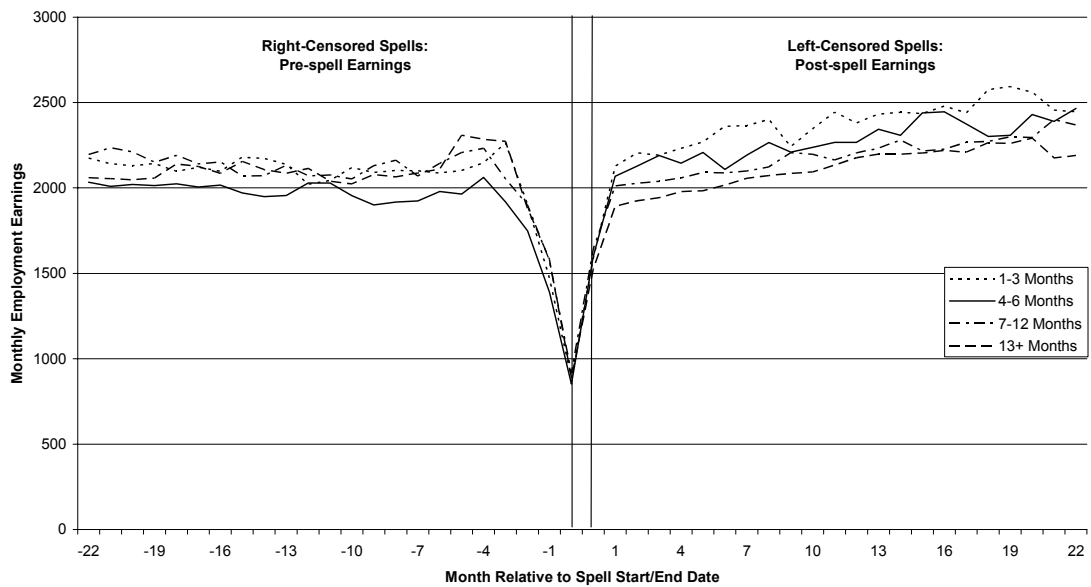


Figure 3

Regression Effects of Spell-Duration by Time Since End of Reference Spell

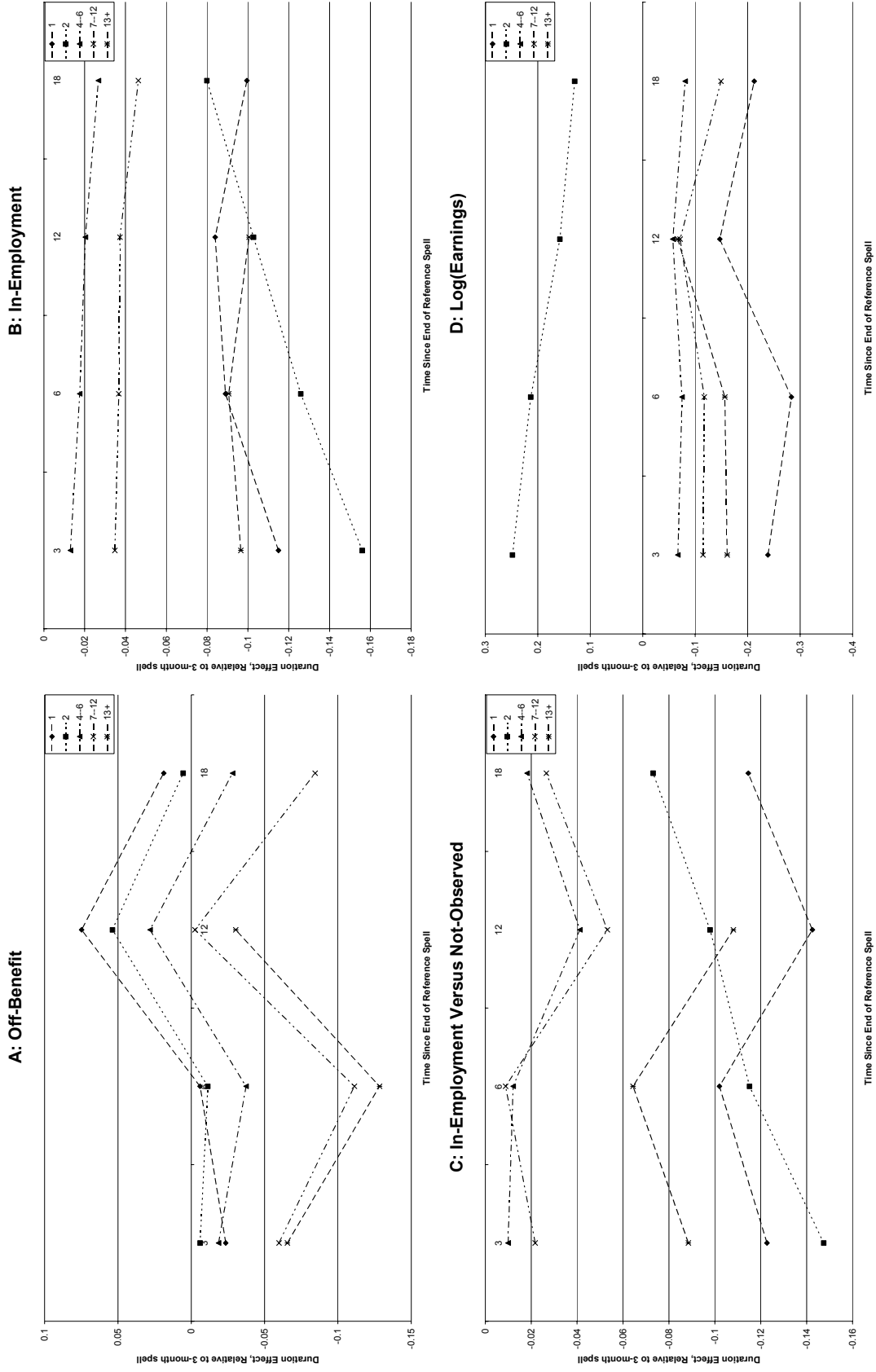


Figure 4

Regression Effects of 'Employed in All Spell-Months' by Time Since End of Reference Spell

