Ministry of Social Development

Valuation of the Benefit System for Working-age Adults

As at 30 June 2016

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The 2016 Valuation at a glance

The purpose of this report is to provide information to the Ministry of Social Development (MSD) about long-term trends in benefit dynamics and future cost, offering insight into how the benefit system is changing over time.

The main estimate of the liability in the benefit system as at 30 June 2016 is **$76.0 billion**. This is the estimated discounted cost of benefit payments and related expenses from the valuation date until retirement for all clients who received income support in the 2015/16 fiscal year.

Top tier segment	Segment	2016 Valuation				2015 Valuation (restated for methodology change)			
		Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits	Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits
Jobseeker Support	JS-WR <1 year	44,538	4,983	112	8.6	44,174	4,357	99	8.8
	JS-WR >1 year	32,419	4,365	135	9.4	31,802	3,670	115	9.2
	JS-HCD <1 year	23,033	2,957	128	9.0	22,306	2,692	121	9.6
	JS-HCD >1year	41,435	6,164	149	9.9	41,961	5,853	139	10.3
	Sub-total	141,425	18,469	131	9.2	140,243	16,572	118	9.5
Sole Parents	Youngest child 0-2	24,590	5,851	238	12.7	26,631	5,838	219	13.8
	Youngest child 3-4	13,403	2,874	214	11.4	14,620	2,927	200	12.5
	Child 5-13, <1 year	4,836	734	152	8.5	4,560	631	138	9.0
	Child 5-13, >1 year	24,903	4,839	194	10.5	25,939	4,596	177	11.0
	Sub-total	67,732	14,299	211	11.3	71,750	13,992	195	12.2
Supported Living	Carer	8,811	1,543	175	9.9	8,791	1,361	155	9.7
	Partner	7,577	899	119	8.0	8,089	859	106	7.9
	HCD	86,482	16,861	195	12.4	87,650	15,416	176	12.3
	Sub-total	102,870	19,303	188	11.9	104,530	17,637	169	11.8
Youth	Youth prog (<18)	1,762	315	179	13.8	1,957	330	169	15.3
	Young Parent (<19)	990	253	255	14.3	1,103	251	227	15.3
	Sub-total	2,752	568	206	14.0	3,060	581	190	15.3
Not On Main Benefits	Sup only, <1 year	26,356	1,467	56	2.9	30,352	1,458	48	3.1
	Sup only, >1 year	74,598	4,512	60	2.8	71,460	3,770	53	3.1
	Orphan only	5,519	597	108	2.0	5,195	485	93	2.1
	Sub-total	106,473	6,576	62	2.8	107,007	5,713	53	3.0
Recent Exits	Recent exits, <1 year	126,286	7,917	63	4.6	132,802	7,443	56	4.8
All segment sub-total		547,538	67,131	123	7.7	559,392	61,938	111	8.0
Expenses + Net loans			8,890				7,909		
Grand total			76,022				69,847		

This result is **$7.6 billion higher** than the estimate in the previous valuation for the liability as at 30 June 2015 (an increase of about 11%) and **$6.2 billion higher** than the restated 2015 valuation in the table above. This increase is largely due to changes in economic assumptions and benefit rates – the main drivers of the long-term cost of benefit receipt. Revised economic assumptions have added $7.2 billion to the liability, and the Budget 2015 increase to benefit rates for those with children has added $1.5 billion. The average future years on benefit has decreased from 8.0 years to 7.7 years from the reinstated 2015 valuation – a decrease of 3.4%.

Change under management influence

The increase masks a **$1.7 billion decrease in liability due to better than expected performance**, almost as large as each of the previous two years. Most of the improvement can be explained by sustained exit rates amongst Sole Parent Support clients, and lower re-entry rates into main benefits for recent exits than previously assumed. The reduction due to experience is not uniform across New Zealand. The Auckland and Bay of Plenty regions comprise approximately 75% of the decrease, while the South Island regions experienced increases in liability.

The **cumulative impact related to Welfare Reform and management influence over the past five years is estimated to be a reduction of $13.7 billion**, or about 17.5% of the 2011 liability. This equates to 1,300,000 fewer projected main benefit years compared to the 2012 valuation, three quarters of which are attributed to welfare reforms and other management actions.

Interaction between social housing history and welfare duration

Previous years' valuations have considered the interactions between risk factors and cross-agency service usage. We continue to incorporate data on clients' child protection history, criminal history, educational status and intergenerational benefit receipt.

This year, we have added clients' social housing history. The 2016 benefit system valuation uses a combined benefit system – social housing projection model, which represents the largest technical extension to the valuation model since 2012. While the benefit system valuation does not include social housing costs, the combination of the benefit and social housing systems cohorts allows us to better understand the combined population:

» **Nearly half of those in the social housing cohort are in the benefit system cohort**, though this is not uniform across the benefit system – of those in social housing, relatively more of them are Sole Parent Support Clients and Supported Living Clients, compared to the general welfare population.
» **Average lifetime benefit system cost** (excluding Accommodation Supplement) i**s $30k higher for those in social housing**. For Sole Parent Support clients, this increases to $47k higher, in part driven by a tendency to remain on benefits longer. Clients not on main benefits have the largest proportionate increase; those in social housing have on average, future lifetime benefit cost $36k (or 83%) higher than those not in social housing.
» **The higher future benefit system cost for social housing tenants is driven by longer spells on main benefits.** Those in social housing are projected to remain on benefits for 1-2 years longer.
» **Many other factors associated with long-term benefit receipt are concentrated amongst social housing clients.**

Māori clients

Māori clients are significantly overrepresented in both the benefit and social housing systems cohorts. While Māori clients comprise only 15% of the general population, they make up 31% of the benefit system cohort and 36% of the social housing system cohort. **The average future lifetime cost for Māori clients is $55,000 higher (about 50%) than for non-Māori clients**. This year we consider what is driving this difference. We find that about 2/3rds of the difference is distributional – that is, explained by other characteristics built into the projection – such as intergenerational benefit receipt, child protection history, social housing history, etc. The remainder of the difference is direct, i.e. our models project higher lifetime costs for Māori clients, all else being equal. We stress this does not imply causality, it may be that other differences not included in the model disproportionately affect the pathways of Māori clients.

Mental health conditions

Mental health is the most common health condition among Jobseeker – HCD and Supported Living Payment – HCD clients – comprising 45% and 35% of these groups respectively. We find **the average future lifetime cost is significantly higher for mental health clients than the average client with a health condition or disability** – $33k higher for JS-HCD clients and $52k higher for SLP-HCD clients. Almost none of this difference is attributable to the condition itself, in fact the **biggest factor driving the higher cost is that mental health conditions tend to affect younger clients**.

Characteristics at entry and prediction of outcomes

Our previous valuation reports have highlighted the importance of early entry into the benefit system in understanding the total future cost; we estimate that about 75% of the liability for all current clients is attributable to clients who first entered the benefit system under the age of 20. This year we look at how effectively we can predict lifetime cost at the point of entry. **The average liability for new entrants aged under 25 in 2015/16 at the end of their quarter of entry is $129k**, with Supported Living Payment and Sole Parent Support entrants substantially higher. We also find that **lifetime costs are significantly higher for Māori and those with child protection history**. After two years, about a quarter of the cohort remain on main benefits with a future cost of $198k in stark contrast to those who have exited (about $57k).

Youth segments

Improvement in benefit system outcomes have been sustained for Young Parent Payment clients. The proportion of 18-year-old YPP clients remaining on the SPS benefit at age 20 has fallen from 75% to 71% over the year. Youth payment clients are exiting benefits more quickly, with average future years on benefit falling from 15.3 to 13.8. This is a reversal of the increase in last year's valuation.

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Part A – Introduction

1 EXECUTIVE SUMMARY

1.1   Introduction

This valuation of the future cost of New Zealand's (NZ) working-age benefit system (as at 30 June 2016) includes:

» An estimate of the total future cost over the lifetime of current beneficiaries
» Analysis of changes over the year, and their impact on the future cost of benefit receipt
» Detailed behavioural information about lifetime patterns of benefit receipt
» Analysis of characteristics associated with higher risk of long-term benefit receipt
» Break-downs of the estimated future cost by client group, by region, and by payment type
» Projected future changes to the client base and the liability.

Since 2012, the New Zealand Government has applied an investment approach to reducing long-term benefit receipt and its associated social and financial outcomes. Annual actuarial valuations of the lifetime cost of working-age beneficiaries provide insight into the benefit system and how it is changing over time.

This 2016 report values the lifetime cost of approximately 550,000 working-age clients who received income support in the 2015/16 fiscal year; nearly one fifth of New Zealand's working-age population. We sometimes break this population into beneficiary segments – based primarily on current benefit and continuous time on benefit (less than or greater than 1 year) – and Work and Income regions.

Enough time has elapsed since Welfare Reform that future projections can be made without reference to pre-reform assumptions. This means the 2016 valuation marks the last valuation to have significant changes attributable to Welfare Reform. We also include some of the impacts of the Government's Budget 2015 child hardship package – which amongst other things included a $25 a week increase in benefit rates for families with children from 1 April 2016.

In 2016, we undertook the first valuation of New Zealand's social housing system (as at 30 June 2015). This introduced a new evidence base about long-term housing pathways and expected future trends to inform management of the social housing system; as well as providing MSD with a client-centred, cross-agency view of interactions between welfare and housing systems. The valuation of the social housing system was undertaken with a combined welfare-housing project model; that is, clients' benefit and housing status are modelled simultaneously.

This report is the first valuation of the benefit system using the combined model. Subsidies to social housing tenants are not in the scope of the valuation, but social housing history is predictive of future benefit system pathways. The addition of social housing-related variables provides further depth to our ability to analyse characteristics that influence long-term benefit receipt. This builds on last year's incorporation of cross-MSD and cross-agency data to explore how vulnerability during childhood and

youth – measured through contact with child protection services and youth justice services – and criminal history – measured through contact with the criminal justice system – influence benefit pathways.

This year we have continued our analysis of clustering of risk factors, provided further review of youth segments, and highlighted two new areas of analysis – Māori disadvantage and clients with mental health conditions.

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

1.2   Key drivers of future cost and developments in 2015/16

The valuation provides a forecast of how beneficiaries move through the system – 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:** Ongoing impacts of Welfare Reform, introduction of the child hardship package and some changes to SPS and part-time work requirements.

» **Operations:** More integrated service delivery including social housing, as well as a shift to continual improvement through the investment approach; trials, practice enhancement and role specialisation.

» **Labour market:** A higher long-term unemployment rate assumption.

» **Demographics:** An increase in net migration to NZ during the valuation year.

