

*Final Report (second version)*

## **Understanding the nature of and factors behind exits from the Disability Support Pension**

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**Table of Contents**

Executive Summary ..... 3

Glossary of acronyms and abbreviations used in the report..... 8

1 Introduction ..... 9

2 Previous literature ..... 12

3 Data ..... 14

4 Descriptive Analysis ..... 21

    4.1 Exits from DSP occurring 1995 to 2002 ..... 21

    4.2 Entry cohort descriptive analysis ..... 30

    4.3 Exit cohort descriptive analysis..... 38

5 Entry-Cohort Models..... 47

    5.1 Methods..... 47

    5.2 Results ..... 54

6 Exit cohort models ..... 64

    6.1 Methods..... 64

    6.2 Results ..... 66

7 Conclusion..... 71

8 References ..... 77

9 Appendix ..... 81

## **Executive Summary**

- This study uses a 50% random sample of administrative records for recipients of the Disability Support Pension (DSP) over the period 1995 to 2002 to investigate the extent and nature of exits from DSP and the factors associated with exits that represent a move towards reduced reliance on income support. The study comprises both descriptive and econometric model estimation components.
- Throughout the paper we take two complementary approaches to the analysis of DSP exits. The first approach is what could be termed an ‘entry cohort’ analysis, whereby we examine all DSP spells that commence in a given period. The second approach we take is an ‘exit cohort’ analysis, whereby we examine all exits from DSP in a given period.
- The entry-cohort approach provides information on the proportion of spells that end within a pre-specified period and facilitates comparison of those who exit DSP within a given period of time from spell commencement with those who do not, as well as comparisons across different groups defined by the nature of the exit. The model estimation we undertake for the entry cohort approach allows us to ask questions of the form “what are the determinants of ‘successful’ exit within three years of commencement of a spell on DSP?” The key advantage of the entry-cohort approach is that valid inferences can be made about the effects of individual characteristics on whether exit occurs and the nature of the exit. This is because all persons in the sample have the same ‘opportunity’ to exit.
- The exit cohort approach allows us examine issues such as the nature of all exits in a given period, how long those exits last, the characteristics of those who exit (including the distribution of spell durations) and how all those who sustain exit compare with those who do not. For the model estimation we undertake for the exit cohort analysis, this approach allows us to answer questions of the form “given exit from DSP, what are the factors associated with *more* ‘successful’ exit?” We define an exit to be more successful the greater the proportion of time the individual is off all income support payments in the period following exit.

## ***Descriptive analysis***

- The descriptive analysis contains three main components: (1) examination of all those who exited DSP between 1995 and 2002; (2) entry cohort analysis of DSP spell destinations; and (3) exit cohort analysis of income support receipt in the period following exit.

### *(1) All exits in the period 1995 to 2002*

- The examination of all exits in the sample period reveals that exits from DSP that are not due to death and do not involve transferring to another income support payment (non-transfer non-death exits) are not common. For example, of the 431,000 male DSP spells in progress at some stage in 2001, less than 40,000 were completed in 2001, of which less than 12,000 were non-transfer non-death exits.
- There are a range of reasons for non-transfer non-death exits, but the single most common reason is ‘return to work’, which accounts for approximately 40 per cent of these exits. We adopt a taxonomy which classifies the remaining array of reasons for non-transfer non-death exits in to eight categories, to give nine categories in total. We then further reduce these to just three categories: ‘return to work’, ‘other positive exits’ and ‘other

exits'. Other positive exits account for about 20 per cent of non-transfer non-death exits and other exits account for about 40 per cent.

- The characteristics of DSP recipients who make the transition off all payments are in general very different from the characteristics of those who do not. Those who make non-transfer non-death exits tend to be younger, tend to have shorter DSP spell durations, are more likely to be male and are less likely to have transferred to DSP from unemployment payments than those who are not observed to exit DSP.

### *(2) Entry cohort analysis*

- For the descriptive entry cohort analysis we examine destinations of DSP spells within a pre-specified period, where the destination of a completed spell is defined to be the *first* destination following exit.
- The majority of DSP recipients are long-term, with approximately 70 per cent still on DSP four years after spell commencement. Of those who stop receiving DSP within four years of spell commencement, approximately 40 per cent are actual 'exits off payments', the remainder of cessations being due to death or transferral to other income support payments. Non-transfer non-death exits, if they are going to occur, are most likely to occur within the first two years of a DSP spell. Significantly, there is evidence of growth between 1995 and 2000 in the proportion of recipients experiencing such an exit within two years of commencing a spell.
- Persons who transfer to DSP from unemployment payments have a much lower probability of exit within four years of DSP spell commencement than those who enter DSP from outside the income support system. Four years after DSP spell commencement, 77 per cent of those who transferred from unemployment payments are still on DSP, compared with 58 per cent of those who entered DSP from outside the income support system.

### *(3) Exit cohort analysis*

- The descriptive exit cohort analysis 'follows' persons who make a non-transfer non-death exit from DSP for a pre-specified period, in particular examining income support receipt behaviour over this period.
- Over 50 per cent of those who exit DSP (other than to go to another income support payment or due to death) return to income support receipt within two years, and over 65 per cent return with four years. Those who return to work have one of the highest rates of return to income support, with 60 per cent returning within 2 years and 69 per cent within 4 years. This could be linked to the tendency to suspend rather than cancel payments of DSP recipients who exit to return to work, since suspensions are for a maximum of two years.
- Many of those who return to income support following exit from DSP will subsequently exit DSP again. In light of this, a useful summary measure of income support receipt in the period following exit from DSP is the proportion of time off income support payments, or PTO. The mean PTO in the four years following exit is 62 per cent, or approximately 30 months. Significantly, despite a higher rate of return to income support payments, those who return to work do not have a higher mean PTO than those who exit for other reasons, implying that many who return to income support shortly after leaving DSP soon exit again. That is, recipients who exit to return to work can be characterised as 'churners'.

### ***Entry cohort econometric analysis***

- We estimate multinomial logit models of the determinants of DSP spell destination within 3.5 years of commencement, distinguishing five destinations: return to work, other positive exit, other exit, no exit and death. The sample comprises persons commencing a DSP spell in the period June 1998 to May 1999.
- Notable findings include:
  - Return to work and other positive exits are less likely within 3.5 years of spell commencement the older is the recipient.
  - The presence of a partner who is on income support at commencement of the DSP spell has a negative impact on the probability of return to work for males, compared with being single or having a partner who is not on income support. For females, being single is associated with the highest probability of return to work. For both males and females, having a partner who is on income support increases the probability of remaining on DSP for the entire 3.5 year period.
  - The presence of young children causes a small decrease in the probability of exit from DSP for females, but has no significant effect on DSP spell destinations for males.
  - Earnings during the DSP spell are associated with a higher probability of return to work, although to a significant extent this arises via a reduced probability of death. This suggests that at least some of the effects associated with earnings reflect the relatively good health of individuals with earnings rather than a ‘labour market engagement’ effect.
  - A recipient’s main medical condition is found to affect spell destination, with musculoskeletal disabilities associated with higher probabilities of return to work, other positive exits and other exits compared with other main medical conditions. However, for females, these effects are limited to those under the age of 45 at time of DSP spell commencement.
  - Transferral to DSP from unemployment payments on average decreases the probability of exiting DSP receipt within 3.5 years of DSP spell commencement by 0.15 compared with entering DSP from outside the income support system. The clear implication is that, for many of those transferring from unemployment payments, failure to exit DSP is intimately connected to difficulties in the labour market that are not just a function of disability.
  - A history of income support receipt in the three years prior to DSP spell commencement increases the probability of return to work, provided the period was not entirely spent on income support and the individual did not transfer directly to DSP from another income support payment. This finding likely reflects the propensity for churning behaviour among those who exit due to return to work, who tend to have had comparatively short DSP spells prior to exit, but who also have a high rate of return to income support within 2 years of exiting DSP.

### ***Exit cohort econometric analysis***

- OLS models are estimated of the proportion of time off income support payments in the 3.5 years following exit of persons who made a non-transfer non-death exit from DSP in the period June 1998 to May 1999. This delivers estimates of the determinants of how ‘successful’ exits are, as measured by the proportion of time off payments, *given exit has occurred*.

- Significant findings are that, conditional on exit having occurred:
  - A higher proportion of time with earned and/or unearned income during the DSP spell is associated with greater exit success. All else equal, an individual with both earned and unearned income in every fortnight of the spell has a proportion of time off payments in the 3.5 years following exit that is 9 percentage points higher than an individual with no earned or unearned income in the DSP spell. The *levels* of earned and unearned income during the DSP spell do not, however, appear to impact on exit sustainability.
  - All other characteristics held constant, individuals with intellectual and learning disabilities have less exit success than individuals with other types of disabilities.
  - Persons who exit for ‘other positive’ reasons have the highest proportion of time off income support, holding all else constant, while those who exit for ‘other’ reasons have the lowest proportion of time off payments.
  - Exit success is lower the greater the proportion of the 3-year period preceding exit from DSP that the individual was on income support payments; and exit success is also lower for individuals who ‘churned’ (that is, had more than one payment spell) in the 3-year period preceding the exit from DSP.

### ***Synthesis of key findings of entry-cohort and exit-cohort analysis***

- Collecting together the results for the entry-cohort and exit-cohort approaches, we obtain the following key results:
  - While return to work is the most common type of transition off all payments, it is also one of the most tenuous exits, in the sense that it is associated with a high propensity to cycle on and off payments. While the reasons for this predisposition towards churning cannot be ascertained from our analysis, we can note that it is *consistent* with this group of recipients having fluctuating earnings capacity, perhaps deriving from fluctuations in health or in ability to manage a long-term health condition.
  - Males aged over 55 years, females with a partner on income support, Indigenous persons, those with no earnings while on DSP, those whose main medical condition is an intellectual or learning disability and females with a dependent child under 12 have both the lowest probabilities of making a successful exit, and the least success in sustaining such exits even when they do make them. Individuals with one or more of these characteristics are therefore comparatively unlikely to make the transition to sustained non-reliance on income support.
  - While non-English speaking background immigrants, all else equal, have a lower probability of a return to work exit, they have a higher predicted proportion of time off payments in the period following such an exit. Similarly, having a partner who is on income support is associated with a reduced probability of making a return to work exit, but it is also, particularly for males, associated with a positive effect on exit success in the event that such an exit is made.
  - Those with a recent history of some income support receipt prior to commencement of the DSP spell are more likely to exit than those with no history, provided they did not transfer directly to DSP from another income support payment; but those with more time on payments in the period leading up to exit from DSP do not sustain exit as well. Furthermore, a recent history of churning prior to exit has a negative effect on the extent to which exit is sustained. Taken together, these results would seem to be

explained by the churning behaviour of those who exit to return to work – they are more likely to exit, but are also more likely to return to payments.

## **Glossary of acronyms and abbreviations used in the report**

Note: Explanations of variables employed in the econometric analysis are provided in Appendix Table 2.

**ABS** – Australian Bureau of Statistics

**Coef** – Coefficient estimate

**DSP** – Disability Support Pension

**ESB** – Born overseas in one of the main English-speaking countries

**IIA** – Independence of Irrelevant Alternatives, an assumption required in order for multinomial logit estimates to be valid.

**Indigenous** – Aboriginal, Torres Strait Islander or South Sea Islander

**IS** – income support (income support payment)

**LDS** – Longitudinal Data Set, a data set derived from Centrelink payment records and which is produced by FaCS.

**MME** – Mean Marginal Effect. In qualitative dependent variable models such as multinomial logit, this is the mean effect of a marginal change in an explanatory variable on the predicted probability of the outcome of interest, evaluated over all observations in the sample. An MME can be interpreted as the change in the predicted probability per one-unit increase in the explanatory variable.

**NESB** – Born overseas in a country other than one of the main English-speaking countries

**Non-Indig. Aus-born** – Non-Indigenous and born in Australia

**OLS** – Ordinary Least Squares, a technique for linear mean regression

**pmt** – payment

**PTO** – Proportion of Time Off income support payments in a specified period. This quantity is always between zero and one.

**SE** – Standard error of the estimate

**TTO** – Total Time On income support payments in a specified period. This is usually expressed as a proportion of the total length of the period, in which case it takes a value between zero and one.

**UNM** – unemployment

**yr(s)** – year(s)

## 1 Introduction

There has been strong growth in the number of persons receiving disability-related income support payments over the last thirty years, particularly since the implementation of the Disability Reform Package in late 1991. In June 1991, there were 334,000 recipients, amounting to 2.96 per cent of the age-eligible population.<sup>1</sup> By June 2003, this had doubled to 673,000 recipients, or 5.14 per cent of the age-eligible population (FaCS, 2004). While it is recognised that DSP provides an important safety net for people with disabilities who cannot work full-time, welfare dependence associated with disability has become an extremely important social policy issue for Australia. The widespread view is that the growth in DSP receipt has had adverse consequences for both the (new) recipients and the wider community.

Much of the public discussion in relation to this issue rightly focuses on inflows into the Disability Support Pension (DSP) – for example, examining ways to reduce the number of people entering DSP. However, outflows out of DSP are also an important dimension of DSP receipt. That is, the ‘stock’ of DSP recipients is the outcome of not only inflows, but also outflows. For example, Cai and Gregory (2003) find important roles for both inflows and outflows in explaining the growth in the number of DSP recipients over the period 1971-1999. Policies that promote sustained exit from payments are therefore likely to be an important component of policies to reduce disability-related welfare dependence. Hence the motivation for the current study, which focuses on exits from DSP.

The broad goal of this paper is to make use of available administrative data on DSP recipients to improve our understanding of the factors associated with sustained exit from DSP that represents a movement towards increased self-reliance. Furthering our understanding of these factors is a natural first step to developing policies further promoting such outflows, and payment records of recipients are a useful resource for this line of inquiry. These records provide a complete history of income support receipt over the period 1995 to 2002, as well as information on personal characteristics and exit destinations. Clearly, there are limitations to

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<sup>1</sup> The age-eligible population comprises persons aged 16 years to the minimum age of eligibility for the age pension (65 years for males and currently 63 for females). Note, however, that a small number of individuals will be eligible for the DSP and not eligible for the age pension, despite being over the minimum age of eligibility for the age pension.

what can be learnt from payment records data, but this analysis will assist in the development of more detailed investigation of the issue of sustained DSP exits.<sup>2</sup>

To investigate exits from DSP using payment records, we first describe the extent and nature of transitions off DSP. In characterising the nature of exits, we draw distinctions based on both the exit destination and length of time it is sustained. Destinations distinguished include the age pension, other income support payments, employment, other ‘non-transfer’ exits (for example, due to partner income exceeding allowable levels) and death. Following on from the descriptive analysis, we then estimate models of exit behaviour, with a specific focus on the determinants of ‘successful’ transitions from DSP, particularly transitions from DSP to employment.

Throughout this paper, we take two complementary approaches to the analysis of DSP exits. The first approach is what could be termed an ‘entry cohort’ analysis, whereby we examine all DSP spells that commence in a given period. The second approach we take is an ‘exit cohort’ analysis, whereby we examine all exits from DSP in a given period. The first approach provides information on the proportion of spells that end within a pre-specified period and facilitates comparison of those who exit DSP within a given period of time from spell commencement with those who do not, as well as comparisons across different groups defined by the nature of the exit. The model estimation we undertake for the entry cohort approach allows us to ask questions of the form “what are the determinants of ‘successful’ exit within three years of commencement of a spell on DSP?”

The key advantage of the entry-cohort approach is that valid inferences can be made about the effects of individual characteristics on whether exit occurs and the nature of the exit. This is because all persons in the sample have the same ‘opportunity’ to exit. That is, findings are not susceptible to differences in exit outcomes across people with different characteristics that are driven by different spell durations, rather than the characteristics themselves. For example, if we were simply to examine all persons to receive DSP in the sample period and compare

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<sup>2</sup> Arguably, a movement from a full rate to a partial rate of payment also represents a move towards increased self-reliance by DSP recipients. However, within-DSP adjustments in payment receipt do not fall within the scope of this study, which focuses on ‘clean breaks’ from DSP receipt. Also note that examination of the extent of reliance on income support of DSP recipients would also require an alternative framework to that which we employ for the study of exits from DSP.

those who exit with those who do not, we might observe a positive effect of ageing on the likelihood of exit; but this could simply be an artefact of older persons tending to have commenced spells earlier.

The exit cohort approach allows us examine issues such as the nature of all exits in a given period, how long those exits last, the characteristics of those who exit (including the distribution of spell durations) and how those who sustain exit from income support payments compare with those who do not. For the model estimation we undertake for the exit cohort analysis, this approach allows us to answer questions of the form “given exit from DSP, what are the factors associated with (more) ‘successful’ exit?” While there are a number of potential criteria against which we could evaluate the ‘success’ of an exit, our preferred criteria (given the available data) is the amount of time off all income support payments in the period following exit. Thus, we define a DSP recipient’s exit to be more successful the greater is the amount of time that person is off income support payments in the (predetermined) period following exit.<sup>3</sup>

This study represents further development of the work undertaken by Cai (2002). Cai combines three FaCS administrative datasets, including the LDS one per cent sample, to examine flows off DSP over the period July 1998 to February 2000, during which time there were 801 exits from DSP in his sample. Cai was able to distinguish four different exit reasons: retirement (443 of the exits), return to work (75), death (87) and other reasons (196). He estimates multinomial logit models to examine, among those who exited, the effects on exit reason of demographic characteristics, main medical condition, income and number of spells on DSP, finding that those who returned to work were more likely than those who exited to the age pension to be young when entering DSP, be male, have earned income while on DSP and be multiple-spell recipients. He also finds those who exited for other reasons were likewise more likely than those who exited to the age pension to be young when entering DSP, be male and be multiple-spell recipients, but were nonetheless different from those who returned to work in most other characteristics.

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<sup>3</sup> The view that an *exit* is more ‘successful’ the longer it is sustained should not be taken to imply anything about the desirability or otherwise of particular patterns of income support receipt, nor the ‘success’ of the DSP recipient. Clearly, the optimal pattern of receipt will depend on individual circumstances, many of which cannot be ascertained from the available administrative data.

This project extends Cai's work in several ways. First, it examines, in significantly more detail, over a much longer time frame, and using a much larger sample, the extent and nature of transitions from DSP, and the characteristics of persons making each type of transition off DSP. Furthermore, our exit cohort approach (which has some parallels with Cai's approach) investigates issues Cai did not, most notably the factors associated with *sustained* exit.<sup>4</sup> Cai also does not compare those who exit with those who do not, whereas our entry cohort approach permits us to investigate the determinants of whether exit occurs (including differentiating by type of exit). Also important is that the longer time frame that we examine in this paper facilitates detailed study of the role of income support payment *history* in affecting outcomes.

## 2 Previous literature

Inflows and outflows are the key dynamic dimensions of disability benefit receipt and together determine the growth of the disability benefit program. Studies examining issues surrounding disability benefit programs can therefore generally be classified into inflow studies and outflow studies.

Inflow studies examine the factors that influence entry into the program. Although both economic and non-economic factors can be important in the disability benefit participation process, investigation of the former set of factors dominates the literature. One of the important economic factors that has attracted substantial study in the US is the generosity of the disability benefit (see for example, Black, Daniel and Sanders, 2002; Bound, 1987; Kreider, 1997; Halpern and Hausman, 1986; Leonard, 1979; Halpern 1979 and Lando, Coate and Kraus, 1979). These studies examine the impacts of benefit levels on applications and awards of disability benefits. The results of these studies are summarized in Bound and Burkhauser (1999). All studies provide supportive evidence that higher benefit rates increase program participation, although the estimated elasticity (responsiveness of take-up to benefit rates) varies across studies (with a range from 0.2 to 1.3).

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<sup>4</sup> In this paper, we use the term 'sustained exit' as shorthand for 'exit followed by a sustained period (of pre-specified length) off all income support payments'.

Another economic factor examined at length in the literature is labour market conditions. Studies conducted in the US have found marked effects of adverse labour market shocks on both the number of applications and number of awards of disability benefits (Landot, 1974; Lando, Coate and Kraus, 1979; Stapleton, Coleman and Dietrich, 1995; Stapleton and Dietrich, 1995, Rupp and Stapleton 1995; Stapleton, Coleman, Dietrich and Livermore, 1998; and Black, Daniel and Sanders, 2002). Disney and Webb (1991) and Piachaud (1986) also find significant effects of the unemployment rate on the increase in the rate of disability benefit receipt in Britain. Using Australian aggregate data, Cai and Gregory (2004) find that an increase in the unemployment rate increases the application and grant rates of DSP in Australia. Cai and Gregory (2005) also find that duration on unemployment is an important determinant of subsequent transition to DSP.

A non-economic factor that has received substantial attention in Australian – and has been the subject of much debate over its role – is population ageing. Because the rate of disability receipt is increasing in age, population ageing will tend to increase the inflow rate of the disability benefit program. Jackson (1999) shows that, until 1997, population ageing had a negative effect on the number of male DSP recipients in Australia. Cai and Gregory (2003) furthermore show that, although population ageing started to have a positive effect on the inflow rate from 1992, the size of this effect is very small.

Outflow studies have not been as extensive as studies of inflows. Studies on outflows can be divided into two categories: those that focus on duration on disability benefits and those that focus on the destinations of exits. Note, however, that these two issues are not completely distinct. Holmes and Lynch (1990) study the factors that impact on duration on the Invalid Benefit (IVB) program for males in Britain. Cai (2004) conducts a similar analysis using Australian administrative data. Rupp and Scott (1995) use a follow-up of the 1974-82 cohort of new recipients of Supplemental Security Income (SSI) disability benefits in the US to estimate the average stay on SSI by different recipient groups.

While duration studies tend to ignore exit destinations for modelling convenience, there is a sizeable stream of studies that examine the exit destinations of disability benefit recipients. Using a random sample of social security beneficiaries who were first entitled to disability benefits in 1972 in the US and were followed until 1981, Hennessey and Dykacz (1989) estimated that 11 percent of this cohort would eventually leave the program due to return to work or recovery, 53 percent due to retirement at age 65 years and 36 percent would exit due to death. Buddelmeyer (2001) models the labour supply behaviour of a cohort of disabled

workers in the Netherlands and finds that those who were younger and more educated were more likely to leave disability benefits for work. The only Australian study of exit destinations of disability benefit recipients is that by Cai (2002) (mentioned in Section 1), who uses administrative data to examine the destinations of DSP recipients who exited the benefit between July 1998 and February 2000.

A study that does not fit into the inflow-outflow framework, but is nonetheless relevant to our current study, is that by Dykacz and Hennessey (1989), who use the same cohort as Hennessey and Dykacz (1989), but focus on the post-recovery experience of the cohort. They estimate that 43 percent of recovered beneficiaries eventually come back to the disability benefit program.

### **3 Data**

The data used comprise payment records of a 50 per cent random (and therefore representative) sample of persons who received DSP in the period January 1995 to November 2002.<sup>5</sup> For each individual in the sample, a payment record is generated for every fortnight in which that individual received an income support payment in the period. Information included with each payment record includes sex, date of birth, postcode of residence, partner status, number of dependent children, age of youngest dependent child, earned income, unearned income, partner income, payment type, payment entitlement and, depending on the payment type, potentially other information (such as activity type for NewStart Allowance recipients). From May 1998, we also have available main medical condition and, for those whose payments were cancelled or suspended, the reason for the cancellation or suspension

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<sup>5</sup> The sampling process involved identifying all individuals who received DSP in the sample period, ordering them by ‘customer identification number’ (approximately corresponding to the order in which recipients first went on to payments) and then selecting for inclusion in the sample every second person. This process is equivalent to a random sampling process, and therefore the sample is representative of all DSP recipients over the period January 1995 to November 2002. Note that, because we have a representative sample of DSP recipients, any sub-group of our sample that we examine will also be representative of that sub-group. For example, when we restrict analysis to those who commenced on DSP in the period June 1998 to May 1999, our sample will be a representative sample of all those who commenced a spell on DSP in that period. Also note that the data set used does not contain any information enabling identification of individuals in the sample.

(available in a separate cancellation reason file). The cancellation reason data provide valuable information on the nature of the transition off DSP, and indeed the *destination* of the recipient. For example, it is possible to identify those who exit DSP to return to work.

For the purposes of this study, we define a spell on payments to have ended only if there is a break in payments of **seven or more fortnights**. This is a high threshold, but is motivated by our view that shorter payment breaks could not sensibly be viewed as true exits. The seven fortnight break is also what is required under the *Social Security Act* 1991 (Section 38B) for a notional continuous payment spell to be deemed ended when the spell is in excess of twelve months duration at the end of the break in payments.<sup>6</sup> Given the long average duration of spells on DSP, the application of this criterion seems reasonable. A benefit of the seven fortnight rule is that it makes it relatively unlikely that we will treat as spell breaks periods off payments caused by administrative factors that do not reflect actual movements off payments.

To identify the exit destinations for completed DSP spells we adopt a three-stage procedure. In the first stage, payment records in the subsequent seven fortnights are examined to identify transfers to other income support payments, for which we distinguish two destinations: transfers to the age pension and transfers to other income support payments. We then examine the customer file which records whether a recipient has died and the date of death.

The third stage, which is only possible for exits occurring from May 1998, involves drawing on the cancellation file, which notionally contains cancellation and suspension reasons for all completed income support spells. There are several hundred different potential cancellation and suspension reasons indicated in the documentation for the data (see LDS User Documentation Version 4.0). While not all of these actually apply to DSP recipients, the number of applicable reasons is still large. We therefore aggregate the cancellation and suspension reasons in a way that groups together reasons of a similar nature. For the descriptive analysis we distinguish nine distinct cancellation/suspension reasons:<sup>7</sup>

1. Return to work (including ‘earnings preclude payment’)
  2. Exceeded income/assets
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<sup>6</sup> Section 38B defines a continuous payment spell to be a period on income support in which the maximum break in payments is 6 weeks in the first 39 weeks of the spell and 13 weeks thereafter.

<sup>7</sup> Details of the cancellation/suspension reasons included in each group are provided in Appendix 1.