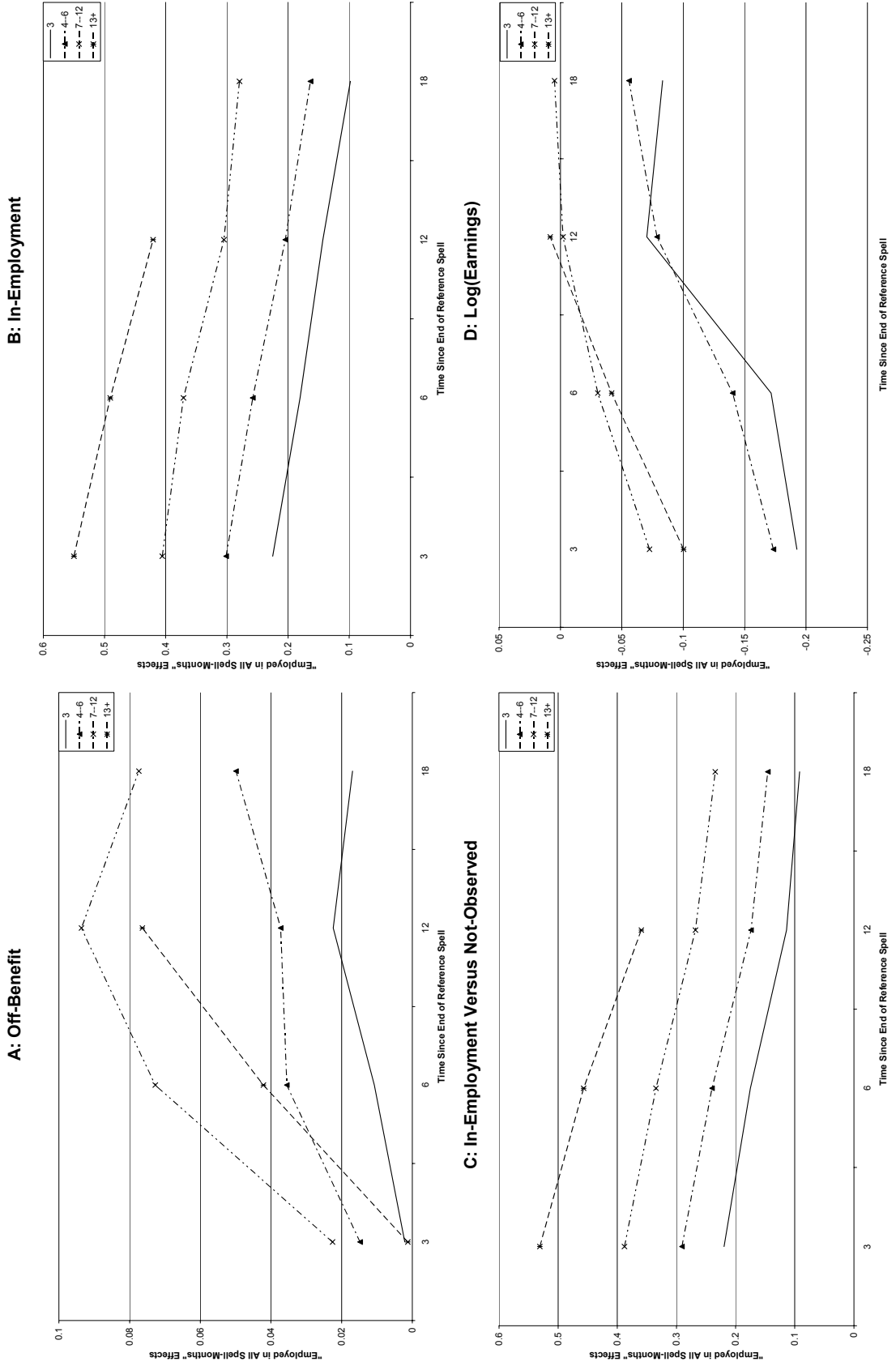


Figure 5

Regression Effects of 'Employed in Some Spell-Months' by Time Since End of Reference Spell

