TAYLOR FRY

Annual report on the Benefit System for Working-age Adults

As at 30 June 2017

This report has been produced for the Ministry of Social Development

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This report has been commissioned by the Ministry of Social Development and written by Taylor Fry. Findings in this report may not represent the views of the Ministry of Social Development

2017 report at a glance

Headline numbers

The 540,000 clients who received benefits in 2016/17 will spend a combined

4.1m

future years receiving main benefits until age 65.

This equates to $72.2b worth of future payments.

Each client will average

7.7

future years receiving main benefit until age 65.
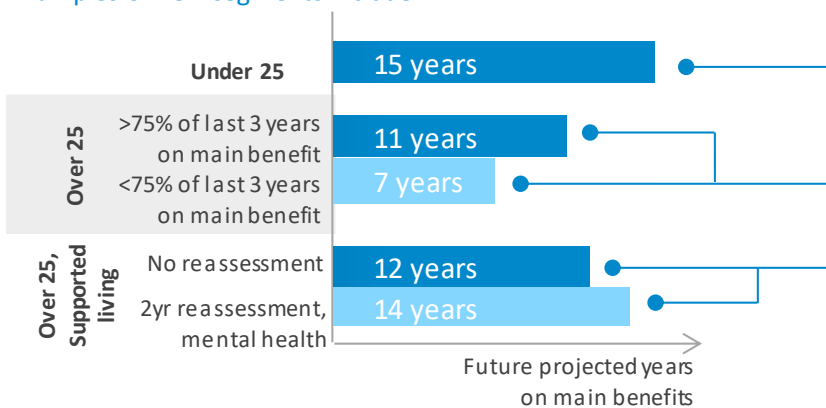
This equates to an average of $119k of future payments.

A new segmentation

This year we report using new segments

Examples of new segments include:

Under 25	15 years	
Over 25 >75% of last 3 years on main benefit	11 years	
<75% of last 3 years on main benefit	7 years	
Over 25, Supported living No reassessment	12 years	
2yr reassessment, mental health	14 years	

Future projected years on main benefits

This new segmentation:

» Better highlights the range of outcomes for youth and young adults

» Uses benefit history to better identify groups with higher future need

» Looks at Supported Living clients in more depth.

Performance story

Some of the differences to forecasts over 2016/17 included:

» Fewer clients exiting Jobseeker benefits, resulting in 1.0% higher than expected Jobseeker numbers

» Slightly more exits from Sole Parent Support, particularly with youngest child aged 3-4

» Fewer first-time clients across most benefit types, partially offset by more clients re-entering

» 1.1% lower than expected youth client numbers.

These trends flow through to projection results.

+3%

Isolating the 'change under management influence' aspect, there is a 3% (or +122,000 years) increase in future benefit years due to experience over 2016/17.

Compared to last year we now project:

• Substantially more future years of Jobseeker support (across all current benefit types)

• Slightly less future years of Sole Parent support.

This is the first experience increase we have observed since analysis began in June 2012.

-14%

We estimate a $11.2 billion cumulative reduction related to Welfare Reform and management influence over the past six years, or about 14% of the estimated future payments in the 2011 report. This translates to more than 0.6m fewer benefit-years.

2017 report at a glance

Features of interest

Each year we conduct new analysis to extract further insight from our projection model. We present a selection of features of interest from this year's report.

Education

New data provided by the Ministry of Education shows that future duration of benefit support differs markedly with educational attainment. For example, work-ready job seekers that did not attain NCEA Level 1 at school have more than twice the expected future years on main benefits than those with NCEA Level 3 or 4; 8 additional years. Nearly half of the impact is directly attribute to education; the rest due to correlated factors (e.g. region, ethnicity, child protection history).

Benefit/Housing joint exits

Nearly half of the primary householders in public housing also received working-age benefit support in 2016/17. While simultaneous exits from the benefit and public housing systems during the same quarter are relatively rare, they are much more common than if the two events were unrelated. For example, those exiting JS-HCD are four times more likely to also exit public housing compared to JS-HCD clients who don't exit. Further, the benefit system exit more commonly occurs before the housing exit. This suggests the reason for the benefit exit (such as sustained employment opportunities) can reduce the need for public housing support.

$3k to Work

Our analysis found that 68% of $3k to Work grant recipients were still off benefit after four quarters. This is higher than 48% for a matched sample of clients with similar backgrounds who did not receive the grant. To the extend that grant recipients wouldn't have moved anyway, our results support the initiative. Off-benefit outcome rates were significantly higher than for the broader population of benefit recipients. Further analysis showed the jobs appear to be as sustainable as other types of benefit exits.

Child Material Hardship package

The Child Material Hardship package introduced in 2016 appears to have an impact on benefit dynamics, in addition to higher benefit rates. Exit rates from Sole Parent Support are markedly higher than last year for those with youngest child aged 3 to 4; this group had new part-time work requirements. Conversely, the observed decreases in jobseeker exit rates was twice as large for clients with registered children. This partly relates to the mechanics of benefit abatement; these clients can now earn more before they no longer qualify for their main benefit.

Benefit suspensions

Clients' benefits can be suspended, typically involving a temporary loss of benefits due to failure to meet mutual obligation requirements. We tested the impact of suspensions on long-term benefit pathways. While there are significant differences between the groups with and without suspensions history, very little of this can be explained by the suspensions history itself. That is, there is very little impact on long-term benefit support attributable to suspensions history.

Health sector usage

Using the Integrated Dataset Infrastructure, we looked at health sector usage as a predictor of later receipt of Health Condition and Disability benefits. We found that those using a mental health-related service were 3.4 times more likely to enter benefits than the baseline population, with some smaller subcategories (e.g. psychotic disorders) having even higher risk. Other service usage, including repeated hospital visits, also saw elevated risk. This type of analysis highlights the continuing usefulness of cross-agency data analysis.

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1.1   Introduction

This life-course model and report on the benefit system (as at 30 June 2017) includes:

» An estimate of the total future time on benefits of current beneficiaries, and associated cost
» An estimate of the total future time on benefits of new entrants to the benefit system, and associated cost
» Analysis of changes over the year, and their impact on the numbers and durations on benefit
» Detailed behavioural information about lifetime patterns of benefit receipt
» Analysis of characteristics associated with higher and lower need of benefits, including cross-sectoral predictors
» Break-downs of the life-course model by client group, by region and by payment type
» Projected future changes to the population receiving benefits.

Since 2012, the New Zealand Government has applied an investment approach to improving long-term social and fiscal outcomes. The annual projection model of the benefit system provides key measurement of progress as well as the factors that are affecting long-term trends and costs.

This 2017 report forecasts the future benefit system service usage of the approximately 540,000 working-age clients who received income support in the 2016/17 fiscal year; nearly one-fifth of New Zealand's working-age population. We project working-age benefit receipt for this population at an individual level, allowing us to report results for different cohorts, such as Work & Income region, or by client segments – based on characteristics that affect their long-term pathways through the benefit system.

Last year's report gave a final assessment of the impact of the changes associated with Welfare Reform in 2013. Changes over the past year are therefore in the post-reform landscape, but include important policy changes (such as the 2016 introduction of the Child Material Hardship Package) and other operational changes.

The projection model takes a detailed and cross-sectoral view of benefit receipt. Previous reports have incorporated data related to corrections, child protection and youth justice. In 2016 we extended the model significantly to incorporate public housing and we formally project joint client housing-benefit pathways. These features remain in the model and are important determinants of projected benefit system service use. Intergenerational benefit receipt has also been an important feature, and this year its role has been extended to new age bands, as our historical time series of data has been extended. This detailed approach, along with other technical improvements to the projection model, continues to offer a comprehensive view of client need and opportunities for intervention.

In this year's report, we introduce new data from the Ministry of Education on educational attainment, enrolments and stand-downs. This data proves to be very powerful in explaining how people move through the benefit system, as well as the overrepresentation of those with low educational attainment

on benefits. We also incorporate benefit suspensions data, imposed when people fail to meet their mutual work obligations, and find that this data has limited incremental impact on client pathways. We have performed a piece of analysis in the Integrated Data Infrastructure (IDI) on health sector service usage to better understand entry into benefits for those clients with a health condition, incapacity or disability.

Other highlights of this year's analysis include a new segmentation, which better aligns with long-term benefit outcomes and areas of current focus for MSD. Other features include an assessment of the 3k to Work grant, a focus on health-related outcomes and focus on key groups of interest, including those who have been off benefits for a few years, the 25-29 age cohort and Māori clients.

Further background is provided in Appendix B, and key terms and acronyms are listed in the Glossary.

1.2 Key drivers of the projection model and developments in 2016/17

The projection model provides a forecast of how beneficiaries move through the system – termed benefit dynamics – and their associated future cost. Factors that influence these forecasts can be split into drivers of benefit dynamics and other financial drivers, or into factors that can and cannot be influenced by management. Of the factors below, operations and policy setting are considered to be under management influence; whereas the remaining factors are considered to be outside of management influence.

Changes to drivers of benefit dynamics:

» **Policy settings:** The expansion of the Young Parent Payment program to 19-year-old parents and the continued impact of the Child Material Hardship Package and the 3k to Work grant.

» **Operations:** Trials for various client groups, including those with mental health issues and those with current or recent corrections spells.

» **Labour market:** A slightly improved labour market, as measured by the unemployment rate, in line with forecasts in the previous report.

» **Demographics:** Continued high levels of net migration to NZ during 2016/17, and lower numbers of births to young mothers.

Changes to other financial drivers:

» **Benefit rates:** Increase related to the Child Material Hardship Package of $25 per week for clients with dependent children.

» **Inflation rate:** A 1.2% benefit rate increase was applied at April 2017, slightly lower than the 1.5% expected. Future inflation assumptions have been raised slightly, in line with Treasury forecasts.

» **Discount rate:** Assumed risk-free rates of return are now significantly higher than at June 2016, reversing the decreases in the previous report.

1.3 Features of interest

1.3.1 Educational attainment

For the 2017 projection and report we have been provided with a new dataset from the Ministry of Education (MoE), significantly improving the quality of education data for clients aged under 25. Looking over the past five years of benefit receipt, the importance of educational attainment is clear. Young clients on JS-WR or EB at June 2012 who had not achieved NCEA Level 1 spent more than twice as long on main benefits over the next five years – on average 2.7 years out of 5, compared to 1.1 years for a client who has achieved NCEA Level 3/4. The effect is a little smaller for JS-HCD (3.5 compared to 2.1

years) SPS (4.1 compared to 3.1 years) or SLP clients (4.6 compared to 3.4), but still strong. Low educational attainment is associated with about an extra year on benefits over the five-year window.

School education attainment levels are lower among the matched[1] current client cohort than the general population. About 65% of (matched) clients did not achieve NCEA Level 2 or higher at school compared to about 17% of the NZ population. This implies educational attainment is also a predictor of entry into the benefit system, as well as being strongly associated with longer durations on benefit. The 65% figure has been stable over the past five years, in contrast to improvements in the national rate of educational attainment over that time period.

The left panel of Figure 1.1 shows that these differences are reflected in our projection model. For work-ready Jobseekers (plus YP and EB), those not attaining NCEA L1 have **more than twice** the expected future years on main benefits than those with NCEA L3/4; 8.1 additional years. For JS-HCD the difference is 6.5 years and for SPS 4.5 years. These large differences reflect the fact that educational attainment is one of the strongest predictors of benefit system pathways for the under 25 age group.

The right panel shows the partial dependence[2] differences between the groups, with <NCEA L1 set as the baseline. Almost half of this difference has been attributed directly to education-related variables in our models; the remainder due to other correlated predictors (such as intergenerational benefit history or ethnicity). The partial dependence effects (comparing NCEA 3/4 to less than L1) are 3.7, 2.8 and 1.9 years for JS-WR, JS-HCD and SPS respectively. Comparisons between other groups can also be made. For example, the partial dependence effect comparing NCEA L3/4 to NCEA L2 for JS-WR clients is 1.1 years. Smaller partial effects are also built into the model for tertiary enrolment and stand-downs and suspensions while at school.

The larger effect for JS-WR benefits is intuitive. The connection between educational attainment and employability is most direct for these clients. The effect is relatively large in the projection model when compared to other predictors of long-term benefit receipt.

Figure 1.1 Future years on main benefits over working-age lifetime by current benefit and school attainment level. Left panel shows average differences, whereas the right panel shows the marginal ('partial') impact of educational attainment (relative to not achieving NCEA level 1), holding all other correlated factors constant. Both panels are for clients aged under 25.

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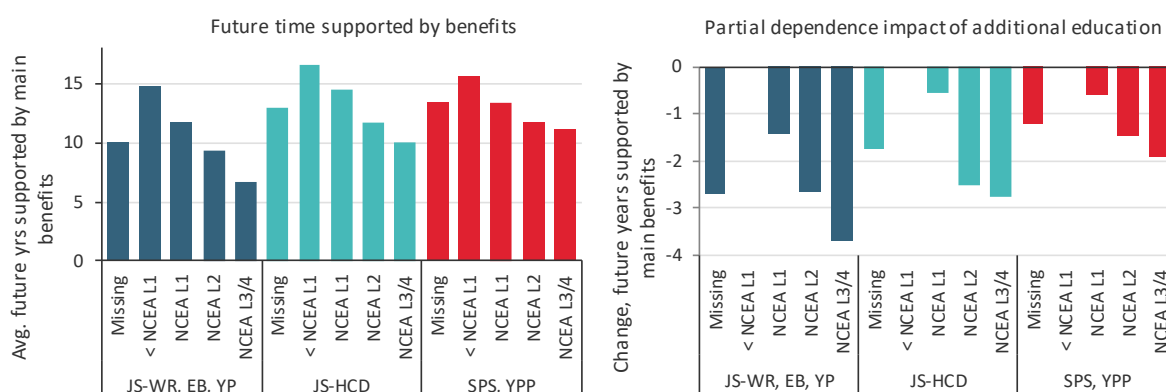
[1] 69.5% of current cohort clients aged 25 and under have a match to the new education data.

[2] Partial dependence refers to the average impact of a variable on the model prediction holding all other factors constant. This removes the influence of other correlated effects to get a 'pure' signal, as measured by the model. Note this is potentially still an association effect rather than causation; there may be other underlying factors not included in the model that affect both educational attainment and welfare trajectories.

The 3k to Work programme, introduced in 2014 (and including the related 3k to Christchurch program), provides relocation grants to help jobseekers who have secured a full-time employment offer in a different region. We have been provided with data covering 1,300 grants paid to people by 30 June 2016 who were receiving JS-WR benefits in the same quarter. We have compared outcomes after a year (four quarters) to other JS-WR recipients using propensity matching. The matching controls for differences in the population taking up the grant. These clients tend to be younger, male and more likely to reside in the South Island.

We perform two analyses: we compare 3k to Work recipients to all jobseekers (Figure 1.2), and to jobseekers who leave benefits (Figure 1.3).

For the first analysis, of the 1,300 grant recipients, 68% were found to still be off main benefits (not on benefits or receiving supplementary-only benefits) after four quarters. As would be expected, this proportion is much higher than for the broader JS-WR population (40%) and matched cohort of JS-WR clients (48%), most of whom would not have a current job offer. While unsurprising, this confirms that benefit outcomes are much better for grant recipients compared to the broader group of JS-WR clients.

Figure 1.2 Benefit status for JS-WR clients a year after their 3k to Work grant receipt ('take-up'), compared to other JS-WR clients and a propensity-matched sample
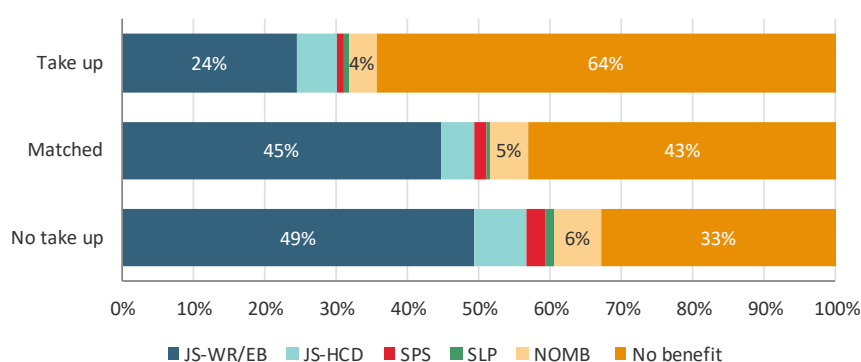
The second analysis centres on the sustainability of the outcome compared to other benefit exits. Of the 1,300 recipients, about 1,050 moved off main benefits in the first quarter after receipt, so we compare these to similar clients exiting JS-WR. 74% of the grant recipients remained off main benefits for the additional three quarters. A similar rate (of 76%) is seen in a matched population of JS-WR exits, so there is no significant difference in the re-entry rate of '3k to Work' recipients to the average JS-WR exit. Interestingly, a smaller fraction of the grant recipients are on supplementary-only benefits, which suggests that some of the grant recipients may be earning a slightly higher income compared to the matched sample.

Figure 1.3 JS-WR clients' status over year after their grant receipt conditional on being NOB or SUP in their first quarter. Benefit state is the first main benefit entered over the year, if applicable.
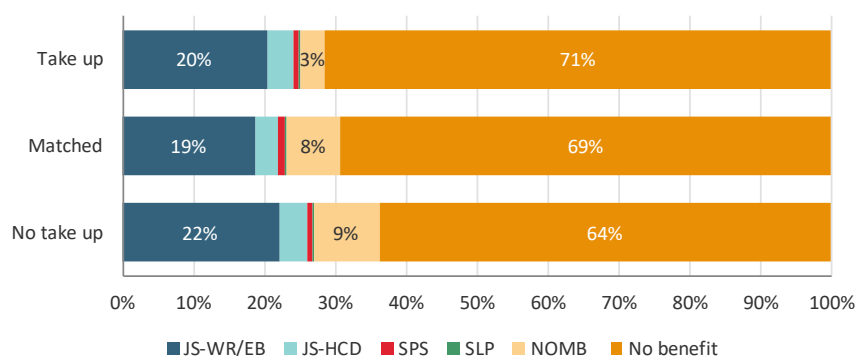
To the extent that clients wouldn't have moved for employment anyway, the results support the program. The first analysis shows that employment outcomes are significantly higher and the second shows that these employment-related exits appear to be as sustainable as other types of benefit exits.

1.3.3 Child Material Hardship Package

The Child Material Hardship Package (CMHP) was introduced in Budget 2015 and came into effect from 1 April 2016. It provided a benefit increase for families of up to $25 per week, as well as an increase to the child care subsidy. It also increased part-time work requirements for some clients. The increase in average benefit payments is visible across most benefit types, and we've allowed for this in our model and made a direct estimate of the effect of the CMHP on future long-term payments.

Our estimate of impact of the CMHP on total future benefits due to higher payment rates is a $1.5 billion increase, with half being future SPS payments as shown in the table below. This is close to our estimate last year, with the main difference to last year's estimate being a higher projected level of CCS payments.

Table 1.1 Impact of CMHP on future benefit payments

Future payments, $m													Total
	Main Benefit type						Tier 2 benefit type				Tier 3 benefit		
	SPS	EB	JS-WR	JS-HCD	SLP	OB	AS	DA	CDA	CCS	EI	HS	
With CMHP	9,384	158	7,581	5,925	22,206	1,701	9,904	1,700	926	1,162	118	3,141	63,906
Without CMHP	8,591	158	7,402	5,694	21,992	1,701	9,904	1,700	926	1,047	118	3,141	62,375
Impact	793	-	179	231	213	-	-	-	-	115	-	-	1,531
Proportion of total impact	52%	0%	12%	15%	14%	0%	0%	0%	0%	8%	0%	0%	

There are also visible impacts on benefit dynamics that we have not directly attributed to the package, but they are highly likely to be related to it. First, the exit (or transfer) rates from SPS benefits are significantly higher for those with a youngest child aged 3 or 4. This client group has new part time work requirements under the package. The size of the change is comparable to that experienced for beneficiaries with children aged 5-13 after the 2013 Welfare Reform changes to work requirements for this group – see Figure 1.4. This reduces expected future years on SPS benefits for those with young children.

Figure 1.4 Proportion of SPS clients exiting benefits or moving to another benefit in the next quarter, by age of youngest child. Lines indicate years to March 31.
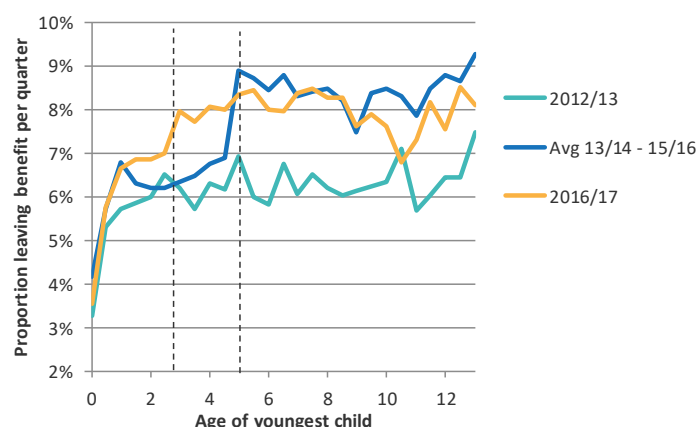
Second, exit rates for jobseekers have fallen for most client groups, but they have fallen twice as much for those with registered children. This is shown in Figure 1.5. One potential explanation for this relates to the role of abatement rates; under the package, couples (with children) can now earn an extra $70 per week and singles (with children) $35 before their main benefit is fully abated. This means that at some income levels, people who previously would have exited benefits no longer do so.

Figure 1.5 Proportion of JS clients exiting benefits or moving to another benefit in the next quarter (de-seasonalised)
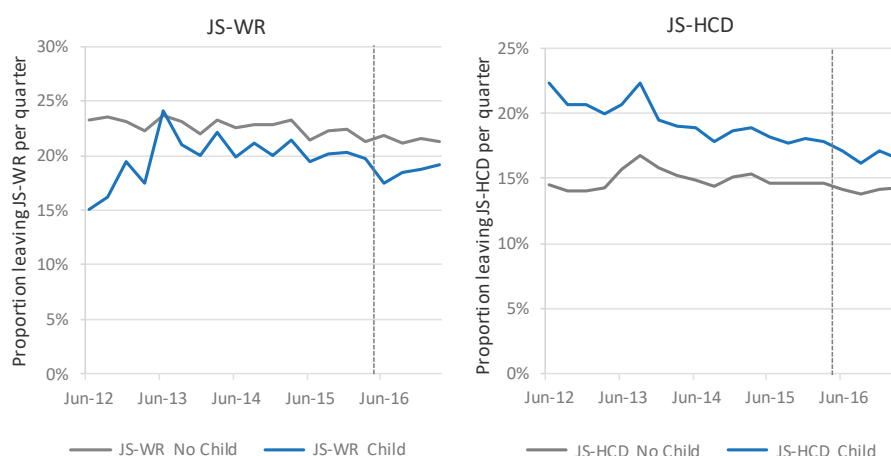
1.3.4   New segmentation variables

As part of the new segmentation, two new variables have been introduced into the projection model; the proportion of recent time with main benefit support and the reassessment frequency of incapacities for SLP-HCD clients.

The introduction of the proportion of time on main benefits over the past few years as a segmentation variable is intuitive and strong. As shown in Figure 1.6, the group of JS-WR recipients with three-quarters of the last three years on benefit will have an extra 3.7 years on benefits in the future, on average, compared to those who have spent less than 75% of the last 3 years on main benefits – a 50% increase. Similar increases are visible for other benefit types, with particularly marked differences for clients who are not on main benefits or recent exits. The effect is also consistently strong across all age bands.

Figure 1.6 Average future years of main benefit support for all clients by benefit type (left panel) and age (right panel), both split according to intensity of recent main benefit support. Lower and higher thresholds determined by the thresholds used in the segmentation (see Section 2.2.2).
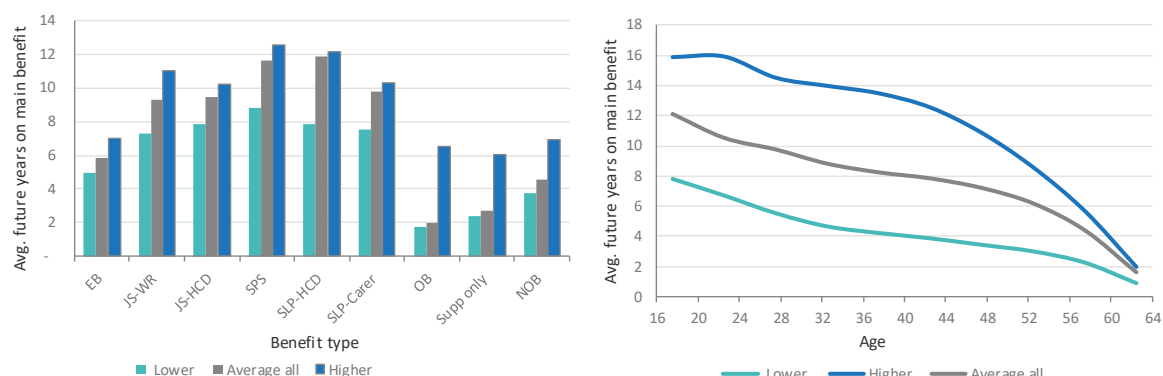
The second variable relates to the reassessment frequency of incapacities for SLP-HCD clients. These clients are either reassessed every two years (if the health condition or disability has a reasonable chance of changing over time), or categorised as never to be reassessed. The new segmentation makes use of this assignment and we have incorporated it as a predictor in our model. There are 86,000 SLP-HCD clients (excluding partners) at June 2017, about three in five of these are assigned to be reassessed.

The impact of the variable on future duration on benefits is small. The left panel of Figure 1.7 shows this, with very little partial dependence effect assigned to the distinction. While those who have a reassessment do recover more frequently, this is offset by higher mortality among those without reassessment. Of greater importance is the **reason** for exit. As shown in the right panel of the figure, those clients with the 2-year reassessment are more than twice as likely to have an employment-related exit from SLP, and this difference applies to most incapacity types.

Figure 1.7 Average future years of main benefit support for SLP-HCD clients at June 2017 and partial dependence effect of the new reassessment frequency variable (left panel). Proportion of SLP-HCD clients at June 2014, with an exit relating to employment in the following 3 years (right panel). Both panels shown by incapacity type.
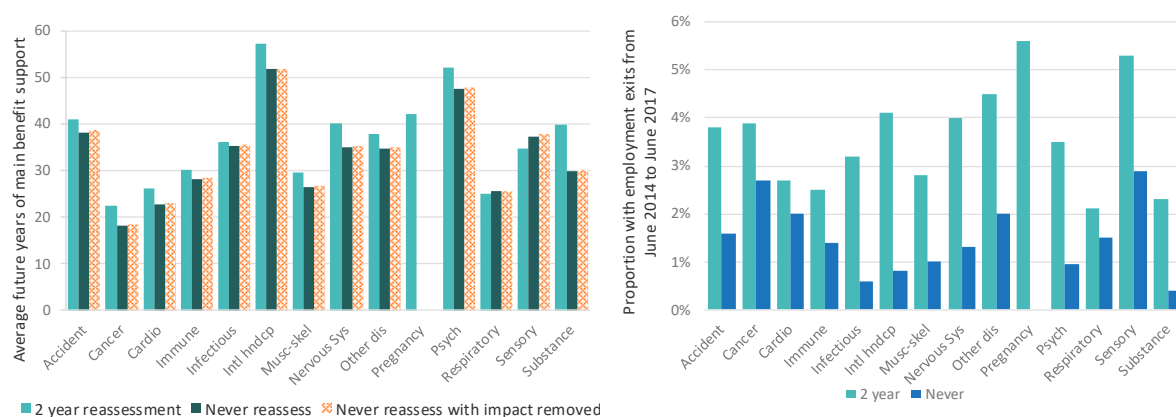
1.3.5 New benefit suspensions data

Benefits can be suspended, usually temporarily, if clients fail to meet mutual obligations (these vary by benefit type, and include taking part in a work ability assessment, requirements to look for work and enrolling dependent children in school). For the first time, we have been provided with suspension data, which we have incorporated into the projection model. However, the impact of suspensions on the projection model turns out to be very small. Those receiving JS-WR with suspensions history are expected to be on benefits for an extra quarter of a year over their lifetime, all else equal.

The prevalence of one or more suspensions is highest for the 20-24 age group. It is twice the rate for Māori compared to NZ European clients. Note this is not necessarily causative, and a relatively higher proportion of Māori clients being young and on JS-WR contributes to the difference.

Figure 1.8 Proportion of clients in 2017 current cohort with one or more suspensions in the past 5 years by benefit type (left panel) and JS-WR subgroup by age group (middle panel) and ethnicity (right panel).
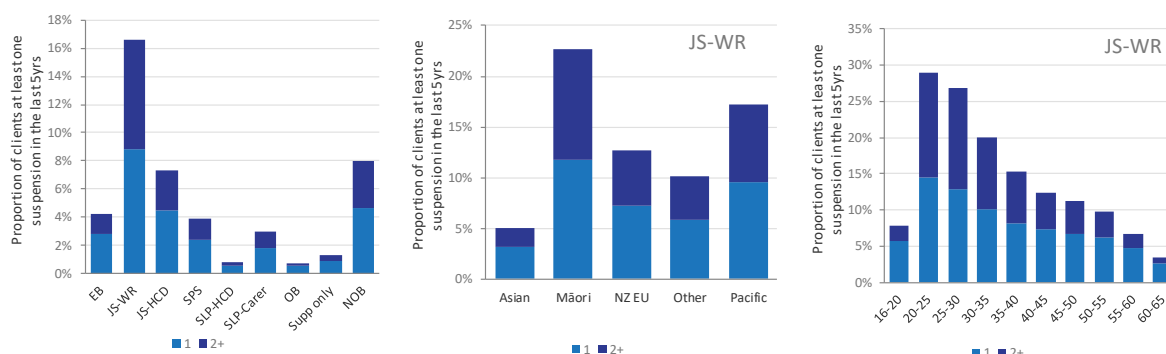
As noted, there is little marginal impact on long-term benefit system support attributable to suspensions history. There are differences in the average future years with benefit support between the groups, but these differences are due to other factors. For example, Māori clients have longer future durations of benefit support, all else equal, and their overrepresentation in the suspensions history group raises the corresponding average future years of benefit support.

1.3.6   Health sector service usage and benefit entry

The Integrated Data Infrastructure (IDI) provides us with an opportunity to explore how the benefit system interacts with other elements of government service delivery. This year, we have combined benefit system data with health data in the IDI to explore health sector service usage and its ability to anticipate entry into JS-HCD or SLP-HCD ('HCD benefits').

Overall, simply having health system service usage history is not enough to predict benefit entry. The number of people accessing healthcare is much higher than the number entering the benefit system. However, the **relative** likelihood of entry can vary substantially by different type of health system service usage, providing some insight into how need may be better identified early. Figure 1.8 shows some of these relativities:

» The top left panel shows people accessing a mental health service were nearly four times more likely to enter an HCD benefit the following year (compared to the general population), and higher again for some specific mental health issues.

» The top right panel shows repeated health sector service usage is also important; those who visited emergency departments five or more times were more than six times more likely to enter HCD benefits the following year.

» The bottom left panel shows that those clients who were in hospital for a substance abuse or mental health issue have very high relative likelihoods of entering HCD benefits (seven and ten times, respectively) in the following year.

» The bottom right panel shows those with a chronic condition to be managed also have a higher relative likelihood of benefit entry.

Figure 1.9 Relative likelihood of entry into HCD benefits in subsequent year, based on health service usage
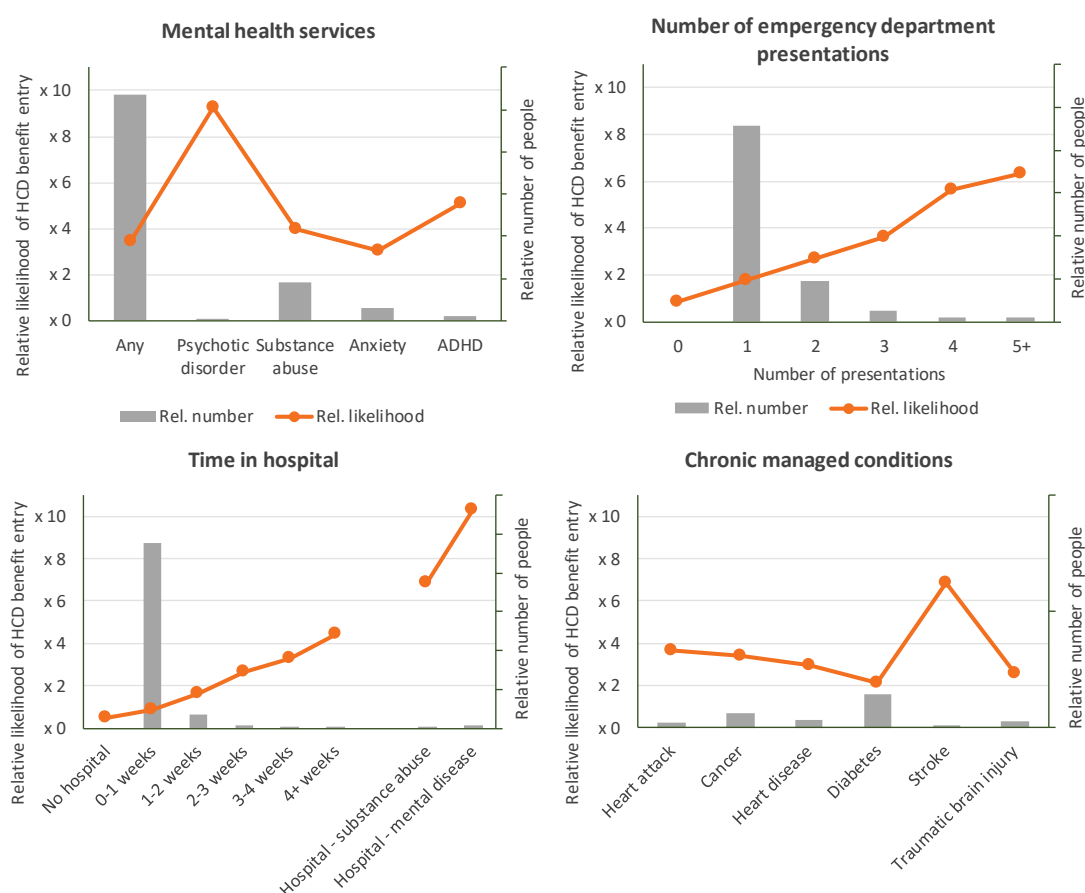
These results also demonstrate high health service usage and underlying need among HCD clients, which tends to start before entry into the benefit system. It also shows the total level of support is necessarily higher for these clients, through the combination of benefit system and healthcare spending.

1.3.7   Interaction of disability allowance and HCD

People who have disabilities may be eligible to receive disability allowance (DA) to help cover related ongoing costs. There are around 120,000 such clients receiving DA each quarter. Three-quarters of the clients receiving DA are also receiving a HCD main benefit (SLP-HCD or JS-HCD). The remainder are on another type of benefit or receiving supplementary benefits only.

The quarter of DA recipients who are not HCD beneficiaries are primarily Supplementary-only, SPS and JS-WR clients. These clients have more extensive history of SLP-HCD and JS-HCD than other clients; however around 1 in 3 have not previously received SLP-HCD or JS-HCD.

Of those with DA payments in the June 2015 quarter while in JS-WR, 6% entered SLP-HCD over the following 2 years; three times the average for all JS-WR clients. In theory, this means that DA receipt among non-HCD beneficiaries can be used as an indicator variable for future HCD demand. The data provided to us does not give much information about the health conditions underlying the DA approval, but such information is potentially useful for better understanding underlying need.

Table 1.2 Rates of entry to JS-HCD and SLP-HCD over Sep-15 to Jun-17 for clients at Jun-15, split by DA receipt

Jun-15 benefit type	Number at June 2015 with DA	Proportion with SLP-HCD over next 2 years		Proportion with JS-HCD over next 2 years	
		With DA	All	With DA	All
JS-WR/EB	6,521	6%	2%	27%	15%
SPS	9,416	4%	1%	9%	4%
Supp only	11,959	3%	1%	11%	4%

1.3.8   Combined benefit-housing transitions

The population in public housing overlaps heavily with the benefit system population and we model benefit support and housing pathways jointly. A natural question is whether people are more likely to exit benefit and public housing support at the same time? In short, the answer is yes. While joint exit rates (here defined as exiting main benefits and a public house in the same quarter) are relatively rare, they are much more common than if the two events were completely independent (that is, the probability of one exit in no way influenced the other exit occurring). Table 1.3 shows that the joint exit rate for exiting both public housing and JS-WR in the same quarter is 0.81%. This is 1.6 times larger than we would expect if the events were independent; that is, it is strong evidence that housing and benefit exits are related. The result is even stronger for other benefit types. For JS-HCD and SPS, the relative increase in the rate of joint exit (compared to independent exits) is 3 to 4 times. SLP relative rates are higher still, although this is likely because effects such as death or moving into care homes also generate a joint exit.

Table 1.3 Quarterly exit rates from main benefits and public housing. Average over three years to June 2017.

Benefit	Quarterly main benefits exit rate, those not in housing	Avg # people on benefit and in housing per quarter	Quarterly main benefits exit rate, those in housing (a)	Public housing exit rate (b)	Joint exit rate (c)	Relative likelihood of joint exit (c ÷ [a x b])
JS-WR, EB	18.0%	11,180	12.4%	4.1%	0.81%	x 1.6
JS-HCD	7.8%	9,009	4.2%	2.6%	0.43%	x 4.0
SPS	6.3%	13,274	3.5%	3.0%	0.38%	x 3.5
SLP	1.8%	16,979	1.4%	2.1%	0.43%	x 15.2

Another natural question is precedence: which event tends to precede the other? Based on an analysis of joint exits split by a quarter (that is, exit benefits one quarter and housing the next, or vice versa), the results point to the benefit system exit being the key precursor. This suggests that the reason for the benefit exit (such as sustained employment) tends to reduce the need for public housing support.

One important caveat on these results is that joint outcomes for positive social outcomes (such as sustained employment) might be confounded in our data with other types of joint exits associated with poor outcomes (for example, mortality or imprisonment). The increased likelihood of joint events in successive quarters give us some confidence that the results hold even if such negative outcome joint events were properly excluded.

1.3.9   Groups of interest

Chapter 3 also explores benefit system outcomes for particular subgroups:

Clients with a mental health condition

As noted in previous reports, clients with mental health issues are a growing portion of the population on both JS-HCD and SLP-HCD benefits. Of the June 2017 cohort, 55% of JS-HCD clients have a mental health

condition. Clients with a mental health condition tend to be younger than other HCD beneficiaries, on average (8 years for JS-HCD and 4 years for SLP-HCD). Younger clients tend to have more future years of required benefit support, all else equal.

Mental health status has a moderate but material impact on outcomes. Those under 30 with a mental health condition (either as a primary or secondary) are projected to have an extra year on benefit for JS-HCD and one to two years for SLP-HCD compared to those without a mental health condition. Clients with mental health conditions are a growing group who will likely require different types of support to achieve sustainable employment.

The 25-29 age cohort

We have considered the 18- to 24-year-old cohort in some detail in previous reports, the 25-29 cohort provides a good point of comparison. This cohort is smaller in absolute numbers but is much more likely to be on SPS or Supplementary-only benefits. The expected future time on benefit and spread of duration is similar to the 18-24 cohort, but the drivers of this (as understood by the model) are different. The importance of various factors for predicting future years on benefit for the two age cohorts are shown in Figure 1.10. Youth impacts such as child protection history or intergenerational data are less influential for the older group, whereas benefit history is more relevant. Ethnicity and education continue to be very important.

Figure 1.10 Variable importance for predicting future years supported by main benefits for JS-WR clients aged 18-24 (left panel) and 25-29 (right panel)

Former benefit system clients

The report formally measures future benefit system pathways for those exiting in the past financial year (2016/17), but there is much that can be said regarding less recent leavers (those exiting in the past 5 years). Duration since last on benefit is the dominant predictor of future benefit system need. The expected number of future years on benefit is 4.6 years for recent exits (0-1 years) and drops by two-thirds to 1.5 years for those off benefits for 4-5 years. This decrease is quite steep and primarily driven by the initial probability of re-entry tailing off markedly. Other key drivers of benefit re-entry (and future duration) for these clients include age, ethnicity and corrections history. Table 1.4 gives an example segmentation for groups with a high or low chance of benefit re-entry.

Table 1.4 Segmentation of clients exiting benefits in the 2 years to June 2015, based on their probability of re-entry over the subsequent two years.

			Number of people at June 2015	Proportion re-entered
Last spell (SLP-HCD, Supp only or OB)	0% of last 3 years on main ben		47,115	7%
	>0% of last 3 years on main ben		20,666	19%
Last spell main (not SLP-HCD, SUP or OB)	No corrections history (10yr)	<50% of last 3 years on main — Māori	16,114	31%
		<50% of last 3 years on main — Non-Māori	49,214	21%
		>50% of last 3 years on main — No CP/YJ match	32,440	33%
		>50% of last 3 years on main — CP/YJ match	4,904	53%
	Some corrections history (10yr)	<50% of last 3 years on main ben	12,050	41%
		>50% of last 3 years on main ben	13,644	55%
Total			**196,147**	**25%**

Māori client outcomes

Māori clients are heavily overrepresented in the benefit system and they also have a higher predicted level of future benefit need. These differences show that current service delivery is not achieving equal employment outcomes for Māori and non-Māori clients. Note these are modelled effects, which do not establish causation. Indeed, ethnicity terms in the model could acting as a proxy for correlated factors that are more directly related to benefit system outcomes (socioeconomic status, for example). Among main benefit clients under age 25 (excluding SLP), Māori clients are expected to be on benefit for an additional 4-5 years compared to non-Māori clients. Roughly half of the additional future benefit duration is directly attributed to ethnicity by the model. The remainder is explained by Māori clients also having higher incidence of other factors associated with higher future benefit system need. Māori clients have up to twice the rate of past corrections history, intergenerational benefit receipt and public housing history.

Future projected durations have increased due to experience over the year (see Section 1.4). Nationally the increases are slightly larger for Māori clients than non-Māori clients (3.3% compared to 2.3%). Future durations of JS-HCD support have increased disproportionately among Māori clients and future SPS durations have not decreased as much as for non-Māori clients. This difference is particularly large in the Auckland region; future durations have increased 2% among Māori clients compared 0.3% for non-Māori clients.

1.4 Main result and analysis of change

1.4.1 Main estimate and impact of changes to key drivers in 2016/17

Table 1.5 Current client results by client segment at 30 June 2017 and 30 June 2016 split by client's segment at respective projection date[3]

Segment			2017				2016			
			Number at 30 June	Total future years of main benefit support ('000)	Avg. future years of main benefit support	Avg. future benefit payments, $k	Number at 30 June	Total future years of main benefit support ('000)	Avg. future years of main benefit support	Avg. future benefit payments, $k
Under 25s	First ben aged < 20	YP/YPP	2,466	37	15.2	214	2,752	39	14.0	206
		JS-WR/EB	15,679	195	12.4	152	17,164	197	11.5	147
		JS-HCD	6,303	94	14.9	195	6,306	90	14.3	197
		SPS	10,700	153	14.3	251	12,189	162	13.3	245
	First ben aged > 20	JS-WR/EB	3,296	23	6.9	81	3,476	23	6.6	83
		JS-HCD	1,448	14	9.7	127	1,369	13	9.5	131
		SPS	1,511	15	9.8	186	1,586	15	9.7	186
		SLP	7,905	192	24.3	316	7,949	192	24.2	329
		Sub-total	49,308	723	14.7	204	52,791	731	13.9	203
Over 25 and on a main benefit	>75% of last 3yrs on main benefits	JS-WR/EB	29,323	287	9.8	137	28,827	280	9.7	139
		JS-HCD	37,283	360	9.7	144	37,455	369	9.9	149
		SPS Chd 0-2	9,280	130	14.0	253	9,878	139	14.1	262
		SPS Chd 3-13	28,134	321	11.4	207	30,539	340	11.1	206
		Subtotal	104,020	1,099	10.6	169	106,699	1,128	10.6	173
	<75% of last 3yrs on main benefits	JS-WR/EB	26,671	180	6.7	88	27,490	188	6.8	92
		JS-HCD	20,212	148	7.3	105	19,338	145	7.5	109
		SPS Chd 0-2	5,148	48	9.2	177	5,091	46	9.0	177
		SPS Chd 3-13	8,749	69	7.9	148	8,449	65	7.7	146
		Subtotal	60,780	444	7.3	110	60,368	443	7.3	112
	Supported Living	Carer	8,350	80	9.6	170	8,292	81	9.8	175
		Partner	7,074	53	7.5	109	7,420	58	7.8	116
		No reassessment	30,022	352	11.7	177	30,580	362	11.8	185
		2yr Mental health	20,200	273	13.5	215	19,608	270	13.8	224
		2yr Other	28,611	245	8.6	144	29,021	256	8.8	149
		Subtotal	94,257	1,004	10.7	169	94,921	1,027	10.8	176
NOMB	>33% last 5yrs on main benefit		30,916	132	4.3	95	32,329	143	4.4	97
	<33% last 5yrs on main benefit		74,528	147	2.0	43	74,144	155	2.1	46
	Sub-total		105,444	279	2.6	59	106,473	299	2.8	62
Recent Exits	>33% last 5yrs on main benefit		63,722	413	6.5	85	65,590	414	6.3	86
	<33% last 5yrs on main benefit		60,013	155	2.6	35	60,696	162	2.7	38
	Sub-total		123,735	568	4.6	61	126,286	575	4.6	63
Grand total			537,544	4,118	7.7	119	547,538	4,204	7.7	123

Of the 540,000 people who received benefits in the year to 30 June 2017, we expect them to spend 4.1 million total future working-age years on main benefits. This works out to an average future duration of 7.7 years per person and average future benefit support of $119k after discounting. Total future benefit payments related to this cohort are $72.2 billion, which includes $8.3 billion in future net loans and expenses costs.

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[3] YP/YPP numbers in the table are set to their basis last year, not allowing for the expansion of the youth service in 2016/17. This is done for consistency with previous reports, but we expect to move to the expanded group next report.

Compared to last year:

» Expected durations on benefit are higher for younger clients.

» Durations are relatively stable for most other benefit types, but there are important compositional changes. The number of expected future years on JS benefits has increased substantially, whereas future years on SPS has fallen (due to faster exits and fewer transfers in from other benefit types).

» Average future payments have generally decreased, but this result is caused by the increase in discount rates. Excluding economic factors, average future payments have increased slightly.

The overall number of future main benefit client years is 2% lower than last year (86,000 years lower). The drivers of change from last year are shown in Figure 1.11:

» A 30,000 reduction in future benefit years due to methodology changes (which should not be regarded as a performance result).

» A small increase of 4,000 benefit years due to economic assumptions, namely a slightly higher path to the assumed long-run unemployment rate.

» An expected decrease of 124,000 benefit years as part of the roll-forward[4] to 2017. We expected that over the course of the year numbers on benefit would fall, materially lowering the total future duration and payments.

» A 122,000, or 3%, increase in future benefit years due to performance. Of the increase, 64,000 relates to observed changes in the current client cohort (number of clients and composition effects), while 58,000 relates to updated model assumptions that reflect recent experience.

In monetary terms, the change due to experience is estimated to be an increase of $1.8 billion, or a 2.6% increase. There were some additional factors driving this result. Higher payment levels for hardship assistance, childcare subsidy and orphan benefits added about $0.8 billion to the total.

Figure 1.11 Analysis of change in current client cohort, future years on main benefits between 2016 and 2017 projections, split by client segment at projection date. Numbers may not add due to rounding.

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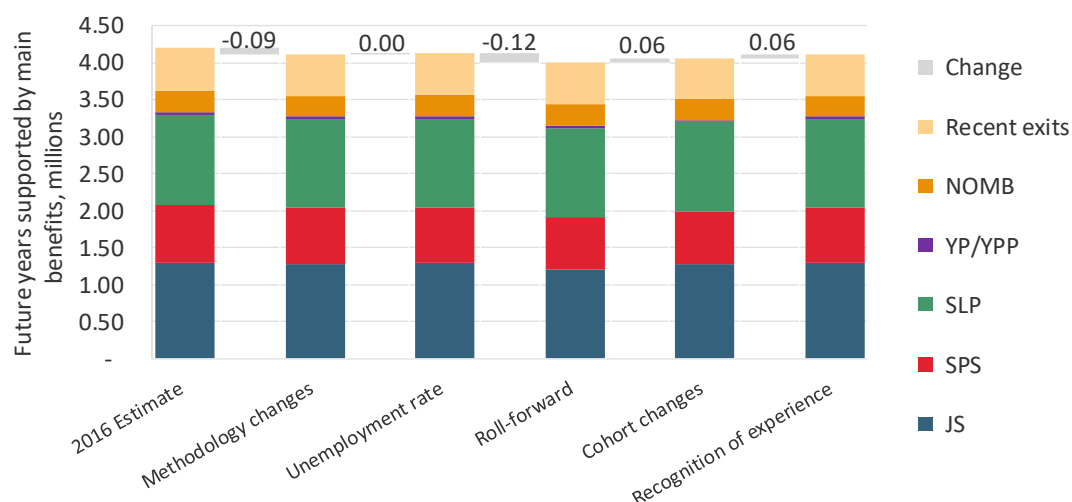
[4] Roll-forward is the term given to how our forecast of the projection is expected to evolve over the year. Using our 2016 projection model, we calculate our 'expected' current cohort at 30 June 2017 and their working-age benefit support payments. Our 2016 models had SPS exits larger than entries, and jobseeker numbers falling with the unemployment rate, so the roll-forward is a decrease.

The 2% decrease (86,000) in future main benefit years attributable to current clients masks an increase relative to expected levels after allowing for time, method changes and economic factors. There was an increase of 122,000 benefit years due to performance, roughly evenly split between cohort changes and projection model changes due to experience.

The result represents the first performance-related increase in future duration and payments over history of annual actuarial reports. Much of the increase is consistent with policy intentions (more childcare subsidy payments, more non-recoverable hardship assistance, and more support for jobseekers with registered children). It also reflects a general slowing of exit rates off benefits. This is partly to be expected when beneficiary numbers fall, as those with the largest employment barriers remain. This effect, however, is already built into the projection and the result suggests the effect is larger than what we would have ordinarily expected. While some of the experience in benefit dynamics can be tied to the Child Material Hardship Package (Section 1.3.3), it may be that remaining jobseekers are proving more difficult to support into employment than forecast.

1.4.2 Benefit dynamics

Client movements through the benefit system in the 2016/17, compared to those seen previously, are illustrated in Figure 1.12.

Figure 1.12 Significant changes to benefit dynamics in 2016/17
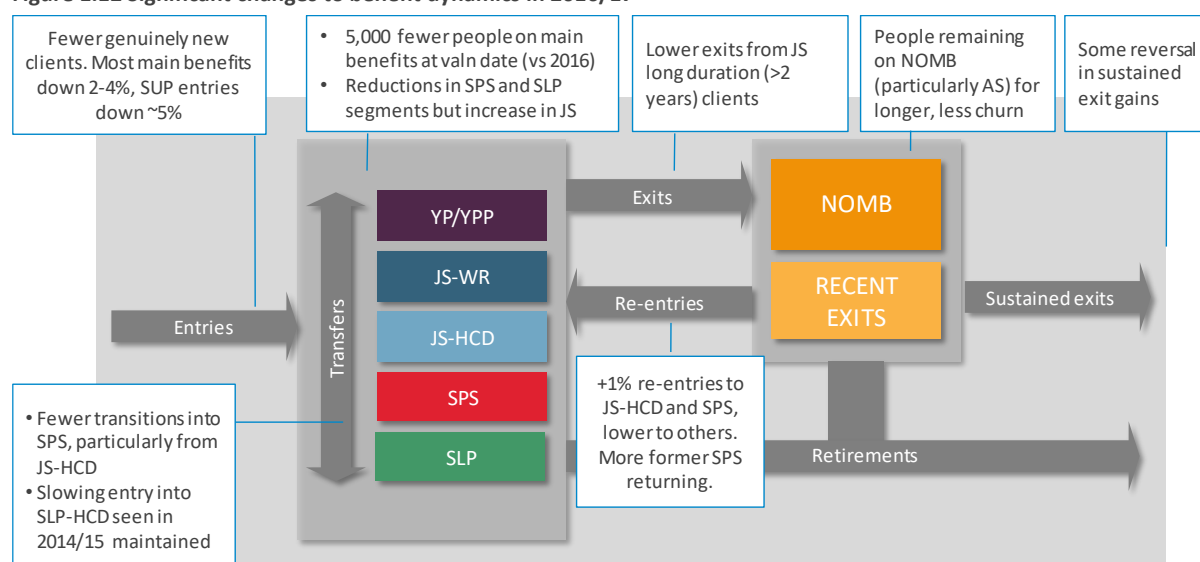
The changes in transfers has led to compositional changes in the type of benefits received in the future; more jobseeker and less SPS clients particularly. The rate of re-entry has tracked at historical lows for several years, so the reversal noted in the figure represents a movement off a very low base.

1.4.3 Breakdown of change under management influence by segment

Figure 1.13 provides a breakdown of the increase of 122,000 future (main) benefit years due to experience. Results are split using client segments as at 30 June 2016 – we are monitoring the evolution of future duration over the year, compared to expectations.

Figure 1.13 Breakdown of the 122,000 increase in future years of main benefit support due to experience, by old segment as at June 2016 (left panel) and contribution by future benefit type (right panel).
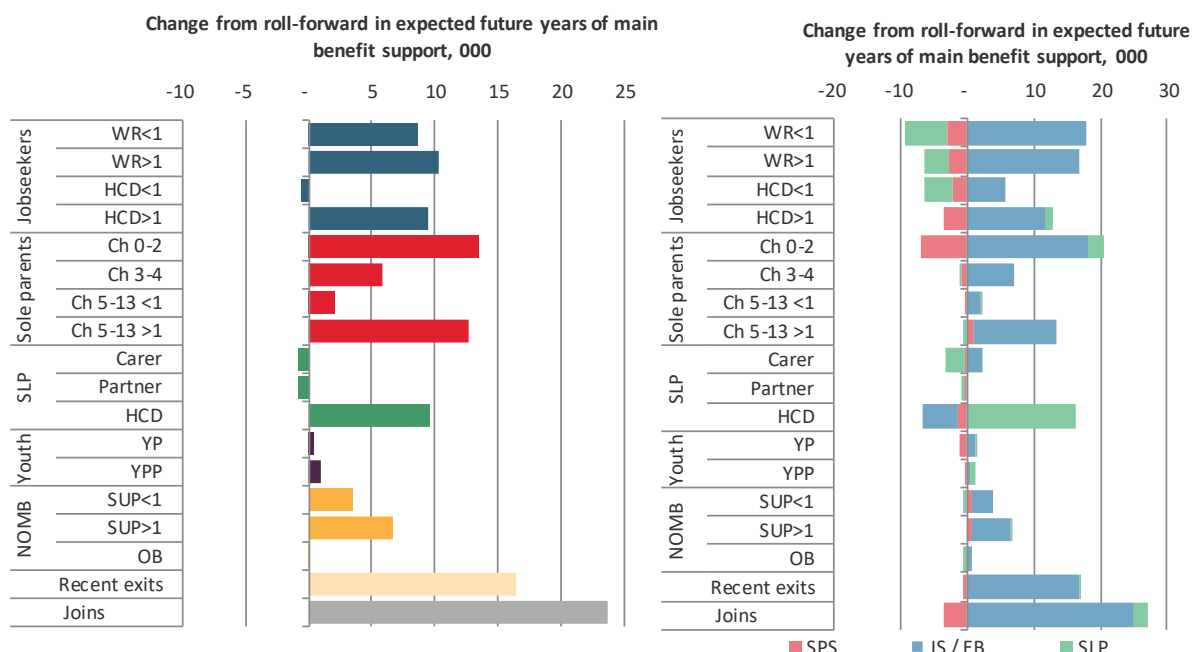
We note:

» The left panel shows that increases in future years apply to all segments. The right panel breaks this down into future years by future benefit type, and shows this increase is driven almost entirely by increases in future years of JS-WR and JS-HCD support (the blue columns). This is partly offset by decreases in other benefit types. Future JS-WR benefit years have increased by 74,000 and future JS-HCD years by 70,000.

» The increase in future SLP-HCD years for those receiving SLP-HCD at 30 June 2016 clients is small in percentage terms (0.3%). The total number of future SLP years has decreased for the 2016 Jobseeker segments, this reflects lower transition rates from JS-HCD to SLP-HCD.

» The large increase for 'joins' in part reflects the larger than expected number of JS-WR and JS-HCD clients compared to our previous projection assumptions.

» Future years of SPS support have decreased across all segments (the pink columns in the left panel). There are now 24,000 fewer than expected projected years of SPS support, a 2.2% decrease. Much of the latest decrease relates to faster exits for those with youngest child aged 3 or 4.

1.4.4   Breakdown of change under management influence by region

Of the increase of 122,000 main benefit years due to experience, 98,000 relates to clients who were in the 2016 current cohort. This increase can be broken down at the regional level, as shown in Figure 1.14.

The relative increases are largest for South Island regions, continuing a trend seen in the last report; the Canterbury region has a particularly large increase. This is now the third year in which the results for the Canterbury region has underperformed relative to our projections. Part of the effect may relate to its unusual labour market since 2012; a very tight labour market post-earthquake, due to the rebuild, has normalised over the past few years. This evolution may not be fully captured in the unemployment rate statistics. Regional results are discussed further in Chapter 5.1.

Figure 1.14 Breakdown of the 98,000 increase in future years of main benefit support for 2016 current clients, by June 2016 region (left panel), contribution by future main benefit type also shown (right panel).
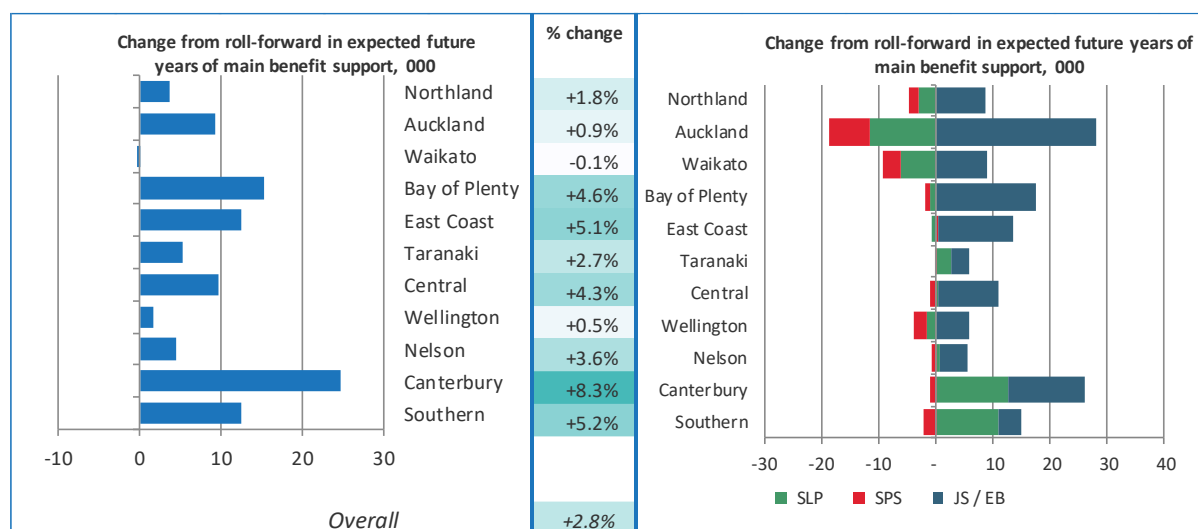
1.4.5   Cumulative impact of management's influence

This is the seventh annual benefit system report. This means there is now six years' worth of analysis attributing the change in future benefit system use among key drivers.

For each year prior to 2017, there has been a material **decrease** in the projected future payments plus expenses due to experience – that is, due to the combination of Welfare Reform and MSD's management of the benefit system. These decreases comprise reductions due to both decreases in the number of beneficiaries (and potentially beneficiaries moving to segments with lower future benefit durations) and due to model changes (that is, recognition of how benefit trajectories are changing over time). In last year's report, we also saw an increase due to higher benefit rates (associated with the Child Material Hardship Package) of $1.5 billion. This year sees our first increase due to experience ($1.8 billion) representing about an eighth of the previous cumulative decreases. These changes are summarised in Figure 1.15. Our estimate of the impact of the Child Material Hardship package is unchanged from last year and shown as a separate item.

Figure 1.15 Changes in future payments plus expenses, current client cohort, due to experience over the past six reports
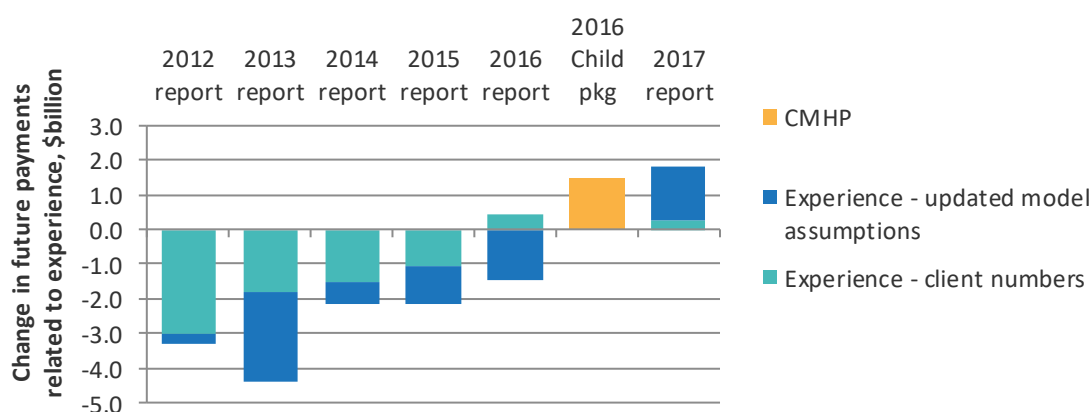
The **cumulative decrease** over six years of the change considered to be under management influence is about 14.3% of the value of the total future cost as at 2011, or $11.2 billion. This excludes the effect of the introduction of the Child Material Hardship Package, which added $1.5 billion. Including this, the total decrease is $9.7 billion.

The change under management influence can also be understood in terms of numbers of beneficiaries and their expected duration on benefit. Jobseeker and SPS client numbers have fallen significantly since 2012, and duration on benefits has also fallen significantly for SPS clients. Recent exits and those not on main benefits are expected to spend between one to two fewer future years on main benefits.

> These changes mean that, compared to the pre-reform benchmark estimate (as at June 2012), current clients are expected to spend more than 1,180,000 fewer years on main benefits over their working lifetime, although this is down from 1,300,000 last year. About three quarters of this reduction in future years on main benefits can be attributed to policy and operational changes.

1.5 Analysis by segment

Table 1.5 presented key segment level results. We highlight some further features of specific segments:

» The 'Under 25s' segments are split into those who enter the benefit system before or after age 20. The group of clients aged under 25 who entered before age 20 ('Under 25s, first benefit aged <20') is substantially larger than those who entered after age 20 ('Under 25s, first benefit aged >20'). Future durations with main benefits are, on average, about five years longer for those who entered before age 20 than those on the same benefit type who entered after age 20. This is driven by the higher prevalence of factors associated with long-term benefit receipt for the younger entry segments, including child protection and intergenerational benefit receipt.

» Those under 25 receiving SLP ('Under 25s, SLP') have the longest future duration of any segment, averaging 24 future years with main benefit support. This reflects the very low exit rate from SLP.

» Those over 25 and with main benefit support, are first split into three subgroups:

- SLP ('Over 25 and on a main benefit, SLP')
- Non-SLP main benefit support and main benefit support in at least three quarters of the past three years ('Over 25 and on a main benefit, >75% of last 3 years on main benefits')
- Non-SLP main benefit support and main benefit support in less than three quarters of the past three years ('Over 25 and on a main benefit, <75% of last 3 years on main benefits')

The split on past (main) benefit receipt distinguishes between those with higher and lower support needs. This is visible in the projected pathways, those with more history will on average spend an additional 3 years with benefit support.

» We further segment 'Over 25 and on a main benefit, SLP' clients. In particular, SLP-HCD clients with a 2-year reassessment are split between those with a mental health related incapacity, and those with another primary incapacity. The difference between the two groups is large. Those with a mental health primary incapacity are projected to have an additional 5 years of benefit support. A key driver of this is the younger average age of these clients. 56% of the group with primary mental health incapacities are below the age of 50, compared to 30% of those with other primary incapacities.

» The 'NOMB' and 'Recent Exits' groups are split based on the proportion of the last 5 years with main benefit support. Again, this is effective in distinguishing between people with higher and lower need of future benefit support. Among the 'NOMB, >33% of last 5 years on main benefits' segment, we project twice the average future duration of main benefit support than among the 'NOMB, <33% of last 5 years on main benefits' segment. When comparing the two 'Recent Exits' segments the average future duration is two-and-a-half times longer for the segment with more recent history.

While the average results by segment are key to understanding the composition of the benefit system, we emphasise that there is significant detail modelled within each of the segments too. Figure 1.16 shows the spread of future years of benefit support within segments. For example, the range for JS-WR clients under age 25 (and entering before age 20) is particularly wide. While the average is 12.4 future years with main benefits, a quarter of these clients have an expected future duration of seven years or less, while a quarter have an expected future duration of at least 16 years.