3. Improved health (impairment assessed as less than 20 points impaired, or more than 20 points impaired but assessed as able to work full-time or be re-skilled)
4. Voluntary withdrawal
5. Compensation-related (receiving or will receive compensation payment(s) for injury)
6. Residential/locality (a range of cancellation reasons, including ‘departure/absence overseas’, ‘customer in prison’, ‘not residentially qualified’, etc.)
7. Non-compliance (failure to comply with requirements such as attending an interview or providing requested information)
8. Other reason (any other known reason that does not fall into one of the above categories)
9. Not known (cancellation reason missing)

These categories are further aggregated for the econometric analysis into 3 groups: “Return to work”, “Other positive exit” and “Other exit”. The “Other positive exit” group consists of “Exceeded income/assets”, “Improved health”, “Voluntary withdrawal” and “Compensation”. Thus, this group captures the exits which are due to either improved health or increased income. The remainder of exit types are lumped into the group “Other exit” (which for the entry-cohort analysis includes transfers to other income support payments<sup>8</sup>).

DSP recipients may, on ceasing payment receipt, have payments suspended rather than cancelled. Suspension allows individuals to return to DSP receipt within two years of ceasing payments without being required to satisfy all of the administrative requirements of new claimants, most notably an external medical or work capacity assessment.<sup>9</sup> It is possible to distinguish whether a DSP recipient has had payments suspended or cancelled, which would seem to be important information – all else equal, we would expect this to make return to DSP

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<sup>8</sup> While transfers to other income support payments are conceptually distinct from exits off all payments, they are grouped with “other exits” for the entry cohort analysis because such transfers are rare when we restrict to persons under age pension age.

<sup>9</sup> A recipient whose payments are suspended due to ‘return-to-work’ can also retain the Pensioner Concession Card issued to DSP recipients for 12 months after suspension. This card entitles the holder to discounted prices on various goods and services (mostly provided by governments or by government agencies).

more likely. However, in practice, most ‘return-to-work’ and ‘other’ exits are suspensions, implying there is little added value in drawing distinctions between exits involving suspension of payments and exits involving cancellation of payments.<sup>10</sup>

Table 1 presents a range of preliminary descriptive statistics on the sample used. Given the use of a 50 per cent random sample, population estimates of recipient numbers can be obtained simply by doubling the figures reported. Statistics are presented for each year and also for the entire sample period as a whole (in the column headed ‘All years’). The top four panels provide ‘stocks’ based information on recipients of DSP in each year, while the remaining panels provide information on ‘flows’ into and out of DSP. The first panel shows substantial growth in the number of recipients over the eight year period spanned by the administrative data. For example, the third row estimates imply that, on average, there were 454,540 DSP recipients in each fortnight of 1995 and 645,572 DSP recipients in each fortnight of 2002. This corresponds to 42 per cent growth in recipient numbers.

The second, third and fourth panels provide information on the demographic composition of DSP recipients in terms of sex, country of birth, Indigenous status and age. The majority of recipients are male, but the proportion of recipients who are female has increased from 30 per cent to 38 per cent over the period. This will at least in part reflect the closing off of some other payment types previously available to females, in particular, Wife Pension and Widow B Pension, and the progressive increase in the minimum age of eligibility for the Age Pension for females. Changes in the country of birth and Indigenous status composition of recipients have been relatively minor, although there has been some increase in the proportion of recipients who are Indigenous and also a decrease in the proportion who are immigrants from non-English-speaking countries. The age distribution is heavily skewed towards older persons (within the 16-64 years age range), with over two-thirds aged 45 years and over. There has, however, been a decline in the proportion aged 60 years and over and an increase in the proportion 35-60. This will, to some extent reflect the increase in female recipients, who qualify for the age pension at age 60 or soon after over this period.

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<sup>10</sup> However, in the exit-cohort econometric analysis, we do investigate whether cancellation versus suspension impacts on how well exit from income support is sustained.

Table 1: Summary features of the data

	1995	1996	1997	1998	1999	2000	2001	2002	All years
<b>Stocks</b>									
Number of recipients	258,736	275,513	287,840	302,463	316,691	328,929	343,001	353,365	531,054
Number of spells	259,943	276,343	288,724	303,759	317,935	330,433	344,478	354,444	502,999
Recipients per fortnight	227,270	245,650	259,054	272,273	284,387	295,035	308,321	322,786	276,439
<i>Proportion of spells by sex (%)</i>									
Female	30.3	31.9	33.3	34.7	35.7	36.7	37.5	38.4	35.1
Male	69.7	68.1	66.7	65.3	64.4	63.3	62.5	61.6	64.9
<i>Proportion of spells by country of birth &amp; Indigenous status (%)</i>									
Non-Indig. Aus.-born	66.9	67.0	67.3	67.5	67.9	68.3	68.5	68.7	67.8
Indigenous	2.3	2.5	2.6	2.7	2.8	2.9	3.1	3.2	2.8
ESB	8.3	8.4	8.4	8.4	8.3	8.2	8.1	8.1	8.2
NESB	22.5	22.2	21.8	21.5	21.1	20.7	20.3	20.0	21.2
<i>Proportion of spells by age groups (%)</i>									
<=24 years	5.7	5.5	5.6	5.6	5.7	5.7	5.8	5.8	5.7
25-34 years	10.9	10.9	10.8	10.5	10.4	10.2	10.1	10.1	10.4
35-44 years	15.9	16.2	16.4	16.6	16.8	16.8	16.7	16.5	16.5
45-54 years	25.6	26.0	26.3	26.2	26.3	26.3	26.1	25.8	26.1
55-60 years	23.3	24.1	24.6	24.5	24.4	24.1	24.2	24.4	24.2
60+ years	18.7	17.3	16.4	16.5	16.5	17.0	17.0	17.3	17.1
<b>Inflows</b>									
Number of inflows	33,955	38,248	36,455	38,305	40,310	38,961	42,564	37,094	305,892
<i>Origin of inflows</i>									
Outside IS	50.8	34.1	37.2	38.6	36.0	39.2	36.7	36.8	38.5
Sickness benefit	19.3	19.5	6.5	4.0	3.7	2.9	2.9	2.5	7.4
Unemployment benefit	19.0	33.6	45.1	47.5	50.2	47.1	50.2	50.3	43.3
Other payment	11.0	12.8	11.2	9.9	10.2	10.9	10.2	10.5	10.8
<i>Proportion of inflows completed within each duration interval (%)</i>									
0-1 year	9.8	10.9	11.5	12.4	12.1	12.7	11.6	4.6 <sup>(a)</sup>	11.6 <sup>(b)</sup>
1-2 years	7.4	7.5	8.5	8.1	7.9	8.0	2.7 <sup>(a)</sup>		7.9 <sup>(b)</sup>
2-3 years	6.7	7.1	7.3	7.2	6.8	2.5 <sup>(a)</sup>			7.0 <sup>(b)</sup>
3-4 years	5.9	5.8	5.8	5.7	2.1 <sup>(a)</sup>				5.8 <sup>(b)</sup>
4-5 years	5.6	5.6	5.3	2.3 <sup>(a)</sup>					5.5 <sup>(b)</sup>
5-6 years	5.6	5.5	2.2 <sup>(a)</sup>						5.6 <sup>(b)</sup>
6-7 years	4.8	2.2 <sup>(a)</sup>							4.8 <sup>(b)</sup>
7-8 years	1.5 <sup>(a)</sup>								1.5 <sup>(b)</sup>
Right-censored <sup>(c)</sup>	52.8	55.4	59.5	64.4	71.1	76.8	85.8	95.4	52.8 <sup>(b)</sup>

Table 1 continued – Summary features of the data

<b>Outflows (exits)</b>									
Number of outflows	21,848	24,075	23,251	26,154	26,463	28,520	27,130	25,082	202,523
<i>Spell duration distribution of outflows</i>									
<=2 yrs (%)	32.6	33.0	33.9	32.9	32.8	32.2	34.4	31.2	32.9
2-4 yrs (%)	21.7	19.5	18.7	19.3	18.9	17.4	16.7	16.3	18.5
4-6 yrs (%)	12.5	13.9	15.5	14.2	15.0	15.3	14.1	13.4	14.3
6-8 yrs (%)	8.2	8.1	8.4	9.8	10.4	10.2	10.7	12.2	9.8
8-10 yrs (%)	7.3	6.6	5.4	5.6	6.2	7.2	7.5	7.5	6.7
>10 yrs (%)	17.8	18.8	18.1	18.2	16.7	17.7	16.6	19.4	17.9
Mean duration (fortnights)	140.1	143.4	141.5	144.5	143.1	148.3	144.2	156.9	145.4
Standard deviation of duration in fortnights	138.9	144.0	145.2	149.6	146.9	151.7	150.7	158.2	148.6

Notes: *Number of recipients* – Number of persons who received DSP in the calendar year; *Number of spells* – number of DSP spells in progress at some stage of the calendar year; *Recipients per fortnight* – Mean number of persons receiving DSP at a single point in time in the calendar year; *Indigenous* – Aboriginal or Torres Strait Islander; *ESB* – English-speaking background immigrant; *NESB* – Non-English-speaking background immigrant; *Right-censored* – spells still in progress at the end of the observation period. (a) Some spells (i.e., those who entered later in the year) will be right-censored (still in progress at the end of the sample period) at spell durations shorter than the upper bound of this interval. (b) Only the spells that *could* be observed to have a completed spell duration in the relevant interval are included. For example, the first estimate (11.6) is based on spells commenced in the period 1995 to 2001, whereas the second estimate (7.9) is based on spells commenced in the period 1995 to 2000.

The remaining panels of Table 1 provide information on flows into and out of DSP. As must be the case for the number of DSP recipients to have grown, outflows have been consistently lower than inflows. There has, however, been considerable variation in both inflows and outflows (although the first and last years should not be included in comparisons across years, since flows early in 1995 and late in 2002 do not enter our data). There was some increase in the number of outflows in each year to 2000, but the number of inflows also grew (notwithstanding a dip in 2000).

The sixth panel of Table 1 indicates the origins of inflows to DSP in terms of income support receipt. The category ‘Outside IS’ applies to inflows where the recipient was not on income support in any of the seven fortnights immediately prior to commencement of the DSP spell. The ‘Sickness benefit’, ‘Unemployment benefit’ and ‘Other payment’ categories indicate that recipient was on income support in at least one of the seven fortnights immediately prior to commencement of the DSP spell, with the applicable payment type (Sickness Allowance, an unemployment-related payment or another payment type) determined by the *last* (most recent) observed payment type.

Approximately two-thirds of inflows are transfers from other income support payments, which are most commonly unemployment payments.<sup>11</sup> The bottom part of the inflows panel provides an indication of the duration distribution of DSP spells commenced in each year. For example, 11 per cent of spells that commenced in 1996 were shorter than one year, and 55 per cent were still in progress at the end of the sample period. Conversely, 45 per cent of DSP spells commenced in 1996 were observed to be completed within seven years of commencement.<sup>12</sup> Comparing across years, there is some evidence of a tendency towards shorter spells in more recent years. For example, 9.8 per cent of spells commenced in 1995 were less than one year's duration, compared with 12.7 per cent for spells commenced in 2000.

The bottom panel of Table 1, taking an outflows approach, examines the duration of spells completed in each year. In all years, approximately one-third of completed spells were less than two years duration, with a further one-third between 2 years and 6 years duration and the remaining one-third of completed spells in excess of 6 years duration. The mean duration of completed spells on DSP across the eight calendar years was 67 months. While strong trends in the duration distribution of completed spells over the eight year period are difficult to discern, there has been some tendency towards longer durations. In particular, the proportion of completed spells in the 2-4 years duration range has declined while the proportions in the intervals above 6 years have increased. Thus, while there has been an increase in the proportion of spells commenced each year that end within one year (as evidenced by the Table 1 panel on inflows), this has not arrested a broader trend towards longer completed DSP spell durations.

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<sup>11</sup> The proportion of inflows from Sickness Allowance dropped dramatically between 1996 and 1997, from 20 per cent to 6 per cent. This derives from a change in eligibility criteria for Sickness Allowance in 1996 which confined receipt to persons in employment at the time of incapacitation who had jobs to return to upon recovery.

<sup>12</sup> The completed duration of spells still in progress at the end of the sample period ("right censored" spells) cannot be determined, which constrains the information that can be presented in Table 1. For example, right-censored spells commencing in January 1996 will have reached a duration of almost 7 years. Since we don't know how many of these spells actually ended in the next year, the proportion of these spells ending in the duration interval 7-8 years is not known.

## 4 Descriptive Analysis

### 4.1 Exits from DSP occurring 1995 to 2002

We begin our analysis of exits from DSP by describing the number and nature of all exits from DSP that occur in the full sample period, before moving on to present descriptive results when adopting the entry-cohort and exit-cohort approaches.

Table 2 presents the total number of exits from DSP that occur in each year of the sample period. It also reports the immediate destinations of all DSP exits in the data period. Four destinations are distinguished: transfers to the age pension, transfers to other income support payments, exit due to death and ‘other exits’. Other exits consist of those who did not move to other income support payments within seven fortnights of a movement off DSP. Other exits can be further disaggregated by exit reason from May 1998 onwards, when cancellation reason data are available. The table shows that over half of DSP exits are transfers to the Age Pension, while twenty percent exit due to death and one-quarter leave DSP without transferring to other income support payments (which we refer to as ‘non-transfer non-death’ exits).

An important feature of DSP receipt evident from Table 2 is that non-transfer, non-death exits from DSP are not common. For example, the estimates imply that fewer than 40,000 male DSP spells were completed in 2001, of which less than 12,000 were non-transfer, non-death exits. This constitutes a very small proportion of the 431,000 male DSP spells that were in progress at some stage of that year. The number of exits in each year increases over the sample period (excluding 2002, for which only exits up until November 2002 are available), but this is likely to be simply a product of growth in the number receiving DSP over the period.

In many respects, the low rate of non-transfer non-death exit is to be expected. Disabilities, by their nature, tend to be long-term and therefore the conditions leading to entry to DSP in the first place are likely to be highly persistent over time. Furthermore, in recent years the income test applied to DSP recipients has meant few are likely to be rendered ineligible by excessive earnings if working less than 30 hours per week (which is the amount of work a recipient is deemed incapable of undertaking in order to be eligible for DSP). For example, a single DSP recipient would currently need to earn in excess of \$34,000 per annum to be ineligible for DSP on the grounds of exceeding maximum allowable income.

Table 2: Exit destinations of DSP recipients by year of exit

	Destination of DSP exits (percent)				Number of exits
	Transfer to		Non transfer exit		
	Age Pension	Other payments <sup>13</sup>	Death	Other exit	
<i>Males</i>					
1995	57.8	1.1	22.2	18.9	17,898
1996	59.5	1.0	20.8	18.7	18,219
1997	53.3	1.8	21.3	23.6	18,137
1998	51.3	4.3	20.5	23.9	18,577
1999	50.1	2.6	19.7	27.6	19,426
2000	51.1	2.4	19.0	27.5	19,194
2001	50.0	2.1	18.7	29.2	19,796
2002	55.5	2.1	20.2	22.1	16,488
All	53.5	2.2	20.3	24.1	147,735
<i>Females</i>					
1995	30.0	2.7	28.6	38.8	3,950
1996	45.5	1.5	20.8	32.1	5,856
1997	31.4	4.8	26.1	37.7	5,114
1998	49.1	5.6	18.4	26.9	7,577
1999	39.3	4.9	21.5	34.3	7,037
2000	56.0	3.4	16.0	24.7	9,326
2001	40.1	4.1	21.0	34.9	7,334
2002	59.2	3.8	17.6	19.4	8,594
All	46.0	3.9	20.3	29.8	54,788
<i>Persons</i>					
1995	52.8	1.4	23.3	22.5	21,848
1996	56.1	1.1	20.8	22.0	24,075
1997	48.5	2.5	22.4	26.7	23,251
1998	50.7	4.7	19.9	24.8	26,154
1999	47.2	3.2	20.2	29.4	26,463
2000	52.7	2.7	18.0	26.6	28,520
2001	47.3	2.6	19.3	30.8	27,130
2002	56.8	2.7	19.3	21.2	25,082
All	51.4	2.6	20.3	25.6	202,523

<sup>13</sup> For males, 81% of transfers to other income support payments are to NewStart Allowance, while for females, 38% of the transfers are to NewStart Allowance.

Table 3: Detailed exit destinations of non-transfer non-death exits by exit year

	Exit Year					All exits
	1998	1999	2000	2001	2002	
<i>Males</i>						
Return to work	34.9	39.3	44.7	39.5	46.3	41.2
Exceeded income/assets	10.0	6.9	5.6	4.3	5.0	6.0
Improved health	1.5	1.9	1.5	1.4	1.3	1.5
Voluntary withdrawal	2.6	3.1	2.9	2.1	2.4	2.6
Compensation	16.1	14.0	7.3	11.4	8.6	11.1
Residential/locality	13.4	14.1	14.7	16.2	17.3	15.2
Non-compliance	7.4	9.4	8.2	11.0	11.7	9.6
Other reason	8.6	8.0	5.9	6.9	6.1	7.0
Reason unknown	5.5	3.4	9.2	7.3	1.3	5.6
Number of exits	2,531	5,209	5,179	5,506	3,569	21,994
<i>Females</i>						
Return to work	26.4	30.6	33.3	32.0	37.3	32.2
Exceeded income/assets	21.3	17.4	14.1	11.2	13.8	14.9
Improved health	3.8	1.7	2.1	1.5	1.7	2.0
Voluntary withdrawal	7.3	6.3	6.4	5.2	5.1	5.9
Compensation	10.9	10.3	6.3	9.6	6.0	8.6
Residential/locality	4.0	5.3	6.2	8.2	7.5	6.5
Non-compliance	6.0	9.5	10.1	13.8	15.1	11.3
Other reason	10.3	10.5	8.4	10.0	8.6	9.6
Reason unknown	10.1	8.4	13.0	8.5	5.0	9.1
Number of exits	1,120	2,349	2,244	2,481	1,621	9,815
<i>Persons</i>						
Return to work	32.3	36.6	41.3	37.2	43.5	38.5
Exceeded income/assets	13.5	10.1	8.2	6.5	7.8	8.7
Improved health	2.2	1.8	1.7	1.4	1.4	1.7
Voluntary withdrawal	4.1	4.1	3.9	3.1	3.2	3.7
Compensation	14.5	12.9	7.0	10.8	7.8	10.4
Residential/locality	10.6	11.4	12.1	13.7	14.2	12.5
Non-compliance	7.0	9.4	8.8	11.8	12.7	10.1
Other reason	9.1	8.8	6.7	7.9	6.9	7.8
Reason unknown	6.9	5.0	10.4	7.6	2.5	6.7
Number of exits	3,651	7,558	7,423	7,987	5,190	31,809

Note: Sample comprises all persons making a non-death non-transfer exit from DSP over the period June 1998 to November 2002. Destinations are derived from cancellation reason data. See Appendix Table 1 for the cancellation reasons composition of each exit destination.

Non-transfer non-death exits (fourth data column of Table 2) can in general be regarded as reflecting a move to increased self-reliance, whereas other exit destinations cannot. However, the degree to which this is in fact the case will vary depending on the exit reason or destination and the extent to which the exits are sustained, which are empirical questions we

seek to answer – that is, which destinations are associated with greatest likelihood of sustained self-reliance. A first step in this direction is taken in Table 3, which describes the composition of non-transfer non-death exits in terms of the nine cancellation or suspensions reasons we distinguish (available from May 1998). Specifically, it presents the proportion of non-transfer non-death exits in each year that are of each type.

The single most common cancellation or suspension reason is ‘return to work’, which accounts for over 40 per cent of these exits for males and over 30 per cent of these exits for females. Also significant are residence/locality and compensation-related reasons. Among non-transfer non-death exits, just over one half are known to be for reasons that could be regarded as ‘positive’ – returning to work, exceeding allowable income or assets, improved health or voluntary withdrawal. The reason for exit is unknown or unclassified for a further 7 per cent of exits. Between 1998 and 2002, the exit destination composition of non-transitional exits changes significantly from year to year. While somewhat volatile, general trends apparent include increases in the proportions of non-transitional exits due to return to work, residence/locality and non-compliance, and decreases in the proportions of exits due to exceeding allowable income or assets, improved health and compensation payouts.

Tables 4 and 5 briefly compare the characteristics of DSP recipients observed to exit DSP receipt in the sample period (1995 to 2002) with the characteristics of other DSP recipients. Discussion here is cursory, with examination of the implications of characteristics for exit patterns primarily reserved for the econometric analysis. Table 4 considers all recipients who exit DSP, presenting descriptive statistics on sex, age, country of birth and Indigenous status, origin prior to commencing the DSP spell (in terms of income support receipt) and DSP spell duration. As well as aggregate comparisons of persons observed to exit with persons not observed to exit, the table also presents comparisons across persons characterised by type of exit: transfer to the age pension; transfer to other income support payments; cessation of payments due to death; and non-transfer non-death exits. Statistics presented relate to characteristics at the time of exit for those who exit and at the end of the sample period for those who do not exit DSP.

Before proceeding, it should be noted that comparisons between those observed to exit and those who do not exit do need to be interpreted with caution. Comparisons of characteristics of those who exit with those who do not are not necessarily informative. For example, a finding that those who exit are more likely to be male than those who do not exit cannot be regarded as evidence that males have a greater propensity to exit. It could simply be a

function of there being a higher proportion of males than females with long durations on DSP (so that it is not sex per se responsible for the difference in exit rates, but rather differences in the duration distribution between males and females). Essentially, the problem is that we are comparing flows (exits from DSP) with stocks (DSP recipients at the end of the sample period). Nonetheless, at the very least, characteristics of those who do not exit DSP are useful as a kind of reference point for interpreting characteristics of those who exit.

As the above example anticipated, Table 4 shows that it is indeed the case that persons observed to exit are more likely to be male than persons not observed to exit – 73 per cent of those who exit are male, compared with 61 per cent of those not observed to exit. As suggested in the example, this is likely to mostly reflect a ‘cohort’ effect – that is, earlier cohorts of entrants to DSP are more male dominated than recent cohorts, and earlier cohorts tend to have higher exit rates, for example because of exits to the age pension. Support for this contention is found in the breakdown by exit type, which shows the male share of exits is highest for transfers to the age pension.

Those who exit tend to be older than those who do not, which is to be expected given that a major share of exits comprises transfers to the age pension. Significantly, however, those who transfer to other income support payments or go off payments altogether tend to be younger than those who do not exit. For example, 88 per cent of those who transfer to other payments and 77 per cent of those who go off all payments are under 55 years of age at the time of the exit from DSP. By comparison, only 58 per cent of those who did not exit DSP by the end of the sample period were under 55 years of age at the end of the sample period.

The third panel for Table 4 presents the country of birth and Indigenous status composition of recipients observed to exit DSP between 1995 and 2002. Australian-born persons are more highly represented in the ‘no exit’ group than the ‘exit’ group, with non-English speaking background immigrants in particular under-represented in the ‘no exit’ group compared with the ‘exit’ group. However, descriptive information of the kind presented in Table 4 cannot be used to attribute effects on exit propensities to country of birth, since other characteristics correlated with country-of-birth may be responsible. For example, age differences in recipients across country-of-birth groups are likely to be an important reason for the observed differences in exit rates (which provides one of the motivations for the econometric analysis in Sections 3 and 4). Indeed, transfer to the age pension is the exit group in which the native-born are relatively under-represented and in which NESB immigrants are relatively over-

represented. This suggests that age is an important explanatory factor in the relatively lower share of the native-born and the relatively higher share of NESB immigrants in exits.

Table 4: Characteristics of persons who completed DSP spells in the period 1995-2002, by type of exit

	Exit to:				All exits	No exit <sup>(a)</sup>
	Age Pension	Other IS payment	Death	Other destination		
<i>Sex</i>						
Male	75.8	59.8	72.9	68.6	73.0	61.4
Female	24.2	40.2	27.1	31.5	27.1	38.6
<i>Age at exit</i>						
16-24	0.0	8.4	2.5	11.3	3.6	6.2
25-34	0.0	19.9	5.9	17.6	6.3	10.3
35-44	0.0	30.1	12.7	22.5	9.1	16.9
45-54	0.0	29.8	26.4	25.7	12.7	26.5
55-60	7.6	10.1	29.7	15.7	14.2	25.2
61-64	16.4	1.6	21.7	6.8	14.6	14.4
65+	76.0	0.1	1.1	0.4	39.4	0.5
<i>Country of birth &amp; Indigenous status</i>						
Non-Indig. Aus-born	57.8	67.5	68.5	69.6	63.3	68.8
Indigenous	1.0	7.1	3.6	3.7	2.4	3.3
ESB	10.5	8.2	10.5	10.2	10.4	8.0
NESB	30.7	17.3	17.4	16.6	24.0	19.9
<i>Duration on DSP (fortnights)</i>						
Mean	187.0	114.9	138.9	70.3	145.4	175.7
Standard error	149.9	124.4	163.6	95.2	148.6	177.9
<i>Duration distribution (%)</i>						
<=2 yrs	16.1	32.2	42.2	59.2	32.9	27.1
2-4 yrs	18.7	27.7	15.4	19.5	18.5	18.3
4-6 yrs	17.7	17.8	11.0	9.6	14.3	13.4
6-8 yrs	13.4	6.9	7.8	4.6	9.8	12.3
8-10 yrs	9.3	3.7	5.5	2.5	6.7	6.8
>10 yrs	24.7	11.7	18.1	4.7	17.9	22.2
<i>Origin</i>						
Left-censored	67.3	43.0	48.5	30.0	53.3	33.3
Outside IS	18.2	15.2	26.0	37.4	24.6	21.7
Sickness benefit	2.7	6.4	6.0	6.7	4.5	4.7
Unemployment benefit	7.8	28.0	14.3	21.0	13.0	32.7
Other payment	4.0	7.5	5.2	5.1	4.6	7.6
Number of persons	104,174	5,348	41,089	51,912	202,523	325,912

Notes: (a) Refers to those spells that were still in progress on 29 November 2002 (the end of the sample period). *Indigenous* – Aboriginal or Torres Strait Islander; *ESB* – English-speaking background immigrant; *NESB* – Non-English-speaking background immigrant; *Left-censored* – spell in progress at the beginning of the sample period (January 1995).

