Hits and misses: True positives, false positives and false negatives in New Zealand working age welfare benefit receipt in 2016

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Abstract:

Some people are on welfare *and* are entitled to it (true positives). Some people are on welfare, but are *not* entitled to it (false positives). And some people entitled to welfare but don't receive it (false negatives). How big are these three groups in the New Zealand working age welfare system? We compare and analyse the incidence of welfare benefit eligibility versus receipt among the working age population using matched survey and administrative data from Statistics New Zealand's Integrated Data Infrastructure (IDI). The June quarter 2016 *Household Labour Force Survey* (HLFS) is used to identify potential eligibility to the alternative main welfare benefits; while welfare benefit receipt is variously measured in the HLFS-Incomes supplement, Inland Revenue's administrative Employer Monthly Schedules (EMS), and administrative data from the Ministry of Social Development's Tier-1 benefits. First, from the HLFS data, we estimate that 7.3% of those aged 18-64 are eligible for Jobseeker Support (JSS), 2.7% are eligible for Supported Living Payments (SLP), and 9.9% of non-partnered people are eligible for Sole Parent Support (SPS). Second, we estimate under take-up rates among those eligible for each of these benefits is about 40%, and over take-up rates among the ineligible of 1.3% for JSS, 1.5% for SLP, and 0.2% for SPS (0.3% of ineligible non-partnered individuals, and 0.2% of partnered). Relative to the respective benefit populations, these translate to under and over take-up of 40% and 37% for JSS (47,100 and 43,200), 13% and 56% for SLP (11,700 and 52,100), and 21% and 5% for SPS (14,000 and 8,300: the latter includes 5,000 partnered recipients). Third, we estimate the annual fiscal costs associated with over take-up of these benefits on the order to total $1.4b ($481m from JSS, $790m from SLP and $148m from SPS). The fiscal *savings* associated with under take-up are potentially on the order of $1.0b ($529m from JSS, $175m from SLP, and $247m from SPS). These results question the effectiveness of New Zealand's current welfare system in delivering benefits to those who are eligible.

1. Introduction

A major component of New Zealand's public policy reforms from the 1980s has been a philosophical shift from more universally provided to more strongly income-targeted working age welfare benefits and tax credits (Stephens 1996). The main aims of income targeting were to provide support for those in need at an acceptable fiscal cost (Boston and St John 1999; Stephens 1996). However targeting is imperfect (Boston and Chapple 2014; Chapple 2018). There may be under take-up of benefits by those eligible for benefit (described here as false negatives of the welfare system). False negatives arise because of lack of information about eligibility, stigma arising from taking up a benefit, complex programme rules making people unclear about their eligibility or because other non-monetary application costs are high relative to dollar benefit entitlements (Craig 1991; Currie 2004; Hernanz, Malherbet, and Pellizzari 2004). Conversely, over take-up of benefits by those who are ineligible (false positives) may occur, either because of administrative error, misinformation or misunderstanding about eligibility criteria, or because of conscious fraud (Burgess 1992; Van Stolk et al. 2006; Skrable 1997; Wolf and Greenberg 1986; Woodbury 2002; Yaniv 1997). Only a proportion of people on a benefit, therefore, will be both eligible and receiving a benefit (true positives). True positives are the "hits" in the targeting process, while false positives and false negatives together constitute the "misses".

In this paper we identify and measure the mismatch between welfare benefit eligibility and welfare benefit take-up in New Zealand in 2016. One can consider the result as providing an indicator of systemic effectiveness on several important dimensions. As indicated, we identify and compare three groups: (1) people eligible but not receiving a benefit ("false negatives"), (2) people ineligible and receiving a benefit ("false positives") and (3) people both eligible and receiving a benefit ("true positives"). We identify the three

groups using a unique combination of survey data, which is used to both identify eligibility for alternative welfare benefits and provide one measure of welfare receipt, linked to administrative data, which provides alternative measures of welfare receipt. We also use multivariate regression analysis to assess the socio-demographic characteristics associated with under and over take-up.

To our knowledge, this is the first study world-wide to empirically to integrate research on over and under take-up of working age welfare benefits, allowing a comparison of the relative importance of each and providing an empirical account of what have been described theoretically as two sides of the same coin (Yaniv 1997). Our work thus contributes new knowledge to global understandings of the effectiveness of means-tested welfare systems and to issues of design of governance and performance management functions of welfare states.

A short summary of the nature of the New Zealand working age welfare system is of value to those unfamiliar with it. Working age welfare in New Zealand is non-contributory. This system pays flat-rate, non-earnings related welfare benefits of open ended duration which are unconnected to previous labour market outcomes. Benefits are means tested against spousal income (the exception here is accident compensation which pays benefits as a percentage of individual earnings. Accident compensation is not considered here).

There are three main benefits, often referred to as "first tier" benefits, for which eligibility is considered in this paper. The first is Jobseeker Support (JSS), paid to people who are unemployed and are actively seeking work. The second is the Supported Living Payment (SLP), which is a benefit for people who have, or are caring for someone with a health condition, injury or disability. The third is Sole Parent Support (SPS), paid to a single parent who is responsible for raising young children. There is a fourth benefit we consider, a much smaller one, the Youth Payment, made to young people aged 16 or 17 years old who lack

other family support. We do not consider eligibility for and take-up of other means tested parts of the New Zealand working age welfare system, including Working for Families tax credits, which are child-related payments, and the Accommodation Supplement and Income-related Rents, which are housing related payments.

To determine false negatives, false positives and true positives for these three first tier benefits, our analysis uses matched survey and administrative data from Statistics New Zealand's Integrated Data Infrastructure (IDI). The analytical sample is derived from the June quarter 2016 *Household Labour Force Survey* (HLFS) which provides information on the socio-demographic, family structure, health limitations, employment and job search activities of individuals to identify their (potential) eligibility for alternative welfare benefits. The June quarter HLFS is selected to take advantage of the Income Supplement (HLFS-IS), which provides data on individuals' self-reported income and benefit receipt across broad categories. The HLFS sample is then matched both to Inland Revenue (IRD) data on monthly earnings and benefits receipt; and to Ministry of Social Development (MSD) Tier-1 welfare benefit receipt data, which provides detailed information on income from individual benefit spells.

We begin by assessing the eligibility status of people for alternative welfare benefits, using information collected in the June quarter 2016 HLFS. From this, we estimate that 7.3% of people aged 18-64 are eligible for Jobseeker Support, 2.7% are eligible for the Supported Living Payments (SLP) benefit, and 9.9% of non-partnered people are eligible for the Sole Parent Support (SPS) benefit.[1]

[1] Because SPS eligibility is restricted to non-partnered individuals, we largely restrict our SPS analysis to HLFS respondents who are non-partnered. However, in estimating over take-up rates of SPS, we do take account of receipt by partnered individuals: in particular, we estimate about 0.2% of HLFS respondents who report being partnered are also observed receiving the SPS benefit.

Second, based on benefit receipt rates among the eligible samples, we estimate under take-up rates for each of these benefits of 40% – i.e. 43% of those assessed as eligible for JSS do not receive any benefit, while 36% and 38% of those eligible for SLP and SPS respectively do not receive any benefit. Conversely, the benefit receipt rates among the ineligible samples give over take-up rates of 1.3% for JSS, 1.5% SLP, and 0.3% for SPS. Alternatively, measured relative to the number of benefit recipients, the under and over take-up rates are 40% and 37% for JSS, 13% and 56% for SLP, and 21% and 5% for SPS. Furthermore, based on official administrative beneficiary counts at the end of June 2016, these estimates imply 47,100 people eligible for JSS do not receive any first-tier benefit, while 43,200 JSS ineligible people receive JSS. The corresponding under- and over take-up numbers are 11,700 and 52,100 for SLP, and 14,000 and 8,300 (which includes SPS receipt by 5,000 partnered individuals) for SPS.

Third, combining the average benefit amounts received with the population counts, we estimate the combined annual fiscal costs associated with over take-up of these three welfare benefits is on the order of $1.4b ($481m from JSS, $790m from SLP, and $148m from SPS). Because we don't observe the benefits forgone by the eligible non-recipients, we are unable to provide directly comparable estimates of the fiscal *savings* associated with under take-up. However, assuming they equal to the average benefits of recipients, we estimate annual fiscal saving on the order of $951m ($529m from JSS, $175m from SLP, and $247 from SPS).

The paper is organised as follows. In the next section we review relevant literature on the eligibility versus take-up of welfare benefits. In section 3, we describe more fully the data sources and construction of the analytical sample used in the analysis. Section 4 presents and discusses the analysis of benefit eligibility versus take-up, and the paper concludes in section 5 with a discussion of the implications.

2. Literature review

There is a significant but fairly small quantitative international literature on under take-up of means tested welfare benefits, which the OECD have surveyed (Hernanz, Malherbet, and Pellizzari 2004). Most under take-up studies are from the UK and the USA (Craig 1991; Currie 2004; Finn and Goodship 2014; Hernanz, Malherbet, and Pellizzari 2004; Matsaganis, Ozdemir, and Ward 2013). Time series considerations of changes in under-take-up are scarce (Finn and Goodship 2014). Under take-up estimates range widely from 12% to 67% of the number and/or values of benefits (Bargain, Immervoll, and Viitamäki 2012; Craig 1991; Currie 2004; Finn and Goodship 2014; Hernanz, Malherbet, and Pellizzari 2004; Whelan 2010).

In a separate literature, over take-up estimates range from 2% to 20% of the number or value of benefits (Burgess 1992; Wolf and Greenberg 1986; Woodbury 2002). There are several unintegrated and dated New Zealand studies showing partial rates of over or under take-up for some working age welfare benefits (Chapple and Crichton 2012; Meimand 1997; Ministry of Social Development & Inland Revenue 2007). There are some qualitative studies from a few countries, mostly focussing on over take-up arising out of beneficiary fraud (Dean and Melrose 1996, 1997; Groves 2002; Regev-Messalem 2013, 2014; Swan et al. 2008; Tunley 2011).