Changes to other financial drivers:

» **Benefit rates:** Increase related to the child hardship package of $25 per week for clients with dependent children.

» **Inflation rate:** Zero benefit inflation applied in 2015/16, lower than expected.

» **Discount rate:** Assumed forward rates now significantly lower than at June 2015.

1.3 Main result and analysis of change

1.3.1 Main estimate and impact of changes to key drivers in 2015/16

Table 1.1 Current client liability forecasts by client segment at 30 June 2016 and previous valuation. Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2016 Valuation				2015 Valuation (restated for methodology change)			
		Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits	Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits
Jobseeker Support	JS-WR <1 year	44,538	4,983	112	8.6	44,174	4,357	99	8.8
	JS-WR >1 year	32,419	4,365	135	9.4	31,802	3,670	115	9.2
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	Young Parent (<19)	990	253	255	14.3	1,103	251	227	15.3
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Not On Main Benefits	Sup only, <1 year	26,356	1,467	56	2.9	30,352	1,458	48	3.1
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Expenses + Net loans			8,890				7,909		
Grand total			76,022				69,847		

The **main estimate** of the liability in the benefit system as at 30 June 2016 is $76.0 billion. This is the estimated discounted cost of benefit payments and related expenses from the valuation date until retirement for clients who received income support in 2015/16. Table 1.1 shows the liability divided by client segment at the valuation date.

Compared to last year:

» Overall the number of clients receiving main benefits has fallen during 2015/16, following a decrease in 2014/15. Some segments, notably JS-WR segments, saw an increase in clients.

» Average liabilities have increased for all segments, largely due to inflation and discount rate changes which, on average, increase liabilities by 10%.

» The average future number of years on main benefits has decreased for all segments (on average by 3.4%), excluding JS-WR and SLP segments. Sole parents are now expected to average one fewer future year on main benefits (a decrease of 7.5%), Youth are now expected to average just over one fewer future year on main benefits (a decrease of 8.7%), and Jobseekers a quarter of a year's fewer future years on main benefit (a decrease of 2.7%).

This result is **$7.6 billion higher than the estimate of the previous valuation** for the liability as at 30 June 2015 (an increase of about 11%). This masks a $1.7 billion improvement due to experience.

> The change due to experience refers to the change in future lifetime cost once other factors (including economic factors) have been accounted for. This change is generally attributable to the effects of policy reform and management actions.

The difference from last year to this year, shown in Figure 1.1 breaks down as follows:

» A $1.5 billion increase due to methodology changes, with the biggest component of the changes associated with integrating the social housing system valuation and including higher inflation for Accommodation Supplement payments.

» A $7.2 billion upwards revision of the 2015 liability due to updates to economic parameters such as unemployment, inflation and interest rates. Most of this change is due to lower discount rates (+$8.7 billion), partially offset by lower inflation (-$2.6 billion). The remaining $1.0 billion relates to a higher long-term unemployment rate assumption.

» An expected decrease in the liability over the year of $0.7 billion as part of the roll-forward to 2016.

» An additional decrease of $1.7 billion due to experience, reflecting better than expected performance over the year – as a result of recent policy and operational changes that influenced benefit dynamics. It is composed of a $2.0b decrease in future benefits, offset by a $0.3b increase in expenses.

» A $1.5 billion increase related to the increased benefit rates due to the child material hardship package.

Figure 1.1 Analysis of change in liability between 2015 and 2016 valuations, by segment at valuation
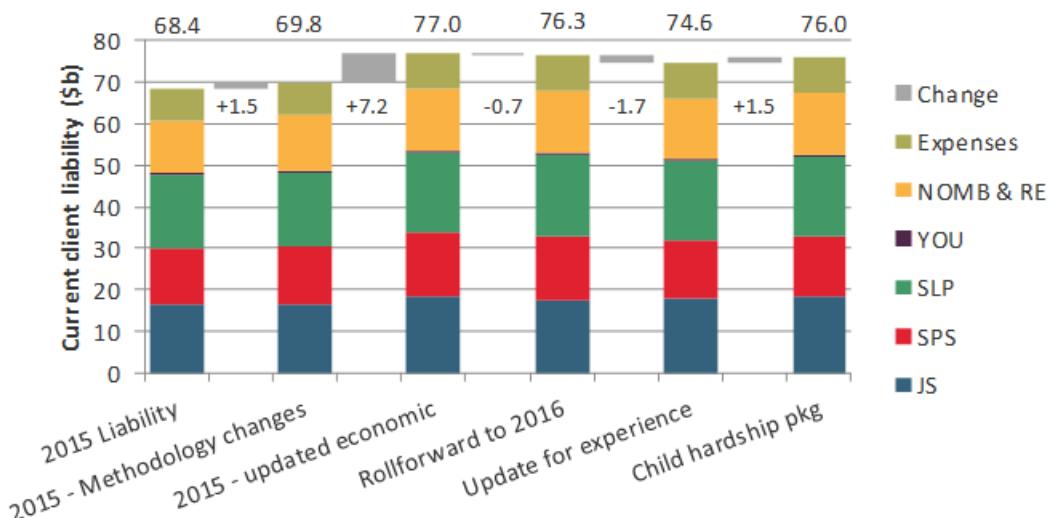
> The 11% increase relative to last year's estimate (an increase of $7.6 billion) masks a $1.7 billion performance improvement – driven by fewer beneficiaries and improved benefit dynamics recognised in the projection model. Before expenses this is a $2.0 billion decrease.

1.3.2   Benefit dynamics

Client movements through the benefit system in the valuation year, relative to those projected in the previous valuation, are illustrated in Figure 1.2.

Figure 1.2 Significant changes to benefit dynamics in 2015/16, relative to expectations
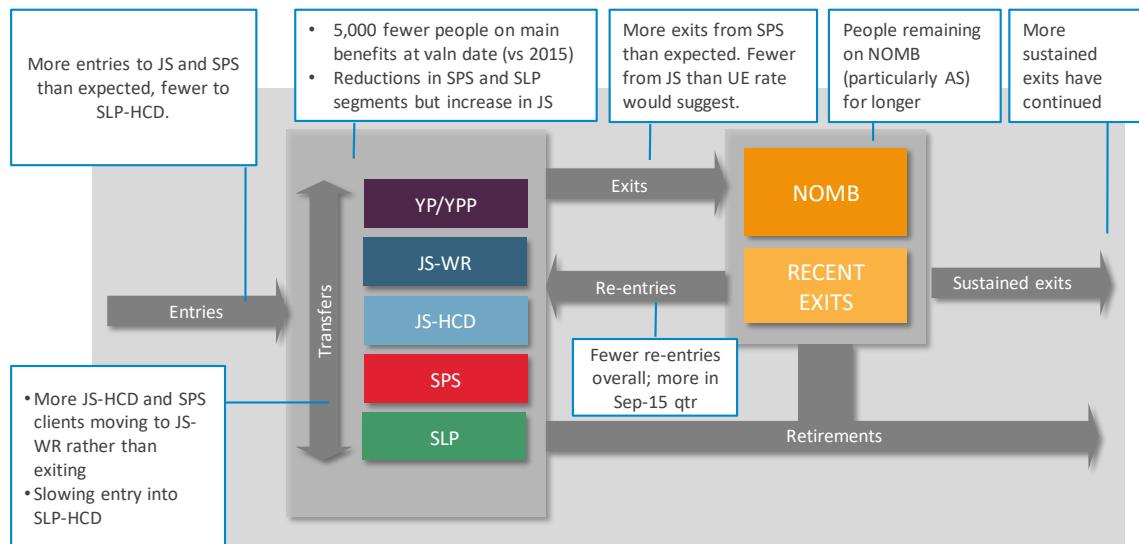
The labour market is a key driver of benefit dynamics. The unemployment rate decreased over 2015/16, broadly in line with the forecast used in the previous valuation. Surprisingly, JS-WR numbers have increased marginally despite this fall – these results are suggestive of a 'hardening' of the segment, where the decrease in numbers seen in the segment over the past few years (there were 20% more JS-WR clients in 2012) has left a group that has lower than expected exit rates.

1.3.3   Breakdown of change under management influence by segment

Figure 1.3 provides a breakdown of the $1.7 billion decrease in liability that is considered to be under management influence by client segment (as at the previous valuation date).

Figure 1.3 Breakdown of $1.7 billion decrease due to experience, by segment as at June 2015

Change on expected liability from Roll-forward ($m)
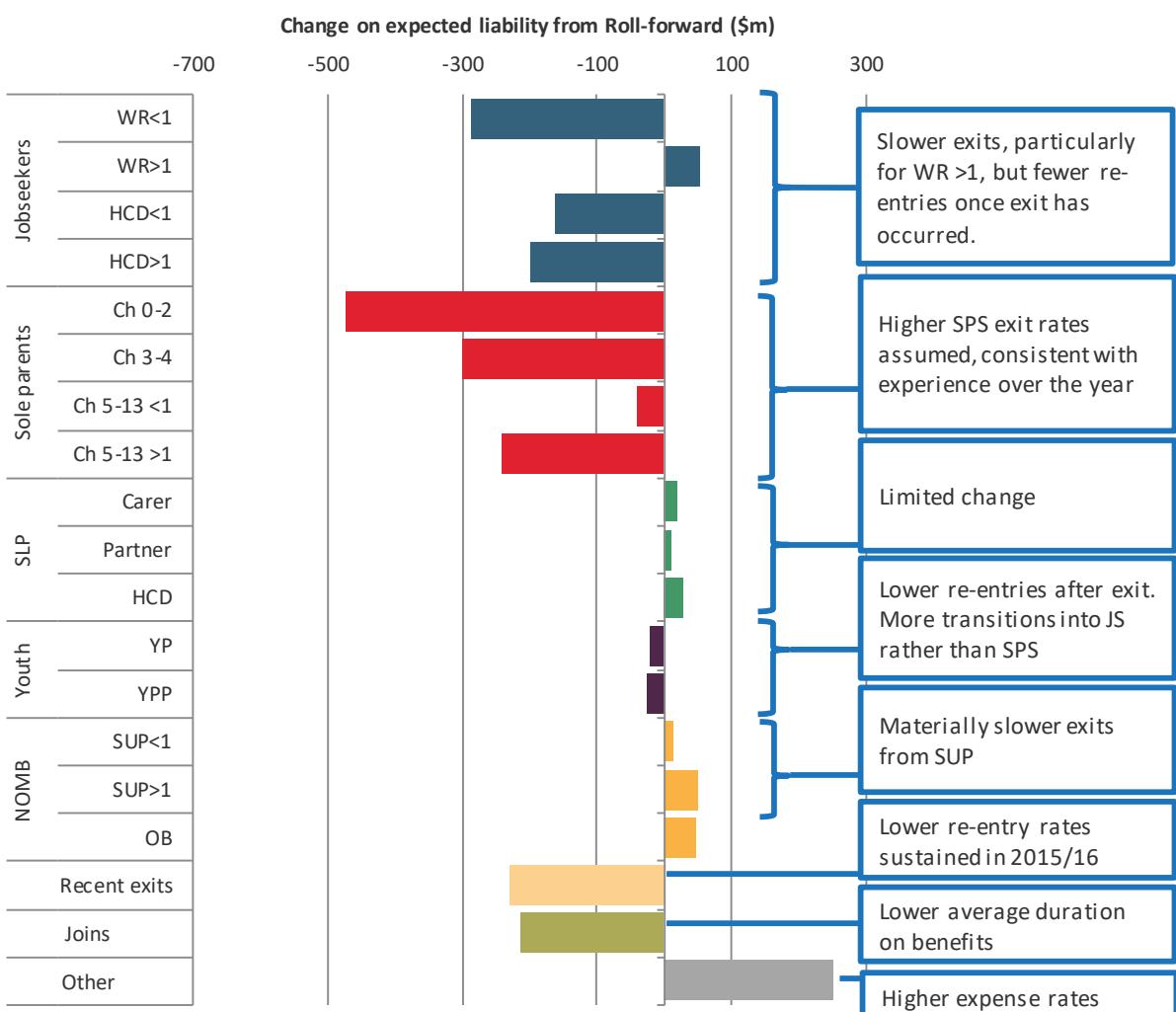
We have calculated how the projected future lifetime cost for these clients has changed relative to what we would have expected. Factors beyond MSD's influence, such as unemployment, inflation, and discount rates have been excluded. Improvements continue to be primarily due to **more Sole Parents than expected exiting benefits, and more sustainable exits from the benefit system.**