The fourth and fifth panels of Table 4 present information on the duration distribution of completed spells and spells still in progress at the end of the sample period.<sup>14</sup> They show the mean and standard deviation of spell duration and the proportion of exits in each duration interval. For example, the first column indicates the mean duration of spells that were ended by transferral to the Age Pension was 187 fortnights, with 16.1 per cent of these spells having a completed duration less than 2 years, and 24.7 per cent having a completed duration in excess of 10 years.

Comparing spell durations of all those who exited in the sample period with spell durations of those who did not exit shows that recipients with completed spells tend to have a shorter duration on DSP than the duration on DSP at the end of the sample period of recipients who did not exit. This is indicated by a lower mean spell duration, which is driven by a higher proportion of short spells and lower proportion of very long (10 or more years) spells.

The estimates presented for completed spells by exit destination (the first four columns of Table 4) provide some insight into the differences in the nature of DSP receipt across individuals who exit to different destinations. These estimates also provide some indication of the implications of the sample selection restrictions necessarily imposed for the entry-cohort econometric analysis, which only considers exits that occur within 3.5 years of commencement of a DSP spell. These estimates show there to be substantial differences in completed spell durations across exit destinations. Only 4.7 per cent of non-transfer non-death exits were from spells in excess of 10 years duration, compared with nearly a quarter of transfers to the Age Pension. Conversely, 59 per cent of non-transfer non-death exits were from spells of less than 2 years duration, compared with 16 per cent for transfers to the Age Pension. In terms of implications of the restriction of the entry-cohort econometric analysis to exits occurring within 3.5 years of spell commencement, these results suggest that we will capture approximately 40-50 per cent of exits, and – importantly – 70-75 per cent of non-transfer non-death exits.<sup>15</sup>

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<sup>14</sup> The measure of spell duration used here is explicitly provided in the administrative records (i.e. there is a data item ‘spell duration’).

<sup>15</sup> Appendix Table 3 focuses on non-transitional non-death exits after June 1998, when cancellation reason data are available, presenting information on differences in the duration distribution by cancellation reason. Differences in the completed spell duration distribution across cancellation reason are much less pronounced

The origin of DSP recipients in terms of income support receipt (bottom panel of Table 4) is only known for those who commenced the DSP spell after January 1995 (that is, for whom the DSP spell is not ‘left censored’).<sup>16</sup> Thus, the origin is not known for one-third of those who did not exit DSP and over half of those who did exit DSP. However, it is informative to compare DSP recipients who exited off all income support payments (the fourth data column) with DSP recipients who did not exit (sixth data column), since the rates of left-censoring are similar for these two groups, with origin known for approximately two-thirds of each group. The differences between these two groups in their origin composition is striking. One-third of those who do not exit DSP are known to have transferred to DSP from unemployment payments, compared with only 21 per cent of those who exit off all payments. Correspondingly, 37 per cent of those who exit off all payments entered DSP from outside the income support system, compared with only 22 per cent of those who do not exit. This is highly suggestive of inability to engage successfully in the labour market, *irrespective of disability*, as a predictor of non-exit.

Table 5 focuses on non-transfer non-death exits and compares characteristics across the eight calendar years in the sample period. For each year, descriptive statistics are presented for DSP recipients observed to make a non-transfer non-death exit in that year and for DSP recipients who were still on DSP at the end of the year. Aside from the decline in the proportion of spells that are left censored as we move from 1995 to 2002, the overwhelming impression is one of relative stability in the characteristics of those who exit compared with those who do not.

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than across the four exit destinations distinguished in the upper panels. Notable, however, is that only 50-55 per cent of spells ending due to improved health occur within four years of spell commencement (compared with 70-75 per cent for all non-transitional exits), with over one quarter of these exits occurring after a 4-6 year spell on DSP. Thus, the entry cohort analysis will not pick up a relatively larger proportion of this type of ‘positive’ exit. Also of note is that those exiting for ‘non-compliance’ reasons tend to have longer spell durations than those making other non-transitional exits.

<sup>16</sup> A spell is ‘left-censored’ if it commenced prior to the beginning of the sample period (January 1995).

Table 5: Characteristics of persons who made a non-transfer-non-death transition from DSP compared with those who did not exit, by year

	1995		1996		1997		1998	
	Exit in 1995	No exit <sup>(a)</sup>	Exit in 1996	No exit <sup>(a)</sup>	Exit in 1997	No exit <sup>(a)</sup>	Exit in 1998	No exit <sup>(a)</sup>
<i>Sex</i>								
Male	68.8	68.8	64.4	67.5	68.9	65.9	68.6	64.9
Female	31.2	31.2	35.6	32.5	31.1	34.1	31.4	35.1
<i>Age at exit</i>								
16-24	11.5	6.1	10.8	5.9	10.7	6.0	11.1	6.0
25-34	18.8	11.1	18.7	11.2	16.9	11.0	18.4	10.7
35-44	20.7	16.4	25.4	16.7	20.8	16.7	22.1	17.1
45-54	27.3	26.5	25.7	26.9	25.3	27.0	25.1	27.1
55-60	15.0	23.8	14.1	24.4	17.6	25.2	16.1	25.2
61-64	6.3	15.3	5.0	14.4	8.4	13.8	6.8	13.5
65+	0.4	0.9	0.4	0.5	0.4	0.4	0.5	0.4
<i>Country of birth &amp; Indigenous status</i>								
Non-Indig. Aus-born	66.9	66.9	67.1	67.1	69.9	67.3	69.9	67.7
Indigenous	3.3	2.4	3.7	2.5	3.0	2.6	3.3	2.7
ESB	11.6	8.3	10.5	8.4	10.6	8.4	10.3	8.3
NESB	18.3	22.4	18.8	22.0	16.5	21.7	16.5	21.3
<i>Duration on DSP (fortnights)</i>								
Mean	86.2	166.4	73.7	168.6	73.9	172.8	67.0	176.6
Standard error	109.0	161.4	99.9	163.6	100.2	165.8	92.2	168.1
<i>Origin</i>								
Left-censored	80.9	83.4	53.8	71.6	38.9	62.5	27.6	54.6
Outside IS	13.1	8.2	29.2	11.4	35.1	14.1	41.3	16.4
Sickness benefit	2.4	3.3	7.1	5.8	8.6	6.0	8.0	5.8
Unemployment benefit	1.8	3.2	5.7	7.7	12.8	12.9	18.3	17.9
Other payment	1.8	1.9	4.2	3.5	4.6	4.6	4.8	5.4
Number of persons	4,917	237,035	5,286	250,728	6,201	264,015	6,483	276,014

Table 5 continued: Characteristics of persons who made a non-transfer-non-death transition from DSP compared with those who did not exit, by year

	1999		2000		2001		2002	
	Exit in 1999	No exit <sup>(a)</sup>	Exit in 2000	No exit <sup>(a)</sup>	Exit in 2001	No exit <sup>(a)</sup>	Exit in 2002	No exit <sup>(a)</sup>
<i>Sex</i>								
Male	68.9	63.7	69.7	62.9	69.31	61.9	68.7	61.4
Female	31.1	36.3	30.3	37.1	30.69	38.1	31.3	38.6
<i>Age at exit<sup>(b)</sup></i>								
16-24	10.9	6.1	12.2	6.1	11.1	6.2	12.3	6.2
25-34	17.9	10.5	18.1	10.4	16.0	10.4	16.7	10.3
35-44	23.4	17.1	21.7	17.2	21.7	17.0	24.2	16.9
45-54	25.8	27.0	25.5	27.1	25.6	26.7	25.9	26.5
55-60	15.3	24.9	15.7	24.8	16.7	24.8	14.3	25.2
61-64	6.1	14.0	6.5	13.9	8.5	14.5	6.2	14.4
65+	0.5	0.4	0.3	0.4	0.4	0.5	0.3	0.5
<i>Country of birth &amp; Indigenous status</i>								
Non-Indig. Aus-born	68.9	68.1	70.8	68.4	70.78	68.6	71.5	68.8
Indigenous	3.7	2.8	3.8	3.0	3.83	3.2	4.6	3.3
ESB	10.7	8.2	9.5	8.1	9.44	8.1	9.4	8.0
NESB	16.8	20.9	15.9	20.5	15.94	20.2	14.5	19.9
<i>Duration on DSP (fortnights)</i>								
Mean	69.0	180.7	64.3	185.2	68.5	188.4	64.8	175.7
Standard error	92.9	170.9	87.5	173.9	92.6	177.1	89.6	177.9
<i>Origin</i>								
Left-censored	21.6	47.6	15.4	42.1	13.24	37.1	10.9	33.3
Outside IS	41.1	18.1	43.4	19.7	42.81	20.8	43.1	21.7
Sickness benefit	7.5	5.6	6.8	5.3	6.36	5.0	5.3	4.7
Unemployment benefit	24.8	22.7	28.6	26.3	31.34	29.9	33.7	32.7
Other payment	5.0	6.1	5.8	6.7	6.25	7.2	7.0	7.6
Number of persons	7,779	290,364	7,579	300,735	8,348	315,907	5,317	325,912

Notes: (a) 'No exit' refers to those DSP spells that were still in progress at the end of the relevant year (in 2002, this is the end of the sample period, 29 November). *Indigenous* – Aboriginal or Torres Strait Islander; *ESB* – English-speaking background immigrant; *NESB* – Non-English-speaking background immigrant; *Left-censored* – spell in progress at the beginning of the sample period (January 1995).

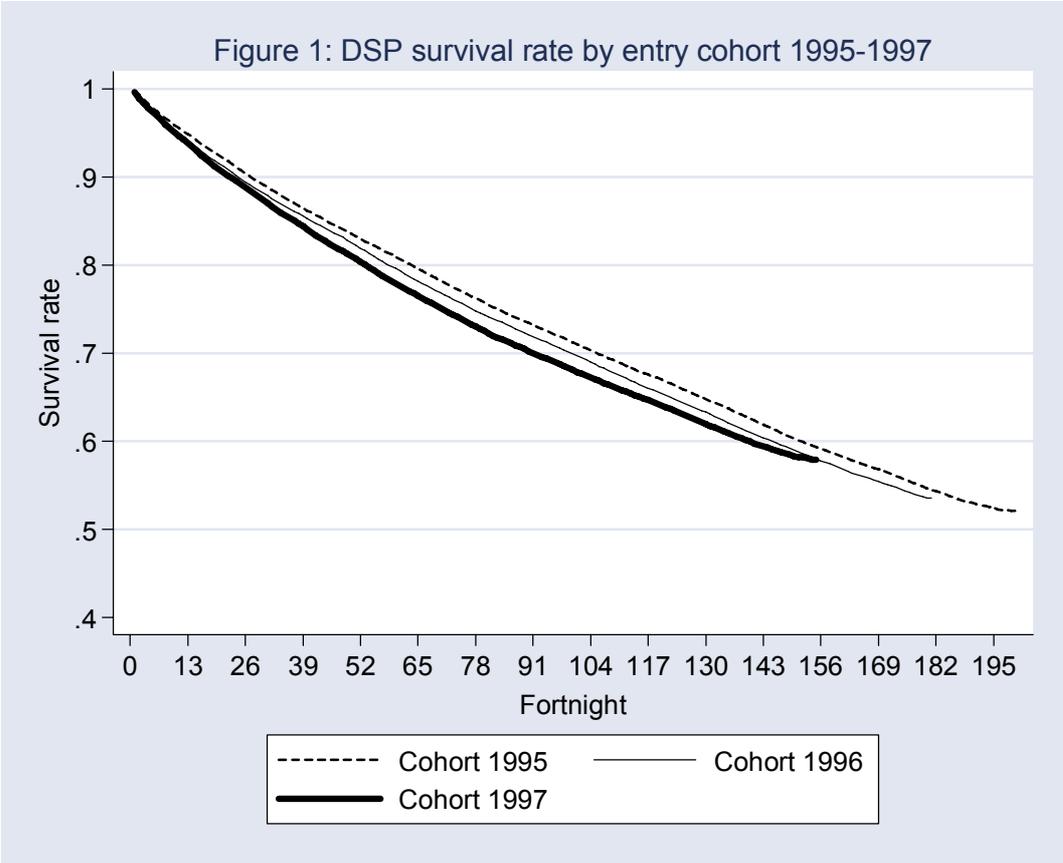
#### 4.2 Entry cohort descriptive analysis

The entry-cohort analysis involves following each individual who commenced a DSP spell in a particular period until the spell ends, or until a pre-specified spell duration is reached (e.g. three years).<sup>17</sup> For both descriptive and model estimation components of this analysis, we therefore define the destination of a completed (uncensored) DSP spell to be the **first** destination following the spell end. We refer to the pre-specified period as the “observation

<sup>17</sup> Our requirement of a 7 fortnight break in payments before a new spell can be deemed to have commenced means that the earliest date of spell commencement in our data is 22 April 1995.

window”. A spell still in progress at the end of the observation window is a right-censored spell. For all of the entry cohort analysis we restrict our sample to males aged under 65 years and females aged under 60 years at commencement of the DSP spell.

Figures 1 and 2 provide a picture of duration on DSP for all recipients in the sample who commenced a DSP spell prior to 2002. They present, for each year, the number of recipients who reached each duration as a proportion of those who commenced a spell in the year. For example, Figure 1 shows that approximately 70 per cent of individuals who commenced a DSP spell in 1995 (Cohort 1995) were still on DSP after four years (104 fortnights). As this suggests, and as expected, the majority of DSP recipients are long term, with the median duration well in excess of four years. In terms of changes over the sample period, the impression from Figure 1 is that more recent entry cohorts tend to have a larger proportion of recipients with shorter spells than earlier cohorts. This is indicated by the survival function of the 1997 entry cohort lying above that of the 1996 cohort, which in turn lies above the survival function of the 1995 entry cohort. However, this trend is not apparent in Figure 2 when comparing the 1998-2001 entry cohorts.



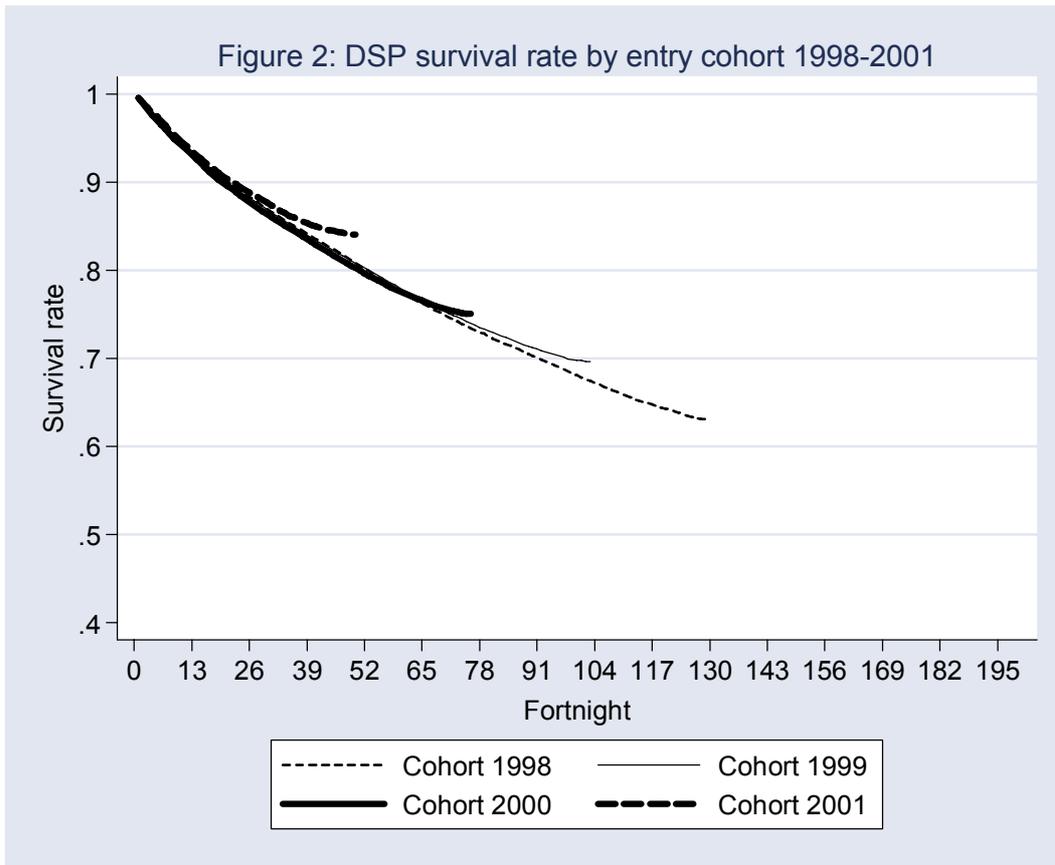


Table 6 examines in more detail the destinations of persons who commence a spell on DSP. It presents, for spells commenced in each year from 1995 to 2000, the proportion exiting DSP within pre-specified periods, distinguishing four destinations: age pension, other income support payment, death and other non-transfer exits. To illustrate how to interpret the estimates, consider spells commenced in 1995 (top panel). Within one year of commencement, 2.2 per cent of these spells ended via a transfer to the age pension, 0.1 per cent ended via a transfer to another income support payment, 3.4 per cent ended due to the recipient's death and 4.0 per cent ended due to a non-transfer non-death exit. Within six years of spell commencement, 17.2 per cent of recipients transferred from DSP to the age pension, 1.4 per cent transferred to another income support payment, 9.0 per cent died and 13.3 per cent exited all income support payments.<sup>18</sup>

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<sup>18</sup> Note that some of these individuals may have subsequently gone back on to DSP or another income support payment.

**Table 6: Proportion of entry cohort exiting to each destination, by spell duration (%)**

Entry cohort	Destination	Spell duration					
		<=1yr	<=2 yrs	<=3 yrs	<=4 yrs	<=5 yrs	<=6 yrs
1995	Age pension	2.2	5.1	7.9	10.9	13.8	17.2
	Other payment	0.1	0.2	0.7	0.9	1.2	1.4
	Death	3.4	5.0	6.2	7.2	8.2	9.0
	Exit IS	4.0	6.8	9.1	10.7	12.2	13.3
	Still on DSP	90.3	82.9	76.2	70.3	64.7	59.0
1996	Age pension	1.8	4.2	7.4	10.3	13.5	
	Other payment	0.1	0.3	0.7	0.8	1.0	
	Death	3.9	5.5	6.5	7.5	8.4	
	Exit IS	4.8	8.2	10.6	12.5	13.9	
	Still on DSP	89.4	81.9	74.8	69.0	63.3	
1997	Age pension	1.3	4.5	7.4	10.5		
	Other payment	0.1	0.2	0.9	1.0		
	Death	4.1	5.8	6.8	7.7		
	Exit IS	5.4	8.9	11.6	13.3		
	Still on DSP	89.1	80.6	73.3	67.5		
1998	Age pension	1.1	3.4	6.5			
	Other payment	0.9	1.1	1.5			
	Death	3.6	5.1	6.2			
	Exit IS	6.1	10.0	12.7			
	Still on DSP	88.3	80.4	73.1			
1999	Age pension	1.3	3.4				
	Other payment	0.2	0.4				
	Death	3.5	4.9				
	Exit IS	6.7	10.2				
	Still on DSP	88.4	81.1				
2000	Age pension	1.5					
	Other payment	0.2					
	Death	3.8					
	Exit IS	6.6					
	Still on DSP	88.0					
1995-2000 <sup>(a)</sup>	Age pension	1.5	4.0	6.9	9.8	12.8	16.2
	Other payment	0.2	0.4	0.9	1.1	1.3	1.6
	Death	3.6	5.2	6.3	7.2	8.1	8.8
	Exit IS	5.7	9.1	11.7	13.5	15.0	16.2
	Still on DSP	88.9	81.3	74.2	68.4	62.9	57.3

Notes: (a) Only cohorts who can *potentially* be observed to have long enough duration are included in producing estimates for this panel. For example, to calculate the proportion leaving within one year of DSP spell commencement, all of the cohorts from 1995 to 2000 were included. By contrast, for the proportion leaving within 5 years, only the 1995 and 1996 cohorts were used, because individuals who commenced after 1996 could be still on DSP at the end of the sample period with an incomplete spell duration less than 5 years. The proportion of these individuals who exit within 5 years of spell commencement is not known.

A notable and potentially important trend evident from Table 6 is that the proportion exiting all payments within two years of commencing a DSP spell has steadily and markedly grown

between 1995 and 1999, from 6.8 per cent of spells commenced in 1995 to 10.2 per cent of spells commenced in 1999. While there are a number of potential explanations for this trend, including policy changes over the period (for example, improvements in services to assist DSP recipients in obtaining employment) and changes to the composition of new DSP entrants, a likely candidate is the improvements in macroeconomic conditions that occurred over the period, which could make the labour market more receptive to DSP recipients attempting to obtain employment.<sup>19</sup> Despite the positive development with respect to transitions off all payments within two years of DSP spell commencement, it should be emphasised that such transitions are still comparatively rare. For example, 9.1 per cent of persons commencing a spell in 1995 made a transition off all income support payments within 3 years of DSP spell commencement, while the corresponding figure for persons commencing a DSP spell in 1998 was still only 12.7 per cent.

A further important feature of exits from DSP that is evident from Table 6 is that the rate of exit from all payments is decreasing in spell duration. Focusing on the last panel of Table 6, we see that 5.7 percent of DSP recipients exited all payments in the first year following spell commencement, compared with 2.6 per cent exited during the second year, 1.8 percent exited in the third year and 1.5 percent the fourth year. Thus, if a ‘successful’ exit from DSP is to be made (defined as a non-death transition off all payments), it is in general going to happen quite quickly after spell commencement. This is prima facie evidence of negative duration dependence for non-transfer non-death exits. Of course, the extent to which this derives from a “lock-in” effect, whereby increased time on DSP itself makes exit more difficult, as opposed to systematic differences in the characteristics of DSP recipients by duration of receipt, cannot be resolved by examination of Table 6 alone.

Table 7 considers the destinations of DSP spells within four years of spell commencement, comparing across five age groups: 16-24 years, 25-44 years, 45-54 years, 55-59 years and 60-64 years (the last of which is not examined for females because of the exclusion from the sample of females aged over 60 years). All years for which the four-year observation window is available (1995-1998) are combined, with each person who commenced a DSP spell in the

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<sup>19</sup> There is also tentative evidence of increases in exits within longer duration intervals. For example, the proportion exiting all payments within 4 years is 10.7 percent for the 1995 entry cohort, compared with 13.3 percent for the 1997 cohort. However, a longer data window is required to confirm this trend.

period contributing one observation (the four-year period following the *first* DSP spell commencement of the individual in the period). The choice of the four-year window represents the outcome of a trade-off between maximising the sample size and maximising the length of the observation window. For example, increasing the observation window to five years would require us to exclude DSP spells that commenced in 1998, since these spells would not reach five years' duration before the end of the sample period (November 2002).

Table 7: Destinations of DSP spells within four years of commencement, by age at entry on to DSP – First DSP spell of persons commencing a DSP spell in the period January 1995 to November 1998

Age group (yrs)	Spell destination					No. of persons
	Age Pension	Other payment	Death	Exit IS	Still on DSP	
<i>Males</i>						
16-24	0.0	1.5	3.1	23.5	71.9	8,636
25-44	0.0	2.1	6.3	20.2	71.4	25,780
45-54	0.0	1.0	9.3	12.6	77.1	23,113
55-59	0.0	0.4	9.8	8.8	81.0	19,889
60-64	63.8	0.2	8.7	6.6	20.8	16,421
All ages	11.2	1.1	7.9	13.8	66.0	93,839
<i>Females</i>						
16-24	0.0	1.8	2.8	14.7	80.8	5,720
25-44	0.0	1.8	6.0	15.3	76.9	15,888
45-54	0.0	1.0	7.2	9.7	82.2	18,915
55-59	38.5	0.3	6.9	6.2	48.1	11,413
All ages	8.5	1.2	6.3	11.2	72.9	51,936
<i>Persons</i>						
16-24	0.0	1.6	3.0	20.0	75.4	14,356
25-44	0.0	2.0	6.2	18.3	73.5	41,668
45-54	0.0	1.0	8.4	11.3	79.4	42,028
55-59	14.0	0.4	8.8	7.9	69.0	31,302
60-64	63.8	0.2	8.7	6.6	20.8	16,421
All ages	10.2	1.1	7.4	12.9	68.5	145,775

Males have a higher rate of exit off all income support payments than females in all age ranges, but for both males and females such transitions are relatively uncommon among persons who commence a DSP spell after age 45. Transitions off all payments are particularly uncommon for those who enter DSP within five years of reaching the minimum age of eligibility for the Age Pension (approximated by the 55-59 years category for females).

Indeed, among DSP recipients who started their DSP spells in the uppermost age category, most exits that occur are due to transferral to the age pension or due to death.

Table 8 contains the same sample and follows the same structure as Table 7, but reports destinations across groups defined by origin in terms of income support receipt prior to commencement of the DSP spell. Consistent with the evidence presented in Tables 4 and 5, the probability of remaining on DSP for the entire four-year period following commencement of the DSP spell is highest for those who transferred from unemployment payments (NewStart Allowance). Persons who entered DSP from outside the income support system, who slightly outnumber persons who transferred from unemployment payments, have the highest probability of a ‘clean break’ (non-transfer non-death exit) from DSP within four years of spell commencement.