3. Data description

The data used in the analysis is derived from Statistics New Zealand's Integrated Data Infrastructure (IDI). The primary sample of interest is derived from the June quarter 2016 Household Labour Force Survey (HLFS) sample. Our analysis focuses primarily on three Tier-1 working age welfare benefits - Jobseeker Support (JSS), Supported Living Payment (SLP), and Sole Parent Support (SPS) benefits, which require individuals to be at least 18

years old. However, we also provide some analysis of Youth Payment (YP) and Young Parent Payment (YPP) youth benefits available for 16 to 19 year olds. The June quarter HLFS was chosen because the annual HLFS-Incomes Supplement (HLFS-IS) is conducted in this quarter, providing self-reported information on market and non-market income.

The HLFS is a large representative survey of the resident population, consisting of about 15,000 households per quarter. The survey collects a broad range of information on household and family structure, socio-demographic characteristics, detailed labour market activity, and health limitations. These dimensions are used to assess individuals' potential eligibility for the main welfare benefits. The sociodemographic information pertains to the date of the survey, and the labour market information to a reference week, the calendar week immediately preceding the survey date.

The June quarter HLFS-IS collects self-reported income from various sources, including employment and welfare benefits, during the reference week. It thus facilitates refinements of individuals' potential benefit eligibility status on the basis their reported family income. The welfare benefit income information collected in the HLFS-IS is aggregate Work and Income New Zealand (WINZ) benefit income. It does not distinguish income from different types of benefit.

The HLFS sample was then matched to two administrative data sources in the IDI that contain information on welfare benefit receipt. The first is Inland Revenue's (IRD) Employer Monthly Schedules (EMS) data, which contains calendar month information on earnings and other incomes with pay-as-you-earn (PAYE) tax withheld at source and reported to IRD. The EMS data contains and identifies PAYE-withheld working age welfare benefit payments paid during a calendar month. However, as with the HLFS-IS, it does not distinguish between the various types of benefits. The second administrative data source is the Ministry of Social Development's (MSD) Tier-1 benefit receipt data, which contains daily amounts paid in each

benefit spell by type of benefit. In contrast to both the HLFS-IS and EMS data, the MSD data contains detailed information on the benefit type for each spell in Tier-1 benefit data.

We match individuals in the HLFS sample first to the EMS by the calendar month at the end of their HLFS weekly reference period. We then separately match individuals in the HLFS to any Tier-1 benefit spell that overlaps the weekly HLFS reference period. This means that the EMS and MSD data is also matched for those in the HLFS sample, albeit potentially imperfectly – e.g. if a benefit spell ends early in the reference week which also straddles two calendar months, the MSD benefit payment may occur in the month prior to that matched to the EMS data. As the various income amounts collected from the three sources pertain to different periods (weekly from HLFS-IS, monthly from EMS, and daily from MSD, for comparability we have re-expressed the EMS and MSD incomes in weekly values (using scale factors 12/52 and 7 respectively).

3.1 Comparing sample benefit and administrative numbers

To anticipate the sample characteristics of the matched HLFS-IDI sample, we first provide a comparison of the total numbers of benefit recipients on each of the three main working age benefits from our sample to published aggregate official administrative numbers. Table 1 summarises this comparison for the MSD-sourced benefits, as well as the total numbers from the EMS and HLFS-IS. The first column presents the official MSD administrative numbers as at the end of June 2016**.** The second column shows the corresponding numbers of recipients derived from our June quarter 2016 HLFS sample matched to the MSD administrative benefit data: these numbers have been scaled up to adjust for the (non-

)matching of HLFS respondents to the IDI-spine, assuming that the non-matching is random with respect to benefit receipt.[2]

Comparing the numbers in these two columns suggests the HLFS-IDI coverage is close to 80% of JSS and SLP recipients, and close to 90% of SPS recipients.[3] The final two columns in the table show, respectively, the number of people in the HLFS sample receiving PAYE tax-withheld benefit income in the matched IRD EMS tables (again scaled-up to adjust for random non-matching of the HLFS sample to the IDI), and the number of people in the sample reporting WINZ income in the HLFS-IS. These numbers are somewhat higher than the corresponding MSD benefit numbers, at least partly due to recipients of other taxable benefits being included in the EMS payments, and recipients of other WINZ payments included in the HLFS-IS numbers.

After accounting for non-matching to the IDI-spine, the overall shortfall in the HLFS sample predicted MSD welfare numbers was about 50,000 people. In addition to possible timing issues between the survey reference period and benefit receipt, there are several possible reasons for the discrepancies. One important reason is likely to be due to several limitations arising out of the sampling frame of the HLFS. The HLFS excludes people living in non-private dwellings like hotels, motels, boarding houses and military camps. According to the most recent data in the 2013 census, 4 percent of people were living in such circumstances. Given the New Zealand population was estimated at 4.693 million people in 2016, this implies perhaps 190,000 New Zealanders were out of scope because of this

[2] These numbers, together with the numbers in columns (4) and (5), are estimated from the matched HLFS-IDI sample, using the HLFS sample weights, based on the numbers presented in Table 2.

[3] Although the timing differs across the columns – i.e. as at end of June for the administrative numbers versus over the June quarter for the HLFS counts – we don't expect this to have a major effect at the aggregate level. For example, the corresponding administrative numbers for the end of March 2016 are individually and collectively very similar to those at the end of June. Also, if we relax the strict timing of measurement of MSD benefit receipt within the HLFS reference week, to allow for receipt at some stage during the June quarter, then there is roughly full coverage of JSS and SPS (102% and 99% respectively), and 85% coverage of SLP.

exclusion, but potentially benefit eligible, in the year of our match. Thus, this exclusion could account for tens of thousands of missing beneficiaries.

In addition, the HLFS also excludes people living in non-permanent dwellings, which include tents and not permanently sited caravans, and people living on a wharf or boat. It is unclear how many people are covered under this definition and thus excluded, but it is possibly in the thousands. The HLFS also excludes people living outside the North, South and Waiheke Islands. Other islands cover about 2000 people in total, including Great Barrier (900), Kawau (80), Chatham (600) and Stewart Islands (400). The exclusion of these islands is unlikely to make a major contribution to the shortfall, as it would at most add several hundred people to the predicted welfare numbers.

Finally, if a dwelling selected for the sample contains people "not usually resident", they are excluded from the HLFS (and recorded as being at their "usual residence" in the census, but only if they have one). How many people fall into such a category is unclear, but it will include people temporarily staying with friends or relatives due to homelessness who may well be on a welfare benefit.

3.2 Measuring benefit eligibility and ineligibility

The primary focus of our analysis is to compare the eligibility for, and receipt of, the main working age benefits. To do this, we first use the information in the HLFS to assess each individual's eligibility and ineligibility for the three main working age benefits: Job Seeker Support (JSS); Supported Living Payments (SLP); and Sole Parent Support (SPS). Based on such eligibility status, we will then analyse the corresponding benefit take-up rates from the various sources. We assess eligibility separately for each benefit type, using a sequential approach based on alternative eligibility criteria, and described in the appendix.

To be eligible for any of these benefits, individuals must satisfy a residency requirement that they have lived in New Zealand continuously for at least two years (except for refugees), and normally live in New Zealand. Benefit receipt is also subject to an income test which is assessed on joint income for if partnered, and may result in a lower or zero rate of eligibility. In addition other eligibility criteria apply for specific benefits.

First, eligibility for JSS involves an active labour market activity test. For this, an individual must not be in full-time employment (30+ hours per week), be available and seeking full-time work. There are some exemptions from the activity test, related to a health condition or injury. We estimate both potential eligibility and ineligibility for JSS using hierarchical schemes, based first on an individual's reported residency, followed by their labour market activity in the HLFS, which we then refine on the basis of reported health conditions, and finally an income assessment. A combination of lack of detail in the HLFS questions and/or inconsistencies in individuals' response can result in the eligibility status of some individuals being indeterminate – e.g. there are inconsistent responses by some part-time workers to questions around whether they are actively seeking versus wanting to work more hours.

Second, eligibility for SLP requires either that a person is permanently and significantly restricted in their ability to work because of a health condition, injury or disability; or that they are a full-time carer for someone at home. As the relevant health information in the HLFS is limited, we estimate eligibility for SLP using a hierarchical scheme based on their residency, followed by whether they are not in the labour force (NILF) because of their own health, whether they are NILF because they are looking after an adult, employed less than their desired number of hours of work or away from work (last week) because of a health condition, and finally refined using an income assessment.

Finally, eligibility for SPS requires that a person is unpartnered, and has at least one dependent child under 14 years. Again, because the information in the HLFS on partner support is limited, we estimate a person's potential eligibility for SPS on the basis of their residency, their being unpartnered, having dependent children under 14, and subject to the income assessment.

3.3 Sample descriptive statistics

Table 2 provides summarises of the sample characteristics for the combined matched HLFS-IS, EMS and MSD sample for individuals aged 18–64. The first column presents summary statistics for the full HLFS sample; the second column pertains to the subsample of individuals who are matched to the IDI spine (this accounts for 89% of the full sample); and the final two columns pertain to the matched sample stratified by whether or not the individual is partnered. In order to maintain the representativeness of the sample, we include observations from proxy responses in all samples: the sample characteristics, particularly with respect to eligibility and receipt, are broadly similar whether or not these are included. Comparing the characteristics of the first two columns implies the matched individuals are on average slightly older, more likely to be NZ European, partnered, and employed than those unmatched but, given the high match rate (89%), the matched sample is reasonably representative of the full sample.

Focusing on the matched samples in columns 2–4, the estimated JSS eligibility rates are 7.3% in the working age population, and 16.1% and 2.7% among non-partnered and partnered individuals respectively.[4] We present the detailed hierarchical breakdown of the overall eligibility and ineligibility rates in Table 3. This shows the non-partnered and

[4] Because of inconsistency in individual responses associated with whether or not they reported being underemployed versus seeking more work hours, we were unable to assign a potential JSS eligibility status for 1.9% of the population.

partnered eligibility differences are due to substantially higher employment and health related reasons for JSS eligibility of non-partnered individuals, as well as higher rates of fulltime employment and income-abatement ineligibility of partnered individuals. Some of these differences will also be associated with socio-demographic differences between partnered and non-partnered individuals apparent in Table 2, such as age, ethnicity, and family status.

Assessed eligibility for SLP benefits are lower than for JSS: 2.7% of the matched sample, and again eligibility is higher for non-partnered (5.4%) than partnered (1.3%) individuals. The detailed breakdown in Table 3 suggests the higher rates of non-partnered eligibility are largely due to much higher rates of NILF because of their own health status, although partnered individuals are also more likely to be ineligible because of income-abatement. The estimated rate of non-partnered individuals eligible for SPS benefits is 9.9%, which translates through to 3.4% of the overall matched sample.