Figure 1.16 Relative numbers of clients by number of projected future years of support
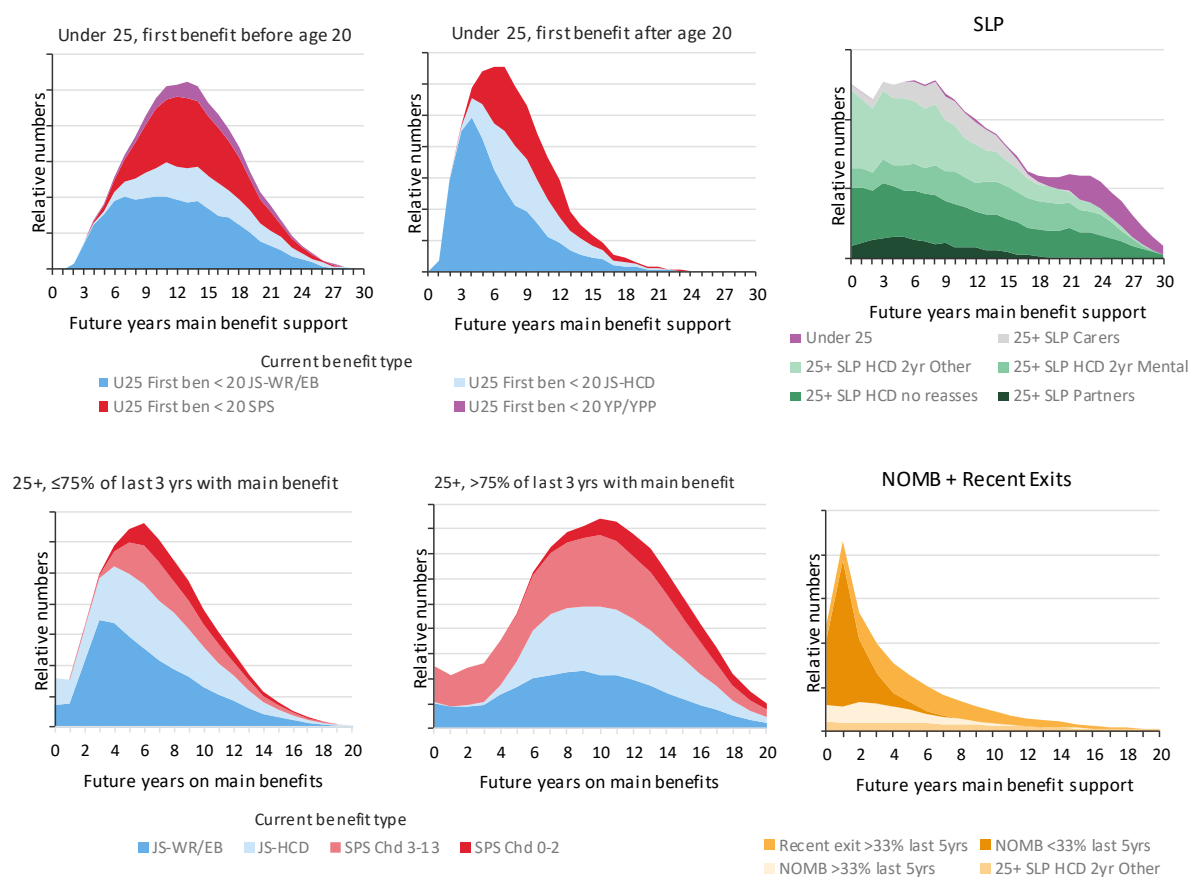
Figure 1.17 shows the lifetime projection plots for top tier segments. Colouring represents future benefit type and grey represents exits (dark grey for exits due to retirement and light grey for working-age exits for employment or other reasons). We observe that:

» 'Under 25s' start on a mix of different benefit types. Among these clients there is an initial rapid decrease in total proportion with main benefit support, dropping to 69% after 2 years. This rapid decrease is mostly due to clients moving off JS-WR benefits. The proportion with SPS support drops more slowly, reducing from 27% to 14% after 10 years. The proportion with SLP support remains fairly steady over time.

» For 'Over 25 and on a main benefit, >75% of last 3 years on main benefits', the proportion with main benefit support decreases to 55% after 5 years. This compares to just 35% for 'Over 25 and on a main benefit, <75% of last 3 years on main benefits'. SLP benefits become increasingly used over the course of the projection.

» Most SLP-HCD clients remain on SLP until retirement. The 'Over 25, SLP' segment is older than most others, so the retirement effect is more pronounced.

» Supplementary only clients show relatively fast transitions off benefit support entirely. A small number transfer back to main benefit support. After 4 years 12% of those who are still working age are projected to have transferred to a main benefit, most commonly JS support. After 10 years two thirds of those who are still working age are projected to not be accessing any benefit support.

» The number of 'Recent Exits' who have returned to main benefit support reaches a peak 2-3 years into the projection, at about 22% of those still working age. Re-entries are mainly JS-WR/EB initially, (64% in the first quarter) but an increasing proportion move into SPS and SLP segments in the longer term (30% JS-WR/EB after 10 years).

Figure 1.17 Lifetime projections as at 30 June 2017 by top tier segment

Legend: ■ JS-WR + EB ■ JS-HCD ■ SPS ■ SLP ■ NOMB ■ NOB ■ Retired
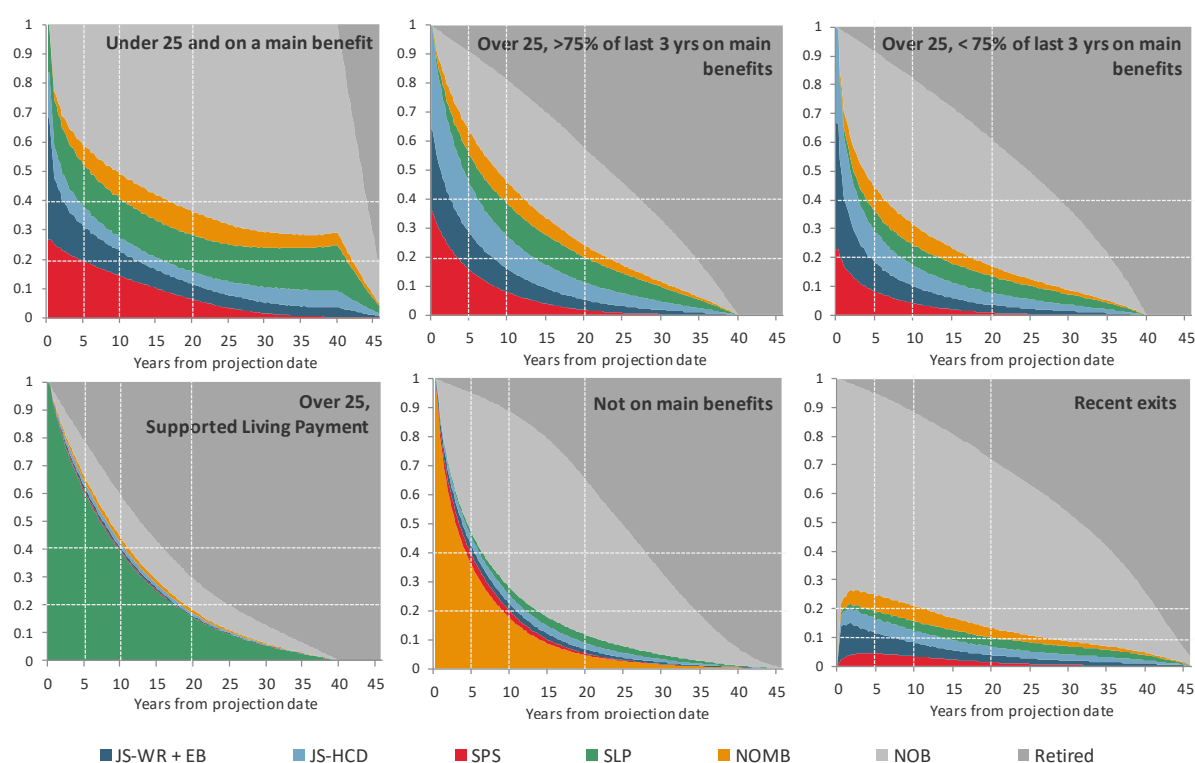
Finally, the variable importance results (shown in Figure 1.18) give an indication as to what drives longer future durations among segment groups. Age is very prominent for 'Over 25 and on a main benefit, SLP' and 'Over 25 and on a main benefit, >75% of last 3 years on main benefits'. These groups will tend to use benefit support for a long time and age imposes a limit on the number of future years until reaching age 65. The 'Under 25s' and 'Recent Exits' segments have a more even spread across a wide range of predictors. Such segments potentially favour targeted investment approaches, since there is a wider range of underlying needs and expected outcomes.

Figure 1.18 Relative variable importance for estimating future lifetime benefit cost, for top tier segment groups; top eleven variables shown for each segment group
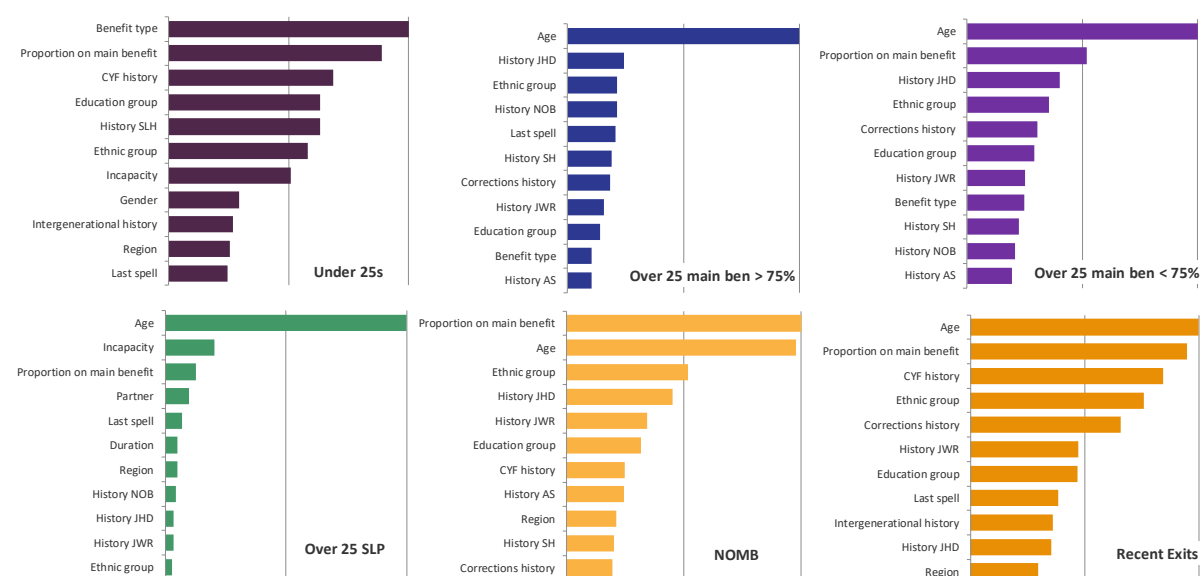
To illustrate some of these differences, Figure 1.19 shows the partial dependence plots (impact of a variable holding all others constant) for age and JS-HCD benefit history. Both JS-WR and SPS clients with history of JS-HCD have significantly more future benefit years projected (up to four extra years), with about half of this effect directly attributed to the JS-HCD history explicitly.

Figure 1.19 Partial dependence plots of future years of main benefit support for JS-WR (left panel) and SPS (right panel) clients by age and history of JS-HCD receipt

1.6   Analysis by region

Benefit system pathways differ markedly by region, and we report on results based on Work and Income's 11 regions. Figure 1.20 illustrates, at a very high level, the most significant changes to benefit dynamics at the regional level compared to what was projected at the previous report date.

Figure 1.20 Significant changes to benefit dynamics at the regional level in 2016/17 compared to expected
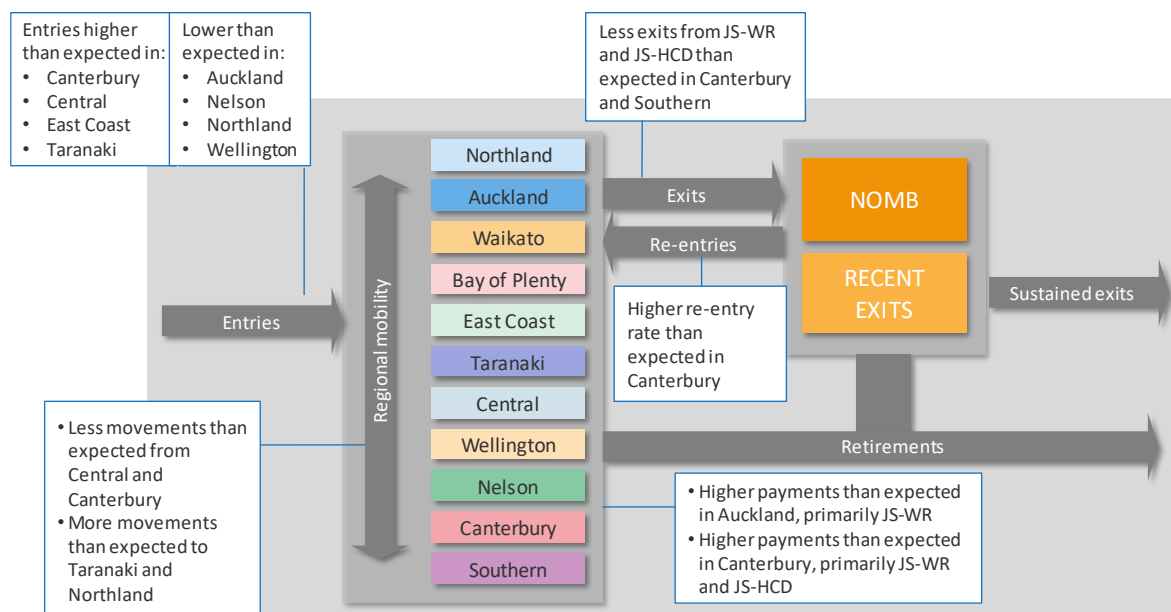
Benefit dynamics, such as the rate of entries and exits to the system, are influenced by regional unemployment trends. We use regional level unemployment forecasts in the projection model to better capture these regional effects.

Over the year to June 2017 the largest differences to regional unemployment rates compared to forecasts were:

» A much sharper fall than forecast in the Nelson region. We now project the Nelson regional unemployment rate to ease up to the long-term rate over the next 5 years.

» Significant rises in the Bay of Plenty, East Coast and Taranaki regions compared to forecast decreases. Unemployment rates in these regions are now forecast to revert faster to their long-term rates.

Table 1.6 shows regional differences in future benefit durations and payments.

Table 1.6 Current client projected future years of benefit support by region as at 30 June 2017

Region	# at valn date (000)	Total future years of main benefit support, 000	Avg # future yrs on main benefits	Interquartile range # future yrs on main benefits	Avg future benefit payments ($000)
Northland	27.2	241	8.9	9.3	137
Auckland	173.5	1,136	6.5	8.6	108
Waikato	46.9	379	8.1	9.6	126
Bay of Plenty	48.6	383	7.9	9.0	122
East Coast	32.1	287	8.9	9.9	137
Taranaki	25.8	233	9.0	9.9	134
Central	35.4	297	8.4	9.7	129
Wellington	42.7	327	7.7	9.4	115
Nelson	20.4	144	7.0	8.5	109
Canterbury	45.3	372	8.2	9.9	124
Southern	35.7	286	8.0	9.4	117
Australia	3.8	34	9.0	9.8	80
All regions	**537.5**	**4,118**	**7.7**	**9.4**	**119**

Over the 2016/17 year:

» The Canterbury region saw material increases in the number of JS-WR, JS-HCD and SLP-HCD clients

» Central and Taranaki saw increases in client numbers across all benefit types and were the only regions to see increases in SPS client numbers

» The Auckland region saw a decrease in number of all main benefits clients in particular, a 9% decrease in JS-WR clients

» Wellington also saw a decrease across all main benefit types.

The average future years of support per main benefit client is similar to last year in most regions. The exceptions are the Canterbury and Southern regions where this increased by 3%. We unpack key trends for the Canterbury region in Section 6.4.3, given the region has been moving against the national trend of shorter durations for a few years.

Compositional differences are a key factor to understanding regional differences. For example, Auckland has 1.1 fewer future years on benefit compared to the national average, but only a minority of this is directly attributed to regional effects in the projection model. Benefit type and benefit history actually explain most of the difference. Auckland has a higher proportion of Supplementary-only clients (generally receiving AS, which is consistent with higher housing costs in the region). Similarly, the higher proportion of Pacific peoples and Asian clients tends reduces the average projected duration. These differences are unpacked for each region in Section 6.4.

The new education data (matched for 69% of clients aged 25 and under) also adds to our analysis by region. For instance, among matched clients the proportion who have attained NCEA L2 or higher at school is highest in the Wellington region (55%) and lowest in the Northland region (35%). The higher

levels of educational attainment contribute to the average projected durations for matched clients being lower in the Wellington region (9.7 future years) than the Northland region (12.5 future years).

1.7 Model approach, reliances and limitations

Chapter 9 explains how we project dynamics of the NZ benefit system.

This projection, as with all similar types of projections, carries a significant degree of uncertainty. This uncertainty has reduced relative to last year, as benefit system dynamics have stabilised. However, the uncertainty is still significant and is discussed further in Section 8.5 and Chapter 10.

2 DEVELOPMENTS IN 2016/17

2.1   The contents and structure of this report

The purpose of this report is to update MSD on long-term trends in benefit system dynamics, offering insight into how the benefit system is changing over time, and how it is likely to be used in the future. It comments on how MSD's management of the benefit system, as well as external drivers of employment outcomes such as unemployment, are influencing long-term trends and costs. MSD can use this information to target its investments to meet underlying need in the benefit system and reduce long-term benefit receipt, where appropriate.

This life-course model and report on the benefit system (as at 30 June 2017) includes:
» An estimate of the total future time on benefits of current beneficiaries, and associated cost
» An estimate of the total future time on benefits of new entrants to the benefit system, and associated cost
» Analysis of changes over the year, and their impact on the numbers and durations on benefit
» Detailed behavioural information about lifetime patterns of benefit receipt
» Analysis of characteristics associated with higher and lower need of benefits, including cross-sectoral predictive factors
» Break-downs of the life-course model by client group, by region, and by payment type
» Projected future changes to the population receiving benefits.

Part A – Introduction is comprised of Chapter 1 – Executive summary, and Chapter 2 – Developments in 2016/17.

Part B – Results is comprised of Chapters 3 to 8. Part B contains a full description of the projection model results and analysis and will be most useful for readers who are seeking a comprehensive understanding of the June 2017 model and its implications.

Part C – Approach is comprised of Chapters 9 and 10. These chapters will be useful to technical readers, such as other actuaries and analysts.

Terms and acronyms used in this report are explained in the **Glossary**, Chapter 11**.**

Appendices are provided to give further information on more technical aspects of the model, including assumptions, data, modelling approach and more detailed results. Appendix B provides background about the projection model for readers seeking context about New Zealand's benefit system and the purpose and structure of benefit system projection models.

2.2   New features in the 2017 model and report

2.2.1   Education data from the Ministry of Education

This year's model is the first that incorporates data provided by the Ministry of Education. This includes:

» Secondary school achievement level

- » Time suspended from school while in secondary school
- » Achievement level for enrolled tertiary courses.

We have incorporated this information for clients aged up to 25. The data significantly improves on the coverage and quality of the existing educational fields maintained by MSD, and highlights the very different rates of employment outcomes between cohorts with different educational attainment.

The incorporation of improved education data continues a trend of increasing the use of cross-sectoral data to improve understanding of benefit system client needs. It follows the introduction of intergenerational benefit receipt information in 2014, corrections data in 2015, child protection data in 2015, and public housing data in 2016.

2.2.2   A new client segmentation

We have used the same 17 segments to unpack and interrogate benefit system results since the 2012 report (shown in Figure 2.1). This year for the first time we report on the benefit system under a new segmentation framework (shown in Figure 2.2). This more nuanced segmentation, comprising 25 segments, better aligns with current policy and cohort priorities, including:

- » **Changes to work requirements for SPS clients based on the age of their youngest child** – Work requirements for SPS clients with children aged 3-4 and those aged 5-13 have now been harmonised.

- » **Changes to the Youth Service** – The youth segments were selected to align to the Youth Service – a programme which provides specialist case management and support to help young people into training and education, and prepares them for employment. This has now been expanded to include 19-year-old parents. There are also other potential policy changes for youth and young adults arising from the review of child protection in New Zealand.

Figure 2.1 Original beneficiary segments

Figure 2.2 Beneficiary segments, 2017

While section 5 of the report explores the new segments in more detail, key elements are:

» **Greater prominence is given to beneficiaries aged under 25** – Many of these clients are likely to receive long-term benefit support, and have potential for improved outcomes with targeted interventions. The existing youth service, incorporating the Youth Payment (YP) and Young Parent Payment (YPP) form only a part of this subgroup.

» **The previous time spent on main benefits[5] has replaced the previous duration based measure** – This reflects the very different outcomes for people who have received extended support on benefits, compared to those who receive benefits for only a few quarters and often sustainably transition out of the benefit system. These splits are useful both for clients on main benefits, as well as those not currently supported by a main benefit. For main benefit clients, a higher need client is defined as spending three quarters of the past three years receiving main benefits. For those not supported by a main benefit the threshold is at a third of the past five years receiving main benefits.

» **Those receiving the Supported Living Payment with a health condition, incapacity or disability (SLP-HCD) have been split by their reassessment status** – Those with reassessment every two years have significantly higher employment outcomes. We have also split out those with mental health conditions, reflecting their increased prominence in the benefit system and the opportunity for more tailored assistance for these clients.

Some results in the report make use of the old segments, rather than the new – typically this is when we reference 2016 expected results, where imposing new segments on last year's data would add complications.

2.2.3   New features of key interest areas

The report highlights relevant insights from the projection model. In addition to the education data and new segments, there are some key areas of interest that are explored in Section 3:

» A review of the Child Material Hardship Package impact and the 3k to Work initiative
» More detail on health outcomes, including mental health effects, the role of Disability Allowance (a Tier 2 supplementary benefit) and some work comparing benefit entries to Ministry of Health data
» A focus on the 25-29 age cohort
» A focus on clients who have left benefits over the past 5 years
» A focus on Māori clients
» A look at joint exits from the benefit system and public housing.

2.2.4   Sanctions data

This year MSD has provided us with data on sanctions placed on clients, typically applied when they fail to meet their mutual obligations, such as job search requirements. We have tested whether these events help predict long-term benefit outcomes.

2.2.5   Technical improvements to the models

We make technical improvements to the model each year, to ensure we continue to better understand the client base. This year we have:

» Incorporated teenagers in public housing into the projection module to better model their transition to adults with housing and benefit needs

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[5] Emergency, Jobseekers, Sole Parents, and Supported Living benefits are considered to be 'main' throughout the report. This contrasts with those clients receiving supplementary benefits only, such as Accommodation Supplement, and also excludes the Orphan's or Unsupported Child benefits.

» Reordered some sub-steps in the quarterly transition models to better simulate the availability of empty housings which can then be occupied within the same quarter

» Introduced new modelling variables tied to the segmentation (SLP reassessment, proportion of time on main benefits, mental health incapacity indicator flag)

» Introduced factors related to the new data (education and benefit sanctions)

» Extended intergenerational, child protection and youth justice history variables to age 30 (previously age 25), as we now have sufficient longitudinal history for this age group.

The impact of these changes on the projection model are separately identified, so they do not contaminate the change analysis.

2.3 Impact of 2016/17 changes to key cost drivers

2.3.1 Policy and operational changes

Developments in 2016/17

Over the period there was also a number of initiatives targeted at clients with specific characteristics:

» **19-year-old parents** – Budget 2016 announced the expansion of the Youth Service to all 19-year-old parents. This change came into effect in October 2017.

» **Clients with a diagnosed mental health conditions** – In August 2016, the Government announced a two-year trial for clients with a diagnosed mental health condition – Work to Wellness – providing coaching and mentoring, job search services and assistance to help clients into work. The trial is available in Auckland, Waikato, Central, Canterbury and Southern regions.

» **Offenders** – In October 2016, the Government announced a three-year trial to support more offenders into employment. Work and Income case managers and professionals will work with prisoners from pre-release for up to a year to help them prepare, find and stay in employment to help reduce reoffending.

» **Oranga mahi trials** explore potential ways to assist benefit recipients into work, by providing a set of treatments and services, including Cognitive Behavioural Therapy.

There are also continuing impacts from previous policy changes:

» The **Child Material Hardship Package** (CMHP) came into effect at 1 April 2016. We had only limited data to assess its impact in our previous report. The intent of the package is to reduce hardship among children in New Zealand's poorest families. Benefit rates for families with children rose by $25 a week after tax and some child care benefits also rose. Mutual obligations were also raised for some clients:
   • Most sole parents, and partners of beneficiaries, must be available for part-time work once their youngest child turns three (a change from five).
   • All beneficiaries with part-time work obligations are expected to find work for 20 hours a week (rather than 15 hours a week).
   • Beneficiaries receiving SPS must re-apply for their benefit every year.

» The **$3k to Work initiative** has been running for a number of years, and we measure its effectiveness on benefit outcomes as part of this report in Section 3.3. It appears to be mostly positive, with clients taking up the offer having exits that appear as sustainable as other types of benefit exits.

While policy changes typically have a significant and immediate impact on the benefit system, operational changes, particularly those preceded by trials are typically smaller and will show incremental improvements in the long-term trends.

Impact of these changes

Of the policy changes above, the CMHP has the largest influence on the long-run projection of the benefit system:

» Future benefit costs are higher, we estimate they are up by $1.6 billion. This represents additional support the government is now providing to benefit system clients with children.

» Some benefit durations, particularly for job seekers, have lengthened. This effect appears to be strongest in client groups most affected by the CMHP. Some of this is natural; higher benefit levels mean that a higher level of income is required before benefits fully taper off, so people who did not previously qualify for benefits now do. Some of it may also be behavioural, but this effect is difficult to isolate.

We also update our models to reflect observed changes in benefit dynamics. Some of these changes will align with some of the other policy changes listed, but we have not attempted to make other specific attributions.

2.3.2   Labour market changes

Developments in 2016/17

The labour market is a key driver of benefit dynamics. The unemployment rate is the most telling economic predictor that affects the projected rate of entry to, and exit from, benefits.

As in previous projection models we have used Treasury forecasts, here from the 2017 Pre-election Economic and Fiscal Update (PREFU), released in August 2017. The unemployment rate decreased slightly over the 2016/17 year, aside from a small spike in the December 2016 quarter. This was in line with the forecast by Treasury that was used in the previous report – as shown in Figure 2.3. In the June 2017 quarter, the unemployment rate was 4.8%, fractionally lower than used by Treasury in PREFU. The assumed long-term unemployment forecast is 4.3%, unchanged from last year.

Figure 2.3 National unemployment rates
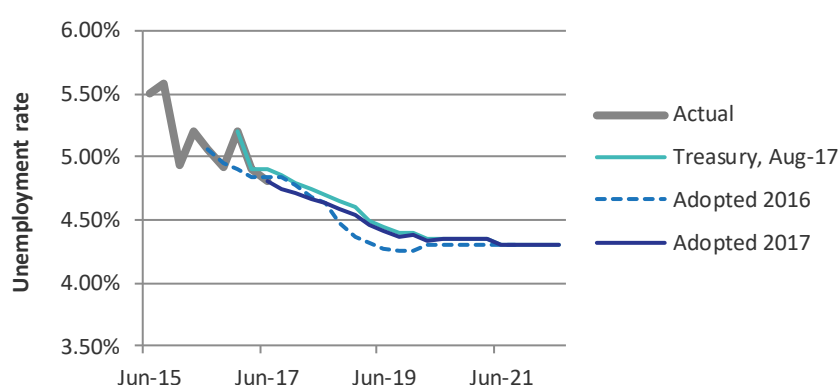
Impact of these changes

The unemployment rate affects the transition rates of existing clients as well as the number of new clients who enter the benefit system. As might be expected, the jobseeker (particularly work-ready, JS-WR) segments are most sensitive to unemployment rate changes (see Figure 2.4), but virtually all benefit types exhibit some sensitivity. The rate of JS-WR exits has decreased over recent years despite a decrease in the unemployment rate.

Figure 2.4 Historical unemployment rate and quarterly transition rate from JS-WR to NOB
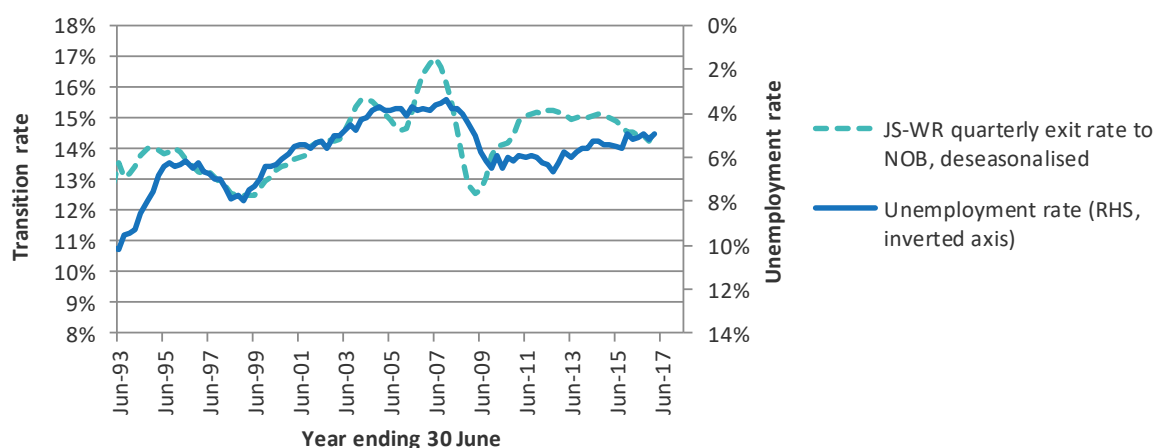
The changes to the unemployment rate (both the actual rate over 2016/17 and the change to the projected pathway to 4.3% over the next few years) is very small – a 0.2% increase to total future time on main benefits, and similarly a 0.2% to the related future cost ($0.2 billion). The increase is mainly due to the higher rates around June 2019.

The national unemployment rate assumptions are converted to projections at a regional level and applied on a regional basis. This is discussed further in Chapter 5.1.

2.3.3 Demographic changes

Developments in 2016/17

Demographic changes in the working-age NZ population have an impact on how many people are potentially eligible to receive benefits, and for how long. These changes occur slowly over time. Many of these factors, such as the age and ethnicity of the benefit population, are incorporated into our benefit projections. For these reasons, demographic changes are less relevant in year-to-year comparisons, and the impact on *changes* to the estimate of total future payments is relatively neutral.

It is worth noting, however, some trends that do have impacts on the long-term usage of the benefit system:

» Net migration has remained high. The number of permanent and long-term migrants rose from roughly zero in the 2012/13 year to 69,090 in 2015/16. These high levels have been sustained in 2016/17. Higher population growth will generally lead to more benefit use over time in absolute numbers (but not necessarily in relative numbers).

» Fewer births to younger mothers. While the overall number of births has been stable for the past five years, there has been a continuing trend for fewer young mothers. Since 2011/12, the proportion of births to mothers aged under 20 has fallen from 6.5% to 4.0%, and the proportion aged under 25 has fallen from 25.1% to 19.9%. We would expect the consequence of these trends to result in fewer young single parents requiring support and entering the benefit system.

These trends are further highlighted in Figure 2.5.

Figure 2.5 Demographic trends relevant to the benefit system; migration rates and birth numbers over time. Data from Infoshare, Statistics NZ.

Annual net migration - Permanent & long-term

births by mother age
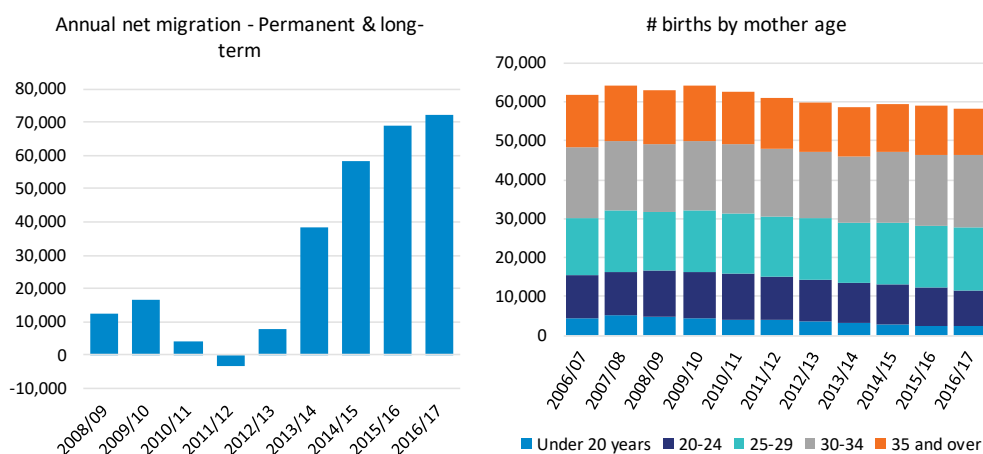
Impact of these changes

Demographic changes tend to affect the composition of the beneficiary population gradually. However, we can see some clear trends over the longer term:

» Over the 10 years to June 2016[6], the working-age population has grown by about 12%. This growth has been particularly high in the past few years, and the increase has averaged 2% per year for the last three years, driven by migration increases. All else equal, this would be expected to lead to higher numbers of Jobseeker work-ready clients.

» The proportion of working-age clients over 50 has increased over the past decade too. All else equal, this would be expected to lead to higher usage of the Supported Living Payment, which has a greater proportion of older clients than other benefit types.

Despite these trends, the absolute numbers of people on benefits is at a similar level to 2007, immediately prior to the global financial crisis. Since the population (including the working-age population) has grown in the period, this means that a lower proportion of people are on benefits – this proportion is 10.0%. Figure 2.6. shows this is the lowest proportion since our dataset begins in 1993.

Figure 2.6 Proportion of working-age population on main benefits

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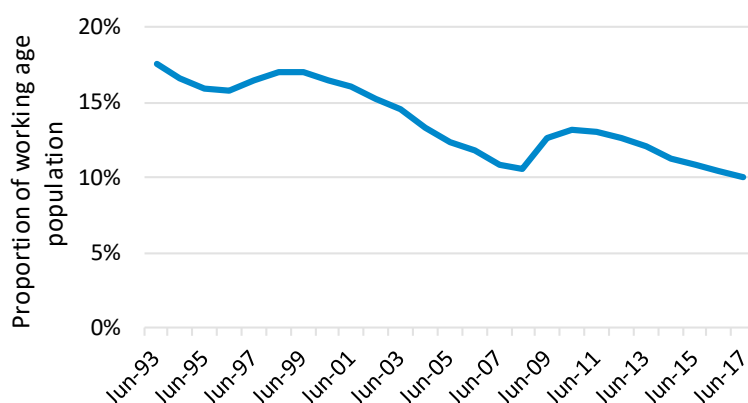
[6] Statistics New Zealand, Infoshare

2.3.4 Benefit rates and risk-free interest rates

Developments in 2016/17 and impact of changes

Inflation and discount rates affect the estimate of total future payments, but are outside of the control of MSD. The projection of payments uses assumptions set by Treasury. Inflation forecasts affect the projected increase in benefit payment rates, so lower assumed levels of annual inflation will tend to reduce the estimate.

Benefit rates are indexed to the December CPI (less cigarettes and other tobacco products) with changes effective on 1 April. For April 2017 this increase was 1.2%. This was lower than the expected increase of 1.5% allowed for in our previous report.

We also discount the estimate of total future payments to June 2017 dollars using risk-free investment rates of return (that is, the yield on NZ government bonds) to reflect the time value of money; a future cash flow is worth less in today's dollars.

Changes to projected risk-free and inflation rates are outlined below, and in Figure 2.7.

Figure 2.7 Assumed risk-free discount and inflation rates
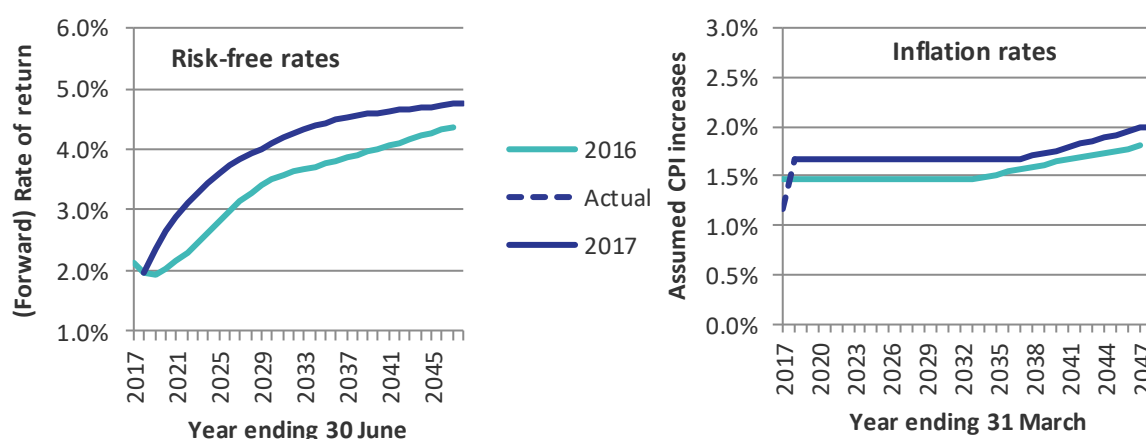
» **Inflation experience was slightly lower than expected.** While the actual benefits increase in 2016/17 was lower than forecast, the Treasury has increased their forecasts by reverting to the long-term rate (2.0%) at a faster rate. This increases our estimate of future benefit levels and our total future payment estimate increases by $1.15 billion or 1.5%.

» **Discount rates have increased** significantly since the previous projection with material increases in short and medium-term rates. The long-term forward rate has been reduced from 4.75% to 4.35%. This decreases the estimate of total future payments by $4.15 billion, or 5.4%.

Overall the real rate of return (the discount rate minus inflation) have risen. The combined effect is a decrease in the total estimate of future payments of $3.0 billion (or -4.0%). This partially reverses effects in the opposite direction seen in 2015/16.

Part B – Results

3   FEATURES OF INTEREST

3.1   Introduction and highlights

This chapter focuses on new findings associated with this year's projection model. These findings arise from new capabilities added to the projection model, the exploration of historical and projected patterns for trends, and from specific focus on areas of interest.

New data from the Ministry of Education give us our best view of the influence of education on benefit outcomes. We have solid data on programs such as the 3k to Work grant and the Child Material Hardship Package. Our new segmentation also introduces some new variables that influence results.

Health outcomes, particularly mental health and disability, have a continued focus in this section, as with previous reports. Other cohorts identified as of interest this year include those aged 25-29, people who have previously received benefits but have been off benefits for a few years, those jointly on benefits and in public housing, and Māori clients.

New education data

The Ministry of Education data (merged on for those under age 25) is significantly more accurate and complete than the existing data. Educational attainment among the benefit system cohort is significantly worse than the general population; about 65% of (matched) clients did not achieve NCEA Level 2 or higher at school, compared to about 17% of the NZ population. A third of the benefit system cohort also have a history of school interventions such as stand-downs.

Work-ready job seekers with <NCEA L1 have **more than twice** the expected future years on main benefits than those with NCEA L3/4; 8.1 additional years. Large differences are also visible for other benefit types. More than half of this difference has been attributed directly to education-related variables in our models; the remainder is due to other correlated predictors.

3k to Work grant

We have looked at benefit system outcomes (the rate of leaving benefits and remaining off) for people who've received the 3k to Work grant. Compared to matched caseloads, the exit rates are far higher than the general population of jobseekers, and the sustainability of exits appear comparable to other groups that exit benefits. Of those that move off benefits in the next quarter, 74% remain off main benefits for the subsequent three quarters.

Child material hardship package

The child material hardship package adds $1.5 billion, or about 2%, to the total future cost of the benefit system. This is in line with last year's estimate, although we have increased the effect of higher childcare subsidy payments. There appear to be resulting changes to benefit dynamics, including higher exits for SPS clients with children aged 3 or 4, and lower exit rates of jobseeker benefits for clients with registered children. The effects have opposite directions in terms of long-term duration, but the latter dominates; we forecast longer durations, particularly while in jobseeker benefits.

New segmentation variables

The proportion of time on main benefits (over three or five years, depending on the benefit type), is an important new segmentation variable that differentiates between high and low future duration on benefit. Those with more recent time on main benefits are predicted to have up to 50% longer benefit duration in the future, with much of this directly attributed to benefit history in the model. We also find the SLP reassessment information is effective in separating clients with high and low rates of employment-related exits from benefit.

New benefit suspensions data

The distribution of benefit sanctions (temporary removal of benefit payments, usually as a result of a failure to meet mutual obligation requirements) is not uniform across the benefit system. It is twice the rate for Māori compared to NZ European clients, and is highest for those aged 20-24. While the difference in expected benefit duration for those with or without sanctions history is substantial, there is very little impact directly attributable to the role of sanctions; the differences are driven by other factors.

IDI health and benefit outcomes

We have looked at health sector service usage as a predictor of later receipt of HCD benefits. While the overall rate is low (the number of people using health services is very much higher than the numbers entering benefits, pinpoint prediction accuracy hard), there are some important findings when considering relative likelihood. Those using a mental health related service were 3.4 times more likely to enter HCD than the baseline population, with some smaller subcategories such as those with psychotic disorders having even higher likelihood. Hospital use (inpatient and emergency), plus chronic health condition history also led to substantially increased likelihood of entry onto an HCD benefit.
Among those that do enter, prior health service usage is very high, and there is a clear timing effect too; much of this heightened usage is within the recent past.

Mental health

Clients with mental health are a growing portion of the population on both JS-HCD and SLP-HCD benefits. Mental health status has a moderate but material impact on outcomes. For those under 30 with a mental health condition (either as a primary or secondary) will have an extra year on benefit for JS-HCD and 1-2 years for SLP-HCD.

Interaction of disability allowance and HCD

The disability allowance (DA) is a supplementary benefit paid to those with a qualifying disability. While three-quarters of recipients are receiving SLP or JS-HCD benefits, the remaining quarter are not on a disability-related main benefit. Receipt of DA while not on an HCD benefit substantially increases the likelihood of future HCD benefit receipt, and data related to this allowance is likely to be useful in better understanding the benefit system cohort.

The 25-29 age cohort

We have considered the 18- to 24-year-old cohort in some detail in previous reports, the 25-29 cohort provides a good point of comparison. The cohort is smaller in absolute numbers but is much more likely to be on SPS or Supplementary-only benefits. The expected future time on benefit and spread of duration is similar to the 18-24 cohort, but the drivers of this (as understood by the model) are different. Youth impacts such as child protection history or intergenerational data are less influential for the older group, whereas benefit history is much more relevant. Ethnicity and education continue to be very important.

Former benefit system clients

The report formally measures future benefit system pathways for those exiting in the past financial year (2016/17), but there is much that can be said regarding less recent leavers (those exiting in the past 5 years). Duration since last on benefit is the dominant predictor of future benefit system need. The expected number of future years on benefit is 4.6 years for recent exits (0-1 years), and drops by two-thirds to 1.5 years for those off benefits for 4-5 years. This decrease is quite steep and primarily driven by the initial probability of re-entry tailing off markedly.
Other key drivers of benefit re-entry likelihood (and future duration) for these clients include age, ethnicity and corrections history.

Combined benefit – housing transitions

We have found that for clients in both benefit and public housing systems, joint exits from both (in the same quarter) are much higher than you would expect than if such events were independent (i.e. if the probability of exiting one had no influence on the probability of exiting the other). For clients receiving JS-HCD and SPS the relative increase in the rate of joint exit (compared to independent exits) is 3 to 4 times. While the causality is more difficult to establish there is some evidence presented that the benefit system exit tends to be the driver of the joint event.

Māori client outcomes

Māori clients are heavily overrepresented in the benefit system. They have a directly higher level of future benefit need (as measured by the model, which does not establish causation), as well as higher rates of other factors associated with higher future benefit system need. For those under 25 and not SLP-HCD, Māori clients are expected to be on benefit for an additional 4-5 years compared to non-Māori clients.

3.2   Educational attainment

For the 2017 projection and report we have been provided with a new dataset from the Ministry of Education (MoE). This dataset extends back to 2010, so is available for clients currently aged 25 or less. There are around 87,500 young people in the current cohort who are matched to this dataset. Information provided includes school-level educational attainment, stand-downs while at school, enrolments at tertiary institutes and some course providers that receive Gateway funding.

In previous years' reports we noted educational achievement data for clients was subject to data quality issues, with last year's report noting about 40% of beneficiaries were without a useful qualifications level. The education data was particularly poor for younger clients; the education field was missing for 50% of clients under 25, and 90% for under 19. The new data is missing for 30% and 70% of these age groups respectively.

As shown in Table 3.1, for clients where we have education data from both datasets, there is only a relatively small correlation between the two (~25%), confirming the old data often had inaccuracies. For example, of those listed as attaining NCEA Level 1 on the original data, only 13% have the same achievement level on the new dataset. The only group with a high correspondence between the original

and new datasets is those with degrees recorded on the original data. The inaccuracy of the original data tended to reduce the measured influence of education on benefit system and employment outcomes.

Table 3.1 Comparison of previous educational attainment level and new MoE information for clients currently aged 25 or less. Figures for those matched to Ministry of Education data.

Original education level	Number of people	New education level - hybrid of NQF at school exit and tertiary enrolment							
		<NCEA L1	NCEA L1	NCEA L2	NCEA L3/4	Other	Diploma	Diploma	Degree +
		0	1	2	3	4	5	6	7+
< NCEA L1	16,300	20%	6%	15%	20%	18%	9%	4%	7%
NCEA L1	14,600	14%	13%	16%	22%	18%	9%	3%	5%
NCEA L2	24,100	4%	4%	25%	21%	20%	12%	5%	8%
NCEA L3/4	17,500	1%	1%	7%	24%	19%	17%	8%	23%
Other	2,700	9%	4%	12%	17%	23%	15%	6%	15%
Post	28,100	6%	3%	10%	22%	27%	17%	8%	8%
Degree +	8,600	0%	0%	1%	2%	2%	3%	3%	89%
Missing	67,300	10%	5%	13%	16%	13%	9%	5%	28%

With the new data we can see educational achievement is a strong predictor of future pathways. We isolated 34,000 matched clients aged 20 and under at June 2012 and observed the proportion of time they were supported by main benefits over the five years to June 2017. Figure 3.1 below shows that the average time supported by main benefits over 2012-2017 decreases with higher levels of educational attainment. This is consistent with literature showing those with higher levels of education are more likely to participate in the labour market, face lower risks of unemployment, as well as having greater access to further training and receive higher earnings on average[7]. Young clients on JS-WR or EB at June 2012 who had not achieved NCEA Level 1 spent more than twice as long on main benefits over the next five years – on average 2.7 years out of 5, compared to 1.1 years for a client who has achieved NCEA Level 3/4. The effect is a little smaller for JS-HCD (3.5 compared to 2.1 years) SPS (4.1 compared to 3.1 years) or SLP clients (4.6 compared to 3.4), but still strong. Low educational attainment is associated with about an extra year on benefits over the five-year window. For Supplementary only and OB clients the reduction is half a year less time with main benefit support.

Figure 3.1 Number of years supported by main benefits over the 5 years to June 2017 split by educational attainment group and June 2012 benefit type for clients aged under 20 at June 2012.

[7] https://www.educationcounts.govt.nz/statistics/indicators/main/education-and-learning-outcomes/1911
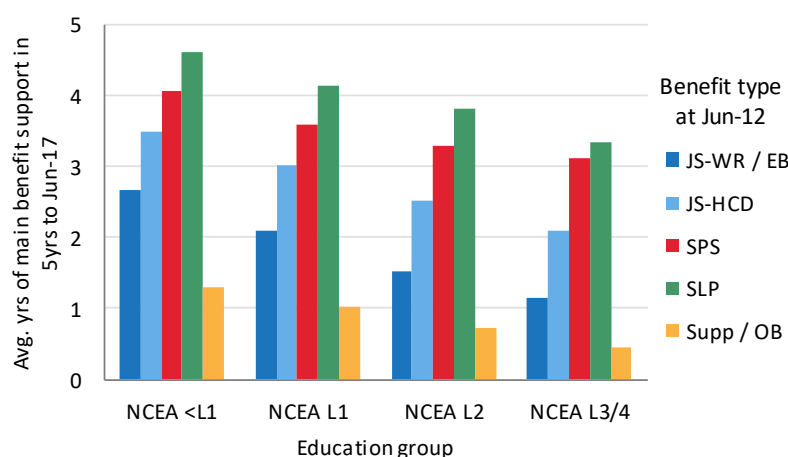
School educational achievement levels are lower among the current client cohort[8] than the general population and this is true across all ethnicity groups. This implies educational attainment is also a predictor for entry into the benefit system, as well as extending duration. Figure 3.2 shows school attainment levels for clients under 25 who are on main benefits. About 65% of (matched) clients did not achieve NCEA Level 2 or higher at school compared to about 17% of the NZ population. However, about half of these people subsequently have a tertiary enrolment at NCEA Level 2 equivalent or higher. As can be seen in Figure 3.2 the proportions have been relatively stable over the past five years. In contrast there have been steady improvements in NCEA Level 2 achievement levels for the population[9].

Figure 3.2 Proportion of main benefit recipients aged under 25 by educational attainment level (left panel). Proportion of main benefit recipients aged 18-25 by educational attainment and ethnicity (right panel).

	Proportion of main benefit clients aged 18-25 with NCEA L2, year to Jun-17	National average
Asian	57%	89%
Māori	30%	71%
NZ European	40%	87%
Other	49%	77%
Pacifiska	43%	78%
All	**37%**	**83%**
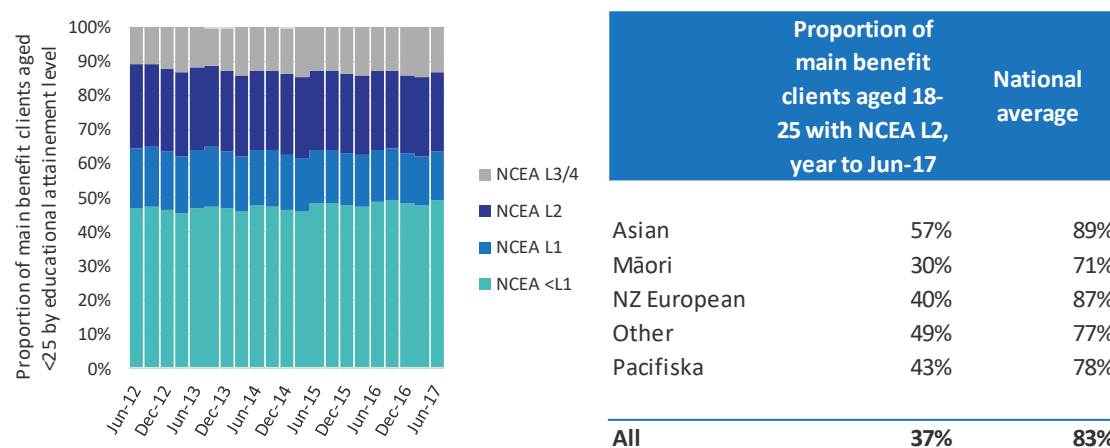
About a third of people aged under 25 in the current client cohort have had a school intervention – a formal removal of a student from a school until a school Board of Trustees decides the outcome at a suspension meeting.

Table 3.2 Proportion of current clients under 25 who have had an intervention and average total days by education attainment level

	Proportion with an intervention	Avg # days for those with an intervention
< NCEA L1	50%	23
NCEA L1	34%	15
NCEA L2	24%	14
NCEA L3/4	11%	11

Table 3.2 shows school interventions correlate strongly with educational achievement. Half of those in our cohort who have not achieved NCEA Level 1 have an intervention, compared to only 11% of those achieving NCEA L3/4. Of those with an intervention, the average number of days off school is significantly higher for those with lower achievement too. Intervention rates vary by ethnicity, decile and gender[10]. Matched Māori clients on our current client cohort are 60% more likely to have an intervention compared to those with European background, and males are 55% more likely than females.

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[8] We refer to the current client cohort as those people who have received a benefit (including supplementary only) in the year to 30 June 2017.
[9] http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-social-indicators/Home/Education/18-year-olds-with-higher-qualif.aspx
[10] Broader statistics on interventions for all people attending school are available at http://www.educationcounts.govt.nz/statistics/indicators/main/student-engagement-participation/Stand-downs-suspensions-exclusions-expulsions

Figure 3.3 New education information for clients aged <25 in June 2017 cohort by current benefit type and education group. Number of clients (top panel), average future years supported by main benefits (middle panel) and partial effect of new education variable on projected future years main benefit support (lower panel)

Client numbers, age <25

Future time supported by benefits

Partial dependence impact of additional education
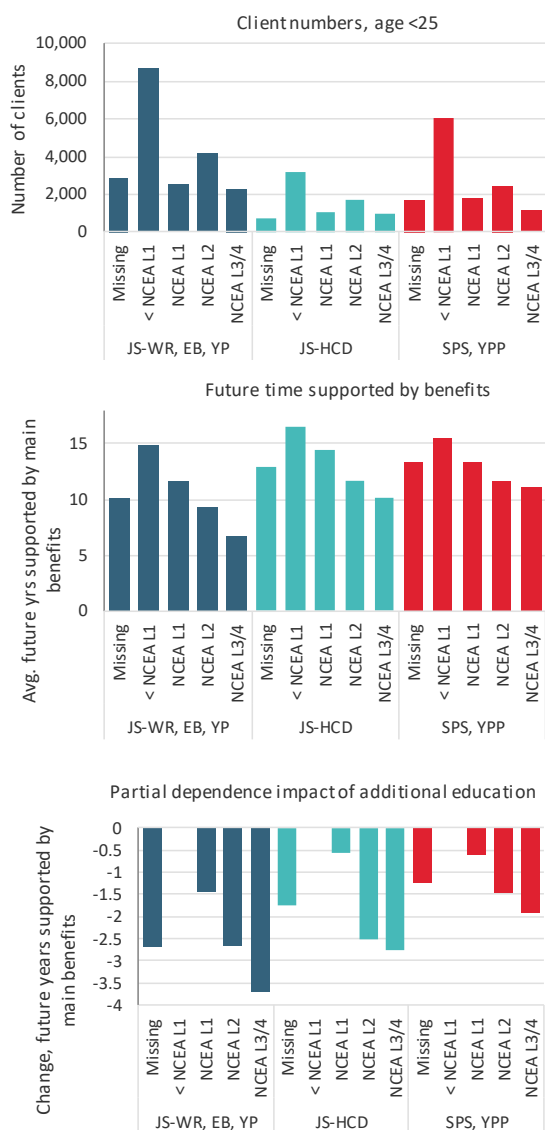
This new education data has been incorporated into our projections of welfare pathways, where they have a significant influence on the distribution of future benefit system need and cost.

Figure 3.3 illustrates that the impact of education on benefit receipt is very large for this younger group of clients.

The first panel shows the distribution of (school-level) educational attainment for JS-WR, JS-HCD and SPS clients. As noted previously, the benefit system sees a large overrepresentation of lower educational attainment.

The second panel shows our projected average future years on main benefit support for these groups. For work-ready jobseekers (plus YP and EB), those with <NCEA L1 have **more than twice** the expected future years on main benefits than those with NCEA L3/4; 8.1 additional years. For JS-HCD the difference is 6.5 years and for SPS 4.5 years. These large differences reflect the fact that educational attainment is one of the strongest predictors of welfare transitions for this age group.

The third panel shows the partial dependence differences between the groups, with <NCEA L1 set as the baseline[11]. About half of this difference has been attributed directly to education-related variables in our models; the remainder is due to other correlated predictors (such as intergenerational benefit history or ethnicity). The partial dependence effects (comparing NCEA 3/4 to less than L1) are 3.7, 2.8 and 1.9 years for JS-WR, JS-HCD and SPS respectively. Comparisons between other groups can also be made, for example the partial dependence effect comparing NCEA L3/4 to NCEA L2 for JS-WR clients is 1.1 years. Smaller partial effects are built into the model for tertiary enrolment and interventions.

The larger effect for JS-WR benefits is intuitive; the connection between educational attainment and employability is most direct for these clients.

Overall the results demonstrate a much clearer signal associated with educational attainment.

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[11] Partial dependence refers to the average impact of a variable on the model prediction holding all other factors constant. This removes the influence of other correlated effects to get a 'pure' signal as measured by the model. Note this is potentially still an association effect rather than causation; there may be other underlying factors not included in the model that affect both educational attainment and welfare trajectories.

3.3   3k to Work grant

3.3.1   Introduction

We have been provided with data on individuals who have taken up the '3k to Work' grant (formerly known as 3k to Christchurch). This program, introduced in 2014, provides relocation grants to help jobseekers who have secured a full-time employment offer in a different region. We compare benefit system outcomes to the broader population to assess the effectiveness of the program.

We have records pertaining to 1,300 grants paid to people by 30 June 2016 who were receiving JS-WR benefits in the same quarter. This means we can compare outcomes after a year (four quarters) to other JS-WR recipients. However, an important consideration is that the characteristics of grant recipients are not typical of 'average' JS-WR recipients; for instance, they are younger, more likely to be male and more likely to reside in the South Island. We have attempted to assess the programme's impact on client outcomes by conducting **propensity matching** of the grant recipients to the wider JS-WR clients. This approach controls for the cohort differences by picking a pseudo-control sample from those not receiving the grants, but who have similar characteristics otherwise. This matching is done via a propensity model[12]. Figure 3.4 shows that the most important factors to control for within the propensity model were region, time (the receipt of grants has been non-uniform over time), benefit history, age and gender.

Figure 3.4 Variable Importance in the propensity model of JS-WR clients participating in 3k to Work
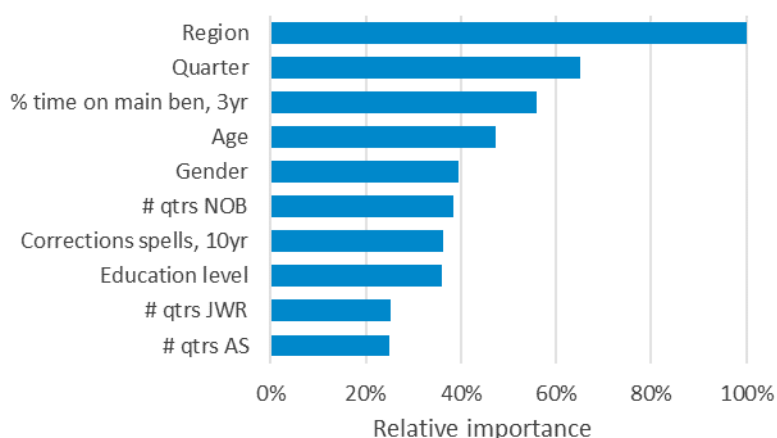
Figure 3.5 shows that the matched control group cohort (dark blue series, named 'matched') better matches the characteristics of the grant recipients (teal series, 'take up') and other JS-WR clients (blue series, 'No take up') across region, age and gender.

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[12] For an introduction to propensity matching, set Austin (2011), *An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies*, Multivariate Behav Res. 2011 May; 46(3): 399–424. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3144483/

Figure 3.5 Variable Importance in the propensity model of JS-WR clients participating in 3k to Work
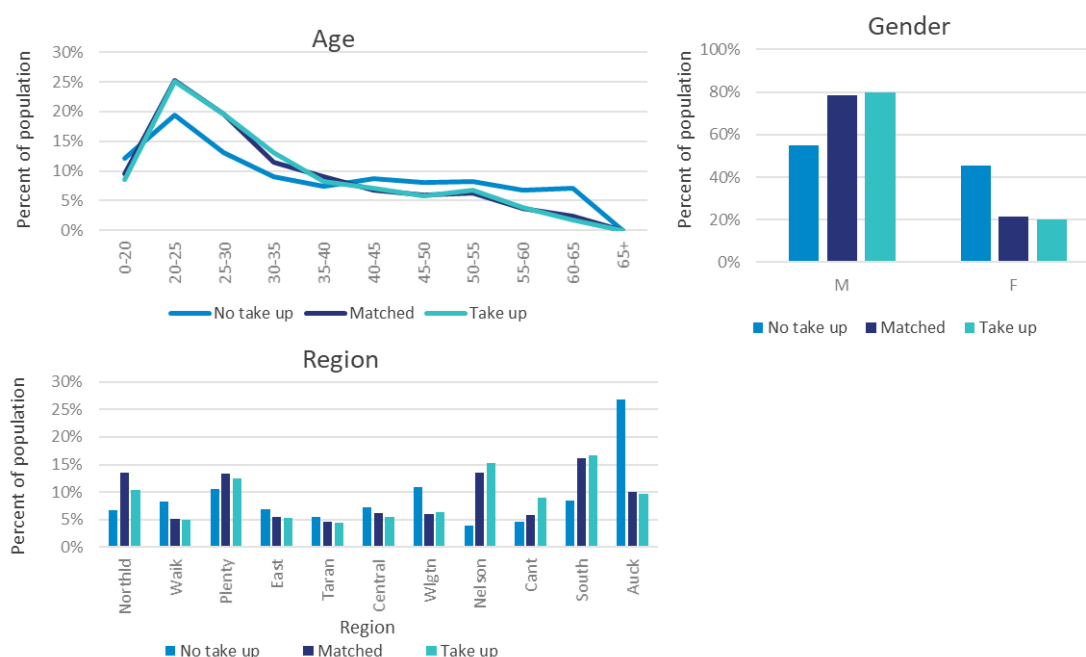
3.3.2   Benefit outcomes after four quarters

We have performed two propensity matching exercises to answer two related, but slightly different questions:

1. Of all on-benefit JS-WR recipients, are grant recipients more likely to be off benefits a year later?
2. Of grant recipients who exit JS-WR next quarter, are they just as likely to remain off benefits after a year compared to other JS-WR clients who exit main benefits?

Of the 1,300 grant recipients, 68% were found to still be off main benefits (not on benefits or receiving supplementary-only benefits) after four quarters. As would be expected, this proportion is much higher than for the broader JS-WR population (40%) and matched cohort of JS-WR clients (48%), most of whom would not have a current job offer. While unsurprising, this confirms that benefit outcomes are much better for grant recipients compared to the broader group of JS-WR clients.

The propensity matching enhances our ability to make inferences about the grant. These clients receiving the grants were more likely to exit benefits compared to the broader population. However, the difference between the take-up group and the matched sample is still large.

Figure 3.6 Benefit status for JS-WR clients a year after their 3k to work grant receipt ('take-up'), compared to other JS-WR clients and a propensity-matched sample.
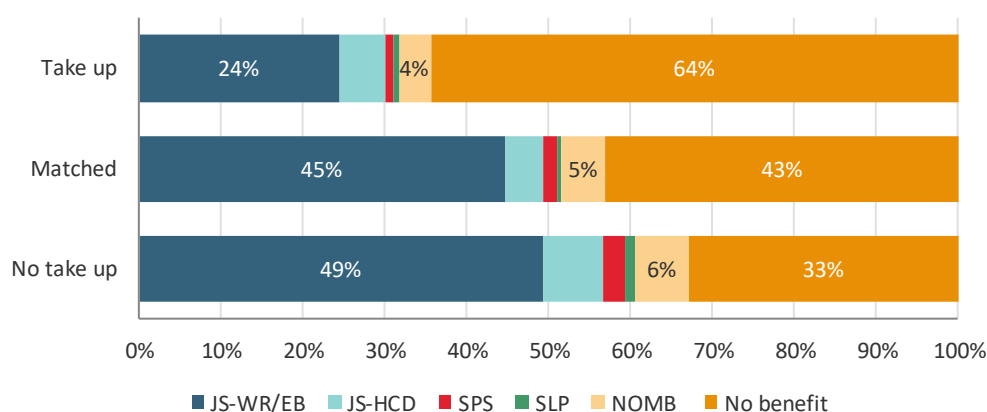
The second related question is more centred on the sustainability of the outcome compared to other benefit exits. Of the 1,300 recipients, about 1,050 moved to NOB or SUP in the first quarter after receipt, so we compare these to similar clients exiting JS-WR. 74% of the grant recipients remained off main benefits for the subsequent three quarters (making a full year off main benefits when the first quarter is included). A similar rate (of 76%) is seen in a matched population of JS-WR exits, leading us to conclude that there is no significant difference in the re-entry rate of '3k to work' recipients to the average JS-WR exit. Interestingly, a smaller fraction of the grant recipients are on supplementary-only benefits, which suggests that some of the grant recipients may be earning a slightly higher income compared to the matched sample.

Figure 3.7 JS-WR clients' status over year after their grant receipt conditional on being NOB or SUP in their first quarter. Benefit state is the first main benefit entered over the year, if applicable.
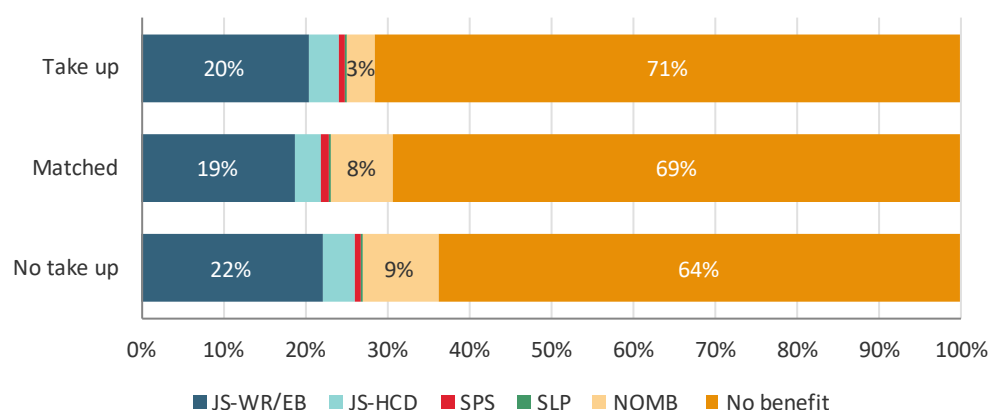
To the extent that clients wouldn't have moved for employment anyway, the results support the program. The first analysis shows that employment outcomes are significantly higher and the second shows that these employment-related exits appear to be as sustainable as other types of benefit exits.

3.4   Child material hardship package

On 1 April 2016 the Child Material Hardship Package (CMHP) provided a benefit increase for families of up to $25 per week, as well as an increase to the child care subsidy. We estimate this package to have increased future benefit payments by $1.5 billion, being the direct result of higher weekly benefit payment rates. The effectiveness of the package in addressing its stated policy intentions – namely

addressing material hardship for children – will be monitored separately, with measures to include broad movements in MSD's Deprivation Index (DEP-17).

We now have a five quarters experience under the CMHP and have observed:

» Significant increases in SPS payment rates, as well as CCS payments to those on SPS; quarterly SPS payments have increased by $340 (left panel below in Figure 3.8), and SPS-CCS payments by $37 (middle panel)

» Smaller, but still significant increases are also visible for clients with children on other main benefit types – as an example, JS-WR shown below (right panel).