Table 8: Destinations of DSP spells within four years of commencement, by spell origin – First DSP spell of persons commencing a DSP spell in the period January 1995 to November 1998

Spell origin	Spell destination					No. of persons
	Age Pension	Other payment	Death	Exit IS	Still on DSP	
<i>Males</i>						
Outside IS	17.7	0.7	9.7	17.5	54.5	39,449
Sickness benefit	7.1	0.8	9.2	11.9	71.0	12,213
Unemployment benefit	6.0	1.5	5.9	10.7	76.0	38,338
Other payment	9.3	1.4	6.7	12.8	69.8	3,839
All	11.2	1.1	7.9	13.8	66.0	93,839
<i>Females</i>						
Outside IS	9.8	0.7	8.8	16.5	64.1	18,334
Sickness benefit	4.9	1.0	5.5	10.8	77.8	5,671
Unemployment benefit	6.0	1.6	3.5	8.4	80.5	15,510
Other payment	11.1	1.3	6.4	7.0	74.2	12,421
All	8.5	1.2	6.3	11.2	72.9	51,936
<i>Persons</i>						
Outside IS	15.2	0.7	9.4	17.2	57.5	57,783
Sickness benefit	6.4	0.9	8.0	11.6	73.2	17,884
Unemployment benefit	6.0	1.5	5.2	10.0	77.3	53,848
Other payment	10.7	1.4	6.5	8.4	73.1	16,260
All	10.2	1.1	7.4	12.9	68.5	145,775

Persons entering DSP from outside the income support system also have relatively high rates of death and exit to the age pension, so that the probability of such persons being on DSP for

the entire four-year window is considerably lower than for those who transferred from unemployment payments. Differences between those transferring from unemployment payments and those entering from outside the income support system are particularly large for males. The implication is that previous difficulty obtaining employment is an important predictor of likelihood of DSP recipients making the transition off all income support payments.<sup>20</sup>

While non-transfer non-death exits from DSP can be regarded as ‘successful’ exits from the perspective of reduced reliance on income support, further information on the reasons for these exits is important to assessments of their nature. The cancellation reason data available after May 1998 provide such information. Table 9 examines exit reasons of non-transfer non-death exits in the 3.5 years following spell commencement for persons who commenced a DSP spell between June 1998 and May 1999. It reports the proportion of spells commenced in this period exiting for each of the nine distinct reasons described in Section 2, with the cumulative proportions reported at 6 months, 1 year, 2 years, 3 years and 3.5 years after spell commencement. For example, the upper left cell indicates that 1.6 per cent of males who commenced a spell on DSP between June 1998 and May 1999 exited with a cancellation or suspension reason of ‘return to work’ within 6 months of commencement. Within one year of spell commencement, a total of 2.8 per cent of males had exited with this cancellation/suspension reason, and within 3.5 years, 6.2 per cent had exited for this reason.

The single most common cancellation or suspension reason is return to work, accounting for 42.5 per cent of the male non-transfer non-death exits that occur within 3.5 years of spell commencement, and 31.8 per cent of the female non-transfer non-death exits. A further 23.6 per cent of male and 32 per cent of female non-transfer non-death exits can be characterised as ‘positive’ (means test, improved health, voluntary withdrawal and compensation-related). Consistent with the evidence presented in Table 6, the estimates produced in Table 9 suggest that the probability of a transition off all income support payments is decreasing in the duration of the spell. This pattern is particularly strong for the return-to-work destination. For example, in the first year after DSP spell commencement, 2.3 per cent of recipients return to work, compared with 1.5 per cent in the second year and 0.9 per cent in the third year.

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<sup>20</sup> Cai and Gregory (2005) furthermore show that males transferring to DSP from unemployment payments have generally had long durations on unemployment payments prior to transfer.

Table 9: Persons who entered DSP in the period June 1998 to May 1999: Breakdown of non-transfer-non-death exits (% as a proportion of the entry cohort)

	Detailed exit destination									All
	Return to work	Means test	Improved health	Voluntary w/drawal	Comp-ensation	Resid./locality	Non-compliance	Others	Unknown/missing	
<i>Males</i>										
half yr	1.6	0.3	0.0	0.1	0.6	0.6	0.1	0.2	0.1	3.6
1 yr	2.8	0.6	0.1	0.3	1.1	0.9	0.3	0.4	0.3	6.7
2 yrs	4.6	0.8	0.1	0.4	1.5	1.5	0.6	0.6	0.6	10.7
3 yrs	5.7	0.9	0.2	0.4	1.7	2.0	1.0	0.7	0.9	13.6
3 & half yrs	6.2	1.0	0.2	0.4	1.8	2.1	1.1	0.8	0.9	14.5
Proportion of exits	42.5	6.7	1.4	3.0	12.5	14.4	7.8	5.5	6.3	100
<i>Females</i>										
half yr	0.8	0.5	0.0	0.1	0.4	0.2	0.1	0.2	0.3	2.6
1 yr	1.4	1.0	0.0	0.2	0.7	0.3	0.2	0.5	0.4	4.6
2 yrs	2.4	1.3	0.0	0.4	0.9	0.4	0.4	0.8	0.8	7.6
3 yrs	3.1	1.5	0.1	0.5	1.1	0.6	0.8	1.0	1.1	9.8
3 & half yrs	3.4	1.6	0.1	0.6	1.2	0.7	0.9	1.1	1.2	10.8
Proportion of exits	31.8	14.9	1.0	5.4	10.7	6.3	8.4	10.4	11.0	100
<i>Persons</i>										
half yr	1.3	0.4	0.0	0.1	0.5	0.4	0.1	0.2	0.2	3.2
1 yr	2.3	0.8	0.0	0.3	0.9	0.7	0.3	0.4	0.3	5.9
2 yrs	3.8	1.0	0.1	0.4	1.3	1.1	0.5	0.7	0.7	9.6
3 yrs	4.7	1.2	0.2	0.5	1.5	1.5	0.9	0.8	1.0	12.2
3 & half yrs	5.2	1.2	0.2	0.5	1.6	1.6	1.1	0.9	1.0	13.2
Proportion of exits	39.2	9.2	1.3	3.7	12.0	11.9	8.0	7.0	7.7	100

Notes: 'Proportion of exits' is each destination's share of all non-transitional non-death exits occurring within 3.5 years of spell commencement. See Appendix Table 1 for the cancellation reasons composition of each exit reason.

### 4.3 Exit cohort descriptive analysis

Our descriptive exit cohort analysis involves following DSP recipients for a pre-specified period following exit from DSP. Interest is in the extent to which the transition off DSP is sustained, which naturally limits our focus to non-transfer non-death exits. The reason for excluding transfers to other income support payments is that we are primarily interested in the extent, nature and predictors of exit off *all* income support payments. Indeed, most transfers to other income support payments comprise transfers to the Age Pension. We employ a four-year observation window for analysis that does not involve examination of detailed exit reasons (and therefore include the 1995-1998 exit cohort) and a three and a half year window for the analysis that does examine detailed exit reason (and therefore the June 1998-May 1999 exit cohort). We exclude those whose age at exit was above 60 years for males and above 57

years for females. This ensures that no person reaches the minimum age of eligibility for the Age Pension within the observation windows examined and that therefore all persons have the same “opportunity” to remain off (and return to) income support payments.

In ‘following’ recipients in the period after exit, it is important to be aware that nothing is known about the circumstances of these individuals when not on income support, other than that they are not on income support. Thus, for example, a person who exits DSP and does not return will be regarded as a person who has sustained a situation of non-reliance on income support, but it may be that the individual in fact died shortly after exiting DSP. While this is likely to be a relatively rare occurrence, it will apply to some individuals.

A useful starting point for the exit cohort analysis is to examine the proportion returning to DSP or other income support payments in the period following exit. Figure 3 does this, showing the cumulative proportion returning to income support payments at each duration after exit. That is, the height of the graph at each point gives the proportion of those who exited DSP in the period 1995-98 who have returned to income support payments (at least once) at some stage within the period indicated by the horizontal axis label. For example, approximately 50 per cent of those who exited DSP in 1995-98 returned to income support payments within two years (52 fortnights). Note that the graph includes all persons who have at some stage up to that point returned to payments, even if they have since left income support payments again. The graph also distinguishes returns to DSP from returns to other income support payments (on the basis of the destination of the *first* return to payments). Mostly, persons who return take up DSP receipt again. Approximately 53 per cent return to DSP within four years of exit, and a further 12 per cent return to other income support payments.

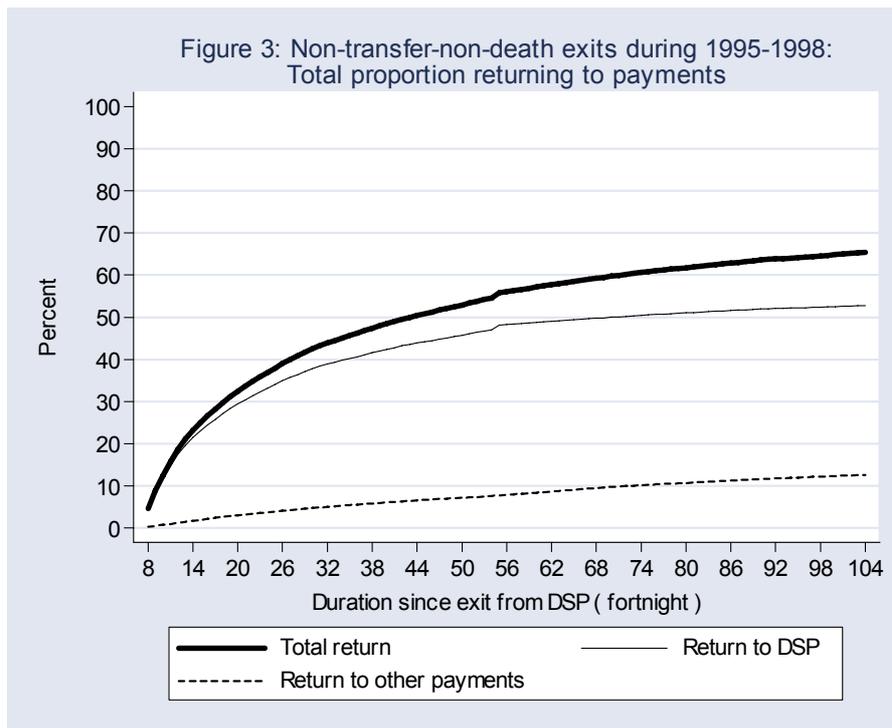


Figure 4 presents the same information as Figure 3 disaggregated by sex (but without stacking returns to other income support payments on top of returns to DSP). The main difference between males and females is that males have a higher rate of return to DSP than females. Also notable is the kink at about two years since exit for females returning to DSP (which appears to be driving the smaller kink apparent for all persons in Figure 3). This may reflect the fact that a large proportion of non-transfer non-death exits are due to payment suspensions, which allow the recipients to return to payments without re-application within two years of suspension. However, it is curious that this only has a discernible impact for females.

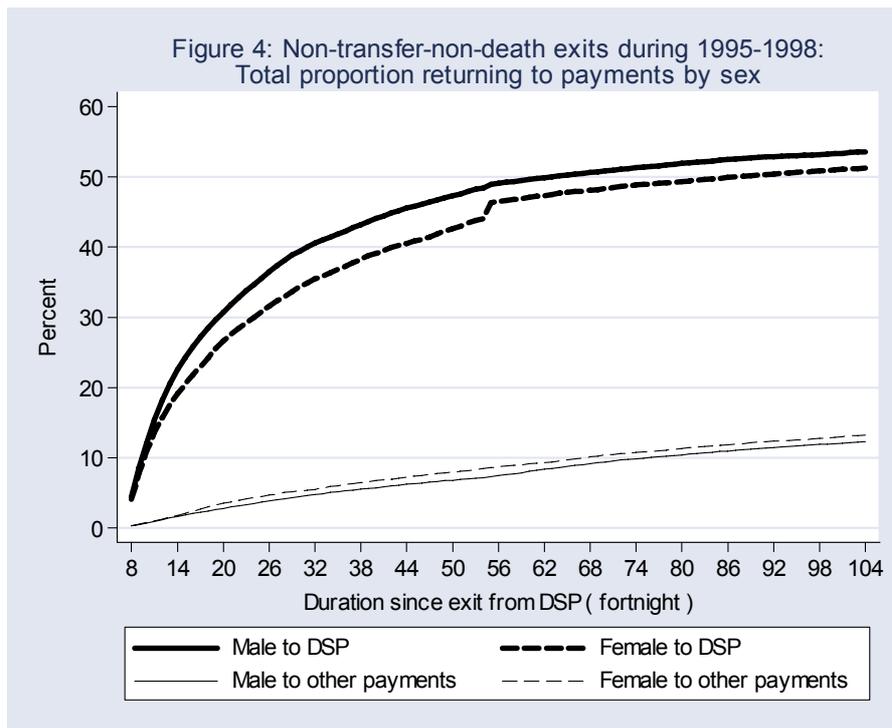


Figure 5 compares rates of return to DSP and other income support payment across two age groups: those aged less than 45 years at the time of exit and those aged over 45 years at the time of the exit. The rate of return to DSP and other income support payments is higher for the younger age group. For example, 50 per cent of persons aged under 45 at exit return to DSP within two years of exit, compared with approximately 42 per cent of persons aged over 45 at exit.

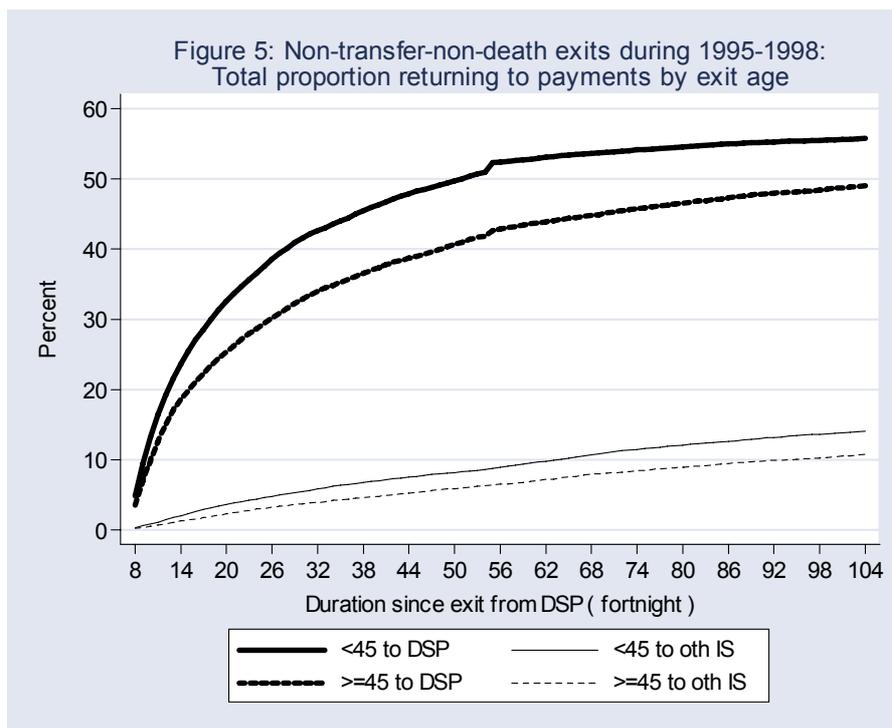


Table 10 examines rates of return by detailed exit reason. Significantly, those who return to work have among the highest rates of return, surpassed only by those who fail to meet residential or locality requirements (which includes, for example, failure to report a change of address) and those who exited for unknown reasons. Most of those who exit to return to work have DSP payments suspended rather than cancelled, which reflects the uncertainty about the recipient's capacity to cope with employment.<sup>21</sup> As might be expected, those whose payments are cancelled because of improved health (and who are therefore deemed to no longer have a health condition that qualifies them for DSP) have a low rate of return to DSP. However, this is somewhat offset by a larger rate of return to other income support payments than is evident for any other group.

<sup>21</sup> According to staff from the Disability Policy Branch at the Department of Employment and Workplace Relations, the two year DSP suspension provision was introduced to improve incentives for DSP recipients to take up work if possible, the apparent underlying rationale being that recipients will be more inclined to take up employment if, in the event that the recipient is unable to sustain employment, return to DSP is made easier.

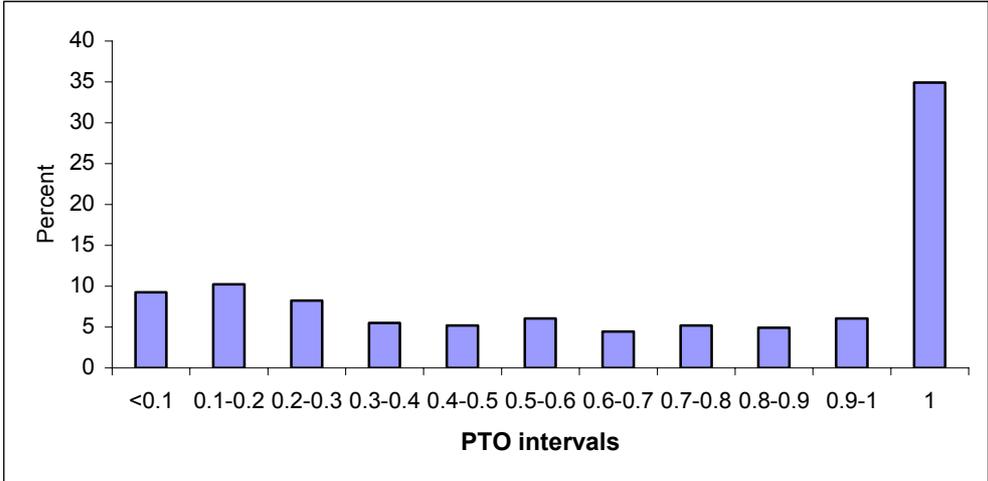
Table 10: Persons making a non-transfer-non-death exit during the period June 1998 to May 1999: Total proportion returning to payments, by detailed exit reason (%)

Duration since exit	Return Payment	Return to work	Exceeded Inc./Assets	Improved health	Voluntary withdrawal	Compen -sation	Residential /Locality	Non-compliance	Other	Unknown
Half year	DSP	22.9	9.3	3.2	4.5	4.3	36.0	19.0	12.5	24.4
	Other pmt	0.4	1.1	8.7	2.3	0.6	1.2	2.5	0.8	1.5
	Total	23.3	10.4	11.9	6.8	4.9	37.3	21.5	13.3	25.9
1 year	DSP	42.3	18.6	4.8	8.6	14.7	51.8	30.8	24.1	45.6
	Other pmt	1.2	3.9	17.5	5.0	2.5	7.8	7.2	5.1	3.2
	Total	43.6	22.5	22.2	13.5	17.2	59.6	38.0	29.2	48.8
2 years	DSP	57.3	29.5	6.3	21.2	25.3	58.4	37.6	34.2	61.6
	Other pmt	2.6	8.9	27.0	10.8	6.7	18.4	15.2	8.2	5.2
	Total	59.9	38.5	33.3	32.0	32.1	76.8	52.7	42.3	66.9
3 years	DSP	60.2	37.6	9.5	27.5	31.8	59.6	39.8	37.6	66.6
	Other pmt	7.4	11.8	34.9	14.9	10.5	23.4	19.5	12.7	7.0
	Total	67.5	49.4	44.4	42.3	42.3	83.0	59.3	50.3	73.5
3.5 years	DSP	60.9	40.8	10.3	31.5	34.2	59.6	40.0	38.9	68.6
	Other pmt	8.5	12.2	35.7	18.0	12.4	24.4	21.0	14.3	7.0
	Total	69.4	53.0	46.0	49.5	46.6	84.1	61.1	53.2	75.6
No. of persons		2086	559	126	222	789	577	442	489	344

Note: See Appendix Table 1 for the cancellation reasons composition of each exit reason.

While the above ‘time to first return’ measure is useful, perhaps more informative is the ‘proportion of time off income support payments in the period following exit’ (PTO) measure. This provides an aggregate summary measure of the extent to which a person who exits DSP is reliant on income support in subsequent years. Figure 6 presents the four-year PTO distribution of those who made a non-transfer non-death transition from DSP between 1995 and 1998. The four-year PTO is the proportion of time off income support payments in the four years following exit. Each 0.1 interval therefore approximately corresponds to a 10-fortnight interval. For example, the <0.1 interval contains persons who spent less than 10 fortnights off payments in the four years following exit, while the 0.1-0.2 interval contains persons who spent between 10 and 20 fortnights off all payments in that period. Outcomes are distributed across the whole PTO range (0-1), but the distribution is somewhat double-peaked, with a relatively large concentration at low PTO levels (less than 0.3) and about 35 per cent with a PTO of 1 (i.e. off payments for the entire four-year period).

Figure 6: Distribution of proportion of time off payments (PTO) in the four years following exit – Persons making a non-transfer non-death exit 1995-1998



Note: PTO – Proportion of Time Off income support payments (in the four years following exit from DSP).

Table 11 presents descriptive statistics for the PTO distribution. Panel A contains statistics for the four-year PTO distribution of those who exited in the period 1995 to 1998, in aggregate and by exit year. The aggregate figures correspond to the information presented in Figure 6. The principal piece of additional information from Panel A is that the mean proportion of time off income support payments is approximately 60 per cent (29 months), the corollary of which is that on average, 40 per cent of the four years following exit are spent on payments.

Panel B of Table 11 contains descriptive statistics on the three-year PTO distribution of the June 1998-May 1999 exit cohort, the motivation for which is that comparisons can be made across groups defined by exit reason. The groups distinguished are ‘return to work’, ‘other positive exit’ and ‘other exit’, details about which are available in Appendix Table 1. Differences in the mean PTO across these groups are not particularly large, varying from a low of 58 per cent for male ‘other exits’ to a high of 77 per cent for male ‘other positive exits’. Nonetheless, this ordering of mean PTO, with ‘other exits’ having the lowest mean PTO and ‘other positive exits’ having the highest mean PTO, is evident for both males and females.

Perhaps the most important finding from Panel B of Table 11, because of its contrast with the inferences drawn from the analysis of ‘time to first return to payments’ in Table 10, is that the ‘return to work’ group has an intermediate level PTO. Taken together with the finding that

this group has among the highest rate of return to payments, this result implies that this is a group containing many recipients who cycle off and on DSP (churn).<sup>22</sup> That is, these recipients do not simply come back on to DSP and stay there. Rather, the intermediate-level PTO implies that return to payments is shortly followed by another episode off all income support payments.

Table 11: Distribution of PTO – Persons making a non-transfer non-death exit

<b>A. Four-year PTO by exit year</b>					
	1995	1996	1997	1998	All
<i>Proportion in each PTO range (%)</i>					
<0.25	30.16	21.3	22.73	21.15	23.59
0.25-0.50	13.4	16.62	13.69	15.33	14.78
0.5-0.75	9.99	16.44	11.93	12.78	12.81
0.75-1.00	12.97	12.45	15.02	14.84	13.9
1.00	33.48	33.19	36.64	35.91	34.91
<i>PTO by exit year</i>					
Mean	0.60	0.63	0.65	0.65	0.62
Standard deviation	0.38	0.35	0.36	0.35	0.37
No. of persons	4164	4489	4946	5244	18843
<b>B. 3.5-year PTO of the 1998-99 exit cohort, by sex and broad exit reason</b>					
	Return to work	Other positive exit	Other exit		
<i>Males</i>					
Mean	0.64	0.77	0.58		
Standard deviation	0.34	0.31	0.35		
No. of persons	1536	1007	1271		
<i>Females</i>					
Mean	0.68	0.74	0.63		
Standard deviation	0.33	0.32	0.35		
No. of persons	547	679	530		

Note: PTO – Proportion of Time Off income support payments.

As a preliminary step to investigating the characteristics associated with more successful exits from DSP, in Table 12 we compare characteristics across groups defined by PTO level. Specifically, we compare those with PTOs in the ranges, 0-0.25, 0.25-0.5, 0.5-0.75, 0.75-0.99 and 1. Note that these are comparisons of characteristics, given a non-transfer non-death exit has occurred. Patterns are in fact somewhat difficult to discern from Table 12, with

<sup>22</sup> Tseng et al. (2004) define a ‘churn’ to occur when a person ceases receipt of income support and subsequently takes up receipt again (generally within 5 years of ceasing receipt).

characteristics of DSP recipients who exited out of the IS system not appearing to be significantly different by the proportion of time off payments. There are tentative indications of over-representation of males, Australian-born individuals and those with left-censored spells at low PTO levels, but these are subtle differences. The indications are, therefore, that these characteristics do not impact on the sustainability of exit. However, the econometric analysis undertaken in Section 6 will provide more conclusive evidence on this issue.

Table 12: Characteristics by PTO – Persons who made a non-transfer non-death exit in 1995-1998 (%)

	<0.25	0.25-0.49	0.5-0.74	0.75-0.99	1.00	All
<i>Sex</i>						
Male	67.58	69.37	65.45	65.99	65.91	66.77
Female	32.42	30.63	34.55	34.01	34.09	33.23
<i>Age at exit (years)</i>						
16-24	13.16	12.6	12.14	12.63	9.62	11.64
25-34	21.3	21.11	21.91	21.6	16.81	19.83
35-44	25.58	26.32	27.84	24.69	22.12	24.65
45-54	26.14	26.03	25.43	26.11	34.53	28.96
55-60	13.81	13.93	12.68	14.96	16.92	14.93
<i>Country of birth and Indigenous status</i>						
Non-Indig. Aus-born	70.96	72.03	73.82	69.27	67.85	70.16
Indigenous	4.93	4.99	4.23	3.59	1.87	3.59
ESB	8.73	9.41	8.86	11.11	12.05	10.34
NESB	15.39	13.57	13.09	16.03	18.22	15.91
<i>Origin</i>						
Left-censored	54.98	46.1	48.22	45.15	49.28	49.45
Outside IS	25.42	31.45	31.4	33.05	27.13	28.74
Sickness benefit	6.14	6.86	6.75	8.17	8.07	7.28
Unemployment benefit	9.65	11.06	10.07	9.85	11.4	10.55
Other payment	3.8	4.52	3.56	3.78	4.12	3.99
No. of persons	4445	2785	2414	2620	6579	18843

Note: *PTO* – Proportion of Time Off income support payments. *Indigenous* – Aboriginal or Torres Strait Islander; *ESB* – English-speaking background immigrant; *NESB* – Non-English-speaking background immigrant; *Left-censored* – spell in progress at the beginning of the sample period (January 1995).

## 5 Entry-Cohort Models

### 5.1 Methods

The econometric models we estimate are aimed at formally investigating the determinants of successful transition off DSP, and the factors associated with sustained exit. To this end, the entry cohort analysis involves estimation of multinomial logit models of the probability of each of several DSP spell destinations occurring within three and a half years of commencing a spell on DSP. These models provide estimates of the effects of each explanatory variable on the probability of each spell destination. For example, estimates for a dummy variable equal to one if the individual is male and zero if the individual is female give us the effects on the probability of each destination of being male as opposed to female.