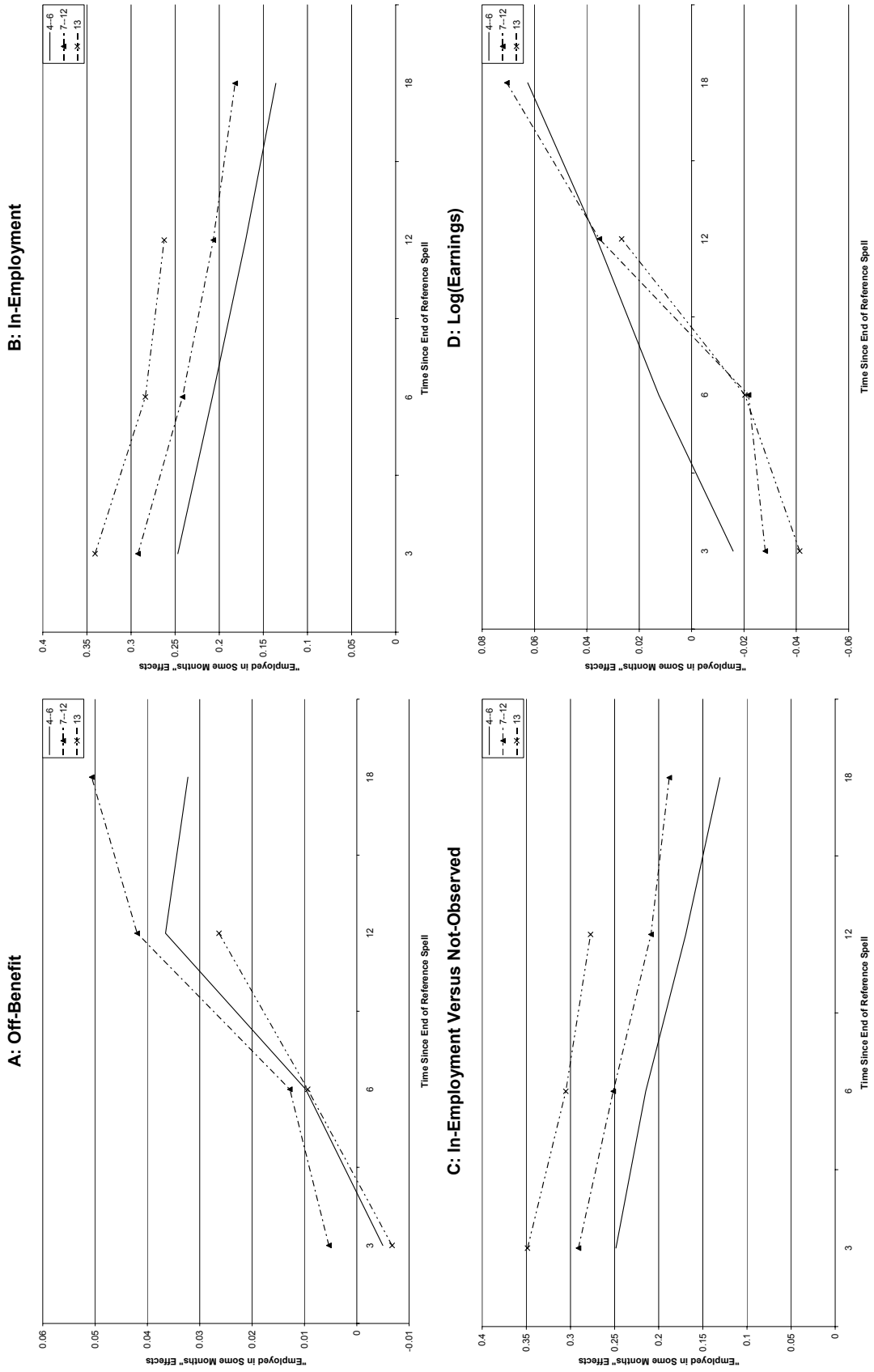


Figure 6

Regression Effects of 'Employed Immediately Prior to Months' by Time Since End of Reference Spell