1.3.4   Breakdown of change under management influence by region

The $1.7 billion decrease in the change due to experience can also be broken down at the regional level (based on the region where beneficiaries resided in the previous valuation) – shown in Figure 1.4. The column on the right shows the percentage change, which recognises the relative size of regions.

Figure 1.4 Breakdown of $1.7 billion decrease in change due to experience, by June 2015 region. Percentage change calculated before addition of net loans and expenses.

Change on expected liability for clients valued in 2015, $m	% change
Northland	-4.0%
Auckland	-4.5%
Waikato	-3.9%
Bay of Plenty	-6.7%
East Coast	-5.9%
Taranaki	-3.7%
Central	-4.0%
Wellington	-1.5%
Nelson	+0.6%
Canterbury	+9.3%
Southern	+1.4%
Overall	*-2.9%*

How much is each region contributing to the $1.7 billion reduction in liability due to experience?

Auckland and Bay of Plenty have the largest decreases in absolute terms. Their contributions represent 73% of the overall decrease in liability, despite representing about 39% of the liability valuation.

While liabilities are higher than expected in all South Island regions, Canterbury saw by far the largest increase.

The Canterbury result is mainly driven by significant changes in benefit dynamics, including markedly higher benefit re-entry rates amongst recent exits. These changes are much larger than the unemployment rate change would imply. The Canterbury labour market has behaved very differently to that of other regions since 2011. 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. We discuss this further in Section 6.4.3.

1.3.5   Cumulative impact of management's influence

This is the sixth welfare valuation, meaning that there is now five years' worth of analysis attributing the change in liability amongst key drivers. Welfare reform policy and operational changes have had a significant impact on benefit take-up over the past number of years, with flow on financial savings.

Compared to pre-reform baseline forecasts in the 2012 valuation, there has been **a cumulative reduction in payments of $2.07 billion over four years**. About 70% of these savings can be attributed to Welfare Reform policy and operational changes.

Additionally, each year there has been a material **decrease** in the liability due to experience – that is, due to the combination of Welfare Reform and MSD's management of the benefit system. These decreases in liability comprise reductions due to both decreases in the number of beneficiaries (and potentially beneficiaries moving to lower liability segments) and due to model changes (that is, recognition of how benefit trajectories are changing over time). These decreases are summarised in Figure 1.5.

Figure 1.5 Current client liability reductions due to experience, past five valuations
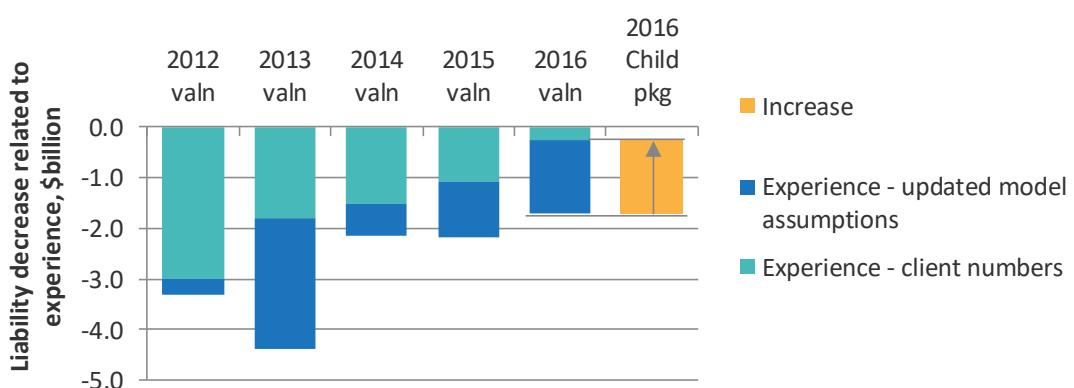
The **cumulative decrease** over five years of the change considered to be under management influence is about 17.5% of the value of the liability as at 2011, or $13.7 billion. This is partly offset by the introduction of the child hardship package in April 2016, which adds $1.5 billion.

The change under management influence can also be understood in terms of numbers of beneficiaries and their expected duration on benefit[1]:

» Since 2012, Jobseeker segment numbers have reduced by 14%, with a relatively larger reduction in the JS-WR segment. Expected number of future years on main benefits are slightly shorter; one fewer year for JS-HCD clients.

» Numbers in SPS 5-13 segments are down 25%, while numbers in other SPS segments are 24% lower. Current SPS clients are expected to spend over 2 years less on benefit.

» SLP numbers are 1% higher (Carers +13%), with small changes in duration.

» Youth segments have 7% fewer clients, with a large substitution from YPP to YP. Average future duration on benefits is 2.4 years less (3.5 for YPP).

» Future duration on main benefits for Supplementary only clients has reduced, by about a year. However, their expected time on Supplementary only benefits has increased by one-and-a-half years.

These changes mean that, compared to the pre-reform benchmark valuation (as at June 2012), current clients are expected to spend more than 1,300,000 fewer years on main benefits over their working lifetime, up from 1,040,000 last year. About three quarters of this reduction in future years on benefits can be attributed to policy and operational changes.

Last valuation we reported 900,000 fewer future years on benefits, which included both main benefits and years on Supplementary only assistance. This number has actually reduced this year to 775,000 fewer years on benefits due to the substantial increase in durations on Supplementary benefits observed over the year. That is, since the last valuation we are projecting fewer years on main benefit and more years on supplementary benefits, with a net effect of a further decrease in liability.

1.4   Features of interest

1.4.1   Interaction between social housing and benefit systems

As noted, this is the first benefit system valuation where social housing and benefit cohorts have been projected simultaneously. As Figure 1.6 shows, the intersection between the two groups is a large portion of the housing cohort, and a small but significant portion of the benefit system cohort. Of those in social housing, relatively more of them are SPS and SLP clients compared to the general welfare population.

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[1] 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 3.5.3. The changes shown in Figure 3.15 do allow for unemployment rate changes.

Figure 1.6 Left panel shows the intersection of housing and welfare cohorts[2]. The right panel compares the relative numbers of clients for the whole benefit system versus those in both benefit and social housing.
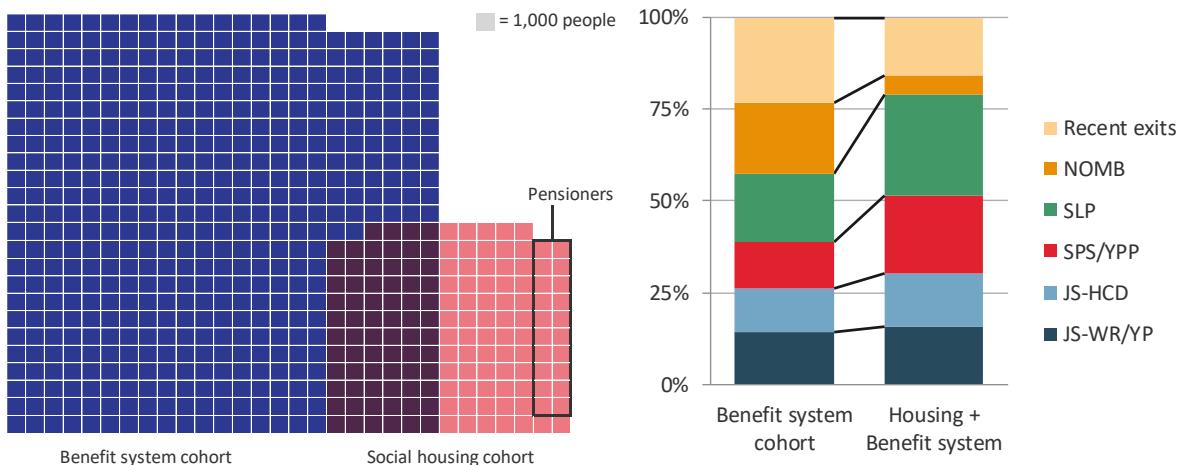
Average benefit system cost (to age 65, and excluding Accommodation Support) is $30k higher for those in social housing. This higher future benefit cost for social housing tenants is **driven by longer stints on main benefits**. Those in social housing are typically projected to remain on benefits for 1-2 years longer, but social housing status only explains part of these higher costs and durations.

We find that **many other factors associated with long-term benefit receipt are concentrated amongst social housing clients**. For clients aged 18-24 – i.e. clients for which we have child protection, inter-generational benefit receipt, and corrections history data – **approximately 30% have had time in social housing.** Compared to 18-24 benefit system clients who have no social housing history, they are:

» 1.2 times more likely to have low educational attainment – achieving NCEA Level 1 or lower

» 1.9 times more likely to have had a child protection event

» 2.4 times more likely to have had a parent on benefits for 80% or more of the time during their teenage years

» 2.0 times more likely to have had an adult corrections spell (as a result of a criminal conviction).

Importantly, these risks tend to compound; whereas only 7% of clients aged 18-24 without social housing history have at least three of the four risk factors, this is true of 22% of those with some social housing history; that is, more than three times as much.