The choice of the 3.5 year observation window for examining exit destinations is the outcome of a trade-off between maximising the number of individuals in our sample and maximising the observation window. The longer the observation window, the earlier the cut-off date for inclusion in the sample. For example, a five year observation window would require us to restrict to spells commencing prior to November 1997. The 3.5 year window allows inclusion of all spells commencing prior to June 1999. However, complete cancellation reason data are only available from June 1998, so that only persons commencing a DSP spell in the period June 1998 to May 1999 are included in our sample. While the inability to include spells commencing prior to June 1998 is not ideal, this restriction does have the benefit of providing us with at least three years of income support payment history for each individual.

In addition to the restrictions on date of spell commencement, we further restrict the sample to eliminate the possibility of transitions to the age pension (similar to the exit cohort descriptive analysis). Such transitions are simply a function of ageing and have no policy implications. This restriction is achieved by including only persons below the qualification age for the age pension for the entire three year window. Thus, age at spell commencement is at most 61 years for males and 57 years for females.

Our modelling of DSP spell destinations distinguishes five destinations:

1. Return to work
2. Other 'positive' exit (including exits due to income/assets test, improved health, voluntary withdrawals and compensations)

3. Other exit (including exits due to residential/locality reasons, non-compliance, other reasons and unknown reasons)
4. No exit (still receiving DSP or other income support payment at the end of the three and a half years following spell commencement)
5. Death

Conceivably, an ordering of these outcomes could be argued to exist, with (1) the best outcome and (5) the worst, which would suggest that models that assume an ordering of outcomes, such as ordered probit, could be employed. However, we instead adopt the multinomial logit model on the basis that imposing such an ordering may not be appropriate. In particular, this would require that a characteristic that increases the probability of 2 relative to 1 would also increase (or at least not decrease) the probability of 3 relative to 2. It does not seem reasonable to require this in the current context.

Our observational unit is the individual, not the spell, which means that each individual contributes only one observation, even if that person had more than one DSP spell commence between June 1998 and May 1999. This approach is largely for computational convenience, since estimation of models with multiple observations for some individuals would need to account for the resulting dependence between observations.

The multinomial logit model is identified by normalising the parameters  $\beta$  to zero for one outcome (the base category), and is described by the system of equations:

$$\Pr(y = 1) = \frac{1}{1 + \sum_{j=2}^J e^{X\beta_j}}$$

$$\Pr(y = m) = \frac{e^{X\beta_m}}{1 + \sum_{j=2}^J e^{X\beta_j}}, \quad m = 2, \dots, J \quad (1)$$

where  $y$  is the outcome of interest (with  $J$  distinct values, and equal to one for the base category),  $X$  is a vector of explanatory variables and  $\beta_j$  is the coefficient vector for outcome  $J$ .

Coefficient estimates are not readily interpretable for logit models, and the effects of individual explanatory variables on the outcome variable depend on the values of the

explanatory variables at which they are evaluated. Consequently, rather than report coefficient estimates, ‘mean marginal effects’ of the explanatory variables are reported.

The marginal effect of continuous explanatory variable  $x_k$  on the probability outcome  $m$  occurs for a person with characteristics  $\mathbf{x}^i$  is given by:

$$ME_{m,k}^i \frac{\partial \Pr(y = m | \mathbf{x}^i)}{\partial x_k^i} = \Pr(y = m | \mathbf{x}^i) \left[ \beta_{k,m|J} - \sum_{j=1}^J \beta_{k,j|J} \Pr(y = j | \mathbf{x}^i) \right] \quad (2)$$

while the *mean* marginal effect is given by:

$$MME_{m,k} = (1/n) \sum_{i=1}^n ME_{m,k}^i \quad (3)$$

where  $MME_{m,k}$  is the mean marginal effect of variable  $x_k$  on the predicted probability  $\Pr(y = m | x)$ , and the summation is over the  $n$  individuals in the sample. This is, as the name suggests, the mean marginal effect of the explanatory variable on the predicted probability a person is in category  $m$ , evaluated over all individuals in the sample, and holding all other explanatory variables constant at their actual values. Its interpretation is ‘the average effect on the probability of outcome  $m$  per unit increase in  $x_k$ ’.

For a binary explanatory variable, the marginal effect of explanatory variable  $x_k$  on the probability outcome  $m$  occurs for a person with characteristics  $\mathbf{x}^i$  is given by:

$$ME_{m,k}^i = \Pr(y = m | \mathbf{x}_{-k}^i, x_k = 1) - \Pr(y = m | \mathbf{x}_{-k}^i, x_k = 0) \quad (4)$$

where  $\mathbf{x}_{-k}^i$  represents the vector of characteristics of person  $i$  for all variables other than  $x_k$ . The *mean* marginal effect is as defined by Equation (3).<sup>23</sup> This is obtained by changing the explanatory variable  $x_k$  from zero to one for every individual, holding all other explanatory variables at their actual values, and calculating the mean change in the predicted probability.

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<sup>23</sup> *Marginal* effect is actually a misnomer for binary variables, since equation (4) gives the effect of a discrete change in the binary variable from 0 to 1. However, for expositional convenience, we will persist with using the term ‘marginal’ to describe the effect captured by Equation (4).

Note that the mean marginal effect of a variable sums to zero across the J possible outcome categories, i.e.  $\sum_{j=1}^J MME_{j,k} = 0$ . This implies that the MME can be inferred for one category if the MMEs are known for all other categories. However, all outcome categories are reported, since the standard errors for the omitted outcome cannot be inferred from the other outcomes.<sup>24</sup>

Multinomial logit models allow flexibility in terms of the nature of the effects of characteristics on outcomes when compared with alternatives such as ordered probit. However, it is necessary to invoke the ‘Independence of Irrelevant Alternatives’ (IIA) assumption. This requires the probability of one outcome relative to another to be insensitive to the existence of another possible outcome.<sup>25</sup>

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<sup>24</sup> Studies in which qualitative dependent variable models are estimated commonly report marginal effects evaluated at *mean values* of the explanatory variables. A problem with this approach is that no-one is actually at the mean when we have binary explanatory variables and, furthermore, marginal effects can vary substantially, and in a non-linear fashion, with characteristics. Mean marginal effects are therefore more likely to produce representative estimates of the effects of characteristics. Another common approach for multinomial logit models is to present ‘odds ratios’, which give the effect of the explanatory variable on the likelihood of the outcome relative to the likelihood of the base outcome. While invariant with respect to the values of other characteristics, this is not necessarily informative with respect to the likelihood (probability) of the outcome. For example, an increase in an explanatory variable could increase the probability of both the outcome of interest and the base outcome. Also, large changes in the odds ratio could translate into small changes in probability, or vice versa.

<sup>25</sup> See Long and Freese (2001) for further discussion of the IIA assumption. Two commonly employed tests of the IIA assumption are the Hausman test and the Small-Hsiao test. However, these tests actually provide little guidance to violations of the IIA assumption, and in practice the validity of the IIA assumption depends on modelling outcomes that are sufficiently distinct from each other.

Rather than attempt to derive analytic standard errors (which may not actually exist), standard errors for the estimates of mean marginal effects are derived from 400 bootstrap samples.<sup>26</sup> The standard error of any statistic  $M$  is computed from the bootstrap distribution as:

$$SE_M = \sqrt{\left(\frac{1}{B-1}\right) \sum_{i=1}^B \left[ \hat{M}^i - \left(\frac{1}{B}\right) \sum_{i=1}^B \hat{M}^i \right]^2} \quad (5)$$

where  $B$  is the number of bootstrap iterations and  $\hat{M}^i$  is the value of  $M$  in the  $i$ th bootstrap sample.

An alternative approach available to us for the entry cohort approach, which we have chosen not to adopt, is duration analysis. This is often used to examine issues of this nature. Duration analysis focuses on the determinants of the exit *rate*, and has a number of desirable properties, including the capacity to incorporate time-varying characteristics. However, the focus of the entry-cohort analysis undertaken in this study is on the determinants of *whether*, following commencement of a DSP spell, exit occurs within the intermediate term, and whether there are associations between individual characteristics and different exit destinations within this period. Multinomial logit models are well suited to investigation of these issues. A duration model, by contrast, would tend to focus on the factors associated with *faster* exit from DSP. It should also be noted that, given the evidence from the descriptive analysis that non-transfer non-death exits tend to occur within two years of spell commencement if they are going to occur at all, the duration dimension captured by duration models may not be so important. A further issue favouring the multinomial logit approach is that the very low exit rate from DSP is potentially more problematic for estimation of duration models than for the models we estimate in this study.

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<sup>26</sup> The bootstrap method for constructing standard errors involves creating  $m$  samples of the same sample size as the original sample ( $n$ ). Each sample is obtained by randomly drawing an observation from the original sample and then replacing it before making another random draw – with the result that some observations in the original sample will enter the bootstrap sample more than once and some will not enter it at all. The econometric estimation is then repeated on each of the  $m$  bootstrap samples (i.e. it is conducted  $m$  times). This generates a distribution (range of values) for each statistic produced by the estimation procedure, which can be used to construct confidence intervals and standard errors. See, for example, Johnston and DiNardo (1997), pp. 362-70, for further discussion of the bootstrap method.

As alluded to, all our explanatory variables need to be time-invariant. We do, however, create some variables for within-spell characteristics. After experimenting with alternative sets of explanatory variables, we settled on the following variables. Unless otherwise stated, all variables are evaluated at the point of spell commencement:<sup>27</sup>

- Age (five dummy variables)
- Country of birth and Indigenous status (four dummy variables)
- Partner status and partner's receipt of income support (three dummy variables: single; partner who is on income support; partner who is not on income support)
- Presence of dependent children (five dummy variables which are a function of the presence of dependent children and the age of the youngest child)
- Earned income and unearned income. Payment records contain separate entries for earned (labour market) income and unearned income. The presence of income from sources other than income support is likely to impact on the likelihood of exit and the exit destination. Most obviously, having earned income is an indicator of successful participation in the labour market – but its effect could be to increase or decrease the likelihood of exit. On the one hand, it may make the transition to complete independence from income support easier; on the other hand, the supplemental income it provides may make staying on DSP relatively more 'comfortable'. Unearned income is likely to have a negative effect on labour supply, and therefore we would expect it to have a negative effect on the likelihood of exit from DSP. Two variables are employed for each of these two types of income: (1) the proportion of time in the spell the recipient had earned/unearned income; and (2) mean earned/unearned income evaluated only over those fortnights in the spell in which earned/unearned income is positive.
- Location of residence. Dummy variable equal to one if resident of a capital city and eight dummy variables for state/territory of residence.
- Local unemployment rate at time of spell commencement. The information on location of residence allows identification of the Australian Bureau of Statistics (ABS) labour force statistical region in which the recipient resides. There are 64 of these regions in Australia,

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<sup>27</sup> Full details on the variables are reported in Appendix Table 2.

for each of which the ABS produces labour force data on a monthly basis. We use this to construct a variable which is the unemployment rate in the recipient's labour force statistical region at the time of spell commencement. This is a measure of the labour market conditions in the recipient's area, which has been shown in other studies to be an important influence on labour market outcomes of individuals.

- Main medical condition. Clearly, the nature and severity of the disability has the potential to impact on DSP receipt, because it is likely to impact on the capacity of the individual to participate in the labour market. We do not have available information on disability severity, but we do have information on the type of the disability as captured by the administrative data item 'main medical condition'. We use this information to generate four dummy variables: Musculoskeletal and connective tissue; psychological and psychiatric; intellectual and learning; and other. This is a very aggregated classification of disability type. However, we experimented with more disaggregated categories (increasing the number of dummy variables – details on the more disaggregated main medical conditions are provided in Appendix Table 2) and found that the estimates for the disaggregated categories were very similar amongst those belonging to the same broad category. We therefore prefer the more parsimonious set of dummy variables.
- Origin prior to spell. Three dummy variables: transferred from unemployment payments; transferred from another income support payment; entered DSP from outside the income support system. As the descriptive analysis suggested, the origin of the individual in terms of income support receipt is likely to be important because it captures information about the nature of the recipient. For example, an individual who transfers from unemployment payments has observably experienced difficulty successfully participating in the labour market.
- Income support payment history in the three years prior to DSP spell commencement. Recent patterns of income support are likely to be strong predictors of future patterns of DSP and other income support payment receipt. For example, a recent history of an extended period on income support implies very limited, if any, engagement with the labour market. We employ four dummy variables for the proportion of time spent on income support payments (TTO): 0, 1-50%, 50-99%, 100%.
- Housing status. Seven dummy variables for home ownership or rental circumstances. Housing status may impact on likelihood of exit from DSP for a number of reasons,

mostly connected to impacts on labour supply (e.g. see Whelan (2003), who examines the effects of housing assistance on labour supply).

The effects of many of these characteristics are likely to depend on the individual's age – that is, we would generally expect the implications of characteristics such as main medical condition, previous income support receipt and earned and unearned income to differ between younger and older persons. To allow for this possibility, we distinguish between recipients under the age of 45 years and those over 45 years of age, interacting a dummy variable equal to one if the individual was aged over 45 years at spell commencement with the variables for other characteristics. While in principle all age dummy variables could be interacted with all other variables, in practice this will produce a large number of insignificant coefficient estimates. We settled on distinguishing between those under the age of 45 and those over the age of 45 on the basis that this should capture in a parsimonious manner any age dependence in the effects of other characteristics. The reported specifications contain interactions between the age dummy variable and the variables for main medical condition, past income support receipt and the local unemployment rate. Interactions with the variables for spell origin and earned and unearned income were also tried, but the coefficient estimates for these interaction terms were all statistically insignificant and so the reported specification excludes them.

## **5.2 Results**

Multinomial logit models produce a potentially overwhelming array of estimates. However, our primary interest is in the effects of characteristics on the probability of return to work and other positive exits. We can therefore focus primary attention on the third and fourth data columns of Table 13, which contains mean marginal effects estimates from the logit models.<sup>28</sup> Models are estimated separately for males and females on the basis that the determinants of 3.5 year destinations of DSP spells are likely to differ substantially. However, it turns out that, although there are important differences, there are many similarities in the results for males and females; consequently, we discuss the results for males and females concurrently.

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<sup>28</sup> The logit coefficient estimates are reported in Appendix Table 6.

Table 13a: Multinomial logit mean marginal effects – Individuals commencing DSP spells in the period June 1998-May 1999 – Males

Variable name	No exit		Death		Return to work		Other positive exit		Other exit	
	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E
<i>Age group (16-24 omitted)</i>										
25-34	-0.067**	0.018	0.041**	0.016	0.008	0.006	0.013	0.012	0.005	0.007
35-44	-0.039**	0.017	0.047**	0.015	-0.006	0.006	0.008	0.010	-0.010	0.006
45-54	-0.025	0.024	0.052**	0.018	-0.016	0.010	0.014	0.011	-0.025**	0.010
55+	0.041*	0.023	0.054**	0.018	-0.045**	0.009	0.000	0.010	-0.050**	0.009
<i>Country of birth &amp; Indigenous status (Non-Indigenous Australian-born omitted)</i>										
ESB	-0.025**	0.011	-0.003	0.006	0.007	0.006	0.002	0.005	0.019**	0.007
NESB	0.027**	0.008	-0.016**	0.004	-0.015**	0.005	0.001	0.004	0.003	0.005
Indigenous	-0.012	0.017	0.006	0.010	-0.033**	0.007	-0.005	0.008	0.045**	0.011
<i>Partner status (Single omitted)</i>										
Partner not on IS	-0.025**	0.011	-0.003	0.006	0.007	0.006	0.002	0.005	0.019**	0.007
Partner on IS	0.027**	0.008	-0.016**	0.004	-0.015**	0.005	0.001	0.004	0.003	0.005
<i>Presence of children (No children omitted)</i>										
Youngest 0-5	-0.039**	0.016	0.024**	0.012	-0.007	0.008	0.022**	0.008	0.000	0.009
Youngest 6-11	-0.053**	0.016	0.039**	0.012	0.013	0.009	0.000	0.006	0.002	0.009
Youngest 12-14	-0.014	0.017	0.000	0.009	0.020*	0.010	0.004	0.007	-0.009	0.010
Youngest ≥15	0.031	0.029	0.001	0.018	-0.005	0.015	0.007	0.014	-0.033**	0.015
<i>Earned income</i>										
Amount	-0.002	0.002	-0.007**	0.002	0.012**	0.001	-0.002**	0.001	-0.001	0.001
Time	0.029	0.020	-0.052**	0.016	0.034**	0.006	-0.001	0.008	-0.011	0.011
<i>Unearned income</i>										
Amount	-0.006**	0.003	-0.002	0.002	-0.005**	0.002	0.005**	0.001	0.008**	0.002
Time	0.027**	0.008	-0.009*	0.005	0.000	0.005	0.007*	0.004	-0.025**	0.005
<i>Region and regional unemployment rate</i>										
Capital city	-0.012*	0.006	0.006	0.004	0.004	0.004	-0.006**	0.003	0.009**	0.004
UNM rate	0.005**	0.002	-0.004**	0.001	-0.001	0.001	0.001*	0.001	-0.002*	0.001
UNM rate*age45+	-0.001	0.002	0.002	0.001	-0.002*	0.001	-0.002**	0.001	0.003**	0.001
<i>Main medical condition (MUS omitted)</i>										
PSY	-0.009	0.018	0.056**	0.017	-0.009	0.006	-0.027**	0.004	-0.011*	0.006
INT	0.080**	0.019	-0.026	0.018	-0.006	0.007	-0.033**	0.003	-0.015**	0.007
OTH	-0.068**	0.015	0.113**	0.014	-0.006	0.006	-0.022**	0.005	-0.017**	0.006
PSY*age45+	-0.036*	0.020	-0.012	0.012	0.000	0.010	0.017	0.012	0.031**	0.013
INT*age45+	-0.156	0.113	0.030	0.077	0.033	0.043	0.096	0.128	-0.003	0.038
OTH*age45+	-0.020	0.016	0.004	0.012	-0.005	0.008	0.009	0.006	0.012	0.010
<i>Spell Origin (Outside IS omitted)</i>										
Unemployment/sickness	0.159**	0.010	-0.029**	0.006	-0.063**	0.005	-0.015**	0.004	-0.052**	0.006
Other IS payment	0.105**	0.017	-0.020*	0.011	-0.040**	0.007	-0.020**	0.006	-0.024**	0.009
<i>Past IS receipt (TTO=0 omitted)</i>										
TTO: 1%-50%	-0.193**	0.017	0.008	0.010	0.072**	0.010	0.020**	0.007	0.093**	0.014
TTO: 50%-99%	-0.133**	0.017	-0.026**	0.008	0.066**	0.010	-0.009	0.006	0.101**	0.015
TTO: 100%	-0.011	0.018	-0.018*	0.010	0.001	0.011	-0.022**	0.005	0.050**	0.015
TTO: 1%-50%*age45+	0.043**	0.015	0.000	0.011	0.003	0.009	-0.020**	0.005	-0.026**	0.008
TTO: 50%-99%*age45+	0.030*	0.018	0.004	0.013	0.013	0.011	-0.007	0.007	-0.039**	0.007
TTO: 100%*age45+	0.017	0.022	0.022	0.015	0.003	0.019	-0.019**	0.007	-0.023**	0.009

Table 13a continued: Multinomial logit mean marginal effects – Individuals commencing DSP spells in the period June 1998-May 1999 – Males

Variable name	No exit		Death		Return to work		Other positive exit		Other exit	
	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E
<i>Housing status (Home owner outright omitted)</i>										
Home-purchasing	-0.034*	0.019	0.008	0.011	0.029**	0.011	0.007	0.007	-0.010	0.011
Owner-other	-0.014	0.017	0.010	0.009	0.005	0.010	-0.003	0.005	0.002	0.012
Private renting	-0.002	0.009	-0.005	0.005	0.007	0.006	-0.010**	0.003	0.010	0.006
Public renting	0.054**	0.013	-0.017**	0.007	-0.012	0.008	-0.020**	0.004	-0.005	0.009
Other renting	0.013	0.012	-0.006	0.006	0.001	0.007	-0.020**	0.004	0.012	0.008
Renting: Unknown	0.011	0.011	-0.022**	0.005	0.013*	0.007	-0.010**	0.004	0.007	0.007
<i>State or territory of residence (NSW omitted)</i>										
VIC	0.014**	0.007	0.001	0.005	0.004	0.004	-0.003	0.003	-0.016**	0.004
QLD	0.007	0.009	0.004	0.005	0.003	0.004	-0.013**	0.003	0.000	0.005
SA	0.039**	0.011	0.008	0.008	-0.012**	0.006	-0.019**	0.003	-0.015**	0.006
WA	-0.004	0.010	0.007	0.007	0.012*	0.007	-0.012**	0.004	-0.003	0.006
TAS	0.058**	0.015	-0.024**	0.009	-0.006	0.009	-0.010*	0.005	-0.018*	0.009
NT	-0.001	0.031	0.052**	0.022	-0.032**	0.014	-0.009	0.011	-0.010	0.015
ACT	0.042*	0.023	-0.022*	0.013	0.004	0.015	-0.002	0.010	-0.022*	0.013

Notes: SE: Standard error derived from 400 bootstrap samples. \*\* and \* indicate significance at the 5% and 10% level respectively. See Appendix Table 2 for explanation of variables.

Table 13b: Multinomial logit mean marginal effects – Individuals commencing DSP spells in the period June 1998-May 1999 – Females

Variable name	No exit		Death		Return to work		Other positive exit		Other exit	
	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E
<i>Age group (16-24 omitted)</i>										
25-34	-0.078**	0.024	0.032*	0.019	-0.005	0.005	0.033*	0.019	0.018*	0.010
35-44	-0.053**	0.021	0.050**	0.017	-0.013**	0.005	0.022	0.014	-0.006	0.008
45-54	-0.032	0.027	0.078**	0.021	-0.018**	0.009	0.003	0.013	-0.031**	0.013
55+	-0.014	0.032	0.079**	0.029	-0.020**	0.008	-0.006	0.013	-0.039**	0.009
<i>Country of birth &amp; Indigenous status (Non-Indigenous Australian-born omitted)</i>										
ESB	-0.049**	0.014	0.004	0.007	0.012*	0.007	0.003	0.006	0.030**	0.010
NESB	0.031**	0.010	-0.015**	0.005	-0.015**	0.004	-0.004	0.005	0.002	0.007
Indigenous	-0.004	0.019	-0.002	0.011	-0.017**	0.006	0.004	0.012	0.019	0.013
<i>Partner status (Single omitted)</i>										
Partner not on IS	-0.013	0.010	0.006	0.006	-0.012**	0.005	0.016**	0.006	0.004	0.007
Partner on IS	0.036**	0.010	-0.021**	0.005	-0.013**	0.005	0.006	0.005	-0.007	0.006
<i>Presence of children (No children omitted)</i>										
Youngest 0-5	0.021	0.019	-0.005	0.010	-0.028**	0.005	-0.001	0.008	0.012	0.012
Youngest 6-11	-0.004	0.017	0.015	0.011	-0.025**	0.006	-0.004	0.007	0.018	0.011
Youngest 12-14	0.001	0.017	-0.011	0.008	-0.002	0.009	0.012	0.008	0.000	0.010
Youngest ≥15	0.015	0.021	-0.011	0.011	-0.019**	0.008	0.034**	0.015	-0.020*	0.011
<i>Earned income</i>										
Amount	0.003	0.003	-0.010**	0.003	0.008**	0.001	-0.004**	0.002	0.003**	0.001
Time	-0.022	0.020	-0.023	0.016	0.018**	0.016	0.012	0.009	0.015	0.009
<i>Unearned income</i>										
Amount	-0.013**	0.005	0.004	0.003	0.001	0.004	0.007**	0.001	0.001	0.003
Time	0.016*	0.009	0.001	0.006	-0.002	0.006	0.002	0.004	-0.016**	0.006
<i>Region and regional unemployment rate</i>										
Capital city	0.003	0.008	-0.005	0.005	0.004	0.004	0.000	0.004	-0.002	0.005
UNM rate	0.003	0.002	-0.003**	0.001	-0.001	0.001	0.001	0.001	0.000	0.001
UNM rate*age45+	0.003	0.002	-0.001	0.001	0.000	0.001	-0.001	0.001	0.000	0.001
<i>Main medical condition (MUS omitted)</i>										
PSY	0.010	0.019	0.038**	0.019	-0.008	0.005	-0.023**	0.005	-0.017**	0.007
INT	0.101**	0.027	0.001	0.027	-0.026**	0.004	-0.034**	0.003	-0.041**	0.005
OTH	-0.060**	0.017	0.104**	0.015	-0.002	0.006	-0.025**	0.006	-0.017**	0.007
PSY*age45+	-0.051**	0.025	-0.026**	0.012	0.018	0.012	0.030*	0.017	0.030**	0.015
INT*age45+	-0.147	0.178	0.003	0.094	-0.037**	0.002	0.146	0.184	0.036	0.076
OTH*age45+	-0.042**	0.020	0.006	0.013	0.008	0.010	0.018*	0.011	0.010	0.011
<i>Spell Origin (Outside IS omitted)</i>										
Unemployment/sickness	0.129**	0.012	-0.033**	0.008	-0.043**	0.005	-0.019**	0.005	-0.035**	0.007
Other IS payment	0.081**	0.011	-0.007	0.008	-0.033**	0.004	-0.018**	0.005	-0.024**	0.006
<i>Past IS receipt (TTO=0 omitted)</i>										
TTO: 1%-50%	-0.113**	0.020	-0.013	0.010	0.092**	0.015	0.014*	0.008	0.020**	0.010
TTO: 50%-99%	-0.070**	0.020	-0.021**	0.010	0.086**	0.016	-0.001	0.009	0.007	0.010
TTO: 100%	0.004	0.021	-0.017	0.011	0.046**	0.016	-0.021**	0.007	-0.011	0.010
TTO: 1%-50%*age45+	0.025	0.018	-0.013	0.010	-0.018**	0.007	0.003	0.009	0.002	0.012
TTO: 50%-99%*age45+	0.038*	0.019	-0.017*	0.010	-0.018**	0.007	-0.014*	0.008	0.012	0.015
TTO: 100%*age45+	0.030	0.020	-0.008	0.010	-0.017**	0.008	-0.007	0.010	0.001	0.014

Table 13b continued: Multinomial logit mean marginal effects – Individuals commencing DSP spells in the period June 1998-May 1999 – Females

Variable name	No exit		Death		Return to work		Other positive		Other exit	
	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E	Effect	S.E
<i>Housing status (Home owner outright omitted)</i>										
Home-purchasing	-0.002	0.019	0.014	0.013	0.007	0.011	-0.001	0.008	-0.018*	0.009
Owner-other	-0.014	0.019	0.001	0.010	0.020	0.013	-0.002	0.007	-0.005	0.011
Private renting	-0.006	0.011	0.006	0.007	-0.005	0.006	-0.009*	0.004	0.013**	0.007
Public renting	0.034**	0.013	-0.005	0.008	-0.003	0.007	-0.009	0.006	-0.017**	0.007
Other renting	-0.004	0.016	0.009	0.011	0.002	0.008	-0.012*	0.007	0.005	0.009
Renting: Unknown	0.009	0.013	-0.015**	0.006	0.005	0.007	-0.004	0.006	0.005	0.009
<i>State or territory of residence (NSW omitted)</i>										
VIC	0.010	0.009	0.000	0.005	-0.001	0.005	0.003	0.005	-0.012**	0.005
QLD	0.003	0.009	0.001	0.006	0.000	0.005	-0.004	0.005	0.000	0.006
SA	0.019*	0.011	0.009	0.008	0.001	0.006	-0.007	0.006	-0.022**	0.006
WA	0.006	0.014	0.006	0.009	-0.011**	0.005	0.002	0.007	-0.003	0.007
TAS	0.011	0.020	-0.013	0.011	-0.005	0.010	-0.009	0.008	0.017	0.013
NT	-0.010	0.036	0.054**	0.027	0.010	0.021	-0.025**	0.012	-0.028*	0.015
ACT	0.003	0.029	-0.024*	0.014	-0.009	0.011	0.020	0.017	0.011	0.018

Notes: SE: Standard error derived from 400 bootstrap samples. \*\* and \* indicate significance at the 5% and 10% level respectively. See Appendix Table 2 for explanation of variables.