The reported rates of benefit receipt in the matched sample are highest for WINZ income receipt in the HLFS-IS (9.7%), followed by 8.7% in the EMS and 7.8% received any Tier-1 benefit in the MSD data. This pattern of ordering is consistent with the IS-reported WINZ receipt covering the broadest range of benefit receipt, and the MSD data covering the narrowest range of Tier-1 benefits. In addition, measurement period differences between the EMS data (calendar monthly payment receipt overlapping with the HLFS reference period) and MSD data (payment receipt within the HLFS reference period) may also affect the reported rates.

Table 3 provides a more detailed summary of the HLFS determined potential eligibility status for each of the three benefit types. Across all benefits, we estimate that a little under 2% of the population is ineligible for benefit because they have been in the country for less than two years. In the matched sample, the largest sub-group of JSS eligibility is associated with individuals not in the labour force (NILF) because of health

reasons (3.1%),[5] followed by those unemployed or employed part-time but looking for full-time work (1.8% and 1.1% respectively), and those NILF but either looked for a job in the last 4 weeks or with a job to start in the next 4 weeks (1.0%). Unsurprisingly, working full-time is the main reason for being ineligible for JSS (64%), followed by working part-time and not looking for full-time work (11%), and NILF but intend looking for work (5.6%). We also estimate that 3.8% of the adult population, who would otherwise be eligible for JSS, are ineligible because their HLFS-IS reported family income exceeds the level at which JSS would be abated to zero. Comparing the estimates for partnered versus non-partnered individuals, unsurprisingly this income-abatement criteria is more likely to eliminate individuals who have partners.

Because the health barrier information in the HLFS is limited, it is likely that the 2.7% estimated eligibility rate for SLP underestimates the true fraction. For example, we have not labelled NILF respondents whose main activity is 'looking after children' as SLP-eligible, because we expected this group is dominated by parents looking after young children without health issues. The dominant reason associated with SLP eligibility is being NILF for own health reasons (1.8%), which accounts for two-thirds of those eligible. In addition, we estimate that 2.3% of the population are potentially eligible for SLP but become ineligible because of abatement associated with their family income.

Finally, we estimate that 9.9% of the non-partnered adults are potentially eligible for Sole Parent Support. Because there is limited information in the HLFS on partner support, we expect this figure overestimates the true fraction of SPS eligible non-partnered adults. Nearly 5% of non-partnered individuals are ineligible for SPS because of the income abatement test.

[5] Note, these are people who would otherwise not be eligible because of their NILF status.

We next examine the concordance between the alternative sources used to measure welfare benefit receipt. Table 4 shows the binary concordance rates between each pair of measures: each (*row*column*) entry is the fraction of observations observed with the *column* benefit measure given non-receipt or receipt of the *row* measure.[6] First, there is a strong concordance between benefit receipt in the monthly EMS and MSD spell data. For example, almost 90% of the sample who receive EMS benefit income in a calendar month have a corresponding Tier-1 benefit spell, compared to 0.1% of those with no EMS benefit income. Conversely, over 99% of individuals with a Tier-1 benefit spell receive EMS benefit income in the corresponding month, compared to 1% with no benefit spell.[7] In contrast, the concordance rates between self-reported HLFS-IS WINZ income receipt and the administrative sources of benefit income is much lower: about two-thirds of those who report WINZ income receipt in the survey have corresponding EMS (71%) or MSD (67%) benefit income, compared to about 1.5-2% of those who report no WINZ income. Similarly about 80% of those with either EMS (79%) or MSD (83%) benefit income report WINZ income, compared to about 3-3.5% of those with no EMS or MSD benefit income.[8] Overall, these concordance rates imply MSD reported benefit income is mostly highly consistent with both EMS and HLFS-IS WINZ benefit income receipt, which is in line with the narrower focus on Tier-1 benefits in the MSD data.

There are several possible reasons for mismatches across the different sources.[9] There are conceptual differences in the welfare income being reported in the alternative

[6] For example, the entries in the first two rows (HLFS-IS WINZ) associated with the second (EMS) column imply that of respondents who report no WINZ income in the HLFS-IS, 0.012 (1.2%) have EMS benefit income in the matched month, while 0.480 (48.0%) of respondents who report WINZ income have EMS benefit income.
[7] For the individual Tier-1 benefit types, the true positive rate for JSS is a little lower (98.5%), perhaps due to greater incidence of shorter spells mismatched between the EMS and MSD data. Also, the false positive rates are all noticeably around 5%.
[8] The true positive rates are 85-87% across the separate Tier-1 benefit types, while the false negative (?) rates are somewhat higher (about 10%) than for any Tier-1 benefit receipt.
[9] For example, Hyslop and Townsend (2016) and Hyslop and Townsend (2017) analyse, respectively, differences in earnings and binary employment measures reported in the Survey of Family Income and

sources, as the HLFS-IS measure tacitly covers a broad range of WINZ-related welfare income, while the EMS covers a narrower range of welfare payments that have PAYE tax deducted, and the MSD data is narrower still covering only Tier-1 benefits. A second reason for mismatch is that respondent errors in reporting income sources in HLFS-IS. A third reason is errors in matching individuals across different sources in the IDI. Fourthly, there may be either mismatches or errors in aligning the timing of benefit receipt across the different sources (this may particularly affect matching short benefit spells).

Given the concordance rates in Table 4, and that MSD benefit data most directly measures the main welfare benefits that we are able to estimate the eligibility status for in HLFS, we will primarily focus discussion on this source in our analysis below. However, we will also report results based on the alternative benefit measures.

4. Analysis

In this section we discuss the analysis of under and over take-up rates for the three main welfare benefits. We begin by presenting the main results of under and over take-up rates. Second, we use regression analysis to identify the main socio-demographic correlates of these mismatches. Finally, we use the estimated over and under take-up rates, together with the average benefit receipt by ineligible recipients for each benefit, to estimate the fiscal costs and savings associated with these mismatches.

4.1 Measuring under and over take-up

In Table 5 we report the benefit receipt rates reported from the alternative sources (MSD, EMS and HLFS-IS) for the IDI-matched HLFS sample stratified by the estimated eligibility status for each benefit. As discussed above, our discussion will focus on HLFS determined

Employment (SoFIE) and EMS within the IDI, and conclude there are significant errors in both measures across both reported source.

benefit eligibility status versus the MSD reported benefit receipt. Given an individual can be eligible for multiple benefit types, we report the fractions receiving any MSD main benefit as well as the specific benefit. The table presents results for the matched sample in panel (a), and the subsamples of Non-partnered in panel (b) and Partnered in panel (c). The first row of each panel reports the incidence of HLFS determined eligibility status associated with each of the three benefits, and the subsequent rows the benefit receipt rates within the stratified (in)eligibility subsamples.

We begin by discussing the results associated with Jobseeker Support eligibility, presented in columns 1-3. Of those assessed as JSS eligible, 57% received any Tier-1 benefit in the MSD data, while less than half of these (26% overall) received the JSS benefit. Taken on face value this implies 43% of JSS eligible recipients do not receive any benefit, while more than half of those who do receive a benefit are receiving one other than JSS.[10] Similarly, among those estimated to be JSS-ineligible, nearly 4% receive a Tier-1 benefit, and 1% receive the JSS benefit, suggesting an over take-up rate of at least 1% among the ineligible population.[11] Given the more inclusive coverage of the EMS and HLFS-IS WINZ benefit measures, those sources have consistently higher receipt rates than for the MSD reports for both the JSS-eligible and JSS-ineligible samples.

As the size of the at-risk populations differ greatly for the under and over take-up rates, it is useful to express these relative to a common base. To do this, we estimate the under and over take-up rates relative to the number of benefit recipients, and then estimate the numbers of each. This implies under take-up of JSS amounts to 40% of benefit

[10] To allow the possibility that individuals may be eligible for multiple benefits, and so receive a benefit other than the specific benefit of focus, we adopt a conservative measure of the under take-up rates as the (1 - fraction receiving any Tier-1 benefit). Conversely, to allow for the possibility that those ineligible for a specific benefit may be eligible for an alternative benefit, we measure the over take-up rates as the fraction ineligible who receive the specific benefit.

[11] The receipt rates for the indeterminate eligibility subsample in column 3 lie between the respective rates of the eligible and ineligible subsamples (19% for any Tier-1 benefit, and 7% for JSS).

recipients, and over take-up is 37%.[12] Based on the official number of JSS beneficiaries at the end of June 2016 in Table 1 (117,954), these estimates imply that about 47,100 people eligible for JSS did not receive it, and 43,200 people who are not eligible did receive JSS. Table 6 summarises this analysis, together with a more detailed breakdown of the hierarchical characterisation of benefit eligibility and ineligibility.

The corresponding results for the SLP and SPS benefit eligibility status are broadly similar, although the true-positive receipt rates are somewhat higher than for JSS. Of the 2.7% of the population eligible for SLP, 41% receive the SLP benefit and 64% receive some type of Tier-1 benefit: the latter implies an under take-up rate of 36%. On the other hand, the over take-up rate for SLP is 1.5% (6.3% of those ineligible for SLP receive some Tier-1 benefit). Again, relative to the official number of SLP recipients (93,243), these numbers imply estimates of SLP under and over take-up of 13% and 56% respectively, or total numbers at the end of June 2016 of 11,700 and 52,100. It is worth emphasising again that our ability to identify SLP eligibility is limited by the available health information in the HLFS: we expect this limited information contributes to the much larger estimated rates and numbers of SLP over take-up compared to JSS.

Given SPS eligibility is restricted to sole parents, we largely focus our SPS analysis on the sample of non-partnered individuals. Among this population, of the 9.9% estimated to be eligible for SPS, 52% are observed to receive the SPS benefit and 62% receive some MSD Tier-1 benefit. In contrast, among those ineligible, only 0.3% receive the SPS benefit, while 13% receive any Tier-1 benefit. Thus the estimated under and take-up rates for SPS among the risk-populations are 38% and 0.3% respectively. Again, relative to SPS recipients, the

[12] We calculate the under take-up rate as the fraction of under take-up in the population relative to the total fraction of any MSD benefit recipients – i.e. 0.40 = ((1-0.573)*0.073)/0.078. In contrast, the over take-up rate is calculated as the over take-up fraction in the population relative to the total fraction of JSS recipients – i.e. 0.37 = (0.013*0.908)/0.032).

under and over take-up rates are 21% and 5%, and imply total numbers of 14,000 and 3,300 respectively. In addition to the ineligible non-partnered, panel (c) shows 0.2% of partnered individuals receive SPS, which amounts to an additional 5,000 ineligible SPS recipients: giving the estimated total number of 8,800 ineligible SPS recipients (12.7% of recipients).