1.4.2   Māori clients

Māori clients are significantly overrepresented in both the benefit system and housing cohort. While Māori comprise only 15% of the general population, they are 31% of the benefit system cohort and 36% of the social housing cohort. They represent 42% of JS-WR clients and 48% of SPS clients.

The average future lifetime cost for Māori clients is $55,000 higher (about 50%) than for non-Māori clients. Distributional factors – that is, differences in characteristics between client groups other than ethnicity (such as current benefit type) – comprise about two-thirds of the difference between Māori and non-Māori clients:

» Relatively more Māori clients are in higher cost segments (such as SPS)

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[2] Cohorts refer to those active in the benefit or social housing systems respectively in the 2015/16 year.

» Māori are over represented in each of the risk factors associated with higher benefit system cost. Compared to non-Māori 18-24 year olds, Māori are:

- 1.2 times more likely to have low educational attainment – achieving NCEA Level 1 or lower
- 1.5 times more likely to have had a child protection event
- 2.1 times more likely to have had an adult corrections spell (as a result of a criminal conviction)
- 1.9 times more likely to have had a parent on benefits for 80% or more of the time during their teenage years
- 1.4 times more likely to have spent at least eight quarters on a Jobseeker benefit
- 2.0 times more likely to have had some social housing history.

The remainder of the difference – a third of the difference between Māori and non-Māori clients – is due to a direct effect. That is, our model projects higher lifetime costs for Māori clients, all else being equal. These impacts are shown in Figure 1.7, with the partial dependence effect split out in orange; the remaining effects are distributional.

Figure 1.7 Average individual future costs, split by current benefit type and ethnicity
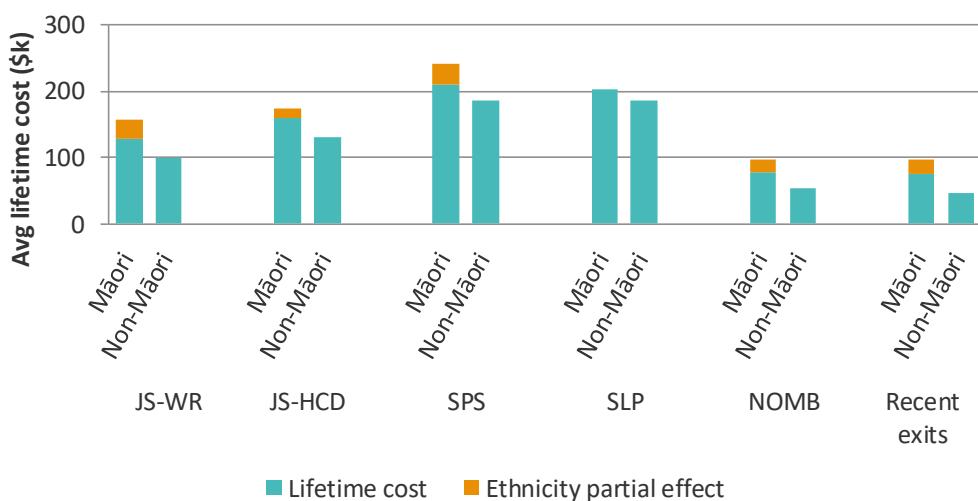
We stress that the direct (or partial) effect observed is not necessarily causative; it may be that other causes (invisible) to the model are present that disproportionately affect the pathways of Māori clients.

1.4.3 Mental health conditions

Mental health is the most common health condition among Jobseeker – HCD, and Supported Living Payment – HCD clients – comprising 45% and 35% of these groups respectively. Moreover, their number and relative share have been growing substantially over time.

Mental health conditions cover a broad range of specific diseases. Stress and depression represent a significant portion (41%) of JS-HCD mental health clients, whereas bipolar disorder and schizophrenia represent a larger portion of the SLP-HCD mental health cohort (47%). In both cases 'other psychological condition' is also a large category.

Figure 1.8 Type of mental health conditions by benefit type

JS-HCD

SLP-HCD

- Stress
- Depression
- Bipolar Disorder
- Schizophrenia
- Other psych.
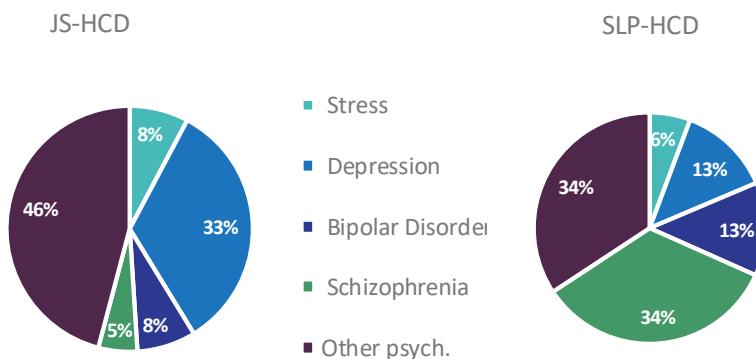
Average future lifetime cost is significantly higher for mental health clients than for other HCD clients. The cost is $33k higher for JS-HCD clients and $52k higher for SLP-HCD clients. **Interestingly, almost none of this difference is attributable to the condition type itself**. This means that the difference is largely distributional, and **the biggest factor is that mental health conditions tend to affect younger clients**. The average age of mental health JS-HCD clients is 7.6 years younger than other JS-HCD clients, and the difference is 4.4 years for SLP-HCD clients.

Figure 1.9 Average future lifetime cost by benefit and HCD type. Split by mental health partial effect.
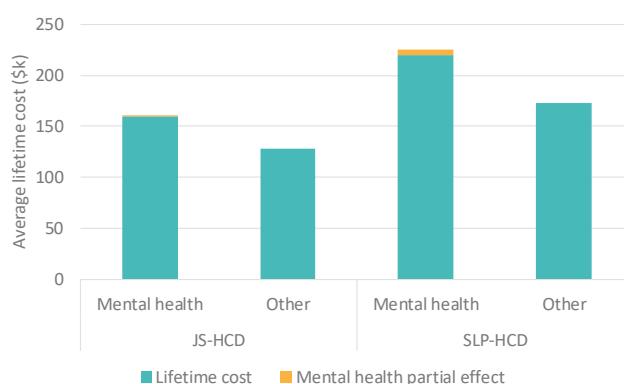
The incidence of mental health incapacity at younger ages has significant implications for longer-term benefit receipt and employment. The increased lifetime benefit system costs aligns with a reduced potential time in employment during young and middle ages, as well as increased healthcare costs over an extended period.

1.4.4   Characteristics at entry and prediction of outcomes

Our previous valuation reports have highlighted the importance of early entry into the benefit system in understanding the total future cost. As discussed in previous reports we estimate that about **75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20** – as shown in Figure 1.10. Further, despite the very small number of beneficiaries who enter through a youth segment each year, just over a third (34%) of the total liability is attributable to clients who first entered benefits via a youth segment.

Figure 1.10 Current client lifetime cost split by current client age and status when first entering the benefit system[3]
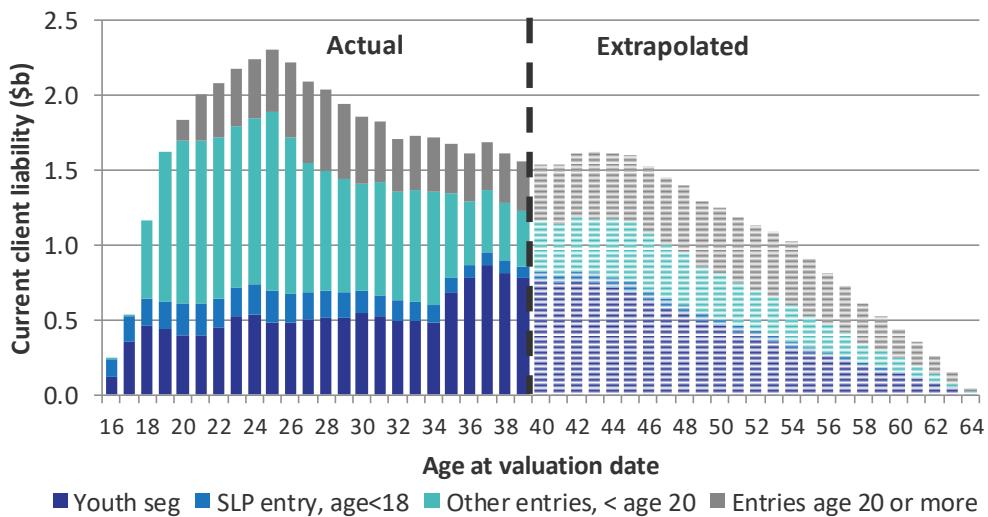
Given the importance of age of entry, this year we explore how effectively we can predict lifetime cost at the point of entry into the benefit system. This is an inherently harder question, as there is no benefit history information to guide likely trajectories. Accuracy in long-term cost prediction is lower, but increases over time as experience develops.

To do so we have examined the cohort of people aged under 25 who entered benefits (main or Sup only) for the first time in 2013/14. Figure 1.11 shows our lifetime cost predictions for these clients one quarter, one year and two years after entry. In summary, at entry we know that some clients will exit for relatively low cost, while others will remain with very high ultimate cost. Initially we do not know who will fall into which group, so more clients are placed into intermediate values. While the 'spread' of liabilities we can forecast in the left panel is already quite wide, it continues to increase as benefit history accumulates.

Figure 1.11 Distribution of future lifetime cost for clients who enter the benefit system in 2013/14 under age 25. Colour shading is by benefit status at the end of the corresponding quarter.
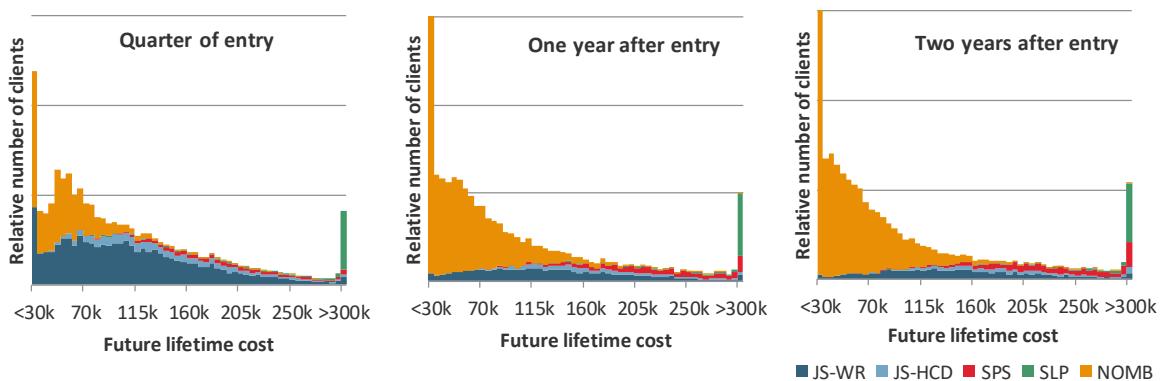
That is not to say that prediction is poor at the point of entry – the leftmost panel still shows significant variation in predicted future cost.