Considering first age, the estimates imply that, for both males and females, return to work within 3.5 years of spell commencement is less likely the older the recipient, with the (negative) mean impact of being aged 55+ compared with being aged 16-24 particularly large for males. Other positive exits are not significantly different by age for males, but for females being aged 25-44 years has a sizeable positive impact on the probability of other positive exits compared with the other age ranges. Beyond age 25, the older the DSP recipient at entry, the more likely he or she is to remain on DSP the entire 3.5 year period. Persons aged 16-24 years at entry on to DSP have a higher probability of remaining on income support than all older persons except those aged over 55 years at entry, which is likely to reflect differences in the nature of the disabilities of this young age-at-entry group (not captured by ‘main medical condition’).<sup>29</sup>

<sup>29</sup> The ‘no exit’ category includes persons who transferred from DSP to another income support payment, but for convenience we treat this category as ‘continual receipt of DSP for the entire observation window’. There are, it should be noted, very few of these transitions in our sample because of the restriction to persons below age pension age.

The variables for country of birth and Indigenous status indicate a positive impact on the probability of return to work of being either non-Indigenous Australian-born or English-speaking background foreign-born, when compared with Indigenous and non-English-speaking background immigrants. No significant differences in the probability of other positive exit exist for the country of birth and Indigenous status variables.

Partner status and partner income support receipt are associated with different effects on the likelihood of return to work for males and females. For females, being single is associated with a higher probability of return to work compared with being partnered, whether or not the partner is on income support. For males, only if the partner is on income support at commencement of the DSP spell does having a partner have a negative effect compared with being single. Among the potential explanations for this results is that it could reflect higher disincentives for working for a male with a partner on income support because of its potential effects on the partner's income support payments.

Also significant to note with respect to partner status is that, for both males and females, having a partner who is on income support on average increases the probability of not exiting DSP. In particular, compared with having a partner who is not on income support, having a partner on income support on average increases the probability of remaining on DSP for the entire 3.5 year period by 0.05. As with the finding with respect to return to work for males, this is consistent with reduced incentives to exit for recipients whose partner is also on income support. However, it should be emphasised that this result could derive from other sources – namely, systematic differences in unobserved characteristics that are correlated with partner status.

The presence of dependent children is in general irrelevant to the 3.5 year spell destination for males, with the exception that the presence of children with the youngest child under 12 years of age is associated with an elevated probability of death. For females, having dependent children is associated with a decreased probability of return to work. On average, the presence of dependent children, the youngest of whom is below secondary school age, decreases a female's probability of return to work within 3.5 years of DSP spell commencement by approximately 0.03. It is not surprising that young children reduce the likelihood of return to work for females, since it is well known that the associated caring responsibilities act to decrease labour supply (e.g. Kalb (2002)). Having a youngest dependent child aged 15 or older is also associated with a decreased probability of return to work within 3.5 years of spell commencement. There is no obvious explanation for this result, but it could derive from

“selection effects”, whereby females entering DSP when the youngest dependent child is over 15 years of age systematically differ in unobserved characteristics affecting likelihood of exit from other female entrants to DSP.

As suggested by the estimated effects of the partner status variables, income from sources other than own income support payments is likely to impact on DSP spell destination. Earned income is likely to be particularly important, not so much because of the income it delivers *per se*, but rather because its frequency and level are proximate measures of work capacity and the level of engagement with the labour market of the individual while receiving DSP. The estimates obtained bear this out, with both the earned income variables having highly statistically significant effects on the return to work probability of both males and females. However, neither of these effects is particularly large. A \$100 increase in mean fortnightly earnings in those fortnights in which earnings were positive is associated with an increase in the probability of return to work of 0.012 for males and 0.008 for females. Thus, large changes in mean earnings are associated with only small changes in the probability of return to work. Similarly, an increase in the proportion of the spell that an individual has earnings from zero to 100 per cent increases the probability of return to work by 0.034 for males and 0.018 for females.

Importantly, greater earnings do not significantly impact on the probability of staying on DSP for the entire 3.5 year period. It might have been expected that the increased probability of return to work would have been associated with a reduced probability of non-exit. However, the increased probability of return to work in fact comes about largely via a lower probability of death. This suggests that some of the effect we are capturing for the earnings variables is in fact a health effect rather than a ‘labour market engagement’ effect. That is, healthier recipients, as measured by risk of death, are more likely to work while on DSP.

Unearned income is associated with quite different effects to earned income. Only for males is there a discernible impact on the likelihood of return to work, which is that an increased proportion of time with unearned income marginally *decreases* the probability of return to work. Unearned income does, however, increase the probability of ‘other positive’ exits for both males and females, which may be connected with partner earnings and income and assets eligibility criteria. Interestingly, increased time with unearned income increases the likelihood of remaining on DSP for the entire 3.5 years following spell commencement, whereas increased mean unearned income decreases this likelihood. The former effect may reflect some degree of ‘comfort’ while on DSP. The latter result possibly reflects greater risk of

failing the income test – that is, the higher is unearned income, the more likely it is to subsequently increase beyond the allowable limit. The latter result may also reflect a lower opportunity cost of exiting DSP: unearned income will cause a reduction in benefits payable once the ‘free area’ is exceeded, implying the loss of benefits from exiting DSP is lower the higher is unearned income.

Variables for the location of residence at commencement of the spell comprise a capital city dummy, state dummies and the local unemployment rate. Residing in a capital city is not associated with any significant effects for females, but for males does have a significant negative effect on the probability of ‘other positive exit’. The local unemployment rate has a significant effect on the probability of remaining on DSP for the entire 3.5 year observation window for males, each percentage point increase in the local unemployment rate on average increasing the probability of remaining on DSP for the entire window by 0.005.<sup>30</sup> Importantly, a higher local unemployment rate is associated with a reduced likelihood of death within 3.5 years of spell commencement for both males and females. This may reflect the fact that adverse labour market conditions increase inflows of ‘healthier’ persons. That is, a higher unemployment rate may reduce employment prospects for a wider spectrum of persons with disabilities and lead to increased inflow of persons to DSP of persons with less severe disability (where severity is measured by risk of death).

The specification reported in Table 13 allows the effect of the local unemployment rate to differ between recipients under 45 years of age and recipients over 45 years of age. This is achieved by interacting the local unemployment rate with a dummy variable equal to one if the recipient was over 45 years of age at commencement of the DSP spell. For females, no significant differences between these two age groups are apparent, but significant (but small) differences do exist between the two age groups for males. Most notable is that the negative effect on the likelihood of return to work associated with an increased unemployment rate is greater for males aged over 45.

Point estimates for the main medical condition variables imply that, for persons under 45 years of age, ‘return to work’, ‘other positive exit’ and ‘other exit’ are more likely if the individual has a musculoskeletal condition, although for return to work the difference from

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<sup>30</sup> A positive effect on remaining on DSP is also apparent for females, but it is not statistically significant.

other main medical conditions is mostly not statistically significant. Also notable with respect to main medical condition is that, for females in the under-45 age group, intellectual disability is associated with a significantly lower probability of return to work than the other main medical conditions. 'Other' medical conditions are associated with the highest likelihood of death within 3.5 years of spell commencement, while musculoskeletal conditions are associated with the lowest likelihood of death.

Interactions between the medical condition dummies and the age dummy variable indicate few differences between younger and older males in the effects associated with medical condition. The only statistically significant difference is that psychological/psychiatric conditions have a positive impact on probability of 'other exit' for males over the age of 45, compared with a small negative impact for males under 45 years of age. For females, by contrast, a number of differences between younger and older recipients in the effects of medical condition are evident. Musculoskeletal conditions are associated with a lower probability of exit (that is, a higher probability of being in the 'no exit' category) for females over the age of 45, largely arising through lower probabilities of 'other positive exit' or 'other exit'. Also notable is that intellectual/learning conditions have a larger negative mean impact on probability of return to work for females over the age of 45.

Recent income support history is captured by two sets of variables: three dummy variables for spell origin and four dummy variables for the proportion of the three years preceding DSP spell commencement on income support (TTO). In terms of spell origin, consistent with the descriptive findings (Tables 4 and 8), compared with entry to DSP from outside the income support system, transferral from unemployment payments on average decreases the probability of return to work significantly – by 0.06 for males and by 0.04 for females. Transferral from other income support payments is likewise associated with a (smaller) negative impact on probability of return to work when compared with entry from outside the IS system. Transferral to DSP from income support payments (whether or not unemployment payments) also decreases the probability of other positive exit. Perhaps most telling is that, relative to originating from outside the income support system, transferring from unemployment payments on average increases the probability of staying on DSP for the entire 3.5 year period following spell commencement by 0.15. The corresponding figure for transferral from other income support payments is 0.10.

A recent (three-year) history of income support receipt increases the probability of return to work, and decreases the probability of remaining on DSP for the entire 3.5 year period,

provided the period was not entirely spent on income support – and (as implied by the above discussion) provided the individual did not transfer directly from another income support payment. For example, focusing on persons under 45 years of age, compared with no recent history of income support receipt, the mean effect of *some* receipt in the three period prior to spell commencement is to increase the probability of return to work by 0.07 for males and by 0.09 for females, and to decrease the probability of remaining on DSP for the entire 3.5 year period by at least 0.13 for males and by at least 0.07 for females. On the surface, this appears to be a somewhat odd result – that a history of income support receipt increases the likelihood of returning to work compared with no history. However, as evidenced by the descriptive analysis (in particular, Tables 9, 10 and 11), this no doubt reflects the high degree of churning behaviour of DSP recipients who exit DSP due to return to work. In terms of differences in effects of recent income support receipt by age, the main finding is that positive effects on likelihood of exit associated with recent history of income support receipt are less pronounced for older recipients. For example, the estimates imply that a history of some income support receipt decreases the probability of remaining on payments for the entire 3.5 years by at least 0.1 for males aged over 45 (compared with 0.13 for under-45s) and by at least 0.03 for females aged over 45 (compared with 0.07 for under-45s).

To summarise the results of the entry-cohort analysis, we find a number of factors significantly impact on the destination of DSP recipients in the 3.5 years following commencement of a DSP spell. The numerous results obtained from this analysis can be difficult to synthesise, but some of the findings deserve particular emphasis for their significance. Two results in particular stand out. First is the finding of adverse effects associated with transferral to DSP from unemployment payments. This finding would seem to be important, because it is not clear that persons in this group are in general more severely disabled than persons entering DSP from other sources. The strong suggestion is that DSP receipt for the group entering from unemployment payments is very much connected to inability to successfully participate in the labour market that is not fully explained by the presence of a disability. The second result concerns the finding that recent history of income support receipt increases the probability of ‘successful’ exit, provided the individual was not continuously on income support in the period immediately preceding commencement of the DSP spell and did not transfer directly from another income support payment.

## 6 Exit cohort models

### 6.1 Methods

For our exit-cohort approach, we estimate (linear) Ordinary Least Squares (OLS) models of the *Proportion of Time Off* all income support payments (PTO) in the three and a half years following initial exit for an exit cohort. This measure is employed as a summary measure of the level of ‘success’ of the exit. To be precise, we ask “given exit, what are the predictors of more successful exit, were an exit is defined to be more successful the greater is the proportion of time off income support in the three and a half years following initial exit?”

Since the exit cohort analysis is of the predictors of level of exit success *given* (successful) exit, we limit our sample to persons who make non-transfer non-death exits, and also exclude persons who are not below age-pension age for the entire three and a half years following exit.<sup>31</sup> Like the entry-cohort analysis, we restrict to the 1998-9 exit cohort, in order to obtain both cancellation reason data and a 3.5 year observation window following exit for all members of the sample. One advantage of this sample selection rule is that we obtain at least three years income support payment history for each observation.

An alternative approach to the PTO approach would be to examine continuous duration off income support following exit, but we prefer our approach, since a short duration off IS followed by a short IS spell and then permanent exit is preferable to an intermediate duration off IS followed by permanent re-entry. Also possible are qualitative dependent variable models of alternative outcomes, but again, we think the PTO approach is preferable because a qualitative approach does not make use of all available information and is therefore less efficient than the PTO approach.

Many of the explanatory variables employed for the exit cohort analysis are the same as those employed for the entry-cohort analysis – namely, the variables for age, country of birth/Indigenous status, partner status, presence of children, housing status, location of residence, local unemployment rate, earned and unearned income and main medical condition. Note, however, that characteristics evaluated at the point of spell commencement for the entry cohort analysis are evaluated at the point of exit for the exit cohort analysis.

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<sup>31</sup> In fact, we restrict to males aged less than 60 and females aged less than 57 at the time of exit.

Similar to the variables for recent history of income support receipt included in the entry cohort analysis, we include variables for income support receipt in the three years preceding exit. These comprise a set of dummy variables for the proportion of time on income support in the three year period (1-50%, 50-75%, 75-99% and 100%) and an indicator variable equal to one if the number of spells on income support in the period exceeds one (where a change in payment type is treated as completion of one spell and commencement of another spell).

Three dummy variables are also included for cancellation/suspension reason (return to work, other 'positive' exit and other exit) and a further indicator variable is included which is equal to one if the individual had payments cancelled rather than suspended.

We also include an indicator variable equal to one if the individual moved residence from one state to another in the year preceding the exit. The effect of changes in location of residence is an interesting issue, and this variable represents only a preliminary attempt to investigate it. Moving can occur for a number of reasons, but among these for people with disabilities will be disability-related and work-related reasons. Disability-related reasons are likely to represent efforts to reduce the adverse impacts of the disability, for example by moving to a location with better health and other support services, where there are family members to provide support, or where the climate is warmer. Moving can also occur to improve employment prospects (or indeed to take up a job offer). Both of these broad categories or reasons are likely to impact on the likelihood of exiting DSP and sustaining exit. For example, moves may be associated with a reduction in the adverse effects of the disability on work capacity or an improvement in employment opportunities which increase chances of sustained return to work.

There are, however, a number of econometric issues in attempting to investigate the effects of moving residence – for example, moving is likely to be correlated with other unobserved characteristics, such as disability severity, which impact on the outcome being modelled. At this stage, we restrict to a focus on the effects of moving state of residence within a year prior to exiting DSP.<sup>32</sup>

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<sup>32</sup> Clearly, it would be valuable to employ techniques that would facilitate examination of this issue in more depth, for example considering the effects of moving to warmer climate, to major city, to lower unemployment region, and any number of other types of moves. Duration analysis would perhaps make such a line of inquiry feasible.

As with the entry-cohort econometric analysis, we also investigate the dependence of the effects of characteristics on the age of the individual by employing interactions between variables for these characteristics and a dummy variable equal to one if the individual was over the age of 45 at the time of exit. Age interactions were tried for the variables for main medical condition, cancellation reason, recent income support history, local unemployment rate and earned and unearned income. However, our reported specification contains interactions only for the cancellation reason and local unemployment rate variables, since the coefficient estimates for all other interaction terms were not statistically significant – implying no age dependence for these characteristics.

## 6.2 Results

Table 14 presents coefficient estimates for the explanatory variables included in OLS regressions on PTO, with separate models were estimated for males and females. The dependent variable PTO is the proportion of time off all income support payments in the 3.5 years following exit. It ranges between zero and one, with higher values implying a greater proportion of time off payments, which we interpret as a more successful exit. Thus, an increase in the value of the explanatory variable is interpreted as having a positive impact on exit success if the coefficient estimates is positive and a negative impact if the coefficient is negative.

The sample consists only of persons making a non-transfer non-death exit from DSP between June 1998 and May 1999. It bears emphasising that the restriction to those who make a transition off all payments means that the PTO models estimated are of the determinants of exit success, *given exit has occurred*. That is, we are not examining the determinants of exit success, but rather the determinants of the extent to which a ‘successful’ exit is in fact a success. We therefore refer to the PTO as a measure of ‘*conditional* exit success’ or ‘exit sustainability’ (rather than, for example, ‘exit success’) in order to retain clarity as to the outcome being examined.

Considering first the effects of age on PTO, for both males and females the point estimates imply little role for age, the only exception being that, for males, exit aged over 55 years is associated with a 9 percentage point reduction in the predicted proportion of time off payments. Country of birth and Indigenous status are associated with sizeable effects on PTO. For both males and females, Indigenous persons have the lowest PTOs (all else being equal). Immigrants tend to have the highest PTOs, although for females this is restricted to those

from English-speaking countries, with non-English speaking background immigrant females having the same predicted PTO as non-Indigenous native-born females.

Partner status at the time of exit does not significantly impact on male PTOs, although estimates do suggest a mildly positive effect of having a partner. For females, having a partner on income support at the time of exit has a very large negative on the proportion of time off payments, acting to reduce the PTO by 11 percentage points compared with being single and by 14 percentage points compared with having a partner who was not on income support at the time of exit.

With respect to earned and unearned income, the striking finding is that the proportion of time off payments is increasing in the proportion of the DSP spell in which the individual had income, with point estimates almost identical for males and females. The estimates imply that, all else equal, a person with earned income in every fortnight of the DSP spell has a PTO 5.7 percentage points higher than an individual who did not have earned income in any fortnight of the DSP spell. Similarly, a person with unearned income in every fortnight of the DSP spell has a PTO approximately 3.6 percentage points higher than an individual who did not have unearned income in any fortnight. The larger size of the coefficient estimates for earned income is likely to derive from a labour market engagement effect that does not operate for unearned income. Significantly, the level of income, whether earned or unearned, does not appear to matter, with none of the variables for their mean values having a discernible impact.

The main medical condition coefficient estimates show that, all other characteristics equal, persons with intellectual or learning disabilities have the lowest conditional exit success, although for males they are closely followed by persons with psychological or psychiatric disabilities. Persons with intellectual or learning disabilities were also shown in the entry cohort analysis to have the lowest probability of exit off all payments. Taking these two results together, this main medical condition is clearly associated with particularly limited exit success.

Table 14: OLS estimation results for 3.5-year PTO of individuals making a non-death non-transfer exit in the period June 1998-May 1999

Variable name	Males		Females	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age group (16-24 omitted)</i>				
25-34	-0.004	0.022	0.045	0.033
35-44	-0.027	0.022	0.023	0.034
45-54	-0.017	0.029	0.053	0.042
55+	-0.093**	0.033	0.015	0.051
<i>Country of birth &amp; Indigenous status (Non-Indigenous Australian-born omitted)</i>				
ESB	0.035*	0.018	0.043	0.028
NESB	0.040**	0.016	-0.007	0.025
Indigenous	-0.050*	0.029	-0.081*	0.042
<i>Partner status (Single omitted)</i>				
Partner not on IS	0.028	0.019	0.029	0.020
Partner on IS	0.023	0.019	-0.110**	0.032
<i>Earned income</i>				
Amount	0.000	0.002	0.002	0.003
Time	0.057**	0.022	0.057**	0.028
<i>Unearned income</i>				
Amount	0.002	0.004	-0.006	0.008
Time	0.036**	0.015	0.037*	0.021
<i>Main medical condition (MUS omitted)</i>				
PSY	-0.059**	0.015	-0.030	0.022
INT	-0.068**	0.025	-0.101**	0.041
OTH	0.007	0.013	0.010	0.019
<i>Cancellation/suspension reason (Return to work omitted)</i>				
Positive exit	0.102**	0.026	0.001	0.039
Other exit	-0.046**	0.016	-0.026	0.026
Positive exit*age45+	-0.114**	0.028	-0.062	0.039
Other exit*age45+	0.028	0.026	-0.022	0.041
Cancellation indicator	0.077**	0.020	0.132**	0.031
<i>3-year IS history prior to exit</i>				
Multiple-spell indicator	-0.034**	0.016	-0.050**	0.023
<i>Percentage of time on IS (TTO&lt;50% omitted)</i>				
TTO: 50-74	-0.025	0.018	0.001	0.027
TTO: 75-99	-0.028*	0.017	-0.010	0.024
TTO: 100	-0.047**	0.018	-0.021	0.026
<i>Location</i>				
Regional UNM rate	-0.004	0.003	0.005	0.004
Regional UNM rate*age45+	0.000	0.003	-0.005	0.004
Capital city	0.039**	0.012	0.047**	0.018
Moving indicator	-0.026*	0.015	0.004	0.035

Table 14 continued: OLS estimation results for 3.5-year PTO of individuals making a non-death non-transfer exit in the period June 1998-May 1999

	Males		Females	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Presence of children (No children omitted)</i>				
Youngest 0-5	0.021	0.027	-0.108**	0.036
Youngest 6-11	0.014	0.025	-0.086**	0.035
Youngest 12-14	0.003	0.028	0.002	0.039
Youngest $\geq 15$	0.044	0.051	-0.066	0.062
<i>Housing status (Home owner outright omitted)</i>				
Home-purchasing	0.049	0.033	-0.047	0.041
Owner-other	-0.016	0.025	-0.018	0.037
Private renting	-0.010	0.017	0.019	0.023
Public renting	-0.048**	0.024	-0.059*	0.033
Other renting	-0.003	0.023	-0.011	0.036
Renting: Unknown	0.023	0.021	-0.001	0.029
<i>State or territory of residence (NSW omitted)</i>				
VIC	0.023	0.015	-0.039*	0.022
QLD	-0.006	0.015	-0.031	0.023
SA	-0.037	0.023	-0.071**	0.032
WA	-0.085**	0.020	-0.033	0.029
TAS	-0.012	0.033	-0.077	0.050
NT	-0.053	0.055	-0.081	0.079
ACT	-0.031	0.043	-0.042	0.053
Constant	0.700**	0.040	0.627**	0.058
Adjusted R <sup>2</sup>	0.088		0.064	
Number of observations	3,814		1,756	

Notes: *PTO* – Proportion of Time Off income support payments. PTO is between 0 and 1. For example, a coefficient of 0.05 implies a one unit increase in the explanatory variable increases PTO by 0.05 or 5 percentage points. SE denotes standard error. \*\* and \* indicate significance at the 5% and 10% level respectively. See Appendix Table 2 for explanation of variables.

Cancellation reason variables included show that for males under 45 years of age, those making ‘other positive’ exits have the greatest conditional exit success and those making ‘other’ (negative) exits have the lowest conditional exit success. That ‘other positive’ exits are associated with a higher PTO than return to work is not surprising given the evidence on churning of those who exit to return to work. Similarly, it is to be expected that those who exit for reasons such as compliance failures would have the lowest PTOs. However, these results hold only for males under 45 years of age. For males over 45 years of age and for all females, there are in fact no significant differences in coefficient estimates across the three cancellation reasons.

Payment cancellation is, as might be expected, associated with a significant positive impact on PTO compared with payment suspension. The effect is particularly large for females. Interpretation of this result is somewhat difficult without more information on the administrative decision-making process with respect to suspensions and cancellations over the sample period. However, given the strong correlation between return-to-work exits and payment suspension – 95 per cent of return-to-work exits are suspensions – and between ‘other exits’ and payment suspension – 80 per cent of ‘other exits’ are suspensions – it would seem that the negative impacts on predicted PTO compared with ‘other positive exits’ that are associated with ‘return-to-work’ and ‘other’ exits are greater than implied by the coefficient estimates for cancellation/suspension reason alone.

Three-year income support history is a predictor of conditional exit success, with the predicted PTO decreasing in the proportion of time on income support in the three years preceding exit – although differences between the dummy variables are not significant for females. For both males and females, the predicted PTO is also lower, all else equal, if the individual had more than one spell in the three-year period preceding exit – that is, if the individual is a recent churner. It follows that conditional exit success is greatest for persons who have a single short DSP spell with no prior time on income support. Interestingly, however, a person with two or more short spells prior to exit will, all other characteristics held constant, have a lower predicted PTO than a person with a single long spell prior to exit. For males, that single long spell can be up to (but not greater than or equal to) three years, while for females it can be longer than three years, and the predicted PTO following exit will be lower than for a churner with two or more short spells. It therefore seems that past churning is particularly detrimental to sustaining exit, or reflective of characteristics particularly detrimental to sustained exit.

The local unemployment rate is not associated with any discernible impact on conditional exit success, while residing in a capital city is associated with a sizeable positive effect. Moving interstate within the year preceding exit has a statistically significant *negative* effect on PTO for males, which is somewhat hard to explain. Also notable for females is that the presence of dependent children, the youngest of whom is under the age of 12, has a substantial negative effect on conditional exit success.