The SPS under and over take-up rates are lower than for the JSS and SLP benefits, in both the full population and among non-partnered. This may reflect that the SPS eligibility criteria is more clearly identified in the HLFS and/or more straightforward to verify in practice. Alternatively, it may be that eligibility for other benefits (particularly JSS) is more transient in nature, resulting in better measured concordance between SPS eligibility and receipt.

As noted earlier, the eligibility rates are higher for both JSS and SLP benefits among the Non-partnered sample in panel (b). Also, the estimated under take-up rates are lower (39% for JSS and 29% for SLP); while the estimated over take-up rates are about double the rates for the full population (2.6% for JSS and 3.3% for SLP). The corresponding eligibility and over take-up rates are lower, and the under take-up rates higher, for the Partnered sample presented in panel (c).

4.2 Factors associated with under and over take-up of benefits

We next consider the correlates of under and over take-up of the main welfare benefits. To do this, we estimate regressions of under and over take-up on various sociodemographic characteristics, as well as reasons for, and time since, leaving the last job, and country of birth and years in New Zealand, separately for each benefit type's risk sets. We present summary results from this analysis in Table 7.[13] The first three columns present under take-up results

[13] Appendix tables Table A1, Table A2 and Table A3 contain additional results from regressions that provide nuanced specifications of the relationships involving foreign born residents.

for JSS, SLP and SPS respectively, and columns (4) – (6) present the corresponding over take-up results for each benefit.

We focus our discussion on the results for JSS, in columns (1) (under take-up) and (4) (over take-up). First, among those estimated to be eligible for JSS, non NZ-born people have about a 14% higher under take-up rate, which declines over time spent in New Zealand at about 0.4% per year. Possibly related to migrant status, we also estimate a strong Asian under take-up of JSS (18%). In contrast, we find no significant effect of being non NZ-born or Asian on JSS over take-up. Second, for those eligible for JSS, we have estimated the difference between their estimated benefit (abated for their reported income) and their reported income, relative to the estimated benefit. This "benefit gap" is negative and statistically significant, and its estimated coefficient implies that a 10% lower gap is associated with about a 3% lower JSS take-up rate.

Third, controls for the time since last job, indicate that, relative to those eligible who never worked, finishing a job in the last three months was associated with 26% lower JSS receipt. This plausibly reflects a combination of benefit stand-down effects associated with job-quits, lags in applying for JSS and expectations of finding replacement work relatively quickly. In contrast, we estimate that, among the JSS ineligible group, longer spells of being jobless (greater than 3 months) are associated with about 3% higher take-up, and we also estimate that those who left their last job for "work" related reasons (such as a contract end, job layoff, or due to dissatisfaction with the job) have 5% higher take-up. These factors may reflect discouraged worker effects resulting in inadequate levels of labour force attachment or job search activity to satisfy the JSS eligibility criteria.

Fourth, there are several statistically significant sociodemographic correlates with under take-up of JSS. Partnered individuals are 15% less likely to take-up than singles; and those with children have 7-9% lower under take-up rates than those without (although only

the coefficient on 1 child is statistically significant). We estimate a quadratic (U-shaped) life cycle profile of under take-up, in which under take-up is minimised at about age 45 – e.g. under take-up is about 17% lower at 45 than 25. Also, those with school, post-school vocational, or university qualifications are 11-18% less likely to take-up JSS than individuals with no qualifications. Broadly speaking, we estimate qualitatively similar (mirror) findings of these factors on JSS over take-up, except that we find the presence of children is associated with lower over take-up rates. Other than the strong positive Asian ethnicity effect on under take-up of JSS, we find no significant ethnic effects on under take-up. However, we do estimate statistically significant over take-up effects associated with both Maori and Pacific ethnicity, on the order of 2–2.5% relative to European.

Broadly similar patterns of results are estimated for SLP and SPS benefits, presented in the other columns of Table 7, although the statistical precision associated with the under take-up is lower due to smaller estimated eligibility populations (i.e. risk sets). For example, the point estimates for the non NZ-born and years in NZ coefficients are similar to those for JSS, but less precisely estimated. However, the 'benefit gap' effects under take-up of these benefits are larger: a 10% lower gap between income and benefit entitlement is associated with about 4% lower SLP take-up and 7% lower SPS take-up rates. While leaving their last job in the last three months does not affect under take-up of SLP, we estimate the longer term exits are associated with reduced under take-up of 17–19%, perhaps reflecting longer term health conditions. We find no evidence that time since last job affects under take-up of SPS benefit, but leaving the last job for reasons other than retirement or study is associated with about a 10% lower under take-up. In contrast to there being no significant gender differences in under take-up of JSS and SLP, we estimate that women are nearly 30% more likely to take-up SPS when eligible than men.

The main differences across the benefits over take-up regression results are again differences for SPS. These include the time and reasons for leaving last job, in which recent exits and leaving for personal reasons are each associated with about 1.5% higher over take-up; while ineligible women have about 0.5% higher take-up than men; and those with dependent children also have higher over take-up rates.

4.3 Estimating the fiscal cost of over take-up

In this section we estimate the possible fiscal cost associated with over take-up of the main welfare benefits by individuals estimated to be ineligible to receive them. Table 8 summarises the average weekly benefit incomes reported by ineligible recipients from the three sources (HLFS-IS, EMS and MSD) for the IDI-matched sample (Non-partnered subsample for the SPS ineligible recipients), together with the estimated annual fiscal costs of over take-up.[14]

Using MSD benefit receipt data, we estimate that individuals who wrongly received Jobseeker Support benefits, did so at an average weekly rate of $214. Based on the estimated 43,200 individuals who wrongly received JSS (from section 4.1), implies an annual fiscal cost of $481m. Similarly based on the estimated 52,100 ineligible Supported Living Payment recipients, receiving $292/week on average, the estimated annual cost is $790m; and 8,300 ineligible Sole Parent Support recipients receiving an average $341/week costs $148m. The combined annual fiscal cost of over take-up of these three benefits by ineligible recipients is $1,419m. The estimated costs are similar, although slightly greater, based on the average benefit amounts received reported in EMS and WINZ payments in HLFS-IS, totalling $1,522m and $1,492m respectively.

[14] The average incomes from the EMS and MSD data are generally quite close, while the average HLFS-IS reported WINZ incomes are usually higher, perhaps due to wider coverage. However, the average reported benefit incomes does not appear to vary systematically by eligibility status, although comparability of the reported averages is potentially affected by differential selectivity of reported benefit income by eligibility.

As the amount of benefit forgone by those who do not receive a benefit when eligible is not observed in the data, an assumption on this amount is needed in order to calculate similar estimates of the fiscal *savings* associated with under take-up. To do this, the second panel of Table 8 presents the estimated savings assuming the amount forgone is equal to the average received by recipients (reported in Table 2), and the estimated numbers of under take-up for each benefit in section 4.1. Based on the MSD specific benefit averages we estimate that the annual fiscal savings associated with under take-up of the three is $951m: $529m from JSS, $175m from SLP and $247m from SPS. As with the estimate of over take-up costs, the estimated fiscal savings are somewhat larger based on either the average EMS amounts ($1,003m) or HLFS-IS WINZ amounts ($1,029m). As the regression results in Table 7 show individuals' with lower benefit entitlement are less likely to take-up a benefit, we expect the value of the benefit (forgone) is lower than average, in which case these estimates will overstate the true fiscal savings from under take-up. As such, these estimates likely provide an upper bound estimate of the fiscal savings from under take-up.

Overall, these estimates suggest possible net annual fiscal costs associated with the over and under take-up of the main working age benefits of over $400m. Given the data limitations of HLFS for identifying SLP and SPS eligibility in particular, there are potentially strong caveats around the accuracy of these estimates. Nonetheless, they are suggestive of large mismatches between benefit eligibility and take-up, with correspondingly large fiscal costs and savings, and potential for substantial improvement in welfare policy delivery to the intended recipients.

5. Concluding discussion

The analysis here implies there are potentially strong mismatches between welfare benefit eligibility and benefit receipt in New Zealand. Among the three main working age benefits

we analysed, we estimate that about 40% of individuals assessed to be eligible for each of these benefit were not receiving any benefit; and conversely, that over 1% of individuals ineligible for JSS or SLP receive the benefit, while 0.2% of those ineligible for SPS received SPS (consisting of 0.3% of ineligible non-partners, and 0.2% of those partnered). For JSS, these estimates imply under and over take-up numbers of 47,100 and 43,700, or about 40% of those receiving benefit; for SLP, the number of under and over take-ups are 11,700 and 52,100 (13% and 56% of SLP recipients); and for SPS, we estimate the number are under and over take-ups are 14,000 and 8,300 (21% and 12.7% of SPS recipients). Analysing the patterns of under take-up, we found that foreign born people are less likely to take-up their eligibility for benefits. In addition, those who have lower benefit entitlement rates are less likely to receive a benefit, as are those eligible for JSS who recently left a job.

Our estimates imply there are potentially large annual fiscal savings and costs associated with the differences between benefit eligibility and receipt, on the order of $950m and $1,420m respectively. These results also suggest there are significant questions around the effectiveness of New Zealand's current welfare system to target those in need, and hence to deliver benefits to those who are eligible and not to those who are ineligible.