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[3] The length of data available only permits us to accurately estimate the age of entry for clients up to age 40. We have extrapolated rates for older clients.

Table 1.2 gives an illustrative segmentation of clients (aged under 25 and entering in 2015/16) with their predicted lifetime cost at the end of their quarter of entry. In the table a combination of benefit type, child protection history and ethnicity creates substantial variation in lifetime cost. The overall average liability for new entrants under 25 in 2015/16 is $129k. However:

» **SLP and SPS entrants are substantially higher than the average**.

» **Lifetime costs are significantly higher for Māori clients and those with child protection history**; in each case the liability is roughly 50% higher.

Table 1.2 Illustrative segmentation of clients under 25 entering the benefit system for the first time in 2015/16, who are still on main benefits at the end of their quarter of entry.

Cohorts			Number	Avg lifetime cost ($000s)	
SLP-HCD			920		335
SPS	CP history		550		224
	No CP		590		164
Other main ben	CP history	Māori	2,810		177
		Not Māori	3,100		126
	No CP	Māori	3,080		129
		Not Māori	7,290		77
All			18,350		129

1.4.5   A review of youth segments

The previous valuation reviewed the youth segments in significant detail, as valuing the future lifetime cost of the benefit system makes it very clear that an effective strategy for working with youth and young entrants is essential to achieving the goals of reducing long-term benefit receipt. This year we review key trends. As in previous years, we emphasise that relatively small cohort numbers in youth segments means the results are subject to additional uncertainty compared to other results in the report.

Trends in numbers and composition

While the previous report discussed the increase in YP clients since the introduction of the Youth Service, YP numbers (measured on a consistent basis to the previous valuation) have actually fallen over the last year. YPP numbers have continued to decrease over the past year, and exit rates have also been higher than expected.

> The total number of clients in the youth segments is now lower than what it was prior to the introduction of the Youth Service. However, reducing client numbers is not the sole objective of the program and in isolation can be misleading; in the previous valuation report we discussed some of the broader metrics and indicators of progress. These comments still stand.

Figure 1.12 shows the proportion of YP and JS-WR clients under 20 with certain risk characteristics. Over the past year, the trends have continued apart from Māori clients and those with a high level of intergenerational benefit receipt.

> Clients with child protection history now account for 57% of the cohort under age 20.

We note that these compositional changes have not increased the average liability of the cohort. In fact, the average liability has decreased after standardising for economic factors, driven by more sustained exits for those who do leave main benefits.

Figure 1.12 Proportion of YP and JS-WR clients under 20 with certain risk characteristics
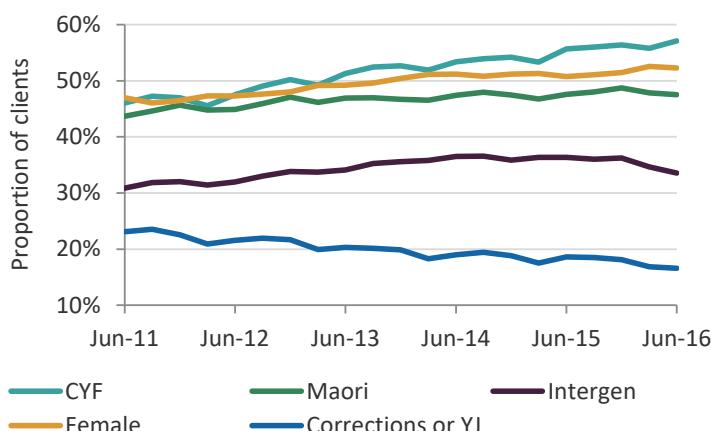
Youth segment welfare outcomes and duration on benefits

One way of measuring the performance of the Youth Service is to examine the exit rate for clients at the end of the service. That is, looking at the benefit status by the time they reach age 19 (for YP clients) or 20 (for YPP). Trends over time are summarised in Figure 1.13; the June 2014 cohort is the latest one for which we have full actual outcome data.

For clients who were in (the equivalent of) YP and aged 17 at June 2011, we can track their outcome at age 19. We observed that 48% had exited benefits (the yellow bar), 32% were still on a Jobseeker type benefit (blue) and 20% were receiving another type of benefit (red, mainly SPS). The bar graph on the right replicates the equivalent analysis for 18-year-old clients receiving YPP (or equivalent), showing their benefit status two years later.

Figure 1.13 Status for 17-year-old YP clients when they reach age 19 and 18 year old YPP clients at age 20
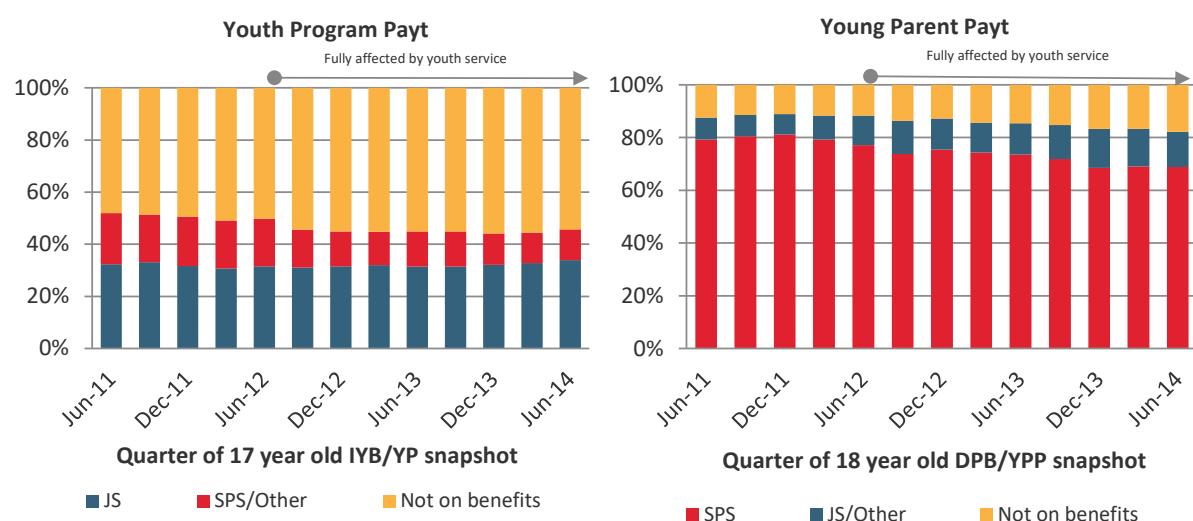
As noted in the previous report, there **has been clear improvement in the proportion of clients who have exited the benefit system after the introduction of the Youth Service in August 2012**.

> The improvements previously noted for two-year benefit system outcomes for youth segments have been sustained in 2015/16, and possibly improved further for YPP.

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For YP clients, those remaining on JS increased from 31% to 33% compared to the previous year. However, this has been offset by a lower proportion transitioning to SPS. This means that the proportion who are not on benefits by age 19 remains at 55%, noticeably lower than 48% for the June 2011 cohort. For YPP clients, the proportion remaining on SPS has continued to decrease from 80% in 2011 to 75% in 2013 to 71% in 2014.

The trends discussed above have led to us lowering the projected duration on benefits for these clients. Compared to June 2015 projections, **the average projected future years on main benefits for YP has decreased 10%, from 15.3 years to 13.8 years**. This reflects higher exit rates out of JS and lower transition rates into SPS. This reverses the result from 2015 where durations increased 8%. It also illustrates some of the potential volatility in forecasting the segment; the last two years have been more volatile than usual, as is visible in client numbers and transition rates.

The **average projected future years on benefit for YPP has decreased 6%, from 15.3 years to 14.3 years**. This reflects improved employment outcomes for clients on SPS more generally.

1.5   Analysis by segment

1.5.1   Distribution of future lifetime cost

The difference in average future lifetime cost across segments means that some segments make up a disproportionately large or small share of the total liability relative to the number of clients in that segment. For instance, under 25s represent 10% of the number of clients valued, but 16% of the total liabilities. These differences are illustrated in Figure 1.14 for the various segments.

Figure 1.14 Contributions of segments towards client numbers and liability total
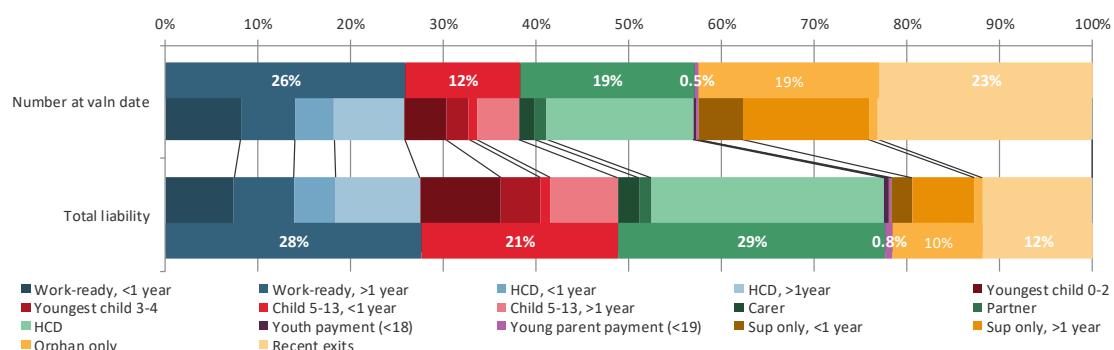
The spread of individual level liability – reflecting the differences between higher and lower-risk beneficiaries:

» Is significant within segments – for example, amongst JS-HCD clients aged over 25, 8% of clients have a future lifetime cost that is double the median. This indicates that a sub-group of JS-HCD clients are at significantly higher risk of long-term benefit receipt.

» Increases as additional risk factors (such as social housing history) are incorporated into the model.

> The ten percent of clients with the highest average future lifetime cost (on average $334,000, inflated and discounted) make up just over a quarter of the total liability in the benefit system. SPS clients make up nearly a third of this group, and another half is SLP clients. At the other extreme, around one in six main beneficiary clients has an average future welfare liability less than $60,000.

1.5.2   Predictors of long-term risk

The valuation models enable us to compare the relative importance of various client characteristics in causing a future lifetime cost to be low or high. These relativities vary across different segments, with the top eleven characteristics that best differentiate risk of long-term benefit receipt within each segment shown for various segment groups in Figure 1.15.