Figure 3.8 Average quarterly benefit payment for SPS (left), SPS-CCS (middle) and JS-WR (right)
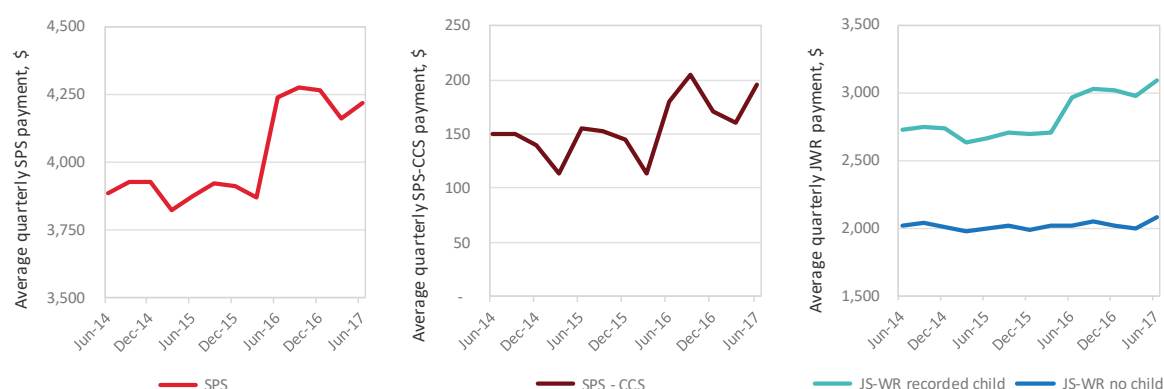
Our estimate of impact of the CMHP on total future benefits due to higher payment rates is $1.5 billion, with half being future SPS payments as shown in the table below. This is close to our estimate of $1.5 billion provided in the previous report, which was based on a single quarter of experience. The main difference is the higher projected level of CCS payments, not allowed for in the previous report.

Table 3.3 Impact of CMHP on future benefit payments

Future payments, $m												
	Main Benefit type						Tier 2 benefit type				Tier 3 benefit		Total
	SPS	EB	JS-WR	JS-HCD	SLP	OB	AS	DA	CDA	CCS	EI	HS	
With CMHP	9,384	158	7,581	5,925	22,206	1,701	9,904	1,700	926	1,162	118	3,141	63,906
Without CMHP	8,591	158	7,402	5,694	21,992	1,701	9,904	1,700	926	1,047	118	3,141	62,375
Impact	793	-	179	231	213	-	-	-	-	115	-	-	1,531
Proportion of total impact	52%	0%	12%	15%	14%	0%	0%	0%	0%	8%	0%	0%	

While an increase in total future benefit payments naturally follows an increase in current benefit rates, there are other visible effects from the CMHP on benefit dynamics. We have not explicitly separated these changes from other changes to benefit system transitions (they are included in the overall change due to experience), however we discuss relevant observations below.

Figure 3.9 Proportion of SPS clients exiting benefits or moving to another benefit in the next quarter, by age of youngest child. Lines indicate years to March 31.
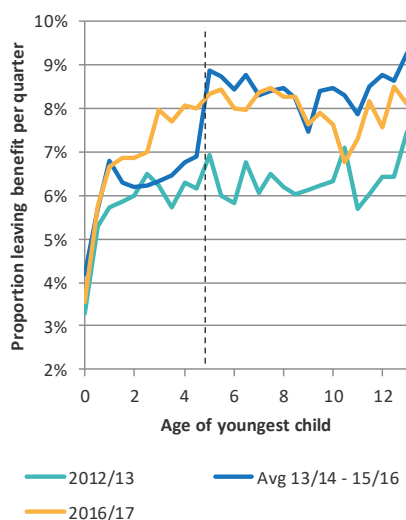
Firstly, as part of the CMHP, work requirements for sole parents with children aged 3-4 were strengthened. Figure 3.9 shows the impact of this compared to the impact of previous reforms. The rates of exit from SPS[13] prior to Welfare Reform in 2013 was fairly flat at 6-7% per quarter across most child ages. After the 2013 reforms exit rates rose 2 to 3 percentage points for those with youngest child aged 5 or more. A similar magnitude increase is now visible for those with children aged 3-4 years, consistent with the CMHP changes. We expect this will lead to, all else equal, lower durations on benefit for SPS clients with young children.

Secondly, an increase in benefit rates (with no change to abatement rates) means that clients may earn a higher income before their benefit is fully abated.

Following the CMHP couples can now earn an extra $70 per week and singles $35 before their main benefit is fully abated. This will likely depress the exit rate slightly, as people remain longer on partial benefits (as opposed the full benefit rate). This effect does appear to be visible in the data. Figure 3.10 below shows the exit rates for JS clients (JS-WR left panel and JS-HCD right panel).

Figure 3.10 Proportion of JS clients exiting benefits or moving to another benefit in the next (de-seasonalised)
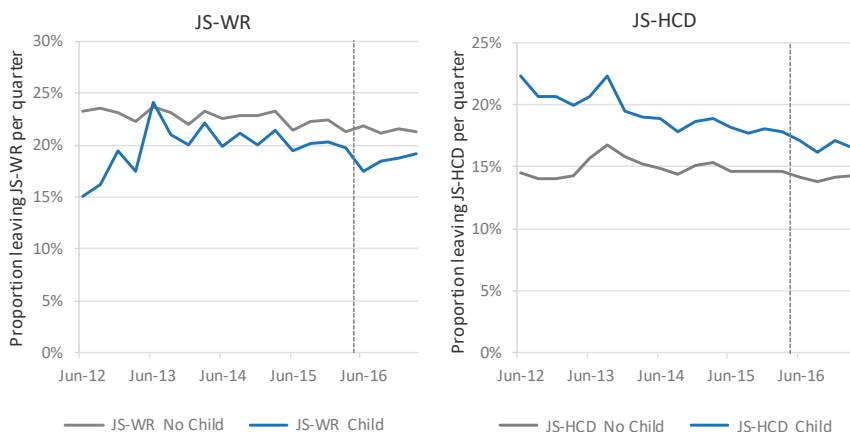
While exit rates from JS-WR and JS-HCD have fallen for most subgroups over 2016/17 (see Section 4.4 for further discussion on this) the decrease is greater for clients with children. Compared to 2015/16, exit rates for JS-WR clients without children have fallen by 0.9 percentage points per quarter, whereas it is 1.75 points for those with children. Similarly, for JS-HCD the figures are 0.6 and 1.2 percentage points for those without and with children respectively. In summary, Jobseeker exit rates have fallen by twice as much for clients with registered children. This is probably tied to the CMHP, and so some over the overall system impacts are attributable to the package (although as stated above, we have not attempted to isolate these).

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[13] This includes both exits from main benefits, as well transfers. The balance between the two has remained fairly stable since 2012/13.

3.5 New segmentation variables

As part of the new segmentation, two new variables have been introduced into the projection model; the proportion of recent time with main benefit support and the reassessment frequency of incapacities for SLP-HCD clients. This section explores these variables and their predictive ability on benefit system outcomes.

3.5.1 Proportion of time on main benefits

Proportion of recent time with main benefit support refers to what proportion of the last 3 or 5 years a client has received main benefit support[14]. The importance of these variables is intuitive; those who have only briefly received benefit support may have recent relevant employment history, whereas those on benefits for longer may face more barriers to exiting benefits. Proportion of time on main benefits is correlated with some of the existing benefit history variables built into the model, but is also a powerful predictor in its own right.

Figure 3.11 shows the average future years of main benefit support for all clients split according to intensity of recent main benefit support. The group of JS-WR recipients with three-quarters of the last three years on benefit will have an extra 3.7 years on benefits in the future, on average, compared to those who have spent less than 75% of the last 3 years main benefits, a 50% increase. Similar increases are visible for other benefit types, with particularly marked differences for clients who are not on main benefits or recent exits. The effect is also consistently strong across all age bands.

Figure 3.11 Average future years of main benefit support for all clients by benefit type (left panel) and age (right panel), both split according to intensity of recent main benefit support. Lower and higher thresholds determined by the thresholds used in the segmentation (three quarters of the past three years for main benefits, and one third of the past five for NOMB and recent exits; see Section 5.2).
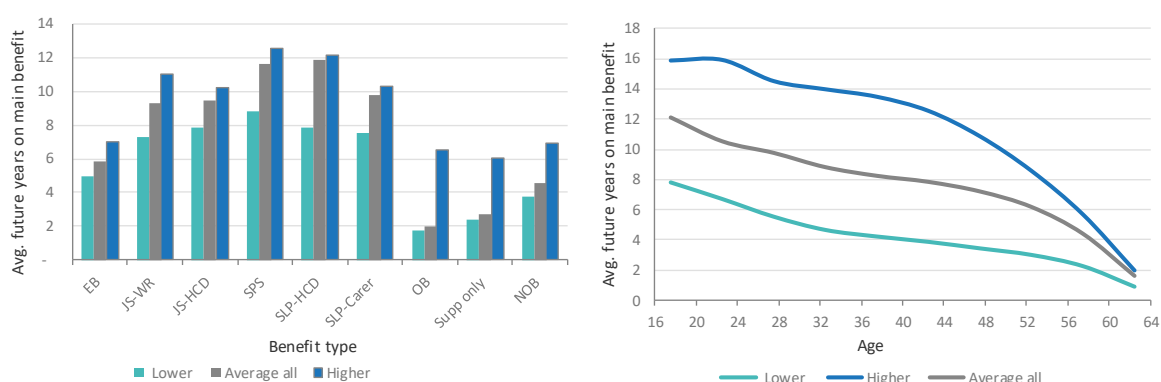
Figure 3.12 shows the increase in future time on benefits in further detail for key beneficiary groups and also distinguishes between the direct (partial) effect of the proportion of time variable, versus other correlated effects built into the model. Comparing the far left and right of each of the charts, JS-WR and Supplementary-only clients with a heavy recent benefit history are expected to receive benefit support for an extra five to six future years compared to those with less intense recent history. For JS-WR, most of the increase is attributable to other factors, whereas it recent benefit history is the key driver of the difference for Supplementary-only clients.

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[14] For younger clients who have not been eligible for main benefits for 12 (20) quarters we adjust these proportions to proportion of quarters since they were age 18 (or received a main benefit if before age 18). Formally, we also count partial receipt in a quarter as a full quarter, consistent with our quarterly definition of benefit state.

Figure 3.12 Average future years of main benefit support attributable to recent benefit history and other factors by benefit type. Note the scale varies between panels.
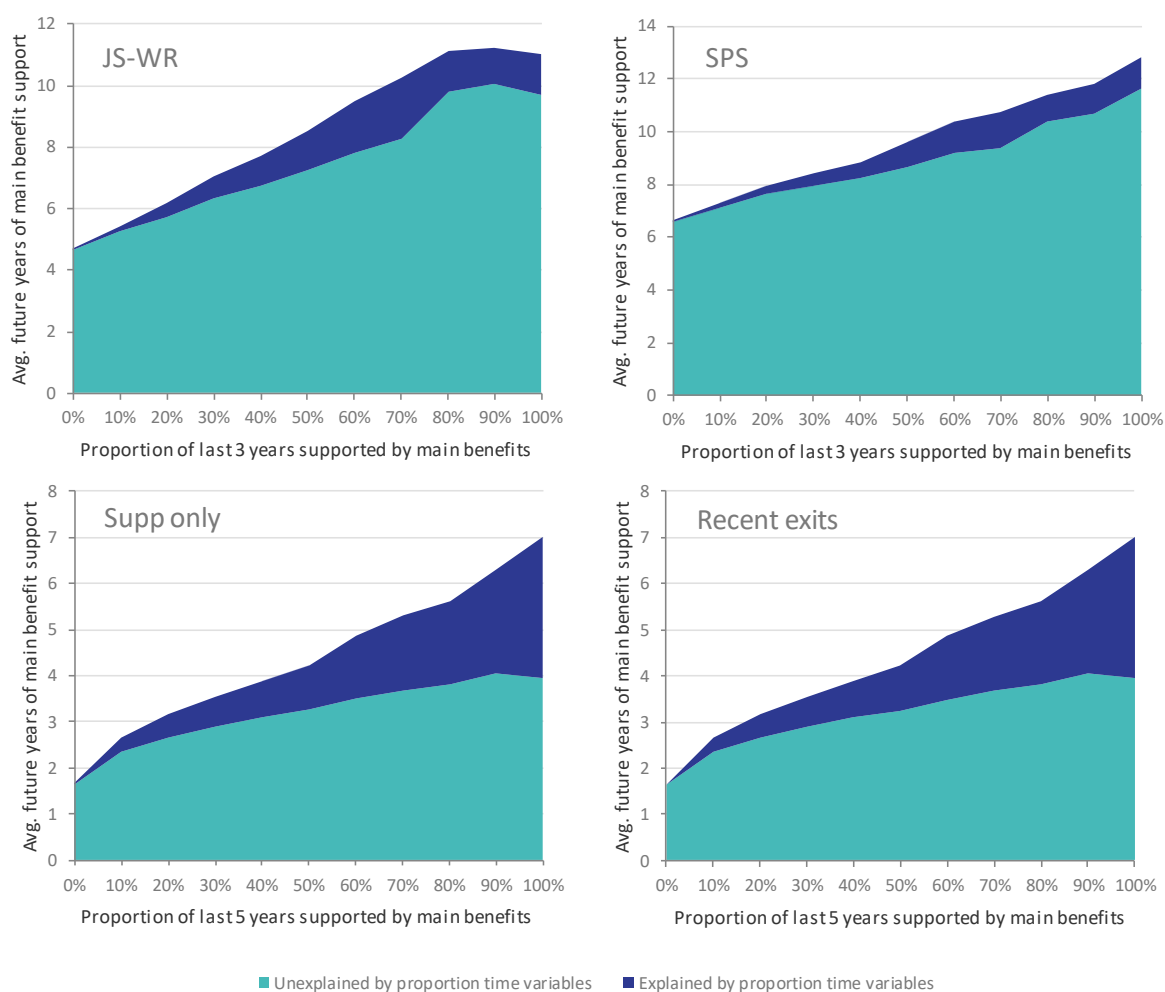
3.5.2   SLP reassessment frequency

SLP-HCD clients are currently assigned to either have a reassessment every two years (if their health condition or disability has reasonable chances of changing over time), or never to be reassessed. The new segmentation makes use of this assignment and we have incorporated it as a predictor in our model. There are 86,000 SLP-HCD clients (excluding partners) at June 2017. About three in five of these (62%) are subject to the two-year reassessment. This, unsurprisingly, varies with duration on benefit, with only 15% of those with 20 years' duration on SLP being subject to reassessment. The proportion of clients with reassessment vary by incapacity type as shown in Figure 3.13; those with intellectual handicaps have the lowest rates of reassessment and those with substance abuse issues have high rates of 2-year reassessment.

Figure 3.13 Proportion of SLP-HCD clients with 2-year or never HCD reassessment frequencies as at June 2017

	# clients Jun-17
Intellectual handicap	9,855
Sensory condition	2,355
Other disability	8,214
Nervous system	6,709
Cancer	2,242
Accident	3,712
Cardiovascular	5,599
Mental health	30,339
Immune system	2,984
Respiratory	2,744
Musculoskeletal	9,016
Infectious	815
Substance abuse	1,553

■ 2-year reassessment   ■ No reassesment
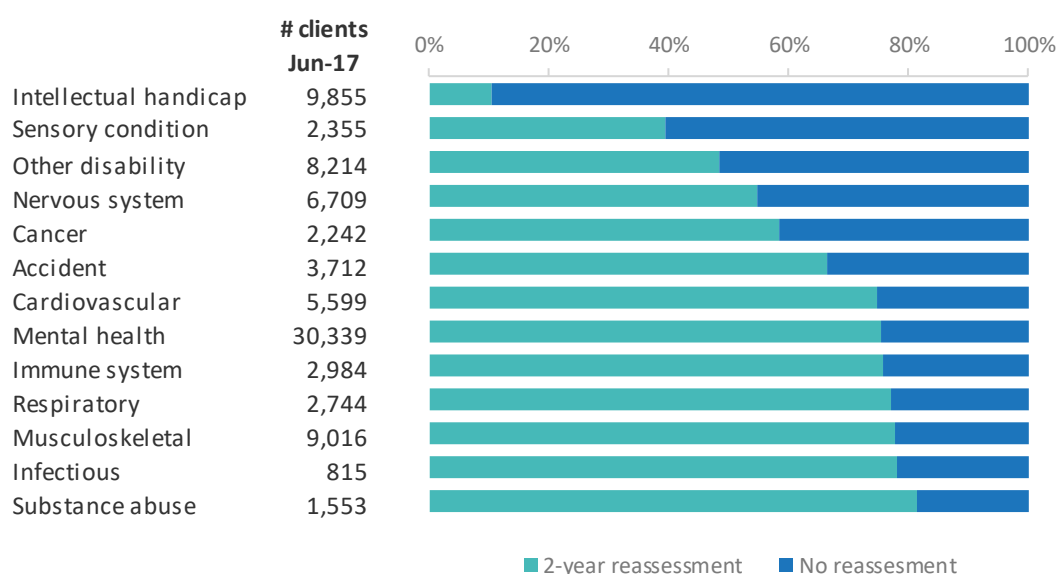
Figure 3.14 shows the different exit rates by duration patterns for these two groups of clients. There are increased exits about every 2 years for those with reassessment. In contrast, those without reassessment have a much higher exit rate initially (in part due to death and other non-employment exits), but then their rate of exit drops below the rate for those with reassessment at higher durations.

Figure 3.14 Probability a client exits SLP-HCD by duration of benefit support
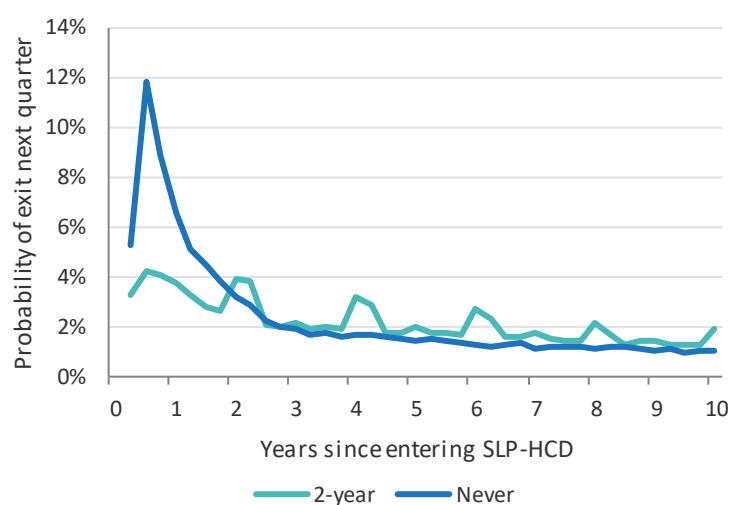
Taking the average across the duration curve, exit rates are roughly equal for the two groups. This is reflected in the average expected duration on benefits for these clients. The left panel of Figure 3.15 shows the partial dependence effect of the reassessment frequency when predicting future years of main benefit support for current SLP-HCD clients. The partial dependence effect is negligible. This is because all SLP-HCD clients have relatively high needs – exit rates are low and mortality is a key driver. Clients with the 'never reassess' frequency have higher mortality rates and the reduced probability of exiting is offset by the increased mortality.

The distinction between the two groups is very important, however. The rates of employment-related benefit exits are much higher for the group with reassessment. The right panel of Figure 3.15 shows the proportion of employment-related exits for those on SLP-HCD over the subsequent three years. While

overall rates are low, they are more than double for most incapacity types when the client is allocated to the two-year reassessment.

Figure 3.15 Average future years of main benefit support for SLP-HCD clients at June 2017 and partial dependence effect of the new reassessment frequency variable (left panel). Proportion of SLP-HCD clients at June 2014, with an exit relating to employment in the following 3 years (right panel). Both panels shown by incapacity type.
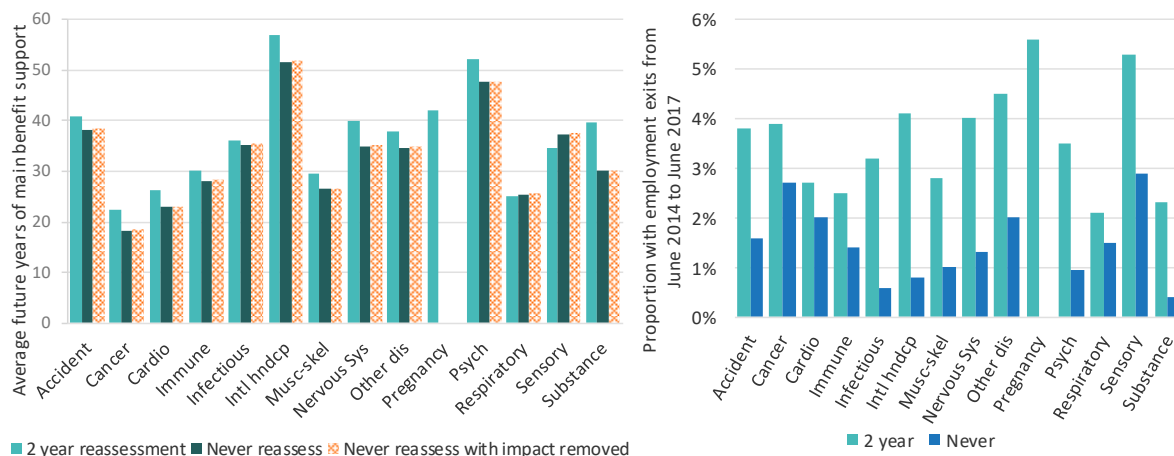
3.6 New benefit suspensions data

Benefits can be suspended, usually temporarily, if clients fail to meet mutual obligations such as job search, notifying MSD of changes in their circumstances or undertaking activities with contracted service providers. These suspensions are relatively rare. Of the June 2017 cohort around one in seventeen people had a suspension in the previous 5 years. Only one in forty had 2 or more suspensions.

Figure 3.16 shows:

» JS-WR clients are most likely to have had their benefits suspended – this benefit has the most mutual obligations, so the result is unsurprising.
» Benefit suspensions are most common for younger clients, particularly those aged 20-24.
» The rate of suspension for Māori clients is double that of NZ European clients. (Note this is not necessarily causative, and a relatively higher proportion of Māori clients being young and on JS-WR contributes to the difference).

Figure 3.16 Proportion of clients in 2017 current cohort with one or more suspensions in the past 5 years by benefit type (left panel) and JS-WR subgroup by age group (middle panel) and ethnicity (right panel).

The impact of suspensions on the projection model, shown in Figure 3.17, is small; those receiving JS-WR with suspensions history are expected to be on benefits for an extra quarter over their lifetime, all else

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equal. This is visible as the difference between the dark blue and orange dotted lines. While there are overall differences in future duration between those with or without suspensions history, suspensions history itself only explains about 20% of the gap. Age, ethnicity and benefit history explains much of the rest.

Figure 3.17 Impact of suspension history on average future years with main benefit support, shown for Māori JS-WR clients (left) and non-Māori JS-WR clients (right).
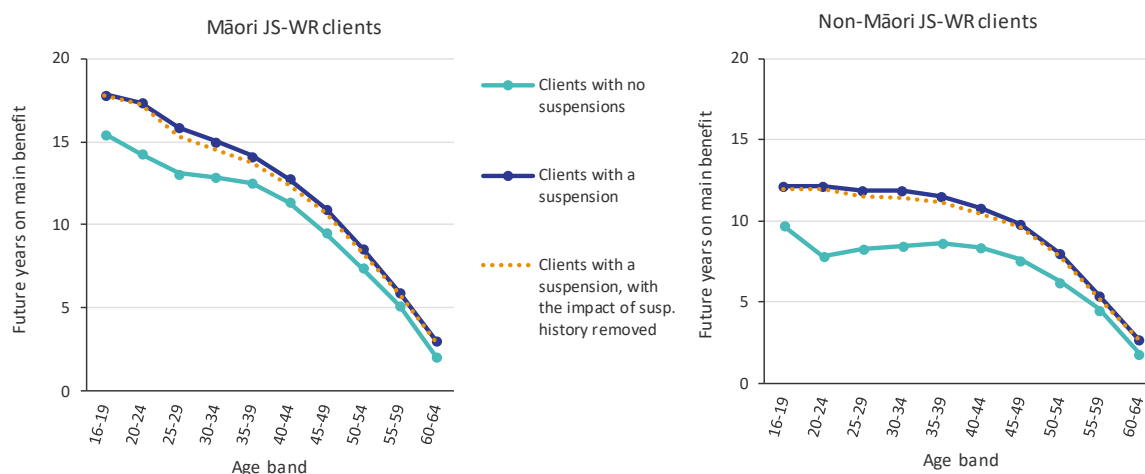
There is also a short-term effect which we have not allowed for explicitly in the model; there is a short-term saving associated with a benefit suspension, due to people not receiving payments while suspended. We have ignored this effect in our projections and our choice of studying suspensions over the past 5 years protects against predicting perceived improved outcomes that result from a suspension.

3.7   IDI health and benefit outcomes

The Integrated Data Infrastructure (IDI) provides an opportunity to explore how the benefit system interacts with other elements of government service delivery. This year, we have combined benefit system data with health data to explore two related questions:

» To what extent can health service usage anticipate entry in to the benefit system, particularly to JS-HCD or SLP-HCD benefits?

» How intensive is prior health service usage among those who enter JS-HCD or SLP-HCD?

Starting with the first question, we looked at the subgroup of people who:

» Were working age in 2013/14 and 2014/15
» Did not spend time on main benefits in the year to 30 June 2014
» Had some interaction with the health system in the year to 30 June 2014.

We then estimated the proportion of this subgroup that spent some time on an HCD benefit in the year ending 30 June 2015. In general, the rate of entry into HCD benefits was low; 0.85% of people who had not been to hospital in the past year entered benefits, whereas 1.6% of those who had been to hospital entered benefits; while the *relative* likelihood is significantly different (twice as high), the absolute likelihood of benefit entry is low. We believe that these relative likelihoods are useful, but note that they need to be analysed alongside other predictive factors.

The figure below shows relative likelihood compared to the baseline likelihood of 0.85%. Those accessing any mental health service (excluding preventative services) were 3.4 times more likely to enter benefits.

This was off a large population base too – over 6,000 entries from a group of 267,000 people. Some smaller subcategories, such as psychotic conditions, had an even more elevated likelihood.

The number of people in each category shown above can vary significantly. Where the number of people is lower we expect more variability in our relative likelihood estimates. However, all groups are more than 1,000 people and estimates are therefore fairly robust.

Time in hospital and emergency department presentations both had steady increases with the intensity of use. Those in hospital for four or more weeks were 4.4 times more likely to enter benefits, and those with at least five emergency department presentations were 6.3 times more likely to enter benefits. The reasons for hospital admission were often important; those in hospital for issues related to substance abuse were 6.8 times more likely, and those with mental health hospitalisations were over ten times more likely.

The IDI also contains information on managed chronic diseases. In the lower right panel we see that Figure 3.18 these similarly indicate high relative likelihood of benefit entry, reflecting the generally poorer outcomes seen for those with chronic conditions.

Figure 3.18 Relative likelihood of entry into HCD benefits in subsequent year, based on health service usage
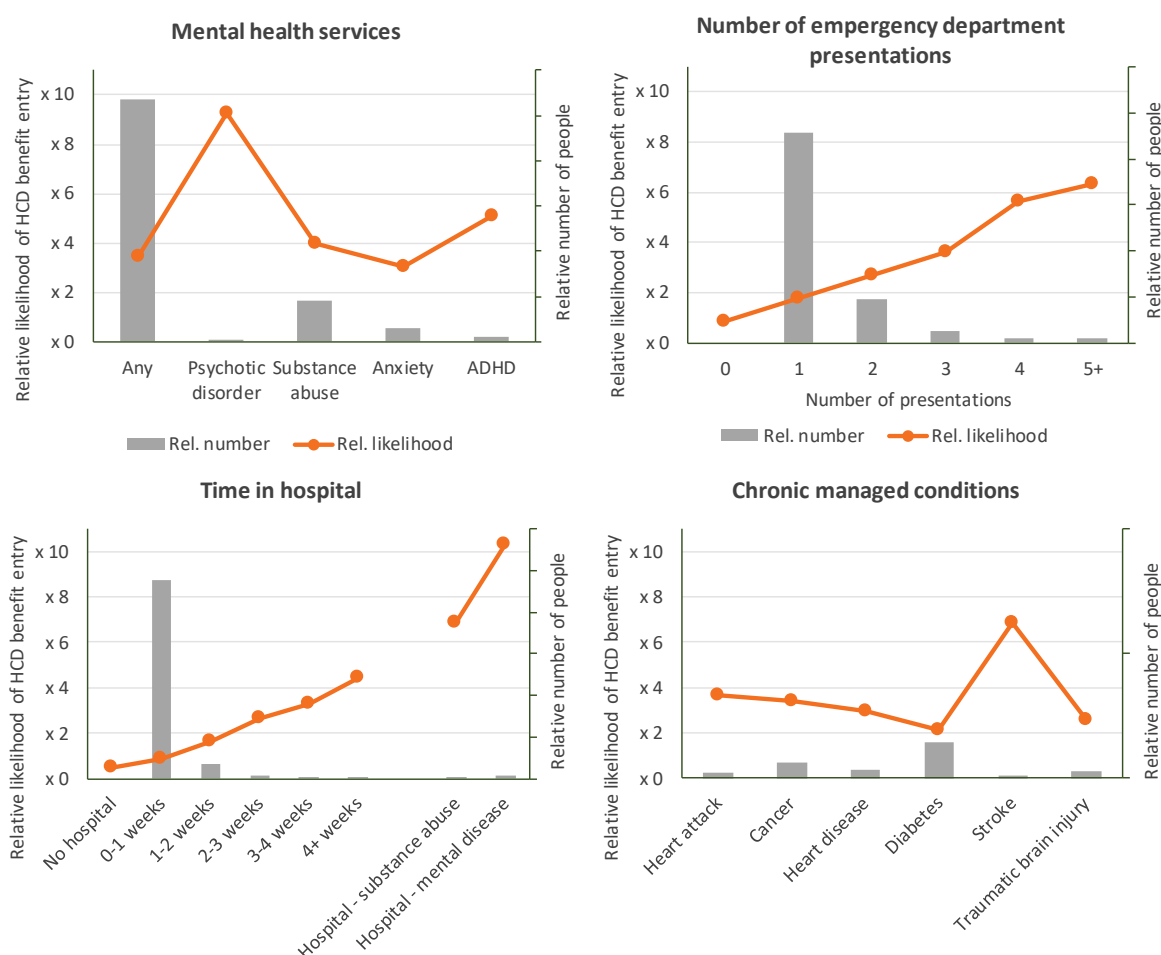
The figure above looks at one year of health service usage. We also examined different time windows to better understand how timing affects benefit entry. Moving to two years of health service usage captured a slightly higher number of HCD entries, but the levels of relative likelihood were very similar. We looked at a quarterly version, where rates of entry into HCD in a single quarterly were estimated based on health service usage in the previous quarter. This narrower definition caught only a third of the number of HCD entries (compared to a year window), but showed much higher relative likelihood; for

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example, the (any) mental health service relative likelihood was 4.8 under this measure, compared to the 3.4 shown above. This demonstrates that there is an important immediacy effect; a significant proportion of benefit entries can be linked to very recent health service usage.

Our second analysis looked at health conditions from the reverse direction; what pathways are evident for people who did enter into HCD benefits? We looked at the health service usage in the year prior to moving onto a HCD benefit in 2014/15 (some of whom may have received another benefit type in 2013/14) and compared them to the wider population. Some summaries are shown in Figure 3.19. We observe for this cohort:

» Health service usage was relatively high. For example, mental health service usage is roughly 12% on the broader New Zealand working-age population (based on Ministry of Health data), whereas its use was double for those who were on benefits in 2014/15. This is very high for those with primary incapacity related to mental health or substance abuse, but is still high for other incapacity types too. (The high rate of mental health issue among the beneficiary population is discussed further in Section 3.8.)

» Similarly, hospital admissions were twice the rate of the general population. It is particularly high for those with blood disorders or cancer.

» Pharmaceutical use is high, with the 20% of the matched population having more than 10 scripts over the year, about three times the general population. Some incapacity types are linked to higher script use – these generally align to those incapacities that also see higher hospital use.

Figure 3.19 Health service usage in 2013/14 for clients on HCD benefits in 2014/15. Split by primary incapacity on MSD data.
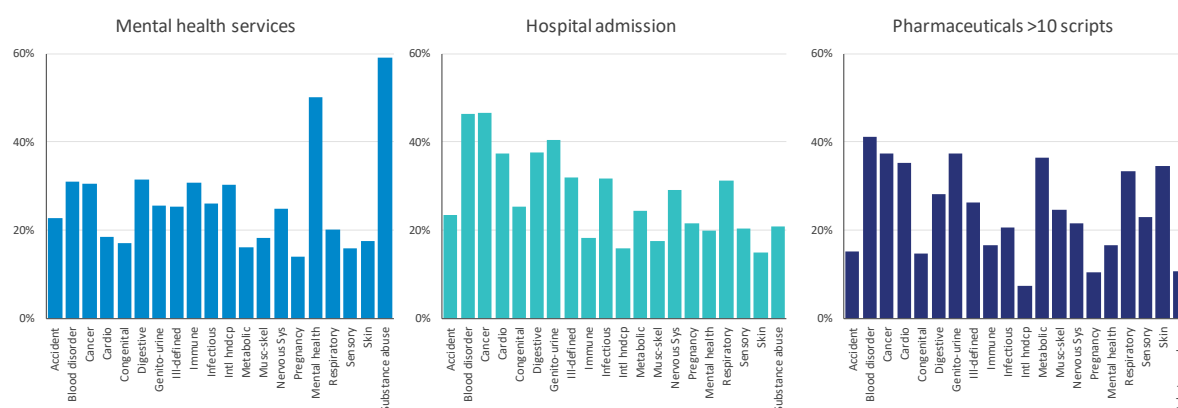
These results demonstrate a reasonable degree of medical need among HCD clients, which tends to start before entry into the benefit system. It also emphasises that whole-of-government spending is fairly concentrated for these clients, through the combination of benefit system and healthcare spending.

3.8   Mental health

As noted in previous reports, mental health related conditions are the most common primary incapacity reason for SLP-HCD and JS-HCD benefits, and the proportion of clients with a mental health condition has been steadily growing over time. Of the June 2017 current cohort, 55% of JS-HCD at 30 June 2017 clients have a mental health condition including 14% of the cohort with a different medical issue listed as their primary incapacity. JS-HCD mental health conditions are typically labelled as depressions or 'other'. For SLP-HCD the equivalent figures are 43% and 12%, and there is much higher incidence of schizophrenia and bipolar disorder. Mental health conditions are more prevalent at younger ages – those with a primary mental health condition are, on average, 8 years younger than others for JS-HCD and 4 years for SLP-HCD. The distribution of JS-HCD clients with primary and secondary mental health incapacities by age band is shown in Figure 3.20.

Figure 3.20 Proportion of HCD clients with a psychological incapacity (primary or secondary) by age band. JS-HCD on left and SLP-HCD on right.
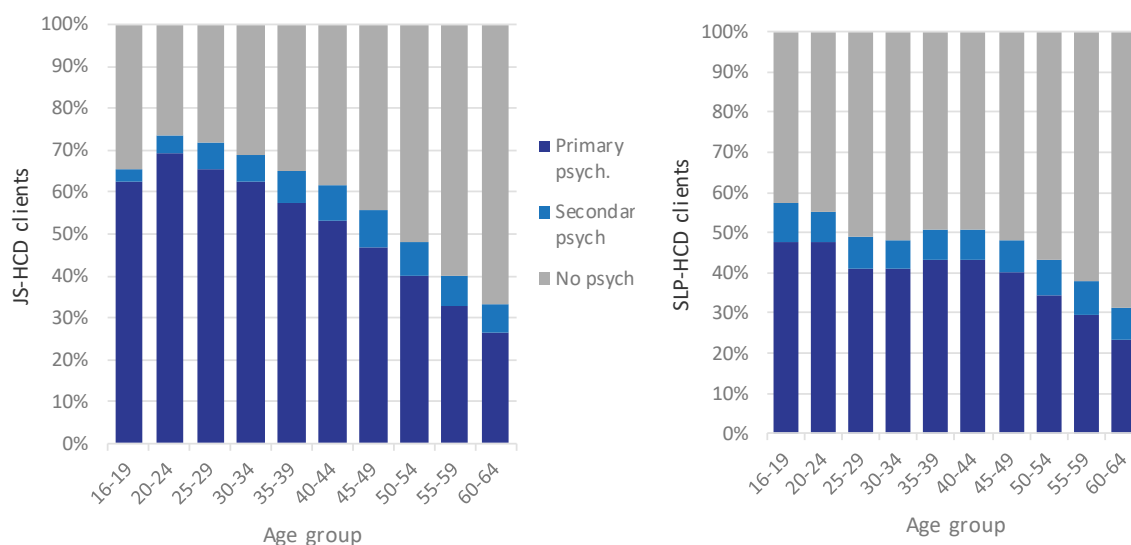
Some primary conditions are more likely to have a related mental health issue, most notably substance abuse.

Figure 3.21 Proportion of HCD clients with a mental health (or psychological) incapacity (primary or secondary). JS-HCD on left and SLP-HCD on right.
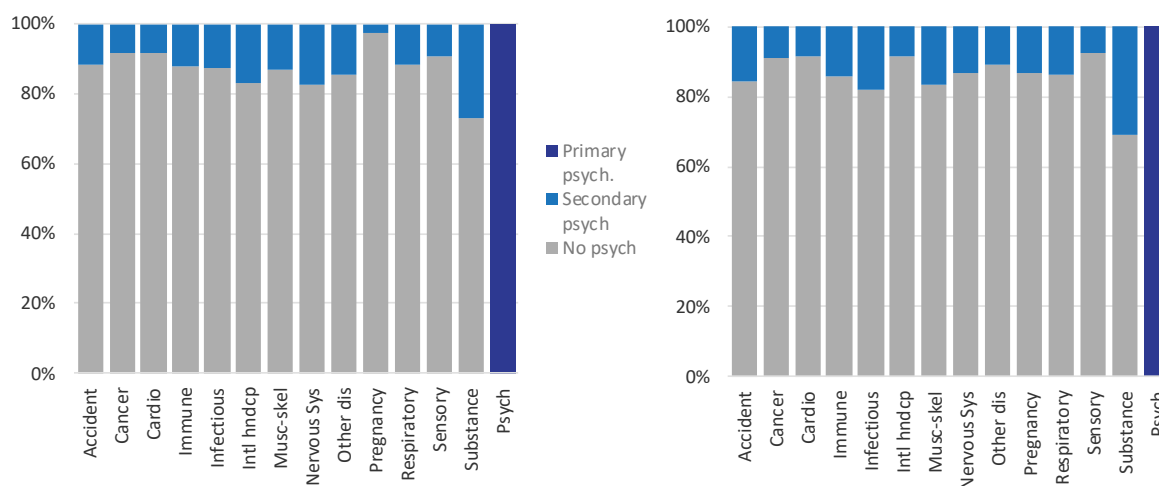
The existence of mental health conditions have implications for future duration on benefits and related cost, with mental health status having a moderate but material impact on outcomes. The impact is most visible for younger ages; those under 30 with a mental health condition (either as a primary or secondary) will have an extra year on benefit for JS-HCD and one to two years for SLP-HCD, compared to those without a mental health condition. The impact is largely borne out on the partial dependence effects as well – it is strongest for younger clients, and also tends to be stronger for those for clients whose mental health condition is listed as primary.

Figure 3.22 Proportion of HCD clients with a psychological incapacity (primary or secondary). JS-HCD on left and SLP-HCD on right.
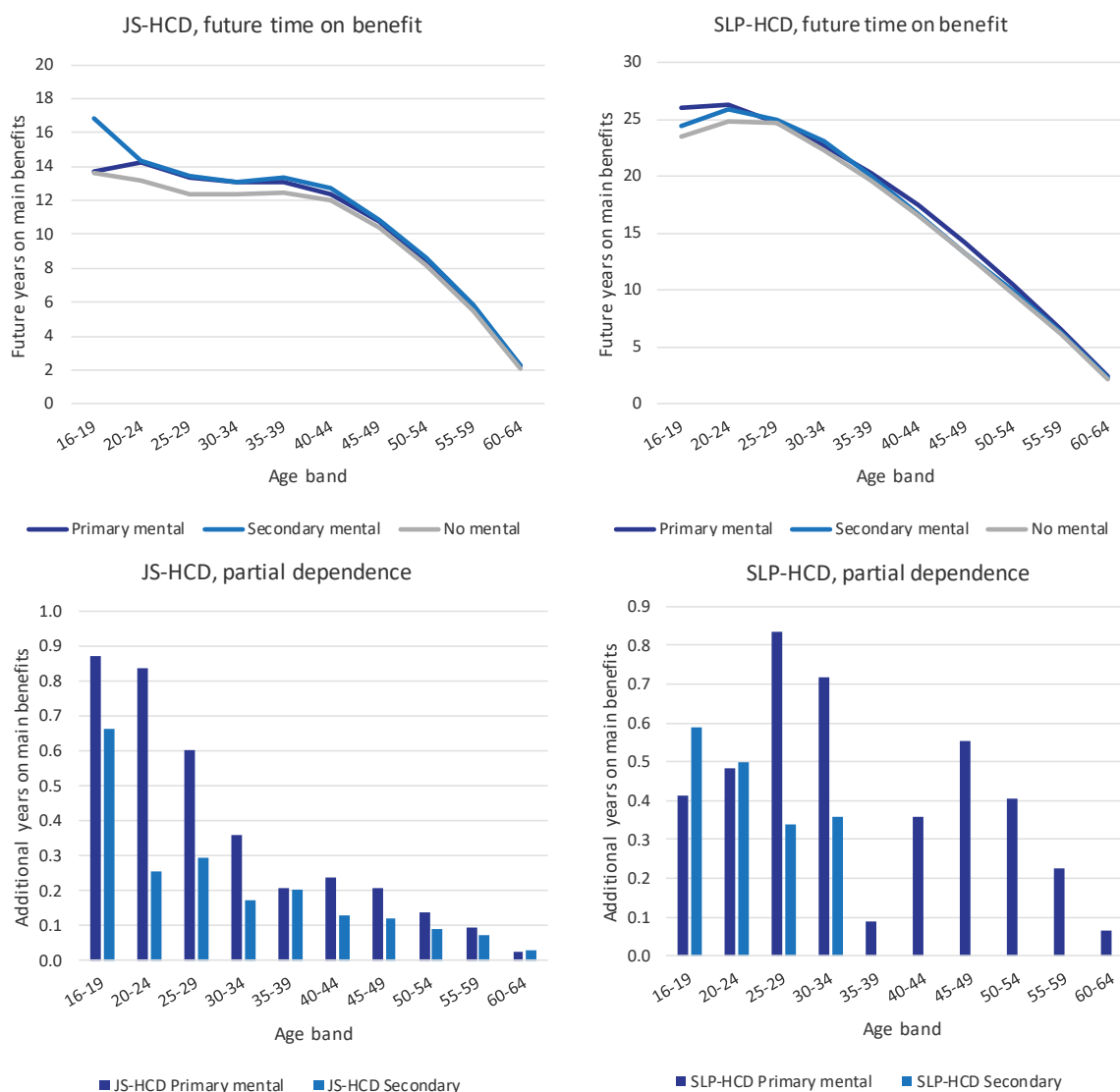
The increasing incidence of mental health conditions provides some operational challenges for MSD. Ordinary case management must be balanced with treatment of the mental health condition (likely requiring support from health sector professionals). This group of clients may well require different types of supports to achieve sustainable employment.

3.9   Interaction of disability allowance and HCD

People who have disabilities may be eligible to receive disability allowance (DA) to help cover related ongoing costs. There are around 120,000 such clients receiving DA each quarter. Three-quarters of the clients receiving DA are also receiving a HCD main benefit (SLP-HCD or JS-HCD). The remainder are on another type of benefit or receiving supplementary benefits only. At 30 June 2017, 62% of SLP-HCD clients and 55% of JS-HCD clients access DA. The rate of use varies by incapacity type and duration on benefit, as shown in Figure 3.23.

Figure 3.23 Proportion of HCD clients accessing DA by incapacity type and duration on benefits
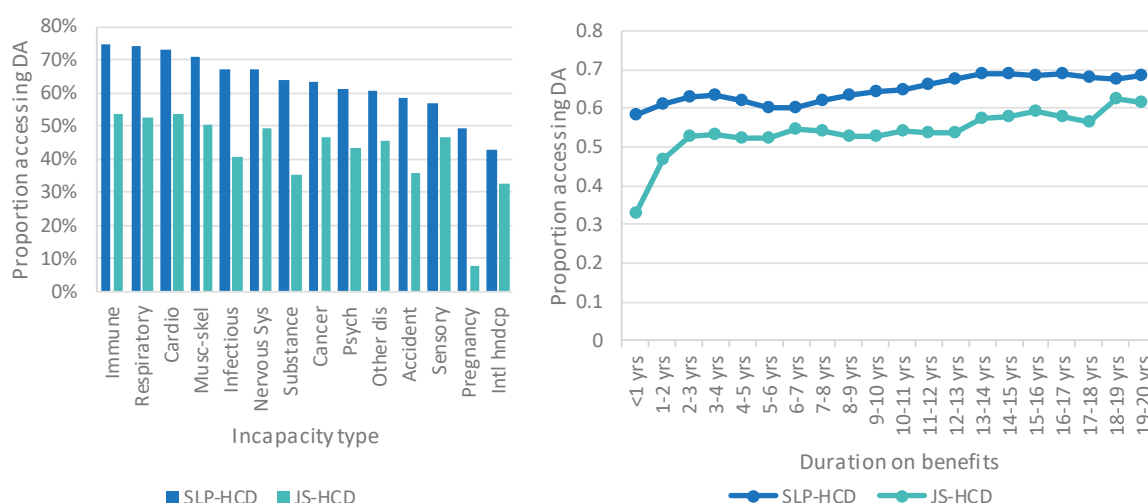
The quarter of DA recipients who are not HCD beneficiaries are primarily Supplementary only, SPS and JS-WR clients. These clients have more extensive history of SLP-HCD and JS-HCD than other clients; however around 1 in 3 have not previously received SLP-HCD or JS-HCD.

Table 3.4 shows the benefit outcomes over two years for people receiving DA but not on JS-HCD or SLP-HCD benefits. Of those with DA payments in the June 2015 quarter while in JS-WR, 6% entered SLP-HCD over the following two years; three times the average for all JS-WR clients. In theory, this means that DA receipt among non-HCD beneficiaries can be used as an indicator variable for future HCD demand. Further, while the data provided to us does not detail the health conditions underlying the DA approval, such information may be useful for better understanding underlying need.

Table 3.4 Rates of entry to JS-HCD and SLP-HCD over Sep-15 to Jun-17 for clients at Jun-15, split by DA receipt

Jun-15 benefit type	Number at June 2015 with DA	Proportion with SLP-HCD over next 2 years		Proportion with JS-HCD over next 2 years	
		With DA	All	With DA	All
JS-WR/EB	6,521	6%	2%	27%	15%
SPS	9,416	4%	1%	9%	4%
Supp only	11,959	3%	1%	11%	4%

3.10　　The 25-29 age cohort

Our previous reports have shown that younger clients typically have higher future duration and cost in the benefit system, and that the drivers of these outcomes relate to a wide variety of predictors, including demographic, benefit history and cross-sectoral predictors. The extension of child protection, youth justice and intergenerational variables to the 25-29 age group in this year's projection model means that we can now better compare them to the 18-24 age group, which has not previously been possible.

Figure 3.24 shows the proportion and actual numbers of each age group by benefit type. In terms of current benefit type, there are many more clients aged 25-29 receiving SPS (23% compared to 15%) and Supplementary only (typically AS) support, and far fewer receiving JS-WR support (22% of clients aged 18-24 versus 14% of those aged 25-29).

Figure 3.24 Proportion of current clients under age 30 (top panel) and number of clients per year of age (lower panel), both shown by age band and current benefit type

Proportion of people

Avg. numbers per year of age
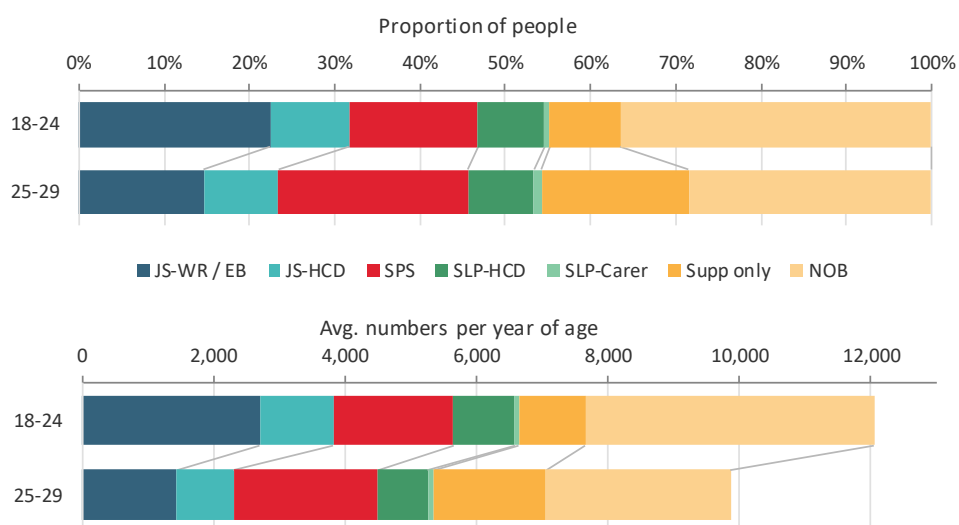
Figure 3.25 shows the average future time supported by main benefits for the two age bands grouped by current benefit type. The future projected times on benefit support are similar, with the younger group projected to need slightly longer periods of support, particularly for SPS and SLP-HCD. The reverse is true for the very small number of young SLP-Carer clients. In terms of predictors, the fewer potential remaining years on benefit for clients aged 25-29 is offset by other factors such as more extensive benefit history.

Figure 3.25 Average projected future years with main benefit support for current clients aged <30 by age band and current benefit type
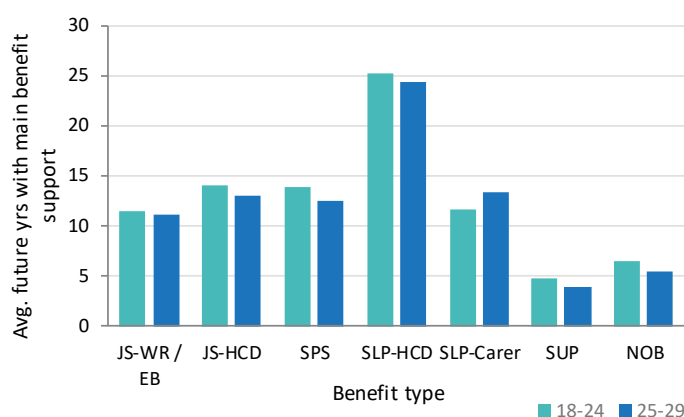
The range of predicted future years supported by main benefits for JS-WR clients aged 18-24 and 25-29 is shown in Figure 3.27. The spread of predictions (shown here as future years supported by main benefits) is slightly wider for the 18-24 cohort, with a 10% subgroup having expected main benefit duration above 20 years. In both cases the range of predictions suggests a large range of underlying need, which we can discriminate between based on demographic, benefit history and cross-sectoral variables.

Figure 3.26 Predicted future years supported by main benefits by 5% prediction percentile bands for JS-WR clients aged 18-24 (left panel) and 25-29 (right panel)
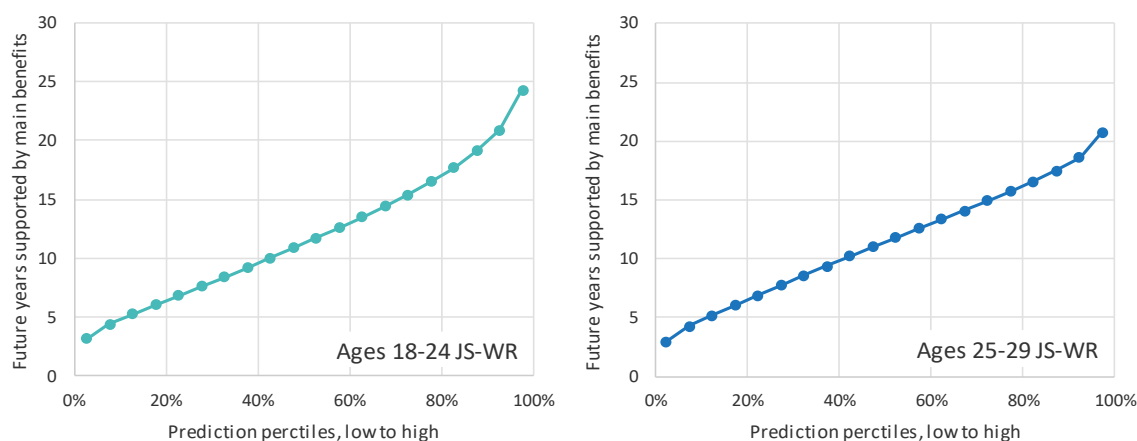
A key question is whether the types of factors driving these predictions differ between the two groups. This appears to be the case – Figure 3.27 shows the relative variable importance for predicting future years supported by main benefits for the 18-24 and 25-29 age groups:

» Benefit history (including the proportion of time on main benefits) is more important for the older cohort. This is, in part, a natural self-fulfilling effect; those with a higher likelihood of long-term benefit receipt, by age 25, have accrued enough benefit history that it can be used to identify them.

» Child protection history is very important for the 18-24 age group (the top predictor), but this fades significantly for the older age group. This suggests that interactions with child protection play an important role in outcomes for those transitioning to adulthood, but its influence on benefit outcomes is replaced by other more recent effects over time.

» Education level is important for both groups (and is thus more persistent than child protection history across ages); this is despite us having poorer quality education data for the 25-29 group.

» Ethnicity and region are both important, and have a similar amount of influence for both age cohorts. These are, broadly speaking, more important for determining future time on benefits than intergenerational benefit receipt or corrections history.

» Housing history (including time receiving AS, and time spent in public housing up to that point) has a strong influence in benefit system trajectories also.

Figure 3.27 Variable importance for predicting future years supported by main benefits for JS-WR clients aged 18-24 (left panel) and 25-29 (right panel)
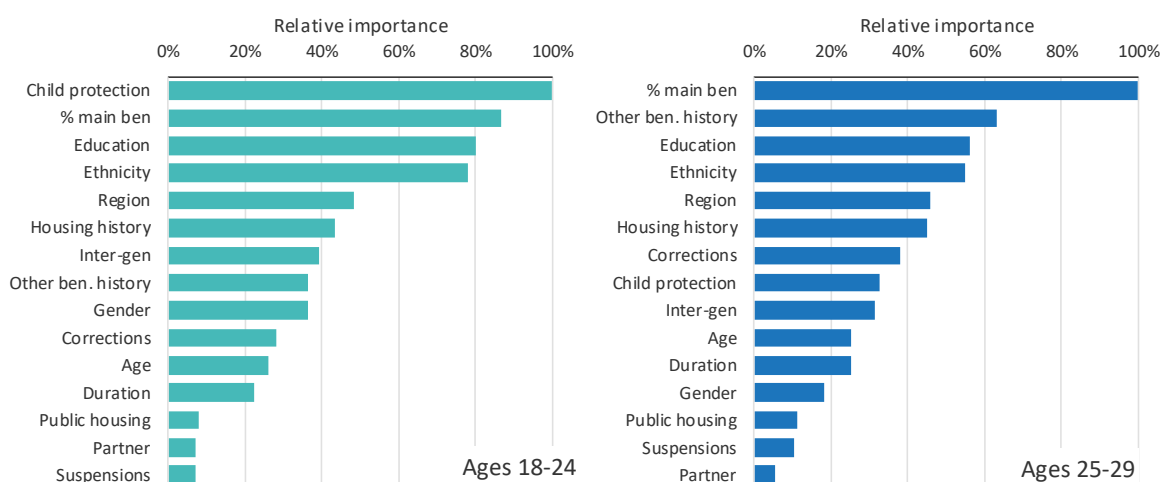
3.11 Former benefit system clients

The majority of this report focuses on the current cohort of clients, those who have received benefit support in the past year. This group was initially defined because the sustainability of exits is much higher after one year with no benefit receipt. In this section we broaden our usual analysis to consider the group of clients who fall outside the current client cohort but who have received benefits in the past five years – the 'not so recent' exits. These clients are of interest when understanding the long-term sustainability of benefit system exits and related need.

If we estimate the likelihood of re-entering the benefit system, or total expected future years on benefits for these clients, the results are dominated by duration since benefit exit; those who have been out of the benefit system longer have significantly less chance of re-entry. Given this, we have separated this group into five sub-groups based on the number of years since main benefit support to explore the results. The first group (0-1 year since main benefits) corresponds to the recent exits segment of the current cohort discussed throughout this report. We have included this group for this analysis to provide a reference point for those with longer durations off benefits.

We have explored outcomes in two ways:

» Projected future main benefit receipt: Using an expanded cohort in the projection model to project future benefit support for this group
» Actual re-entries to benefit support: Using historical data we observed the actual re-entry rate over the two years to June 2017 for those not in receipt of a benefit at June 2015.

3.11.1 Future benefit receipt

At 30 June 2017 there are about 445,000 people who are not on benefits but who received a benefit in the previous five years. Table 3.5 shows the key projection statistics for these people.

Table 3.5 Main results for those not receiving benefits as at June 2017, but having done so within 5 years

Time since benefit receipt	Number at Jun-17	Total future benefit payments, $m	Average future lifetime benefit payments, $k	Avg. future years on main benefits	Proportion with future time on main benefits	Avg. future years on main benefits, given re-entry
0-1 year	123,735	7,566	61.1	4.6	89%	5.2
1-2 years	86,008	3,130	36.4	2.8	80%	3.5
2-3 years	76,931	2,144	27.9	2.1	75%	2.8
3-4 years	79,023	1,778	22.5	1.7	70%	2.5
4-5 years	79,041	1,495	18.9	1.5	66%	2.2
Total	444,738	16,113	36.2	2.7	77%	3.5

From the table we observe:

» The expected number of future years on benefit is 4.6 years for recent exits (0-1 years) and drops by two-thirds to 1.5 years for those off benefits for 4-5 years. This decrease is quite steep and relates to the probability of benefit re-entry, which similarly decreases rapidly with duration. The sharp decrease from 0-1 year to 1-2 years suggests staying off benefit for at least 1-2 years indicates an exit that is much more sustainable over the long-term.

» Of those who last had benefit support 1-2 years ago, around four in five will require future main benefit support, with an average of 3.5 years of main benefit support among those that require support.

While duration since benefit support is very important, there is still a wide range of expected benefit receipt within each duration group, driven by other predictors. The relative importance of variables in predicting the number of years of future main benefit support is shown in Figure 3.28.

Figure 3.28 Variable importance in predicting future benefit support for each since benefit support group
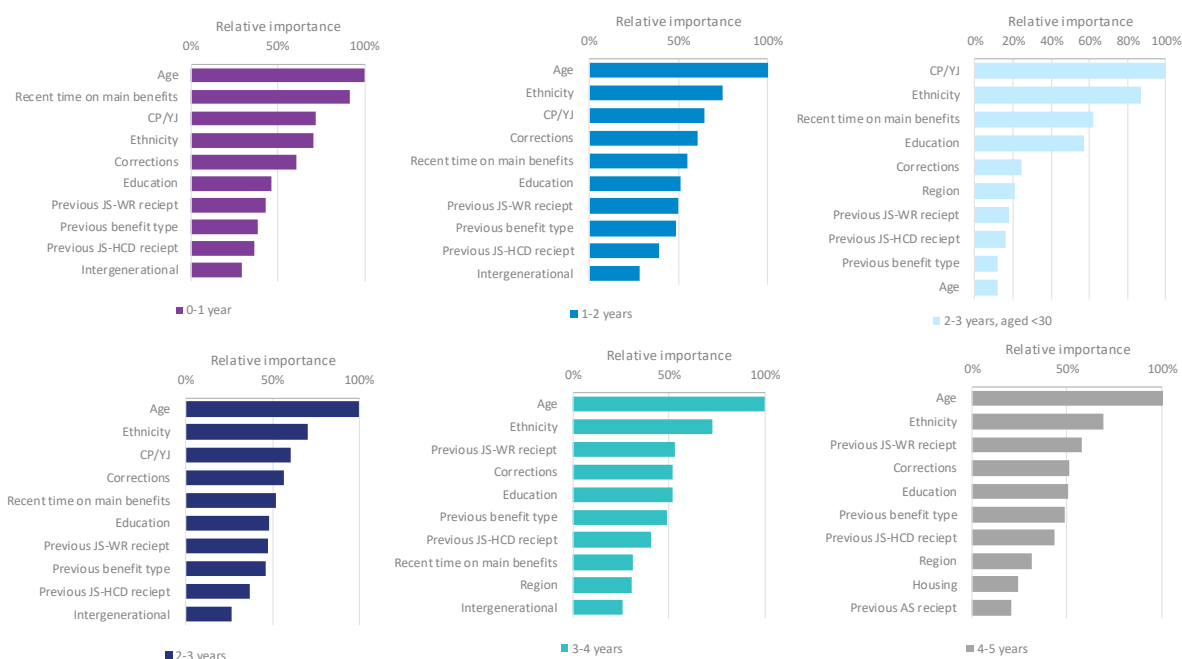
Age is the strongest predictor for each duration group; this in part is a natural result of older people having fewer potential years on benefit before they turn 65 and qualify for the age pension. The average number of future years on main benefit, by age and duration since exit, is shown in Figure 3.29.

Figure 3.29 Average future years of main benefit support by age and year group
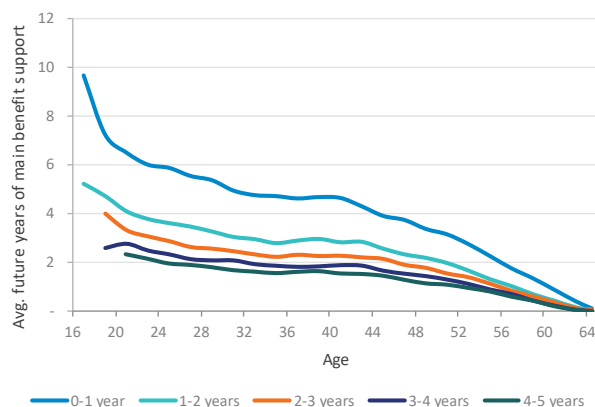
Figure 3.30 Average future years of main benefit support by ethnicity and years since benefit support (left panel) and partial dependence effect of ethnicity for Māori clients (right panel).
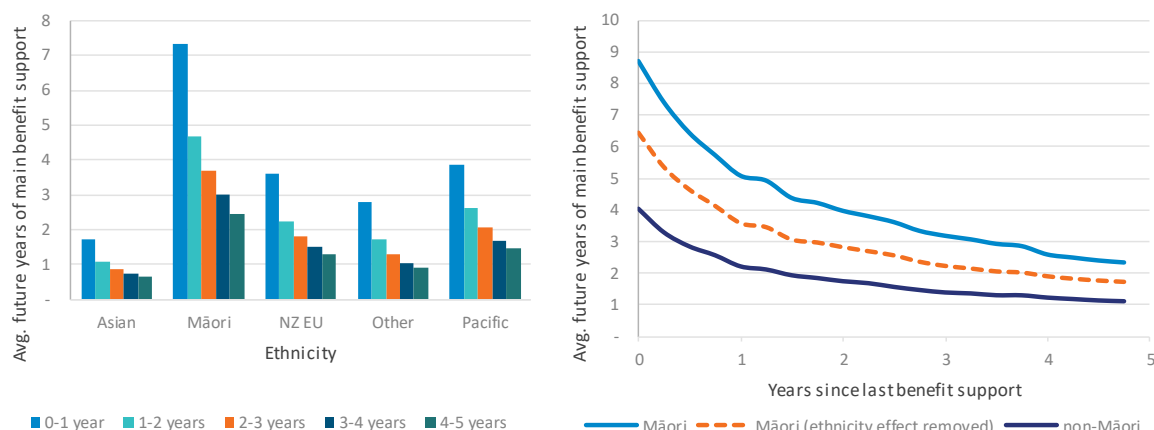
Ethnicity is the second most important predictor for all groups except recent exits. Māori, and to a lesser extent Pacific peoples, have significantly higher rates of re-entry. Figure 3.30 shows that the average future years of main benefit support is almost two times higher among Māori clients than NZ European clients, about half of this is directly attributed to ethnicity by the model (the remainder being other correlated effects).

The proportion of recent time on main benefits makes up the top three predictors for those on last receiving benefit support within the last year (this is also one of the variables used for the new segmentation). For the longer durations groups, previous JS-WR receipt becomes more important – perhaps an indicator of those in consistently in less secure employment environments.

Historical interactions with the child protection and youth justice (CP/JY) systems are very important. This information is only available for clients up to age 30 so its prominence is particularly notable; when we restrict our attention to under 30 clients (top left panel), it becomes the most important determinate for future time in the benefit system.

Time spent serving a serving a corrections spell as a result of a criminal conviction also features as fairly important for all sub-groups. As can been seen in Figure 3.31, this very strong effect that relates to a small proportion of clients. This result is consistent with high levels of benefit receipt among those exiting a corrections spell.

Figure 3.31 Number of clients who have exited benefits (and not returned by June 2017) since June 2012 by proportion of prior ten years serving a corrections spell as a result of a criminal conviction (left panel). Average future years of main benefit support for those with and without a corrections spell as a result of a criminal conviction in the prior ten years and partial dependence effect (right panel).
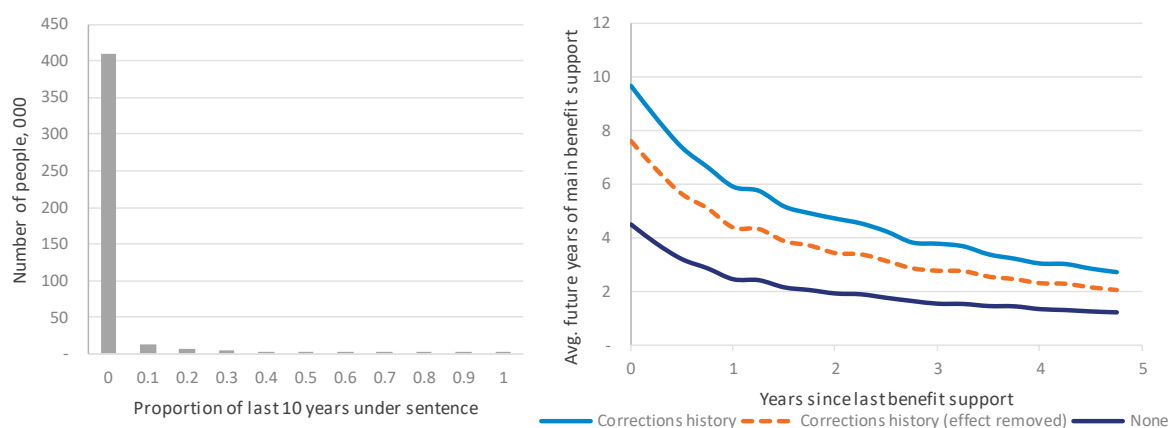
3.11.2   Actual re-entries to benefit support

Benefit churn (exit and re-entry) is to some extent inevitable, and partly driven by labour market factors such as seasonal employment. However, understanding the likelihood of re-entry is important when considering the sustainability of exits from the benefit system. We have taken the cohort of people that were not on any benefit (NOB) in the June 2015 quarter and observed whether the re-entered main benefits over the following two years. We have excluded those aged 63 and over and those who had been NOB for more than 5 years.