## 7 Conclusion

In studying exits from DSP – and in particular transitions off all income support payments – the rightful starting point is to acknowledge that such transitions are not a common occurrence. Less than two per cent of DSP recipients make the transition off all payments each year, of which fewer than forty per cent are classified as returning to work.

Nonetheless, systematic examination of the nature of exits and the characteristics of those who exit successfully is informative. Several of the findings stand out as warranting particular mention. First is that, while return to work is the most common type of transition off all payments, it is also one of the most tenuous exits, in the sense that it is associated with a high propensity to cycle on and off payments. While the reasons for this predisposition towards churning cannot be ascertained from our analysis, we can note that this pattern is *consistent* with this group of recipients having fluctuating earnings capacity, perhaps deriving from fluctuations in health or ability to manage a disability. A second significant finding is that individuals who transfer to DSP from unemployment payments have very low exit rates from DSP. Holding all other characteristics constant, transferral from unemployment payments decreases the probability of exit from DSP by 0.15 compared with entry to DSP from outside the income support system. The clear implication is that failure to exit DSP is for many members of this group intimately connected to difficulties in the labour market that are not just a function of disability. For example, evidence from other studies (E.g. Nickell and Bell (1995), Borland (2000), Wooden (2000)) suggests demand for low-skill workers has declined in recent years, and growth in DSP receipt via transfers from unemployment payments may be one manifestation of this. Further investigation of the persons entering DSP from unemployment benefits, and in particular the specific barriers they face to participating in the labour market, would be very valuable.

The entry-cohort analysis provides information about the determinants of non-transfer non-death exits (which we term ‘successful’ exits), while the exit-cohort analysis then investigates the determinants of the extent to which these exits are sustained, as measured by the proportion of time off all income support payments in the period following exit. It is useful to collect the results for these two approaches together to identify the total impact on exit success of characteristics common to both approaches. That is, for variables included in both sets of models, we can consider their impact on both the likelihood of successful exit and the extent to which it is sustained.

In Table 15 we attempt to provide such a synthesis, presenting estimates from the entry-cohort analysis alongside estimates from the exit-cohort analysis. The table does need to be interpreted with caution, since the samples for the two sets of analysis differ and the entry-cohort estimates are mean marginal effects, while the exit-cohort estimates are OLS regression coefficients. The table contains two panels. The left-hand panel compares the mean marginal effects for the return to work outcome from the entry-cohort analysis (as appear in Table 13) with coefficient estimates from a model of PTO estimated only over persons who made a return to work exit in the period June 1998 to May 1999. Thus, the first column presents the effects of characteristics on the probability of making a return-to-work exit (within 3.5 years of DSP spell commencement), while the second column presents, conditional on making a return-to-work exit, estimates of the effects of these characteristics on how ‘successful’ return-to-work exits are, as measured by the proportion of the 3.5 years following exit off all income support payments.

The right-hand panel of Table 15 examines all non-transfer non-death exits, presenting estimates of mean marginal effects of characteristics on the probability of a non-transfer non-death exit alongside the PTO regression results reported in Table 14. The mean marginal effects for this panel were obtained from a new estimating equation which pools together all non-transfer non-death exits. Thus, the third column presents the effects of characteristics on the probability of making a non-transfer non-death exit (within 3.5 years of DSP spell commencement), while the fourth column presents, conditional on making a non-transfer non-death exit, estimates of the effects of these characteristics on how ‘successful’ the exits are.<sup>33</sup>

Combining the results of the entry-cohort and exit-cohort analyses in this manner indicates that males aged over 55 years, females with a partner on income support, Indigenous persons, those with no earnings while on DSP, those whose main medical condition is an intellectual or learning disability and females with a dependent child under 12 have both the lowest probabilities of making a successful exit, and the least success in sustaining such exits even when they do make them. Individuals with one or more of these characteristics are therefore comparatively unlikely to make the transition to sustained non-reliance on income support.

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<sup>33</sup> To be clear, the first column comes from Table 13 and the fourth column comes from Table 14. The second and third columns of Table 15 present results not reported elsewhere in this report.

Also noteworthy are characteristics that have mixed effects. Of note in this regard is that while non-English speaking background immigrants, all else equal, have a lower probability of a return to work exit, they have a higher predicted proportion of time off payments in the period following such an exit. Similarly, having a partner who is on income support is associated with a reduced probability of making a return to work exit, but it is also, particularly for males, associated with a positive effect on exit success in the event that such an exit is made.

While the variables for income support receipt patterns in the period leading up to entry or exit are necessarily different for the entry- and exit-cohort approaches, the collective findings for these variables are also interesting. Those with a recent history of some income support receipt prior to commencement of the DSP spell are more likely to exit than those with no history, provided they did not transfer directly to DSP from another income support payment; but those with more time on payments in the period leading up to exit from DSP do not sustain exit as well. Furthermore, a recent history of churning prior to exit has a negative effect on the extent to which extent is sustained. The question then arises of how we reconcile these findings. The answer would seem to be found in the churning behaviour of those who exit to return to work – they are more likely to exit, but are also more likely to return to payments.

Table 15a: Synthesis of entry-cohort and exit-cohort regression results for non-death non-transfer exits – Males

Variable name	Return to work		All exits	
	Entry-cohort analysis: Marginal effect on exit	Exit-cohort analysis: Marginal effect on PTO	Entry-cohort analysis: Marginal effect on exit	Exit-cohort analysis: Marginal effect on PTO
<i>Age group (16-24 omitted)</i>				
25-34	0.008	0.018	0.024**	-0.004
35-44	-0.006	-0.022	-0.012	-0.027
45-54	-0.016	0.005	-0.028*	-0.017
55+	-0.045**	-0.112**	-0.096**	-0.093**
<i>Country of birth &amp; Indigenous status (Non-Indigenous Australian-born omitted)</i>				
ESB	0.007	-0.021	0.027**	0.035*
NESB	-0.015**	0.083**	-0.009	0.040**
Indigenous	-0.033**	-0.081	0.013	-0.050*
<i>Partner status (Single omitted)</i>				
Partner not on IS	0.007	0.076**	0.007	0.028
Partner on IS	-0.015**	0.072**	-0.015**	0.023
<i>Presence of children (No children omitted)</i>				
Youngest 0-5	-0.007	0.002	0.014	0.021
Youngest 6-11	0.013	-0.016	0.013	0.014
Youngest 12-14	0.020*	-0.044	0.014	0.003
Youngest ≥15	-0.005	0.070	-0.027	0.044
<i>Earned income</i>				
Amount	0.012**	-0.002	0.015**	0.000
Time	0.034**	0.041	0.027**	0.057**
<i>Unearned income</i>				
Amount	-0.005**	0.007	0.015**	0.002
Time	0.000	0.031	-0.019**	0.036**
<i>Location</i>				
Capital city	0.004	0.062**	0.007	0.039**
Regional UNM rate	-0.001	-0.003	-0.002	0.000
Regional UNM rate*age45+	-0.002*	-0.003	0.000	-0.004
<i>Main medical condition (MUS omitted)</i>				
PSY	-0.009	-0.080**	-0.045**	-0.059**
INT	-0.006	-0.051	-0.051**	-0.068**
OTH	-0.006	-0.008	-0.045**	0.007
<i>Housing status (Home owner outright omitted)</i>				
Home-purchasing	0.029**	0.069	0.027*	0.049
Owner-other	0.005	-0.053	0.000	-0.016
Private renting	0.007	-0.027	0.001	-0.010
Public renting	-0.012	-0.069*	-0.041**	-0.048**
Other renting	0.001	-0.044	-0.009	-0.003
Renting: Unknown	0.013*	-0.013	0.003	0.023
<i>State or territory of residence (NSW omitted)</i>				
VIC	0.004	-0.011	-0.016**	0.023
QLD	0.003	-0.044*	-0.012*	-0.006
SA	-0.012**	-0.075**	-0.050**	-0.037
WA	0.012*	-0.091**	-0.005	-0.085**
TAS	-0.006	-0.066	-0.034**	-0.012
NT	-0.032**	0.052	-0.051**	-0.053
ACT	0.004	-0.104*	-0.024	-0.031

Notes: \*\* and \* indicate significance at the 5% and 10% level respectively. Estimates are reported only for variables common to both sets of analysis. See Appendix Table 2 for explanation of the variables.

Table 15b: Synthesis of entry-cohort and exit-cohort regression results for non-death non-transfer exits – Females

Variable name	Return to work		All exits	
	Entry-cohort analysis: Marginal effect on exit	Exit-cohort analysis: Marginal effect on PTO	Entry-cohort analysis: Marginal effect on exit	Exit-cohort analysis: Marginal effect on PTO
<i>Age group (16-24 omitted)</i>				
25-34	-0.005	0.077	0.027*	0.045
35-44	-0.013**	0.029	-0.015	0.023
45-54	-0.018**	0.090	-0.059**	0.053
55+	-0.020**	0.012	-0.077**	0.015
<i>Country of birth &amp; Indigenous status (Non-Indigenous Australian-born omitted)</i>				
ESB	0.012*	0.069	0.045**	0.043
NESB	-0.015**	0.017	-0.014	-0.007
Indigenous	-0.017**	-0.154	0.003	-0.081*
<i>Partner status (Single omitted)</i>				
Partner not on IS	-0.012**	-0.004	0.002	0.029
Partner on IS	-0.013**	0.008	0.001	-0.110**
<i>Presence of children (No children omitted)</i>				
Youngest 0-5	-0.028**	-0.062	-0.019	-0.108**
Youngest 6-11	-0.025**	-0.158	-0.014	-0.086**
Youngest 12-14	-0.002	0.175	0.008	0.002
Youngest ≥15	-0.019**	-0.064	-0.005	-0.066
<i>Earned income</i>				
Amount	0.008**	0.003	0.013**	0.002
Time	0.018**	0.056	0.042**	0.057**
<i>Unearned income</i>				
Amount	0.008**	0.023	0.015**	-0.006
Time	0.018**	0.025	-0.016*	0.037*
<i>Location</i>				
Capital city	0.004	0.061*	0.002	-0.002
Regional UNM rate	-0.001	0.007	-0.001	0.004
Regional UNM rate*age45+	0.000	-0.008	-0.001	0.000
<i>Main medical condition (MUS omitted)</i>				
PSY	-0.008	-0.057	-0.049**	-0.030
INT	-0.026**	-0.134*	-0.101**	-0.101**
OTH	-0.002	0.018	-0.044**	0.010
<i>Housing status (Home owner outright omitted)</i>				
Home-purchasing	0.007	0.029	-0.012	-0.047
Owner-other	0.020	0.073	0.008	-0.018
Private renting	-0.005	-0.016	-0.001	0.019
Public renting	-0.003	-0.077	-0.032**	-0.059*
Other renting	0.002	-0.018	-0.003	-0.011
Renting: Unknown	0.005	0.008	0.005	-0.001
<i>State or territory of residence (NSW omitted)</i>				
VIC	-0.001	-0.057	-0.011	-0.039*
QLD	0.000	-0.052	-0.004	-0.031
SA	0.001	-0.058	-0.030**	-0.071**
WA	-0.011**	-0.102*	-0.015	-0.033
TAS	-0.005	-0.147	0.001	-0.077
NT	0.010	0.170	-0.045*	-0.081
ACT	-0.009	-0.181**	0.016	-0.042

Notes: \*\* and \* indicate significance at the 5% and 10% level respectively. Estimates are reported only for variables common to both sets of analysis. See Appendix Table 2 for explanation of the variables.

What policy implications emerge from the above findings? Implicitly motivating this study is the policy objective of reducing reliance on income support of DSP recipients through increasing their participation in employment. This in turn implies that identification of the barriers to employment faced by DSP recipients is important. However, the nature of the data used means that few *direct* policy implications in this regard can be gleaned from this study. Administrative data primarily provide information about patterns of receipt and characteristics associated with different patterns of receipt, and provide little direct information on barriers to employment.

The analysis does, however, provide a great deal of information *indirectly* valuable to policy formulation. The detailed understanding of the extent and nature of exits from DSP and the characteristics associated with sustained exit that is furnished by this study provides a solid factual basis for sound policy development. To give but one example, knowledge that the probability of return to work within 3.5 years of spell commencement is decreasing in age is an important pre-condition to appropriate formulation and – perhaps more importantly – appropriate *evaluation* of policies aimed at increasing the rate of return to work.

While the primary value of this study for policy is indirect, several policy implications of a more concrete nature are also forthcoming. First, the findings obtained with respect to persons entering DSP from unemployment payments suggest that particular policy attention ought to be focused on this group of DSP recipients. Transferral from unemployment payments is a strong predictor of failure to make a non-transfer non-death exit, despite there being no apparent reason to believe disabilities experienced by this group of recipients are in general more prejudicial to employment than those experienced by other DSP recipients (and indeed there is possibly reason to believe quite the reverse). The administrative data set employed in this study does not permit identification of the reasons for the adverse effects associated with transferral from unemployment payments – and therefore the appropriate policy responses – but one suspects these reasons are connected to mismatches between skills of DSP recipients and skills demanded in the labour market.

A second important policy implication concerns the churning behaviour of those who exit DSP to return to work. The high rate of return to income support that is evident for this group represents a *prima facie* case for additional assistance when in employment in order to promote *sustainability* of employment. This study does not, however, provide specific information on the reasons why the rate of return to payments is so high for those who exit to return to work – and it therefore provides little guidance on the particular steps that could

assist them in sustaining exit. Identifying the appropriate policies in this regard requires the collection of information on experiences while off income support payments, since this could be used to determine the roles played by various factors, such as unstable health, unstable employment and the two-year limit on payment suspensions, in driving returns to DSP.

A third major policy implication concerns our finding that earnings while on DSP are associated with a higher probability of exit, and more sustained exit when it occurs. While earnings are likely to be correlated with the work capacity of an individual that is permitted by his or her health, this result nonetheless suggests that policies which promote employment of DSP recipients while on DSP are likely to have beneficial effects on rates of sustained exit from income support.

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## 9 Appendix

Appendix Table 1: Classification of cancellation types for non-transfer non-death DSP exits

Category level 1	Category level 2	Cancellation reason (LDS name)	
Return to work	Return to work	Earnings preclude payment - late notification Earnings preclude payment (DSP)	Return to work - notify by 14 days Returned to work
Positive Exit	Exceeded income/assets	Assets greater than allowable limit, given family circumstances	Income greater than allowable limit, given family circumstances
	Improved health	Less than 20 points of impairment More than 20 points of impairment, but can be re-skilled	More than 20 points of impairment, but can work full time
	Voluntary withdrawal	Withdrawn/voluntary surrender	Voluntary surrender trust and company
	Compensation	Compo settlement under investigation Precluded due to compo Dir/DD	Compo preclusion period Customer on precluding payment
Other Exit	Residential/ locality cancellations	Departure/absence overseas	Not residentially qualified
		Former resident left within 2yr	NZ agreement pensioner permanently over
		Customer in prison	NZ agreement pensioner temporarily over
		One of a couple interstate transfer	Autonomous pensioner permanently in NZ
		Interstate transfer out	Overseas 12 months
		Not resident in Australia (agreement)	Overseas 26 weeks
		Overseas - paid 6 monthly (IOB)	Overseas in NZ for 4 weeks
	Non-compliance	Does not meet age requirements	Customer failed to advise TFN
		Fail to attend interview	Partner failed to advise TFN
		Fail to undergo medical exam	Cancelled, review not return
		Failed to return overseas review	Failed to return entitlement review
		Fail to reply to correspondence	Proof of identity not provided
	Other reason	Fail to return DSP medical review form	Returned direct credit payment
Investigation		Whereabouts unknown	
Fail to claim foreign payment			
Claim lodged early		Foreign pension direct deductions	
Delete record		Failed to return trust and company correspondence	
Did not lodge form	Income details not provided		
Disability is short term	No departure certificate		
NEIS/AEIS direct deductions applied	Not permanently blind		
Pending enquiries	No payment destination details		
End of payment	Suspended-review not returned		
Extension period ended	Other		
Failed to return life certificate (IOB)			
Reason unknown	(up until 1 June 2001)	(blank from 15 June 2001)	

Appendix Table 2: Description of explanatory variables

Variable name	Description
<b>1. General DSP recipient characteristics</b>	
<i>Age group</i>	
(16-24)	16 - 24 years of age
25-34	25 - 34 years of age
35-44	35 - 44 years of age
45-54	45 - 54 years of age
55+	55 + years of age
<i>Country of birth &amp; Indigenous status</i>	
Indigenous	Aboriginal, Torres Strait Islander or South Sea Islander
ESB	Immigrant born in one of the main English speaking countries
NESB	Immigrant born in a non English speaking country
(Non-Indigenous Australian-born)	Non-Indigenous Australian-born
<i>Partner status</i>	
(Single)	No partner
Partner not on IS	Have a partner and that partner is not in receipt of income support
Partner on IS	Have a partner and that partner is in receipt of income support
<i>Presence of children status</i>	
(No children)	No dependent children
Youngest 0-5	Youngest dependent child aged 0-5
Youngest 6-11	Youngest dependent child aged 6-11
Youngest 12-14	Youngest dependent child aged 12-14
Youngest ≥15	Youngest dependent child aged ≥15
<i>Housing status</i>	
(Home owner outright)	Own home outright
Home-purchasing	Purchasing home, i.e. paying off mortgage
Owner-other	Other home owner
Private renting	Renter with private landlords
Public renting	Renter in public housing
Other renting	Other renter
Renting: Unknown	Renter: status unknown
<i>State or territory of residence</i>	
(NSW)	New South Wales
VIC	Victoria
QLD	Queensland
SA	South Australia
WA	Western Australia
TAS	Tasmania
NT	Northern Territory
ACT	Australian Capital Territory
<i>Earned income</i>	
Amount	Average earned income in each fortnight on income support that the individual had positive earnings (1 unit = \$100)
Time	Proportion of fortnights on income support in which the individual had positive earned income (1 unit = 100%)
<i>Unearned income</i>	
Amount	Average unearned income in each fortnight on income support that the individual had positive unearned income (1 unit = \$100)
Time	Proportion of fortnights on income support in which the individual had positive unearned income (1 unit = 100%)

Appendix Table 2 continued: Description of explanatory variables

Variable Name	Description
<b>1. General DSP recipient characteristics (continued)</b>	
Capital city	Indicator that the individual lives in one of the capital cities
UNM rate	Labour force statistical region unemployment rate
UNM rate*age 45+	Labour force statistical region unemployment rate interacted with age 45 or over
<i>Main medical condition</i>	
(MUS)	Musculoskeletal and Connective Tissue
PSY	Psychological/Psychiatric
INT	Intellectual/Learning
OTH	Other
PSY*age 45+	Psychological/Psychiatric and aged 45 or over
INT*age 45+	Intellectual/Learning and aged 45 or over
OTH*age 45	Other and aged 45 or over
<b>2. Specific to Entry Analysis</b>	
<i>Past IS receipt</i>	
(TTO: 0)	Proportion of the three-year period prior to DSP spell commencement that the individual was in receipt of income support
TTO: 1%-50%	Did not receive income support at any stage in the period
TTO: 50%-99%	Received income support for 1%-49% of the fortnights in the period
TTO: 100%	Received income support for 50%-99% of the fortnights in the period
TTO: 1%-50% *age 45+	Received income support for 100% of the fortnights in the period
TTO: 50%-99%*age 45+	Have <i>TTO:1%-50%</i> and aged 45 or over
TTO: 100%*age 45+	Have <i>TTO:50%-99</i> and aged 45 or over
	Have <i>TTO: 100%</i> and aged 45 or over
<i>Spell Origin</i>	
(Outside IS)	Not on income support for at least 7 fortnights prior to DSP entry
Unemployment/sickness	Received Unemployment or Sickness Allowance within 7 fortnights of DSP entry (transferred from Unemployment or Sickness Allowance)
Other IS payment	Received another income support payment within 7 fortnights of DSP entry (transferred from other income support payment)
<b>3. Specific to Exit Analysis</b>	
<i>Cancellation reason</i>	
(Return to work)	Return to work
Positive exit	Positive exit
Other exit	Other exit
Positive exit*age 45+	Positive exit and aged 45 or over
Other exit *age 45+	Other exit and aged 45 or over
Cancellation indicator	Dummy variable equal to one if DSP cancelled; zero otherwise
<i>3-year income support history prior to exit</i>	
Multiple-spell indicator	Dummy variable equal to one if more than one IS spell, or more than one payment type received, in the period; zero otherwise
<i>Percentage of time on IS</i>	
TTO = 100	100% of time was in receipt of income support
TTO: 75-99	75%-99% of time was in receipt of income support
TTO: 50-74	50%-74% of time was in receipt of income support
(TTO: 1-50)	1%-50% of time was in receipt of income support
Moving indicator	Dummy variable equal to one if changed state of residence within the year prior to exit from DSP; zero otherwise

Notes: Categories in bracket are the omitted dummies in the regressions.

Appendix Table 2 continued: Classification of main medical condition

<b>Main medical condition – aggregated</b>	<b>Main medical condition level 1 (codes as in LDS)</b>
Musculoskeletal and connective tissue (MUS)	Musculoskeletal and connective tissue (MUS)
Psychological/ psychiatric (PSY)	Psychological/ psychiatric (PSY)
Intellectual/ learning (INT)	Intellectual/ learning (INT)
Other (OTH)	Congenital anomalies (CGA) Cancer/tumour (CAN) Respiratory system (RES) Nervous system (NER) Acquired brain injury (ABI) Endocrine, auto immune and immune system (EIS) Sense organs (SEN) Visceral disorders (VIS) Circulatory system (CIR) Chronic fatigue syndrome/post viral syndrome (CFS) Chronic pain (CRP) Amputation (AMP) Skin disorders and burns (SDB) Unknown (UNK) Not recorded ( )

Appendix Table 3: Completed spell duration by exit routes: Persons making a non-transfer non-death exit in the period June 1998 to November 2002

	Proportion in each duration interval (%)						Exit destination's share of all exits (%)
	<=2 yrs	2-4 yrs	4-6 yrs	6-8 yrs	8-10 yrs	>10 yrs	
Males							
Return to work	65.1	17.9	8.5	4.1	1.8	2.5	41.2
Exceeded income/assets	62.3	17.2	9.0	4.5	2.4	4.6	6.0
Improved health	43.9	25.5	17.2	7.1	2.7	3.6	1.5
Voluntary withdrawal	59.8	17.6	9.7	5.9	2.4	4.7	2.6
Compensation	68.8	17.8	7.8	3.2	1.6	0.7	11.1
Residential/locality	67.8	16.0	7.1	3.7	1.5	3.9	15.2
Non-compliance	46.7	22.3	14.6	5.2	3.6	7.6	9.6
Other reason	55.2	20.0	9.6	5.7	3.0	6.4	7.0
Reason unknown	51.0	24.0	11.9	6.5	2.8	3.8	5.6
Total	62.0	18.6	9.3	4.4	2.1	3.5	100
Females							
Return to work	63.8	18.6	9.6	4.3	2.0	1.8	32.2
Exceeded income/assets	60.4	18.7	9.8	4.5	2.1	4.6	14.9
Improved health	43.5	26.9	16.1	4.2	1.6	7.8	2.0
Voluntary withdrawal	45.3	25.7	14.8	6.0	3.4	4.8	5.9
Compensation	70.3	19.2	6.4	2.4	1.2	0.5	8.6
Residential/locality	62.8	19.2	9.0	4.7	1.3	3.0	6.5
Non-compliance	40.4	25.3	15.8	7.3	3.8	7.5	11.3
Other reason	50.2	20.3	12.7	6.5	3.3	7.0	9.6
Reason unknown	51.9	24.6	10.1	5.0	2.6	5.8	9.1
Total	57.3	20.7	10.8	4.9	2.3	4.0	100

Notes: With the exception of the last column, estimates in each cell are expressed as a percentage of the exits to the destination given by the row heading. For example, the upper left cell indicates that 65.1 per cent of exits to return to work had a spell duration less than 2 years. The last column gives the percentage of all exits to the destination given by the row heading. For example, the upper right cell indicates that 41.2 per cent of all exits were to return to work.