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Table 1: Comparison of benefit numbers, June 2016

	Actual Benefit numbers (1)	Predicted (HLFS-IDI) (2)	Predicted/ Actual (3)	Predicted EMS (4)	Predicted WINZ (5)
Jobseeker Support	117,954	90,480	77%	—	—
Sole Parent Support	65,422	57,540	88%	—	—
Supported Living Payment	93,243	72,540	78%	—	—
Total	276,619	225,560	80%	247,750	280,300

Notes: Column (1) numbers come from "all-main-benefits-fact-sheet-jun-2016", measured "at the end of June 2016" (the corresponding numbers for "end of March 2016" are similar: 117,134; 66,387; and 93,250); column (2) are numbers from the HLFS-IDI matched sample; and columns (4) and (5) are the matched HLFS-IDI sample numbers of EMS benefit income recipients and HLFS-IS WINZ-income recipients. The numbers in columns (2) and (4) are scaled estimates to account for the non-matching of HLFS sample to the IDI-spine, on the assumption that the IDI-match is random with respect to benefit receipt. The unscaled numbers are: 80,200 (JSS), 51,000 (SPS), 64,300 (SLP), and 195,500 (total) in column (2); and 219,600 in column (4).

Table 2: Sample characteristics

	Working-age population samples			
	Full sample	IDI-matched	Non-Partnered	Partnered
HLFS characteristics:				
Female	0.510 (0.25)	0.506 (0.25)	0.508 (0.25)	0.505 (0.25)
Age	40.3 (13.5)	40.8 (13.4)	35.1 (14.5)	43.8 (11.8)
No. children in family	1.1 (1.2)	1.1 (1.2)	1.0 (1.2)	1.2 (1.2)
No. dep children in family	0.8 (1.1)	0.8 (1.1)	0.4 (0.8)	1.0 (1.2)
NZ European	0.645 (0.23)	0.659 (0.22)	0.599 (0.24)	0.691 (0.21)
Maori	0.075 (0.07)	0.073 (0.07)	0.106 (0.09)	0.056 (0.05)
Pacific	0.049 (0.05)	0.047 (0.04)	0.061 (0.06)	0.040 (0.04)
Asian	0.134 (0.12)	0.126 (0.11)	0.122 (0.11)	0.128 (0.11)
NZ Euro & Maori	0.054 (0.05)	0.054 (0.05)	0.066 (0.06)	0.048 (0.05)
Other ethnicity	0.042 (0.04)	0.041 (0.04)	0.047 (0.04)	0.038 (0.04)
University quals	0.288 (0.21)	0.289 (0.21)	0.221 (0.17)	0.325 (0.22)
Post-school quals	0.237 (0.18)	0.241 (0.18)	0.199 (0.16)	0.263 (0.19)
School quals	0.300 (0.21)	0.299 (0.21)	0.389 (0.24)	0.252 (0.19)
Partnered	0.647 (0.23)	0.657 (0.23)	0	1
Parent	0.472 (0.25)	0.481 (0.25)	0.216 (0.17)	0.619 (0.24)
Employed	0.791 (0.17)	0.796 (0.16)	0.699 (0.21)	0.847 (0.13)
FT work	0.645 (0.23)	0.650 (0.23)	0.542 (0.25)	0.706 (0.21)
Unemployed	0.038 (0.04)	0.037 (0.04)	0.066 (0.06)	0.023 (0.02)
Not in labour force	0.171 (0.14)	0.166 (0.14)	0.236 (0.18)	0.130 (0.11)
Estimated eligibility for:				
JSS	0.075 (0.26)	0.073 (0.26)	0.161 (0.37)	0.027 (0.16)
SLP	0.028 (0.17)	0.027 (0.16)	0.054 (0.23)	0.013 (0.11)
SPS	0.034 (0.18)	0.034 (0.18)	0.099 (0.30)	s
HLFS-IS characteristics:				
Received market income	0.754 (0.19)	0.759 (0.18)	0.671 (0.22)	0.805 (0.16)
Received WINZ income	0.098 (0.09)	0.097 (0.09)	0.191 (0.15)	0.048 (0.05)
Average market income	1,155 (988)	1,168 (996)	922 (697)	1,275 (1,084)
Average WINZ income	272 (175)	272 (176)	322 (171)	169 (135)
EMS characteristics:				
Received benefit income	0.077 (0.07)	0.087 (0.08)	0.194 (0.16)	0.031 (0.03)
Received W&S income	0.606 (0.24)	0.684 (0.22)	0.652 (0.23)	0.700 (0.21)
Average benefit income	265 (104)	265 (104)	281 (101)	212 (95)
Average W&S income	1,123 (1,036)	1,123 (1,036)	861 (735)	1,251 (1,132)
MSD characteristics:				
Received Tier-1 benefit	0.070 (0.06)	0.078 (0.07)	0.178 (0.15)	0.026 (0.03)
Received JSS benefit	0.028 (0.03)	0.032 (0.03)	0.067 (0.06)	0.014 (0.01)
Received SLP benefit	0.023 (0.02)	0.025 (0.02)	0.056 (0.05)	0.010 (0.01)
Received SPS benefit	0.018 (0.02)	0.020 (0.02)	0.054 (0.05)	0.002 (0.00)
Average Tier-1 income	272 (78)	272 (78)	287 (74)	219 (72)
Average JSS income	216 (62)	216 (62)	225 (62)	190 (53)
Average SLP income	287 (59)	287 (59)	306 (42)	230 (64)
Average SPS income	340 (54)	340 (54)	340 (54)	342 (42)
Matched to the IDI spine	0.886	1	1	1
No. observations	21,387	19,011	6,507	12,504
Population count	2,846,800	2,523,300	866,500	1,656,800

Notes: Numbers in parentheses are standard deviations. Sample sizes are randomly rounded to base-3 (RR3), population counts are rounded to the nearest 100 (R100). All summary statistics are weighted, based on R100 counts. All mean earnings and income are expressed in nominal-$ weekly amounts, and conditional on (positive) receipt. Entries labelled "s" are suppressed for confidentiality reasons.

Table 3: Potential Benefit Eligibility status from responses in the HLFS survey

	Full sample	IDI matched sample	Non-Partnered sample	Partnered sample
1. Jobseeker Support:				
Eligible:	0.075	0.073	0.161	0.027
1. Unemployed, Look for FT work	0.019	0.018	0.040	0.006
2. Emp-PT, Look for FT work	0.012	0.011	0.026	0.004
3. NILF, Look/Job to start	0.010	0.010	0.023	0.002
4. Emp-PT, Not looking FT b/c health	0.001	0.001	0.002	0.001
5. Unavailable or not looking b/c health	0.032	0.031	0.065	0.013
6. Left last job b/c health	0.002	0.002	0.004	0.001
Ineligible:	0.906	0.908	0.815	0.957
1. In NZ<2 years	0.019	0.018	0.020	0.016
2. Emp-FT work	0.637	0.643	0.535	0.700
3. Emp-PT, Not looking for FT work	0.113	0.113	0.109	0.116
4. Unemployed, Looking for PT work	0.009	0.009	0.017	0.004
5. NILF, Intend looking for work	0.058	0.056	0.091	0.037
6. NILF, Not-intend looking for work	0.032	0.031	0.031	0.032
7. Benefit abated to zero	0.037	0.038	0.012	0.052
Indeterminate:	0.019	0.019	0.023	0.016
2. Supported Living Payment:				
Eligible:	0.028	0.027	0.054	0.013
1. NILF b/c own health	0.019	0.018	0.038	0.008
2. NILF, b/c looking after an adult	0.004	0.004	0.006	0.002
3. Emp, but with a health condition	0.006	0.005	0.010	0.003
Ineligible:	0.972	0.973	0.946	0.987
1. In NZ < 2 years	0.019	0.018	0.020	0.016
2. Benefit abated to zero	0.022	0.023	0.018	0.025
3. Other reason	0.930	0.932	0.908	0.945
3. Sole Parent Support:				
Eligible:	0.034	0.034	0.099	s
Ineligible:	0.966	0.966	0.901	1.000
1. In NZ < 2 years	0.019	0.018	0.020	0.016
2. Benefit abated to zero	0.016	0.016	0.048	s
3. Other	0.930	0.932	0.833	0.984
No. Observations	21,387	19,011	6,507	12,504
Population count	2,846,800	2,523,300	866,500	1,656,800

Notes: For more detailed descriptions of the reasons of eligibility and ineligibility, see the data appendix.
Entries labelled "s" are suppressed for confidentiality reasons.

Table 4: Concordance between alternative measures of benefit receipt

	NZIS WINZ	EMS Benefit	MSD Tier-1 Benefits			
			Any	JSS	SLP	SPS
Received HLFS-IS WINZ Income:						
No	0	0.020	0.015	0.007	0.004	0.004
Yes	1	0.714	0.670	0.263	0.224	0.176
Received EMS Benefit Income:						
No	0.030	0	0.001	0.001	s	s
Yes	0.793	1	0.893	0.358	0.292	0.232
Received MSD Benefit Income:						
No	0.035	0.010	0	s	s	s
Yes	0.825	0.990	1	0.405	0.325	0.258
Received MSD JSS Income:						
No	0.074	0.058	0.048	0	0.026	0.021
Yes	0.800	0.980	1	1	s	S
Received MSD SLP Income:						
No	0.077	0.063	0.054	0.033	0	0.021
Yes	0.849	0.997	1	s	1	s
Received MSD SPS Income:						
No	0.081	0.068	0.059	0.032	0.026	0
Yes	0.843	1.000	1	s	s	1
Total	0.097	0.087	0.078	0.032	0.025	0.020

Notes: The concordances are based on the IDI-matched working-age population sample. Entries labelled "s" have been suppressed for confidentiality reasons.