Figure 1.15 Relative variable importance for estimating future lifetime benefit cost, for top tier segment groups; top eleven variables shown for each segment group
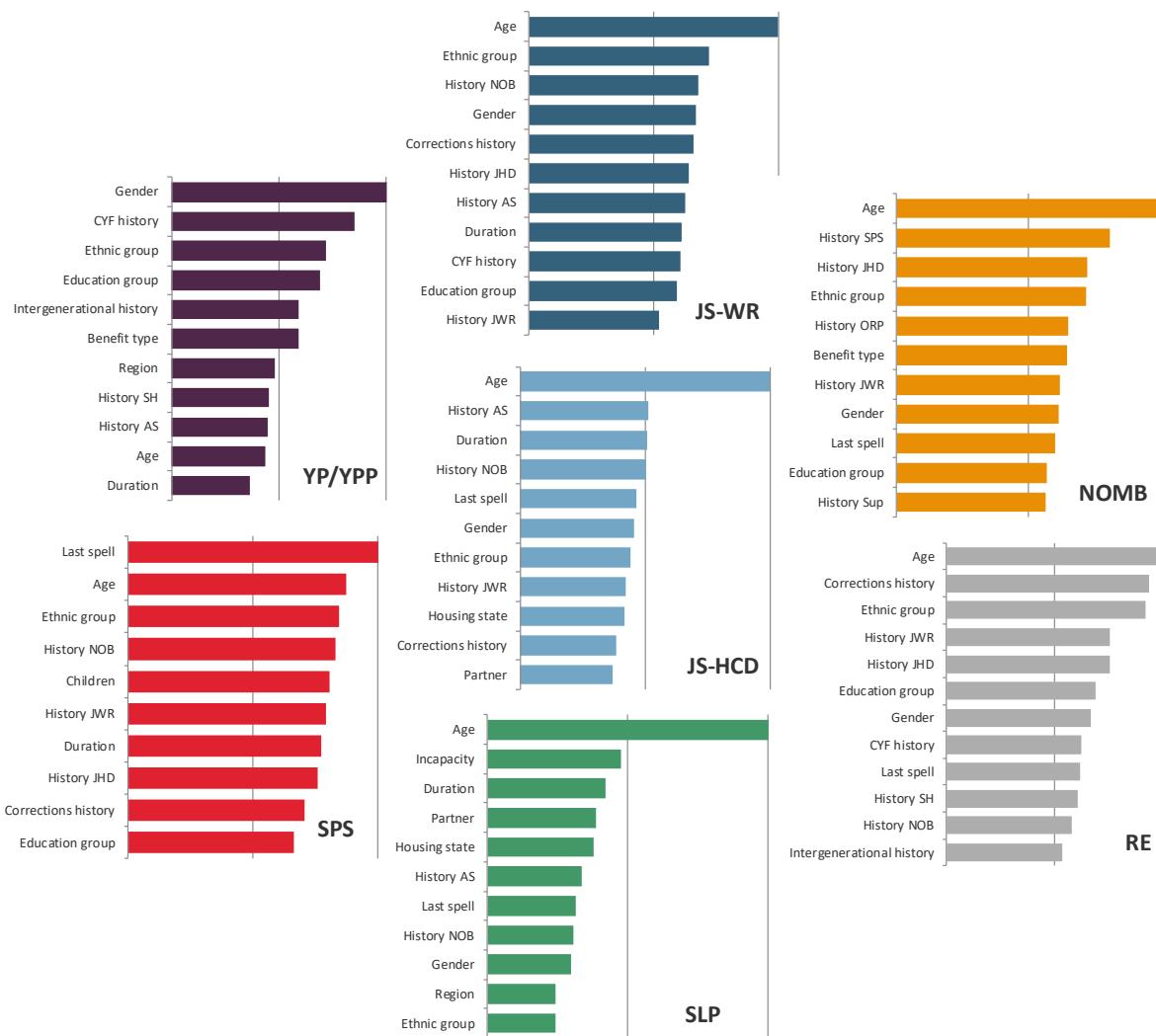
We note the following:

» Age is very important across all segments.

» Benefit history is also very important in most segments.

» Both family benefit history and Child, Youth and Family (CYF) data have only been incorporated for a sub-set of younger clients (those up to age 25), and as a result their significance is understated in segments other than YP/YPP.

» The new variable social housing state is moderately strong amongst JS-HCD and SLP segments. This may indicate a higher need level for a longer term.

» Having served a Corrections spell as a result of a criminal conviction comes through strongly amongst the recent exit segments.

» Ethnicity is a significant indicator of future lifetime cost. This is particularly true for the YP/YPP, JS-WR, SPS, Not on main benefit (NOMB), and Recent exits segments.

» For YP/YPP, gender is the most important variable reflecting the higher likelihood that young women—including those who are already Young Parents—will go on to receive SPS in future.

1.6 Analysis by region

Figure 1.16 illustrates, at a very high level, the most significant changes to benefit dynamics at the regional level compared to what was projected in the last valuation of the benefit system, as at 30 June 2015.

Figure 1.16 Significant changes to benefit dynamics at the regional level in 2015/16 compared to expected
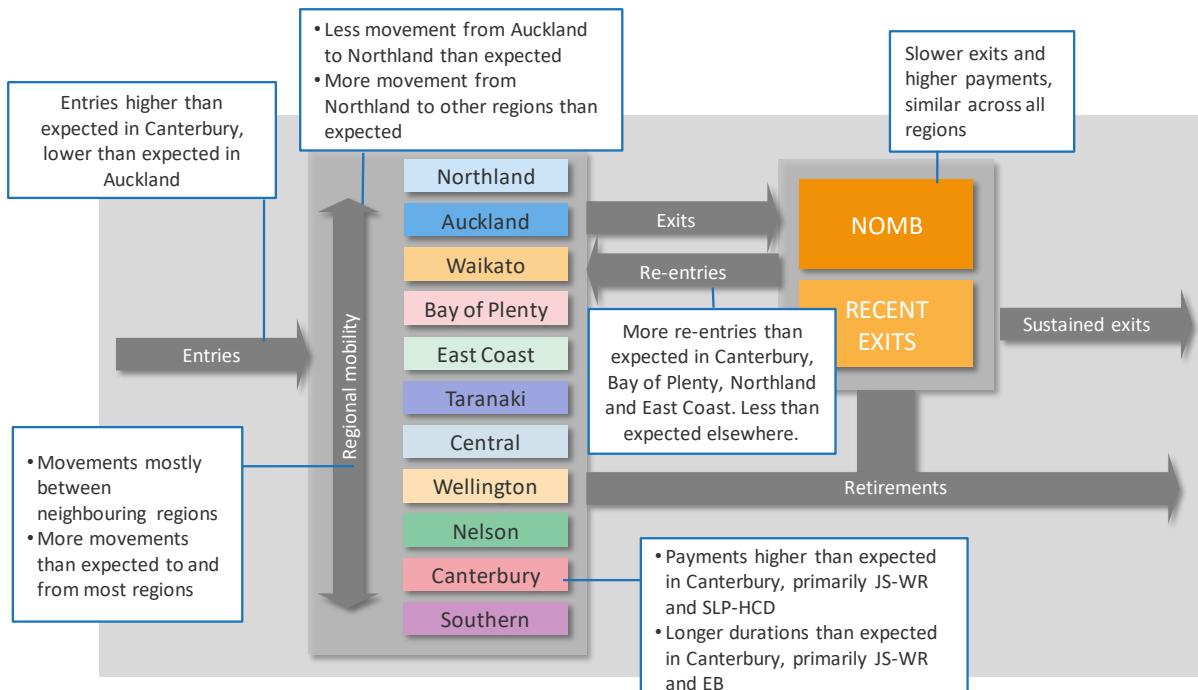
Benefit dynamics are influenced by regional, as well as national, unemployment trends. Unemployment trends vary considerably across the country, with relatively high current unemployment in Northland (9.6%), Central (6.1%) and East Coast (6.1%), in contrast to the relatively low unemployment rates in the Canterbury (3.1%), Southern (4.6%) and Taranaki (4.9%) regions.

1.7 Projected changes to the benefit system

Client entries into the welfare system (from outside the current client group) are expected to be stable and close to 2015/16 levels for most benefit types. About half of these clients are expected to be new to the system, and the other half are anticipated to be former clients returning. JS-WR client entries tend to be younger, whereas new SLP-HCD clients are older and new SPS clients are in between.

Of every 100 young (under age 25) entrants to the system, we expect 67 to have had a parent on main benefit, 32 to have had contact with the CYF-CP system and 15 to have either had contact with CYF-YJ or an adult criminal conviction.

The charts below show the distributions of other service usage history variables for young entrants. Child protection history is particularly high for SPS, SLP and JS-WR entrants, while criminal convictions are more prevalent for JS-HCD and EB entrants.

Figure 1.17 Distribution of family benefit, criminal conviction and CYF (CP+YJ) history. For clients expected to enter as part of the future client liability and age less than 25.[4]
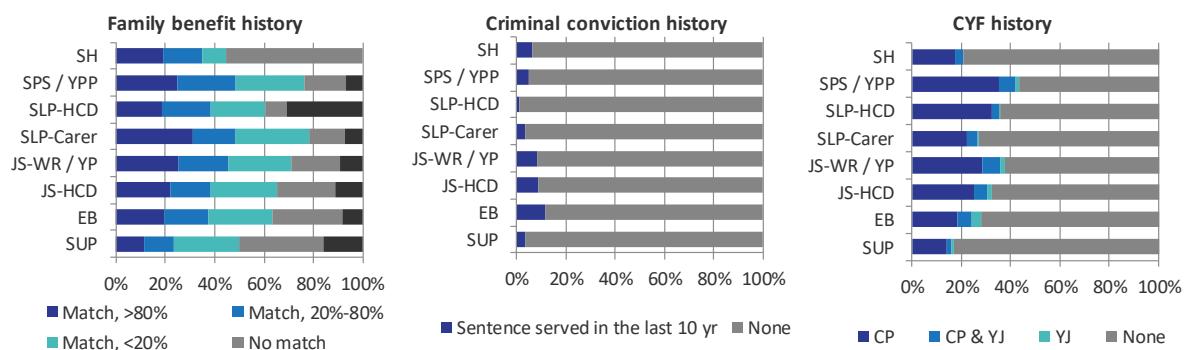
Forecasts assume that past trends will largely continue, and are sensitive to assumptions such as unemployment rates. We note that:

» Based on the forecast unemployment rate, **the make-up of the benefit population is shifting away from Jobseeker benefits and towards Supported Living Payments**. SLP-HCD clients represented 26% of the main benefit client base in 2011, compared to an expected 33% in 2021, an increase of seven percentage points.