Figure 3.32 shows the re-entry rates by age group and duration since benefit support. The overall re-entry rate was 16%, but this varies strongly with duration since last receiving benefit support:

» One in three people NOB for less than a year at June 2015 re-entered main benefits, compared to one in six of those NOB for 1-2 years who re-entered.
» About one in ten people who had been NOB for 3-4 years re-entered main benefits.
» For those NOB for less than a year at June 2015 who were aged under 20 nearly half re-entered, while only 40% of those aged 20-25 re-entered. This echoes findings in previous reports which highlight the large difference in outcomes for those who enter the benefit system before age 20.
» The proportion re-entering decreases across all duration bands for clients up to age 30. Above age 30 the proportion re-entering is very similar.

Figure 3.32 Actual proportion re-entering main benefit support by age band and duration since last benefit support.
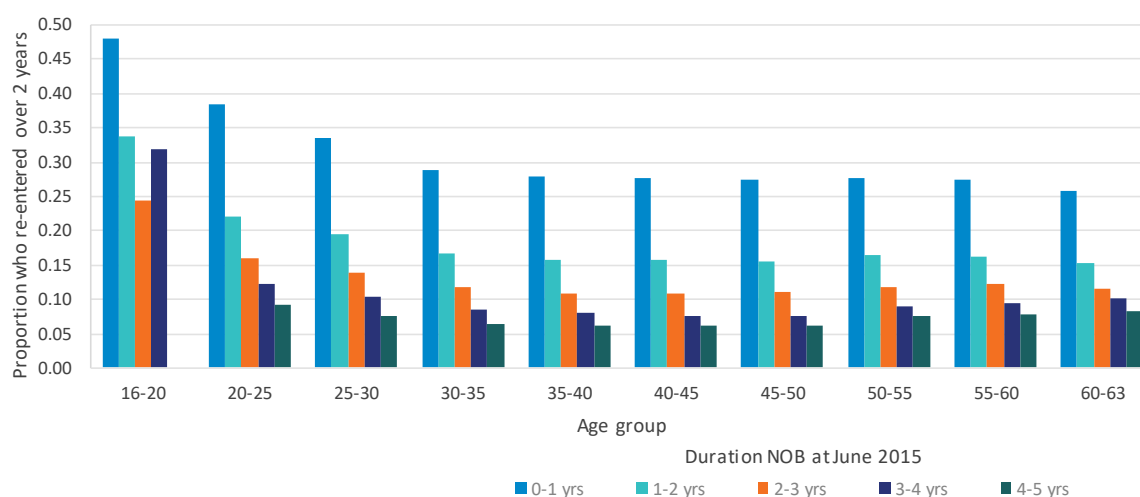
A large variation in re-entry rates can be seen across durations since benefit support and age, Figure 3.33 gives a more complete list showing the variables, for both the whole group and just those under 30.

Figure 3.33 Variable importance for predicting re-entry to main benefits for all in group (left panel) and just those under age 30 (right panel).

Variable importance predicting re-entry

Recent time on main benefits	
Duration NOB	
Corrections	
CP/YJ	
Education	
Previous benefit type	
Previous JS-WR reciept	
Region	
Ethnicity	
Age	
Time since register	
Housing duration	
Previous JS-HCD reciept	
Intergenerational	
Time since housing	
Previous AS reciept	
Benefit suspensions	
Housing	
Time since first benefit	
Previous SPS reciept	

Variable importance predicting re-entry

Recent time on main benefits	
Duration NOB	
Corrections	
CP/YJ	
Education	
Region	
Ethnicity	
Time since register	
Age	
Previous JS-WR reciept	
Intergenerational	
Previous benefit type	
Housing duration	
Benefit suspensions	
Previous JS-HCD reciept	
Time since housing	
Previous AS reciept	
Sex	
Housing	
Time since first benefit	

Age < 30

The two lists are very similar, and also align with the findings in the previous subsection. The most important variables are recent time on main benefits and duration since last benefit support. Recent time on main benefits is used to split the recent exit top tier segment in the new segmentation.

Figure 3.34 Partial dependence plots for key variables, estimating the probability of benefit re-entry of the two-year time window. Results are averaged across all people who have had benefits in the past five years. Duration not on benefits (top left), ethnicity (top right), age (bottom left) and proportion of the last year serving a corrections spell following a criminal conviction (bottom right).
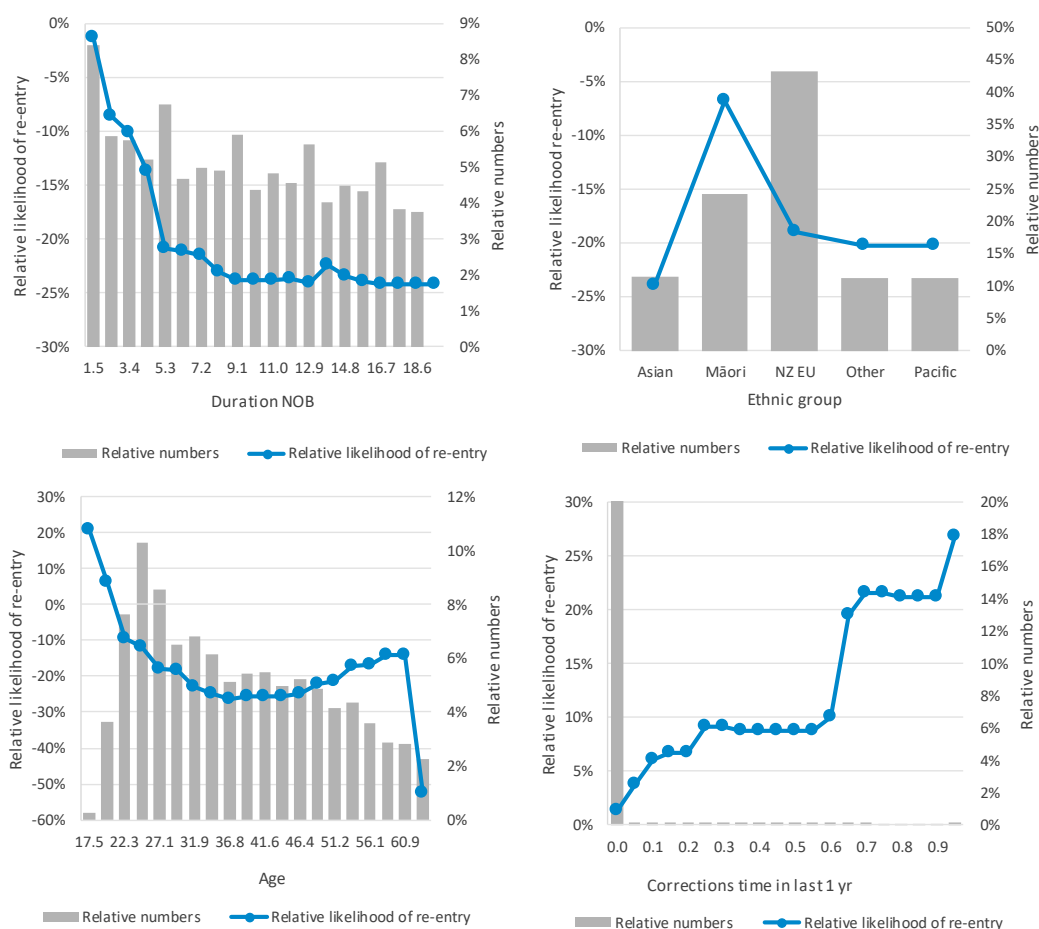
We have performed two statistical segmentation of these clients; one for those who have received benefits within the last 2 years (Table 3.6) and one who have been off benefits for 2-5 years (Table 3.7).

Table 3.6 Segmentation of clients exiting benefits in the 2 years to June 2015, based on their probability of re-entry over the subsequent two years.

			Number of people at June 2015	Proportion re-entered
Last spell (SLP-HCD, Supp only or OB)	0% of last 3 years on main ben		47,115	7%
	>0% of last 3 years on main ben		20,666	19%
Last spell main (not SLP-HCD, SUP or OB)	No corrections history (10yr)	<50% of last 3 years on main	Māori	16,114	31%
			Non-Māori	49,214	21%
		>50% of last 3 years on main	No CP/YJ match	32,440	33%
			CP/YJ match	4,904	53%
	Some corrections history (10yr)	<50% of last 3 years on main ben		12,050	41%
		>50% of last 3 years on main ben		13,644	55%
Total			**196,147**	**25%**

Among the more recent exits (2 years) we see very large differences in re-entry behaviour, with the most likely group eight times more likely to re-enter main benefits. In terms of the groups identified:

»   The first split in Table 3.6 is based on the previous benefit status. Former JS, EB and SPS clients tend to see higher re-entries compared to SLP and Supplementary only (32% compared to 11%).

»   Corrections history is very prominent; among those most recently on a main benefit other than SLP-HCD (not Supplementary only or OB), 20% have served corrections spells as a result of criminal convictions in the past 10 years and they are 75% more likely to re-enter benefits (49% versus 28%).

»   Māori clients re-enter more often than non-Māori clients (36% re-entered compared to 20%).

»   Clients with a CP/YJ match are re-enter more often than non-matched clients. For those under 30 45% of those with a CP/YJ match re-entered, almost double the 24% unmatched clients that re-entered.

The segmentation of those who last received benefit support 2-5 years ago is shown in Table 3.7. It similarly identifies some groups with very high likelihood of needing benefit support, although the number of people in the high likelihood group are relatively fewer in this case.

Table 3.7 Segmentation of those exiting benefits in the 2-5 years prior to June 2015, based on their probability of re-entry over the subsequent two years.

				Number of people at June 2015	Proportion re-entered
No corrections history (10yr)	Last spell (SLP-HCD, Supp only or OB)			102,864	5%
	Last spell main (not SLP-HCD)	0% of last 3 years on main benefits	Non-Māori	77,134	8%
			Māori	21,648	13%
		Some time in last 3 years on main benefits	Non-Māori	36,882	13%
			Māori	11,782	19%
Some corrections history (10yr)	No time in prison in the last year	0% of last 3 years on main benefits		18,668	15%
		Some time in last 3 years on main		9,086	25%
	Time in prison in the last year			2,398	47%
Total				**280,462**	**10%**

Many of the effects seen here are similar to those in Table 3.6. Previous benefit spell, corrections history, ethnicity and proportion of time on main benefits are all used to separate high and low likelihoods of re-benefit entry. Those recently in prison form the group with particularly high likelihood of requiring benefit support.

3.12 Combined benefit - housing transitions

The population in public housing overlaps heavily with the benefit system population and we model benefit support and housing pathways jointly. A natural question is whether people are more likely to exit benefit and public housing support at the same time? Such events would be consistent with employment giving enough financial security to enable a household to exit both systems.

Table 3.8 below looks at people with main benefit support and in public housing in the same quarter, and gives the quarterly probability of a main benefit exit, a public housing exit and a joint exit. The overall benefit exit rates for those in public housing are generally lower than for the broader benefit system population (for example, the quarterly exit rate from JS-WR for someone in public housing is 12.4%, compared to 18% for the broader benefit system population). Part of this is directly related (in the model) to housing status, but other correlated effects play a role; for example, those in public housing tend to be older, on average, than the broader benefit system client population.

The public housing exit rate varies between 2% to 4% in the table. Note this is for all householders, so includes non-signatory household members such as adult children. The joint exit rate for exiting both public housing and JS-WR in the same quarter is 0.81%. This is 1.6 times larger than we would expect if the events were independent (i.e. if the probability of one exit in no way influenced the other exit occurring); that is, it provides strong evidence that people are more likely to exit benefits and housing within the same quarter. This result is even stronger for other benefit types. For JS-HCD and SPS, the relative increase in the rate of joint exit (compared to independent exits) is 3 to 4 times. SLP relative rates are higher still, although this is likely because of life events that will generate a joint exit, including death.

Table 3.8 Quarterly exit rates from main benefits and public housing. Average over three years to June 2017.

Benefit	Quarterly main benefits exit rate, those not in housing	Avg # people on benefit and in housing per quarter	Quarterly main benefits exit rate, those in housing (a)	Public housing exit rate (b)	Joint exit rate (c)	Relative likelihood of joint exit (c ÷ [a x b])
JS-WR, EB	18.0%	11,180	12.4%	4.1%	0.81%	x 1.6
JS-HCD	7.8%	9,009	4.2%	2.6%	0.43%	x 4.0
SPS	6.3%	13,274	3.5%	3.0%	0.38%	x 3.5
SLP	1.8%	16,979	1.4%	2.1%	0.43%	x 15.2

Because the data we receive reports whether an exit has occurred in the quarter, not the date of exit, we are not able to draw strong conclusions about the order of exit from the two systems. However, as a simple way of measuring the relative ordering is shown in Table 3.9– the relative likelihood of exits from the second system the quarter **after** an exit from the first. The significantly higher figures in the first column (housing exit the quarter after a benefit support exit) shows that the benefit system exits tends to occur first. This suggests that the reason for the benefit exit (such as sustained employment) tend to reduce the need for public housing support.

Table 3.9 Relative likelihood from exiting public housing (or benefit support) in a quarter, given the presence of a benefit support (housing) exit in the prior quarter.

Benefit	Relative liklihood of housing exit the quarter after a benefit system exit	Relative liklihood of benefit system exit the quarter after a housing exit
JS-WR, EB	x 1.6	x 1.1
JS-HCD	x 4.0	x 1.7
SPS	x 3.8	x 1.5
SLP	x 15.7	x 3.2

One important caveat on these results is that joint outcomes for positive social outcomes (such as sustained employment) might be confounded in our data with other types of joint exits (for example, mortality or imprisonment). The staggered results in Table 3.9 give us some confidence that the results hold even if such negative outcome joint events were properly excluded.

3.13   Māori client outcomes

We included a section on Māori outcomes in the previous report. Key findings from that analysis remain true this year:

» Māori clients are significantly over-represented in the benefit system. According to the 2013 census 15% of the population are Māori whereas 32% of the 2017 current cohort are Māori[15]. Figure 3.35 shows the ethnic distribution of current clients by segment, of note 50% of the under 25 current cohort are Māori.

» Māori clients have an over-representation of other predictive factors, which are associated with longer durations of benefit support. Table 3.10 shows the incidence of some of these factors – corrections history, intergenerational benefit receipt and public housing history are particularly strong. Māori clients aged 18-24 in the benefit system are twice as likely to have had an adult corrections spell.

» Table 3.9 also shows the co-occurrence of predictive factors, which is particularly relevant to Māori. 19% of Māori clients (in the 18-24 age group) have at least four factors, compared to 7% of the rest of the benefit system cohort.

Figure 3.35 Number of clients (left panel) and proportion (right panel) by segment and ethnicity

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[15] http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-maori-english.aspx?url=/Census/2013-census/profile-and-summary-reports/quickstats-about-maori-english.aspx
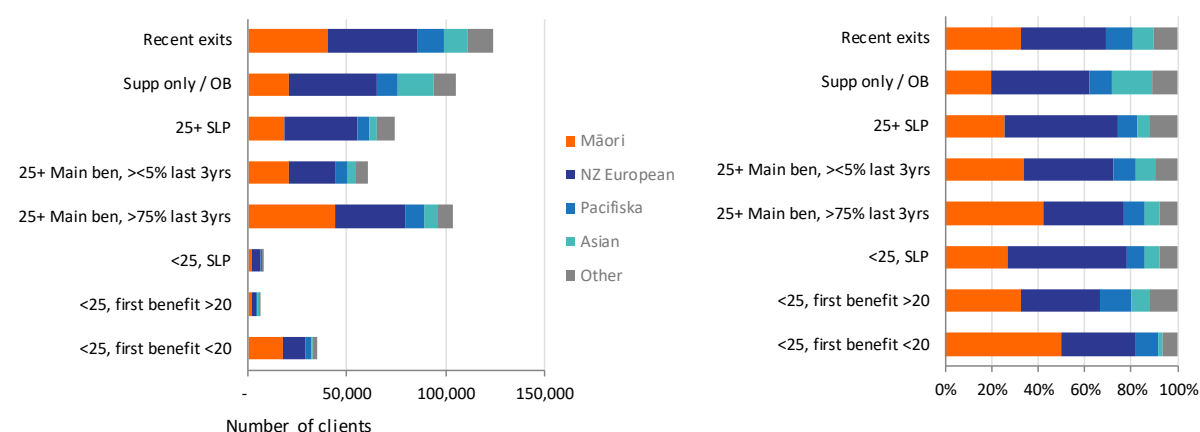
Table 3.10 Incidence of predictive factors of long-term benefit support, clients aged 18-24, split by ethnicity (this table

	Single predictive factors						Multiple predictive factors				
	Education	CYF	Justice	Inter-gen.	Welfare	Housing	At least 1 other predictive factor	At least 2 other predictive factors	At least 3 other predictive factors	At least 4 other predictive factors	At least 5 other predictive factors
	NCEA <L1 or L1	A Chd protection event	(Adult) corrections spell	Parent on ben >80%, ages 13-18	>8 qtrs on JS	Some SH history					
Non-Māori	18.5%	35.1%	9.5%	21.9%	24.5%	19.9%	64.5%	37.1%	18.4%	7.1%	2.0%
Māori	20.1%	52.1%	19.6%	40.8%	35.4%	40.1%	82.7%	61.4%	38.6%	18.6%	6.0%
Increase	**x1.08**	**x1.48**	**x2.08**	**x1.86**	**x1.45**	**x2.01**	**x1.28**	**x1.66**	**x2.09**	**x2.60**	**x2.99**

The expected future benefit system duration for Māori clients is significantly higher for most beneficiary segments. These differences show that current service delivery is not achieving equal employment outcomes for Māori and non-Māori clients. As shown in Figure 3.36 the difference is 4-5 additional years for those under 25 and not SLP-HCD. The proportion directly attributed to ethnicity by the model varies by segment. It is particularly large for those in the under 25 segments other than SLP (~70%), but only ~45% for recent exits; correlated factors (notably benefit history) play a greater role. While this attribution **does not establish causation** (there may be other underlying effects driving the results), they do demonstrate a significant level of elevated need for this client group. For those on SLP there is little difference across ethnicities.

Figure 3.36 Future years supported by main benefits by segment with partial dependency of Māori ethnicity
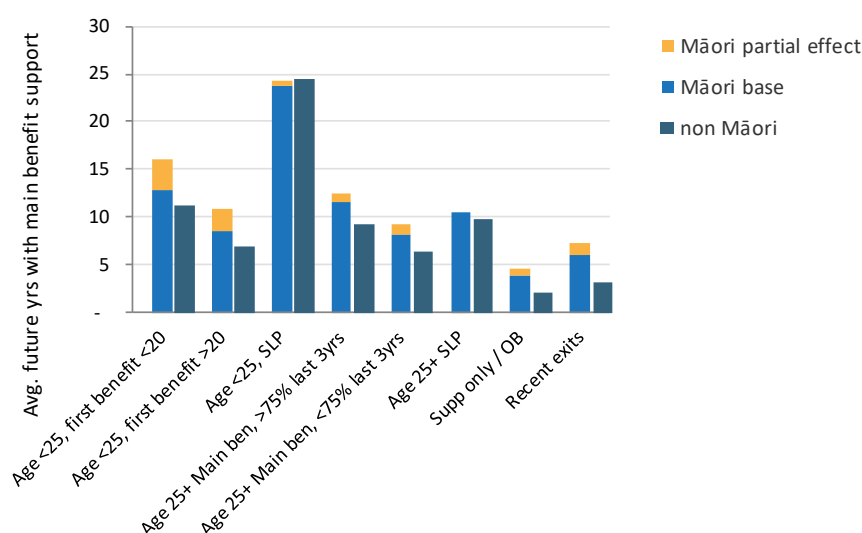
Figure 3.37 shows the relative change since the previous projection in future support years for Māori and non-Māori clients. This is the change due to experience over the year and excludes other effects, such as methodology changes and changes due to economic assumptions. Most groups show increases (discussed further in Section 4.6), which largely relates to decreases in future SPS durations being more than offset by increases in future JS durations. Nationally there was a 3.3% increase among Māori clients and a 2.3% increase among non-Māori clients. The decreases in future SPS durations are smaller and the lengthening of future JS durations is more pronounced, primarily for JS-HCD durations among Māori clients. The difference in the relative increase varies by region:

» In the Auckland region future durations have increased 2% among Māori clients compared 0.3% for non-Māori clients
» In the Northland, Bay of Plenty, East Coast, Central and Nelson regions the increases in future durations are 1.5-2 times as large among Māori clients
» In the Canterbury region, which had the largest increase overall the difference in changes among Māori clients and non-Māori clients is minimal

» In the Southern region, the increase among Māori clients was smaller than that among non-Māori clients (4.5% compared to 5.4%).

Figure 3.37 Relative change in expected future years of main benefit support for Māori and non-Māori clients by region

Change from roll-forward in expected future years of main benefit support
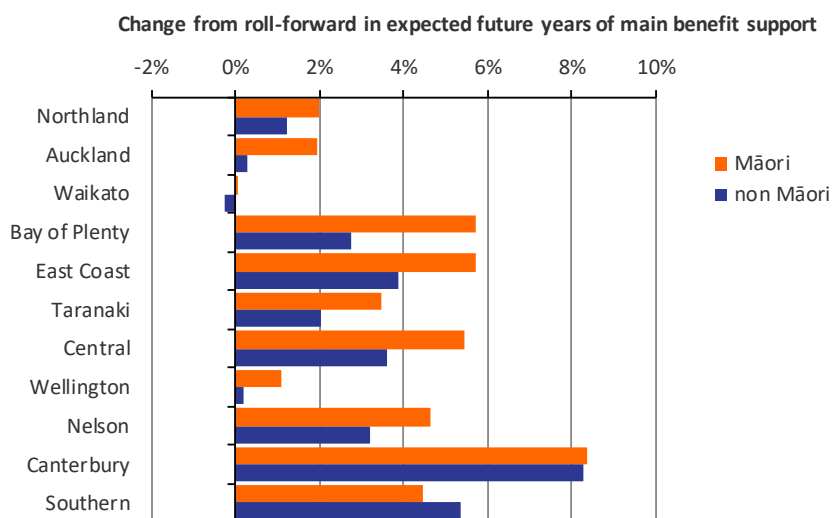
4 MAIN RESULTS AND ANALYSIS OF CHANGE

4.1   Introduction and highlights

This chapter discusses the main results of the long-term projection through the benefit system for clients as at 30 June 2017. It includes a detailed analysis of actual experience in 2016/17 against forecasts, including the analysis of the change and attribution of management influence. This chapter also discusses how changes to the key drivers of future cost discussed in Chapter 2 have influenced the expected future benefit payments. Subsequent chapters provide more detailed analysis of results by segment (Chapter 5), by region (Chapter 6), and by payment type (Chapter 7).

The **main estimate** the benefit system projection as at 30 June 2017 is 4.1 million future years of main benefits for the 540,000 people who received a benefit sometime in 2016/17. This is an average future duration of 7.7 years. Average future payments (after discounting) is $119k. Total projected future payments and expenses attributable to current clients as at 30 June 2017 is $72.2 billion, of which $8.3 billion is net loans and expenses.

This year's estimate of future main benefit years is 86,000 lower than last year, but this masks an **increase** of 122,000 benefit years related to performance and experience; other factors, including the expected roll-forward and method changes, make up the difference. Of the 122,000, about half relates to numbers on benefit (and cohort composition) being different to expected, and the other half relates to experience-related changes made to the projection models. The result represents the first performance-related increase in future duration and payments over the history of annual actuarial reports.

In terms of benefit dynamics, we have observed marked decreases in the exit rates from jobseekers benefits, and some increases in the rate of re-entry for recent exits (which have been at historical lows for a number of years). Transfers into Supported Living Payments have remained low, and exits from SPS remain high, and have increased for those with youngest child aged 3 or 4. These changes have led to substantial compositional changes to the types of benefits clients are expected to receive in the future. The increases in future benefit years are more pronounced for South Island regions.

In terms of fiscal results, payments in 2016/17 were 11.5% lower, or $795 million, compared to the baseline 2012 prior to Welfare Reform.

The cumulative impact over six years of the change considered to be under management influence is 14.6% of the value of the total future cost as at 2011, or $11.4 billion. This is partly offset by the introduction of the Child Material Hardship Package, which adds $1.5 billion.

These changes mean that, compared to the pre-reform benchmark valuation (as at June 2012), current clients are expected to spend more than 1,180,000 fewer years on main benefits over their working lifetime, up from 1,300,000 last year. About three quarters of this reduction in future years on main benefits can be attributed to policy and operational changes.

4.2   Estimated duration and payments to current and future clients

Table 4.1 Current client results at 30 June 2017 and 30 June 2016 split by client's segment at respective projection date[16]

Segment			2017				2016			
			Number at 30 June	Total future years of main benefit support ('000)	Avg. future years of main benefit support	Avg. future benefit payments, $k	Number at 30 June	Total future years of main benefit support ('000)	Avg. future years of main benefit support	Avg. future benefit payments, $k
Under 25s	First ben aged < 20	YP/YPP	2,466	37	15.2	214	2,752	39	14.0	206
		JS-WR/EB	15,679	195	12.4	152	17,164	197	11.5	147
		JS-HCD	6,303	94	14.9	195	6,306	90	14.3	197
		SPS	10,700	153	14.3	251	12,189	162	13.3	245
	First ben aged > 20	JS-WR/EB	3,296	23	6.9	81	3,476	23	6.6	83
		JS-HCD	1,448	14	9.7	127	1,369	13	9.5	131
		SPS	1,511	15	9.8	186	1,586	15	9.7	186
		SLP	7,905	192	24.3	316	7,949	192	24.2	329
		Sub-total	49,308	723	14.7	204	52,791	731	13.9	203
Over 25 and on a main benefit	>75% of last 3yrs on main benefits	JS-WR/EB	29,323	287	9.8	137	28,827	280	9.7	139
		JS-HCD	37,283	360	9.7	144	37,455	369	9.9	149
		SPS Chd 0-2	9,280	130	14.0	253	9,878	139	14.1	262
		SPS Chd 3-13	28,134	321	11.4	207	30,539	340	11.1	206
		Subtotal	104,020	1,099	10.6	169	106,699	1,128	10.6	173
	<75% of last 3yrs on main benefits	JS-WR/EB	26,671	180	6.7	88	27,490	188	6.8	92
		JS-HCD	20,212	148	7.3	105	19,338	145	7.5	109
		SPS Chd 0-2	5,148	48	9.2	177	5,091	46	9.0	177
		SPS Chd 3-13	8,749	69	7.9	148	8,449	65	7.7	146
		Subtotal	60,780	444	7.3	110	60,368	443	7.3	112
	Supported Living	Carer	8,350	80	9.6	170	8,292	81	9.8	175
		Partner	7,074	53	7.5	109	7,420	58	7.8	116
		No reassessment	30,022	352	11.7	177	30,580	362	11.8	185
		2yr Mental health	20,200	273	13.5	215	19,608	270	13.8	224
		2yr Other	28,611	245	8.6	144	29,021	256	8.8	149
		Subtotal	94,257	1,004	10.7	169	94,921	1,027	10.8	176
NOMB		>33% last 5yrs on main benefit	30,916	132	4.3	95	32,329	143	4.4	97
		<33% last 5yrs on main benefit	74,528	147	2.0	43	74,144	155	2.1	46
		Sub-total	105,444	279	2.6	59	106,473	299	2.8	62
Recent Exits		>33% last 5yrs on main benefit	63,722	413	6.5	85	65,590	414	6.3	86
		<33% last 5yrs on main benefit	60,013	155	2.6	35	60,696	162	2.7	38
		Sub-total	123,735	568	4.6	61	126,286	575	4.6	63
Grand total			**537,544**	**4,118**	**7.7**	**119**	**547,538**	**4,204**	**7.7**	**123**

We define the current client cohort as clients up to age 65 receiving a benefit in 2016/17. There are 537,500 such clients, down by 10,000 on the equivalent population last year. Future client cohorts are

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[16] YP/YPP numbers in the table are set to their basis last year, not allowing for the expansion of the Youth Service in 2016/17. This is done for consistency with previous reports, but we expect to move to the expanded group next report.

defined as those who receive benefits in each year but did not receive benefits in the previous year. In particular, the 2017/18 future clients are those people not in the 2016/17 current client cohort, but are expected to be in the 2017/18 current client cohort. We estimate future benefit system pathways (including duration and related payments) for current clients and the next five years of future clients.

The total projected future years of main benefit support to current clients as at 30 June 2017 is 4.1 million. The result is shown down in two different ways; by current client segment in Table 4.1 above and by future benefit type in Table 4.2 below. Note the difference between the two tables; the first is shown by a client's current status (so the total future years of 287,000 for older JS/EB clients includes future spells, such as SPS and SLP), whereas the second shown by future spell type (so the future spells in JS-WR will total to 724,000 years across clients in various segments currently). We provide many other breakdowns of this result throughout the report. For instance, Chapter 5 covers breakdowns by client segment in greater detail, while Chapter 5.1 looks at regional level results.

Current clients are projected to receive, on average, 7.7 further years of main benefit support from 30 June 2017, up until they turn 65. This ranges from 2.6 years among clients not currently on main benefits to 14.7 years among clients under age 25.

The associated average future payments to current clients is $119k. This equates to $63.9 billion of benefit payments. We also estimate $8.3 billion in future costs relating to net loans and MSD expenses. This means that the total projected future payments and expenses attributable to current clients as at 30 June 2017 is $72.2 billion.

Table 4.2 Current and future clients projected years supported by benefits subdivided by future benefit type [17]

Component	Current clients, projected time with benefit support, 000 years	Future clients, projected time with benefit support, for clients entering in:				
		2017/18	2018/19	2019/20	2020/21	2021/22
Main benefits						
JS-WR	724	130	127	121	120	118
JS-HCD	862	111	112	108	108	106
SPS	617	76	76	73	72	71
SLP-HCD	1,729	115	115	111	110	108
SLP-Carer	152	15	15	15	15	14
EB	34	6	6	6	6	6
Subtotal	**4,118**	**453**	**451**	**434**	**430**	**423**
Supplementary						
OB	93	14	13	13	13	13
Supp only	1,067	159	157	151	149	148
Subtotal	**1,160**	**173**	**170**	**164**	**162**	**160**
Grand total	**5,278**	**626**	**621**	**598**	**592**	**583**

Table 4.2 also shows the total future years of support for current and future clients. In addition to future years on main benefits, we also estimate time on other benefits, including the Orphan's benefit and supplementary-only benefits. These total 1.16m years for the current cohort, or 2.2 years per person. The numbers of projected supplementary-only years is down materially; we have reduced rates of re-entry into this benefit state in line with the effects described on page 84.

The table also shows that **the estimate for future main benefit years associated with new entrants in 2017/18 is 453,000, gradually falling to 423,000 in 2021/22.** The equivalent table for last year's

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[17] Numbers presented may not add perfectly due to rounding. See glossary at the end of the report for acronyms.

projection is shown in Table 4.3. The pattern of decrease is slightly faster than last year's projections and reflects fewer entries as projected unemployment rates fall. Chapter 8 includes a more detailed discussion of clients entering the benefit system and projections of lifetime benefit payments associated with these clients in future years.

Table 4.3 Years on benefits from the previous report – 2016 current and future client projected years supported by benefits subdivided by future benefit type based on 2016 projection

Component	Current clients, projected time with benefit support, 000 years	Future clients, projected time with benefit support, for clients entering in:				
		2016/17	2017/18	2018/19	2019/20	2020/21
Main benefits						
JS-WR	674	128	126	118	116	116
JS-HCD	881	117	117	113	111	111
SPS	630	77	77	74	73	72
SLP-HCD	1,823	130	131	126	125	126
SLP-Carer	156	15	16	15	15	15
EB	40	7	7	7	7	7
Subtotal	**4,204**	**475**	**473**	**453**	**446**	**446**
Supplementary						
OB	83	12	11	11	11	11
Supp only	1,146	184	182	176	173	173
Subtotal	**1,230**	**196**	**193**	**187**	**184**	**184**
Grand total	**5,431**	**671**	**666**	**640**	**630**	**630**

The 2016 current client total future main benefit years was 4.12 million. Compared to the 2016 projection, several changes are visible this year. First, the proportion of JS-WR years has increased more than a percentage point to 17.6%, reflecting longer durations of JS-WR support over the last year. The proportion of future SLP years has decreased slightly, however future SLP years represent over 40% of all projected main benefit years for the current client cohort, the largest category.

These changes have equivalent implications for future payments. Some additional factors affect payments, such as an increase in our allowance for future Hardship benefits in response to experience. Payment level implications are discussed further in Chapter 7.

The key cost drivers were discussed in Section 2.3. The next sections consider how these and other system changes have impacted the benefit system compared to what we expected last year.

4.3   Movement in the total future main benefit years between 2016 and 2017 projections

The 2017 current client future years measure is 86,000 benefit-years lower than last year's estimate as at 30 June 2016; about 2% lower. In terms of future fiscal cost, the projected total future payments are $3.2 billion dollars lower than last year's projection.

The significant changes are to the projected future years are stated below and shown in Figure 4.1. The cost version of the analysis of change are included Figure 4.2; they have an additional component related to changes in inflation and discounting assumptions. Inflation and discounting assumptions have a large impact on projected benefit payments but not on years of future benefit receipt.

Figure 4.1 Analysis of change in current client cohort, future years on main benefits between 2016 and 2017 projections, split by client segment at projection date. Numbers may not add due to rounding.
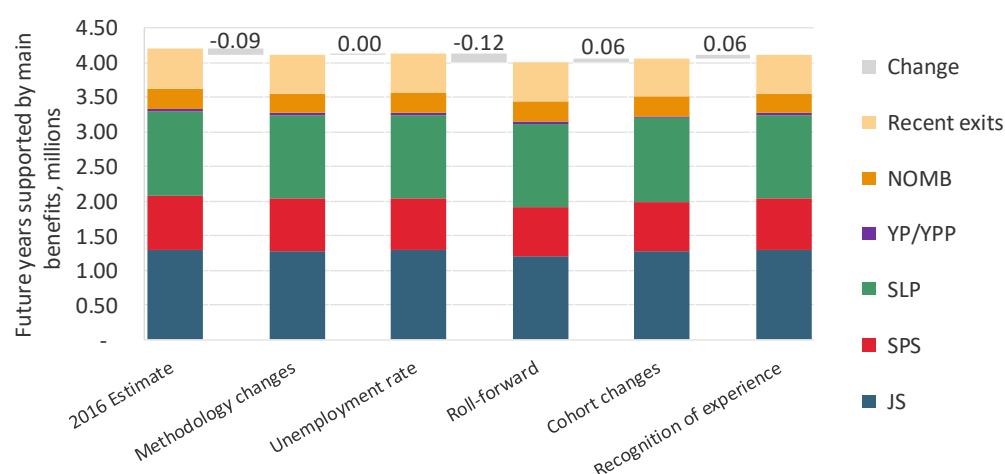
Figure 4.2 Analysis of change in future benefit payments (plus net loans and expenses) between 2016 and 2017 projections, split by client segment at projection date. Numbers may not add due to rounding. Includes costs related to net loans and administration expenses.
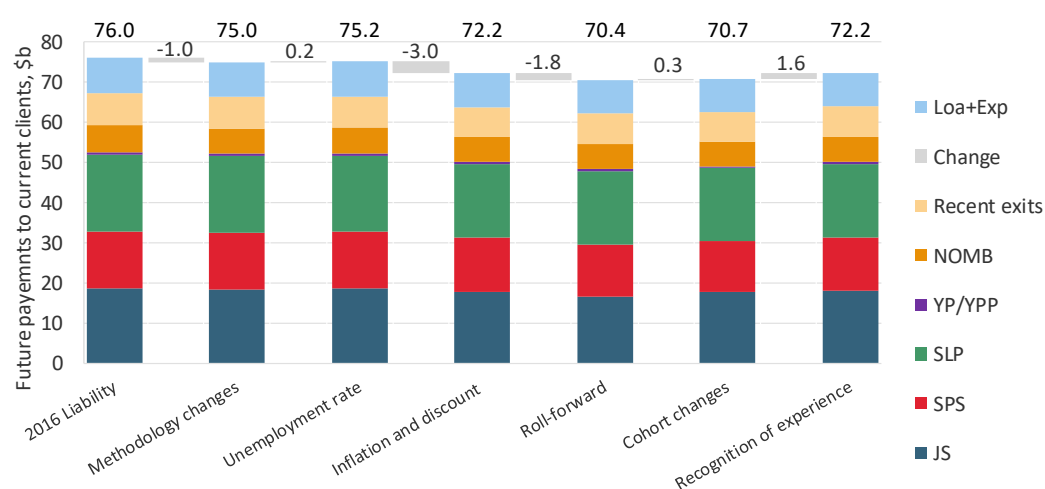
Future benefit-years among current clients has fallen from 4.20m to 4.12m. The result attributable to operational and policy changes was an increase of 0.12m years, or 3%. This was evenly spread between cohort changes (the number of beneficiaries decreased by less than expected) and model changes (more future years on benefit per person).

Table 4.4 Summary of drivers of change in current client projections between 2016 and 2017

	Future years of main benefit support	Future benefit payments	Comment
Methodology changes	30,000 reduction in future benefit-years.	$1.0 billion downwards movement of the 2016 projection.	These changes are technical, and related projection changes non-informative; the decrease is not useful for assessing performance over the year. In fact, the main reason for separately estimating these is to avoid contaminating the performance-related estimate. The main technical changes in the 2017 model were the: » Extension of child protection, youth justice and benefit system. » Improved allocation of partner indicator for SLP-HCD entrants. » Inclusion of proportion of past few years on benefits and SLP-HCD reassessment frequency. » Introduction of new education and benefit sanctions data. » Improved handling of public housing that is made available and occupied by a new household within the same quarter. » Inclusion of some children in public housing as part of the projection cohort.
Economic parameters	Small (4,000) upwards movement in future benefit-years.	$0.2 billion increase relating to the unemployment rate. $3.0 billion decrease relating to inflation and discounting assumptions.	If we had our current knowledge of economic variables (their evolution over 2016/17 and the latest Treasury forecasts), the 2016 current client projections would have been slightly higher. Inflation and discounting assumptions have a large impact on projected benefit payments but not on projected years of benefit support. Revised inflation forecasts are higher over the short term, more than offset by a significant fall in bond yields. See also Section 2.3.4.
Expected changes over the year to 30 June 2017	124,000 decrease in future-benefit years.	$1.8 billion decrease.	We expected a substantial decrease in future benefit-years and payments over the year; this was based on an expected fall in beneficiary numbers, plus a slight aging in the cohort, which would outweigh any increase in benefit payments. This expected change is consistent with a falling unemployment rate.
Performance-related experience over the year	122,000 increase. 64,000 relates to observed changes in the current client cohort (number of clients and composition effects), and 58,000 relates to updated model assumptions that reflect recent experience.	$1.8 billion increase[18] +$0.3 billion relates to observed changes in the current cohort, and +$1.6 billion relates to updated model assumptions. Of the $1.6 billion, $0.5 billion of this relates to higher levels of non-recoverable hardship assistance and $0.2 billion for higher CCS and OB payments.	Numbers and projected future support has not fallen as much as forecast. This change includes the impact of policy and operational changes and is discussed in greater detail in Section 3.7. This reflects both the observed results (less people exiting the system compared to forecasts) and our response to those results in modelling future patterns of benefit receipt (projecting ongoing deterioration in exits and re-entries). Model changes are concentrated in the JS-WR and JS-HCD exit rates; durations for these clients, particularly those who are young or transferring in from other benefits, have increased. The impact is larger for payments due to changes to some supplementary benefits. The non-recoverable hardship increase is mainly due to a relabelling of some support that was previously recoverable. Some CCS benefit rates increased as part of the Child Material Hardship package, and increased part-time work requirements also increase use of CCS.

The result represents the first performance-related increase in future duration and payments over history of annual actuarial reports. Much of the increase is consistent with policy intentions (more childcare subsidy payments, more non-recoverable hardship assistance, and more support for jobseekers with registered children). It also reflects a general slowing of exit rates off benefits. This is partly to be expected when beneficiary numbers fall, as those with the largest employment barriers remain. This effect, however, is already built into the projection and the projection result suggests the effect is larger than what we would have ordinarily expected. While some of the experience in benefit dynamics can be tied to the Child Material Hardship Package (Section 3.4), it may be that remaining jobseekers are proving more difficult to support into employment than forecast.

4.4 Actual versus projected results for 2016/17

4.4.1 Benefit dynamics

At its simplest, the projection of future main benefit years and payments can be understood as a snapshot of how many clients are currently included in the current cohort population, their expected benefit dynamics (particularly expected duration of benefit support), and the level of associated payments.

Client movements through the benefit system, relative to those predicted in the previous projection, are illustrated in the figure below. Many trends are encouraging and associated with lower need for benefits, such as the lower numbers of entry and slowing transitions into SPS and SLP-HCD, others push in the opposite direction. Lower exit rates have been seen for some benefits and re-entry rates for some recent exits have pushed up (from the historically low levels seen in the previous report).

Figure 4.3 Significant changes to benefit dynamics in 2016/17
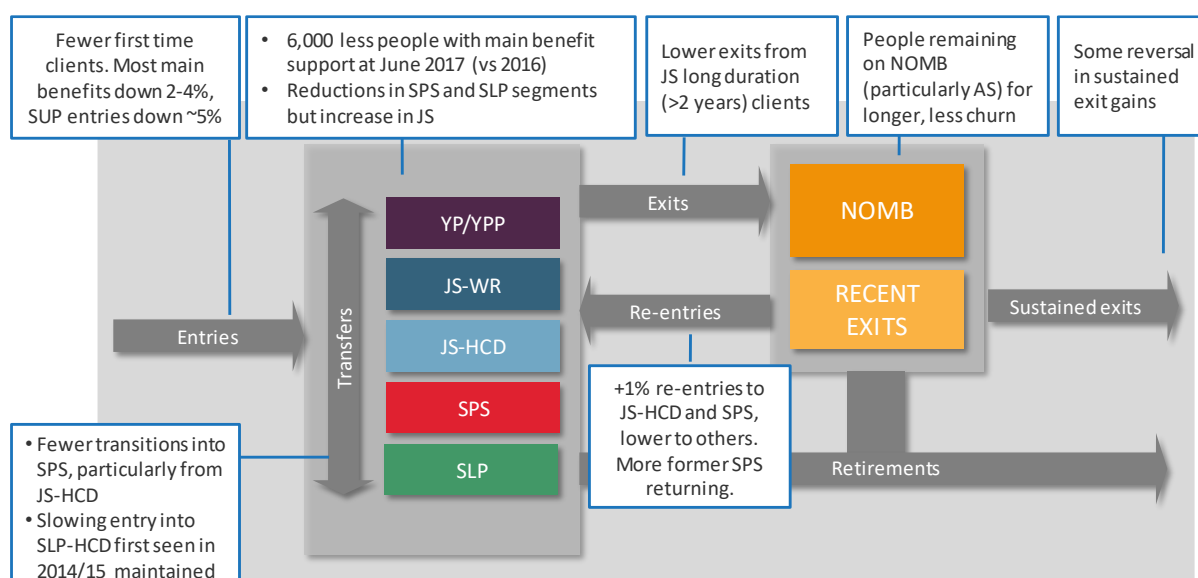
4.4.2 Actual versus projected results by segment in 2016/17

This section compares actual and projected numbers of clients and payment amounts for 2016/17, split by client segment[19] as at 30 June 2016, the previous report date. Future clients who were expected to enter in 2016/17 are also included as a separate group. The results are summarised in Figure 4.5 as well

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[18] Components do not add due to rounding.
[19] Here we have used the old (2016) segments.

as in Table 4.5. Total numbers have emerged very close to what was forecast a year ago, and payment levels a little higher although there is significant variation by segment.

Table 4.5 Actual versus expected benefit results for the 2016/17 year, by segment as at 30 June 2016

Top tier segment	Segment	Avg # on benefit in qtr			Avg Qtrly Benefit			Total payments 2016/17		
		Actual 000s	Expected 000s	Ratio	Actual $	Expected $	Ratio	Actual $m	Expected $m	Ratio
Jobseeker Support	WR < 1	34.2	34.4	99%	2,819	2,850	99%	386	393	98%
	WR > 1	29.3	28.4	103%	3,704	3,444	108%	435	392	111%
	HCD < 1	19.6	19.6	100%	3,354	3,412	98%	263	268	98%
	HCD > 1	39.2	38.6	102%	3,923	3,835	102%	616	592	104%
Sole Parent	Ch 0-2	23.5	23.6	100%	5,945	5,800	102%	560	547	102%
	Ch 3-4	12.6	12.8	99%	5,661	5,715	99%	286	292	98%
	Ch 5-13 < 1	4.3	4.4	100%	5,069	5,159	98%	88	90	98%
	Ch 5-13 > 1	23.9	23.8	100%	5,634	5,577	101%	538	531	101%
Supp Living	Carer	8.4	8.4	100%	5,142	5,016	103%	173	168	103%
	Partner	7.1	7.1	100%	3,667	3,689	99%	104	105	100%
	HCD	82.7	82.6	100%	4,438	4,461	99%	1,468	1,474	100%
Youth	Youth payt	1.5	1.5	98%	2,836	2,724	104%	17	16	102%
	Young parent	0.9	0.9	100%	5,356	5,305	101%	20	20	100%
NOMB	Sup <1yr	22.4	22.9	98%	1,124	1,051	107%	101	96	104%
	Sup >1yr	68.6	68.4	100%	1,150	1,120	103%	316	306	103%
	Orp only	5.1	5.1	100%	3,764	3,670	103%	77	75	103%
Recent exits	Recent exits	26.8	26.2	102%	2,632	2,664	99%	282	279	101%
Future clients		49.1	51.0	96%	2,081	1,875	111%	408	382	107%
Total		459.4	459.8	99.9%	3,339	3,277	101.9%	6,137	6,026	101.8%

Overall client numbers were slightly lower (-0.1% or 1,500 clients) than expected. This result included slightly higher numbers (+0.3%, or 2,700 clients) over the latter half of 2016 and slightly lower numbers in the first half of 2017 (-0.5% or 4,200 clients). Results vary by benefit type:

» SLP client numbers were very close to expected. This is not unusual – it is a very steady cohort with low rates of exit, permitting accurate estimation.

» SPS client numbers were also close to expected.

» JS client numbers were 1.0% higher over the year than expected. This is the average over the year – the number for the June 2017 quarter was more than 2% higher than projected; see Figure 4.4. This is driven mostly by lower exits among clients with longer durations on benefit. The results and Figure 4.4 continue to suggest a 'hardening' of the segment where the clients with the lowest barriers to employment have left and the remaining group have more complex barriers to employment than expected. This trend was noted in last year's report and has continued over 2016/17.

» Youth client numbers were 1.1% lower than expected. Most of this is due to the June 2017 quarter; numbers for the previous three quarters were only 0.3% lower than expected.

» Not on main benefits (NOMB) client numbers (that is, entries onto main benefits from those starting NOMB) were lower than expected.

Figure 4.4 Actual versus expected client numbers over the 2016/17 year, by segment as at 30 June 2016
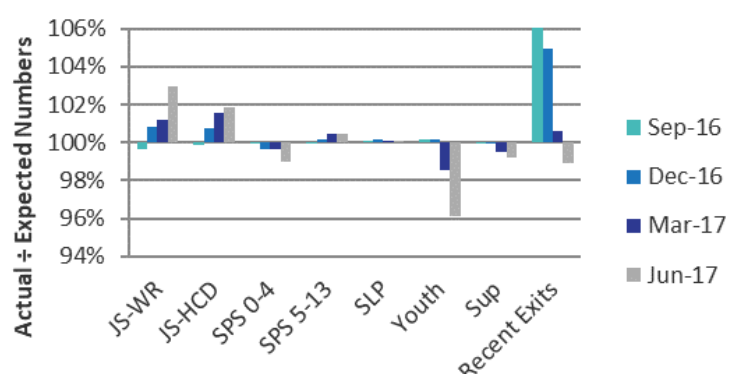
Trends in benefit payments included:

» Total payments for the year were $110m, or 1.8% higher than expected. More than half of this is attributable to beneficiaries in the high duration segment for JS-WR and JS-HCD. The higher payments in these segments were a result of higher numbers (2.3%) and higher average benefits (4.5%) than expected. Jobseekers with registered children had larger relative numbers, pushing up the average cost too.

» Payment levels for SPS clients with youngest child aged 0-2 and SLP carers were also about 2.5% higher than expected.

» Youth Payment and NOMB average payment levels were about 2% and 3% higher than expected, respectively.

» Other segments were generally close to expected levels.

> These results for client numbers and payment levels combine to give total payments 1.8% or $110m higher than expected in 2016/17; more than half of this is attributable to jobseeker clients who had been on benefits for at least year (as at June 2016).

4.4.3   Actual payments versus pre-reform expectations

Although payments were broadly in line with what was projected in the previous valuation, they are substantially lower than the pre-reform levels forecast in the 2012 valuation, which we've used as our pre-reform baseline estimate. Much of this reduction had already been accounted for in the 2013 valuation, where faster exit rates were observed.

Figure 4.5 shows actual benefit payments against our expectations in the past five reports. The 2012 report had a relatively flat projection, with lower unemployment offset by benefit inflation at CPI and most other elements stable.

> The 2012 projection model set a benchmark prior to Welfare Reform. Compared to pre-reform levels forecast in the 2012 valuation:
>
> » Payments in 2012/13 were $179 million lower, or 2.7%
> » Payments in 2013/14 were $464 million lower, or 7.0%
> » Payments in 2014/15 were $631 million lower, or 9.4%
> » Payments in 2015/16 were $799 million lower, or 11.7%
> » Payments in 2016/17 were $795 million lower, or 11.5%
>
> In total, payments to date for the five years since 2012 were 8.5% lower than forecast in the 2012 valuation, reflecting an actual saving of $2.87 billion compared to what was expected. We estimate 62% of these savings can be attributed to Welfare Reform policy and operational changes.

We have estimated just over three fifths of the change in payments is due to experience separate to economic factors; that is, policy and operational changes undertaken by the Government and MSD. The remainder of the difference is attributable to lower than expected benefit rate increases. Very little appears attributable to changes to the economy (as measured by unemployment rate sensitivity), as the improvements in the national unemployment rate seen since 2012 have been broadly in line with, or even marginally worse than, forecasts made at the time. The sensitivity to unemployment rate forecasts is discussed in Section 8.5.2.

Figure 4.5 Actual and expected quarterly benefit payments
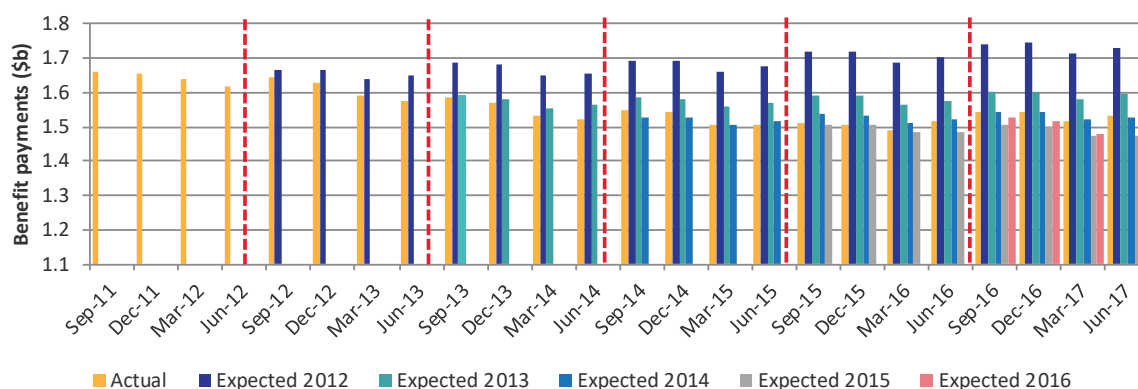
4.4.4 Other comments on actual versus expected payment experience

There are many ways to subdivide actual versus expected payment results. The segment split results above are important, but obscure some other interesting effects. Some other splits are described below.

» **Age:** Numbers of clients by age band for the 2016 current client cohort were generally slightly above expected, with the exception of the 16 to 17-year-old group, where numbers were lower than expected (-1%). There was more variation for new clients entering the system; entries among clients aged 18-34 were 18% lower than expected across 2016/17, but were 12% higher for the 35-65 age group.

» **Regions:** Most regions were in line with the national average; that is, slightly higher than expected. East Coast, Canterbury and Bay of Plenty were the main regions driving higher client numbers, with client numbers being 1-2% higher than expected throughout 2016/17. We note that the Canterbury region is an unusual labour market due to its very low unemployment rate, lasting effects of earthquake recovery efforts and the impact of the 3K to Christchurch (now 3k to Work) initiative. Regional effects are discussed further in Chapter 5.

More detailed breakdowns examining the experience over 2016/17 can be found in Appendix J.

4.5 Projected client numbers and payments

We can combine the current client and future client projections to obtain forecast total client numbers and payments. These are shown in Figure 4.6.

Figure 4.6 Number of clients at end of quarter by segment (left), and quarterly payments in actual values (right, excluding expenses and net loans cost)
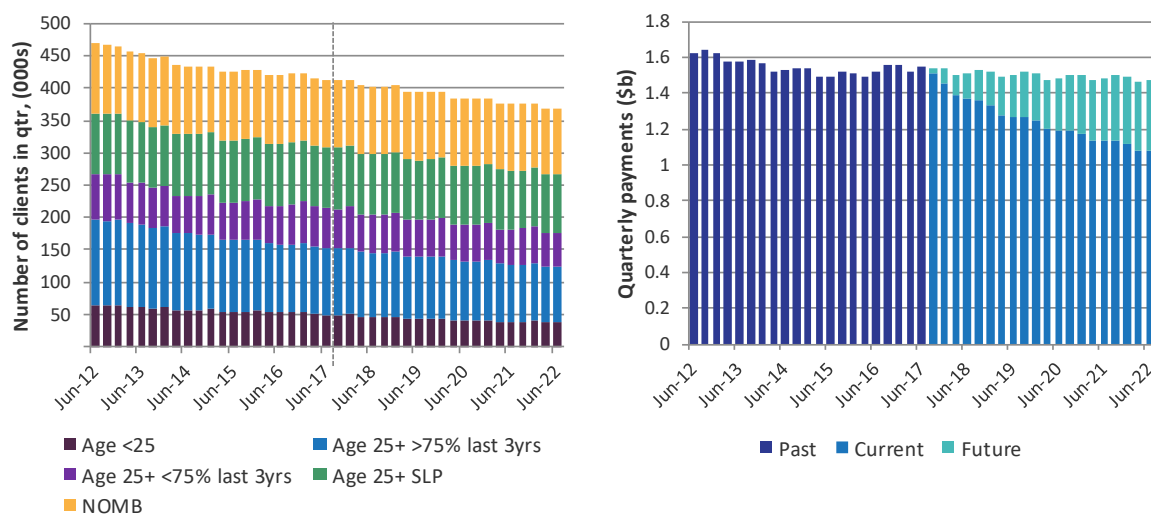
The projections reflect recent trends plus forecast future improvement in labour market conditions:

» Over the next five years, the number of clients in all segments are forecast to decrease. Main beneficiary numbers are projected to decrease by 3.4% over 2017/18.

» The number of clients under age 25 supported by main benefits are forecast to decrease by 23% over the next five years. This matches the decrease seen for those aged under 25 in the previous five years.

» The number of clients aged 25 plus supported by main benefits is forecast to decrease 16%, this compares to the decrease of 18% seen over the last five years. The forecast decrease is 18% for the segments for those with more extensive recent main benefit support.

» The number of SLP clients aged 25 and over is expected to decrease only very slightly over the next five years (a 4% decrease), with SLP-HCD and SLP-Carers entries mostly balancing out exits.

» Most of the decrease, particularly among Jobseeker Support clients, is tied to the forecast decrease in unemployment rates over the next five years.

» Total payments are forecast to fall by 5% over the next five years, despite assumed benefit inflation of 9% over the period; these are more than offset by decreases in client numbers.

» About four fifths of the total projected payments over the next five years are attributable to the current client cohort, with the remainder attributable to future clients. Payments to future clients represent an increasing proportion the total payments over time.

These projections also depend on the number of new clients entering in the future. These have been projected based on historical trends and implicitly allow for factors such as population change. Future entries are more difficult to estimate than trends for existing clients. The sensitivity to unemployment rate forecasts is discussed in Section 8.5.2.

4.6   Analysis of the change under management influence

4.6.1   Segment level impact

There is a 122,000 increase in future years of main benefit support due to experience. This increase is broken down at a segment level (as at June 2016) in the left panel of Figure 4.7. An equivalent breakdown by region is provided in the next section.

Figure 4.7 Breakdown of 122,000 increase in future years of main benefit support due to experience, by old segment as at June 2016 (left panel) and contribution by future benefit type (right panel).
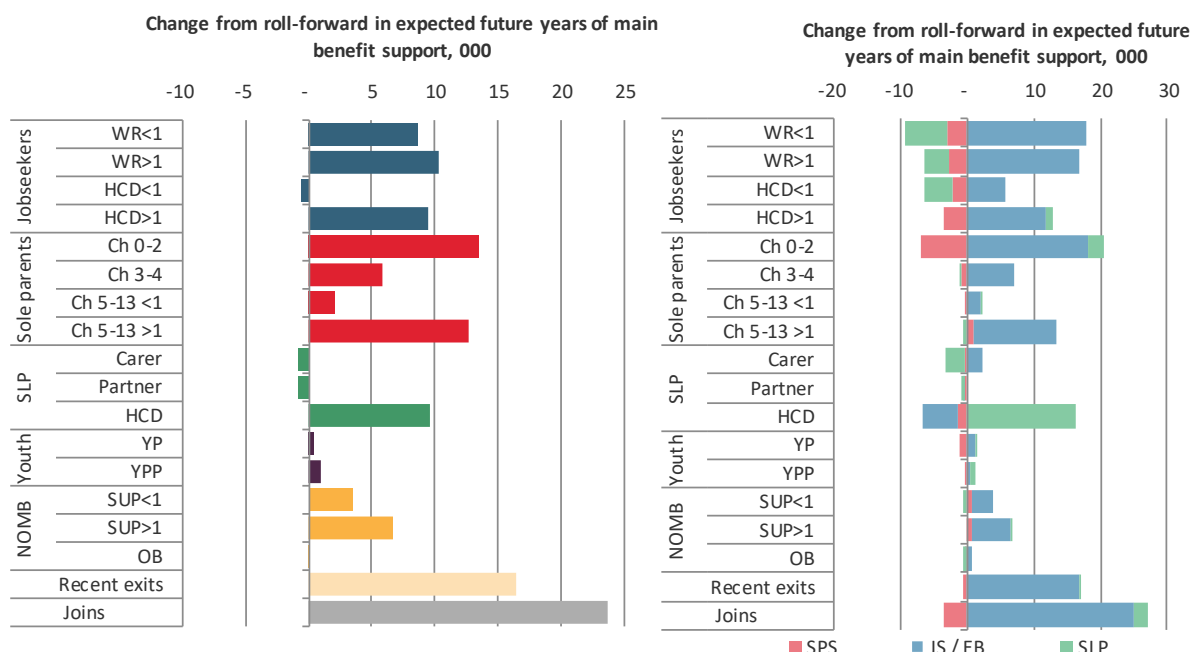
Increases in future years of main benefit support are spread across all segments for clients in the 2016 projection cohort. There is also an increase associated with more people entering the system than projected. The right panel of Figure 4.7 breaks down the change in future years by future benefit type. We note:

» The increases almost entirely relate to future years of JS-WR and JS-HCD support. Future JS-WR benefit years have increased by 74,000 and future JS-HCD support years by 70,000.

» The increase for future SLP-HCD years for current SLP-HCD clients is small in percentage terms (0.3%). Future years of SLP support has decreased overall for the 2016 Jobseeker segments, due to lower transition rates from JS-HCD to SLP-HCD.

» The large increase for 'joins' in part reflects the larger than expected number in JS-WR and JS-HCD compared to our roll-forward assumptions.

» Future years of SPS support has decreased across all segments. There are now 24,000 fewer than expected projected years of SPS support, a 2.2% decrease. Much of the latest decrease relates to faster exits for those with youngest child aged 3 or 4.

While future years of main benefit support has increased there has been some substitution and future years of supplementary only benefit support has decreased across almost all segments. There are 71,000 fewer projected years on Supplementary only benefits, which is a 3.6% decrease.

4.6.2   Region level impact

Of the increase of 122,000 main benefit years due to experience, 98,000 relates to clients who were current clients in the 2016 report. This figure can also be broken down at the regional level, as shown in Figure 4.8. All regions bar Waikato saw an increase due to experience ranging from 0.5% in Wellington to 8.3% in Canterbury. The Auckland region which represents about 30% of all future years and saw a moderate increase of 9,000 years.

The increases are largest for the South Island regions; the Canterbury region has a particularly large increase. This is now the third year in which the results for the Canterbury region has underperformed relative to our projections. Part of the effect may relate to its unusual labour market since 2012; a very

tight labour market post-earthquake, due to the rebuild, has normalised over the past few years. Part of the performance story is a fall back to transition trends comparable to other regions; see Section 5.1 for more information. One striking difference between Canterbury and Southern regions compared to most others is the increase in future SLP years. This appears to be related to a higher probability of clients moving into SLP from JS-HCD in these regions. These transfers have decreased in other regions in recent years but remained fairly constant in Canterbury and Southern regions.

Figure 4.8 Breakdown of the 98,000 increase in future years of main benefit support for 2016 current clients, by June 2016 region (left panel), contribution by future main benefit type also shown (right panel).
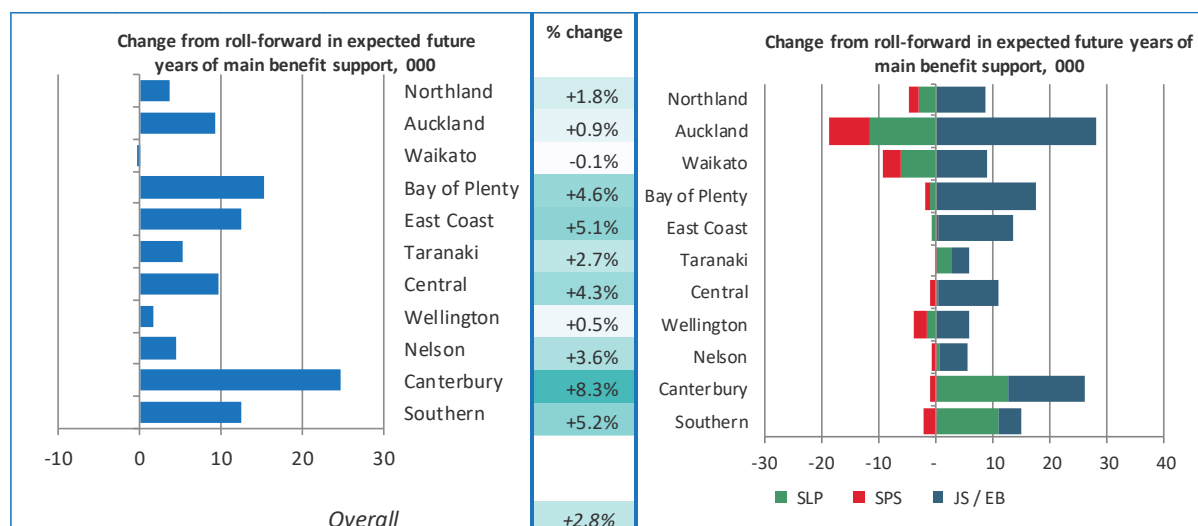
Figure 4.9 shows unemployment rates for the North and South Islands, which have been moving in opposite directions in recent years. The observed experience is in addition to these trends, which we have allowed for in the projection model. Interestingly, while the unemployment rate has slightly increased in the South Island, exit rates for JS-WR clients have fallen for the most recent two quarters (partly offset by higher benefit re-entry rates).

Figure 4.9 Comparison of unemployment rates for North and South Islands (left panel) and JS-WR exit rates (inverted axis, right panel)
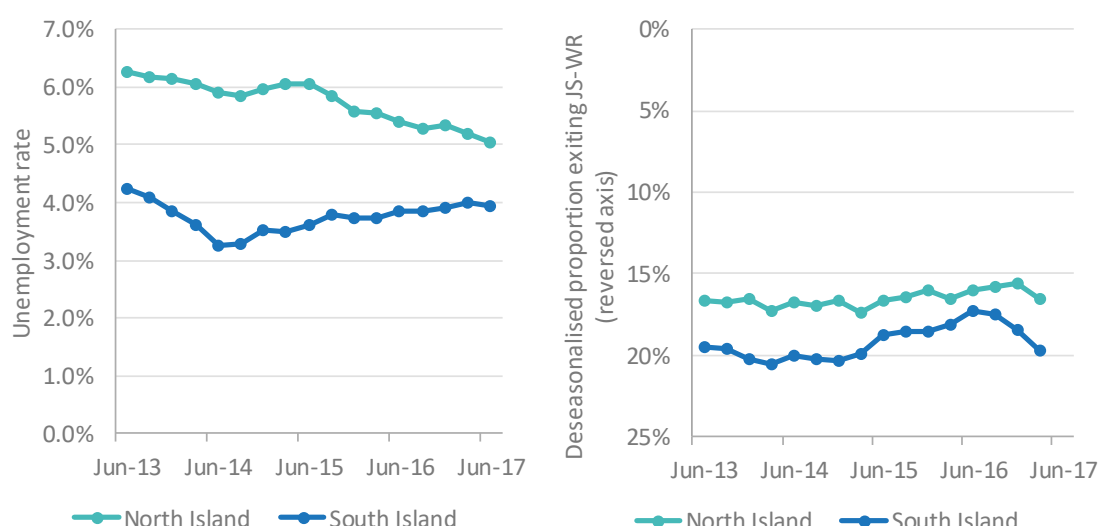
4.7 Model changes in response to 2016/17 experience

Each year we incorporate the new experience during the previous year into our models. Most changes come through as gradual evolutions of benefit dynamics; we recognise these as they occur, with some smoothing for recent trends where there is uncertainty in the longevity of an observed effect.