Table 5: Alternative benefit receipt rates by HLFS benefit eligibility measures

	JSS eligibility				SLP eligibility			SPS eligibility		
	Yes	No	Ind'nate	Total	Yes	No	Total	Yes	No	Total
					(a) IDI-matched sample					
Fraction	0.073	0.908	0.019	1.000	0.027	0.973	1.000	0.034	0.966	1.000
Fraction receiving:										
Any MSD benefit	0.573	0.036	0.189	0.078	0.639	0.063	0.078	0.615	0.060	0.078
Specific MSD benefit	0.257	0.013	0.068	0.032	0.412	0.015	0.025	0.521	0.003	0.020
EMS benefit	0.625	0.041	0.204	0.087	0.687	0.070	0.087	0.653	0.067	0.087
NZIS WINZ income	0.594	0.055	0.157	0.097	0.655	0.081	0.097	0.681	0.076	0.097
					(b) Non-partnered					
Fraction	0.161	0.815	0.023	1.000	0.054	0.946	1.000	0.099	0.901	1.000
Fraction receiving:										
Any MSD benefit	0.614	0.087	0.358	0.178	0.707	0.148	0.178	0.615	0.130	0.178
Specific MSD benefit	0.268	0.026	0.095	0.067	0.449	0.033	0.055	0.521	0.003	0.054
EMS benefit	0.665	0.097	0.358	0.194	0.756	0.162	0.194	0.653	0.144	0.194
NZIS WINZ income	0.621	0.102	0.303	0.191	0.714	0.161	0.191	0.681	0.137	0.191
					(c) Partnered					
Fraction	0.027	0.957	0.016	1.000	0.013	0.987	1.000	s	1.000	s
Fraction receiving:										
Any MSD benefit	0.444	0.014	0.067	0.026	0.495	0.020	0.026	s	0.026	s
Specific MSD benefit	0.224	0.007	0.048	0.014	0.333	0.005	0.010	s	0.002	s
EMS benefit	0.500	0.017	0.089	0.031	0.541	0.024	0.031	s	0.031	s
NZIS WINZ income	0.511	0.034	0.048	0.048	0.527	0.041	0.048	s	0.048	s

Notes: The first row in each panel gives the fractions assessed as eligible and ineligible (or 'indeterminate' for JSS) for benefits in the HLFS; the subsequent rows give the fractions receiving benefits conditional on the assessed eligibility. Entries labelled "s" have been suppressed for confidentiality reasons.

Table 6: Detailed Under- and Over- Take-up rates (MSD Benefit receipt measures)

		Under Take-up (any benefit)			Over Take-up (Specific Benefit)		
	HLFS Frac. (1)	Under TU (2)	Rel to Rec. (3)	Number (4)	Over TU (5)	Rel to Rec. (6)	Number (7)
JSS:				117,954			117,954
Eligible	0.073	0.427	0.399	47,062			
1.	0.018	0.474	0.109	12,868			
2.	0.011	0.676	0.099	11,676			
3.	0.010	0.589	0.072	8,459			
4.	0.001	0.594	0.010	1,132			
5.	0.031	0.242	0.094	11,140			
6.	0.002	0.554	0.016	1,847			
Ineligible	0.908				0.013	0.367	43,240
1.	0.018				s	s	s
2.	0.643				0.003	0.067	7,942
3.	0.113				0.027	0.095	11,178
4.	0.009				0.153	0.042	5,001
5.	0.056				0.052	0.091	10,736
6.	0.031				0.037	0.036	4,265
7.	0.038				0.028	0.034	3,971
Indeterminate	*0.019*	*0.811*	*0.192*	*22,697*	*0.068*	*0.040*	*4,706*
SLP:				93,243			93,243
Eligible	0.027	0.361	0.126	11,726			
1.	0.018	0.251	0.059	5,510			
2.	0.004	0.308	0.014	1,319			
3.	0.005	0.782	0.053	4,898			
Ineligible	0.973				0.015	0.558	52,059
1.	0.018				s	s	s
2.	0.023				s	s	s
3. FT-Emp	0.626				0.002	0.039	3,625
3. PT-Emp	0.137				0.012	0.067	6,236
3. Unemp	0.036				0.036	0.051	4,785
3. NILF	0.134				0.076	0.397	36,978
SPS:				65,422			65,422
Eligible	0.099	0.385	0.214	13,992			
Ineligible:	0.901				0.003	0.051	3,334
1.	0.020				s	s	s
2.	0.048				s	s	s
3. FT-Emp	0.476				0.003	0.023	1,528
3. PT-Emp	0.126				s	s	s
3. Unemp	0.051				s	s	s
3. NILF	0.180				s	s	S
Partnered	—	—			0.002	0.076	5,003

Notes: JSS and SLP results are based on IDI matched sample. SPS are results based on Non-partnered subsample, except for the final row (Ineligibility because of being Partnered), which is based on the IDI matched sample: 'In NZ for < 2 years' and 'FT Emp' each account for about 40% of the ineligible partner SPS recipients; entries 's' are suppressed for confidentiality reasons.
The numbers on the first rows of each panel are the official (MSD administrative) counts from Table 1.

Table 7: Under and Over take-up of Tier-1 Benefits

	Under Take-up			Over take-up		
	(1)	(2)	(3)	(4)	(5)	(6)
	JSS	SLP	SPS	JSS	SLP	SPS
Non NZ-born	0.140**	0.091	0.106	-0.002	-0.006*	-0.002
	(0.056)	(0.102)	(0.095)	(0.003)	(0.003)	(0.003)
Years in NZ	-0.004**	-0.002	-0.007*	-0.00003	0.0002	-2.0e-07
	(0.002)	(0.003)	(0.004)	(0.0001)	(0.0001)	(0.0001)
Years in NZ*	-0.272*	-0.256	-0.434*	-0.020*	0.001	-0.0004
Not spec	(0.148)	(0.241)	(0.227)	(0.012)	(0.012)	(0.010)
Benefit gap	-0.282***	-0.418***	-0.675***	—	—	—
	(0.049)	(0.077)	(0.070)			
Last job: <3 mths	0.264***	0.115	0.104	0.008	0.009	0.013**
	(0.054)	(0.120)	(0.102)	(0.008)	(0.007)	(0.005)
Last job: 3-12 mths	0.024	-0.186**	0.0505	0.029***	0.019***	-0.001
	(0.047)	(0.084)	(0.071)	(0.006)	(0.005)	(0.004)
Last job: >1 year	-0.070*	-0.167***	0.002	0.032***	0.081***	-0.0003
	(0.037)	(0.056)	(0.057)	(0.004)	(0.004)	(0.003)
Last job: time not-sp	-0.033	-0.085	0.160	0.017	0.111***	0.012*
	(0.062)	(0.095)	(0.123)	(0.013)	(0.011)	(0.006)
Left last job: 'personal'	-0.049	-0.034	-0.085*	0.004	-0.007	0.015***
	(0.034)	(0.054)	(0.051)	(0.006)	(0.005)	(0.004)
Left last job: 'work'	-0.018	-0.069	-0.128*	0.051***	-0.022***	0.004
	(0.040)	(0.091)	(0.070)	(0.007)	(0.006)	(0.004)
Female	0.0214	-0.014	-0.284***	0.002	-0.003	0.005***
	(0.024)	(0.037)	(0.049)	(0.002)	(0.002)	(0.001)
Partnered	0.149***	0.156***	—	-0.017***	-0.029***	—
	(0.030)	(0.045)		(0.002)	(0.002)	
Age	-0.381***	-0.173*	-0.265**	0.015***	0.029***	0.004
	(0.058)	(0.100)	(0.111)	(0.005)	(0.005)	(0.004)
Age-squared	0.042***	0.017	0.037**	-0.002***	-0.003***	-0.001
	(0.007)	(0.012)	(0.015)	(0.001)	(0.001)	(0.0005)
1 child<14	-0.067*	-0.018	—	-0.004	-0.004*	0.016***
	(0.038)	(0.072)		(0.003)	(0.003)	(0.003)
2 children<14	-0.067	-0.018	0.007	-0.009***	-0.011***	0.024***
	(0.046)	(0.091)	(0.039)	(0.003)	(0.003)	(0.005)
3+ children<14	-0.092	-0.394**	-0.022	-0.011***	-0.015***	-0.002
	(0.062)	(0.184)	(0.045)	(0.004)	(0.004)	(0.009)
Maori	-0.020	0.046	0.0003	0.026***	0.014***	0.002
	(0.032)	(0.054)	(0.042)	(0.004)	(0.003)	(0.003)
Pacific	0.011	-0.017	0.104*	0.021***	0.005	-0.002
	(0.047)	(0.080)	(0.057)	(0.004)	(0.004)	(0.003)
Asian	0.175***	0.109	0.201**	-0.002	-0.001	-0.001
	(0.050)	(0.097)	(0.079)	(0.003)	(0.003)	(0.003)
Euro / Maori	-0.061	-0.018	-0.002	0.007*	0.007*	-0.004
	(0.043)	(0.068)	(0.053)	(0.004)	(0.004)	(0.003)
Misc ethnicity	0.020	-0.180*	0.065	0.013***	0.006	-0.001
	(0.053)	(0.101)	(0.074)	(0.004)	(0.004)	(0.004)
Univ qual	0.179***	0.144**	0.164**	-0.020***	-0.025***	-0.007***
	(0.042)	(0.069)	(0.066)	(0.003)	(0.003)	(0.002)
Postsch qual	0.112***	0.149***	0.027	-0.014***	-0.018***	-0.006**
	(0.033)	(0.051)	(0.044)	(0.003)	(0.003)	(0.002)
School qual	0.177***	0.071	0.102***	-0.017***	-0.021***	-0.007***
	(0.029)	(0.047)	(0.039)	(0.003)	(0.003)	(0.002)
Constant	1.299***	1.154***	1.550***	0.004	-0.017*	-0.001
	(0.115)	(0.204)	(0.198)	(0.010)	(0.010)	(0.007)
Observations	1,500	582	672	17,154	18,429	5,838
R-squared	0.246	0.227	0.322	0.034	0.066	0.018

Notes: Standard errors in parentheses. Omitted non-NZ born group is North-west and Southern Europe and North America. Reasons for leaving last job were categorised as 'personal' (family, sickness, moved), 'work' (job ended, laid off, dissatisfied with conditions), and other (retired, education). *** p<0.01, ** p<0.05, * p<0.1

Table 8: Fiscal cost of over take-up and saving of under take-up

Benefit	Benefit:			
Measure	JSS	SLP	SPS	Total
1. Fiscal costs of Over take-up				
MSD benefit payments (weekly, $)	214	292	341	
(Annual, $m)	481	790	148	1,419
EMS benefit payments (weekly, $)	279	275	341	
(Annual, $m)	627	744	150	1,522
HLFS-IS WINZ payments (weekly, $)	250	275	428	
(Annual, $m)	562	744	186	1,492
2. Fiscal savings of Under take-up				
MSD benefit payments (weekly, $)	216	287	340	
(Annual, $m)	529	175	247	951
EMS benefit payments (weekly, $)	265	265	265	
(Annual, $m)	649	162	193	1,003
HLFS-IS WINZ payments (weekly, $)	272	272	272	
(Annual, $m)	666	166	198	1,029

Notes: Weekly benefit amounts are averages among those wrongly receiving benefits in panel 1, and full sample averages in panel 1; the fiscal costs and savings are based on the respective weekly amounts and the estimated numbers of over and under take-ups (discussed in section 4.1).