» **The benefit population is getting older**, influencing both the mix of benefits and composition within benefit types.

» The **number of clients on main benefits is projected to fall significantly over the next five years** with significant downward trends in JS-WR and SPS numbers, consistent with the unemployment rate forecast and recent trends.

By combining the projections for current and future client liabilities, we can estimate the characteristics of the welfare population in five years' time. There are 'peaks' in the age distribution (currently centred at ages 24 and 41) that correspond to those who first enter the labour force during recessions. These peaks demonstrate the **significant long-term impact of recessions** on young people joining the labour force during a downturn.

Figure 1.18 End of quarter benefit type and age distribution for June 2011, June 2016 and June 2021

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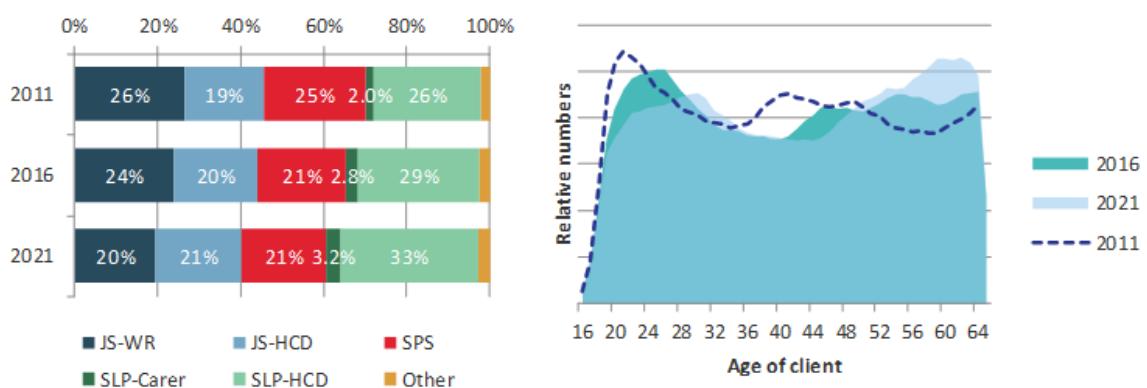
[4] For family benefit history, Match refers to a link between beneficiary and parent. The percentages refer to the proportion of time the parent was on benefit while the person was aged 13-18.

Our forecast for the main estimate in the **next valuation** (as at 30 June 2017) is a reduction in the liability to $74.3 billion. The liability is forecast to reduce gradually each year to $67.8 (as at 30 June 2021).

1.8   Valuation approach, reliances and limitations

Chapter 9 explains how Taylor Fry carries out the valuation of the NZ benefit system.

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

2   DEVELOPMENTS IN 2015/16

Inside this chapter

2.1   The contents and structure of this report
2.2   New features in the 2016 valuation
2.3   Impact of 2015/16 changes to key cost drivers

2.1   The contents and structure of this report

The purpose of this valuation is to report to MSD on long-term trends in benefit dynamics and future cost, offering insight into how the benefit system is changing over time. Annual valuations show how MSD's management of the welfare system, as well as external drivers of cost such as unemployment, are influencing long-term trends and costs. MSD can use this information to target its investments to reduce long-term benefit receipt and consequently, to reduce the overall future cost of the benefit system.

This valuation of the future cost of the benefit system (as at 30 June 2016) includes:
  » An estimate of the total future cost over the lifetime of current beneficiaries
  » An estimate of the total future cost over the lifetime of new entrants to the welfare system
  » Analysis of changes over the year, and their impact on the future cost of benefits
  » Detailed behavioural information about lifetime patterns of benefit receipt
  » Analysis of characteristics associated with higher risk of long-term benefit receipt, including cross-sectoral risks
  » Break-downs of the estimated future cost by client group, by region, and by payment type
  » Projected future changes to the client base and the liability.

Part A – Introduction is comprised of Chapter 1 – Executive summary, and Chapter 2 – Developments in 2015/16.

Part B – Results is comprised of Chapters 3 to 8. Part B contains a full description of the valuation results and analysis and will be most useful for readers who are seeking a comprehensive understanding of the June 2016 valuation 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 valuation, including assumptions, data, modelling approach and more detailed results. Appendix B provides background about the valuation for readers seeking context about New Zealand's benefit system and the purpose and structure of benefit system valuations.

2.2 New features in the 2016 valuation

2.2.1 Housing valuations and joint welfare-housing modelling

In 2016, we completed the **first annual valuation of New Zealand's social housing system[5]** (the social housing valuation) for MSD – the single purchaser of government-funded social housing places. The social housing valuation was as at 30 June 2015, and estimated future housing-related costs[6] for households in housing or on the register[7] in 2014/15. The social housing valuation reports **household** lifetime housing cost (which we calculate as the sum of individual lifetime costs for adults in each household), as movements in housing state typically occur at a household level.

The first social housing valuation set a baseline for future social housing costs associated with households. It also provides insight into other elements of the social housing system related to the Government's social housing reform programme, the objectives of which are to:

» Ensure social housing is the right design and size, and in the right place for people who need it

» Increase affordable housing supply

» Ensure people who need housing support can get it and receive social services that meet their needs

» Encourage and develop more diverse ownership of social housing, with more innovation and responsiveness to tenants and communities

» Help social housing tenants to independence, as appropriate.

Importantly for the 2016 benefit system valuation, the social housing valuation was completed using a **combined welfare-housing projection model.** This means each quarter we model the evolution of both housing status (three possibilities – in a social housing place, receiving the Accommodation Supplement (AS), or neither) and welfare benefit status (with possibilities covering the main benefit types, SUP-only clients and those no longer on benefits). We use this to simulate joint pathways and costs for individuals and households.

This change represents the largest technical extension to the valuation model since 2012. The modelling of housing state is discussed briefly in Section 9. A more detailed explanation of the process is provided in the 2015 social housing valuation report.

While **social housing subsidies are not part of the scope of the benefit system valuation**, there are many good reasons for a combined model:

» There is a heavy overlap in welfare and social housing populations; half of social housing tenants also received benefits in the year.

» There are strong predictive effects – in welfare receipt predicting housing movements, and housing predicting welfare outcomes. This means benefit system projections will be more accurate due to the inclusion of housing status.

» Benefit system and most housing costs can be calculated, which gives a more comprehensive picture of long-term cost for individuals and households.

» The benefit system and social housing system both have forms of housing support; the former through Accommodation Supplement (AS) and the latter through subsidised tenancies. It would be difficult to understand housing support without combining these payments in some way.

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[5] Not released at the time of writing.
[6] The estimate includes most direct costs (income-related rent subsidies, accommodation supplement, temporary additional support) plus some associated expenses. We exclude some items such as cost of capital.
[7] The register is the list of households who qualify for a social housing place and are ready to be assigned to a social housing place when one is available.

» It offers consolidation of some modelling aspects.

Thus, the combined projection model provides MSD with an even more client-centred view of future welfare and housing pathways; understanding clients' lifetime costs across both systems gives greater insight into which clients to target for support so that services can be designed to address their needs.

So far, separate reports have been prepared for the benefit and housing systems, each using the combined projection model. This has allowed us to:

» Use the first social housing report to explain the underlying methodology in some detail, as well providing a baseline for future social housing valuations.

» Reflect the different objectives in the two systems.

We understand in the future MSD may examine how the objectives and operational responses in the two systems may be brought closer together – possibly looking at future costs across both systems for some cohorts. At this point, the approach to reporting would be reconsidered.

The key advantage to the combined modelling from the perspective of the 2016 benefit system report is that we now understand how social housing status and history can be used to predict welfare trajectories. We explore this in detail in Section 4.2.

2.2.2   A new segmentation

In 2012, we undertook a segmentation of the benefit system jointly with MSD. This considered a statistical analysis of the outcomes for different subgroups combined with operational and policy objectives from MSD. This analysis led to MSD choosing 17 segments to value and monitor[8]. These are shown in Figure 2.1. We have reported valuation results using these segments for the last four valuations.

Figure 2.1 Beneficiary segments

At the time, the intention was to periodically assess the relevance of the segmentation. In 2016, MSD decided to revisit the segmentation, particularly due to:

» **The new Better Public Services (BPS) target for reducing long-term welfare dependence** – In June 2015, the BPS target of reducing long-term Jobseeker Support numbers to 55,000 by June 2017 was replaced with reducing working age client numbers by 25% to 220,000 from 295,000 as at June 2014, and an accumulated actuarial release of $13 billion by June 2018. The duration based split used in the original segmentation split was of reduced relevance.

» **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.

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[8] This process is described in more detail in the 30 June 2012 valuation.

» **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 will now be expanded to include 19-year-old sole parents and some other young adults. There are also other potential policy changes for youth and young adults arising from the review of child protection in New Zealand.

The segmentation analysis has been completed and new draft segments exist, but have not yet been finalised. The bulk of this report has been completed using the old segments.

2.2.3   Welfare Reform – now business as usual

This is now the sixth annual valuation of the benefit system for working-age adults. The first valuation (as at June 2011) set a baseline, which was prior to the Government's Welfare Reform. Welfare Reform – introduced to reduce long-term benefit dependency in New Zealand for people of working age – introduced several key policy changes, primarily in 2012/13 and 2013/14:

» The 2012 introduction of the Youth Service – which aims to support youth and young parents to pursue education, training and work-based learning

» The 2012 introduction of new work obligations to encourage and support more people into work

» The 2013 simplification of the benefit system, and creation of new benefit types:

- Jobseeker's Support (JS)
- Sole Parent Support (SPS)
- Supported Living Payments (SLP).

Welfare Reform also introduced significant operational changes, such as the new service delivery model rolled out nationally from July 2013. These changes have had a significant impact on employment and financial outcomes.

We note there is always uncertainty immediately after a reform as to whether an observed effect will be sustained longer-term. For this reason, both the 2014 and 2015 benefit system valuations only allowed for part of the observed effect of Welfare Reform to be factored into our model assumptions. We now believe that enough time has elapsed that projections can be made without reference to the pre-reform assumptions.

This means that 2016 is the last benefit system valuation to have significant changes to the liability attributable to Welfare Reform. Future changes will instead be due to more recent policy changes and the continuous operational improvements undertaken by MSD. This also may mean that the scale of incremental new changes each year become more moderate.

2.2.4   Focus on current areas of interest

The valuation is performed at an individual-client level, allowing us to explore specific topics of interest. This year we have focused on mental health conditions, Māori clients and the prediction of lifetime cost at entry into the benefit system. See Chapter 4 for further detail.