Appendix Table 4a: Summary statistics for the entry-cohort analysis sample – Males

	Death	Return to work	Other positive exit	Other exit	No Exit	All
<i>Age group (%)</i>						
16-24	4.6	19.9	4.9	17.0	11.8	12.0
25-34	7.9	21.4	10.5	20.6	10.6	11.8
35-44	14.1	24.7	22.8	24.3	17.8	18.6
45-54	32.0	21.9	29.4	23.7	27.0	26.9
55+	41.4	12.0	32.4	14.4	32.8	30.8
<i>Partner status (%)</i>						
Single	52.8	61.2	33.6	68.0	53.8	54.4
Partner not on IS	23.6	15.7	28.1	9.4	11.1	12.8
Partner on IS	23.6	23.1	38.3	22.5	35.1	32.8
<i>Country of birth &amp; Indigenous status (%)</i>						
Indigenous	3.4	1.9	1.7	7.0	3.0	3.2
Non-Indig. Aus-born	69.2	77.6	69.2	68.3	68.4	69.1
ESB	10.7	9.4	9.1	9.9	8.5	8.8
NESB	16.7	11.1	20.0	14.8	20.1	18.9
<i>Presence of children status (%)</i>						
No children	85.5	79.9	73.6	85.2	84.1	83.6
Youngest 0-5	4.2	7.2	12.5	6.4	5.6	5.9
Youngest 6-11	5.8	7.3	7.1	5.1	4.9	5.2
Youngest 12-14	3.6	4.9	5.5	2.9	4.1	4.1
Youngest ≥15	0.9	0.8	1.3	0.4	1.2	1.1
<i>State or territory of residence (%)</i>						
NSW	32.0	30.7	39.3	35.2	31.4	31.9
VIC	24.3	24.3	26.5	19.9	25.0	24.6
QLD	20.2	22.5	15.6	22.6	19.6	19.9
SA	9.2	6.7	6.1	8.2	10.6	9.9
WA	9.4	10.9	6.8	9.4	7.7	8.1
TAS	1.9	2.7	3.6	2.5	3.5	3.3
NT	1.9	0.5	0.7	1.1	0.9	0.9
ACT	1.0	1.7	1.4	1.1	1.3	1.3
<i>Housing status (%)</i>						
Home owner outright	39.5	23.5	52.3	21.0	33.4	33.0
Home-purchasing	3.6	4.9	5.8	2.1	2.9	3.1
Owner-other	5.6	3.4	6.1	2.5	3.7	3.8
Private renting	24.3	28.4	18.4	31.7	25.3	25.6
Public renting	4.8	3.9	2.2	5.7	7.4	6.7
Other renting	9.2	11.5	3.7	15.3	10.5	10.5
Renting: Unknown	12.9	24.4	11.5	21.8	16.9	17.3

Appendix Table 4a continued: Summary statistics for the entry-cohort analysis sample – Males

	Death	Return to work	Other positive exit	Other exit	No Exit	All
<i>Earned income</i>						
Time	2.9	18.8	5.3	6.4	6.2	6.8
Amount	27.5	299.3	50.4	69.8	56.1	71.0
<i>Unearned income</i>						
Time	48.3	34.3	60.5	26.7	40.2	40.2
Amount	41.0	18.8	107.2	32.7	29.2	32.3
<i>Region</i>						
Capital city	56.4	55.4	47.1	57.1	53.5	53.8
UNM rate	8.0	8.1	8.5	8.2	8.5	8.4
<i>Main medical condition (%)</i>						
MUS	11.1	30.4	51.3	29.3	35.4	33.5
PSY	11.3	23.3	10.2	30.4	22.4	21.8
INT	0.7	10.8	0.9	7.6	6.0	5.9
OTH	76.9	35.5	37.6	32.7	36.1	38.7
<i>Past IS receipt (%)</i>						
TTO: 0	32.7	17.1	39.9	15.1	21.6	22.3
TTO: 1%-50%	33.6	36.7	38.2	32.7	26.8	28.7
TTO: 50%-99%	17.4	40.7	17.4	38.5	26.3	27.1
TTO: 100%	16.4	5.5	4.5	13.6	25.3	21.8
<i>Spell Origin (%)</i>						
Outside IS	47.5	55.8	57.3	41.2	30.7	35.2
Unemployment/sickness	50.4	43.0	41.5	56.8	67.1	62.8
Other IS payment	2.1	1.2	1.2	2.0	2.2	2.1
Number of observations	1,406	1,331	694	1,323	15,229	19,983

Appendix Table 4b: Summary statistics for the entry-cohort analysis sample – Females

	Death	Return to work	Other positive exit	Other exit	No Exit	All
<i>Age group (%)</i>						
16-24	4.9	23.5	5.3	14.6	12.2	12.1
25-34	8.3	21.7	12.5	21.2	10.3	11.3
35-44	20.6	23.3	27.5	24.0	21.1	21.5
45-54	46.7	24.2	39.3	31.7	40.2	39.5
55+	19.5	7.3	15.4	8.5	16.2	15.6
<i>Partner status (%)</i>						
Single	55.4	80.8	47.5	65.7	66.1	65.3
Partner not on IS	29.4	11.2	30.6	18.2	12.2	14.1
Partner on IS	15.3	8.0	21.9	16.2	21.7	20.6
<i>Country of birth &amp; Indigenous status (%)</i>						
Indigenous	4.4	2.3	3.1	5.7	4.0	4.0
Non-Indig. Aus-born	72.1	80.1	69.2	67.7	68.6	69.2
ESB	9.3	10.0	8.9	11.7	7.5	8.0
NESB	14.2	7.5	18.8	14.9	19.9	18.8
<i>Presence of children status (%)</i>						
No children	79.8	90.9	74.9	77.7	82.5	82.1
Youngest 0-5	4.7	1.6	6.3	7.8	4.0	4.2
Youngest 6-11	7.6	2.1	5.5	7.5	4.4	4.7
Youngest 12-14	5.8	4.3	8.2	5.4	5.6	5.6
Youngest ≥15	2.2	1.1	5.1	1.5	3.5	3.3
<i>State or territory of residence (%)</i>						
NSW	30.1	31.3	31.1	32.9	30.4	30.6
VIC	26.2	24.7	29.2	22.2	26.8	26.5
QLD	18.6	20.3	15.7	21.8	18.3	18.5
SA	10.3	10.7	9.6	6.9	11.2	10.9
WA	9.0	7.3	8.7	9.1	7.7	7.9
TAS	2.3	2.5	2.9	4.5	3.4	3.3
NT	2.5	1.4	0.2	0.6	0.7	0.8
ACT	1.0	1.8	2.7	2.0	1.5	1.5
<i>Housing status (%)</i>						
Home owner outright	39.1	20.3	45.8	25.8	30.5	30.9
Home-purchasing	4.4	3.7	5.1	2.5	3.0	3.2
Owner-other	5.8	4.1	6.0	3.1	4.2	4.3
Private renting	23.1	27.4	20.5	35.2	25.9	26.1
Public renting	9.3	7.1	7.0	7.1	13.6	12.5
Other renting	6.3	11.6	4.1	8.5	7.3	7.3
Renting: Unknown	12.1	25.8	11.6	17.8	15.6	15.7

Appendix Table 4b continued: Summary statistics for the entry-cohort analysis sample –  
Females

	Death	Return to work	Other positive exit	Other exit	No Exit	All
<i>Earned income</i>						
Time	3.9	25.5	7.5	11.7	7.4	8.1
Amount	26.1	300.9	46.2	109.6	58.4	67.8
<i>Unearned income</i>						
Time	48.9	34.7	52.0	30.3	36.1	37.1
Amount	40.5	17.1	63.0	19.1	19.8	22.4
<i>Region</i>						
Capital city	53.8	63.0	57.1	54.9	57.0	57.0
UNM rate	7.9	7.9	8.3	8.3	8.4	8.3
<i>Main medical condition (%)</i>						
MUS	7.6	21.5	43.6	30.5	31.9	30.4
PSY	7.4	28.8	18.1	27.5	26.9	25.6
INT	0.9	5.3	1.0	3.5	6.0	5.3
OTH	84.2	44.5	37.3	38.5	35.1	38.5
<i>Past IS receipt (%)</i>						
TTO: 0	40.6	14.6	32.0	21.7	18.3	20.1
TTO: 1%-50%	20.6	39.0	39.8	31.2	23.7	25.1
TTO: 50%-99%	14.2	36.5	17.8	28.5	22.9	23.0
TTO: 100%	24.6	9.8	10.4	18.6	35.0	31.7
<i>Spell Origin (%)</i>						
Outside IS	50.9	51.1	51.3	40.9	25.7	29.8
Unemployment/sickness	27.0	43.8	34.5	42.0	52.1	49.2
Other IS payment	22.1	5.0	14.2	17.1	22.2	21.0
Number of observations	688	438	415	650	9,724	11,915

Appendix Table 5: Summary statistics for the exit-cohort analysis sample

	Non-death non-transfer exit		Transfer exit	
	Male	Female	Male	Female
<i>Age group (%)</i>				
16-24	12.3	10.3	4.8	31.7
25-34	19.8	21.1	18.1	40.2
35-44	26.6	25.5	31.7	45.9
45-54	24.6	33.4	33.6	47.0
55+	16.7	9.7	11.8	23.7
<i>Country of birth &amp; Indigenous status (%)</i>				
Indigenous	3.8	3.9	5.7	10.7
Non-Indig. Aus-born	71.4	74.2	68.3	68.2
ESB	9.9	9.2	7.4	7.7
NESB	14.9	12.6	18.5	13.4
<i>Partner status (%)</i>				
Single	62.7	58.4	55.7	78.0
Partner not on IS	16.0	33.5	4.0	5.6
Partner on IS	21.3	8.1	40.3	16.3
<i>Presence of children status (%)</i>				
No children	81.6	81.0	67.9	66.2
Youngest 0-5	6.1	6.3	12.6	19.0
Youngest 6-11	6.6	6.3	10.3	10.4
Youngest 12-14	4.5	4.7	8.2	3.0
Youngest ≥15	1.1	1.7	1.0	1.5
<i>State or territory of residence (%)</i>				
NSW	34.9	32.5	36.6	35.6
VIC	22.6	22.4	9.4	10.4
QLD	21.1	20.1	32.6	32.3
SA	6.6	8.6	5.2	8.3
WA	9.2	10.0	10.5	8.6
TAS	2.9	2.8	3.8	2.4
NT	1.0	1.1	1.5	1.2
ACT	1.6	2.4	0.4	1.2
<i>Housing status (%)</i>				
Home owner outright	24.1	27.4	14.7	8.9
Home-purchasing	3.0	4.3	2.5	1.5
Owner-other	5.7	5.6	8.2	1.2
Private renting	30.5	30.6	34.0	35.9
Public renting	7.9	9.1	15.5	24.6
Other renting	12.2	7.5	13.9	12.2
Renting: Unknown	16.6	15.4	11.3	15.7

Appendix Table 5 continued: Summary statistics for the exit-cohort analysis sample

	Non-death Non-transfer Exit		Transfer Exit	
	Male	Female	Male	Female
<i>Main medical condition (%)</i>				
MUS	3+6.2	33.7	43.9	27.3
PSY	23.3	24.7	19.3	27.0
INT	8.1	5.3	3.1	2.7
OTH	32.4	36.3	33.8	43.0
<i>Cancellation reason (%)</i>				
Return to work	40.3	31.2	0.0	0.0
Positive exit	26.4	38.7	0.0	0.0
Other exit	33.3	30.2	0.0	0.0
Cancellation	34.5	45.4	95.6	89.0
Multi-spell indicator	46.7	45.0	27.7	32.3
<i>Percentage of time on IS (%)</i>				
TTO <=50	21.9	22.6	1.9	4.2
TTO:50-74	16.8	14.7	3.8	2.7
TTO: 75-99	19.3	27.2	15.5	28.5
TTO: 100	42.0	35.5	78.8	64.7
<i>Location</i>				
Capital city	55.9	57.8	42.7	47.8
Moving indicator	7.2	3.7	7.8	4.2
Unemployment rate	8.1	8.1	8.7	8.3
<i>Earned income</i>				
Time (%)	12.1	16.3	17.1	9.4
Amount (\$)	599.6	488.1	187.9	68.7
<i>Unearned income</i>				
Time (%)	32.6	37.6	34.5	14.9
Amount (\$)	122.8	104.5	36.5	6.6
Number of observations	3,814	1,756	524	377

Appendix Table 6a: Multinomial logit coefficient estimates – Individuals commencing DSP spells June 1998-May 1999 – Males

Variable name	Death		Return to work		Positive exit		Other exit	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
<i>Age group (16-24 omitted)</i>								
25-34	0.632**	0.181	0.234*	0.120	0.468*	0.241	0.182	0.115
35-44	0.666**	0.170	-0.069	0.122	0.301	0.231	-0.111	0.116
45-54	0.744**	0.234	-0.283	0.202	0.430	0.287	-0.406**	0.198
55+	0.695**	0.242	-1.080**	0.223	-0.053	0.303	-1.048**	0.215
<i>Partner status (Single omitted)</i>								
Partner not on IS	-0.009	0.093	0.488**	0.118	0.408**	0.129	-0.076	0.123
Partner on IS	-0.742**	0.089	-0.088	0.112	0.037	0.125	-0.213**	0.102
<i>Country of birth &amp; Indigenous status (non-Indigenous Australian-born omitted)</i>								
ESB	-0.008	0.099	0.168	0.112	0.101	0.145	0.307**	0.103
NESB	-0.299**	0.084	-0.324**	0.103	-0.004	0.111	-0.003	0.090
Indigenous	0.108	0.171	-0.739**	0.223	-0.166	0.307	0.550**	0.128
<i>Main medical condition (MUS omitted)</i>								
PSY	0.708**	0.196	-0.174	0.114	-1.119**	0.190	-0.186*	0.105
INT	-0.594	0.403	-0.248*	0.149	-2.411**	0.485	-0.372**	0.153
OTH	1.803**	0.169	-0.046	0.107	-0.564**	0.143	-0.185*	0.106
PSY*age 45+	-0.146	0.241	0.077	0.197	0.485*	0.279	0.473**	0.167
INT*age 45+	0.659	0.828	0.764	0.562	1.732	1.135	0.237	0.621
OTH*age 45+	0.088	0.185	-0.060	0.153	0.285	0.176	0.207	0.146
<i>Past IS receipt (TTO=0-omitted)</i>								
TTO:1%-50%	0.406**	0.164	1.452**	0.125	0.891**	0.181	1.473**	0.141
TTO: 50%-99%	-0.250	0.174	1.253**	0.126	-0.047	0.203	1.432**	0.140
TTO: 100%	-0.288	0.199	0.073	0.194	-0.944**	0.292	0.652**	0.174
TTO:1%-50%*age 45+	-0.072	0.168	-0.028	0.172	-0.766**	0.192	-0.543**	0.172
TTO: 50%-99%*age 45+	0.024	0.191	0.143	0.182	-0.274	0.240	-0.843**	0.183
TTO: 100%*age 45+	0.283	0.202	0.013	0.299	-0.820**	0.408	-0.462**	0.218
<i>Spell Origin (Outside omitted)</i>								
Unemployment/sickness	-0.651**	0.094	-1.267**	0.077	-0.713**	0.121	-0.984**	0.078
Other IS payments	-0.495**	0.220	-1.223**	0.280	-1.048**	0.406	-0.639**	0.223
<i>Region and regional unemployment rate</i>								
Capital city	0.101	0.066	0.085	0.070	-0.159*	0.092	0.163**	0.067
UNM rate	-0.063**	0.020	-0.019	0.016	0.026	0.022	-0.031**	0.015
UNM rate*age 45+	0.029	0.021	-0.036*	0.021	-0.044*	0.023	0.046**	0.019
<i>Earned income</i>								
Amount	-0.107**	0.028	0.210**	0.011	-0.053*	0.028	0.001	0.018
Time	-0.848**	0.247	0.566**	0.125	-0.075	0.255	-0.184	0.179
<i>Unearned income</i>								
Amount	-0.023	0.027	-0.071	0.044	0.168**	0.021	0.136**	0.026
Time	-0.173**	0.081	-0.052	0.086	0.168	0.112	-0.439**	0.089

Appendix Table 6a continued: Multinomial logit coefficient estimates – Individuals commencing DSP spells June 1998-May 1999 – Males

	Death		Return to work		Positive exit		Other exit	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
<i>Presence of children (No children-omitted)</i>								
Youngest 0-5	0.396**	0.161	-0.081	0.154	0.612**	0.162	0.046	0.147
Youngest 6-11	0.571**	0.141	0.286*	0.148	0.084	0.182	0.118	0.154
Youngest 12-14	0.013	0.165	0.333**	0.164	0.135	0.191	-0.121	0.183
Youngest ≥15	-0.028	0.305	-0.166	0.362	0.138	0.361	-0.755	0.461
<i>Housing status (Home owner outright omitted)</i>								
Home-purchasing	0.162	0.166	0.485**	0.166	0.246	0.189	-0.097	0.211
Owner-other	0.171	0.136	0.110	0.183	-0.066	0.174	0.048	0.193
Private renting	-0.072	0.089	0.126	0.101	-0.310**	0.125	0.153	0.098
Public renting	-0.379**	0.146	-0.318*	0.173	-0.946**	0.277	-0.163	0.147
Other renting	-0.121	0.121	-0.003	0.132	-0.835**	0.225	0.152	0.120
Renting: Unknown	-0.397**	0.108	0.209*	0.118	-0.337**	0.155	0.104	0.114
<i>State or territory of residence (NSW omitted)</i>								
VIC	-0.007	0.079	0.040	0.085	-0.110	0.103	-0.294**	0.083
QLD	0.043	0.084	0.031	0.088	-0.447**	0.120	-0.013	0.081
SA	0.061	0.113	-0.313**	0.134	-0.829**	0.179	-0.332**	0.118
WA	0.106	0.111	0.197*	0.115	-0.437**	0.170	-0.033	0.112
TAS	-0.520**	0.212	-0.212	0.198	-0.440*	0.225	-0.405**	0.193
NT	0.623**	0.247	-0.784*	0.427	-0.327	0.496	-0.193	0.297
ACT	-0.468	0.293	0.001	0.253	-0.118	0.348	-0.475*	0.280
Constant	-3.055**	0.265	-2.433**	0.226	-2.288**	0.327	-2.052**	0.219
Pseudo-R2	0.142							
No. of obs.	19,968							

Notes: *Coef.* – Coefficient; *S.E.* – Standard error. \*\* and \* indicate significance at the 5% and 10% levels, respectively. “No exit” is the base category.

Appendix Table 6b: Multinomial logit coefficient estimates – Individuals commencing DSP spells June 1998-May 1999 – Females

Variable name	Death		Return to work		Positive exit		Other exit	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
<i>Age group (16-24 omitted)</i>								
25-34	0.652**	0.258	-0.034	0.185	0.865**	0.296	0.425**	0.171
35-44	0.883**	0.239	-0.373*	0.193	0.658**	0.283	-0.051	0.173
45-54	1.335**	0.291	-0.599*	0.316	0.148	0.372	-0.599**	0.277
55+	1.139**	0.314	-0.821**	0.373	-0.156	0.398	-1.015**	0.312
<i>Partner status (Single omitted)</i>								
Partner not on IS	0.129	0.119	-0.420**	0.193	0.452**	0.145	0.081	0.134
Partner on IS	-0.509**	0.129	-0.516**	0.202	0.098	0.148	-0.193	0.127
<i>Country of birth &amp; Indigenous status (non-Indigenous Australian-born omitted)</i>								
ESB	0.140	0.149	0.425**	0.181	0.176	0.187	0.551**	0.136
NESB	-0.356**	0.128	-0.590**	0.200	-0.164	0.145	-0.017	0.126
Indigenous	-0.029	0.228	-0.687**	0.347	0.124	0.307	0.307	0.190
<i>Main medical condition (MUS omitted)</i>								
PSY	0.600**	0.293	-0.295	0.198	-0.860**	0.205	-0.377**	0.151
INT	-0.119	0.524	-1.402**	0.301	-2.551**	0.617	-1.422**	0.266
OTH	2.189**	0.243	-0.041	0.186	-0.637**	0.175	-0.262*	0.141
PSY*age 45+	-0.548	0.397	0.579*	0.317	0.747**	0.292	0.564**	0.226
INT*age 45+	0.331	1.154	.	.	2.033*	1.226	0.747	1.064
OTH*age 45+	0.174	0.264	0.314	0.273	0.540**	0.230	0.245	0.201
<i>Past IS receipt (TTO=0-omitted)</i>								
TTO:1%-50%	-0.110	0.222	2.045**	0.222	0.579**	0.222	0.574**	0.179
TTO: 50%-99%	-0.376	0.231	1.837**	0.227	0.082	0.242	0.280	0.186
TTO: 100%	-0.372	0.253	1.027**	0.303	-0.821**	0.305	-0.208	0.221
TTO:1%-50%*age 45+	-0.295	0.240	-0.709**	0.306	0.052	0.247	-0.013	0.228
TTO: 50%-99%*age 45+	-0.441*	0.267	-0.740**	0.326	-0.582*	0.319	0.143	0.242
TTO: 100%*age 45+	-0.194	0.232	-0.717*	0.426	-0.278	0.370	-0.032	0.265
<i>Spell Origin (Outside omitted)</i>								
Unemployment/sickness	-0.839**	0.165	-1.378**	0.138	-0.776**	0.162	-0.859**	0.129
Other IS payments	-0.251	0.181	-1.697**	0.271	-0.744**	0.198	-0.658**	0.162
<i>Region and regional unemployment rate)</i>								
Capital city	-0.098	0.095	0.123	0.122	-0.001	0.117	-0.046	0.093
UNM rate	-0.053**	0.026	-0.041	0.027	0.015	0.028	0.002	0.021
UNM rate*age 45+	-0.032	0.028	-0.017	0.036	-0.034	0.031	-0.004	0.027
<i>Earned income</i>								
Amount	-0.200**	0.048	0.249**	0.019	-0.116**	0.044	0.063**	0.022
Time	-0.429	0.306	0.637**	0.185	0.417	0.279	0.331*	0.189
<i>Unearned income</i>								
Amount	0.088*	0.046	0.054	0.084	0.221**	0.041	0.045	0.062
Time	-0.007	0.114	-0.105	0.141	0.029	0.137	-0.334**	0.117

Appendix Table 6b continued: Multinomial logit coefficient estimates – Individuals commencing DSP spells June 1998-May 1999 – Females

Variable name	Death		Return to work		Positive exit		Other exit	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
<i>Presence of children (No children-omitted)</i>								
Youngest 0-5	-0.124	0.228	-1.454**	0.424	-0.072	0.258	0.158	0.194
Youngest 6-11	0.272	0.187	-1.192**	0.387	-0.127	0.253	0.282	0.187
Youngest 12-14	-0.237	0.193	-0.061	0.282	0.320	0.212	0.005	0.202
Youngest ≥15	-0.234	0.283	-0.837*	0.477	0.703**	0.255	-0.483	0.332
<i>Housing status (Home owner outright omitted)</i>								
Home-purchasing	0.253	0.222	0.184	0.306	-0.022	0.251	-0.394	0.278
Owner-other	0.027	0.192	0.542*	0.290	-0.050	0.227	-0.057	0.247
Private renting	0.126	0.126	-0.147	0.174	-0.262*	0.154	0.240*	0.123
Public renting	-0.140	0.170	-0.146	0.240	-0.356	0.225	-0.428**	0.186
Other renting	0.158	0.194	0.080	0.221	-0.433	0.276	0.103	0.181
Renting: Unknown	-0.344**	0.156	0.161	0.194	-0.142	0.197	0.092	0.156
<i>State or territory of residence (NSW omitted)</i>								
VIC	-0.012	0.113	-0.058	0.144	0.080	0.134	-0.252**	0.114
QLD	0.014	0.126	0.008	0.154	-0.144	0.161	-0.002	0.116
SA	0.140	0.158	-0.028	0.196	-0.249	0.197	-0.541**	0.176
WA	0.113	0.165	-0.389*	0.220	0.041	0.203	-0.074	0.160
TAS	-0.310	0.285	-0.168	0.349	-0.330	0.321	0.260	0.217
NT	0.784**	0.340	0.255	0.510	-1.241	1.036	-0.726	0.546
ACT	-0.594	0.413	-0.311	0.416	0.467	0.349	0.179	0.311
Constant	-3.609**	0.356	-2.708**	0.371	-2.615**	0.402	-1.834**	0.293
Pseudo-R2	0.151							
No. of obs.	11,906							

Notes: *Coef.* – Coefficient; *S.E.* – Standard error. \*\* and \* indicate significance at the 5% and 10% levels, respectively. “No exit” is the base category.

Appendix Table 7: OLS estimation results for 3.5-year PTO of transfer exits occurring in the period June 1998-May 1999

Variable name	Males		Females	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age group (16-24 omitted)</i>				
25-34	-0.109	0.070	0.011	0.052
35-44	-0.120*	0.069	-0.047	0.051
45-54	-0.101	0.081	-0.124*	0.065
55+	-0.110	0.091	-0.154*	0.088
<i>Country of birth &amp; Indigenous status (Non-Indigenous Australian-born omitted)</i>				
ESB	0.137**	0.051	0.023	0.052
NESB	0.028	0.038	0.065	0.044
Indigenous	0.063	0.059	0.041	0.046
<i>Partner status (Single omitted)</i>				
Partner not on IS	0.121	0.074	0.041	0.062
Partner on IS	0.030	0.040	-0.041	0.041
<i>Main medical condition (MUS omitted)</i>				
PSY	0.021	0.038	-0.088**	0.039
INT	-0.097	0.079	-0.031	0.090
OTH	0.024	0.031	0.024	0.034
Cancellation indicator	0.046	0.069	-0.041	0.046
<i>3-year IS history prior to exit</i>				
Multi-spell indicator	0.015	0.070	0.076	0.066
<i>Percentage of time on IS (TTO&lt;50% omitted)</i>				
TTO: 50-74	-0.208*	0.122	-0.174	0.108
TTO: 75-99	-0.230**	0.107	-0.189**	0.078
TTO: 100	-0.230**	0.114	-0.171**	0.086
Regional UNM rate	0.002	0.006	-0.015**	0.006
Regional UNM rate*age45+	-0.009*	0.005	-0.002	0.006
Capital city	-0.031	0.029	-0.017	0.030
Moving indicator	0.021	0.031	0.202**	0.065
<i>Earned income</i>				
Amount	0.029**	0.008	-0.003	0.009
Time	0.049	0.072	0.189**	0.064
<i>Unearned income</i>				
Amount	0.045	0.029	0.196**	0.069
Time	-0.053	0.046	-0.044	0.056

Appendix Table 7 continued: OLS estimation results for 3.5-year PTO of transfer exits occurring in the period June 1998-May 1999

	<b>Males</b>		<b>Females</b>	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Presence of children (No children omitted)</i>				
Youngest 0-5	0.071	0.052	-0.115**	0.039
Youngest 6-11	0.051	0.051	-0.140**	0.050
Youngest 12-14	0.045	0.053	0.103	0.083
Youngest $\geq 15$	-0.104	0.134	0.224**	0.112
<i>Housing status (Home owner outright omitted)</i>				
Home-purchasing	0.078	0.091	-0.086	0.127
Owner-other	-0.042	0.059	-0.132	0.134
Private renting	0.017	0.045	0.019	0.058
Public renting	-0.124**	0.051	-0.027	0.060
Other renting	0.033	0.056	-0.087	0.066
Renting: Unknown	0.002	0.056	0.018	0.063
<i>State or territory of residence (NSW omitted)</i>				
VIC	-0.006	0.048	-0.037	0.049
QLD	-0.023	0.031	-0.029	0.035
SA	0.054	0.064	0.030	0.056
WA	0.098**	0.047	0.035	0.052
TAS	0.082	0.072	0.118	0.092
NT	0.092	0.112	-0.083	0.138
ACT	0.384*	0.215	0.002	0.127
Constant	0.420**	0.143	0.540**	0.121
Adjusted R <sup>2</sup>	0.119		0.207	
Number of observations	524		337	

Notes: *Coef* – Coefficient; *S.E.* – Standard error. \*\* and \* indicate significance at the 5% and 10% levels, respectively. PTO is between 0 and 1. For example, a coefficient of 0.05 implies a one unit increase in the explanatory variable increases PTO by 0.05 or 5 percentage points.