Appendix: Determining benefit eligibility and ineligibility status

Potential (in)eligibility for the main Tier-1 benefits is determined using HLFS and NZIS reported information as follows. For each benefit, if HLFS-IS reported income is sufficient to abate the benefit to zero, the individual is classified as ineligible.

1. Jobseeker Support (JSS) potential (in)eligibility

   (Unrefined Eligible codes are 1-3; and Ineligible codes 11-15. Health related LM activity refinements relabel some ineligible to eligible, codes 4-6):

   Eligible:
   1 = Unemployed, and looking for fulltime work, or looking for fulltime or parttime work
   2 = Employed not fulltime, and looking for more hours
   3 = NILF, and has a job to start in the next 4 weeks or looked for work in last 4 weeks
   *Health refinements:
   4 = Employed parttime, and away from work lw or work fewer hours than would like b/c of health
   5 = Unemployed or NILF, and not available, don't want a job or not looking for a job because of health
   6 = Employed parttime, Unemployed or NILF, and left last job because of health
   Ineligible:
   1 = Non New Zealand born, in country less than two years
   2 = Employed fulltime
   3 = Employed parttime, and not looking for fulltime work
   4 = Unemployed, and looking for parttime work
   5 = NILF, and intend looking for work
   6 = NILF, and don't intend looking for work
   *Income abated ineligibility refinement:
   7 = Income sufficient to abate JSS to zero
   Indeterminate:
   0 = anyone who doesn't satisfy one of the above conditions

   (Note: anyone reported as in fulltime employment is characterised as JSS ineligible, irrespective of health responses.)

2. Supported Living Payment (SLP) potential eligibility:

   Eligible:
   1 = NILF because of own health status
   2 = NILF because of looking after an adult
   3 = Employed, but away from work last week, or work fewer hours than like because of a health condition
   Ineligible:
   1 = Non New Zealand born, in country less than two years
   2 = Benefit abated to zero
   3 = Other reason

3. Sole Parent Support (SPS) potential eligibility:

   Eligible: Aged>=20, Unpartnered and with dep children aged<14
   Ineligible:
   1 = Non New Zealand born, in country less than two years
   2 = Benefit abated to zero
   3 = Other reason

4. Youth Payment (YP) and Youth Parent Payment (YPP) potential eligibility:

   YP: aged 16-19
   0 = ineligible
   1 = a child in the family, and main activity is study or training
   2 = a non-partnered, non-child in the family, and main activity is study or training

   YPP: aged 16-19
   0 = ineligible
   1 = non-partnered, non-child, with at least 1 dependent child in the family
   2 = partnered, non-child, with at least 1 dependent child in the family

5. NZIS-based income refinement that benefit should be Abated to zero:

   0 = not abated to zero
   *single, aged>=18:
   1 = aged 18-19, non-partnered child ("at home"), with market income>=$281/week
   2 = aged 18-19, non-partnered, non-child ("away from home"), with no dep children, mkt income>=$331
   3 = aged 20-24, non-partnered, with no dep children, mkt income>=$331
   4 = aged >=25, non-partnered, with no dep children, mkt income>=$381
   *sole parents:
   21 = non-partnered, with at least 1 dep child, mkt income>=$623
   *couples:
   31 = partnered, with no dep children, mkt income>=$581
   32 = partnered (partner pot JSS-eligible), with at least 1 dep child, mkt income>=$616
   33 = partnered (partner pot JSS-ineligible), with at least 1 dep child, mkt income>=$652
   *single, aged 16-17:
   41 = non-partnered, with mkt income>=$262
   *couples, aged 16-19:
   51 = partnered, with mkt income>=$312

Table A1: Under and Over take-up of Jobseeker Support

	Under take-up			Over take-up		
Non NZ-born	0.140**	—	0.181*	-0.002	—	-0.004
	(0.056)		(0.098)	(0.003)		(0.005)
Pacific-born	—	0.094	-0.079	—	0.002	0.005
		(0.082)	(0.124)		(0.006)	(0.008)
Asia-born	—	0.055	-0.118	—	0.003	0.006
		(0.096)	(0.134)		(0.007)	(0.008)
Misc-CoB	—	0.188**	0.019	—	-0.001	0.002
		(0.081)	(0.122)		(0.005)	(0.007)
Years in NZ	-0.004**	—	-0.003	-0.00003	—	-0.00001
	(0.002)		(0.003)	(0.0001)		(0.0002)
Years in NZ*	—	-0.005**	-0.002	—	-0.00005	-0.00005
Pac/As/Misc		(0.003)	(0.004)		(0.0002)	(0.0003)
Years in NZ*	-0.272*	-0.245*	-0.284*	-0.020*	-0.021*	-0.021*
Not spec	(0.148)	(0.147)	(0.149)	(0.012)	(0.012)	(0.012)
Benefit gap	-0.282***	-0.282***	-0.287***	—	—	—
	(0.049)	(0.049)	(0.049)			
Female	0.0214	0.022	0.022	0.002	0.002	0.002
	(0.024)	(0.024)	(0.024)	(0.002)	(0.002)	(0.002)
Partnered	0.149***	0.155***	0.150***	-0.017***	-0.017***	-0.017***
	(0.030)	(0.030)	(0.030)	(0.002)	(0.002)	(0.002)
Age	-0.381***	-0.370***	-0.377***	0.015***	0.015***	0.015***
	(0.058)	(0.058)	(0.058)	(0.005)	(0.005)	(0.005)
Age-squared	0.042***	0.040***	0.041***	-0.002***	-0.002***	-0.002***
	(0.007)	(0.007)	(0.007)	(0.001)	(0.001)	(0.001)
1 child<14	-0.067*	-0.069*	-0.068*	-0.004	-0.004	-0.004
	(0.038)	(0.037)	(0.037)	(0.003)	(0.003)	(0.003)
2 children<14	-0.067	-0.073	-0.069	-0.009***	-0.009***	-0.009***
	(0.046)	(0.046)	(0.046)	(0.003)	(0.003)	(0.003)
3+ children<14	-0.092	-0.092	-0.097	-0.011***	-0.011***	-0.011***
	(0.062)	(0.062)	(0.063)	(0.004)	(0.004)	(0.004)
Maori	-0.020	-0.020	-0.012	0.026***	0.026***	0.026***
	(0.032)	(0.033)	(0.033)	(0.004)	(0.004)	(0.004)
Pacific	0.011	0.051	0.057	0.021***	0.019***	0.019***
	(0.047)	(0.055)	(0.055)	(0.004)	(0.005)	(0.005)
Asian	0.175***	0.258***	0.265***	-0.002	-0.005	-0.005
	(0.050)	(0.081)	(0.081)	(0.003)	(0.006)	(0.006)
Euro / Maori	-0.061	-0.061	-0.053	0.007*	0.008*	0.007*
	(0.043)	(0.043)	(0.044)	(0.004)	(0.004)	(0.004)
Misc ethnicity	0.020	0.023	0.030	0.013***	0.013***	0.013***
	(0.053)	(0.054)	(0.055)	(0.004)	(0.004)	(0.004)
Univ qual	0.179***	0.182***	0.176***	-0.020***	-0.020***	-0.020***
	(0.042)	(0.042)	(0.042)	(0.003)	(0.003)	(0.003)
Postsch qual	0.112***	0.111***	0.110***	-0.014***	-0.014***	-0.014***
	(0.033)	(0.033)	(0.033)	(0.003)	(0.003)	(0.003)
School qual	0.177***	0.178***	0.175***	-0.017***	-0.017***	-0.017***
	(0.029)	(0.029)	(0.029)	(0.003)	(0.003)	(0.003)
Last job: <3 mths	0.264***	0.260***	0.264***	0.008	0.008	0.008
	(0.054)	(0.054)	(0.054)	(0.008)	(0.008)	(0.008)
Last job: 3-12 mths	0.024	0.016	0.021	0.029***	0.029***	0.029***
	(0.047)	(0.047)	(0.047)	(0.006)	(0.006	(0.006)
Last job: >1 year	-0.070*	-0.072*	-0.066*	0.032***	0.032***	0.032***
	(0.037)	(0.037)	(0.037)	(0.004)	(0.004)	(0.005)
Last job: time not-sp	-0.033	-0.039	-0.029	0.017	0.017	0.017
	(0.062)	(0.061)	(0.062)	(0.013)	(0.013)	(0.013)
Left last job: 'personal'	-0.049	-0.049	-0.049	0.004	0.004	0.004
	(0.034)	(0.034)	(0.034)	(0.006)	(0.006)	(0.006)
Left last job: 'work'	-0.018	-0.017	-0.017	0.051***	0.051***	0.051***
	(0.040)	(0.040)	(0.040)	(0.007)	(0.007)	(0.007)
Constant	1.299***	1.283***	1.290***	0.004	0.004	0.004
	(0.115)	(0.116)	(0.116)	(0.010)	(0.010)	(0.010)
Observations	1,500	1,500	1,500	17,154	17,154	17,154
R-squared	0.246	0.246	0.248	0.034	0.034	0.034

Notes: Standard errors in parentheses. Omitted non-NZ born group is North-west and Southern Europe and North America. Reasons for leaving last job were categorised as 'personal' (family, sickness, moved), 'work' (job ended, laid off, dissatisfied with conditions), and other (retired, education).*** p<0.01, ** p<0.05, * p<0.1