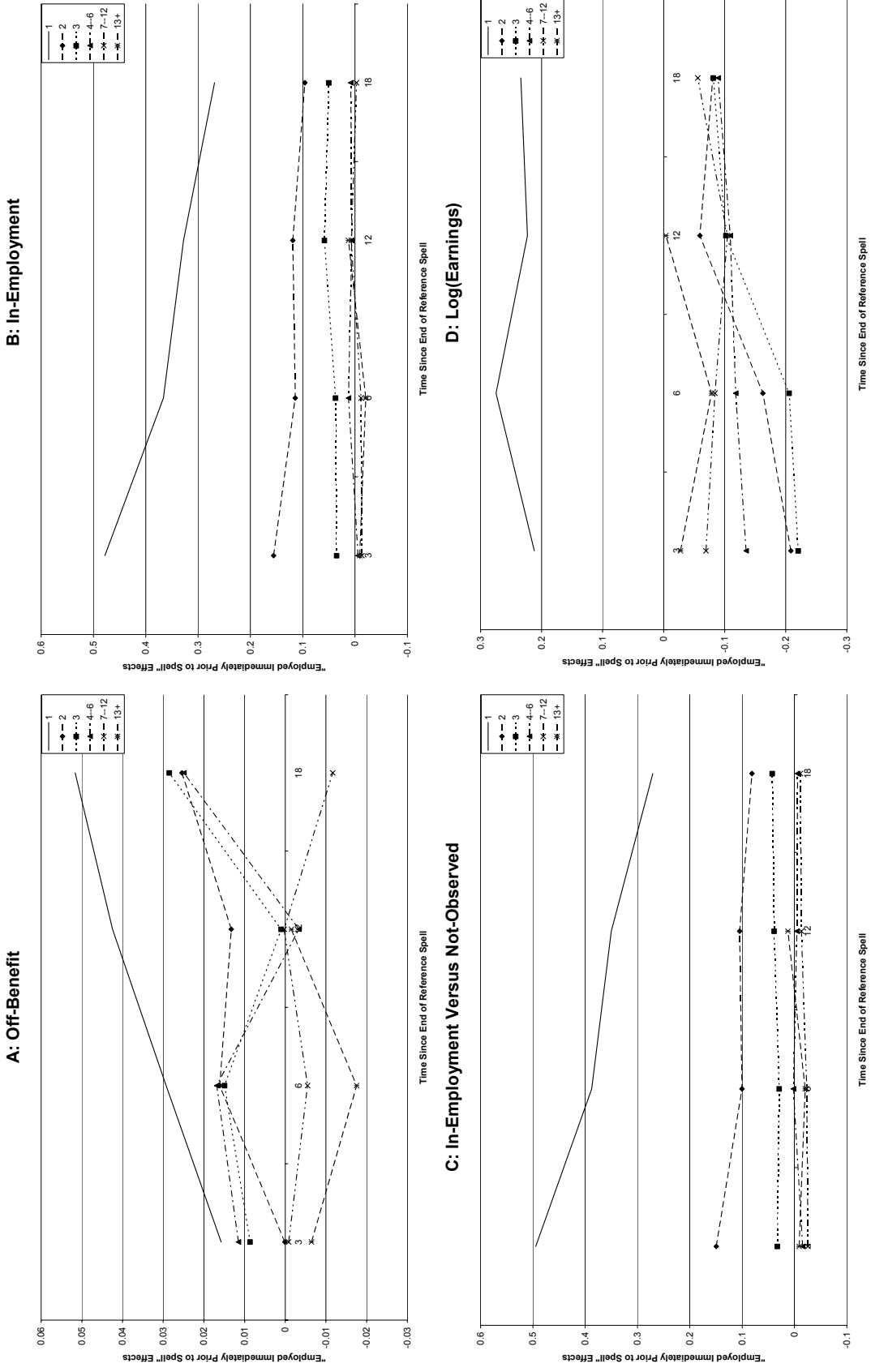


Figure 7

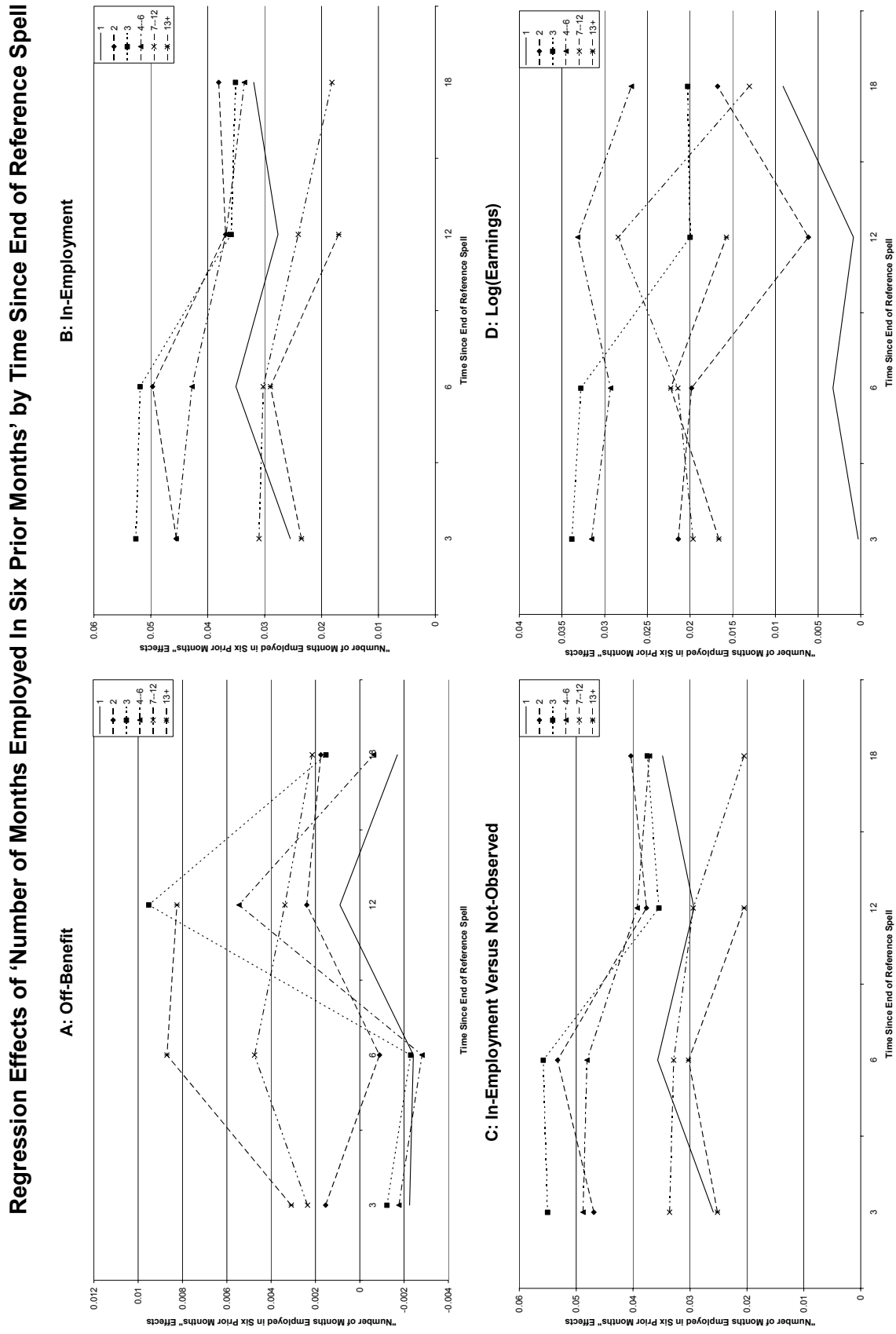


Figure 8

Regression Effects of 'Ratio of Average Pre-Spell Earnings to Average Benefits' by Time Since End of Reference Spell