Other changes can be linked to a particular policy reform; these can be allowed for more directly if there is confidence in the permeance of its impact. For example, we have taken this approach with the Child Material Hardship package.

We discuss the most material changes below. We first look at 'leave rates' for various benefit types then re-entry rates. By leave rate we mean probability a person leaves their current benefit type. For example, the JS-WR leave rate is the proportion of JS-WR clients who leave benefits or change benefit type in the next quarter.

Setting model assumptions always carries some uncertainty, and we explore the sensitivity to model assumptions in Chapter 8.

4.7.1 Leave rates for SPS clients

The 2013 reforms saw leave rates rise dramatically for clients with their youngest child aged 5+. The 2016 reforms introduced work requirements for those with children aged 3-4. As a result, leave rates have risen markedly for those with children aged 3-4, up towards the level for those with older children. However, this change appears to be partly offset by leave rates falling a little for those with older (≥5) children. These effects can be seen in Figure 4.10 and Figure 4.11.

Figure 4.10 Probability of leaving SPS by youngest child age, lines indicate years to 31 March.
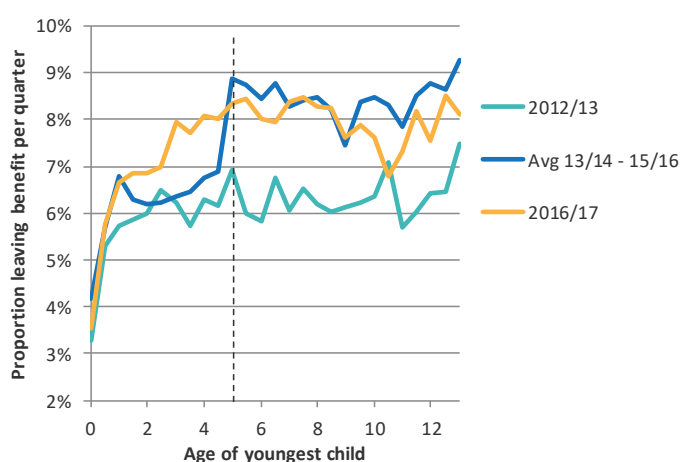
While overall SPS leave rates were stable, we have reflected the changes by youngest child age in our assumptions. Other noted changes include:

- » Slightly more leaves among newer male clients
- » Significant decrease in leaves for those with benefit suspensions history
- » Of those transferring benefits, more females are now moving to JS-WR (and less to Supp. only).

Figure 4.11 Probability of leaving SPS (de-seasonalised) for clients where the youngest child is aged under 5 (left panel) and school aged (right panel).
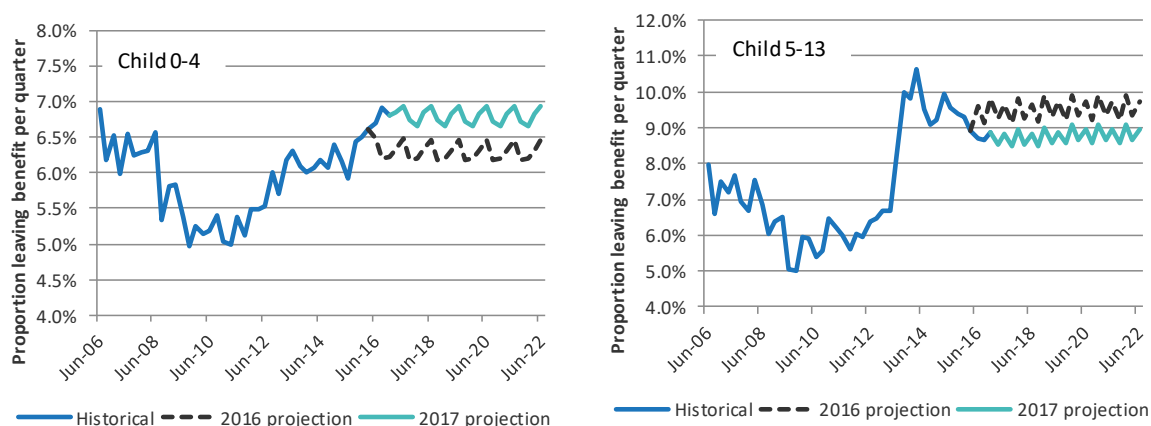
4.7.2   Leave rates for JS-WR clients

Leave rates have fallen significantly over the year, continuing a trend identified in the 2016 report. Figure 4.12 shows historical leave rates for JS-WR clients as well as the revised assumptions:

» The adopted projection levels shown have lower leave rates, reflecting the recent experience.
» The upward trend visible in our assumption is consistent with the projected decrease in the unemployment rate.

Figure 4.12 Probability of leaving JS-WR by quarter, de-seasonalised. History prior to June 2013 is the weighted average of the pre-reform benefits: UB, DPB>14 and Widow/WA benefits.
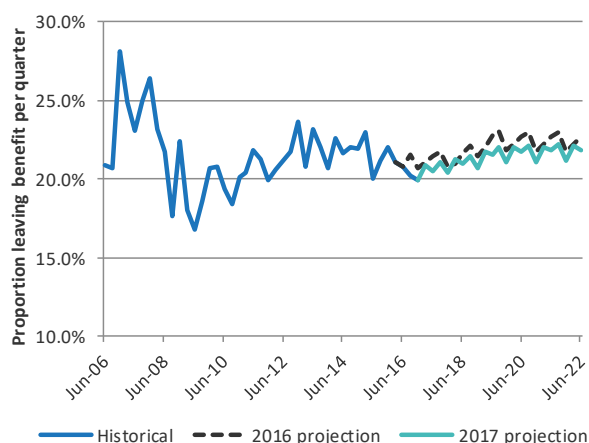
This decrease in leave rates is wholly attributable to longer duration clients (JS-WR longer than 2 years). There are significant further decreases for clients in the Canterbury region and former SPS clients.

4.7.3   Leave rates for JS-HCD clients

JS-HCD exit rates have fallen significantly in the past year, to historic lows. This applies to both exits off, and transfers to, other benefits (transfers are slightly more affected, including a lower rate to SLP-HCD). In consultation with MSD we have incorporated half of this year's decrease in exit rates into our projection, aiming to reflect experience without introducing undue volatility. If this decrease persists over the next year there will be further increases in expected durations for spells on JS-HCD. Figure 4.14 shows historical leave rates for JS-HCD clients as well as the revised assumptions. A large proportion of the decrease in leave rates is attributable to men aged 20-30 and women aged over 30.

Figure 4.13 Probability of leaving JS-HCD by quarter
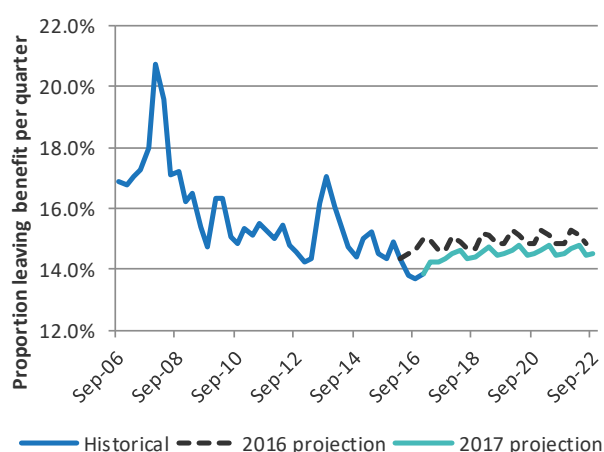
4.7.4 Leave rates for SLP-HCD clients

Leave rates for SLP-HCD clients are always very low; clients remain on benefit for many years and a large proportion 'age out' at 65. However, the leave rate is still of interest as SLP-HCD clients represent around 30% of main benefits clients, and a small change in the leave rate can have a large impact on total future durations and payments. The leave rates are shown in Figure 4.14, and have been falling slowly over the past few years and exit rates are now at 15-year lows. However, the decrease in 2016/17 appears to be mostly compositional. This includes increasing durations among clients; 37% of clients have been on benefit for at least 10 years compared to 31% five years ago. We also observed:

» Fewer exits for those aged under 30
» More exits in first 2 years, less in years 5-10
» Fewer exits in Canterbury and Southern regions
» More exits for cancer sufferers; these clients already had much higher exit rates (a combination of mortality and recovery than other HCD groups, but the gap has grown over 2016/17.
» Additionally, including SLP reassessment frequency had a significant impact on leave rates by duration. Some of this information had previously been built in via incapacity type.

Figure 4.14 Probability of leaving SLP-HCD by quarter
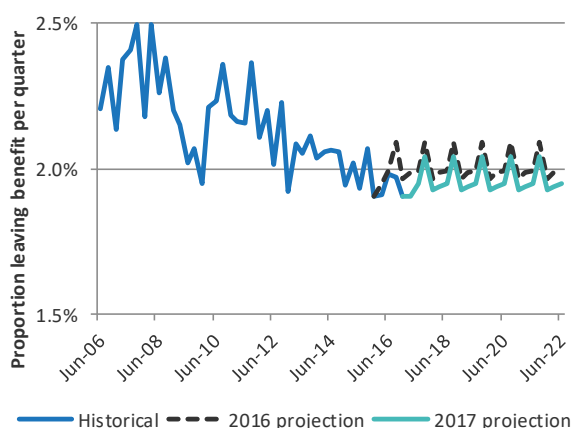
4.7.5 Leave rates for Supplementary only clients

Leave rates for Supplementary only clients (primarily AS recipients) fell significantly in 2015/16. The trend is substantial and has persisted in 2016/17. We have set assumptions similar to levels used last year, Figure 4.15 shows the historical rates and revised assumptions. We have been advised that the

most likely cause of the change is the removal of the annual re-application process for Accommodation Supplement (AS). This is consistent with the chart; were there's a clear removal of an 'anniversary effect' every four quarters. This change has a symmetric effect on reduced entries into the group, which was not fully recognised last year. This year we have better allowed for lower entries, which has the impact of reversing some of the increases in future Supplementary only years added in last year's report.

Figure 4.15 Probability of leaving Supplementary only state by quarter (left panel) and by duration (right panel)
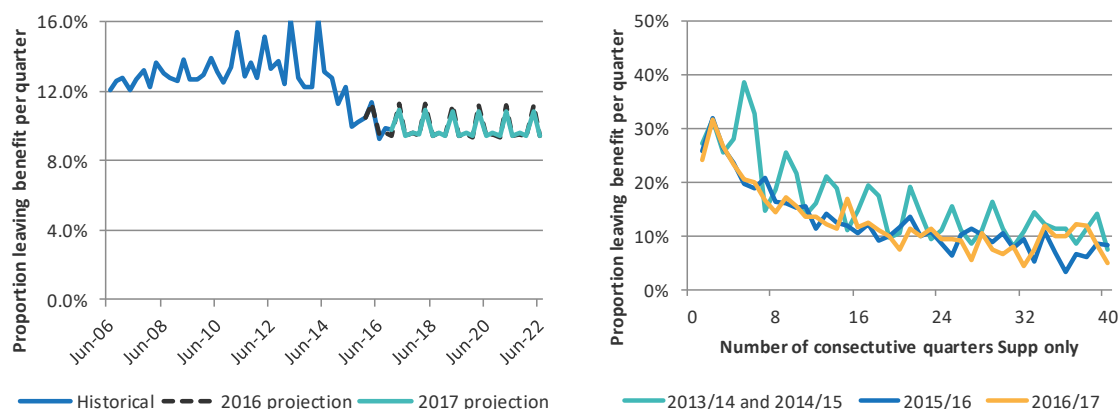
4.7.6   Benefit re-entry rates

Benefit re-entry rates for those within 12 months and 1-4 years of leaving benefits are shown in Figure 4.16. Re-entry rates in the first year after exit have been reasonably close to projected, with slight increases among former SPS and EB clients as well as in the Canterbury region. The biggest changes in our model assumptions are for re-entries after medium durations. Among those exiting benefits 1-4 years ago, re-entry rates have further risen over 2016/17. We have raised mid-duration re-entry rate assumptions somewhat, partially reflecting the recent change in experience. Re-entry rates after longer durations (4+ years) are largely unchanged.

Figure 4.16 Quarterly benefit re-entry rates for among clients within 12 months of leaving benefit (left panel) and among clients between 1 and 4 years after leaving benefit (right panel)
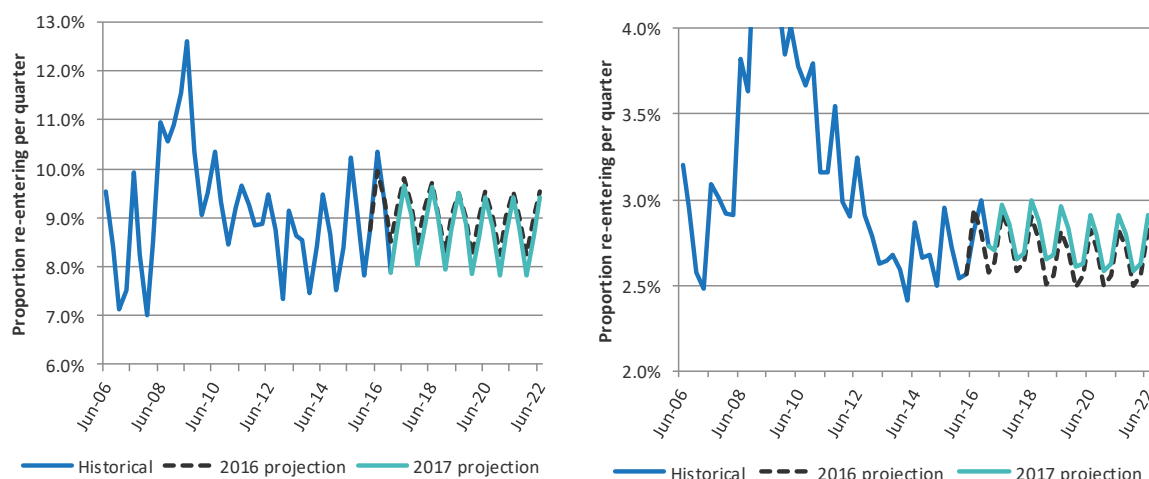
4.8   Cumulative impact of management's influence

This is the seventh annual benefit system report. This means that there is now six years' worth of analysis attributing the change in future benefit system use among key drivers.

For each year prior to 2017, there has been a material decrease in the projected future payments plus expenses due to experience – that is, due to the combination of Welfare Reform and MSD's management of the benefit system. These decreases comprise reductions due to both decreases in the number of beneficiaries (and potentially beneficiaries moving to segments with lower future benefit durations) and due to model changes (that is, recognition of how benefit trajectories are changing over time). Last year (2016) also saw an increase associated with the Child Material Hardship Package (due to higher benefit rates) of $1.5 billion. This year sees our first material increase due to experience ($1.8 billion) representing about an eighth of the previous cumulative decreases. These changes are summarised in Figure 4.17. Our estimate of the impact of the Child Material Hardship package is unchanged from last year and shown as a separate item.

Figure 4.17 Reductions in future payments plus expenses, current client cohort, due to experience over the past six valuations
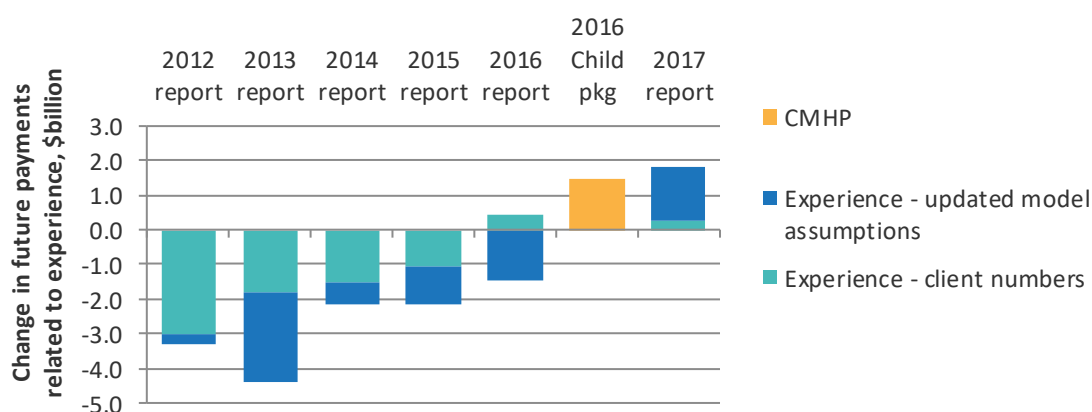
The **cumulative decrease** over six years of the change considered to be under management influence is about 14.3% of the value of the total future cost as at 2011, or $11.2 billion. This excludes the effect of the introduction of the Child Material Hardship Package, which added $1.5 billion. Including this, the total decrease is $9.7 billion.

The change under management influence can also be understood in terms of numbers of beneficiaries and their expected duration on benefit[20]:

» Since 2012, Jobseeker segment numbers have reduced by 15%, with a relatively larger reduction in for JS-WR clients. Expected number of future years on main benefits are slightly shorter; one fewer year for JS-HCD clients.

» Numbers on SPS segments are down 29%, while durations are down significantly. Current SPS clients are expected to spend over 2 years less on benefit.

» Total SLP numbers are flat (although SLP-Carers are 14% higher), with small changes in duration.

» Youth segments (before allowing for the expansion of the Youth Service to higher ages) have 16% fewer clients, with a large substitution from YPP to YP.

These changes mean that, compared to the pre-reform benchmark valuation (as at June 2012), current clients are expected to spend more than 1,180,000 fewer years on main benefits over their working lifetime, although this is down from 1,300,000 last year. About three quarters of this reduction in future years on main benefits can be attributed to policy and operational changes.

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[20] The comments in these bullets do not formally allow for the decrease in unemployment rates since 2012, although we note broad consistency between actuals and 2012 assumptions in Section 4.4.3. The changes shown in Figure 4.17 do allow for unemployment rate changes.

5 ANALYSIS BY SEGMENT

5.1 Introduction and highlights

This chapter provides further detail of the results at a segment level. Beneficiary segments allow us to better understand important subgroups within the benefit system client population. This report represents the first time we are presenting projection results using the new segmentation, developed jointly with MSD during 2016.

Figure 5.1 New segmentation for the 2017 report

Highlights

» The client segmentation has been refreshed to reflect developments over the last 5 years in the projection model, MSD's policy and operations focus and deeper understanding of important drivers of long term support. The new segments focus on an extended youth group (to age 25), provide more differentiation of SLP clients with future work capacity, and differentiate between those with heavier and less heavy recent main benefit support.

» In the June 2017 quarter, there were 6,000 fewer clients on main benefits than a year ago.

» Numbers have decreased for most segments, but increased for some age 25 and over JS-WR and JS-HCD segments. In particular, the JS-WR/EB with heavier recent benefit support and JS-HCD with less heavy recent benefit support segments.

» While numbers have decreased, the decreases are smaller than were projected in 2016. Particularly for JS, where numbers were, on average, 2% higher over the year than projected.

» Compared to last year, the average future durations with main benefit support have increased slightly across all segments. The biggest increases are for Under 25s, these segments are now projected to spend, on average, 3 further quarters with main benefit support.

> » Age and a benefit history variable come through among the strongest predictors of future long spells with benefit support across all segments. Childhood interactions with CP/YJ, ethnicity and the new education variables are also strong predictors for those aged under 25. Previous JS-HCD support is a strong predictor for both age over 25 with main benefit support segments.
>
> » Within segments there are a wide range of projected pathways, for example 12% of JS-WR/EB clients under age 25 who entered before age 20 have more than double the median projected future years of support.

5.2   New client segmentation

The old client segments, used for the past five years, were developed when the projection model was in its infancy and were aligned with the 2013 Welfare Reforms. The previous segmentation was structured around a 'top tier' split based on benefit types and lower tier splits using other characteristics such as continuous duration on benefit and child age. Since then there have been significant developments in the projection model, further understanding of drivers of long term benefit support and changes to MSD operations and policy. This led to the refresh of the segmentation.

The new segmentation is shown in Figure 5.1 and was developed jointly with MSD. Compared to the previous, the new segmentation:

» Gives greater prominence to beneficiaries aged under 25.

» Uses historical proportion of time with main benefit support for grouping clients, replacing the previous duration-based measure. We believe this better distinguishes between clients in higher or lower need of future benefit support; clients with extensive history but a recent break are correctly identified as higher-need.

» Provides more splits for SLP-HCD clients using their reassessment status and incapacity type.

As shown in Figure 5.1 the first split in the segmentation is whether a person currently receives main benefit support. Current level of benefit support not only reflects the support levels required now, but is also a strong predictor of future support needs. Further splits are then made using age, age of entry into the benefit system, historical proportion of time with main benefit support and benefit type. SLP clients have long-term support needs and we recognise this difference through a dedicated group of segments, with further splits by reassessment status and incapacity type. This gives 25 segments in all, each with somewhere between 1,500 and 75,000 clients in it as at June 2017.

Under 25s

Many clients aged under 25 are likely to receive long-term benefit support and the group represents a clear opportunity for improved outcomes through effective tailored investments. This is particularly true for those entering before age 20. This age of entry threshold and benefit type combine to form 8 segments in all (which we sometimes refer to collectively as 'Under 25s'). SLP clients aged under 25 form a distinct segment; they typically have quite severe incapacities, very long expected durations and very high support needs.

Aged 25+ with benefit support in >75% of the last 3 years

There are four segments related to main benefit clients who are over age 25 and have received main benefit support in more than 75% of the previous 12 quarters[21]. Predicted future durations on benefits for clients with this heavier recent use of the system are significantly longer, on average, than for those

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[21] Technically, they received main benefits in more than 9 of the last 12 quarters.

with less heavy recent use. These clients likely require additional support to move towards sustainable employment.

Four segments are formed based on current benefit type and age of youngest child for SPS clients. Work obligations differ for SPS clients whose youngest child is aged 0-2 compared to 3-14, making a natural operational splitting point for segmenting SPS clients.

Aged 25+ with benefit support in ≤75% of the last 3 years

Main benefit clients who have received main benefit support in less than 75% of the previous 12 quarters form four segments according to current benefit type. These segments mirror those for clients that have heavier recent benefit receipt. Clients with less heavy recent history are much more likely to receive support for a few quarters and then transition out of the system (with lower likelihood of re-entry), potentially requiring less intense investment.

Supported Living Payment

SLP clients require long-term support and so make up a large portion of future benefit-years. There are 5 SLP segments (in addition to the Under 25 SLP segment). Two segments are unchanged from the previous segmentation; those where eligibility arises from their partner and those who are Carers. The previous SLP-HCD group is now split into three:

» Those with no reassessment requirement
» Those with a reassessment requirement and mental health condition
» Those with a reassessment requirement and other type of health condition, incapacity or disability.

This reflects mental health being a growing area of focus for MSD and recognition that even within SLP there are a range of incapacity levels and support needs.

Not supported by a main benefit – Not on Main Benefit (Supplementary only plus OB)

Those currently not receiving main benefit support but with some other form of support (most commonly Accommodation Supplement) are referred to as Not on Main Benefit (NOMB) and form two segments. Formally, this includes clients on supplementary-only benefits, plus those receiving an Orphan's or Unsupported Child benefit. The split is a 33% threshold in the proportion of time with main benefit support in the last five years [22]. The probability of re-entry for those with heavier recent support is much higher.

These segments cover a larger number of clients compared to the main benefit segments. These clients currently receive lower benefit payments and on average we predict will require less benefit system support in the future.

Not Supported by a main benefit – Recent Exits

These clients ceased all benefit support within the last year, but many will re-enter the system in the future. We use the same split into two segments as we do for NOMB clients; a threshold of 33% of the last five years on main benefits. This split provides strong differentiation in the probability of re-entry. As with the NOMB segments, recent exit segments have relatively large client numbers.

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[22] Those receiving main benefits during at least seven out of twenty previous quarters are allocated to the heavier receipt group.

5.3   Actual versus expected results for 2016/17

Each year we assess actual client numbers and payments compared to our previous projection. These differences were also introduced as changes to benefit dynamics (see Figure 4.3). Since June 2016 the number of people with main benefit support has decreased by 6,000 or 2%. This decrease was similar to last year, but smaller than projected in the previous report; we had expected improving labour market conditions plus high SPS exit rates to lead to a slightly larger decrease.

This difference can be seen in Table 5.1, which compares how many clients were expected (based on the 2016 projection) in each quarter to how many clients there actually were by benefit type.

Table 5.1 Actual and expected numbers (000s) by benefit type. A client is counted if they receive benefit at some point during the quarter, but only counted once (whichever benefit they receive most in a quarter).

	Quarter	Benefit type						
		JS-WR	JS-HCD	SPS	SLP-Carer	SLP-HCD	Supp.	OB
Actual	Sep-16	101.6	72.3	73.2	9.2	95.7	103.6	5.9
	Dec-16	103.4	73.2	72.8	9.3	95.4	102.7	5.9
	Mar-17	103.6	73.0	72.9	9.3	95.2	102.2	5.9
	Jun-17	96.6	72.2	70.4	9.3	94.9	101.5	6.0
Expected	Sep-16	100.3	72.1	73.4	9.3	95.4	103.8	5.8
	Dec-16	100.6	72.5	72.7	9.4	95.3	105.3	5.8
	Mar-17	100.7	72.1	72.8	9.4	95.1	106.9	5.8
	Jun-17	93.8	70.8	71.3	9.5	95.1	106.7	5.9
Ratio A/E	Sep-16	101%	100%	100%	100%	100%	100%	101%
	Dec-16	103%	101%	100%	100%	100%	98%	102%
	Mar-17	103%	101%	100%	99%	100%	96%	102%
	Jun-17	103%	102%	99%	98%	100%	95%	103%

We note:

»   There were significantly more JS-WR clients in the June 17 quarter than were expected (96,600 vs 93,800). Numbers of JS-WR were 1-3% higher than expected in each quarter. This is due to less exits than expected among longer duration clients.

»   There were also more JS-HCD clients at June 17 than were expected; numbers of JS-HCD clients became progressively higher than expected over the year.

»   There were slightly fewer SPS clients at June 17 than expected, over the year SPS client numbers were close to expected; a faster rate of exit for clients with children aged 3-4 was partially offset by lower exit rates for those with children aged 5 or more.

»   The number of SLP-Carer clients was slightly lower than expected over the second half of 2016/17. About half of this result was due to fewer client entries.

»   SLP-HCD numbers were close to expected over the year.

»   Numbers receiving Supplementary-only benefits have not increased as expected and were 5% lower than expected in the June 2017 quarter. This result was discussed in terms of fewer entries into this category in Section 4.7.

»   OB numbers were 1-3% higher than expected each quarter. This is a small group; 3% corresponds to less than 300 clients.

5.4 Segment level projection results

5.4.1 Results

Table 5.2 shows the segment level current client projection results (as at 30 June 2017), as well as the equivalent results from the previous year's projection.

Table 5.2 Current client projection results by client segment at 30 June 2017 and 30 June 2016

Segment			2017				2016			
			Number at 30 June	Total future years of main benefit support ('000)	Avg. future years of main benefit support	Avg. future benefit payments, $k	Number at 30 June	Total future years of main benefit support ('000)	Avg. future years of main benefit support	Avg. future benefit payments, $k
Under 25s	First ben aged < 20	YP/YPP	2,466	37	15.2	214	2,752	39	14.0	206
		JS-WR/EB	15,679	195	12.4	152	17,164	197	11.5	147
		JS-HCD	6,303	94	14.9	195	6,306	90	14.3	197
		SPS	10,700	153	14.3	251	12,189	162	13.3	245
	First ben aged > 20	JS-WR/EB	3,296	23	6.9	81	3,476	23	6.6	83
		JS-HCD	1,448	14	9.7	127	1,369	13	9.5	131
		SPS	1,511	15	9.8	186	1,586	15	9.7	186
		SLP	7,905	192	24.3	316	7,949	192	24.2	329
		Sub-total	49,308	723	14.7	204	52,791	731	13.9	203
Over 25 and on a main benefit	>75% of last 3yrs on main benefits	JS-WR/EB	29,323	287	9.8	137	28,827	280	9.7	139
		JS-HCD	37,283	360	9.7	144	37,455	369	9.9	149
		SPS Chd 0-2	9,280	130	14.0	253	9,878	139	14.1	262
		SPS Chd 3-13	28,134	321	11.4	207	30,539	340	11.1	206
		Subtotal	104,020	1,099	10.6	169	106,699	1,128	10.6	173
	<75% of last 3yrs on main benefits	JS-WR/EB	26,671	180	6.7	88	27,490	188	6.8	92
		JS-HCD	20,212	148	7.3	105	19,338	145	7.5	109
		SPS Chd 0-2	5,148	48	9.2	177	5,091	46	9.0	177
		SPS Chd 3-13	8,749	69	7.9	148	8,449	65	7.7	146
		Subtotal	60,780	444	7.3	110	60,368	443	7.3	112
	Supported Living	Carer	8,350	80	9.6	170	8,292	81	9.8	175
		Partner	7,074	53	7.5	109	7,420	58	7.8	116
		No reassessment	30,022	352	11.7	177	30,580	362	11.8	185
		2yr Mental health	20,200	273	13.5	215	19,608	270	13.8	224
		2yr Other	28,611	245	8.6	144	29,021	256	8.8	149
		Subtotal	94,257	1,004	10.7	169	94,921	1,027	10.8	176
NOMB	>33% last 5yrs on main benefit		30,916	132	4.3	95	32,329	143	4.4	97
	<33% last 5yrs on main benefit		74,528	147	2.0	43	74,144	155	2.1	46
	Sub-total		105,444	279	2.6	59	106,473	299	2.8	62
Recent Exits	>33% last 5yrs on main benefit		63,722	413	6.5	85	65,590	414	6.3	86
	<33% last 5yrs on main benefit		60,013	155	2.6	35	60,696	162	2.7	38
	Sub-total		123,735	568	4.6	61	126,286	575	4.6	63
Grand total			537,544	4,118	7.7	119	547,538	4,204	7.7	123

These results are split based on a client's segment at the projection date, and totals include future time with different types of main benefit support. Client numbers and durations are also shown graphically in Figure 5.2. The table and figure show:

» Within 'Under 25s' we observe much higher future benefit years for those entering young, likely reflecting more complex needs. A JS-WR client aged under 25 and entering before age 20 will spend 12 years with main benefit support on average, compared to 7 years for young clients who enter after they turn 20. Similar patterns are visible for other benefit types.

» For those 'Over 25 and on a main benefit', the amount of main benefit receipt over the past three years is effective in splitting those with high and low amounts of future time on main benefits. For 'SPS, >75% of last 3 years on main benefits' the average future duration is 12 years on main benefits, 4 years more than those with lighter history. For JS-WR/EB clients the difference is 3 additional years, and for JS-HCD clients 2.5 additional years.

» For SLP clients the difference between the 'no reassessment' and '2-year reassessment' groups is relatively small. However, as discussed in Section 3.5.2, the drivers of duration are different; mortality is higher for those without reassessment and employment related exits are twice as high for those with reassessment.

» For '2-year re-assessable SLP' clients, those whose primary incapacity is a mental health condition are projected to spend on average 5 more years with main benefit support than other primary incapacities. This is partly an age effect; 56% of the group with primary mental health incapacities are under age 50 compared to 30% of the other group. Younger clients have more potential years of working-age benefit support.

» Among 'NOMB' clients and 'Recent Exits' the amount of historical main benefit receipt is again highly descriptive. Those who have spent a third of the past 20 quarters with main benefits have more than twice the expected future time on benefits. In this case it is **not** due to age distribution differences – the age profile is similar between each of 'NOMB' segments and 'Recent Exits' segments.

Client numbers have decreased for most segments, the exception being some jobseeker segments.

Compared to last year, the average future number of years with main benefit support is largely unchanged for most segments. 'Under 25s' are now projected to spend, on average, an extra year with main benefit support; this mainly relates to additional projected time on jobseeker benefits.

The results can be further understood by splitting the estimate into its two components: client numbers and average future time with benefit support. This is shown in Figure 5.2.

Figure 5.2 Numbers and average future years supported by main benefits by segment (30 June 2017 compared to 30 June 2016) [23]
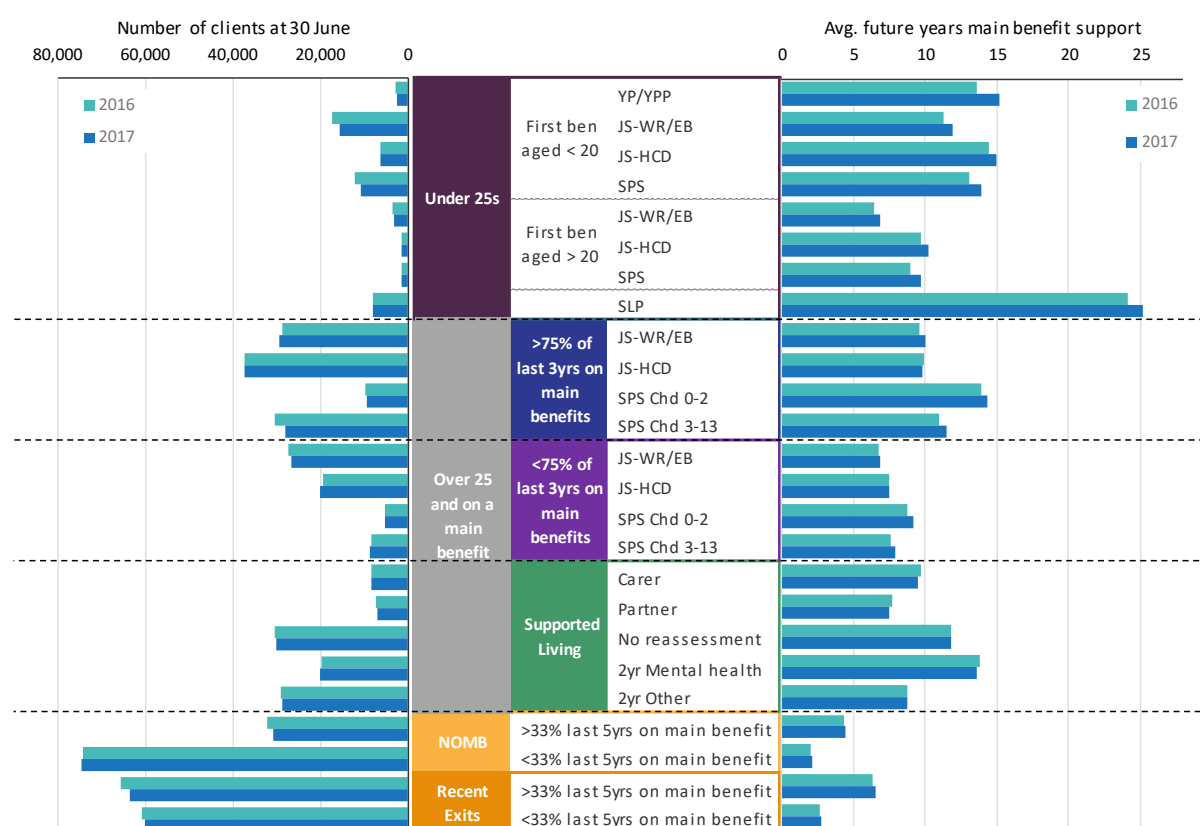
5.4.2   Lifetime projections

The projection estimates future benefit support over the working-age lifetime of current clients. Another way of interpreting the projection results is to look at how the projection applies to individual clients, cohorts and segments across time. We can run the projection and assess the propensity for various groups to continue to require benefit support, and to move between different benefit types over the long term.

Figure 5.3 illustrates expected lifetime transitions over the next 45 years for clients grouped according to their top tier segment at June 2017. Grey represents exits (dark grey for exits due to retirement and light grey for working-age exits for employment or other reasons). The figure shows that:

»   'Under 25s' start on a mix of different benefit types. Future benefit system use is relatively high; we project 28% of these clients will be receiving main benefit support in 20 years. Among these clients there is an initial rapid decrease in total proportion with main benefit support, dropping to 69% after 2 years. This rapid decrease is mostly due to a reduction in number with JS-WR and EB support. The proportion with SPS support drops more slowly, reducing from 27% to 14% after 10 years. The proportion with SLP support remains fairly constant. After 40 years the eldest clients in this segment age out of the projection (and benefit support).

»   For 'Over 25 and on a main benefit, >75% of last 3 years on main benefits', the proportion with main benefit support decreases to 61% over 5 years. Of those not retired, 34% will be receiving main

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[23] This compares results excluding any impact of methodology changes so numbers will not match Table 5.2 exactly.

benefits in 20 years' time. The proportion of those using main benefit support that is SLP support grows to 30% over 10 years.

» Similar trends are seen for 'Over 25 and on a main benefit, <75% of last 3 years on main benefits'. The proportion of those still working age with main benefit is expected to be 22% after 20 years, with an additional 6% receiving supplementary benefits. The number receiving SLP support gradually grows to 8% of those still working age after 10 years.

» Most SLP-HCD clients remain on SLP until retirement. This segment is older than most others, so the retirement effect is more pronounced.

» 'NOMB' clients show relatively fast transitions off benefit support entirely. A small number transfer back to main benefit support, 4 years into the projection 12% of those who are still working age are expected to have transferred to a main benefit, half of which is JS support. After 20 years we project 11% will be receiving main benefit support.

» The number of 'Recent Exits' who have returned to main benefit support reaches a peak 2-3 years into the projection, at about 22% of those still working age. Re-entries are mainly JS-WR/EB initially, (64% in the first quarter) but an increasing proportion move into SPS and SLP segments in the longer term (30% JS-WR/EB after 10 years).

Figure 5.3 Lifetime projections as at 30 June 2017 by top tier segment
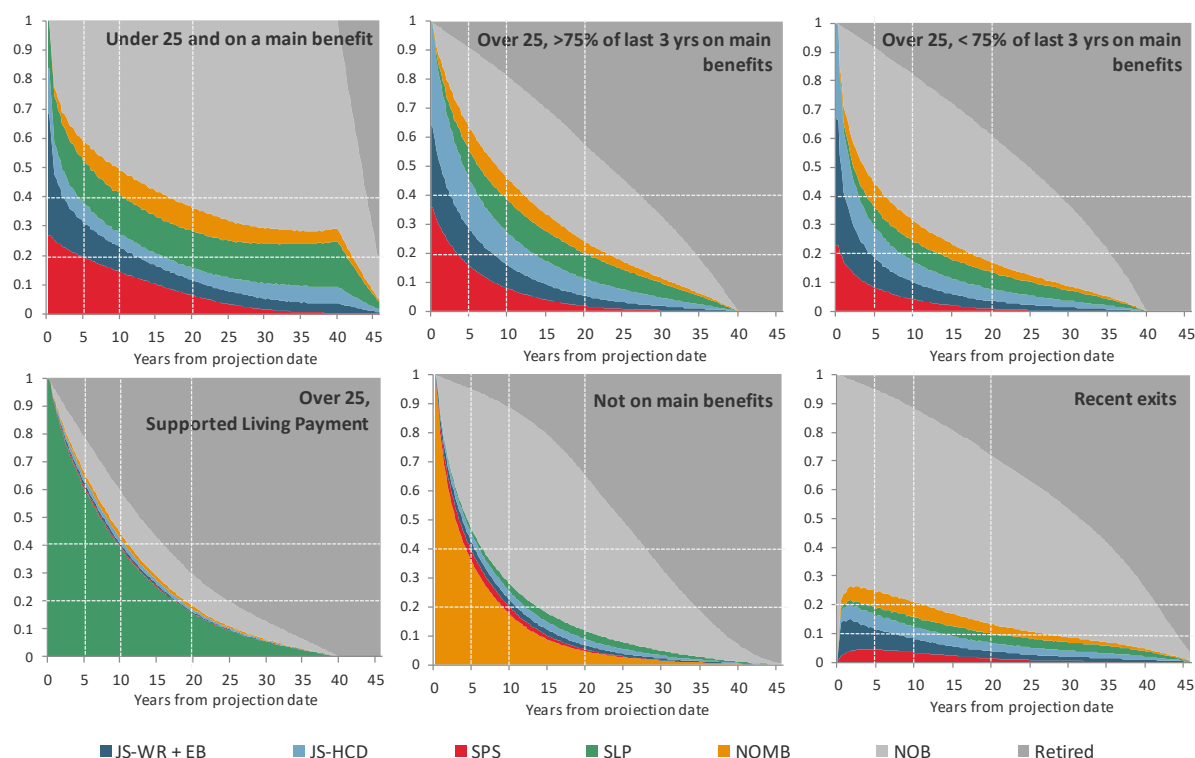
Figure 5.4 illustrates how the overall shapes of these trends have changed from the previous report. Changes visible in this plot will tend to mirror changes to average future duration in Table 5.2.

Figure 5.4 Lifetime projections of future years of main benefit support; change since previous report
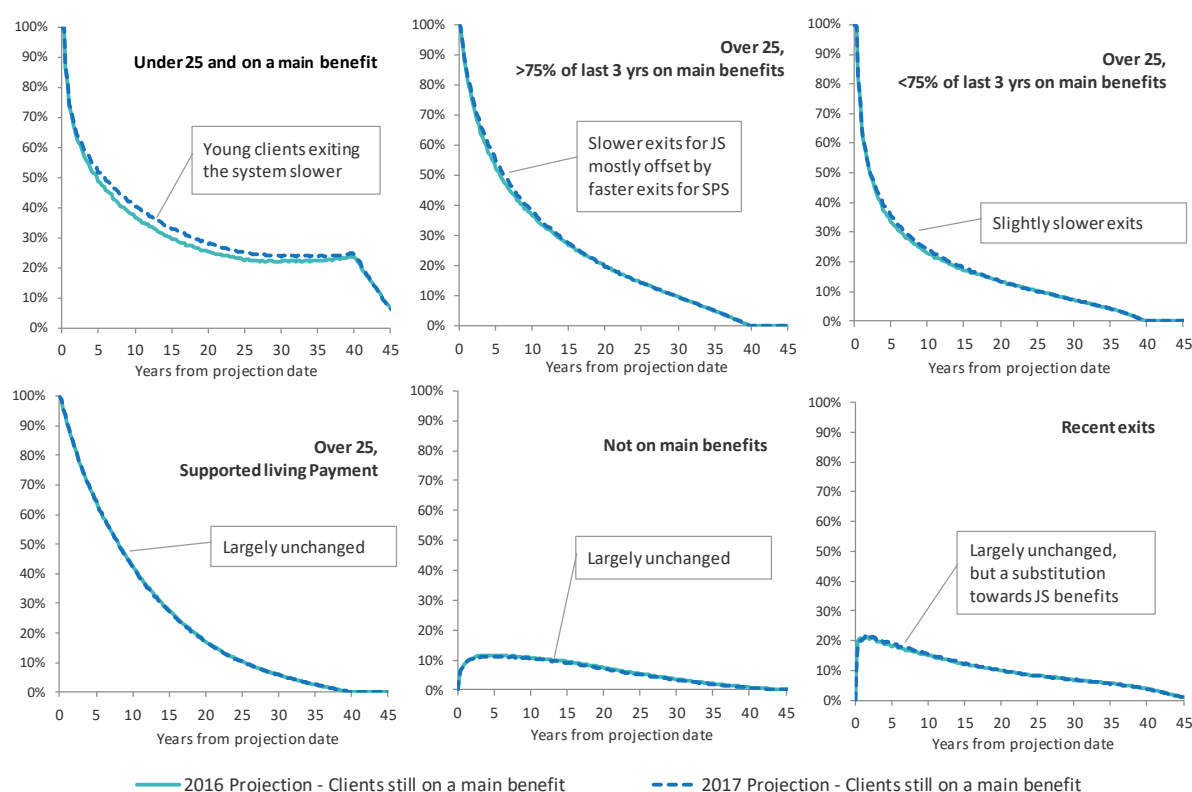
The largest changes are visible in the 'Under 25s', 'Over 25, >75%' and 'Over 25 <75%' segments:

» The proportion of clients currently under 25 supported by a main benefit into future years has increased. The change corresponds to the one-year increase in average future time with benefits consistent with the 'Under 25s' results in Table 5.2.

» The proportion of clients currently in the 'Over 25, >75%' segments that are projected to be supported by main benefits over the next 10 years has increased. This is due to slower exits from JS-WR, particularly among those who currently have longer durations. The effect is partially offset by faster exits from SPS.

» The proportion of clients currently in the 'Over 25, <75%' segments that are projected to be supported by main benefits over the next 10 years has also increased. Similarly, this is due to slower exits from JS-WR, partially offset by faster exits from SPS. The reduction in the exit rate is smaller among these clients with less heavy recent main benefit use.

5.4.3 Relative contribution to total future years

The difference in average future durations across segments means that some segments make up a disproportionately large or small share of the total future duration relative to the number of clients in that segment. For instance, clients aged under 25 represent 9% of the number of clients in the current cohort, but 18% of the total future years. These differences are illustrated in Figure 5.5 for the various segments.

Figure 5.5 Contributions of segments towards client numbers and total future years of main benefit support
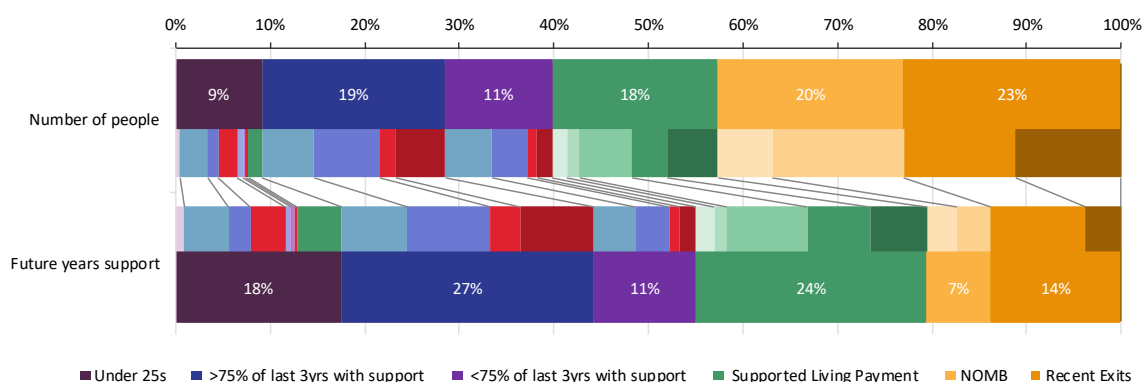
The segment definitions use some of the strongest predictors (age, main benefit type and benefit history) of future pathways to group clients. However, we model at an individual level, so there are still substantial differences in predicted benefit duration within segments. Figure 5.6 shows the relative proportion of each segment by projected number of future main benefit support years. The wide range reflects the importance of other predictors, which we explore further in Section 5.6.1. In each panel of the figure, the width of the duration range indicates how much variation we expect in future durations due to these individual-level effects.

The spread of individual level durations, even within segments, is significant. For example, among JS-WR/EB clients:

» In the 'Under age 25, JS-WR/EB' segment, 12% of clients have more than double the median projected future years of support.
» In the 'Over age 25, with support in >75% of the last 12 quarters, JS-WR/EB' segment, 17% of clients have more than double the median projected future years of support
» In the 'Over age 25, with support in 75% of the last 12 quarters segment, JS-WR/EB', 14% of clients have more than double the median projected future years of support

This indicates that within each segment there are a sub-group of JS-WR/EB clients that are likely to require a much higher level of support over their lifetime.

Figure 5.6 Relative numbers of clients by number of projected future years of support
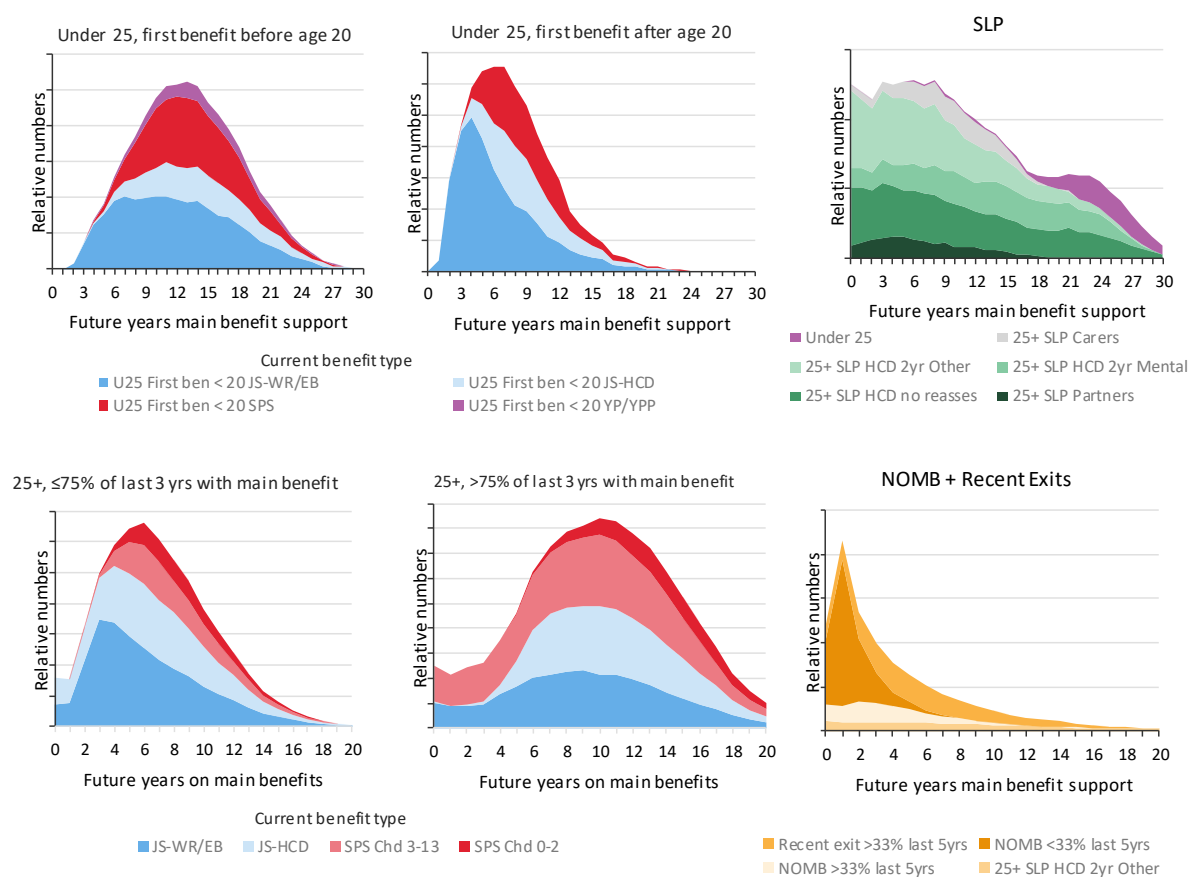
This spread of benefit system outcomes is further explored in Figure 5.7 which shows the interquartile range of individual projections within a segment. This means that 50% of the individual results within the segment fall within the highlighted range (and a quarter of clients will be below and above the range). The range is around 6 years for most segments and generally larger for those with longer projected future durations. For 'Recent Exits with less recent main benefit' support a small proportion re-enter the system and have a high number of future years of support, this pull the average up to the top of the interquartile range.

Figure 5.7 Segment interquartile range of individual projected future years on benefit and average
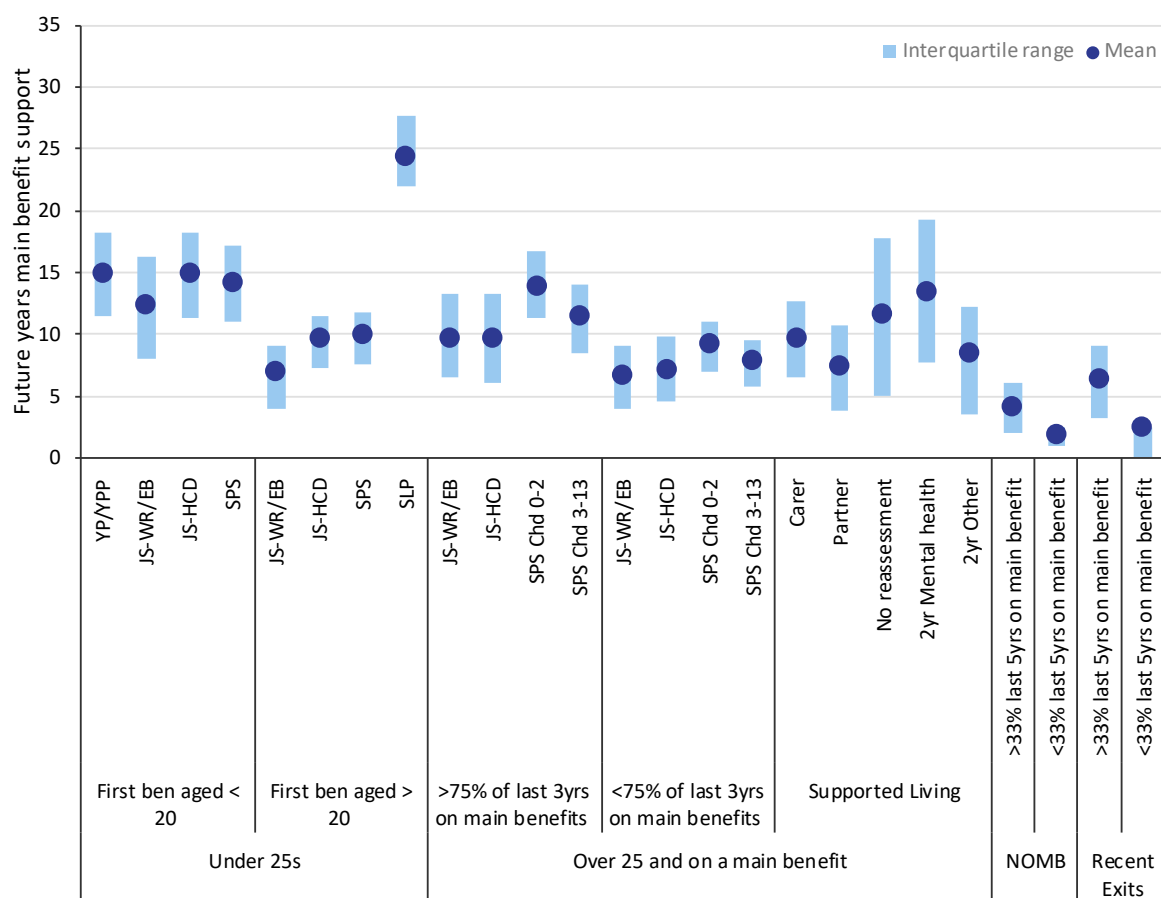
The twenty percent of clients with the highest projected future years of main benefit support (on average 19 years) make up half of the total projected future years. About a quarter of these clients are in the 'Under 25s' segments and a about third in the 'Over 25, SLP' segments. At the other extreme, around one in eleven main benefit clients is projected to spend at most 2 more years with main benefit support.

5.5 Analysis of transfers between segments

Each quarter, about 55,000 beneficiaries either leave benefits or transfer to a different benefit; this represents about 13% of the client base. About half of these movements are exits from main benefits (movements to the Recent Exit or Supplementary Only segments), with the remainder transferring to a different benefit.

Transfers are a key feature of the benefit system. A client's projection is affected both by their current benefit spell plus future spells with different benefit types. Further, policy and operational changes (such as the 2013 reforms) tend to affect transfer behaviour in addition to entry and exit rates. Following the

2013 reforms we observed considerable changes to the transfer rates which had mostly stabilised by the 2015 report. We now consider changes in transfer changes unrelated to those reforms.

Changes to transfer rates are typically harder to predict than exits from or entries to main benefits. Transfers give insight into the likely long-term mix of benefit types.

Table 5.3 summarises the number of movements per quarter for some of the most important transfers. As with modelling the reforms generally, there has been significant movement over the year and some judgement has been required in setting transfer rates going forward (see Section 4.7).

We make the following observations:

»   Transfers from JS-WR and JS-HCD to Supplementary only benefits have decreased markedly, mirroring the reduction in exit rates. This has contributed to the higher numbers on jobseeker benefits compared to our 2016 projections. The reverse transfers have also decreased, meaning there is also less 'churn' where people move back and forth between Jobseeker and Supplementary only benefits.

»   One of the biggest transfers of clients is the movement from JS-WR to JS-HCD and vice versa. The transfer rate from JS-HCD to JS-WR decreased which reverses the change seen in 2015/16. Movements to JS-HCD from JS-WR now outstrip the inverse.

»   Transfers from JS-HCD to SLP-HCD have decreased in recent years and were unchanged this year.

»   SPS to SUP is the next most common transition and as with JS-WR to SUP, it is an important transition that represents an exit from main benefits. This transition rate has slightly decreased as more clients transfer to JS-WR rather than SUP.

»   While JS-HCD to SUP transitions are less common, the number has decreased substantially this year. Exit rates have also decreased.

»   The 15% decrease in transfers from JS-HCD to SPS follows previous decreases. There were only two thirds as many JS-HCD to SPS transfers in 2016/17 compared to 2013/14

Table 5.3 Major transfers between benefit types in 2016/17 and comment on change compared to 2015/16

From		To	Avg. # client transfers per qtr, 2016/17	Change in transfer rate, compared to 2015/16	Comment
JS-HCD	→	JS-WR	2,719	-10%	Decreased, reverses previous years change
JS-WR	→	JS-HCD	2,959	-1%	Fairly stable, now faster than reverse (JS-HCD → JS-WR)
SPS	→	JS-WR	1,325	+1%	Fairly stable
JS-WR	→	SUP	1,760	-15%	Further decreased from previous year, also less exits
SPS	→	SUP	1,535	-3%	Slight decrease, these clients moving to JS-WR instead of SUP
SUP	→	JS-WR	1,149	-11%	Further decreased from previous year, reverse also decreased (less churn)
JS-HCD	→	SLP-HCD	1,277	-0%	Stable after several years of decreases
SUP	→	SPS	949	-1%	Fairly stable
JS-HCD	→	SUP	717	-10%	Further decreased from previous year, also less exits
JS-WR	→	SPS	798	+1%	Fairly stable
SUP	→	JS-HCD	715	-3%	Slight derease, and reverse direction also decreased (less churn)
JS-HCD	→	SPS	633	-15%	Further decreased from previous year

5.6 Understanding segment-level differences

5.6.1 Predictors of long-term support

The projection models enable us to compare the relative importance of various client characteristics in causing the projected future duration to be low or high. These relativities vary across different segments; the eleven most important characteristics for differentiating between high and low future benefit duration are shown for various segment groups in Figure 5.8.

We note the following:

» Age is very important across all panels except the 'Under 25s'. Age is particularly important SLP segments, where younger clients have more future potential years on benefits and typically require them. Age is less important for the 'Under 25s' only because of the age condition on the segment itself. That is, current age is important in predicting high future durations for the 'Under 25s', but less important in differentiating between future durations **within** those segments, as by definition these clients are young.

» The new proportion of time segmentation variables, discussed in Section 3.5.1, come through as very important across most segments. This is despite the segmentation already incorporating a threshold based on this variable. For example, it is the second most important variable for those 'Over 25 with main benefit support in <75% of the last 12 quarters'; the predictor is further splitting among those who already have a relatively low value. This top tier segment contains a mix of benefit types (including JS-HCD). It suggests a clients' recent history of support can be considered as equally, if not more than, important than their current benefit type in predicting future support durations.

» Education level is important for those in the 'Under 25s'; this uses the new linked data as discussed in Section 3.2.

» Both intergenerational benefit history and CYF (child protection and youth justice) data are only available for a subset of younger clients (those up to age 30), and as a result their significance is understated in segments other than the 'Under 25s'. Despite this, Interactions with Child protection or youth justice as a child comes through strongly among the recent exit segments. Among the 'Under 25s' interactions with child protection or youth justice as a child ranks third.

» Gender is a moderately important variable for those under age 25. This reflects the higher probability that female clients will go on to receive SPS in future.

» Having a criminal conviction also comes through strongly among the 'Recent Exits'.

» Ethnicity is a come through as a strong predictor of future durations for the 'Under 25s'. It is more moderate for main beneficiaries over age 25, where there is a more accumulated benefit history with which to predict future durations. It is a strong predictor for 'Recent Exits'.

» SLP segments are very sensitive to age – almost all of the total variability in future duration is explained by current age. The type of heath condition, injury or disability is second most important for predicting SLP-HCD future durations.

Figure 5.8 Relative variable importance for estimating future lifetime benefit cost, for top tier segment groups; top eleven variables shown for each segment group
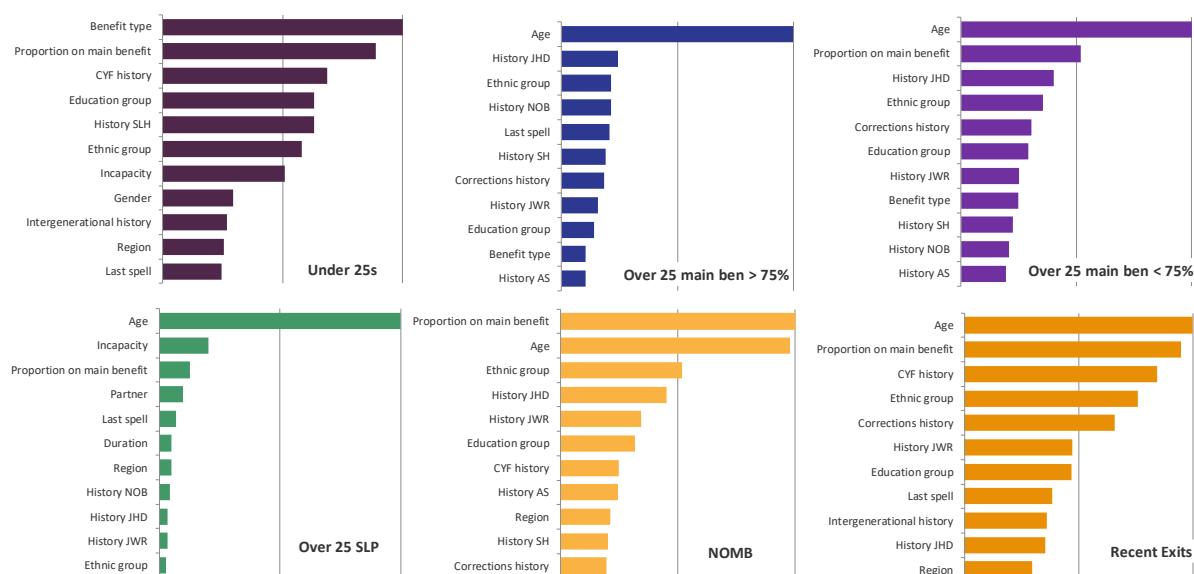
The 'Under 25s' and 'Recent Exits' have a more even spread across a wide range of predictors. Such segments potentially favour targeted investment approaches, since there is a wider range of underlying needs and expected outcomes.

We can understand how these drivers are affecting the estimate of future durations of support by examining the partial dependence effects. These effects show what the influence of each variable is, holding all other variables constant. They can also be used to understand the interactions between different variables; that is, how does future duration vary due to the **joint** status of variables. Partial dependence plots for selected variables (such as education) can be found Chapter 3. In Figure 5.9 we further show the influence of age and historical JS-HCD support receipt split by benefit type.

Figure 5.9 Partial dependence plots of future years of main benefit support for JS-WR (left panel) and SPS (right panel) clients by age and history of JS-HCD receipt

As indicated by the variable importance lists those with previous JS-HCD receipt have, on average, much longer future durations. The difference is slightly larger for SPS clients than for JS-WR.

5.6.2   Year-on-year changes to segment composition

This section looks at how the mix of clients within each segment changed this year, and how these underlying changes influence segments' average future duration of support.

The change in average client future duration was discussed in Section 5.4. There are two primary causes of change:

» Projection models might change the estimate for various client cohorts
» The type of clients within each segment may change.

We refer to the latter category of change as 'distributional' or demographic – that is, the mix of clients within the segment is different, and those differences have a bearing on average future durations for the segment. As an example of distributional change, if the average age of clients in a segment were lower than in previous years, this would tend to increase the average future duration, even if everything else remained unchanged. We have attempted to quantify the influence of this distributional change for each top-level segment, summarised in Table 5.4.

As an example, consider the 'Over 25, >75% of last 3 years with main benefit support' segments: if the distribution of various characteristics were exactly the same as last year we would expect the same average future duration report this year (the segment average in Table 5.2) to be 0.03 years lower. In other words, distributional changes to the mix of clients within the segment have cause the average projected duration to be 0.03 years higher than last years. This means that a small part of the increase in future years in this segment is due to distributional impacts.

Overall the impact of compositional changes over the year is small. This is unsurprising, as compositional changes tend to be significant only over longer time periods. For clients under 25, we note the increased amount of CYF history (child protection and youth justice) that increases duration, plus slightly higher educational attainment, which decreases duration.

Table 5.4 Estimation of the influence of distribution change over the year to June 2017 on the average future duration for selected segment groups

Segment	Composition change breakdown	Commentary
Under 25, entry before age 20 **+0.08 years**		Distributional changes to the mix of clients within the Under 25, entry before age 20 segments have caused the average future duration to increase 0.08 years. The largest effects are: » More history of JS support, on average one quarter more JS-WR and half a year JS-HCD » More clients with longer durations of support » A higher proportion (of those matched) attained NCEA L2 at school » A higher proportion interacted with CP as a child (from 5.5% in 2016 cohort to 6.1% in 2017 cohort)

Segment	Composition change breakdown	Commentary
Under 25, entry after age 20 **+0.22 years**		Distributional changes to the mix of clients within the Under 25, entry after age 20 segments have caused the average future duration to increase 0.08 years. The largest effects are: » More history of SPS and JS-HCD support among clients » Slightly longer average durations » A higher proportion (of those matched) attained NCEA L2 at school » A higher proportion interacted with CP as a child
Under 25, SLP **+0.08 years**		Distributional changes to the mix of clients within the Under 25 SLP segment have caused the average future duration to increase 0.08 years. The largest effects are: » Slightly less historical benefit receipt » One percentage point more of group with primary incapacity being psychological » A higher proportion (of those matched) attained NCEA L2 at school » A higher proportion interacted with CP as a child » As these are all SLP clients, benefit type distribution has not changed.
25+, >75% last 3yrs **+0.03 years**		Distributional changes to the mix of clients within the age over 25, heavier recent history segments have caused the average future duration to increase 0.03 years. The largest effects are: » Slightly older age profile » Less SPS clients, more JS clients (also less females) » Lower proportion of Māori clients (still >50%) » Slightly older child age profile among SPS clients » One percentage point more of group in public housing
25+, <75% last 3yrs **+0.11 years**		Distributional changes to the mix of clients within the age over 25, less heavy recent history segments have caused the average future duration to increase 0.11 years. The largest effects are: » Slightly younger age profile » More JS-HCD clients, less JS-WR » Lower proportion of Māori clients (still >50%)Marginally more clients in public housing

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Segment	Composition change breakdown	Commentary
25+, SLP **+0.04 years**		Distributional changes to the mix of clients within the age over 25, SLP segments have caused the average future duration to increase 0.11 years. The largest effects are: » Slightly older age profile » Slightly longer durations among clients » One percentage point more of group with primary incapacity being psychological
Supp. only **+0.00 years**		Distributional changes to the mix of clients within the Supplementary only segments have caused a net change in the average future duration of 0.00 years. The largest effects are: » Slightly older age profile; around a quarter of a year older on average » More history of SPS receipt among clients » Slightly longer average durations as supplementary only clients (this decreases average future time as probability of re-entry decreases) » Slightly less intensive recent support among clients
Recent exits **+0.07 years**		Distributional changes to the mix of clients within the Recent exits segments have caused the average future duration to increase 0.07 years. The largest effects are: » Slightly older age profile » More clients whose last support type was SPS or JS-HCD and less JS-HCD (and more history of SPS support) » Longer duration with support for those just moving in the recent exits segment in the June quarter » Slight increase in the educational attainment profile of matched clients A higher proportion interacted with CP as a child

5.7   Forecast segment numbers

Figure 5.10 shows recent trends and forecast end of quarter numbers by segment. The projection is the combination of the current client numbers (for those expected to continue to receive benefit support) and future client numbers (incoming clients).