Table A2: Under and Over take-up of Supported Living Payments

	Under take-up			Over take-up		
Non NZ-born	0.091	—	0.024	-0.006*	—	-0.006
	(0.102)		(0.184)	(0.003)		(0.005)
Pacific-born	—	0.043	0.021	—	-0.002	0.004
		(0.153)	(0.227)		(0.006)	(0.008)
Asia-born	—	0.029	0.008	—	-0.009	-0.005
		(0.220)	(0.276)		(0.007)	(0.008)
Misc-CoB	—	0.145	0.122	—	-0.007	-0.002
		(0.127)	(0.213)		(0.005)	(0.007)
Years in NZ	-0.002	—	-0.002	0.0002	—	0.0001
	(0.003)		(0.005)	(0.0001)		(0.0002)
Years in NZ*	—	0.001	0.002	—	0.0001	-0.00004
Pac/As/Misc		(0.004)	(0.006)		(0.0002)	(0.0003)
Years in NZ*	-0.256	-0.201	-0.213	0.001	-0.002	0.00002
Not spec	(0.241)	(0.236)	(0.245)	(0.012)	(0.012)	(0.012)
Benefit gap	-0.418***	-0.415***	-0.415***	—	—	—
	(0.077)	(0.077)	(0.077)			
Female	-0.014	-0.010	-0.009	-0.003	-0.003	-0.003
	(0.037)	(0.037)	(0.037)	(0.002)	(0.002)	(0.002)
Partnered	0.156***	0.157***	0.156***	-0.029***	-0.029***	-0.029***
	(0.045)	(0.044)	(0.045)	(0.002)	(0.002)	(0.002)
Age	-0.173*	-0.166*	-0.167*	0.029***	0.029***	0.029***
	(0.100)	(0.100)	(0.101)	(0.005)	(0.005)	(0.005)
Age-squared	0.017	0.016	0.016	-0.003***	-0.003***	-0.003***
	(0.012)	(0.012)	(0.012)	(0.001)	(0.001)	(0.001)
1 child<14	-0.018	-0.017	-0.018	-0.004*	-0.004*	-0.004*
	(0.072)	(0.072)	(0.072)	(0.003)	(0.003)	(0.003)
2 children<14	-0.018	-0.018	-0.017	-0.011***	-0.011***	-0.011***
	(0.091)	(0.092)	(0.092)	(0.003)	(0.003)	(0.003)
3+ children<14	-0.394**	-0.384**	-0.384**	-0.015***	-0.015***	-0.015***
	(0.184)	(0.186)	(0.187)	(0.004)	(0.004)	(0.004)
Maori	0.046	0.046	0.043	0.014***	0.014***	0.014***
	(0.054)	(0.053)	(0.054)	(0.003)	(0.003)	(0.004)
Pacific	-0.017	-0.040	-0.041	0.005	0.003	0.003
	(0.080)	(0.109)	(0.109)	(0.004)	(0.005)	(0.005)
Asian	0.109	0.119	0.116	-0.001	0.003	0.002
	(0.097)	(0.168)	(0.168)	(0.003)	(0.006)	(0.006)
Euro / Maori	-0.018	-0.018	-0.020	0.007*	0.007*	0.007*
	(0.068)	(0.067)	(0.068)	(0.004)	(0.004)	(0.0041)
Misc ethnicity	-0.180*	-0.215**	-0.216**	0.006	0.007	0.007
	(0.101)	(0.106)	(0.106)	(0.004)	(0.005)	(0.005)
Univ qual	0.144**	0.145**	0.145**	-0.025***	-0.025***	-0.025***
	(0.069)	(0.069)	(0.069)	(0.003)	(0.003)	(0.003)
Postsch qual	0.149***	0.148***	0.148***	-0.018***	-0.018***	-0.018***
	(0.051)	(0.051)	(0.051)	(0.003)	(0.003)	(0.003)
School qual	0.071	0.070	0.070	-0.021***	-0.021***	-0.021***
	(0.047)	(0.047)	(0.047)	(0.003)	(0.003)	(0.003)
Last job: <3 mths	0.115	0.120	0.120	0.009	0.009	0.009
	(0.120)	(0.121)	(0.121)	(0.007)	(0.007)	(0.007)
Last job: 3-12 mths	-0.186**	-0.180**	-0.179**	0.019***	0.019***	0.019***
	(0.084)	(0.084)	(0.084)	(0.005)	(0.005)	(0.005)
Last job: >1 year	-0.167***	-0.164***	-0.163***	0.081***	0.081***	0.082***
	(0.056)	(0.056)	(0.056)	(0.004)	(0.004)	(0.004)
Last job: time not-sp	-0.085	-0.094	-0.091	0.111***	0.110***	0.111***
	(0.095)	(0.094)	(0.095)	(0.011)	(0.011)	(0.011)
Left last job: 'personal'	-0.034	-0.034	-0.034	-0.007	-0.009	-0.007
	(0.054)	(0.054)	(0.054)	(0.005)	(0.005)	(0.005)
Left last job: 'work'	-0.069	-0.070	-0.071	-0.022***	-0.022***	-0.023***
	(0.091)	(0.092)	(0.092)	(0.006)	(0.006)	(0.006)
Constant	1.154***	1.137***	1.138***	-0.017*	-0.016*	-0.016*
	(0.204)	(0.203)	(0.205)	(0.010)	(0.010)	(0.010)
Observations	582	582	582	18,429	18,429	18,429
R-squared	0.227	0.229	0.229	0.066	0.066	0.066

Notes: Standard errors in parentheses. Omitted non-NZ born group is North-west and Southern Europe and North America. Reasons for leaving last job were categorised as 'personal' (family, sickness, moved), 'work' (job ended, laid off, dissatisfied with conditions), and other (retired, education).*** p<0.01, ** p<0.05, * p<0.1

Table A3: Under and Over take-up of Sole Parent Support

	Under take-up			Over take-up		
Non NZ-born	0.106	—	0.464*	-0.002	—	-0.003
	(0.095)		(0.260)	(0.003)		(0.005)
Pacific-born	—	0.144	-0.319	—	0.001	0.004
		(0.117)	(0.284)		(0.005)	(0.007)
Asia-born	—	0.239	-0.225	—	0.0002	0.003
		(0.192)	(0.323)		(0.005)	(0.007)
Misc-CoB	—	-0.117	-0.582**	—	-0.003	-0.0003
		(0.131)	(0.291)		(0.005)	(0.007)
Years in NZ	-0.007*	—	-0.0232*	-2.0e-07	—	8.6e-06
	(0.004)		(0.013)	(0.0001)		(0.0002)
Years in NZ*	—	-0.008	0.016	—	-0.00002	-0.00003
Pac/As/Misc		(0.005)	(0.014)		(0.0002)	(0.0002)
Years in NZ*	-0.434*	-0.453*	-0.454*	-0.0004	-0.002	-0.001
Not spec	(0.227)	(0.231)	(0.231)	(0.010)	(0.010)	(0.010)
Benefit gap	-0.675***	-0.678***	-0.668***	—	—	—
	(0.070)	(0.070)	(0.070)			
Female	-0.284***	-0.285***	-0.287***	0.005***	0.005***	0.005***
	(0.049)	(0.048)	(0.049)	(0.001)	(0.001)	(0.001)
Age	-0.265**	-0.259**	-0.252**	0.004	0.004	0.004
	(0.111)	(0.111)	(0.111)	(0.004)	(0.004)	(0.004)
Age-squared	0.037**	0.036**	0.036**	-0.001	-0.007	-0.001
	(0.015)	(0.015)	(0.015)	(0.0005)	(0.0005)	(0.0005)
1 child<14	—	—	—	0.016***	0.016***	0.016***
				(0.003)	(0.003)	(0.003)
2 children<14	0.007	0.009	0.009	0.024***	0.024***	0.024***
	(0.039)	(0.039)	(0.039)	(0.005)	(0.005)	(0.005)
3+ children<14	-0.022	-0.024	-0.024	-0.002	-0.002	-0.002
	(0.045)	(0.045)	(0.045)	(0.009)	(0.009)	(0.009)
Maori	0.0003	-0.002	0.001	0.002	0.002	0.002
	(0.042)	(0.042)	(0.043)	(0.003)	(0.003)	(0.003)
Pacific	0.104*	0.087	0.090	-0.002	-0.003	-0.004
	(0.057)	(0.060)	(0.060)	(0.003)	(0.004)	(0.004)
Asian	0.201**	0.081	0.083	-0.001	-0.003	-0.003
	(0.079)	(0.167)	(0.167)	(0.003)	(0.005)	(0.005)
Euro / Maori	-0.002	-0.006	-0.002	-0.004	-0.004	-0.004
	(0.053)	(0.053)	(0.053)	(0.003)	(0.003)	(0.003)
Misc ethnicity	0.065	0.114	0.118	-0.001	-0.001	-0.0007
	(0.074)	(0.078)	(0.078)	(0.004)	(0.004)	(0.004)
Univ qual	0.164**	0.171**	0.178***	-0.007***	-0.007***	-0.007***
	(0.066)	(0.067)	(0.068)	(0.002)	(0.002)	(0.002)
Postsch qual	0.027	0.031	0.030	-0.006**	-0.006**	-0.006**
	(0.044)	(0.044)	(0.044)	(0.002)	(0.002)	(0.002)
School qual	0.102***	0.107***	0.107***	-0.007***	-0.007***	-0.007***
	(0.039)	(0.039)	(0.039)	(0.002)	(0.002)	(0.002)
Last job: <3 mths	0.104	0.104	0.099	0.013**	0.013***	0.013***
	(0.102)	(0.102)	(0.102)	(0.005)	(0.005)	(0.005)
Last job: 3-12 mths	0.0505	0.045	0.033	-0.001	-0.001	-0.001
	(0.071)	(0.071)	(0.072)	(0.004)	(0.004)	(0.004)
Last job: >1 year	0.002	-0.001	-0.007	-0.0003	-0.0003	-0.0003
	(0.057)	(0.057)	(0.057)	(0.003)	(0.003)	(0.003)
Last job: time not-sp	0.160	0.171	0.168	0.012*	0.012*	0.012*
	(0.123)	(0.123)	(0.123)	(0.006)	(0.006)	(0.006)
Left last job: 'personal'	-0.085*	-0.083	-0.082	0.015***	0.015***	0.015***
	(0.051)	(0.051)	(0.051)	(0.004)	(0.004)	(0.004)
Left last job: 'work'	-0.128*	-0.122*	-0.123*	0.004	0.004	0.004
	(0.070)	(0.070)	(0.070)	(0.004)	(0.004)	(0.004)
Constant	1.550***	1.542***	1.524***	-0.001	-0.0005	-0.0004
	(0.198)	(0.198)	(0.198)	(0.007)	(0.007)	(0.007)
Observations	672	672	672	5,838	5,838	5,838
R-squared	0.322	0.325	0.329	0.018	0.018	0.019

Notes: Standard errors in parentheses. Omitted non-NZ born group is North-west and Southern Europe and North America. Reasons for leaving last job were categorised as 'personal' (family, sickness, moved), 'work' (job ended, laid off, dissatisfied with conditions), and other (retired, education).*** p<0.01, ** p<0.05, * p<0.1