While the forecast numbers relating to current clients are relatively reliably estimated, the numbers related to new entries (and their underlying characteristics) tend to be more uncertain. The number of future entries is dependent on the labour force and other demographic trends, with numbers very sensitive to changes in the economy. We do allow for this sensitivity in the projection but expect more divergence from projections over time compared to current clients. The distribution of entries (by age, ethnicity, likely benefit type, and so on) is likely to evolve over time, which we discuss further in Section 8.4.

Figure 5.10 Forecast numbers at end of quarter, by segment
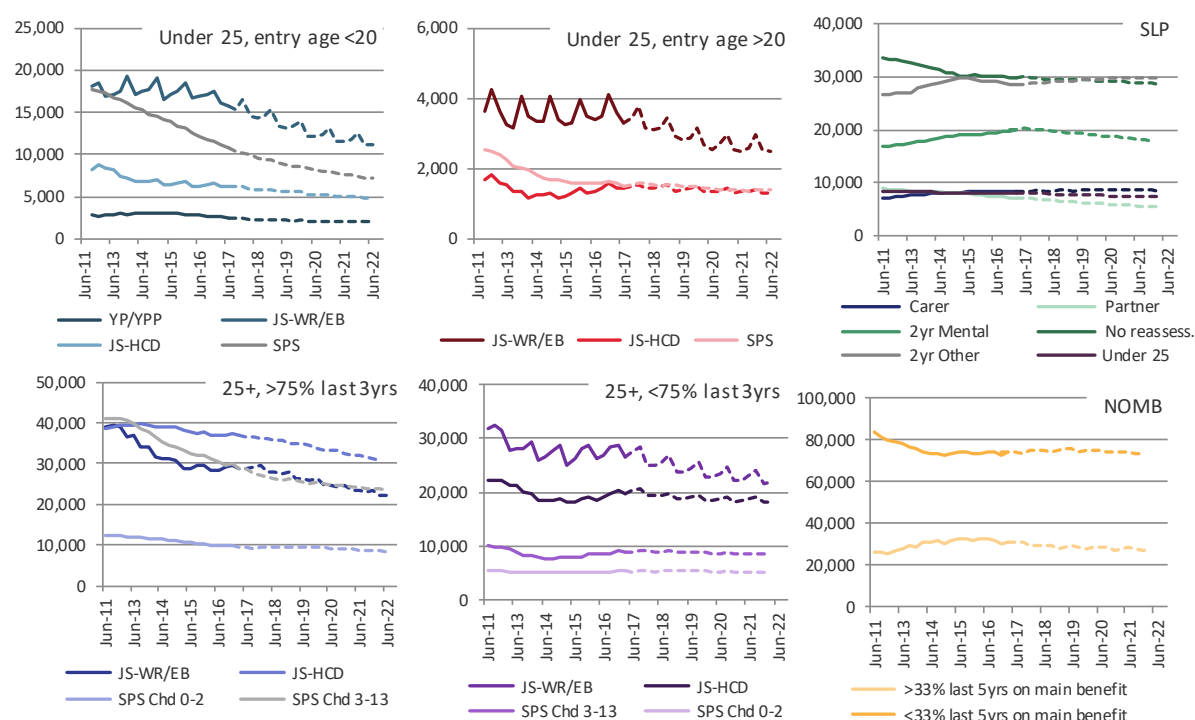
We have forecast:

» The number of clients 'Under age 25 and having entered before age 20' to continue to fall. The reductions are largely in SPS and JS-WR / EB clients. Much of this is driven by unemployment rate assumptions, with the national rate projected to fall 4.8% to 4.3% over the next five years. Young person client numbers are particularly sensitive to economic conditions, so the decrease shown should be seen as carrying significantly higher uncertainty.

» The number of clients 'Under age 25 and having entered after age 20' to fall slowly. The JS-WR/EB group are driving this with numbers of SPS and JS-HCD clients projected to remain reasonably flat. Again, the unemployment rate assumption largely drives the reduction in JS-WR numbers.

» SLP client numbers to be basically flat over the next five years, with new entrants and transfers in, balancing out exits.

» The number of SPS clients over age 25 with heavier recent use of main benefit support to decrease 28% over the next 5 years. The number with a less heavy recent use of main benefit support to decrease 8%.

» The number of 'JS-WR clients over age 25 with benefit support in >75% of the last 3 years' to decrease 14% over the next 5 years. The number with a less heavy recent use of main benefit support to decrease 18%. Once again, the unemployment rate assumption is largely driving the reduction in JS-WR numbers. The proportion of JS-WR clients in the heavier recent use of main benefit support group remains at around 50%. The seasonality effects are much stronger for the group with less heavy recent benefit support.

» The number of JS-HCD clients over age 25 to decrease 13% over the next 5 years. The decrease among those with heavier recent benefit use is faster as these clients are more likely to move to SLP support, while those with less heavy recent support are more likely to exit and potentially re-enter.

» 'NOMB' client numbers decrease slightly (about 4%) over the next five years with slightly larger decreases for those with less recent benefit support.

6   ANALYSIS BY REGION

6.1   Introduction and highlights

Work and Income has 11 regions that form the basis for service delivery and reporting. For our analysis, clients managed through a centralised office (including the Youth Service) have been allocated back to their actual region. There are also nearly 5,000 SLP-HCD clients with severe disability living in Australia; since the 2015 report we have modelled this as a twelfth region.

Figure 6.1 Work and Income regions

Many themes are common across regions – they all deal with the same benefit categories, eligibility requirements and general benefit dynamics. However, there are significant differences between regions. The local economic conditions might make it easier or harder to assist clients into work. Some regions also have more extreme seasonality to the receipt of benefits. The demographic properties of the population (both general and benefit populations) in a region might affect the types of benefits received and the expected time clients remain on them. These differences mean that there is merit in undertaking a detailed regional comparison.

This chapter provides that comparison of client future trajectories by region, and changes observed over time. The regional focus in this report is enabled in part by including regional unemployment rates in the projection which allows it to better respond to differences in regional labour markets.

Unemployment trends vary considerably across the country, with relatively high current unemployment in the Northland (7.4%), Bay of Plenty (6.9%) and East Coast (6.7%) regions in contrast with the relatively low unemployment rates in the Nelson (2.9%) and Canterbury (3.9%) regions.

The 98,000 increase in main benefit support years under management influence (for clients also in the 2016 report) is spread across the regions. Almost all regions saw an increase but some regions had a proportionately greater or lesser impact on the increase:

» The Canterbury and Southern regions represent only 16% of total future support years but 38% of the 98,000 increase.

» The Auckland region represents 28% of total future support years but only 9% of the increase in future years. Similarly, the Wellington region represents 9% of total future support years but only 2% of the increase in future years.

Since 30 June 2016 the number of people receiving main benefit support has decreased or stayed the same for most regions, the exceptions being Taranaki, Central and Canterbury. Average future years of main benefit support among current main benefit clients increased by around 3% in both the Canterbury and Southern regions. Future durations in both regions are still in line with national averages.

The average future duration on main benefit varies by region. The highest estimates are for the East Coast (11.5 years) and Canterbury (11.3 years) regions, while the lowest are for Auckland (9.0 years) and Taranaki (10.7 years) regions. This is in part driven by regional labour markets, mix of client benefit types, and ethnic composition. For example, Canterbury has a high proportion of SLP clients, whereas Auckland has a high proportion of supplementary only (mainly Accommodation Supplement) clients. There is still variation at a segment level; for example, clients under age 25 in Northland, East Coast and Taranaki are projected, on average, to spend 14 further years supported by main benefits, 2 extra years compared to clients under 25 in Wellington or Auckland.

The proportion of clients age under 25 that attained NCEA L2 at school varies by region, from 35% in the Northland region to 55% in the Wellington region. Similar trends are seen in the proportion who enrol in NCEA L2 courses after leaving school. Clients who did not achieve NCEA L2 at school and have no subsequent enrolment are projected to spend significantly longer with main benefit support, the difference tends to be longer in regions with higher proportions attaining NCEA L2. Northland has the smallest difference at 6.7 years and Wellington the largest at 9.0 years.

The total number of main benefit clients is projected to fall with the unemployment rate, but the rate of the decrease and seasonal effects vary by regional labour market.

6.2   Regional unemployment rates

Regional unemployment rates were introduced into the projection model in 2014 to better explore how regional labour markets evolve. We continue to use these regional rates for both historical modelling and benefit system projection. This approach improves the regional level forecasts and our ability to provide insight and attribute change at a regional level.

National unemployment is projected with reference to the forecast of the national unemployment rate published by NZ Treasury (see Figure 2.3). We project each region to a long-term unemployment level based on their historical experience of 'full employment'[24] while ensuring consistency with the forecast national rate as discussed in Section 2.3.2.

Statistics NZ produces historical regional unemployment rates, but these are not seasonally adjusted and are also subject to significant volatility. There are also no readily available long-term forecasts for regional unemployment consistent with NZ Treasury national rates. Our approach to generating these forecasts, developed in consultation with MSD, has been to:

» Seasonally adjust and smooth regional level historical unemployment rates

» Estimate regional unemployment rates in the 'full employment' environment, with reference to pre-GFC unemployment rates observed around the country

» Apply to each region the shape of reversion to full employment using the national rate forecasts

» Adjust the shapes to ensure the population weighted average unemployment rate matches the NZ Treasury projection of the national rate.

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[24] Full employment is generally defined as the condition where everyone willing and able to work is employed. In practice, it is a high rate of employment (and low rate of unemployment) where further increases in employment are difficult, and usually accompanied by strong wage inflation.

As discussed in Chapter 2, the national unemployment rate was 4.8% at June 2017 and is forecast to return to a 'full employment' rate of 4.3% by June 2021. Figure 6.2 shows our forecasts for regional unemployment rates. Regional unemployment rates vary considerably across the country from a high of 7.4% in Northland to a low of 2.9% in Nelson (in June 2017, seasonally adjusted and smoothed). Our projected rates reflect this spread.

The Nelson regional unemployment rate is now at a 10-year low, after a sharp decrease in 2016/17. The regional unemployment rate in Central also decreased over 2016/17 and is now close to the national average. Based on historical trends we do not expect these relatively low rates to be completely sustained. We have therefore forecast slight increases in these two regions. Elsewhere forecast unemployment rates broadly follow the national forecast trend.

Following the earthquake in 2010 the Canterbury region had a very low unemployment rate, with the labour market heavily affected by the earthquake recovery. In previous years we adopted a slight increase to the assumed long-term rate for the region, however the Canterbury region unemployment rate has increased in the previous year and we now project a very slight decrease in line with the national average.

Figure 6.2 Historical and forecast regional unemployment rates
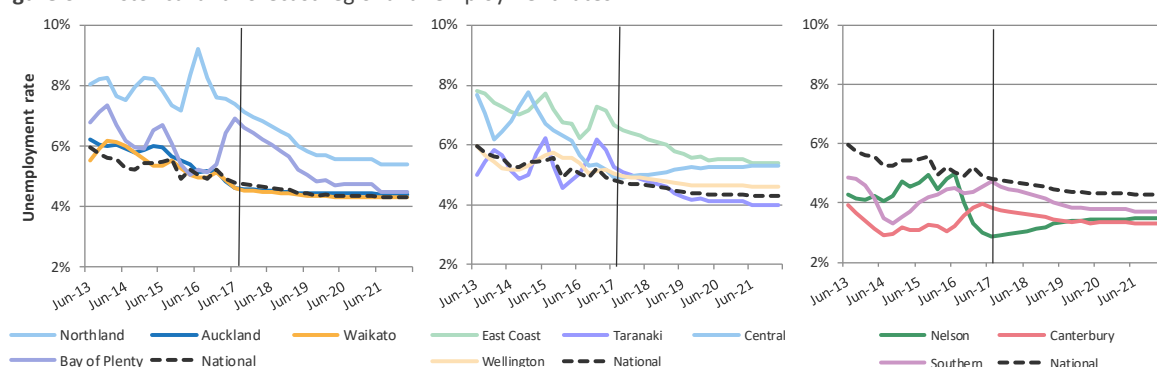
Over the past year there have been some other significant movements in the regional rates, in particular:

» The rate for Northland has decreased almost two percentage points, reversing last year's change
» In contrast Bay of Plenty saw an increase of 1.7 percentage points
» Rates for East Coast and Taranaki regions have also risen slightly (0.5 and 0.2 percentage points respectively)
» Auckland, Waikato and Wellington regions have seen small decreases close to the national average of -0.25 percentage points.

Despite recent trends for Canterbury and Southern regions, South Island regions continue to have lower unemployment than North Island regions. Further details of the assumed unemployment rates by region are given in Appendix C.

6.3   Actual versus expected results for 2016/17

Section 4.4 discussed actual and expected performance over 2016/17 at a national level. This section adds a regional perspective to these results. Figure 6.3 illustrates, at a very high level, the most significant changes to benefit dynamics at the regional level compared to what was expected based on the last projection of the benefit system, as at 30 June 2016.

Figure 6.3 Significant changes to benefit dynamics at the regional level in 2016/17 compared to expected
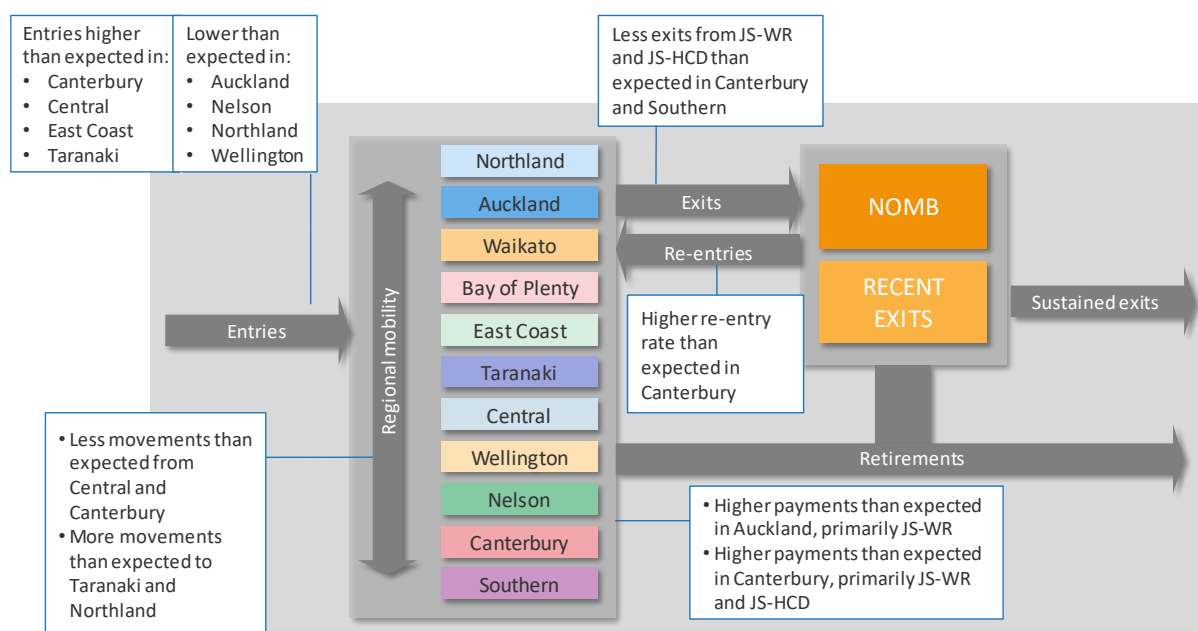
For clients in the 2016 projection cohort, numbers accessing benefit support over the year were close to expected (although this masks some differences by benefit type). This is shown in the left panel of Figure 6.4. The right panel of Figure 6.4 shows the actual versus expected payments over 2016/17 by region. Payments were higher than expected in all regions, but particularly in Waikato, East Coast, Central and Canterbury regions. In Waikato this result was primarily driven by SLP payments, whereas in East Coast, Central and Canterbury regions longer average durations on JS-WR and JS-HCD drove the results.

Figure 6.4 Actual and expected person quarters of benefit support (left panel) and total benefit payments (right panel) both by client's region as at June 2016

Region	Number of person quarters with benefit support, 000		
	Actual	Expected	A / E
Northland	21.2	21.4	99%
Auckland	133.8	133.6	100%
Waikato	35.2	35.1	100%
Bay of Plenty	37.4	36.8	102%
East Coast	24.6	24.1	102%
Taranaki	19.0	18.8	101%
Central	23.7	23.6	100%
Wellington	36.3	36.5	99%
Nelson	15.7	15.7	100%
Canterbury	33.4	33.0	101%
Southern	26.2	26.3	100%
Total	406.5	404.9	100%
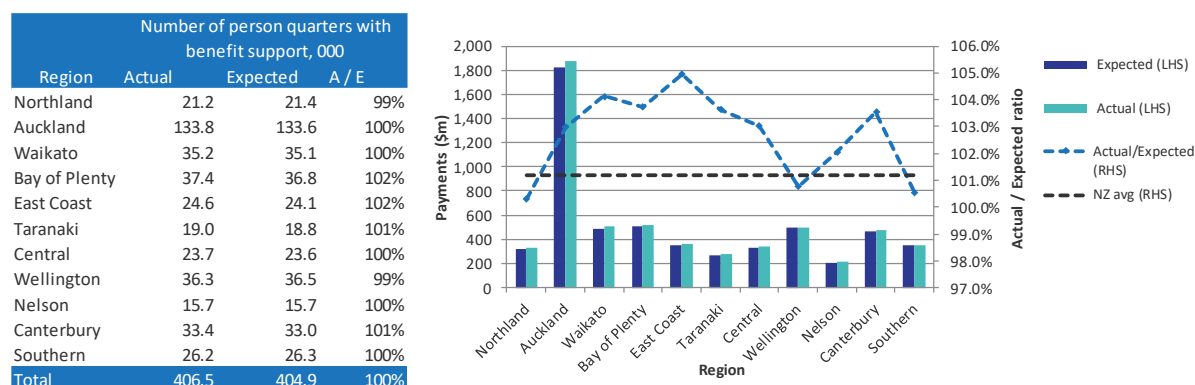
The regional differences are particularly clear when comparing transition rates for JS-WR clients. Figure 6.5 shows the exit and re-entry rates for these clients:

» The exit rate for JS-WR exits has decreased disproportionately in Southern, Canterbury, and East Coast regions
» The re-entry rate has decreased in most regions but remained flat or increased slightly in the Auckland, Bay of Plenty, Central and Canterbury regions.

Figure 6.5 Regional exit rates from JS-WR (left panel) and re-entry rates (right panel), year to June 2016 compared to year to June 2017
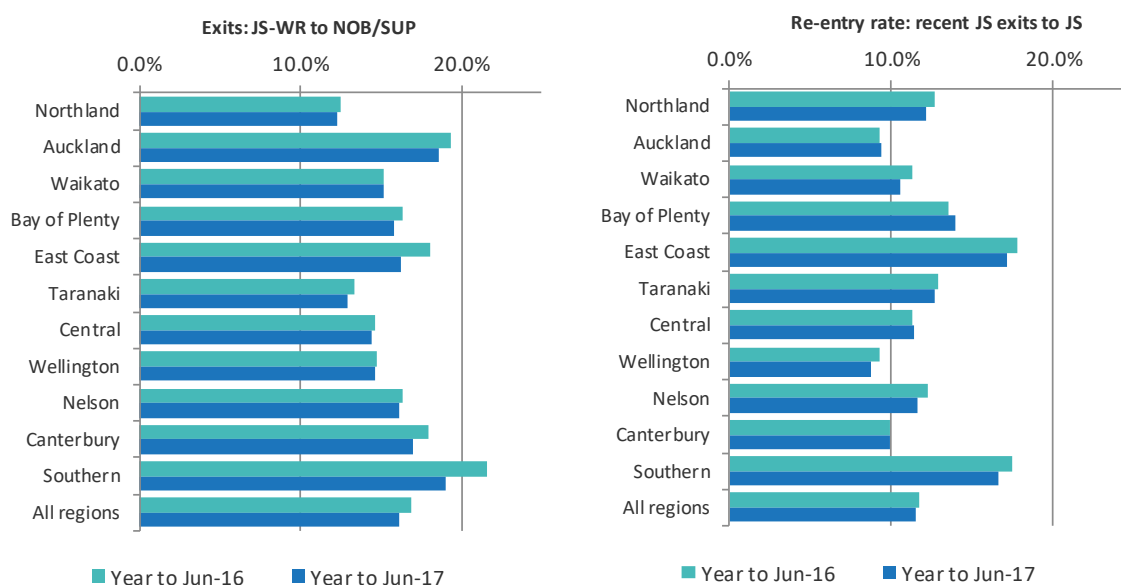
6.4 Regional level projection results

6.4.1 Results

Table 6.1 breaks down the future main benefit support years by client region. Note that these results are split based on a client's region at the 2017 projection date, and totals include all future years of main benefit support regardless of the future regional migration of each person.

Within New Zealand, clients in Taranaki have the highest average future years of main benefit support of 9.0 years while Auckland has the lowest average future years of main benefit support of 6.5 years, a difference of 2.5 years. The spread of future years of support is similar across all regions with the interquartile ranges being about 9 years.

The drivers behind the differences in average future years of support between regions are examined in Section 6.5.

Table 6.1 Current client projected future benefit support by region at 30 June 2017

Region	# at valn date (000)	Total future years of main benefit support, 000	Avg # future yrs on main benefits	Interquartile range # future yrs on main benefits	Avg future benefit payments ($000)
Northland	27.2	241	8.9	9.3	137
Auckland	173.5	1,136	6.5	8.6	108
Waikato	46.9	379	8.1	9.6	126
Bay of Plenty	48.6	383	7.9	9.0	122
East Coast	32.1	287	8.9	9.9	137
Taranaki	25.8	233	9.0	9.9	134
Central	35.4	297	8.4	9.7	129
Wellington	42.7	327	7.7	9.4	115
Nelson	20.4	144	7.0	8.5	109
Canterbury	45.3	372	8.2	9.9	124
Southern	35.7	286	8.0	9.4	117
Australia	3.8	34	9.0	9.8	80
All regions	**537.5**	**4,118**	**7.7**	**9.4**	**119**

There are a small number of clients residing in Australia; these clients are exclusively recipients of SLP. Although Supported Living beneficiaries tend to have a high number of future years of support, the average age of clients in the Australia region is 54, significantly higher than the average of 40 in other regions. The average future years of support of 9.0 is relatively low for SLP clients (segment average 10.7) and is driven by the shorter average time until retirement age.

Figure 6.6 shows each region's contribution to the current client cohort and current client future years of support. Overall, the distribution of the future years of support between regions roughly corresponds to the distribution of the benefit population by region, with differences due to the variation in average future years of support between regions. Nearly a third (32%) of current cohort clients are in Auckland but only 28% of the total future years of support are attributed to these clients.

Figure 6.6 Contribution of each region to current client cohort and total future years of support
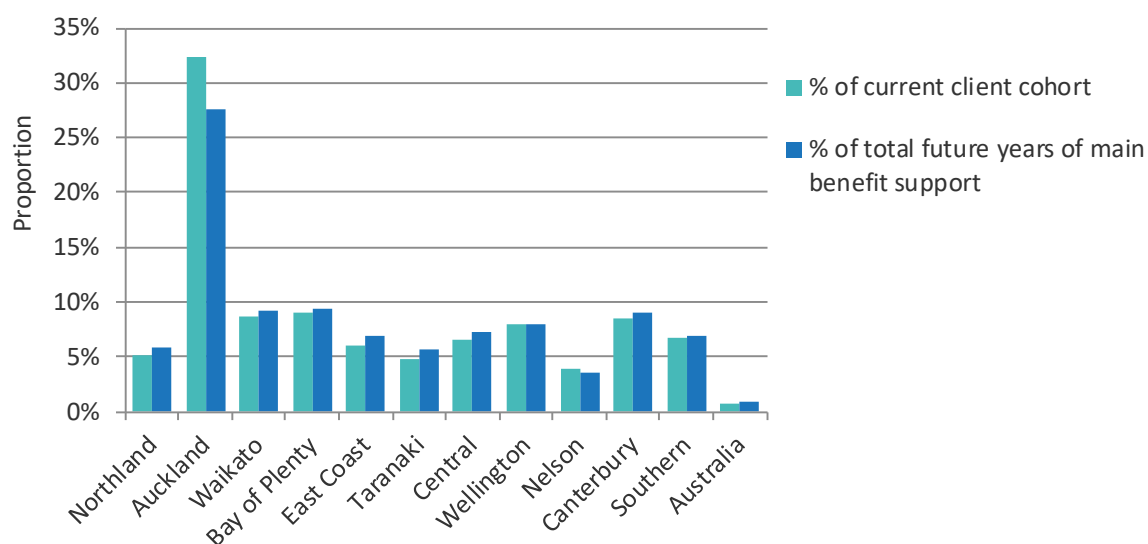
6.4.2   Change from 30 June 2016

As in the segment-level analysis, the total future years of support in a region combines the number of clients and the average future years of support. Both are shown in Figure 6.7, with comparison to the previous projection.

> Overall there has been a decrease in the number of people receiving main benefits since 30 June 2016. Client numbers in the East Coast, Taranaki, Central and Canterbury regions have increased.

Figure 6.7 Number of main beneficiary clients and their average number of future years of support
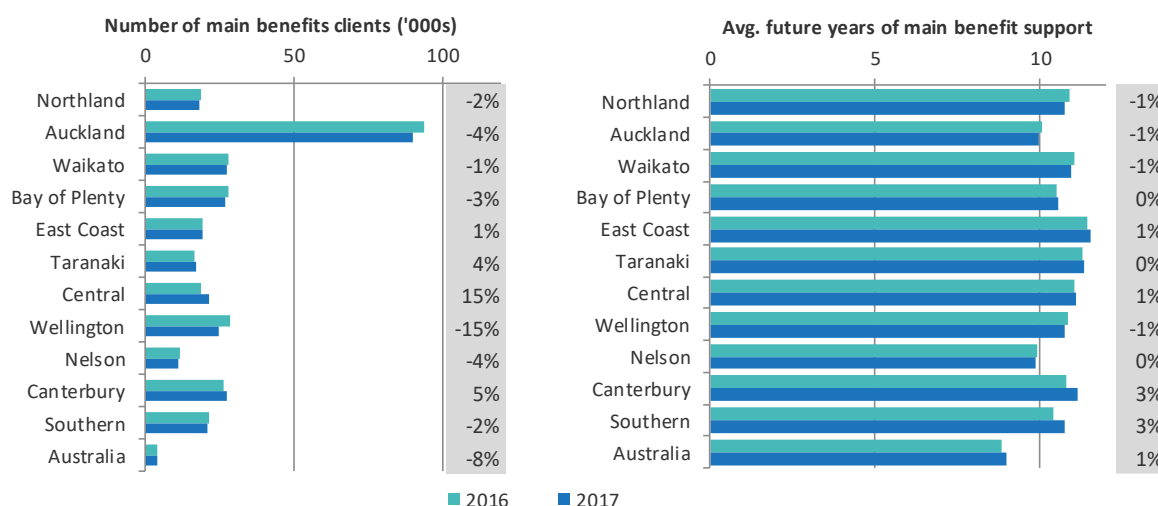
We observe:

- » The Canterbury region saw increases in the number of JS-WR, JS-HCD and SLP-HCD clients
- » Central and Taranaki saw increases across all benefit types and were the only regions to see increases in SPS client numbers
- » The Auckland region saw a decrease in client numbers for all main benefits types and in particular, a 9% decrease in JS-WR clients
- » Wellington also saw a decrease across all main benefit types.

> The average future years of support per main benefit client is similar to last year in most regions. However, in the Canterbury and Southern regions this increased by 3%.

We discuss the impact of changes in demographics of the region in Section 6.5.4. Most other regions saw little change in the average future years of main benefit support however, although this hides a reduction in future SPS support offset by an increase in future JS support.

6.4.3   Regional breakdown of year-on-year change under management influence

As discussed in Chapter 4, once changes to methodology, economic factors and expected evolution of the benefit system over the year have been taken into consideration, there is an increase of 122,000 future years of main benefit support. This difference is the influence of policy change and management of the benefit system. Of the increase 98,000, relates to clients that were part of the June 2016 cohort.

We have split this 98,000 increase in main benefit support years by region, shown in Figure 6.8. The column in the centre shows the percentage change, which recognises the relative size of regions.

Figure 6.8 Break-down of the additional 98,000 years of main benefit support due to experience, by June 2016 region (left panel), contribution by future main benefit type also shown (right panel).

Region	% change
Northland	+1.8%
Auckland	+0.9%
Waikato	-0.1%
Bay of Plenty	+4.6%
East Coast	+5.1%
Taranaki	+2.7%
Central	+4.3%
Wellington	+0.5%
Nelson	+3.6%
Canterbury	+8.3%
Southern	+5.2%
Overall	+2.8%
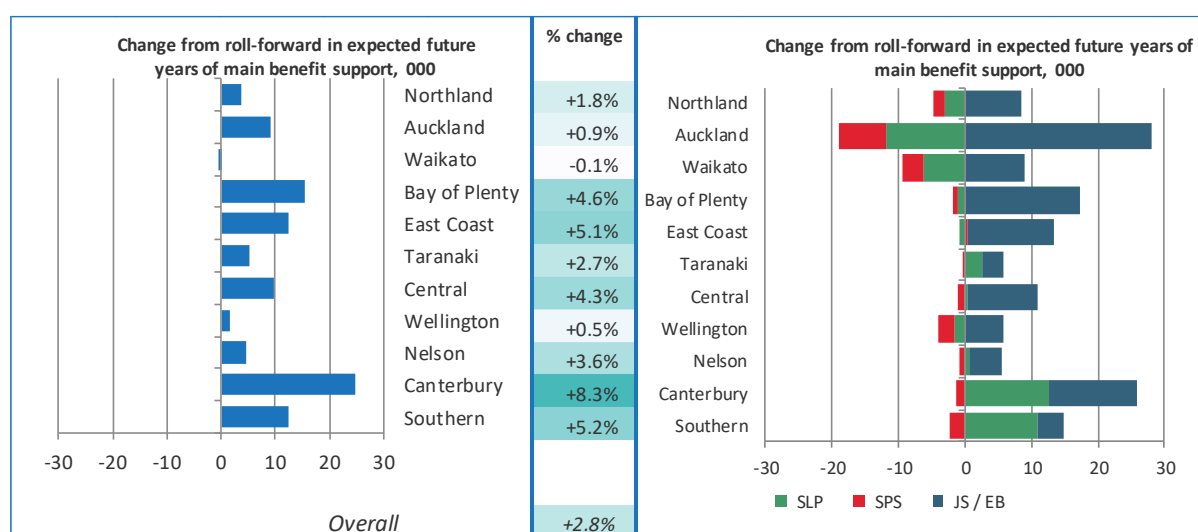
As noted in Section 4.6.2 the increase is spread across all regions and largely relates to increases future years of JS support outweighing decreases in future years of SPS support.

» All regions except Waikato saw an increase. Increases were largest in the Canterbury (8.3%), Southern (5.2%) and East Coast (5.1%) regions.
» In the Canterbury and Southern regions future years of SLP support increased in contrast to the decreases in other regions. In the Canterbury region the exit rate from SLP-HCD has decreased, while in the Southern region the JS-HCD to SLP-HCD transfer rate has increased (opposite to the national trend).
» Canterbury and Southern represent only 16% of total future support years but comprise 38% of the 98,000 increase.
» In contrast Auckland represents 28% of total future support years but only 9% of the increase in future years. Similarly, the Wellington region represents 9% of total future support years but only 2% of the increase in future years.

Understanding the increase in Canterbury

The Canterbury labour market has behaved very differently to that of other regions since 2011, with earthquake recovery efforts distorting the labour market. This means the ability to split underlying labour market effects from management performance is more difficult, and therefore some caution must be taken when interpreting the results for the Canterbury region.

Over 2011 to 2014 the Canterbury region had high benefit system exit rates and low re-entry rates, consistent with its then very low unemployment rate. This was partly attributed to rebuilding activity after the earthquakes. Over the 2014-2016 we saw trends in benefit dynamics revert to levels more comparable with other regions (although measured unemployment remained low). This year, the unemployment rate has risen to 4.9% and the Canterbury region has had another large increase due to experience (+8.3%) for current clients in the previous year's cohort. While most regions saw an increase this year, Canterbury has the largest percentage change. Further, Canterbury is the only region to have seen large increases for three years in a row.

The biggest proportionate increase is future time with JS-WR support (5%), this is followed by increases to future time with JS-HCD support (3%) and SLP support (2%). Some key dynamics, which can be seen in Figure 6.9, are:

» The re-entry rate for those having received benefit support in past 3 years has further increased over 2016/17, this is now nearing the average rate for other regions.
» The exit rate from SLP-HCD has decreased in Canterbury. It is now slightly below the national average. Canterbury has a relatively large share of SLP clients, so this has a moderate to large impact.
» We observed a decreased exit rate from JS-HCD in Canterbury in 2015/16 and this has been maintained in 2016/17. This is still slightly higher than the average exit rate across all other regions.
» The exit rate from JS-WR has decreased in Canterbury. It is now roughly in line with the average across other regions.

Figure 6.9 Selected transition rates in Canterbury compared to the rest of New Zealand. Likelihood of a person not on benefits (but having received a benefit in the previous three years) re-entering the benefit system next quarter (top left), SLP-HCD exit rate (top right), JS-HCD exit rate (bottom left) and JS-WR exit rate (bottom right).
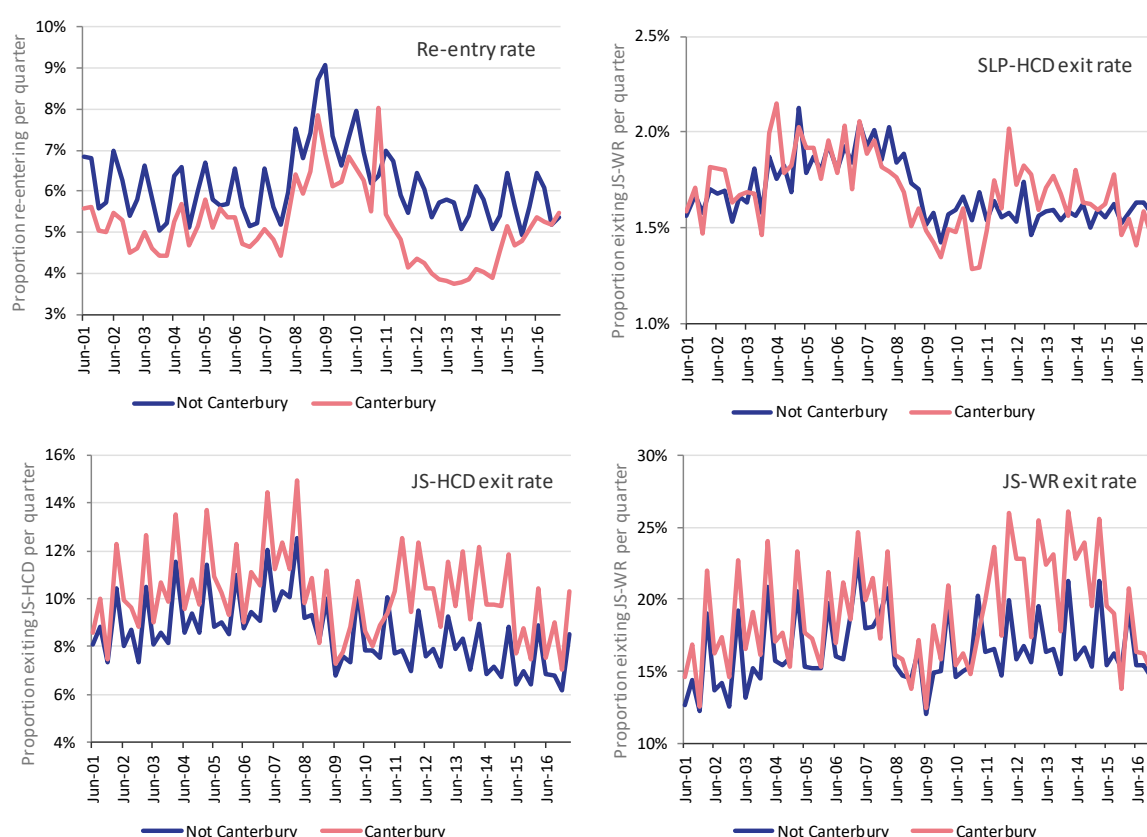
We have recognised most of these trends in our projection assumptions, leading to increases in future durations. Clients on benefits receive support for longer and those that exit are more likely to re-enter.

While durations have increased substantially for most segments, they are not out of line with national averages. Part of the regional volatility is that Canterbury region dynamics (which were unusually favourable in 2012 and 2013) are gradually returning to a more stable state.

6.5 Understanding regional differences

6.5.1 Differences in regional labour markets

Differences in regional labour markets, mix of beneficiary types, ethnic composition and other demographics can vary significantly by region, and these differences have an effect on projected future durations of benefit support. A summary of differences in regional labour markets and average future durations with benefit support is shown in Table 6.2. Shading indicates significant departures from the average for that segment. Some notable differences between regions are:

» Clients under age 25 in Northland, Bay of Plenty, East Coast and Taranaki are projected to spend about an extra year with main benefit support compared to the national average. Young clients in Wellington and Auckland are project to spend about half a year less time supported by main benefits.

» Those over 25 and receiving a non-SLP main benefit in East Coast and Taranaki are projected to spend an extra year with main benefit support compared to the national average. In contrast, those in Nelson and Auckland are projected to spend a year less with main benefit support.

» SLP clients over 25 have longer projected durations in Wellington. This region also has the lowest average age for SLP clients (the primary driver of future duration).

» Clients currently not receiving main benefits (Supplementary only, Orphans Benefit and Recent exits) in the East Coast and Northland regions are more likely to re-enter main benefit support, indicated by the extra projected year of main benefit support compared to the national average. In contrast, clients in Auckland not currently receiving main benefits are projected to require half a year less main benefit support than the national average.

Much of these differences are attributable to regional labour markets, but they are also explained by the significant demographic differences between regions.

Table 6.2 Expected number of future years on main benefits by region and starting segment

Region	UE rate, Jun 17	Expected years on benefit								
		<25, first benefit <20	<25, first benefit >20	<25, SLP	25+ Main ben, >75% last 3yrs	25+ Main ben, >75% last 3yrs	25+ SLP	Supp only / OB	Recent exits	Total
Northland	7.4%	14.9	10.3	24.2	10.7	7.6	10.3	3.5	5.8	10.0
Auckland	4.6%	12.9	7.7	23.0	9.8	6.7	10.5	2.1	3.7	9.0
Waikato	4.6%	13.7	8.4	24.4	11.2	7.5	10.6	3.1	4.8	11.1
Bay of Plenty	6.9%	14.0	9.4	24.0	10.4	7.5	10.6	3.3	5.5	11.1
East coast	6.7%	14.4	9.8	24.6	11.9	8.3	11.0	3.6	5.9	11.5
Taranaki	5.2%	14.5	9.4	25.3	11.5	8.0	10.7	3.2	5.5	9.9
Central	4.9%	13.6	8.1	24.9	11.1	7.6	11.0	3.2	4.9	10.7
Wellington	5.0%	13.0	7.4	24.9	10.7	7.3	11.4	2.6	4.2	10.6
Nelson	2.9%	13.7	8.4	25.7	9.7	6.7	10.1	2.8	4.3	10.7
Canterbury	3.9%	14.1	8.5	25.4	11.6	7.8	10.9	2.7	4.7	11.3
Southern	4.7%	13.2	7.3	25.5	10.7	7.2	11.0	2.9	4.8	11.0
Australia				25.1			8.9			10.8
All regions	5.1%	13.6	8.2	24.3	10.6	7.3	10.7	2.6	4.6	10.6

6.5.2 Differences in segment composition by region

As with client segments, the mix of clients will heavily influence each region's average future durations. While regional composition by segment tends not to vary much from year to year, this year we have a new client segmentation. Given that benefit (and segment) type is the most important predictor of future lifetime benefit support, it is important to understand how differences in the mix of beneficiaries affects each region's total and average future years of support. Regions with higher (relative) proportions of clients in high future duration segments, such as Under 25s and SLP, will tend to have higher average durations as a result. Australia is largely excluded from the discussion below, given it is dominated by SLP

clients. We compare relative numbers of beneficiaries in each region in Figure 6.10, and make the following comments:

» Taranaki has the highest proportion of clients aged under 25 (15%), in contrast Auckland has the lowest (10%)

» The Auckland region has the greatest proportion of clients in 'Not On Main Benefits' and 'Recent Exits' segments. This is partly due to a large number of people in the region receiving Accommodation Supplement and no main benefit. This leads to significantly lower results for the region on a per client basis. Nelson and Bay of Plenty also have a relatively high proportion of clients not receiving main benefit support.

» Northland has twice as many main benefits clients aged over 25 with heavier recent benefit support than less intense recent support. In contrast, the mix in Canterbury is close is 1:1.

» Auckland has a relatively high proportion of JS-HCD clients among those with main benefit support aged over 25. East Coast has a relatively high proportion of SPS clients and less JS-HCD.

» Canterbury has the highest proportion of Supported Living clients (or equivalently, the lowest proportion of non-SLP clients). SLP clients tend to require support for much longer durations. The share of SLP clients aged over 25 ranges from 29% in Canterbury to 17% in Bay of Plenty and 18% in Auckland.

Figure 6.10 Split of client numbers by top level segment and region, recent exits not shown
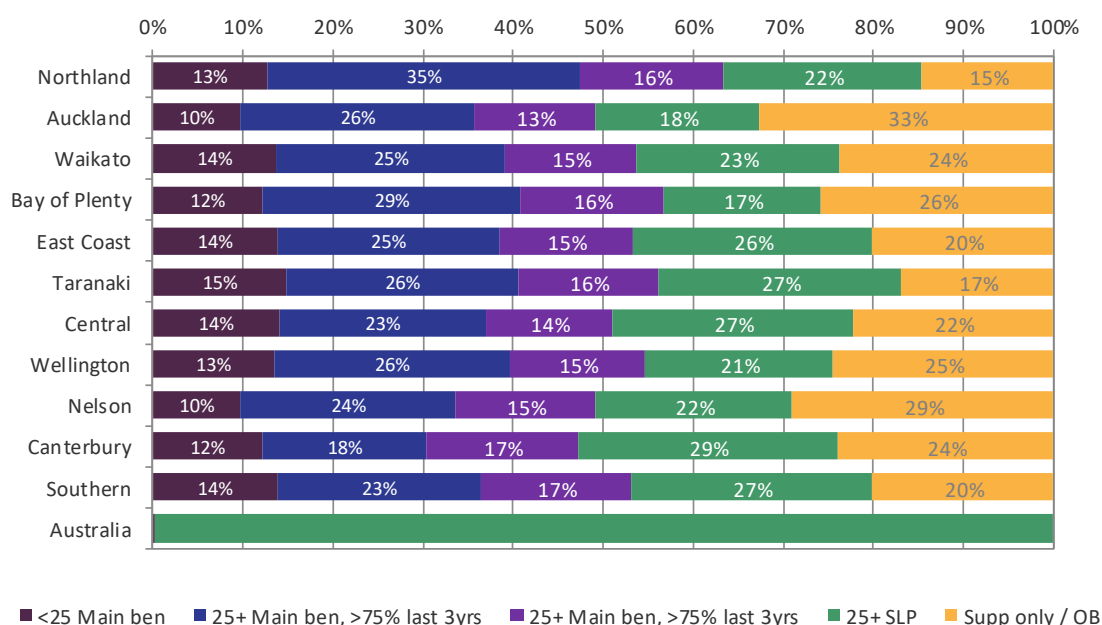
6.5.3   Differences in educational attainment by region

As discussed in Section 3.2, we have new educational attainment information from the Ministry of Education for clients under 25. We have matched data for 86% of the June 2017 cohort aged under 25 and we can use this improved data to consider regional differences in how education and benefit system pathways interact.

Of those that can be matched, over half of our current client cohort left school without attaining NCEA L2 (or higher). About a third of these clients (or 18% of all matched) have subsequently enrolled in a NCEA

L2 or higher qualification after leaving school[25]. These proportions vary by region as shown in Figure 6.11, we note:

» Wellington has the highest proportion of clients attaining NCEA L2 or higher at school (55%) and Northland the lowest (35%). The higher levels of educational attainment contribute to the average projected durations for matched clients being lower in the Wellington region (9.7 future years) than the Northland region (12.5 future years).

» Canterbury and Nelson have relatively high rates of enrolments in NCEA L2 or higher course post school, around 40% of those leaving school without NCEA L2 have subsequently enrolled in NCEA L2 or higher courses.

» Northland and Bay of Plenty have relatively low rates of educational attainment.

Figure 6.11 Proportion of clients by attainment of NCEA L2 or higher (left panel) and associated average future years of main benefit support (right panel), both panels among current clients aged under 25 at June 2017 and by region
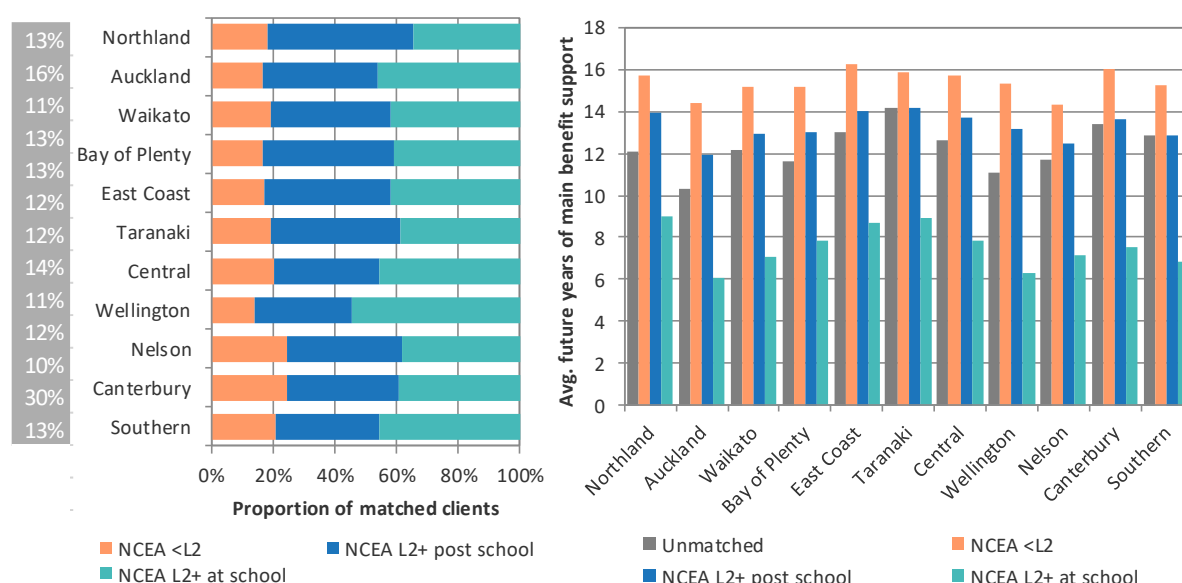
As shown in the right panel of Figure 6.11 the average future years of main benefit support is highest for clients who have not attained NCEA L2 and lowest for those who attained NCEA L2 at school. The difference is significant and ranges from 7-9 years across regions. Northland has the smallest difference at 6.7 years and Wellington the largest at 9.0 years.

While these are large differences in future durations it is important to note that this does not show causality. Low educational attainment may act as a proxy for other challenges a young person faces, for example home and family dynamics, disability or other factors.

The proportion of clients with an intervention (suspension or stand-down) while at school also varies by region as shown in Figure 6.12. Those with an intervention at school have longer projected durations with benefit support. Lower educational attainment at school and interventions are correlated and we have not attempted to attribute the increase in future years between them here.

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[25] We do not have information on tertiary course completions – only enrolments.

Figure 6.12 Proportion of clients aged under 25 with an intervention at school (left panel) by region and average future years of main benefit support for those with and without interventions by region (right panel)

	% with intervention	Avg. total days intervention
Northland	47%	23
Auckland	42%	18
Waikato	44%	18
Bay of Plenty	37%	19
East Coast	45%	17
Taranaki	52%	21
Central	50%	22
Wellington	42%	19
Nelson	42%	21
Canterbury	47%	22
Southern	48%	21

For older clients this new education data is not available, but we still have an educational attainment field collected by MSD which is self-reported and frequently missing. It does not provide information on whether the qualification was granted at school or post-school. Figure 6.13 shows the proportion of clients aged over 25 by attainment of NCEA L2 or higher using this field. Clients with missing information have been excluded. The regional variations are similar to those seen for clients aged under 25:

» Wellington, Auckland and Bay of Plenty have relatively high rates of NCEA L2 qualification

» Southern shows the most relative difference between the two age groups (and datasets). This difference could be related to the introduction of lower cost tertiary education in Southland.

The differences in future durations of main benefit support between the education groups are not as striking using this information. The signal is diluted due to less accurate education fields, and the influence of educational attainment as a predictor may dissipate for older clients with more accumulated benefit history. However, there is much more regional variation in the differences:

» In Northland, Bay of Plenty, East Coast and Taranaki there is little difference in the projected durations of support for clients with and without NCEA L2.

» By contrast, in the rest of the regions (Auckland, Waikato, Central, Wellington, Nelson, Canterbury and Southern) which include New Zealand's largest cities those who report having attained NCEA L2 are projected to spend, on average, about one less year supported by benefits.

Figure 6.13 Proportion of clients by attainment of NCEA L2 or higher (left panel) and associated average future years of main benefit support (right panel), both panels among current clients over 25 at June 2017 and by region
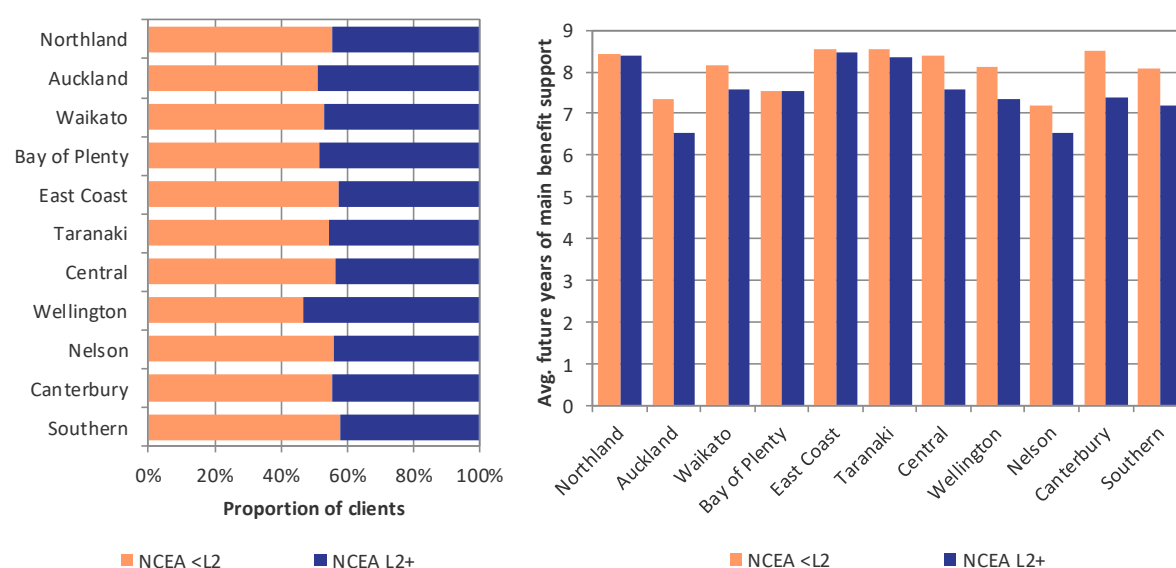
6.5.4   Breakdown of regional differences in projected future durations of support

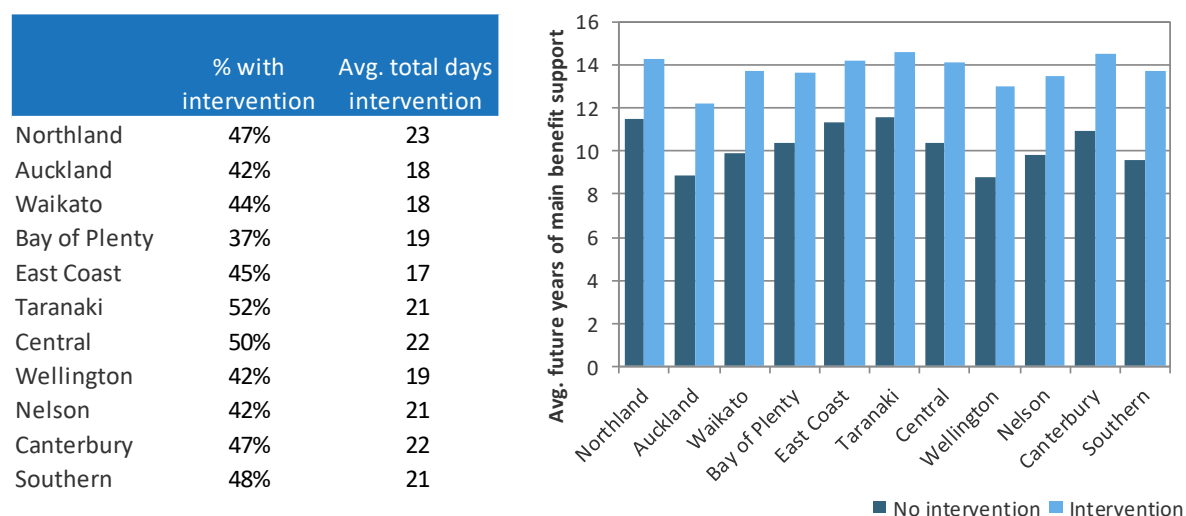The discussion of segment distribution and education variables motivates an examination into which drivers are causing differences in future pathways between regions. The projection models allow us to unpack these differences. Table 6.3 shows how much various predictors contribute to explaining differences between the estimates of future durations of main benefit support in each region, compared to the national average. Note that this is a different type of analysis to the segment-level analysis of the relative importance of different characteristics in predicting future durations, discussed in Section 5.6.1. The relative importance of variables is similar across regions. Here, we compare the demographic composition of each region to the national average to understand what is driving regional differences in future duration estimates. For example, in most regions the age profile is close to the national average, but an older age profile in Nelson significantly lowers average future durations due to a shorter average time to retirement.

> The distribution of client benefit type plus benefit history explain more than three times as much variation in average future duration estimates between regions than specific regional factors (such as regional unemployment rates, and region-specific events like the Canterbury earthquake).

The attribution is based on partial dependence effects, holding other factors constant. In reality effects are related to each other; for example, benefit type will vary with the unemployment rate.

Table 6.3 Breakdown of drivers of difference in average future years of support, regions compared to national average

Region	Difference breakdown	Commentary
Northland **+1.0 year**		The average number of future years of support is 1 year higher than the national average. The distribution of clients by benefit type and benefit history increase the average future duration by 10% This is because Northland has the lowest proportion of Supplementary only clients out of all regions. Furthermore, the region has the largest proportion of Māori clients which increases the future duration by 3%. The relatively low proportion with NCEA L2 only increases the future duration by 1-2%.

Region	Difference breakdown	Commentary
Auckland **-1.1 years**	Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, CP/YJ, Corrections, Other	The average number of future years of support is 1.1 years lower than the national average. Auckland has the highest proportion of SUP only clients and its main benefit clients on average have a shorter history of benefit receipt (JS, SPS and SLP). These effects reduce the average future duration by 11%. Region-specific factors decrease the average future duration by 3%. It also has a high proportion of Pacific peoples and Asian clients which reduces the average future duration by 1%.
Waikato **+0.4 years**	Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, CP/YJ, Corrections, Other	The average future duration in Waikato is just 0.4 years higher than the national average. The region has a relatively high proportion of Māori clients increasing the average future duration 1%. A relatively high proportion of clients have had previous spells, increasing the average future duration by 3%. Waikato also has a higher proportion of younger clients; nearly one in five is under 20 compared to one in six nationally. This age effect increases average future duration by 1%.
Bay of Plenty **+0.2 years**	Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, CP/YJ, Corrections, Other	The average future duration in the Bay of Plenty is close to the national average (only 0.2 years higher). There is a relatively low proportion of SLP clients and a high proportion of SUP only clients decreasing the average future duration by 5%. The dynamics of the region itself decrease the average future duration a further 1%. A slightly younger client cohort and high proportion of Māori clients results in an increase in average future duration of 5%.
East Coast **+1.3 years**	Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, CP/YJ, Corrections, Other	The average future lifetime duration in East Coast is 1.3 years higher than the national average. The region has a high proportion of clients receiving SLP. Furthermore, clients in the region on average have a year longer history of benefit receipt. These two effects combined increase the average future duration by 9%. Regional dynamics add 3% and a high proportion of Māori clients (over 50%) further increases the average future duration 3%. A higher proportion of clients with a history in public housing adds a further 1%.
Taranaki **+1.4 years**	Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, CP/YJ, Corrections, Other	The average future lifetime duration in Taranaki is 1.4 years higher than the national average. Taranaki has a relatively low proportion of SUP only client and a relatively high proportion of SLP clients. Clients tend to have a longer history of benefit receipt and the average current duration among jobseekers is half a year longer than the national average. Combined these effects increase the average future duration by 13%. Regional dynamics increase the estimate another 4%.
Central **+0.7 years**	Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, CP/YJ, Corrections, Other	The average future lifetime duration in Central is 0.7 years higher than the national average. Central has a relatively high proportion of SLP clients and a low proportion of recent exits. In addition, a higher proportion of Central clients are returning clients. These factors combine to increase the average future duration by 9%. There is a reduction of 1% due to the slightly younger age profile.

Region	Difference breakdown	Commentary
Wellington **+0.0 years**		The average future duration in Wellington is very close to the national average. The region has a higher proportion of JS-HCD and recent exit clients and a lower proportion of SLP, JS-HCD and SPS clients, reducing the average future duration 2%. This is offset by the increase due to a relatively younger age profile.
Nelson **-0.6 years**		The average future lifetime duration in Nelson is 0.6 years lower than the national average. South Island regions have lower unemployment levels, and Nelson currently has the lowest. More favourable employment conditions partly explain the 1.3% reduction in average future duration due to regional factors. Nelson also has a relatively high proportion of SUP only and Recent exits clients and an older age profile (average age 1 year older than the national average), reducing the average future duration 1%.
Canterbury **+0.5 years**		The average future lifetime duration in Canterbury is 0.5 years higher than the national average. This is primarily driven by benefit type; Canterbury has the highest proportion of SLP clients, this combines with a low proportion of SUP only clients to increase the average duration by 7%. A high proportion who previously had JS-HCD support adds 1%. These increases are partially offset by an older age profile among SLP clients.
Southern **+0.4 years**		The average future lifetime duration in Southern is 0.4 years higher than the national average. Southern has a relatively high proportion of SLP clients; benefit type adds 3% to the average future duration. A low proportion of first time clients and longer average durations among SLP clients adds another 4%. Regional dynamics increase the average future duration by 1%, which is offset by the low proportion of Māori clients which reduces the future duration by 1%.
Australia **+1.4 years**		The average number of future years of support is 1.4 years higher than the national average. Clients residing in Australia are receiving SLP almost exclusively, increasing the average future duration by 80%. However, this is nearly completely offset by age and other minor effects. The average age of a client in the region is 54, significantly higher than the national average of 40 overall and 48 for SLP clients. This older age profile means a shorter average time to retirement, reducing the average future duration by 60%.

6.6   Projected numbers by region

Figure 6.14 shows the recent history and projected quarterly numbers with main benefit support by region. This is the combination of the current client projection (for those projected to continue to receive benefit support) and future client numbers (incoming clients). These correspond to the number of clients receiving main benefit clients at some point during the quarter (whereas the results in Section 5.7 were numbers at the end of quarter and are lower).

Figure 6.14 Historical and projected quarterly numbers by region
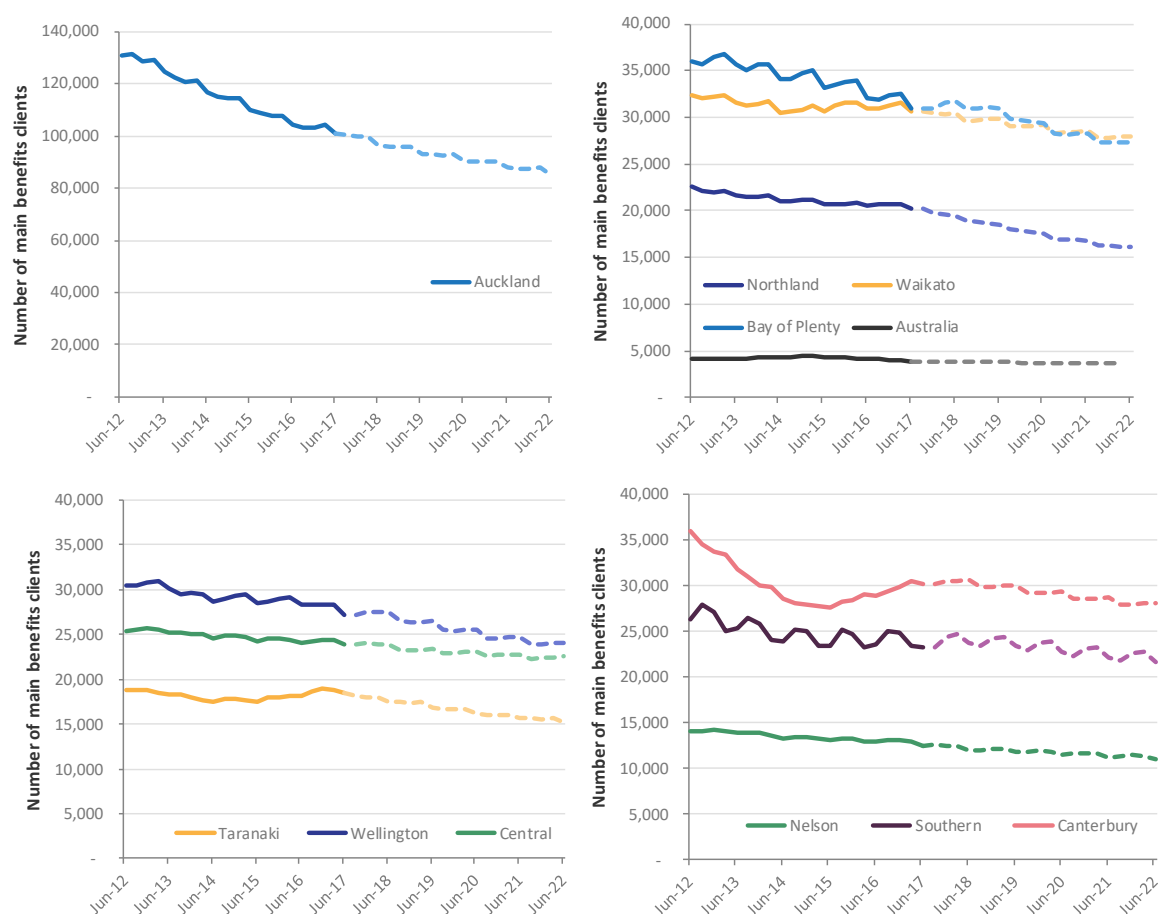
As discussed in Section 5.7, current client projected numbers are more reliably estimated than new entrants (and their underlying characteristics like region). The number of future entries is dependent on the labour force and other demographic trends, with numbers very sensitive to changes in the economy. We do allow for this sensitivity in the projection but expect more divergence from projections over time compared to for current clients.

Over the next five years we have forecast decreases in each region (between 8-20%). The regional trends largely follow the corresponding regional unemployment rate assumptions.

7 ANALYSIS BY PAYMENT TYPE

7.1   Introduction and highlights

Chapter 4 discussed the main results of the projection as at 30 June 2017, and provided a detailed analysis of change. The last two chapters provided analysis by segment and region, respectively.

This chapter provides detailed analysis of the benefit system by future payment type. This is different from Chapter 5 which provides an analysis by segment type as at the date of the projection. That is, this chapter focuses on benefit at the time of payment, rather than the benefit received at the projection date. Analysis in this chapter forecasts how much of each payment type is likely to be paid over the lifetime of current beneficiaries. Another difference to Chapter 5 is that supplementary assistance payments and payments related to future transfers are not linked to the clients' segment on the projection date. Breaking the future payments down this way enables us to analyse specific payment types, such as Accommodation Supplement (AS), Disability Assistance (DA) and Childcare Subsidy (CCS).

Figure 7.1 Payment categories included in our projection model
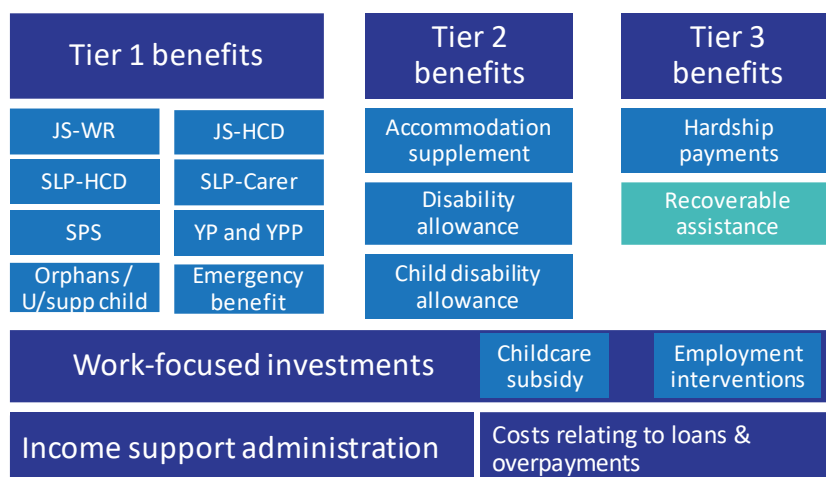
This chapter also includes analysis of debts and loans to clients, as well as operating expenses.

Highlights

Aggregate payments were 101.8% of those forecast for the year. This was driven by:

» Jobseeker payments were 4.3%, or $59 million, higher than forecast due to slowed exits
» Childcare Subsidy (CCS) payments were 22% higher than forecast due to increases associated with the Child Material Hardship package
» (Non-recoverable) Hardship Assistance (HS) payments were 26% higher than forecast due to changes in the classification and treatment of certain grants

Projected payments to the current cohort total $72.2 billion, which includes $8.3 billion for expenses and net loans. This is a decrease of $3.8 billion from the 2016 projection, the decrease driven by changes to inflation and discounting assumptions.

Main benefits make up two thirds of the future payments to current clients (65%). The largest contribution is from SLP-HCD (28%), with significant portions related to SPS (13%), JS-HCD (11%) and JS-WR (8%). Accommodation Supplement (AS) is the largest component (14%) of the non-main benefits.

Compared to 2016 forecasts for 30 June 2017:
» Forecast JS-WR benefits have increased $0.8 billion and future JS-HCD payments have increased $0.7 billion.
» Forecast SPS benefits have decreased $0.5 billion, which follows substantial decreases in previous reports.
» Forecast CCS payments have increased significantly in proportional terms (10%). This relates to increases in both payment rates and changes to part-time work expectations as part of the Child Material Hardship package.
» Forecast non-recoverable HS has increased substantially ($0.5 billion increase to $3.1 billion), this relates to a change in classification of certain grants by MSD (see Section 7.3.5).

The proportion of fraud within benefit overpayments is at its lowest level since at least 2012. We are not able to say whether this is due to better prevention or lower levels of fraud detection.

7.2   Main results by payment type

7.2.1   Actual versus expected payments

Actual payments were slightly higher than forecast (see also Section 4.4). The main features are:

» Aggregate payments were 101.8% of those forecast for the year. This was driven in equal parts by Tier 1 payments being 1.1% higher than forecast and the smaller Tier 3 payments (HS and EI) being 24% higher than forecast.

» JS-WR payments were 5% higher than forecast over the year, representing $41 million over the year. This relates to the slowing of exit rates seen this year and is a large driver of the Tier 1 payments being higher than forecast.

» JS-HCD payments were 2.5% higher than forecast over the year, representing $18 million over the year. As for JS-WR, this relates to the slowed exit rates seen this year.

» SPS payments were 1% lower than forecast over the year.

» SLP-HCD payments were as forecast over the year.

» Emergency Benefit payments were 3% lower than forecast, use of this benefit is not very common and this difference only represents $0.7 million over the year.

» Tier 2 benefits were 0.1% lower than forecast levels. Child Care Subsidy (CCS) payments were 20% higher than forecast. Some CCS payment rates increased as part the Child Material Hardship Package (CMHP), not allowed for in the previous projection. The CMHP also increased part-time work requirements for some clients from 15 hours to 20 hours per week, which also increases CCS use. Other Tier 2 payments were in line with, or slightly below forecasts.

» Tier 3 payments were 24% higher than forecast, entirely attributable to much higher Hardship (HS) payments. This is due to a change in the classification of certain grants from recoverable to non-recoverable. We discuss HS payments further in Section 7.3.5.

Other result tables are provided in Appendix J.

7.2.2   Projected payments to current clients

Table 7.1 shows the total future projected payments by client segment at 30 June 2017 and 30 June 2016. Projected future benefit payments to the current cohort totals $63.9 billion. Adding an additional $8.3 billion for expenses and net loans give total projected payments of $72.2 billion. We subdivide this total in two ways: by current client segment at 30 June 2016 in Table 7.1 and by future benefit type in Table 7.3.

Compared to 2016 projections there are 10,000 fewer clients and total future payments have decreased by $3.8 billion. This decrease is largely driven by changes to inflation and discounting assumptions (see Table 7.3).

Future benefit payments to clients currently under age 25 make up 14% of all forecast payments, despite being only 9% of the current client population. Another 22% of total future payments are forecast to be made to current SLP clients aged 25 and over. Those in the NOMB and Recent exits segments make up 43% of the current client population but only 19% of future payments.

Table 7.1 Total future payments to current clients by client segment as at 30 June 2017 and 30 June 2016

Segment			2017			2016		
			Number at 30 June	Total future benefit payments ($m)	Avg. future benefit payments ($k)	Number at 30 June	Total future benefit payments ($m)	Avg. future benefit payments ($k)
Under 25s	First ben aged < 20	YP/YPP	2,466	527	214	2,752	568	206
		JS-WR/EB	15,679	2,375	152	17,164	2,524	147
		JS-HCD	6,303	1,231	195	6,306	1,241	197
		SPS	10,700	2,688	251	12,189	2,983	245
	First ben aged > 20	JS-WR/EB	3,296	268	81	3,476	288	83
		JS-HCD	1,448	184	127	1,369	179	131
		SPS	1,511	281	186	1,586	295	186
		SLP	7,905	2,499	316	7,949	2,616	329
		Sub-total	49,308	10,054	204	52,791	10,694	203
Over 25 and on a main benefit	>75% of last 3yrs on main benefits	JS-WR/EB	29,323	4,009	137	28,827	4,016	139
		JS-HCD	37,283	5,361	144	37,455	5,593	149
		SPS Chd 0-2	9,280	2,350	253	9,878	2,591	262
		SPS Chd 3-13	28,134	5,811	207	30,539	6,298	206
		Subtotal	104,020	17,531	169	106,699	18,498	173
	<75% of last 3yrs on main benefits	JS-WR/EB	26,671	2,343	88	27,490	2,520	92
		JS-HCD	20,212	2,113	105	19,338	2,108	109
		SPS Chd 0-2	5,148	914	177	5,091	902	177
		SPS Chd 3-13	8,749	1,291	148	8,449	1,229	146
		Subtotal	60,780	6,660	110	60,368	6,759	112
	Supported Living	Carer	8,350	1,417	170	8,292	1,450	175
		Partner	7,074	774	109	7,420	859	116
		No reassessment	30,022	5,308	177	30,580	5,652	185
		2yr Mental health	20,200	4,351	215	19,608	4,391	224
		2yr Other	28,611	4,120	144	29,021	4,335	149
		Subtotal	94,257	15,971	169	94,921	16,687	176
NOMB	>33% last 5yrs on main benefit		30,916	2,932	95	32,329	3,133	97
	<33% last 5yrs on main benefit		74,528	3,238	43	74,144	3,443	46
	Sub-total		105,444	6,170	59	106,473	6,576	62
Recent Exits	>33% last 5yrs on main benefit		63,722	5,429	85	65,590	5,640	86
	<33% last 5yrs on main benefit		60,013	2,091	35	60,696	2,277	38
	Sub-total		123,735	7,520	61	126,286	7,917	63
All segment sub-total			537,544	63,906	119	547,538	67,131	123
Expenses + Net loans				8,338			8,890	
Grand total				72,244			76,022	

Table 7.2 also shows the projected payments for future clients, that is those entering in each of the next five years. The estimate for new entrants in 2017/18 is $7.02 billion, slowly falling to $6.75 billion in 2021/22. The decrease aligns with Table 4.2; the falling pattern is due to a decrease in new client entries with the falling unemployment rate. Chapter 8 provides more information on future entrants.

Table 7.2 Current and future client benefit payments subdivided by future benefit type[26] [27]

Component	Current client projected payments $billion	Future client total projected payments $billion, for clients entering the benefit system in:				
		2017/18	2018/19	2019/20	2020/21	2021/22
Tier 1						
JS-WR	5.9	0.92	0.91	0.87	0.87	0.86
JS-HCD	7.6	0.87	0.88	0.85	0.86	0.85
SPS	9.4	1.09	1.09	1.06	1.06	1.05
SLP-HCD	20.2	1.13	1.13	1.11	1.10	1.09
SLP-Carer	2.0	0.17	0.17	0.17	0.17	0.17
EB	0.2	0.03	0.03	0.03	0.03	0.03
OB	1.7	0.18	0.17	0.17	0.17	0.17
Subtotal	**47.0**	**4.38**	**4.38**	**4.25**	**4.25**	**4.21**
Tier 2:						
AS	9.9	1.10	1.11	1.08	1.08	1.08
DA	1.7	0.11	0.11	0.11	0.10	0.10
CDA	0.9	0.10	0.09	0.09	0.09	0.09
CCS	1.2	0.18	0.18	0.18	0.18	0.18
Subtotal	**13.7**	**1.48**	**1.49**	**1.45**	**1.45**	**1.45**
Tier 3:						
HS	3.1	0.31	0.31	0.30	0.30	0.30
EI	0.1	0.02	0.02	0.02	0.02	0.02
Subtotal	**3.3**	**0.33**	**0.33**	**0.32**	**0.32**	**0.32**
Other:						
Expense	7.9	0.76	0.76	0.74	0.74	0.73
Net loans	0.5	0.06	0.05	0.05	0.05	0.04
Subtotal	**8.3**	**0.82**	**0.82**	**0.79**	**0.78**	**0.77**
Grand total	**72.2**	**7.02**	**7.02**	**6.81**	**6.80**	**6.75**

Table 7.3 breaks down the total projected payments to current clients as at 30 June 2016 and 30 June 2017 by payment type, and shows the key changes between the two. For more discussion on the intermediate steps, see Appendix K.

Of most interest is the $1.8 billion increase due to experience; this is the difference between the roll-forward and the final estimate. We observe the following:

» The increase is split between Tier 1 and Tier 3 benefits; Forecast Tier 2 benefits have only slightly increased.

» Forecast JS-WR benefits have increased $0.8 billion and future JS-HCD payments have increased $0.7 billion. These are large increases that reflect the slower exit rates seen from these benefit types.

» Forecast SPS benefits have further decreased $0.5 billion, partially offsetting the JS increases. This continues a trend of the previous few years.

» Forecast SLP payments are basically unchanged.

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[26] For the purpose of this section, YP payments have been grouped with JS-WR and YPP with SPS.
[27] Totals for future clients are discounted to the middle of that year. For example, for clients entering in 2017/18 payments are discounted to 31 December 2018.

» Forecast CCS payments have increased significantly in proportional terms ($10%). This relates mainly to CHMP impacts.

» Forecast HS has increased substantially ($0.5 billion increase to $3.1 billion), which relates to a change in classification of certain grants by MSD (see Section 7.3.5).

Table 7.3 Total future payments to current clients by payment type as at 30 June 2016 and 30 June 2017

Component	2016 current client liability ($b)			2017 current client liability ($b)	
	Previous valn	Methodology changes	Updated for Eco. assumps	Roll-forward to 2017	Final estimate, after recognition of experience
Tier 1:					
JS-WR	5.6	5.6	5.5	5.2	5.9
JS-HCD	8.0	7.4	7.1	6.8	7.6
EB	0.2	0.2	0.2	0.2	0.2
SPS	9.9	10.5	10.2	9.9	9.4
SLP-HCD	22.2	21.5	20.4	20.1	20.2
SLP-Carer	2.1	2.1	2.1	2.1	2.0
OB	1.6	1.7	1.6	1.6	1.7
Subtotal	**49.5**	**49.0**	**47.0**	**45.8**	**47.0**
Tier 2:					
AS	10.6	10.3	10.0	9.8	9.9
DA	1.9	1.9	1.8	1.7	1.7
CDA	1.0	1.0	1.0	1.0	0.9
CCS	1.1	1.1	1.1	1.1	1.2
Subtotal	**14.6**	**14.3**	**13.9**	**13.6**	**13.7**
Tier 3:					
HS	2.9	2.8	2.7	2.6	3.1
EI	0.1	0.1	0.1	0.1	0.1
Subtotal	**3.0**	**2.9**	**2.8**	**2.7**	**3.3**
Other:					
Expenses	8.5	8.4	8.1	7.9	7.9
Net loans	0.4	0.4	0.4	0.4	0.5
Subtotal	8.9	**8.8**	**8.5**	**8.3**	**8.3**
Grand total	**76.0**	**75.0**	**72.2**	**70.4**	**72.2**

Main benefits make up two-thirds of the future payments to current client (65%). The largest contribution is from SLP-HCD (28%), with significant portions related to SPS (13%), JS-HCD (11%) and JS-WR (8%). Accommodation Supplement (AS) is the largest component (14%) after main benefits.

> Future JS-WR payments have increased compared to last year, but are still significantly lower than in the 2012 (pre-reform) projections and future SPS payments have again decreased. Compared to 2012 projections, future JS-WR and SPS payments have fallen from 28% of the total to 19%, a reduction of 9.7 percentage points.

Main benefit dynamics (1st tier assistance) are the basis for much of the analysis in this report, with payments correlating closely to future years with support. In this chapter, we focus on some of the remaining payment types:

» Second and third tier assistance provided over and above (or independently of) main benefits

» 'Net loans' that arise from Recoverable Assistance and over-payments, including fraud

» Expenses associated with employment and work-readiness investments, as well as administering income support.

Figure 7.2 Future benefit payments to current clients by benefit type, proportion of total
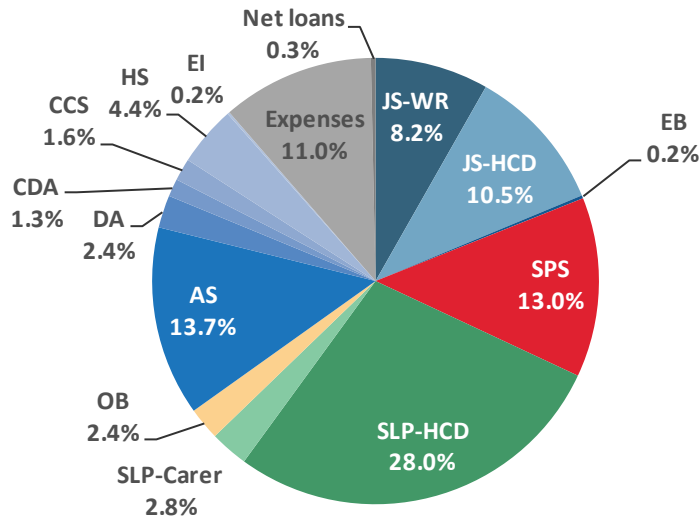
7.3 Tier 2 and 3 assistance

7.3.1 Approach to Tier 2 and 3 assistance

Our models project the average amounts of each Tier 2 and 3 payment type received by a client each quarter, based on characteristics such as underlying benefit type, age and region. The methodology is discussed further in Section 9.3 and Appendix G.

There are a few scope considerations to note in interpreting results in this section, as follows:

» All payments to clients aged over 65 are excluded.

» We do not include clients who are currently only receiving Childcare Subsidy (CCS), Employment Interventions (EI) and Hardship Assistance (HS) in the projection cohort if they have not also recently received another type of benefit.

» While costs associated with Orphan's Benefit (OB) and Child Disability Assistance (CDA) are included in overall results in this section, we have not provided specific commentary. These are benefits paid in respect of children and are not income-tested. As a result, they are not working-age benefits, and future cost is not reduced through a work outcome.

7.3.2 Accommodation Supplement

By far the largest payment type of the Tier 2 and 3 support is Accommodation Supplement (AS). It is also larger (in terms of total future payments) than all main benefits except SLP. AS assists people who have low incomes and low assets with the costs associated with rent, board or home ownership. It is the only benefit for which payment levels vary by region, recognising the relative housing costs in different areas. AS makes up the largest component of the current client future cost after the main benefit payments, representing 14% of the total future payments to current clients.

It is not the only type of housing support offered by the New Zealand Government; about 63,000 households are supported via public housing placements. The public housing system is the subject of a separate report, although we model benefit system and public housing status jointly.

Since the integration of the benefit support and public housing projections we have modelled housing status explicitly. This means we model the proportion of clients receiving AS and the average benefit for those who do so. These two elements vary significantly by benefit type, as shown in Figure 7.2 below. About 76% of JS and SPS clients also receive AS, and just over 50% of SLP clients. AS is also the biggest component of benefit payments for Supplementary only clients, with 77% receiving AS.

Figure 7.3 Average proportion of clients receiving AS (left) and average quarterly payments for those who do receive it (right), for 2015/16 and 2016/17 by benefit type. Figures in June 2017 dollars.
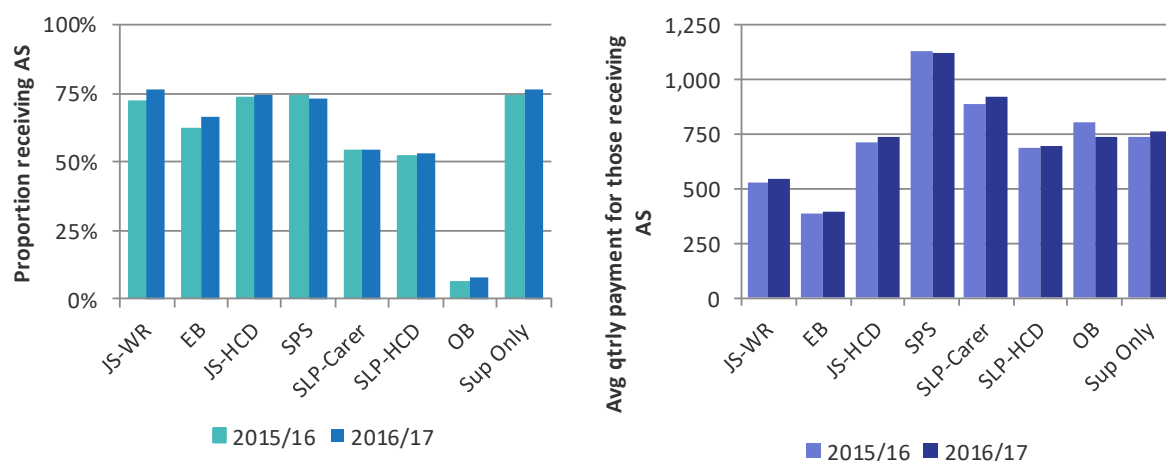
SPS clients tend to have higher rates of AS (the rate is higher with dependent children). The average rate in a quarter also depends on the average length of benefit spell; so EB clients have lower AS in a quarter due to their short spells. Compared to 2015/16:

»   Overall slightly more clients are receiving AS and average payments are slightly higher however this varies by benefit type
»   The proportion of JS clients accessing AS increased, as did average payments among JS clients accessing AS
»   The proportion of SPS clients accessing AS decreased, as did average payments among SPS clients accessing AS.

Our models for the incidence and level of AS allow for the key demographic, historical and other predictors, just like our other models. We also allow for regional effects and the typical market rents seen in the client's territorial local authority. Auckland has significantly higher rents than other regions, and correspondingly higher levels of AS support as shown in Figure 7.4.

Figure 7.4 Average proportion of JS-WR clients receiving AS (left) and average quarterly payments for those who do receive it (right), for 2015/16 and 2016/17 by region. Figures in June 2017 dollars.

Across regions, payment levels to JS-WR clients in the last year have increased the most in the Auckland, Waikato and Southern regions (by 3-4% per year on average), and have fallen in only the East Coast region (by 0.9% per year on average).
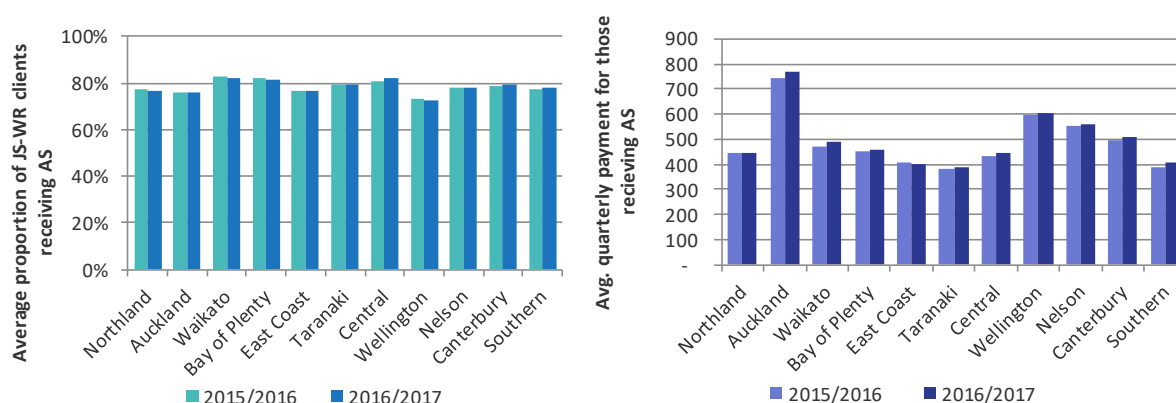
7.3.3   Disability Allowance

Disability Allowance (DA) is paid to low income people with a disability that is likely to last at least six months. It aims to help cover disability-related expenses not covered by another agency. As discussed in Section 3.9, it is most commonly paid to clients who are receiving either JS-HCD or SLP-HCD benefits.

Figure 7.5 Average 2016/17 quarterly Disability Allowance payments by benefit type (left) and average benefit over time for JS-HCD and SLP-HCD clients (right). Figures in June 2017 dollar values and exclude Australian residents.
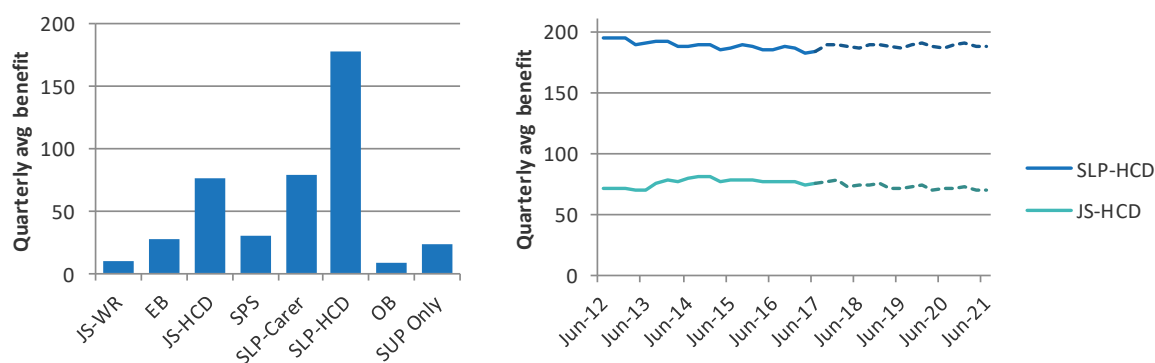
Over the past year, the average quarterly payment to both JS-HCD and SLP-HCD clients has fallen slightly, visible in Figure 7.5. For JS-HCD this continues a gradual trend, while SLP-HCD payment levels have been flat. The decreases most likely relate to changes in the mix of clients, the use of DA varies by factors like age, incapacity type and previous benefit type. Projected payment levels reflect the recent trends and are stable (in 2017 dollar terms) for SLP-HCD clients and decrease very slowly for JS-HCD clients.

7.3.4   Childcare Subsidy

The Childcare Subsidy (CCS) is paid to the main carer of a dependent child under five to assist with the costs of childcare, normally paid for up to nine hours per week if they are not working, studying or training. It is paid predominantly to SPS and NOMB clients. Figure 7.6 shows the different levels of CCS payments by benefit type, and average quarterly benefit payments for the two working-age benefit classes most likely to receive CCS; SPS and Supplementary only. Some Childcare Subsidy rates were increased as part of the Child Material Hardship package and part-time work expectations were

increased from 15 to 20 hours per week, leading to the large step up in average payment rate from 1 April 2016 visible in Figure 7.6. The increase is much larger for SPS clients than for Supplementary only clients (23% increase in average quarterly payment compared to 15% increase). We have adopted the observed increase for SPS clients in our projection assumptions but have accepted only part of the change for Supplementary only clients. These changes have driven the $0.1 billion, or 10%, increase in projected CCS payments, recognising recent experience, which was shown in Table 7.3. This increase was also included in our estimate of the impact of the Child Material Hardship Package in Section 3.4.

Figure 7.6 Average quarterly Childcare Subsidy payments by benefit type for 2015/16 and 2016/17 (left), average payment over time for SPS and SUP-only (right) and average payment over time for SPS split by youngest child age (bottom). Figures in June 2017 dollar values.
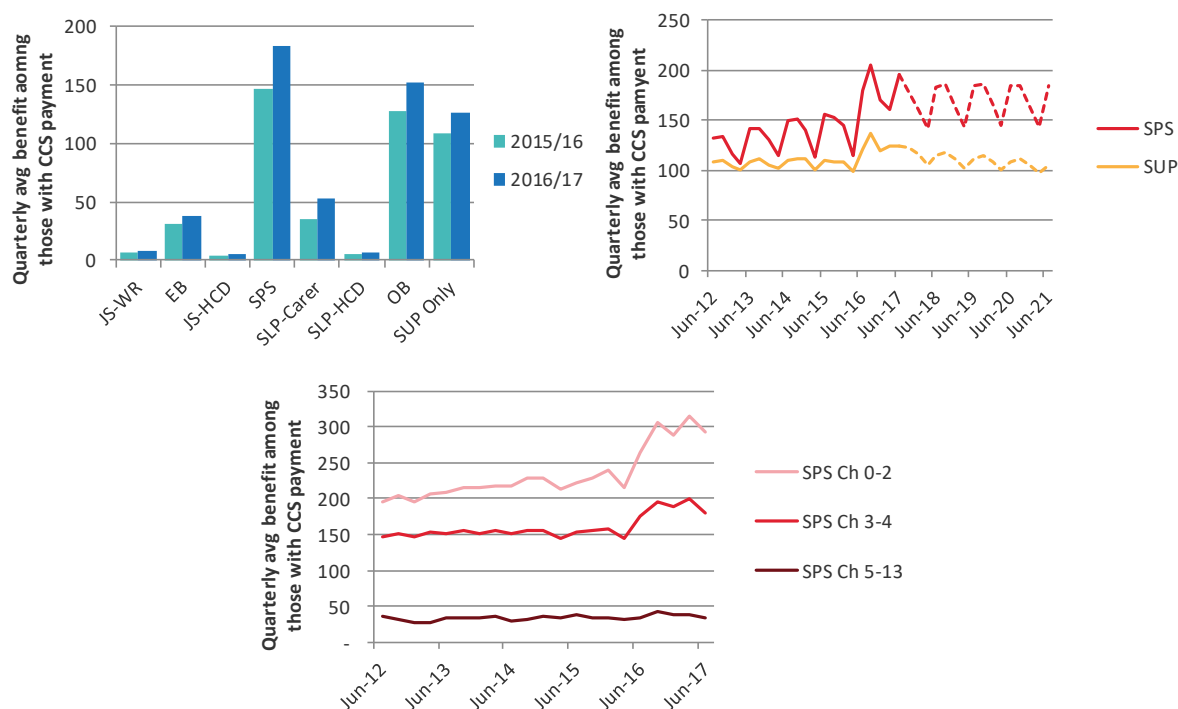
7.3.5   Non-recoverable Hardship Assistance

Hardship Assistance (HS) is a special payment to clients to assist with an urgent financial need when they have no other means of paying for it. Non-recoverable Hardship Assistance is the second largest benefit type of Tier 2 and 3 assistance, after Accommodation Supplement. It is accessed relatively widely by clients across all main benefit types. It includes a range of benefit codes, including temporary additional support (TAS). The two most important predictors of the level of hardship payments are:

» **Time effects**: Compared to other benefits, Hardship payments tend to fluctuate significantly over time. In recent years, payments increased most visibly immediately after the Christchurch earthquakes.

» **Regional effects**: Canterbury region payments were very high after the Christchurch earthquakes, and continue to remain among the highest levels around the country, along with the Auckland, Waikato and Nelson regions. Hardship Assistance payments are relatively low in the Bay of Plenty, East Coast, Taranaki and Southern regions.

Over the previous year MSD has changed the recoverable classification coding of certain special needs grants (mostly accommodation related), meaning they are now included as non-recoverable hardship assistance. Figure 7.7 shows this increase and how it has varied by benefit type and region:

» There was an overall increase in hardship assistance payments of 23% (June 2017 compared to June 2016 quarter).

» Some benefits saw larger increases than others, the average quarterly hardship assistance payment among SPS and JS-WR clients was 30% higher over 2016/17 than 2015/16.

» For those accessing HS, payments per quarter are highest for SPS and SLP benefits. SPS levels have increased significantly in 2016/17.

» Among SPS clients the Auckland, Waikato, Bay of Plenty and East Coast regions were the most affected.

Figure 7.7 Total quarterly Hardship Assistance payments (top left), average quarterly Hardship Assistance payments by benefit type (top right), change in average payment by benefit type (bottom left) and change in average payment by region (bottom right). Figures in June 2017 dollar values.
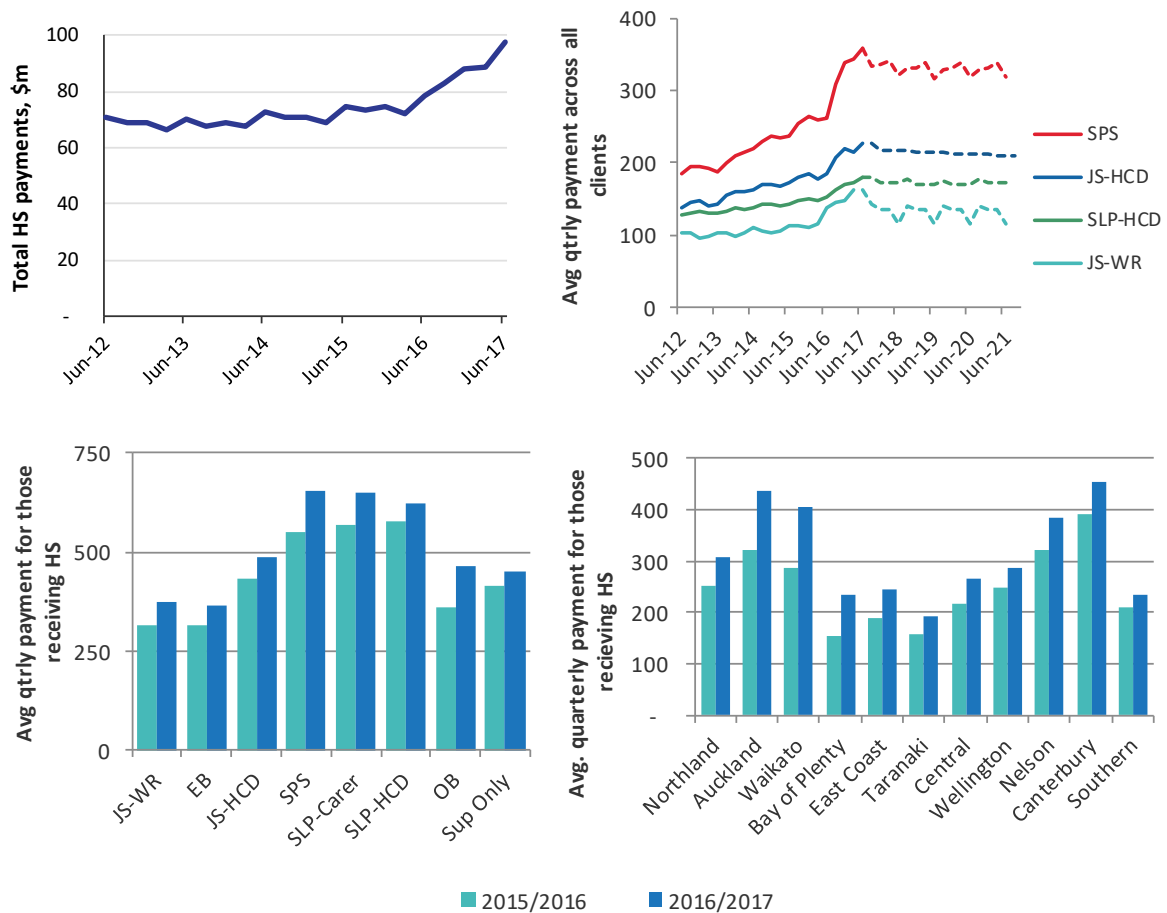
We have generally accepted this increase in payment level into our projected payment levels as shown in the top right panel of Figure 7.7. This has led to the substantial increase in projection hardship assistance payments in 2017 compared to 2016; Table 7.3 showed a $0.5 billion, or 20%, increase in future hardship assistance payments on recognition of experience.

7.4   Net cost of loans

We use the term 'loans' to cover any payments from MSD to a client that will later be recoverable. There are several different ways a loan to a client can arise. We have split them into two main categories that we value separately:

» **Overpayments**, including those due to benefit fraud
» **Recoverable Assistance**, including benefit advances.

It is important to note that our analysis is based on the level of previously detected amounts of overpayments. We have not attempted to determine the levels of undetected overpayments and fraud, despite this having clear relevance to a detailed analysis of overpayments. For example, a decrease in detected overpayments may be good (if there are fewer overpayments occurring) or poor (if overpayment levels are constant but being detected at a lower rate); we are not in a position to distinguish between these cases.

We were provided data that included information on the relevant benefit type enabling the exclusion of loans related to benefits out of scope for the projection (e.g. NZ Super).

7.4.1 Breakdown of current and future client benefit payments by component of net loans cost

We have valued six separate components related to loans, which are largely offsetting. The total amount for the current client projection $458 million, as reported in the main results of Table 7.3. These six underlying components are shown in Table 7.4. Negative amounts represent recoveries on loans made by MSD.

Table 7.4 Summary of net loans contribution to current and future client total payment projections.

Loans category	Payments to current clients ($m)	Payments to future clients ($m)				
		2017/18	2018/19	2019/20	2020/21	2021/22
Further overpayments/fraud on existing debtors	106	0	0	0	0	0
Recoveries on overpayments/fraud on existing debtors	-201	0	0	0	0	0
Overpayments/fraud related to future payments	2,216	213	168	140	125	113
Recoveries on overpayments/fraud related to future payments	-1,867	-179	-142	-118	-105	-95
Net cost – overpayments/fraud	**253**	**34**	**27**	**22**	**20**	**18**
Recoverable assistance payments	1,605	165	163	155	150	145
Recoveries on recoverable assistance	-1,401	-144	-142	-135	-131	-127
Net cost – recoverable assistance	**205**	**21**	**21**	**20**	**19**	**19**
Total net loans cost	**458**	**55**	**47**	**42**	**39**	**37**

The net cost among current clients due to overpayments and fraud has increased by 24% due to experience compared to our expected roll-forward for 2017. This is a large relative change, but small in the context of the overall project payments total. The bulk of the change is driven by the increased recoverable assistance payments seen in 2016/17.

7.4.2 Overpayments, including fraud

Detected overpayments, including fraud, represent about 3.5% of payments made by MSD, or about $210 million per year.

In the past, fraud typically represented just over 10% of the total detections. The vast majority of overpayments (the remaining 90%) were not fraud-related. Over 2013/14 and 2014/15 there was a reduction in non-fraud overpayments and an offsetting increase in fraud overpayment detections. Fraud detections doubled in 2013/14, when an IRD data-matching program was introduced, but have decreased since then. The amount of non-fraud related overpayments in 2016/17 is similar to that in 2015/16 while the amount of fraud overpayments has decreased. This has led to the rate of fraud detection (as a portion of total overpayments) further falling to 10% of the total in 2016/17. Figure 7.8 shows the history of overpayments since 2011/12.

> The proportion of fraud within benefit overpayments is at its lowest level since at least 2012. We are not able to say whether this is due to better prevention or lower levels of fraud detection.

Figure 7.8 Overpayment and fraud detections by year
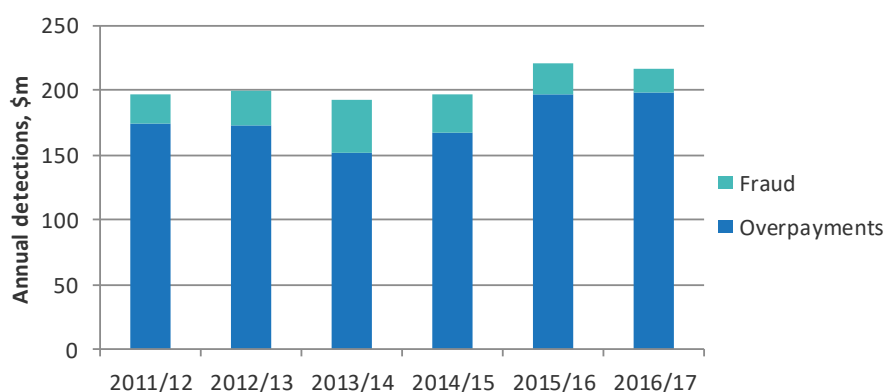
We have modelled the development of existing debts as well as new debts raised relating to future benefit payments. In both cases we allow for subsequent increases in the debt detected, the rate at which debts are recovered, and the proportion that is written off and not recovered. The approach is illustrated in Figure 7.9. The approach is unchanged from the previous report.

Figure 7.9 Approach to modelling detected overpayments (including fraud) and their related recoveries
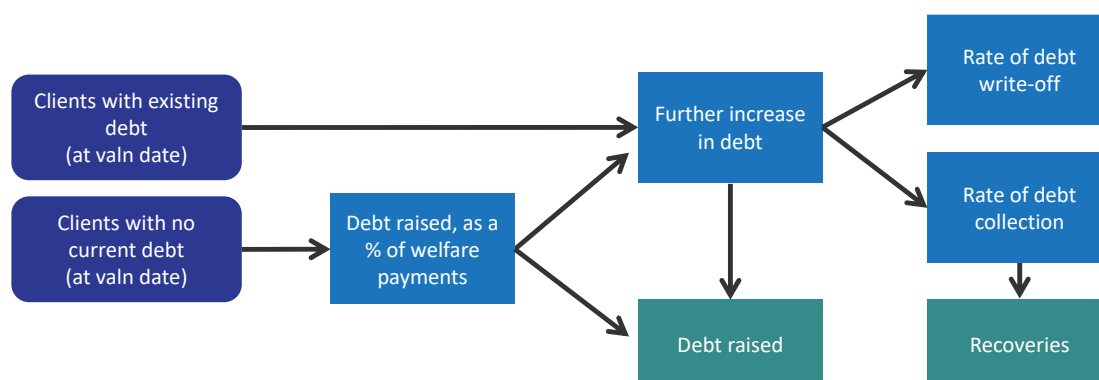
Debts raised

The amount of debts raised for overpayments (including fraud) has been increasing faster than total payments over the last few years. The adopted rate of 3.5% is slightly higher than the 3.4% adopted last year to reflect this.

Development of outstanding debt

A detection of overpayment in one quarter typically results in subsequent further detections related to that client. This may be due to fine-tuning of the original estimate, or discovery of other past or future payments with corresponding overpayments. We estimate this effect using the historical growth in debts tied to an individual. On average, one dollar of debt detected today will grow to $1.47 of detected debt over the subsequent five years, a rate of growth that has again increased from the previous year.

Recovery and write-off rates

Generally, recovery rates are high in the quarter of detection and the subsequent quarter, but trail off beyond that point. Last year we forecast that for every $100 of ultimate debt detected, $70.7 was recovered in the first two years; this year the corresponding figure is $68.8. This slightly increases the ultimate amount of outstanding debt written off.

This trend is also partly explained by the higher proportion of non-fraud detections, which tend to be repaid more slowly than other types of over-payments.

Tail assumptions

The short time period for which data are available mean that trends in development need to be extrapolated to durations for which there is no observed data. We have made the following assumptions, recognising that they are subject to significant uncertainty.

» Existing debts do not increase beyond 10 years after original debt establishment.

» At the 10-year mark 5% of the outstanding balance is assumed to be recovered, as a means of allowing for later recoveries, spread over the next 20 quarters. The remainder is written off.

Main consequences of overpayment assumptions

The combination of assumptions concerning debts being raised, recovered, and written off provides an overall view of overpayment dynamics. The most important features of our projection are as follows:

» After a debt is established, total debts raised are expected to increase by a further 47%, up from 40% last year. This represents extra overpayments that will be accrued by a client before their outstanding debt reduces to zero.

» About 85% of overpayments are assumed to be recovered eventually, a little lower than last year. The remainder is either written off or remains uncollected. After allowing for the time value of money during the period the debt is collected (that is, the interest forgone on overpayment monies), the recovery percentage reduces to 84.3%.

» The average collection date is one year after the establishment of the original debt.

» Total outstanding detections (most of which relate to future benefit detections) in the projected payments to current clients are $2.22 billion. The offsetting recoveries are estimated to be $1.87 billion, with a net difference of $253 million.

7.4.3   Recoverable Assistance

Recoverable Assistance is primarily made up of three payment types:

» Benefit advances
» Special Needs Grants
» Recoverable Assistance payments.

Benefit advances is the dominant category, representing over 80% of Recoverable Assistance payments. These payments are spread across the benefit system, with over a third going to SPS clients, about a fifth to JS-WR clients, roughly a sixth going to each of JS-HCD, and SLP-HCD clients, and the remainder going to clients on the smaller benefit types.

Table 7.5 and Figure 7.10 and graph show the recent experience for Recoverable Assistance. Payment levels have been higher in 2016/17 due to an increase in emergency housing special needs grants.

Table 7.5 Historical levels of Recoverable Assistance

Year	Payments ($m)	Average number receiving a loan per quarter (nearest 100)	Average quarterly payment per client ($)
2012/13	138	62,100	560
2013/14	138	62,700	550
2014/15	132	60,900	540
2015/16	140	61,100	570
2016/17	170	67,500	630

Modelling Recoverable Assistance payments

Recoverable Assistance payments are modelled as an average amount per client, depending on their benefit state as well as other characteristics. This is the same approach used for Tier 2 and 3 benefit types, described in Section 7.3.1. The past and projected payment levels for the most significant benefit states are shown in Figure 7.10.

Figure 7.10 Average Recoverable Assistance quarterly payment per client in main benefit states. Amounts are in June 2017 dollar values. Averages are lower than Table 7.5 as they are taken across all clients, not just those receiving Recoverable Assistance.
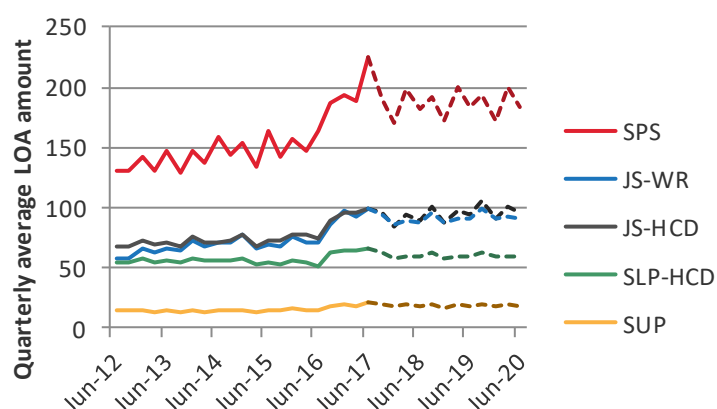
We have partially followed the increase in recoverable assistance payments. As with previous projections, we expect the average payment level of Recoverable Assistance to slowly grow further over the first few years of the projection, at around 1% per year above inflation. Rather than these being built in trends, they reflect the changing composition of the benefit system population over the forecast period. As the unemployment rate drops, the proportion of recipients with higher propensities to receive recoverable assistance tends to rise, which increases the average Recoverable Assistance payment. This effect is offset by the lower numbers of clients with benefit support.

Recoverable Assistance recoveries

We make a relatively simple assumption that the Recoverable Assistance recoveries in a quarter equal 87.25% of Recoverable Assistance payments. This assumption has been retained from the previous projection. The ratio of recoveries divided by payments fell in 2016/17, but this was due to growth in the denominator; we would expect future recoveries to increase next year, all else equal, and so have not changed the recovery rate. However, we note that if we did recognise a drop, it would have only a small impact on the overall result; adopting 80% would reduce total projected payments to client current by about 0.1%.

7.5 MSD expenditure

MSD expenses included in scope of our projection are those payments required to administer benefit support for working-age adults and to help clients prepare for and return to work.

Treatment of expenses in the projection is somewhat challenging. Unlike demand-driven main benefits, the level of expenses is determined each year by Ministers through the budget process. In other words, a budget forecast for out-years is a more reliable source of information about future trends than our projection. Also, data about the distribution of expenditures by beneficiary type is limited.

Nevertheless, we view a projection of expenses on a long-term basis as necessary to provide a complete picture of the future costs of the benefit system. This enables decisions about funding to be made on a comparable future lifetime costs basis. Assuming a fixed level of expenses, our challenge is to determine the share of future expenses associated with current clients versus those who enter the system beyond 2021/22.

7.5.1 Approach to determining future expenses

We discuss our approach to operating expenses in Chapter 9. It assumes the dollar level of expenses in the 2017/18 operating budget continues indefinitely, with increases for inflation. This amount is then converted to an expense rate for each quarter. This expense rate is then allocated between payments attributable to current clients in out-years, and payments attributable to future clients.

The expense budget for 2017/18 year is $731 million in June 2017 dollars, just 1% higher than actual expenses in 2016/17 (compared to inflation of 1.7%). The expense rate is virtually unchanged since last year.

Table 7.6 shows the payments made to expense categories over the past six years.In many cases, consistent with the intent of the Multi-category Appropriation changes, line items from previous years have been consolidated into larger funding envelopes.

Table 7.6 Historical MSD expenses, amounts in actual values, plus 2017/18 budget

Expense category	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18 Budget
	$m	$m	$m	$m	$m	$m
Administration						
Benefit Processing / MCA-Administering Income Support	326	313	309	275	283	264
Payment Integrity and Loan Collection	46	47	46	50	48	49
Special (e.g. quakes)	0	0	0	0	0	0
Administration total	372	360	355	326	331	313
Programs						
Tailored services / training / MCA employment outcomes / MCA work readiness	334	314	346	371	380	392
OSCAR	18	19	19	19	18	19
Programs total	351	334	364	389	398	411
Expenses total	723	693	719	715	729	724

7.5.2   Breakdown of current expenses

We have made the following allocation of expenses to the various categories, shown in Figure 7.11, based on the expense apportionment provided by MSD. More than half of the expenses are for work focused investments, with the remainder for income support and administration. This is a similar proportion to last year, and the splits within the two groups are also very similar to last year.

Figure 7.11 MSD expenses associated with current clients by category
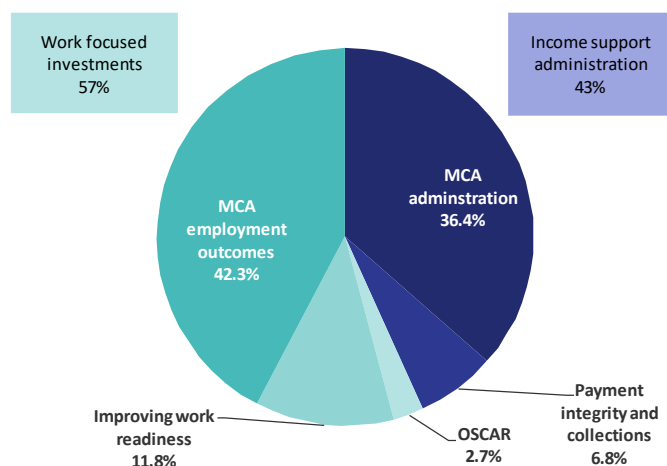
7.5.3   Projected future cash flows

Figure 7.12 shows the quarterly forecast benefit payments over the next 10 years, which drives the attribution of expenses and the calculation of the expense rates.

Figure 7.12 Projected future cash flows in current values and implied expense rate required to hold expenses fixed in real terms over the next 10 years. Future clients are those entering in the next five years (as per the scope of the projection), while distant future clients are those entering beyond that.
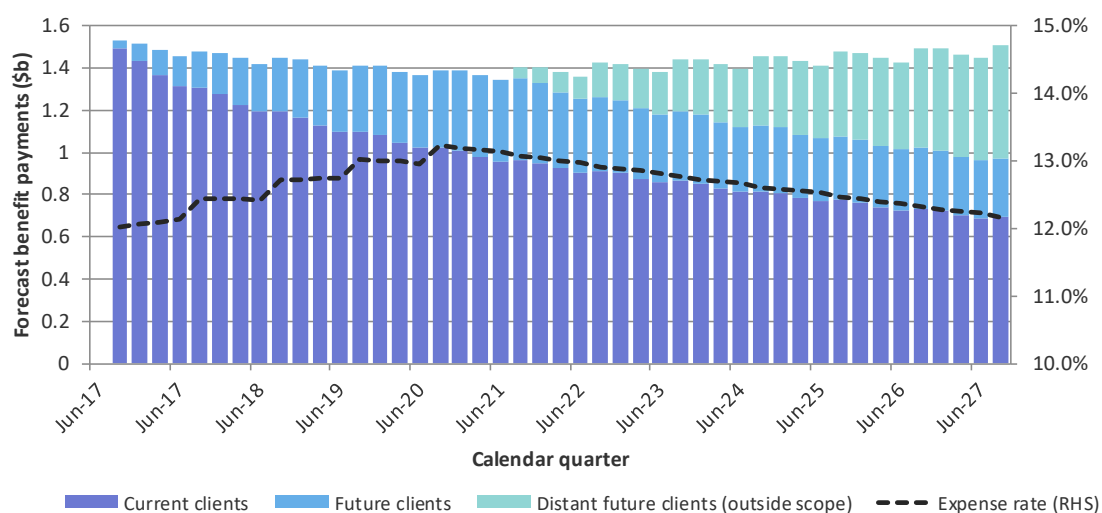
As future client payments have been calculated for the next five years, there are no payments outside the scope of the projection during this period. Thereafter, a growing portion of payments fall outside the scope of the projection, and thus a decreasing amount of future expense is attached to the current and future clients within scope. The expense rate is fairly stable over time, with the long-term rate averaging about 12.6%. This rate is slightly lower than last year's long-term assumption of 12.8%.

The total operating expenses attributable to current clients is $7.9 billion, as shown in Table 7.3. This can be allocated between expense categories according to Figure 7.11.

8 PROJECTED CHANGES TO THE BENEFIT SYSTEM

8.1   Introduction and highlights

Previous chapters have focused most heavily on current clients, that is, clients who received benefit support at some point in 2016/17. Here we look more explicitly at clients entering the system and the implications for how the entire system is forecast to evolve over time. We also discuss the limitations of our projection and the uncertainties involved.

Client entries

The total number entries in 2016/17 was close to the previous year. JS-HCD and SPS entries were slightly higher while EB and Supplementary entries were down slightly. We have reflected these recent trends in our forecasts of future entries. Over the next five years entries are forecast to slowly decrease for JS-WR and Supplementary Only benefits, reflecting the falling unemployment rate. SPS and JS-HCD also have small decreases projected. Compared to the previous years' assumptions the forecast number of entries is slightly increased over the next three years for JS-WR, EB, JS-HCD and SPS. Projected entries to Supplementary Only benefits are lower than last year.

Projected evolution of current client results

Our forecast for the future years of main benefit support estimate in the next projection (as at 30 June 2018) is a 3% reduction to 3.99 million future years. This is forecast to further reduce by about 3% a year to 3.52 million (as at 30 June 2022). The corresponding forecasts for projected future benefit payments is a 3% reduction to $70.0 billion at the next projection, with further decreases to $64.0 billion as at 30 June 2022.

Model sensitivity

The projection results change 1-2% when key transition rates are increased or decreased by 5%. The sensitivity is larger for labour market shocks (as measured by the unemployment rate), and the impact on future payments is larger again for changes to inflation or discount rates.

8.2   Clients entering the benefit system

8.2.1   Client numbers

In addition to the current client lifetime years of support and benefit payments, we also estimate five years of future client years entries and their subsequent benefit system pathways. That is, we forecast entries by clients who have not received benefit support in the 12 months prior to the previous 30 June, but who do receive benefit support at some point in the following year. This section gives some further detail regarding how we estimate the number of clients entering the benefit system over this five-year

period. We build a model that estimates the number of clients entering the benefit system which takes into account:

» The (regional) unemployment rate
» The benefit type at entry
» The length of time from the projection date to the entry date
» Other time related trends as needed.

The approach used for modelling future clients and their support is unchanged from the previous report and is discussed further in Section 9.4.2. Figure 8.1 shows the historical numbers of entries as well as the projections for future years. Those entering public housing is also shown as many of these clients will subsequently enter the benefit system.

Figure 8.1 Past and projected numbers coming into the benefit system each quarter, by benefit type. Previous years projection also shown.
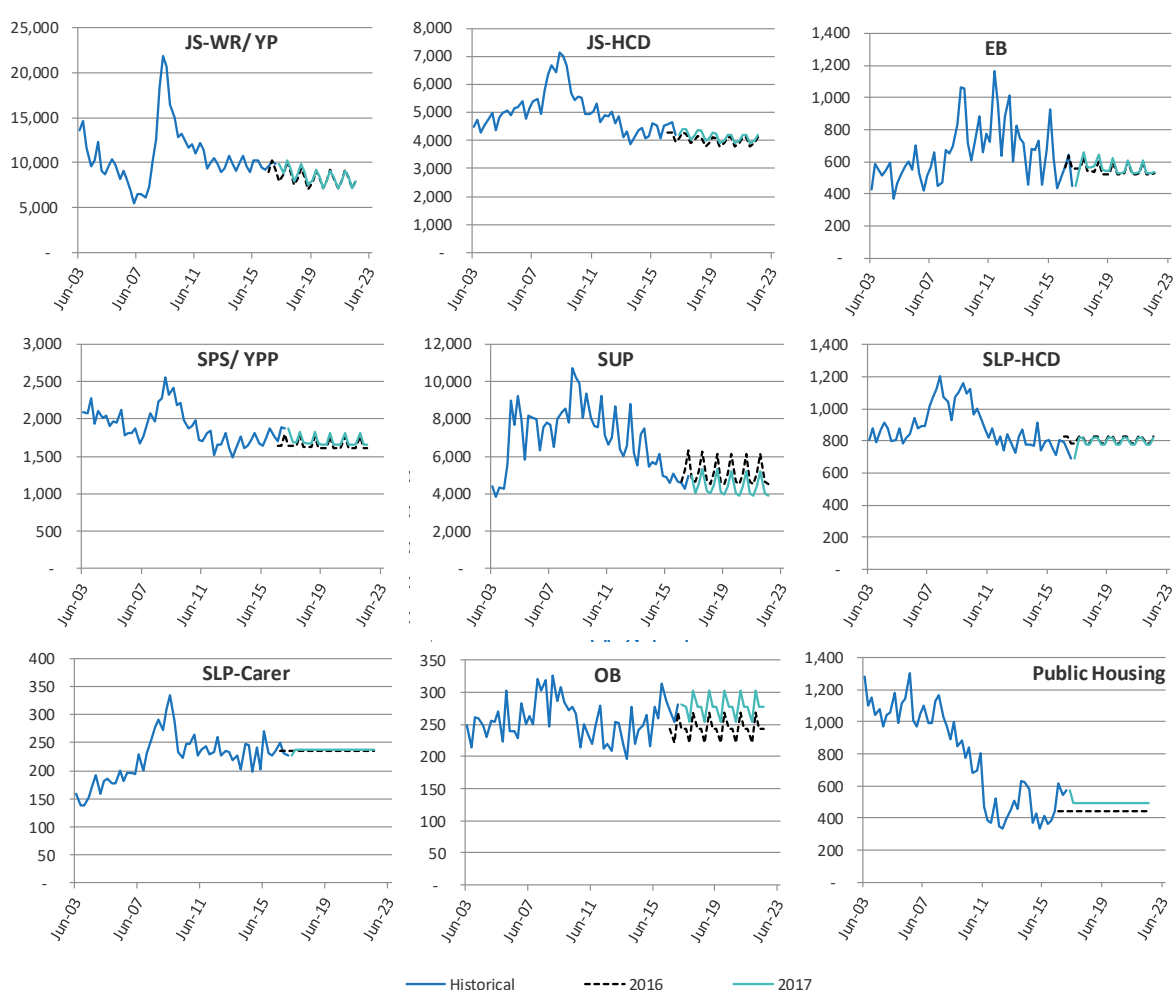
We note:

» Prior to July 2013 Widow and Woman Living Alone benefit entries (about 300 per quarter) and Domestic Purposes Benefit (with youngest child ≥ 14) entries (about 200 per quarter) were distinct from the old Unemployment Benefit, but are now combined post-reform. In this historical data they have been combined as JS-WR entries, giving a continuous time-series.

» JS-WR and EB entry rates are very sensitive to the forecast unemployment rate. We project entry numbers to fall 11% and 7% respectively over the next five years, in line with the forecast decrease in

unemployment rates. Supplementary, SPS and JS-HCD benefits also have some unemployment rate sensitivity built into their forecasts, but the effects are weaker for these benefits.

» Total entries in 2016/17 were similar to the previous year. JS-HCD and SPS entries are up slightly while EB and Supplementary entries are down slightly. Entries to public housing were also higher than in the previous year.

The main changes to the projected number of entries in response to recent trends is a decrease in the number entering Supplementary and an increase in those entering public housing.

The demographic distributions of client entries have been discussed in previous reports. Any changes to these distributions generally happen slowly over time, as such these are largely unchanged.

8.3   Projected evolution of current client results

We have estimated how the current client results will evolve over the next five years with the results for future years on benefit and future payments shown in Table 8.1 and Table 8.2 respectively.

» Our forecast for the future years of support estimate in the next projection (as at 30 June 2018) is a reduction to 3,986k future main benefit years. This is forecast to reduce by about 3% a year to 3,522k (as at 30 June 2022).

» Our forecast for the total future benefit payments in the next projection (as at 30 June 2018) is a decrease to $70.0 billion. This is forecast to reduce by 2-3% a year to $64.0 billion by 30 June 2022.

Thus, the overall trends are the same for both the future years and future benefit payments measures. The largest relative reductions are for the Under 25 non-SLP segments, as well as the Over 25 with heavier benefit receipt segments. Within these segments, the decreases are particularly prominent for JS-WR and SPS clients with children aged 3 and over. JS-WR receipt falls in line with lower assumed unemployment levels, while the trends that have seen SPS client numbers fall are expected to continue for some time yet. SLP segment forecasts are fairly flat; client numbers are projected to decrease fractionally over the period.

These estimates will be affected by changes to any of the key drivers discussed in Section 2.3, such as differences between forecast and actual unemployment rates. These projections assume that the national unemployment rate decreases to 4.3% over the next four years. Different unemployment assumptions would induce different expected changes in the projection over time.

Table 8.1 Forecast current client future years of main benefit support at current and future projection dates, 000

	Top tier segment	2017 (current)	2018	2019	2020	2021	2022
Under 25	Entry before age 20	479	431	397	366	343	327
	Entry after age 20	52	49	46	42	41	40
	SLP	192	189	186	180	175	171
Over 25	>75% of last 3 years	1,099	1,052	1,014	968	928	888
	<75% of last 3 years	444	423	408	403	396	389
	SLP	1,004	995	983	972	959	943
NOMB		279	278	276	274	270	267
Recent exits		568	569	551	530	512	497
Total		**4,118**	**3,986**	**3,861**	**3,736**	**3,625**	**3,522**

Table 8.2 Forecast current client future benefit payments at current and future projection dates, $b

	Top tier segment	2017 (current)	2018	2019	2020	2021	2022
Under 25	Entry before age 20	6.8	6.1	5.7	5.3	5.0	4.8
	Entry after age 20	0.7	0.7	0.7	0.6	0.6	0.6
	SLP	2.5	2.5	2.4	2.4	2.3	2.3
Over 25	>75% of last 3 years	17.5	16.8	16.3	15.6	15.1	14.6
	<75% of last 3 years	6.7	6.4	6.2	6.2	6.1	6.1
	SLP	16.0	15.9	15.8	15.8	15.7	15.6
NOMB		6.2	6.1	6.1	6.1	6.1	6.0
Recent exits		7.5	7.6	7.3	7.1	6.9	6.8
Sub-total		**63.9**	**62.1**	**60.5**	**59.1**	**57.8**	**56.7**
Expenses & Net loans		8.2	8.0	7.8	7.6	7.4	7.3
Total		**72.1**	**70.0**	**68.3**	**66.6**	**65.2**	**64.0**

8.4 The benefit system client population in five years

As noted earlier, the number of clients with main benefit support is projected to fall over the next five years with significant downward trends in JS-WR and SPS client numbers, consistent with downwards trends in forecasted unemployment rate and recent experience. By combining the projections for current and future clients, we can examine the projected characteristics of the benefit system client population in five years' time. This is subject to some of the caveats above; namely, that future client numbers and their characteristics are more difficult to predict.

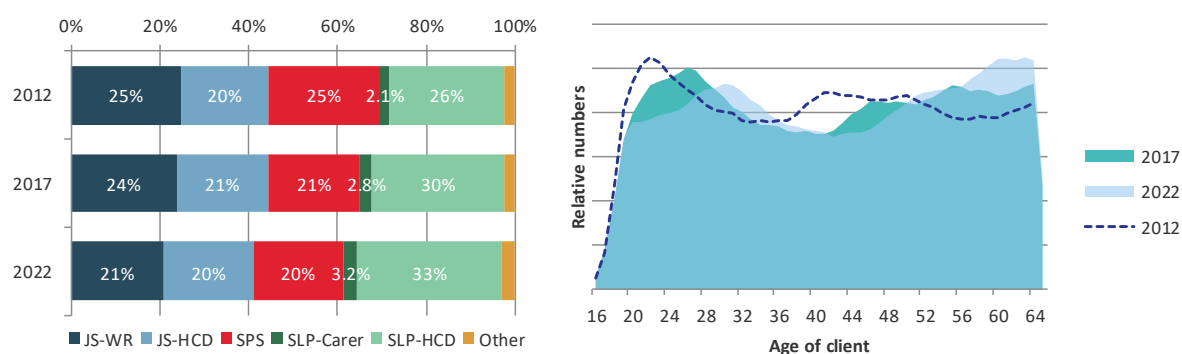**Figure 8.2 End of quarter benefit type and age distribution for June 2012, June 2017 and June 2022**

Figure 8.2 shows the types of changes seen over the last five years and how we have forecast these to continue. JS-WR clients are forecast to drop from 24% to 21% of all main benefits clients between 2017 and 2022. The proportion of SPS clients and JS-HCD clients are both forecast to drop by 1%; while client numbers are projected to decrease, the fall is in line with the overall drop in main beneficiary numbers and so the relative share is stable. Numbers with SLP support represent an increasing portion of the future benefit system population. The projected relative increase of SLP clients (as other segments reduce in absolute numbers) continues long-term trends.

The right panel of Figure 8.2 shows that the benefit system population is projected to be slightly older in five years. Visually we can see this shift in two main areas: a flattening of the current peak at age 26 and a shift to older ages for clients aged 40 and up. Note that:

» Part of this shift reflects changes in benefit type. Lower numbers of JS-WR clients reduce the left peak, and JS-HCD and SPS clients tend to be a little older by comparison. A higher proportion of SLP-HCD and lower proportion of older SPS clients causes the movement at older ages.

» However, within benefit categories the average age of clients is also expected to increase. This is partly due to broader demographic changes, including fewer young entries relative to the aging of clients with benefit support. It may also reflect the preventative nature of the 2013 Welfare Reform efforts in encouraging younger beneficiaries into work, but also the differential impacts of cyclical economic change by age. Young adults and older workers were particularly affected by the GFC, for example, and outcomes for young adults are expected to improve with the forecasted improved labour market.

» There is a visible 'peak' in the age distribution curve corresponding to clients born around 1970. This is centred at age 42 in the 2011 distribution and shifts five years to the right for the other two curves in Figure 8.2. This corresponds to those clients who were young adults in the recession in the early 1990s. A similar peak is also visible related to the GFC, currently centred at age 26. These demonstrate the significant long-term impact of recessions on young people joining the labour force during a downturn.

» The expected peak at the far right for 2022 (ages 60-64) is also notable. It shows that another driver of falling client numbers is that some of the larger age cohorts will start to 'age out' of the working-age benefit system. While this is not a net fiscal saving to the government (as these clients will continue to receive support in the form of the age pension), it does reflect the changing profile of the benefit system.

As discussed in Section 6.6 the decrease in main benefit clients varies by region as a result of labour market dynamics and historical trends. As can be seen in Figure 8.3, the proportion of main benefit clients in Auckland decreased dramatically from 2012 to 2017. We have forecast a smaller decrease over the next five years. The forecast trends in proportion by region largely continues historical trends, with a few exceptions. For example, in Northland the regional unemployment rate is relatively high, our forecast decrease in unemployment is larger than the national average and so the proportion of clients in Northland decreases.

Figure 8.3 Proportion of main benefit clients by region (left panel) and proportion of main benefit clients that are SLP/JS-HCD by region (right panel) for June 2012, June 2017 and June 2022
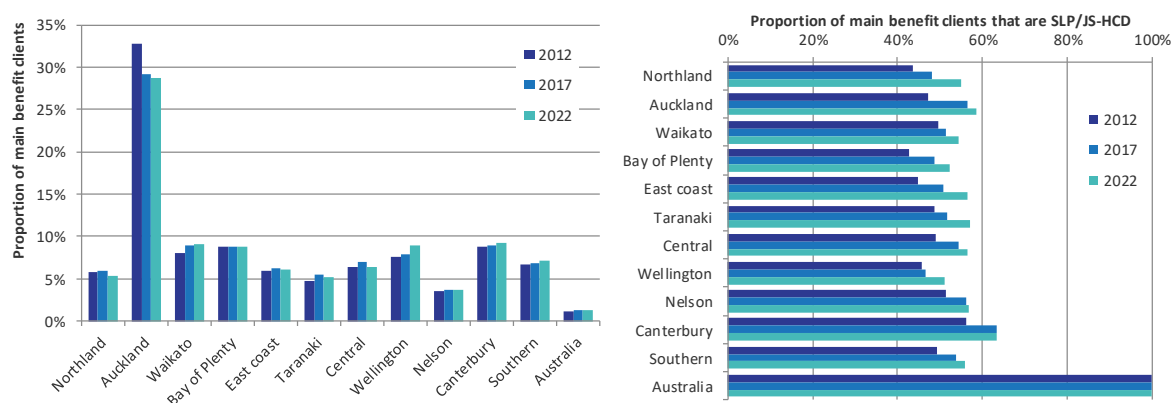
As noted above, client numbers with SLP support represent an increasing portion of the future benefit system population. The proportion with SLP or JS-HCD support is shown by region in the right panel of Figure 8.3. This is forecast to be above 50% in all regions in 2022. Canterbury is the only region in which the proportion of main benefit support clients with HCD support is flat, this reflects the relatively flat forecast unemployment rate in Canterbury meaning JS-WR and SPS clients numbers decrease less in this region.

8.5 Sensitivity analysis

8.5.1 Uncertainty of our estimates

This projection attempts to estimate the movement of clients through the benefit and public housing systems and their related payments over a long-time horizon of over 50 years. Doing so involves making many assumptions and predictions about the future, most of which will turn out to be wrong in hindsight; it is impossible to know exactly how the economy, inflation and transition behaviours will evolve. We have attempted to choose assumptions so that the resulting projection is a central estimate; loosely speaking, we believe that the total projected future years and payments estimates are just as likely to be too high as too low.

We attempt to understand, convey, and to the extent possible, quantify this uncertainty in several ways. First, we discuss how sensitive the projection is to various model assumptions regarding key drivers. Sensitivity analysis clarifies the relationship between key drivers and the results; by how much would the future years of support change, for example, if the unemployment rate remained at its current levels rather than falling to the 'full' employment rate? Benefit dynamics are particularly sensitive to the unemployment rate, so we also consider alternative economic scenarios to help understand the role of labour market uncertainty. Second, we discuss other sources of uncertainty which cannot be allowed for projection models.

8.5.2 Sensitivity to labour market changes

The labour market, and the impact of the economy more broadly, is one of the main sources of uncertainty in our forecasts. The labour market uncertainty is incorporated into our models using the (regional) unemployment rate. There are three elements to the uncertainty:

» The forecast unemployment rate will not be the same as the actual unemployment rate

» The sensitivity of the benefit system to changes in the unemployment rate may be different to our estimates

» There are limitations to using the unemployment rate as a proxy for the economy's impact on the benefit system.

Differences between forecast and actual unemployment rate

The first issue can be understood by considering the result of different unemployment rate projections. In Figure 8.4 we show two such scenarios:

» A situation where unemployment remains constant rather than decreasing to the full employment rate (the 'constant' scenario, in blue).

» A mild recession scenario, where the unemployment rate increases before returning to the full employment rate of 4.3% (the 'recession' scenario, in dotted indigo).

Note these scenarios are still applied using regional unemployment rates; different regions will have varying full employment rates depending on the historical regional unemployment rates.

Figure 8.4 Unemployment rate scenarios
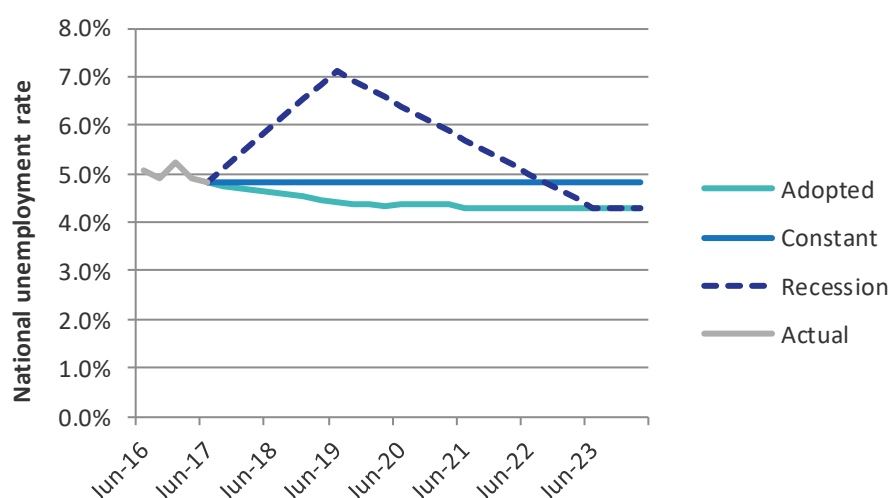
Under **the 'constant' scenario**, future durations for current clients are 3.6% higher at 4,267 million years of main benefit future support, compared to our central estimate of 4,118. This is not spread evenly across benefit types. Future years of JS-WR support are expected to be most affected at 12% higher, compared to 4% for JS-HCD and 2% for SPS. Future benefit payments see similar increases, with a total increase of 3.0%.

Under the **'mild recession' scenario**, future durations for current client are estimated to be 4.0% higher (4,284 million future years). Again, this is most pronounced in future JS-WR support (14% more) compared to other benefit types. Total future payments increase 3.8%. We note that the overall impact is only slightly larger for the recession scenario; a 2% short-term increase has a slightly larger impact compared to a 0.5% higher long-term rate.

The numbers above are for current clients. A rise in unemployment would also see a large impact on the future client numbers, with a particularly large effect on the number of JS-WR entries.

Sensitivity of the benefit system

We have used over 20 years of benefit history provided to estimate how sensitive each of the transition rates are to changes in the unemployment rate. We also estimate the extent to which these sensitivities differ across subgroups, including benefit type, age and region. There are inherent limitations to this approach, in that it assumes these sensitivities have remained roughly stable over this period. These sensitivities might change over time due to policy, demographic and other factors; this possibility adds uncertainty to the labour market attribution.

Unemployment rate as a proxy for the economy

There are inherent limitations to the use of the unemployment rate as a proxy for the economy's impact on the benefit system. For example, the impact of the global financial crisis in 2007 and 2008 was greater than our modelled sensitivity would predict; many other related economic events were occurring simultaneously that compounded the impact on the benefit system. Other important economic variables include participation rates, underemployment rates, short- and long-term interest rates, credit growth, consumer spending and business investment.

In particular, we note that the employment rate would also be a credible indicator of the labour market. It is highly correlated with the unemployment rate, and can be more predictive in some cases where the unemployment rate is low. However, we have previously found that it is less sensitive in downturns compared to the unemployment rate, which may underestimate the expected influx of new clients.

We have previously examined the possibility of extending the modelling of economic variables to include other drivers, including the employment rate. However, we have found that this is difficult from a theoretical (which indicators to include?) as well as a practical perspective (how to allocate signal between multiple correlated indicators?). For this reason, as per previous projections, we have chosen the unemployment rate as a strong single indicator.

8.5.3 Sensitivity to benefit dynamics

The transition model assumptions affect how clients are forecast to move through the benefit system each quarter. The rate at which clients leave their current benefit type (or re-enter benefits from the Recent exit segments) tends to be the most important of these transition assumptions.

Table 8.3 provides the sensitivities of the current client projection results to changes in the probability of moving off the current benefit for the biggest benefit categories. A 5% increase in a transition rate means that a client with a 20% probability of leaving JS-WR in a quarter is changed to 21% (=20% x 1.05).

Table 8.3 Current client projection results: sensitivity to changes to key transition model assumptions

	Future years of main benefit support					Future benefit payments				
	Base	5% increase in probability		5% decrease in probability		Base	5% increase in probability		5% decrease in probability	
		Change	Change	Change	Change		Change	Change	Change	Change
	(m)	(m)	(%)	(m)	(%)	($b)	($b)	(%)	($b)	(%)
Base	16.8					63.9				
JS-WR leave rate		-0.2	-1.0%	0.2	1.0%		-0.4	-0.6%	0.5	0.7%
JS-HCD leave rate		-0.1	-0.7%	0.1	0.9%		-0.3	-0.4%	0.5	0.8%
SPS leave rate		-0.1	-0.7%	0.2	0.9%		-0.5	-0.8%	0.8	1.2%
SLP-HCD leave rate		-0.1	-0.5%	0.1	0.7%		-0.2	-0.3%	0.5	0.8%
Non-beneficiary re-entry rate		0.4	2.5%	-0.5	-2.8%		1.3	2.1%	-1.3	-2.1%

We see that of the transitions listed, the Non-beneficiary re-entry rate causes the largest impacts on the both the future years and future benefit payments measures. The relative sensitivity of the future years of main benefit support measure is larger as there it does not account for time as a supplementary only client, unlike future benefit payments which include all payments.

We discuss the actual transition rate changes for key models in Section 4.7. The sensitivities shown are roughly in line with the types of movement we observe from year to year in the absence of major reform. For example, the JS-WR and JS-HCD transition rate assumptions were both reduced by about 2.5% this year in light of experience. In contrast, rates affected by the reforms have moved markedly; for SPS (youngest child over 5), the average leave rate assumption increased from about 6% to 8.7% over 2014-2016, an increase of more than 40%.

8.5.4 Sensitivity to inflation and investment return assumptions

Many other assumptions in the model are explicit, and the degree to which the adopted assumption has an impact on the results can be measured by sensitivity tests. Such assumptions include inflation and discount rates as well as transition probability assumptions.

Inflation rates affect the rate at which benefit payments are increased. Investment returns affect how much interest is earned on a notional sum set aside today, so that a higher rate of return means that less money needs to be set aside today, lowering the future cost in today's terms. Both these rates are set according to NZ Treasury accounting assumptions (see Section 2.3.4). Both these assumptions can change significantly from year to year, and so form part of the annual change in estimates of future benefit payments.

Table 8.4 shows the action of these two assumptions is close to symmetric; a 1% increase in inflation rates is very nearly equivalent to a 1% decrease in investment returns (and vice versa). We estimate that a 1% increase in inflation would increase the total of future benefit payments to current clients (before net loans and expenses) by 10.7%, or $6.9 billion. Conversely, a 1% decrease in inflation would decrease the estimate of benefit payments to current clients by about 9.1%, or $5.8 billion.

Table 8.4 Total future benefit payments to current clients: sensitivity to changes in inflation and discount rates

Scenario	Lifetime benefit payments to current clients ($b)	Change ($b)	Change (%)
Base	63.9		
Inflation +1%	70.8	6.9	10.7%
Inflation -1%	58.1	-5.8	-9.1%
Discount rate +1%	58.0	-5.9	-9.2%
Discount rate -1%	71.0	7.1	11.1%

Assumptions in the face of reforms

As already discussed (see Section 4.7) it is particularly hard to set assumptions in the presence of reforms. While Welfare Reform assumptions have largely been settled, other changes are visible in the system such as the impact of the Child Material Hardship package and the marked decrease in SUP exit rates. While we believe assumptions related to these are reasonable, they are subject to greater than usual uncertainty.

8.5.5 Other sources of uncertainty

Systematic change to the benefit system

Our models deliberately take a 'status quo' approach to the benefit system projection. Thus, we have not allowed for any future policy changes affecting benefit eligibility or payments. It is highly unlikely that there will be no significant policy changes over the next 50 years, and future reforms would be expected to affect the ultimate durations with benefit support and payments among current clients.

We regard this 'status quo' approach as an important feature of the projection. Setting a baseline allows us to measure the effect of future policy and operational changes as they emerge. For example, in the current projection we have been able to measure the change in future payments attributable to the recent Child Material Hardship package because our prior projections were on a pre-reform basis.

Inability of the projection to reflect real-world complexity

All models are simplifications of a complex system. This simplification assumes that factors not modelled remain generally stable over time. In reality, there are many factors outside the scope of the model that

are likely to evolve with time. We give a few examples to illustrate the flavour of such factors below, but there are many others.

» We do not model factors such as living circumstances (aside from public housing) or access to public transport, although both have been shown to be relevant for employment outcomes. Should the mix of these factors among the benefit population change substantially, we would expect experience to differ from projections.

» Society's attitude to benefit support might evolve over time. If it became less socially acceptable to use benefit support for extended periods, this may cause changes in behaviour not explainable by other factors in the model.

» Natural disasters such as the Christchurch earthquakes have significant effects on the benefit system; benefits are typically high initially, but lower than usual during recovery phases. We do not consider such events in our estimates.

Such issues require us to consult closely with MSD to ensure we understand recent factors that affect the models as they become apparent. However, a similar argument to the systematic changes discussed above applies; not modelling these factors does not imply a failure of the projection. It still provides important feedback and can allow for significant events and trends as they occur.

Simulation error

Our projection models are simulation based, in that we use the models to simulate a client's path through the benefit system multiple times and average the result. This approach is discussed further in Chapter 9.

In theory, it would be possible to generate a series of 'unlucky' simulations, which biased the estimate too high or low. In reality, the chance of this is incredibly small and unlikely to materially affect the results. We estimate that the simulation error of the current client future payments projection is less than 0.1%. This makes simulation error one of the smallest sources of uncertainty in the projection.

Part C – Approach

9   MODEL APPROACH

9.1   Introduction

This chapter explains how Taylor Fry carries out the projection of the NZ benefit system. As noted elsewhere, we perform a combined projection of both the benefit system and public housing system. This chapter is deliberately brief and focuses on the benefit system; those seeking more detail may be interested in reading the following:

»   The 2015 valuation of the public housing system[28] which describes the combined approach in more detail, and

»   The 2013 valuation of the benefit system[29] which describes the benefit system modelling in greater detail, most of which is still relevant.

Further technical details are also available in the appendices to this report.

At its most basic level, the projection model approach involves four steps:

»   Modelling benefit dynamics for current and incoming clients based on a variety of predictive characteristics to determine how many are likely to receive benefits, and what type of benefits, each quarter
»   Estimating payments to these clients and allowing for inflation
»   Discounting the inflated payments to reflect the time value of money
»   Adding the projected net cost of loans and MSD expenditures.

9.2   Data and data quality

9.2.1   Data supplied

We were provided with several individual level datasets. To protect the privacy of individuals, original social welfare numbers (SWNs) were not supplied in the datasets described below. The client identification numbers used for matching datasets were separately created by MSD. Other personal information such as names and addresses were not supplied. A full list of files provided is in Appendix D.

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[28] https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/social-housing-valuation/index.html
[29] https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/valuation-reports/index.html

The 2013 valuation report included detailed information about the benefit data supplied by MSD. The equivalent data has been supplied this year, including:

» Data files containing payments up to 30 June 2017 but extracted as at 31 July 2017

» Data files containing demographic information such as education level and ethnicity. We have used MSD's priority ordering of ethnicity in cases of multiple stated ethnicities

» Benefit rates (all but the most recent benefit rate information was carried across from the previous valuation)

» Historical and forecast economic variables: Treasury forecasts for population, unemployment, and future discount and inflation rates

» Other miscellaneous files, including reason codes, explanations of datasets and district codes.

MSD also provided updated versions to the following datasets, which were described in the 2015 report and included both benefit system and public housing clients:

» **CYF**: Care and protection and youth justice: types of events and dates
» **Criminal conviction history**: Criminal convictions and associated sentences in the corrections system.

As the projection uses a combined benefit system – public housing model, we were also supplied data for public housing. MSD provided updates to the following datasets, which were described in the 2016 report:

» **Monthly register snapshots** at a household and individual level
» **Monthly tenancy snapshots** at a household and individual level
» **Monthly property snapshot**
» **Tenancy exits** at a household level providing a reason for exiting public housing

Reliability and difficulties associated with the public housing data are discussed in Section 9.2.4.

New data was also supplied by MSD this year:

» **Education:** Multiple datasets from the Ministry of Education were provided covering clients who have left a NZ school since 2008. These contained information on secondary schooling, including:

- Enrolments
- Decile of school
- Qualification level attainment at exit
- Suspensions and stand-downs
- Absences

As well as:

- Tertiary enrolments
- Gateway program enrolments and credits
- Trade academy program enrolments and credits

» **Benefit sanctions:** Two data sets were provided, one containing information on the type of sanction, reason indicators and date of any sanctions received by clients since July 2001. The other containing information on reason, attendance and date of client appointments with case managers.

» **HCD reassessment frequency:** This dataset contained approximately quarterly entries from June 1996 of the reassessment frequency for people receiving SLP-HCD or SLP-Carer benefits.

» **3k to work grants:** This one-off dataset indicated the grant date and effective date for recipients of 3k to work grants.

Public housing identities were matched by MSD. This involved:

» A mapping for housing identities to welfare identities

» A migration file that examined identities moving from HNZ to MSD systems (there was a system change during August 2015), at both a household and individual level.

We used a combination of the above to construct the longitudinal series for modelling.

To link the benefit, public housing, Corrections, CP/YJ and Ministry of Education information, MSD provided a matching between anonymous identities in each of the data sets. Such matching processes have the potential for false positives (people matched when they are in fact different) and false negatives (people not matched when they are in fact the same). Rates of mismatch are difficult to estimate; they will tend to dilute the signal associated with benefit receipt, CP/YJ, criminal convictions history and Ministry of Education data slightly, but the mismatch should not affect the main conclusions related to these variables and does not affect the overall projected payments or years of support.

The new approach to matching (necessitated by the wider array of datasets) means that matches between systems are more likely to change from year to year. We have monitored this effect; it occurs for a small number of individuals and do not believe it materially alters the results.

9.2.2   Integrated Dataset Infrastructure (IDI)

We used the IDI for the health outcomes analysis in Section 3.7. Benefit system data within the IDI is similar to that provided to us for the projection modelling. We used various Ministry of Health datasets, including tables on chronic conditions, outpatient, emergency department, community referred diagnostic and hospitalisation events.

Further details on the datasets used, and disclaimers regarding our use of the IDI, are included in Appendix D.5.

9.2.3   Modelling variables

Data provided on the same basis as previous years

The models discussed later in this section use a number of variables to predict the probability that a beneficiary will transition from one state to another (such as exiting main benefits), or the expected payment levels corresponding with their benefit state. These are as follows:

» **Time-related variables:** Benefit quarter and the corresponding unemployment rate (at a national and regional level). We also include the first quartile market rent at a territorial local authority level (local board level for Auckland) for some housing-related models.

» **Client-related variables:** Age, gender, ethnicity, (MSD-reported) education level and region. An updated version of the education level variable was provided in 2016.

» **Client intergenerational history:** Whether the client's parents were beneficiaries while the client was aged 13-18 and the intensity of benefit receipt.

» **Benefit history:** Number of quarters on current benefit, previous benefit, since first benefit and spent in each benefit state. Proportion of time on benefit in the past few years was added in 2017.

» **Family-related variables:** Youngest child age and number of registered children (for SPS clients), and Partner flag (for JS and SLP clients).

» **Health and disability-related variables:** Incapacity type for JS-HCD and SLP-HCD clients, and whether the incapacity belongs to the primary client or to their partner. We added some additional flags related to mental health conditions in 2017.

- » **Criminal convictions history-related variables:** Of the previous year, percentage of time in prison and percentage of time serving any criminal sentence, excluding driving related offences. Of the past 10 years, percentage of time serving any type of criminal sentence, excluding driving-related offences and any type of criminal sentence specifically relating to a theft offence.

- » **CYF-related variables:** Whether the client as a child was involved in a care and protection or youth justice event. If so, the number of events, the age of the child at the first event and the total days of any care and protection placements.

- » **Public housing-related variables:** Whether a client is in public housing or on the register, for how long, rent and subsidy levels, household size and other household characteristics, as well as historical variables related to previous stints in public housing.

New data for the 2017 projection

New **education** variables used for modelling included**:**

- Whether a client is still at school
- The NZQF level attained when leaving school
- The total duration of any stand-downs or suspensions while at school
- The NZQF level of any tertiary enrolment in that year

As well as these new education variables, we retained the previously used education-level variable (from MSD). The new education information was preferably used for modelling where it was available.

One new modelling variable relating to **benefit sanctions** was used – the number of sanctions a client has received in the last 5 years.

One new modelling variable relating to **HCD reassessment frequency** was used – whether a SLP-HCD client's incapacity is reviewable every 2 years or never.

Variables not used in the projection model

The omission of certain variables does not mean they are unimportant. Rather, it indicates that our results can be viewed as an average over that variable. We have attempted to use a series of available variables that provide the highest predictive power, while keeping models computationally manageable. Many of the variables that have not been used are highly correlated to the ones chosen, so do not offer significant additional predictive power.

9.2.4   Reliability of data

Standard investigations that we perform regarding the reliability of data are discussed in detail in previous reports. In summary, these include:

- » Checks on internal consistency of rate files
- » Consistency across provided files
- » Consistency with files used in the previous projection.

Overall, benefit system data consistency is good. As with previous years, we found small differences in the historical data, affecting less than 0.5% of records. There is also a small decrease in historical payments, which occurs each year; our data is supplied net of overpayments, so some historical reversals are applied to it over the course of the year.

While differences in the input data have the potential to change the estimated parameter values of the projection models and hence the results, the inconsistencies here are negligible in the context of the millions of client IDs and the tens of millions of records, so the impact should be negligible as well. We

believe that a majority of the noted differences can be explained as retrospective corrections to data made by MSD.

Public housing data

Data provided on the public housing system is materially lower in quality than that on the benefit system. We noted several issues as part of both the 2015 public housing valuation and 2016 benefit system report, and these remain in the 2017 projection model. At a high level, this impacts our ability to construct a longitudinal view of clients' public housing history, and understand detailed information about households.

The main issues affecting HNZ data (per-August 2015) were false entries/exits, missing links between housing and benefit system populations, duplicate records and missing fields, such as household roles and ethnicity. For MSD data (August 2015 onwards) we observed discontinuities and missing data at the changeover date, plus different recording practices for register applications.

For all data issues, we have taken steps to try to minimise errors across the longitudinal series, including the latest data migration, but some dynamics still show instability. The risk of public housing data quality adversely impacting the benefit system projection is minimal; we have separated out the change associated with the inclusion of public housing. The aggregate trends in the benefit system remain unchanged once we average over all clients. The influence of public housing on benefit dynamics is important but less important than other factors already in the models.

Summary

Based on our checks and reviews we believe the datasets are sufficiently accurate, consistent and coherent; and we are satisfied that they appropriately represent benefit payments made by MSD. This conclusion is subject to the following limitations:

» The existence of retrospective changes to payment levels (usually in the order of 1%) means that some care should be taken with the most recent payment data. We have continued to use a one-month lag in the data; this allows most of these payment changes to be made while not unduly delaying the projection and report.

» A small but non-trivial number of clients have start dates that do not reconcile between the provided spell and rate files. Previous discussions with MSD suggest this is a consequence of one or more of:
  • Retrospective data amendments
  • The cleaning process applied to the spell data
  • Treatment of partners of clients receiving benefits.

Where these differences have occurred, we have used the rate file start date as authoritative. We do not consider that this has a material impact on the model results.

Note that while we make significant efforts to check the quality of data used in our analysis, we do not take ultimate responsibility for the accuracy and completeness of the data. Our reliance on the data provided is further discussed in Chapter 10.

9.2.5   Benefit state and payments

Benefit state was generally based on the benefit codes within the payment files. Some minor changes were required (see Section 9.2.8).

All modelling of average benefits paid per quarter has been done in current dollar values, as at 30 June 2017. This means older payments have been increased in line with historical benefit inflation.

9.2.6 Missing values

Several variables had a significant percentage of missing values:

» Ethnicity
» District
» Incapacity (type and number)
» Education and qualifications (the MSD data field)
» DOB (for housing clients, as mentioned above)
» SLP reassessment frequency (new in 2017).

Most are of the order of a few percent of records. However, data for the (MSD-provided) education variable is particularly poor – see the next subsection.

In some projection models missing variables are reasonable and can be included in the modelling process as an extra categorical level. In this model however, one of the main causes of a missing entry was a fast exit from the benefit system (suggesting perhaps that there was insufficient time in these instances to collect client information fully). This means that missing variables **appear to predict** a fast exit from the benefit system, when in fact the reverse is true (fast exits lead to missing variables).

To avoid this bias, we have interpolated missing values; that is, we randomly allocated values in cases where they were missing. This allocation was performed based on the distribution of variables for the clients with non-missing values when they first enter the benefit system. We believe this is the most effective way of handling missing values, and avoids the need to delete these records entirely. Extra check variables were created to indicate when variables had been interpolated. The education variable that was interpolated was the MSD education level field (as in previous years).

The incidence of missing values this year is similar to previous years among benefit system clients.

For data that is matched by MSD (public housing, Intergenerational, CYF, Corrections and Ministry of Education) there are also 'missing' data fields that occur due to a failure to match. No explicit allowance has been made for this, but the aggregate impact is expected to be small.

9.2.7 Data quality issues for education qualifications data

For clients not matched to the new Ministry of Education datasets (all clients over age 25 and about 15% of clients aged under 25), we have continued to use the educational attainment field provided by MSD. This field has relatively poor quality – 35% of the current client cohort (who do not have matched Ministry of Education data) have either missing or 'None' for their MSD-collected attainment. As for previous years, we have included it by interpolating the missing observations to minimise bias.

Education-specific results should be treated with care – particularly for clients aged over 25.

9.2.8 Recasting data for the post-reform environment

Changes to benefit types from mid-July 2013 cause a discontinuity in the dataset. In particular, JS-WR numbers are higher than the old Unemployment Benefit because former DPB>14 and WID/WA clients are also included. To sensibly model across the discontinuity, we have recast the historical data on a post-reform basis. This has a number of small practical consequences for the modelling data; for instance, a transfer from DPB>14 to UB in the historical time series is no longer counted as a transfer. This allows us to view a more continuous time series and better observe the change in transfer behaviour post-reform.

9.2.9 Missing eligibility fields

The payment data files contain an eligibility field to distinguish between benefit subtypes, as follows:

» Youth Service: YP and YPP

- » Jobseekers: JS-WR and JS-HCD
- » Supported Living: Carer and HCD.

About 75,000 payment spells since the reform dates (0.4% of the total) had a missing eligibility field. This is a similar rate to what was observed last year. We have inferred the missing eligibility field by examining surrounding spells for those clients affected.

We have also applied some minor corrections to 'split entries' on the payments files, where a client's eligibility changes within a payment spell.

9.2.10   Potential false matching across sources

In some instances, more than one anonymous CYF or Corrections identities has been matched to a single anonymous MSD client. Allowing these identities to be the same person would create unlikely overlapping corrections spells, or unlikely age-time relationships. Therefore, in consultation with MSD, we have allowed only one match per person. This affects about 3% of Corrections records and less than 1% of CYF records.

9.3   Projection model parameters

9.3.1   Benefit population and model definition

Definitions of payments and clients in scope for the projection model and are discussed in Appendix B and summarised here. The process for determining these is detailed in previous reports and Appendix F.

A principle underlying the investment approach is a focus on improving employment outcomes for working-age beneficiaries. Thus, the scope is limited to clients aged 16-64. Payments such as AS and DA to clients 65 and over have been excluded from scope. In a similar vein, Student Hardship benefit has been excluded, as this payment is related to pursuing tertiary education, not employment in the near term. In 2017 we extended the scope to include supplementary benefits paid to those on NZ Superannuation and aged under 65. This typically occurs when the client has a partner aged over 65.

Current clients include clients who received benefit support at any point during the 12 months prior to the projection date. This is consistent with analysis that shows exits longer than one year are far more likely to be sustainable. In other words, clients who exited less than a year ago are more likely to return, and it is therefore appropriate to include them.

We model partners of benefit clients in their own right, even though in practice some benefits are linked to partnership status. This is consistent with recent changes through benefit reform such as increased work expectations and active case management for partners who can work.

Youth Payment (for those under age 18) and Young Parent Payment (for those under 20) have been grouped with JS and SPS respectively for modelling purposes to provide greater insight into long-term trends. However, we note that these payments are still identifiable in the projections when reviewing results by client age.

Our definition of future client cohort is clients who receive a benefit in each future projection year, who had not received a benefit in the previous 12 months. This creates some definitional issues related to double-counting of client numbers and cash flows for clients who re-enter after more than one year. This double counting is definitional rather than practical – our integrated projections will contain a given cashflow only once.

9.3.2   Other parameters

Projections are conducted annually as at 30 June. For the 2017 projection earlier data extracts up to 31st March were used for modelling. A further extract covering to 30 June was used to create the projection

cohort. Both sets of data extracts were made after a one-month delay to allow data to mature; for example, adjustments due to abatement against earned income. Projected payments are gross of tax for consistency with Crown accounts, and to better reflect the total future cost from MSD's perspective. We use inflation and discount rates consistent with Treasury economic forecasts.

9.3.3   Reconciling Taylor Fry and MSD definitions

There are a few points of difference in how client status is determined for our modelling and projection compared to MSD's standard definitions:

» **Whether a client is on benefit at any given time:** By (our) definition, a client is on benefit in the projection if they receive any payment in the quarter. In comparison, MSD typically defines this to be whether a client is on a spell at the end of a quarter.

» **Whether a partner spell is counted:** We have modelled partners of main beneficiaries as separate individuals. MSD tends not to count partners in client numbers.

» **Duration:** While we use a continuous duration measure consistent with MSD to allocate to segments, we sometimes refer to 'duration on benefit', meaning the number of successive quarters on that benefit under our quarterly definition.

We explicitly simulate benefit status at the end of a quarter, as well as continuous duration. We also have partner indicators that change dynamically over time. We also note that some benefit type definitions have been broadened to include similar payments. Most notably, Hardship and Emergency Benefits are included in the Jobseekers Support benefit.

9.4   Modelling benefit dynamics and payments

9.4.1   Structure of the model

Overview

In the broadest of terms, the projection methodology is as follows:

» Starting from all current beneficiaries in the projection year, predicting the **number** who will receive working-age benefits each future quarter over their lifetimes.

» Predicting the **number** of new beneficiaries, in each of the next five years, receiving working-age benefits each future quarter over their lifetimes.

» Estimating **payments** to these clients, from the September 2017 quarter onwards. These are initially estimated in 30 June 2017 dollar values, but subsequently adjusted to allow for **inflation** from that date to the date of payment.

» Estimating the **total future benefit payments** by:
  • Discounting these inflated payments to allow for investment return
  • Adding components for loan recoveries and MSD expenses.

Each client is assumed to be in a single benefit 'state' each quarter, out of a possible nine states (eight benefit types and a 'not on benefit' state). Clients then move between states from quarter to quarter and have expected payments assigned, depending on their state. Given this general structure two broad types of model are needed, each of which is discussed in turn, below:

» **Transition models**, which model the probability of remaining in the current state, or moving to each of the other eight states, for each quarter.

» **Payment models**, which calculate the average benefits received by the client given their current state.

An overview of the model payment structure is provided in Figure 9.1. Note that for modelling purposes, YP are included within JS, and YPP are included within SPS.

Figure 9.1 Overview of model payment structure

Tier 1 benefits		Tier 2 benefits	Tier 3 benefits
JS-WR	JS-HCD	Accommodation supplement	Hardship payments
Emergency benefit	SPS	Disability allowance	Recoverable assistance
SLP-HCD	SLP-Carer	Child disability allowance	
Orphans / U/supp child			

Work-focused investments	Childcare subsidy	Employment interventions

Income support administration
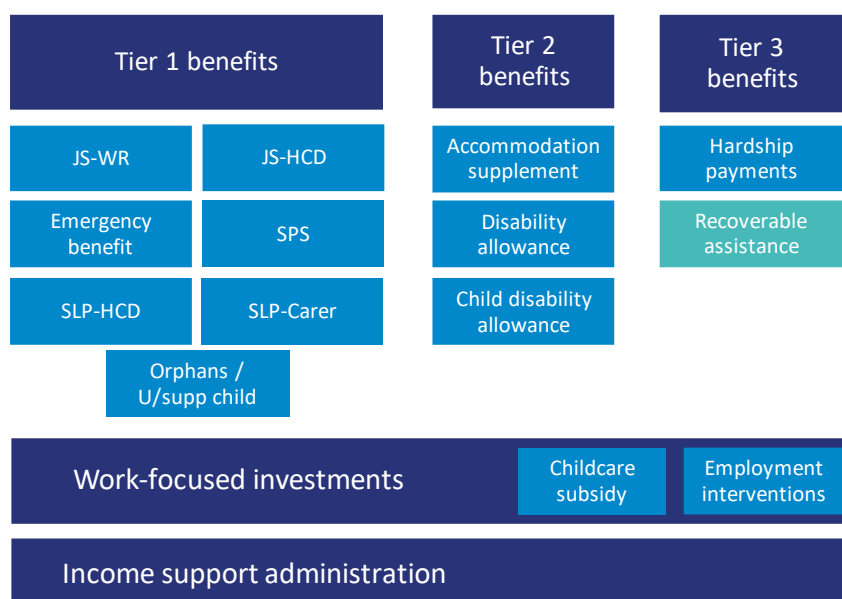
Changes in the 2017 projection

Each year we enhance the project methodology to add new detail, carefully quarantining the effects of methodology changes from performance-related experience. The most important changes this year were:

» Extension of child protection, youth justice and benefit system intergenerational variables to age 30

» Improved allocation of partner indicator for SLP-HCD entrants

» Inclusion of proportion of past few years on benefits and SLP-HCD reassessment frequency

» Introduction of new education and benefit sanctions data

» Improved handling of public housing that is made available and occupied by a new household within the same quarter

» Inclusion of some children in public housing as part of the projection cohort.

The overall impact of these changes on the aggregate results is small, but there are compositional changes for some (for example, the new education data increases predicted duration on benefits for some and lowers it for others).

Modelling benefit dynamics

Quarterly format and allocation to state

We have assigned a single **benefit state** to each client for every quarter, based on their main (Tier 1) benefit type, SUP (if Supplementary benefits only), or NOB (Not on benefits).

We recognise that it is possible to receive more than one benefit in a quarter; and when this occurs, we use the following order of precedence:

» Assign to the main benefit (except OB) received for the most number of days in that quarter

- » If no main benefit, assign to OB (if appropriate), then SUP if any AS, DA or CDA receipt during the quarter

- » If no main or supplementary benefit (or CCS, EI, or HS only), assign to NOB.

As part of the joint projection we have also assigned a single **housing state** to each client for every quarter. We use three public housing states, in a public house (PH), receiving AS (AS) and neither.

Similarly, we recognise it is possible for a person to be in more than one public housing state within a quarter; and when this occurs, we use the following hierarchy:

- » If in public housing for any portion of the quarter assign 'PH' state.

- » If not in public housing at any time in the quarter and receives AS then assign 'AS' housing state.

- » If not in public housing at any time in the quarter and no AS receipt in the quarter, then assign 'Neither' housing state.

The quarterly definition tends to give more stability to beneficiary numbers over time, which is useful for long-term projection.

Transition models

The transition model approach focuses on understanding how people move through the system over time. We estimate the number of clients per quarter by estimating their probability of transitioning from any given state to any other each quarter. While most of the 81 (that is, 9 x 9) different benefit state transition possibilities are observed in each quarter, the likelihood of many of these transitions is very small. We also estimate probabilities for the 9 housing state transitions.

The most frequent benefit transitions are clients who either:

- » Remain in their current benefit state

- » Move from a benefit state to no benefits (exiting main benefits, or from a modelling perspective, moving into the NOB state).

We have designed a series of probability models that focus most heavily on these key transitions. Further details of the transition models are provided in Appendix G.

New entrants to the benefit system

For the purposes of the definitions of model scope agreed with MSD, new entrants to the benefit system include those returning to benefits after at least 12 months off benefit as well as clients genuinely new to the system. New entrants are captured in the future client projection. Numbers of new entrants are modelled separately and were discussed in Chapter 8.

Retirements

Recall that the scope of the project includes only payments to working-age recipients. Our projection 'retires' clients once they reach the age of 65, removing any further contribution to lifetime benefit cost.

Mortality

Client deaths are not explicitly allowed for in the modelling for those aged under 65, however they are allowed for implicitly. For example, if a particular incapacity type led to higher deaths, this would be reflected as a higher benefit exit rate for this subgroup. This approach effectively fixes mortality assumptions for the duration of the projection. Given the relatively low mortality among clients aged under 65, we believe this assumption is not unreasonable.

Modelling payment costs

Payment models

Clients in each state can receive several different benefit types simultaneously; typically, a main benefit plus the various types of 2nd and/or 3rd tier assistance such as Accommodation Supplement or Hardship Assistance. Clients might also receive Recoverable Assistance payments, the bulk of which is later recovered (see Section 7.4).

To obtain the payment type results presented in Section 7.2, separate payment models are required for each combination of benefit state and benefit type received while in that state. This leads to a significant number of payment models; for instance, there are nine payment models for clients in the SPS benefit state (one for each of main Tier 1 benefits, OB, AS, DA, CDA, CCS, HS, EI and Recoverable Assistance). Note we allocate all Tier 1 payments to the current benefit state. This means there is a reallocation in cases where a client receives more than one Tier 1 benefit during a quarter. However, the impact of this reallocation is small. The models also vary according to other client characteristics listed in Section 9.2.2.

While there are many payment models, we note that the relative significance of each differs greatly. Main benefits plus the Accommodation Supplement make up 90% of benefit payments projected for current clients, so these payment types are modelled in greater detail.

For 2nd and 3rd tier assistance other than Accommodation Supplement, payments are modelled as an average value across people in each benefit state. For example, the average DA payment to Jobseeker – HCD clients, conditional on attributes like age, gender, and so on. Thus, these payment levels are appropriate for the aggregate and segment level projection, but must be carefully interpreted when inspected at an individual level.

Payments are modelled in 30 June 2017 dollars, with inflation applied afterwards to projected payments.

9.4.2   Projecting client numbers and payments

Simulated versus exact projection

A key design choice was whether to calculate exact results based on the underlying models or to estimate approximate results using a simulation approach. The differences between the two are explained below:

» **Exact:** this approach tracks every possible outcome for each client for every future quarter and its associated probability based on the underlying models. This process has a heavy computational load due to the many possible outcomes for each client.

» **Simulation:** this approach follows each person through time, using the transition probabilities to simulate a single path for a client. This process is then repeated many times to determine many possible paths for each client. This is also computationally intensive, though less so than the exact approach unless a very large number of simulations are run.

In many ways, the exact approach is preferable; for instance, it gives more correct estimates of the mean, and on the relative likelihood of rarer events. This approach was taken in the 2011 projection model. However, the addition of extra benefit states and modelling variables has made the exact approach computationally intractable.

We have adopted the simulation-based approach since the 2012 projection model. The results presented make use of 10 independent runs of the projection. Based on an analysis of simulation variability, we believe the estimated average of the total lifetime value of benefit payments for the current cohort should be within 0.1% of the true average that would have been obtained from an exact approach.

Further details on computational aspects of the projection are included in Appendix I.

The current client projection

For the current client projection, we take all clients in scope at the projection date. These clients are allocated to segments, and have the appropriate model variables attached (age, duration, and so on). We then apply the transition models to calculate transition probabilities for each future quarter, starting with September. Once allocated to their next quarterly state, the payment models can be applied to calculate quarterly cash flows. This approach is then applied to successive quarters until the end of the projection (about 200 quarters).

The future client projection

The future client projection works in broadly the same manner as the current client projection. The only difference is the number of client entries and their characteristics (age, ethnicity, etc.). Therefore we:

» Build a model of aggregate numbers entering each benefit type each quarter. This depends on demographic and macroeconomic measures such as population growth and unemployment rates.

» Randomly sample client characteristics from the equivalent population of people entering the system in 2015/16.

» Project the sampled clients forward.

This approach treats client returns and new entries simultaneously (the sampling population from 2016/17 includes both returning and new clients). It assumes that the relative numbers of new entrants versus returns will be similar to that seen in 2016/17.

Total results are obtained by summing the 20 quarterly cohorts of future client entries into five annual cohorts and discounting their future lifetime payments into the middle of each year.

In 2016 we integrated the projection of future clients with the projection of current clients; the main difference is that the number of future entrants were reduced in the future client side to allow for the effect of current clients exiting benefits for a year and then re-entering as a 'future client' (by definition).

9.4.3   Modelling the evolution of dynamic variables

Some of the modelling variables tend to remain fixed over the projection; for example, gender and quarter of birth. However other variables, such as duration and registered children will evolve over the course of the projection. We refer to these variables as 'dynamic'. The pattern of this evolution needs to be modelled and allowed for. We describe our treatment for each of the dynamic variables below.

Benefit history variables

Measures related to benefit history include number of quarters on current benefit, quarters since first benefit, number of quarters on various types of benefit, proportion of time on main benefits in the past few years, and previous benefit received. The measures evolve naturally based on incremental changes each quarter, and whether the client remains on benefits for the entire quarter.

We model continuous duration as an overlay on the projection. Based on how a client moves between benefit states on a quarterly basis, we model the probability that their spell was continuous and increment it accordingly.

Region

We have built simple models to simulate how people move between regions while they are on and off benefits. Various characteristics affect the probability of movement including age, duration, ethnicity, current region and benefit type. The probability of moving to a different region is calculated each quarter as part of the projection. If a client moves, they are probabilistically allocated to a region with weightings based on their starting region and historical movement patterns.

In 2016 we added an extra layer of probability models related to a client's territorial local authority (and local board for those in Auckland). This was primarily to improve the projection of public housing demand.

Incapacity type

While clients are receiving JS-HCD or SLP-HCD their incapacity type is used as a predictor variable, using 15 different incapacity groups. We have models that allocate:

» Incapacity type upon entry into JS-HCD or SLP-HCD
» The probability of incapacity type changing while in JS-HCD or SLP-HCD
» The new type of incapacity if there is a change while in JS-HCD or SLP-HCD.

These models rely on a number of client characteristics. This includes demographic characteristics (age, gender and ethnicity), benefit history (duration and current benefit) and incapacity history, as well as an allowance for trends over time.

Partner-related variables

Two partner-related variables are maintained in the projection. The first is a flag indicating whether the partner is also registered on the benefit, and is applicable for JS, SLP-HCD and EB. The second is a flag indicating whether it is the partner who carries the incapacity for SLP-HCD and JS-HCD. We model how these characteristics evolve:

» When people enter the appropriate benefits
» While people remain on benefits.

These models depend on:

» Client age, gender, ethnicity and partner status
» Current benefit type and duration on benefits
» Trends over time.

Child-related variables for SPS recipients

The number and ages of registered children for SPS recipients is highly predictive of both average benefits paid and the likelihood of moving to other benefits or out of the system. Changes over time include new children being born, children aging and therefore becoming independent, children living with a different carer, and so on. People who are not receiving SPS do not necessarily have any child-related information recorded.

The two child-related variables we find to be most significant are the **number of children** (1, 2 and '3 or higher') and the **age of the youngest child**. We model:

» The distribution of child numbers and youngest age upon the entry of their parent/s into SPS. These depend on client age only.

» The probability of a change in the youngest registered child while on SPS. This depends on age, gender, child age, duration on benefit, ethnicity and time trends.

» Distributions of child numbers and youngest ages, given the outcome of the new youngest child model. These depend on the same variables as listed in the previous bullet point.

Criminal-conviction history related variables

For the criminal-conviction related variables, we have developed a set of models which predict:

» If a new sentence related to a conviction occurs in the quarter

- » The type of sentence (prison, theft related or other) given a new event occurs
- » The length of time served (the fraction of the quarter).

These models rely on several client characteristics including previous variable values, benefit state, duration, age, gender, ethnicity, CYF history, and others. The sentence type and length over the last 40 quarters are then used to construct the criminal-conviction related variables used in the main transition and payment models.

Child, Youth and Family related variables

The CYF-related variables can evolve until the client reaches 18. We have developed a set of models which predict:

- » If a CYF event occurs in the quarter
- » The event type, CYF-CP or CYF-YJ, given a CYF event occurs
- » The total days of any care and protection placements.

These models rely on several client characteristics. These include existing CYF history, benefit state, age and gender.

Public housing variables

While in a public house, we have probability models for the:

- » Evolution of income-related rent subsidy
- » Evolution of household size
- » Whether a transfer register application is made, plus its characteristics.

For those not in a public house we have models for whether a client is part of a new register application.

Education variables

We have models to track the evolution of secondary school educational attainment, interventions and tertiary enrolments. These apply to the new Ministry of education data, for clients aged 25 and under.

Benefit suspension variables

We project a variable for the number of suspensions in the previous 5 years, which requires a probability model for new suspension events over time.

9.5   Modelling net loans and expenses

9.5.1   Modelling net loans cost

There are a few ways in which clients become indebted to MSD. We value overpayments (whether arising from fraud or otherwise) and Recoverable Assistance (including benefit advances) separately. Summary results throughout the report present the combined total of all subcomponents as a 'net loans cost'.

Our approach to modelling is unchanged from 2016.

Overpayments

The rate file data provided is net of overpayments and fraud, which are corrected when MSD is made aware of them. If recoveries were made immediately and in full then there would be no need to value these components as part of the projection.

However:

» Not all overpayments and fraud debts are fully recovered

» It can take time to recover these payments, and since no interest is charged, this lag represents a cost to MSD due to the time value of money.

Thus, our approach to modelling overpayments and fraud is to estimate:

» Overpayments/fraud as a percentage of total benefit payments.

» Quarterly factors for the growth in total debts raised for clients with outstanding debt. That is, we model how debts raised can continue to increase.

» The proportion of outstanding debts that is either recovered or written off, given the number of quarters since the original debt was raised.

» The allocation of this last amount to recoveries and write-offs.

These models can then be applied to both the outstanding balances at the projection start date and the projected future benefit payments, giving four distinct components related to overpayments and fraud:

» Further overpayments/fraud for existing debtors
» Recoveries on overpayments/fraud for existing debtors
» Overpayments/fraud related to future payments for new debtors
» Recoveries on overpayments/fraud related to future payments for new debtors.

Recoverable Assistance

As noted above we have used the term 'Recoverable Assistance' to include all types of benefits and assistance that are recoverable (*excluding* overpayments and fraud). Thus, Recoverable Assistance includes benefit advances and recoverable Special Needs Grants (SNGs), as well as a few minor related payments. In the provided data, the payments related to Recoverable Assistance are included under specific benefit codes and recoveries are included in the loan datasets. As with overpayments/fraud, the costs associated with Recoverable Assistance relate to the non-recoverability of some assistance as well as any associated time lags.

The following methodology has been used for Recoverable Assistance:

» Payments are estimated in the same fashion as other benefits and assistance
» Recoveries are estimated as a percentage of Recoverable Assistance payments.

The amount of recoveries related to Recoverable Assistance has been relatively stable over the past few years when compared to Recoverable Assistance payments. For this reason, we believe that a simple percentage adjustment to the projected benefit payments for loan recoveries is appropriate.

Limitations to the loans methodology

Although we believe our projection of the net loans cost is a plausible forecast of future cash flows, there are a few significant limitations to the approach:

» The model does not attempt to estimate the extent of undetected and consequently unrecovered fraud and overpayments.

» A shorter historical series is provided for loans (data from June 2007 onwards), creating challenges in modelling and adding to the uncertainty of extrapolations.

» The assumption is made that Recoverable Assistance recoveries are a straight proportion of corresponding payments, and thus the dynamics of this loan type are stable over time.

We believe a more detailed analysis of loans is possible that better captures the dynamics of loans and recoveries, as well as giving some insight into the total level of overpayments and fraud, not just the detected level. However, such an analysis is beyond the scope of the current projection model.

9.5.2   Modelling Operating Expenses

MSD incurs expenses in delivering benefits, services and programs in addition to the cost of the benefit payments. These can be broadly categorised into:

» Program costs related directly to employment outcomes
» Program costs related to preparing beneficiaries for work
» Administration costs related to providing income support.

Unlike demand-driven benefit receipt, the level of expenditure is determined each year through the budget process, and tends to remain relatively stable. Previous annual expenses as well as 2017/18 budget expenses have been provided to us.

While costs are relatively fixed over time, a share of these costs is associated with current clients and those expected to enter within the next five years. This share is added to the projected payment estimates. The share of future expenses that is associated with new clients in year six and beyond is excluded. This ensures that expenses can be considered on a like-for-like basis with liabilities.

Our methodology for determining the future cost for administration and programs is to:

» Assume the total expense costs are **fixed in real terms** and are based on the 2017/18 budget

» Allocate expense costs to either current client cohort, future client cohort, or clients outside the scope of this projection model

» Proportionally allocate these expenses into the various categories listed above, based on the expense budget information provided by MSD.

9.6   Model checking and validation

There are many checks performed on the models to ensure their appropriateness. These relate to the:

» Individual models used, which are generalised linear model diagnostics statistics and plots
» Analysis of model changes from 2016 to 2017
» Detailed cohort-level analysis of differences in projection patterns.

Back-testing has also been performed in previous valuations. Its usefulness is somewhat reduced in the post-reform environment. Our projection checks this year have instead been focused on comparing pathways and transitions against previous years, in a detailed reconciliation.

Additional detail on diagnostics has been provided in the 2013 and earlier reports.

9.7   Approach to setting assumptions

9.7.1   Behavioural assumptions

Our approach to setting behavioural assumptions is discussed in Section 4.7. To recap briefly, we use our transition and payment models to understand how emerging experience differs from what was forecast. We conduct analysis, including splitting out the impact of cyclical changes, analysis of known changes such as policy and operational changes, and consultations with MSD to give further insight into the nature of these changes. This informs a judgement about the extent to which emerging experience is likely to continue.

9.7.2 Unemployment rate

As discussed in Section 2.3.2, the labour market is (unsurprisingly) an important determinant of benefit dynamics and client behaviour. We use standard Treasury forecasts for the national unemployment rate, detailed in Appendix C. We split out the effect on the model estimate of changes in the forecast unemployment rate; this analysis is provided in Section 4.3. Analysis of the sensitivity of the main estimates to different unemployment scenarios is provided in Section 8.5.

9.7.3 Inflation and discount basis

Benefit rates are indexed to inflation. Under accounting and actuarial standards for insurance and accident compensation, liabilities must be estimated allowing for future inflation and the effect of investment return; that is, discounting the estimated future cash flows to allow for the 'time value of money'. It is important to estimate liabilities allowing for both future inflation and the time value of money so that investment decisions can be made on a like-for-like basis. For example, an investment of $100 now to save $150 in 10 years' time would result in a different decision than an investment of $100 now to save $150 next year.

The projection model uses the standard Treasury forecasts of the Consumer Price Index (CPI) and Government interest rates for inflation and discounting of payment estimates, detailed in Appendix C. Changes to inflation and discounting assumptions will have a significant effect on the projected estimate of payments from year to year. However, these are outside the control of MSD. For this reason, we separate the change in the estimate attributable to these items from other effects. Results of this analysis are provided in Section 4.3. Analysis of the sensitivity of the main estimates to changes in these rates is provided in Section 8.5.

9.8 Compliance with actuarial and accounting standards

There are currently no accounting or actuarial professional standards strictly applicable to the valuation of social benefit liabilities. However, in general we carried out the estimate in accordance with standards applicable to the valuation of accident compensation liabilities.

As such, we have generally complied with the New Zealand Society of Actuaries Professional Standard No. 30 entitled "Valuations of general insurance claims". We have also, where appropriate, complied with International Financial Reporting Standards (IFRS). Specifically, estimates of future payments incorporate an allowance for future inflation, investment return and administration expenses on a basis specified by the standards. However, we have not estimated nor incorporated a prudential margin as is sometimes required by such standards. In our opinion this seems unwarranted given the use to which the valuation will be put.

It is worth noting that in October 2013 the International Actuarial Association published an International Standard of Actuarial Practice 2 (ISAP 2) "Financial Analysis of Social Security Programs". We do not believe that the standard's intention is to cover the type of social benefit system in New Zealand; the focus appears to be on schemes with narrower scopes and elements of funding. In any event, we consider that this valuation complies with those sections of ISAP 2 that may be considered relevant.

10   RELIANCES AND LIMITATIONS

10.1   Introduction

In preparing this report we have relied on data and other information provided by MSD without audit or independent verification. We have carried out internal consistency checks and some checks of the data against external sources for reasonableness in aggregate. Any material discrepancies in the data should be reported to us so that we can consider whether this report should be amended accordingly.

For the analysis of Section 3.7 we relied upon the accuracy of information contained in the Integrated Data Infrastructure. We have used the information without independent verification. It has been reviewed where possible for reasonableness and consistency.

This year there have also been issues related to data quality, particularly related to public housing and education data, discussed in Chapter 9. We have attempted to address these issues appropriately in our analysis.

There is an inherent limitation on the accuracy of estimates in this report caused by the fundamental uncertainty of attempting to predict the future. In our opinion, we have used techniques and assumptions that are appropriate, and the conclusions presented in this report are reasonable, based on available information. However, it should be recognised that the ultimate costs for the current and future client cohorts can be expected to differ, probably materially, from our estimates of those costs.

It is also worth noting that the NZ social benefit system is complex and there have been recent legislative and operational changes. This inevitably leads to more uncertainty than incremental re-calibration of an existing valuation framework. Over time as more valuations are carried out this aspect of uncertainty would continue to reduce in the absence of further material legislative and operational changes.

The estimation of durations and payments for both the current client cohort and future client cohorts is subject to influences whose effects cannot be determined with accuracy. Consequently, it is a virtual certainty that the ultimate payments will depart from any estimate, but the extent of this departure is subject to uncertainty. If potential outcomes and their relative likelihood were expressed as a probability distribution, we would consider our estimates to be the mean of that distribution. In particular, the estimates provided in this report contain no deliberate bias towards over- or under-estimation.

10.2   Nature and implications of risks

10.2.1   Nature of risks

The sources of uncertainty in our valuation estimates can be grouped into the following categories:

»   **Independent (non-systemic) risk**: Risks due to random variability in the number and amount of benefit payments, despite appropriate model structure. We judge this to be a relatively small component of the overall risk.

»   **Systemic risk**: This includes risks that, potentially, are common across more than one benefit type.

- Risks which are internal to the valuation process, which may also be referred to as **model specification risk**. This risk derives from the uncertainty over to what extent the models and valuation process as a whole deviate from a perfect representation of the benefits payments process, which is a complex, real-life system.

- Risks **external to the valuation process** which include future changes in the environment. This uncertainty reflects the fact that, even if our valuation model was perfectly correct, future legislative, policy, behavioural, demographic or economic changes may result in actual experience differing from our projections.

It would be possible to give precise quantification of the independent risk, by combining the standard errors arising from the various sub-models built. However, given the probable size of systematic risk factors, such an estimate would likely prove misleading. System risks are very difficult to estimate; however, they are mitigated by ensuring consistency in how they are treated across valuation years.

10.2.2   Potential implications of internal model specification risk for the main estimate

Model specification risk may be minimised by following good modelling practices which include robust model structures reflecting key drivers, and thorough testing of the models. However, even after following these steps, the resulting models will still be an imperfect reflection of reality. There is a real risk that future results may deviate materially from projections due to factors excluded from the models.

By its nature, model specification risk is difficult, if not impossible, to quantify. However, we have looked at the sensitivity of the valuation results to one component of the model. The sensitivity of the estimate of future payments to a 5% change in either direction in the probability of moving on or off a main benefit (inflated and discounted) is discussed in Section 8.5.

10.2.3   Potential implications of external risks for the main estimate

Changes to any of the key drivers discussed in Section 2.3 will influence the future cost of the system. Understanding the impact of changes external to the modelling process is a key reason for conducting the valuation. Thus, external risks to the accuracy of the main estimate include:

» Future policy and operational changes
» Differences from forecast in economic assumptions (unemployment, inflation and discount rates).

We make no attempt to forecast, for example, future policy changes. We have used standard Treasury forecasts as the basis for our economic assumptions.

Understanding the sensitivity of the projection model to changes in key cost drivers can be useful in managing the benefit system. As noted above, we include analysis of the sensitivity of the valuation result to changes in some behavioural and financial assumptions in Section 8.5.

10.3   Other specific limitations of the projection

There are significant implementation challenges associated with the following issues:

» **The specific definition of 'continuous duration':** We use MSD's definition (excluding gaps of <14 days), but different treatment of partners may cause discrepancies with MSD's calculations, and matching to segments may not be exact.

» **The use of simulation to generate benefit duration and payment estimates:** We estimate the 'noise' typically associated with simulation projections at less than 0.1% at an aggregate level, but it is potentially significant at the cohort and individual level. Extra simulations may be required for subgroups of interest.

- » **The allocation of expenses and loans to segments and individuals:** Our analysis of loans and expenses is for the purpose of understanding their aggregate long-term cost, but due to data limitations is not accurately allocated between client types.

- » **Changes to the benefit system:** As discussed in Chapter 9, changes to benefit types in 2013 cause practical challenges in relation to, for instance, loss of information about obsolete benefit types, including some difficulties in reconciliation between the old and new systems.

- » **Data matching limitations for intergenerational, CYF and Department of Corrections data:** There are inherent technical limitations to how well these datasets can be matched to welfare beneficiaries. We use these variables aware that a small but material portion of clients will not be matched.

- » **Public housing data:** This data is of lower quality for longitudinal modelling. This inherently limits the degree to which we can accurately model housing history to project likely pathways.

None of the items above undermine the accuracy or usefulness of the projection. We raise them primarily so MSD is aware of some of the issues likely to arise in future work related to the investment approach.

10.4   Use of the Integrated Dataset Infrastructure

Our analysis in Section 3.7 of the report was performed using Statistics New Zealand's Integrated Data Infrastructure (IDI). This is a set of administrative data from government agencies linked across anonymous identities. All results that use IDI data are subject to the following disclaimer:

The results in this report/these tables are not official statistics, they have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand. The opinions, findings, recommendations, and conclusions expressed in this report/these tables are those of the author(s), not Statistics NZ.

Access to the anonymised data used in this study was provided by Statistics NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business, or organisation, and the results in these tables have been confidentialised to protect these groups from identification.

Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from the Statistics NZ website. [30]

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

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

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[30] www.stats.govt.nz.

11   GLOSSARY

The following tables give definitions for common acronyms and terms used in this report.

Table 11.1 Acronyms for benefit types and segments

Term	Definition
Tier 1 benefits (main benefits); and basis of segment definitions	
EB	Emergency benefit (included in Jobseeker Support benefit)
HCD	Health condition, disability (sub-set of both Jobseeker Support and Supported Living Payment beneficiaries with reduced work obligations)
JS	Jobseeker Support – new benefit type introduced July 2013 (replaces Unemployment Benefit and Sickness Benefit, and partially replaces Domestic Purposes benefit). We sometimes refer to people receiving JS as Jobseekers, or JS.
NOB	Not on benefits (in a given calendar quarter)
NOMB	Not on main benefits (in a given calendar quarter) but still receiving some benefit system support – a supplementary benefit or OB
RE	Recent exits – segment made up of clients who have stopped receiving benefits in the last year
SPS	Sole Parent Support – new benefit type introduced July 2013 (partially replaces Domestic Purposes benefit). We sometimes refer to people receiving SPS as Sole Parents, or SP.
SLP	Supported Living Payment – new benefit type introduced July 2013 (replaces Invalid's Benefit and Domestic Purposes Benefit – Care of the Sick and Infirm)
WR	Work-ready (sub-set of Jobseeker Support beneficiaries with work obligations)
YP	Youth Payment
YPP	Young Parent Payment
Tier 2 and 3 benefits (supplementary and hardship assistance)	
AS	Accommodation supplement (and related assistance)
CCS	Childcare subsidy (including OSCAR payments to clients)
CDA	Child disability allowance
DA	Disability allowance (and related assistance)
EI	Supplementary Assistance: Employment interventions (including training provided as supplementary assistance)
HS	Non-recoverable hardship assistance
OB	Orphan and unsupported child benefits
OTH	Other benefit, referring to those clients not on a key benefit, includes supplementary assistance, but not including JS-SH (student hardship), CCS, EI and HS
SUP	Clients receiving supplementary benefits (Tier 2 or 3), but no main benefit

Table 11.2 Other acronyms for benefit types discontinued in July 2013

Term	Definition
DPB	Domestic purposes benefit – sole parent (including Emergency Maintenance Allowance)
DPB>14	Domestic purposes benefit with the youngest child aged over 14
DPB-CSI (or CSI)	Domestic purposes benefit – care of sick and infirm
EMA	Emergency maintenance allowance (combined with DPB in pre-2014 projections)
IB	Invalid's benefit
IYB	Independent youth benefit (combined with UB in pre-2014 projections)
SB	Sickness benefit
UBSH	Unemployment Benefit Student Hardship (excluded from scope)
UB	Unemployment benefit (and related benefits)
WID/WA	Domestic purposes benefit – women alone and widow's benefit

Table 11.3 Terms used for 'Loans'

Term	Definition
Loans	Covers all cases where a client can become indebted to MSD, i.e. via overpayments of benefits or assistance (inadvertently or through fraud) or via recoverable assistance (including both benefit advances and other recoverable assistance)
Net loans cost	The future payments for the cost of loans after allowance for recoveries
Overpayments	Payments (benefit or assistance) where a client is inadvertently paid more than their entitlement. In the projection overpayments include those due to fraud
Recoverable assistance	In this report recoverable assistance includes benefit advances and recoverable assistance
Recoveries	Repayments of overpayments and recoverable assistance to MSD
Underpayments	Payments (benefit or assistance) where a client is inadvertently paid less than their entitlement. These do not appear in the projection because payment data is automatically adjusted when an underpayment is discovered, and clients are paid the amount of the underpayment

Table 11.4 Terms used for MSD expenses

Term	Definition
Benefit processing	Expenses related to benefit processing, defined as the ('income' share of Tailored Sets of Services to Help People into Work or Achieve Independence appropriation)
Collections	Services to manage the collection of overpayments and recoverable assistance loans from former clients and other balances owed (for working-age benefits included in the scope of the projection)
Income support administration	Expenses are analysed under two main categories; Income support administration is the category related to delivering benefits to clients
Integrity services	Services to minimise errors, fraud and abuse of the benefit system
MCA	Multi-category Appropriation
OSCAR	Out of School Care and Recreation subsidy to providers
Temporary measures	Time-limited expenses
Training and employment support	Includes Employment Assistance, Vocational Skills Training, Mainstream Supported Employment Programme, and Youth Transition Services
Work Focused Case Management	Includes 'work' share of Tailored Sets of Services appropriation; such as, Job Connect, employment coordinators, and work brokerage
Work focused investments	Expenses are analysed under two main categories, Work focused investments is the category related to helping clients prepare for and return to work

Table 11.5 Other common terms and acronyms used in report

Term	Definition
ABP	Average benefit paid per quarter to clients in receipt of a benefit that quarter
Applicant	An Applicant is the primary household member in a public housing application whilst on the public housing register
Average future lifetime cost	Refers to the expected future benefit payments to a client up to age 65, including inflation and discounting. Sometimes shortened to 'average lifetime cost' or 'average cost', but excludes benefit payments to the client made before the projection date
AWE	Average Weekly Earnings
BEFU	Budget Economic and Fiscal Update
Benefit dynamics	Refers to the way a client moves through the beneficiary system. These include (but are not limited to) exit rates, transfer rates and duration of benefit receipt
Board	Community or Local Board - geographical subgroup of territorial local authorities
CHP	Community Housing Provider - a housing provider (other than Housing New Zealand) that provides social rental housing and/or affordable rental housing
Collections	Services to manage the collection of overpayments and recoverable assistance loans from former clients and other balances owed (for working-age benefits included in the scope of the projection)
CP	Care and Protection
CPI	Consumer price index
CYF	Child Youth and Family
Future lifetime housing cost	The inflated and discounted total future cost projected for an individual or a household
GFC	Global financial crisis
HH	Household - the group of people who either share a tenancy or register application
HLFS	Household Labour Force Survey
HNZ	Housing New Zealand - the Crown agent that provides public housing services
Housing state	Current public housing status of a client, this is determined by whether a client is in public housing, on the register for receiving public house and/or receiving Accommodation Supplement
IFRS	International Financial Reporting Standards
Income support administration	Expenses are analysed under two main categories. Income support administration is the category related to delivering benefits to clients
Integrity services	Services to minimise errors, fraud and abuse of the benefit system
IRD	Inland Revenue Department
IRR	Income-related rent – a rent level reduced from market rent based on income level, reviewed annually by MSD. Market Rent = IRR + IRRS
IRRS	Income-related rent subsidy - a top-up payment to housing providers to bridge the difference between the income-related rent a client pays and the market rent of the property. Market Rent = IRR + IRRS
Market Rent	The average level of rent being paid for similar properties in the same area. Market Rent = IRR + IRRS
MCA	Multi-category Appropriation
MoE	Ministry of Education
MSD	Ministry of Social Development
NCEA	National certificate of educational achievement
NEET	Not in Education, Employment, or Training

NZQF	New Zealand Qualifications Framework
NIL	Not in a public house and not receiving Accommodation Supplement. Sometimes referred to as 'Neither'
NZ Super	NZ Superannuation – A non-means tested payment to New Zealanders aged over 65 who meet the residency requirements. Also includes the Veterans Pension
OSCAR	Out of School Care and Recreation subsidy to providers
Partial dependence	Refers to the dependence on a variable when isolated from other correlated variables; that is, holding other factors constant
Primary	A primary household member is nominated for a public house tenancy or register application. Refer to 'Applicant', 'Signatory' and 'Tenant'
Qtr	Quarter of the year - unit of measurement of time
Qualifying benefit	Benefit types for defining a client to be 'in the system'. This includes JS-WR, JS-HCD, SLP, SPS, EB, OB, YP, YPP, AS, DA and CDA. Notable exclusions are JS-Student Hardship, CCS, EI and HS (in the absence of other benefits payable to the same client). The practical outcome of this definition is that the full future lifetime cost for CCS, EI and HS *where there is an underlying Tier 1 or Tier 2* benefit/assistance are valued.
Region	A geographical grouping by MSD of New Zealand into 11 regions
Register dynamics	Refers to the way a client moves through the register system, includes the application, needs assessment outcome, time spent on the register and register exit to housing or otherwise. Refer to 'Transfer'
Relative exposure	This term is used on figures throughout the report. Depending on the context, it refers to the number of beneficiaries (transition and payment model figures) or the number of potential beneficiaries (*other benefits and assistance* probability models)
Roll-forward	Used to describe the result of applying revised economic assumptions to the previously projection model and deducting any expected payments
PH	Public housing – clients are considered in public housing if they reside in a property managed by Housing New Zealand or a Community Housing Provider, they may be paying income-related rent or market rent
Signatory	A signatory in a household is a person who signs the tenancy agreement and whose income is included in the households' income calculation. Refer to 'Tenant'
SNG	Special Needs Grant
SWN	Social welfare number
System/benefit system	Refers to the NZ benefit system as administered by MSD. Implicitly applied only to those benefits within scope of the projection – i.e. the main benefits and supplementary/hardship assistance listed above
Tenant	Clients are sometimes referred to as tenants where they reside a property managed by Housing New Zealand or a Community Housing Provider, they may be paying income-related rent or market rent
Top tier segment	A high-level segmentation of clients based on current benefit type
Training and employment support	Includes Employment Assistance, Vocational Skills Training, Mainstream Supported Employment Programme, and Youth Transition Services
Transfer	This term is used to describe a client who transitions from one benefit type (or segment) to a different benefit type (or segment)
Work focused case management	Includes 'work' share of Tailored Sets of Services appropriation; such as, Job Connect, employment coordinators, and work brokerage
Work focused investments	Expenses are analysed under two main categories, Work focused investments is the category related to helping clients prepare for and return to work
WR	Welfare Reform
YJ	Youth justice