We note that technical improvements and additions to the model are retained from year to year. In 2015 we added new datasets related to child protection, youth justice and corrections history. These datasets are again updated and included as part of our modelling. This ensures the accuracy of individual level forecasts increases from year to year.

The growing number of different sectors and datasets (with variables now spanning housing, child protection, justice and education) means that we can also explore concentrations of high cost, and how risk factors tend to coincide for subgroups of the benefit system population.

2.3 Impact of 2015/16 changes to key cost drivers

2.3.1 Policy changes

Developments in 2015/16

Budget 2015 introduced a number of policy changes which came into effect from 1 April 2016, as part of the Government's package to reduce hardship amongst children in New Zealand's poorest families:

» 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).

» Benefit rates for families with children rose by $25 a week after tax.

» Beneficiaries receiving SPS must re-apply for their benefit every year.

Other policy changes also came into effect during the valuation period:

» The rate of accommodation support for sole parent students was aligned to the rate available to those on the benefit system from 1 July 2015. The policy takes effect when the student begins their next study period, so for the majority of sole parent students the new rate commenced in March 2016. This policy was announced in Budget 2014.

» The 3K to Christchurch initiative which was also introduced as part of Budget 2014 was expanded to support other regions. The initial policy provided beneficiaries outside Canterbury with a one-off payment of $3,000 if they have a full-time job offer in Canterbury and are ready and willing to move there.

The most visible of these changes is the $25 benefit increase. Although this change is visible for only a single quarter in our data, we have measured the impact of the increase on the valuation.

Other planned changes not in effect by 30 June 2016 are not incorporated into this year's valuation. This includes the Budget 2016 Youth Service extension to 19-year old parents, which came into effect in October 2016.

Impact of these changes

The valuation recognises the increase associated with the $25 per week benefit increase, as well as some decreases associated with the continuing impact of Welfare Reform. The $25 per week benefit increase may also drive behavioural change in benefit dynamics; such changes will not be fully reflected in the 2016 valuation, as we have only observed a single quarter of history since the increase.

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 Operational changes

Developments in 2015/16

As highlighted above, Welfare Reform introduced significant operational changes, primarily the national roll-out of a new service delivery model which introduced a differentiated service tailored to beneficiaries' level of support needs:

- » Work Focused Case Management – intensive case management for people who can work, but are at risk of long-term dependence. This includes one-on-one case management for people with a health condition or a disability who can work.

- » Work Search Support – seminars and outbound calling for people capable of doing their own job search.

- » General Case Management – primarily for people who are soon to start work or are preparing to work including parents.

Budget 2015 increased the number of clients who can receive Work Focused Case Management from 80,000 to 120,000. The additional places are to support sole parents and jobseekers with health conditions and disabilities.

MSD have also maintained their focus on continual improvement. This includes differentiating roles and strengthening practice by case managers, aided by centralisation of processing functions.

Disciplined innovation is also an important part of the investment approach. Robustly-evaluated trials enable evidence-based decisions about which trials should be rolled-out. Budget 2014 introduced seed funding to trial new approaches to assisting clients into work who have been identified in the valuations as being at high risk of long-term benefit receipt. While trial results are not part of the valuation scope, successful initiatives will result in improved benefit system dynamics that are then recognised in the valuation.

Impact of these changes

Operational impacts tend to be smaller and more incremental in nature. The valuation approach is well suited to recognising these impacts over time as history is collected. It can also attribute improvements to specific cohorts, often those which are the target of new approaches and interventions.

2.3.3   Labour market changes

Developments in 2015/16

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.

Statistics NZ has recently revised the way in which they report the unemployment rate. On the new basis rates are approximately 0.4% lower than on the old basis. This change in basis also flows on to the Treasury forecasts; when comparing on a like-for-like basis the forecast long-term unemployment rate has increased since 2015. In the following all references (including 2015 forecasts) to the unemployment are on the new basis.

Notwithstanding definition changes, the **unemployment rate decreased over the 2015/16 year**, broadly in line with the forecast by Treasury that was used in the previous valuation – as shown in Figure 2.2. In the June 2016 quarter, the unemployment rate was 5.0%, consistent with the forecast by Treasury. As in previous valuations we have used Treasury forecasts (here from the 2016 Half Year Economic and Fiscal Update (HYEFU)). In the previous valuation we smoothed Treasury forecasts to better reflect immediate experience, but have not needed to do this in the current valuation. The assumed long-term unemployment forecast is now 4.3%. This has increased 0.2% from previous years; the old 4.5% assumption is close to 4.1% under the new definition of unemployment from Statistics NZ.

Figure 2.2 National unemployment rates
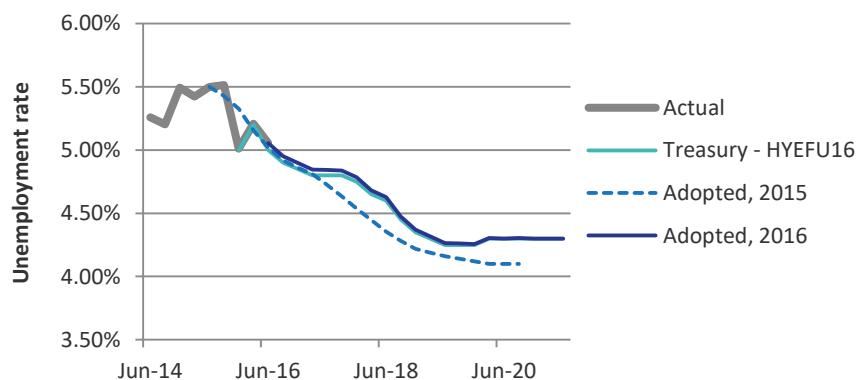
Impact of these changes

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 JS-WR segments are most sensitive to unemployment rate changes (see Figure 2.3), but virtually all benefit types exhibit some sensitivity.

Figure 2.3 Historical unemployment rate and quarterly transition rate from JS-WR to NOB
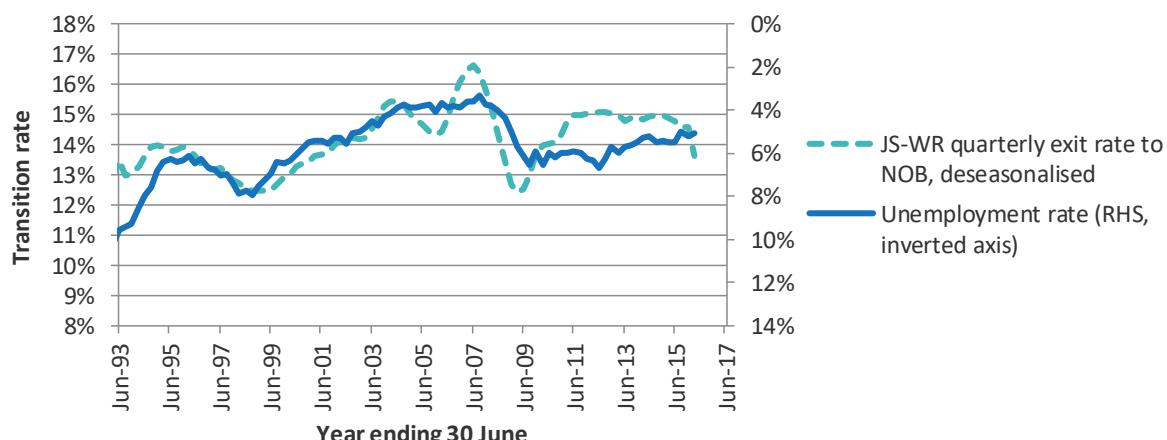
The updated unemployment rate assumptions add $1.0 billion (or 1.5%) to the valuation, holding other factors constant, with the largest increases in future jobseeker benefits. Most of the change relates to the change in the long-term assumption.

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 6.

2.3.4   Demographic changes

Developments in 2015/16

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 liability is relatively neutral.

It is worth noting, however, that net migration has increased in recent years. In the previous valuation we reported that 2014/15 saw the highest net migration gain ever recorded.[9] This further increased by 19% in 2015/16 with a new high net migration record of 69,100 people.[10] The number of people approved for residence has also increased by 21% in the last year, with the majority aged 20-39.

Most migrants settle in the Auckland region, and there has been an increase in migration to Canterbury in recent years due to the Christchurch rebuild following the 2011 earthquake.

Other behavioural changes will be reflected in the valuation over time. For instance, the falling rates of teen pregnancy in New Zealand has led to lower numbers of YPP and teen SPS receipt. This lowers the corresponding lifetime costs in both current and future cohorts.

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[11], the working age population has grown by about 10%. Population growth often sees a matching increase in the welfare population. This may be true of the SLP population, which has grown steadily over time.

» The growth is particularly high in recent years. In the last two years the working age population has grown by around 2% a year.

» Over the 10 years to June 2016, the proportion of working age people over 50 has increased from 25% to 28%. These people are generally more likely to require SLP benefits, and less likely to receive JS or SPS benefits. Interestingly, the proportion of working age people under 30 has also increased (from 31% to 33%); these people are more likely to enter Jobseeker benefits.

Some of these issues are explored further in Section 8.4 where we examine what the beneficiary population might look like in five years' time.

2.3.5   Benefit rates

Developments in 2015/16

In the last valuation we noted the Budget 2015 announcement of a benefit increase for families of up to $25 per week from 1 April 2016, as well as an increase to the child care subsidy through the child material hardship package. These changes are visible and have been incorporated for the first time as part of this year's valuation. The increase in the liability due to this package is not reflective of MSD's performance in managing the benefit system. (The effectiveness of this policy change in addressing material hardship for children will be monitored separately, with measures to include broad movements in MSD's Deprivation Index (DEP-17).)

Benefit rates are indexed to the December CPI (less cigarettes and other tobacco products) with changes effective on 1 April. Observed CPI inflation was slightly negative for the year and benefit levels have been held constant in response. This was lower than the expected increase of 1.6%.

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[9] Ministry of Business, Innovation & Employment, *Migration Trends and Outlook 2014/15*, November 2015. http://www.mbie.govt.nz/publications-research/research/migrants---monitoring/migration-trends-and-outlook-2014-15.pdf
[10] Ministry of Business, Innovation & Employment, *Migration Trends and Outlook 2015/16*, November 2016. http://www.mbie.govt.nz/publications-research/research/migrants---monitoring/migration-trends-and-outlook-2015-16.pdf
[11] Statistics New Zealand, Infoshare

Impact of these changes

The absence of benefit inflation (excepting the $25 increase) means that rates are now lower than were projected to June 2016. This in turn lowers the overall valuation by 1.6%, or $1.1 billion.

The impact of the $25 per week material hardship increase is a $1.5 billion increase in the liability. Over half is due to payments to future SPS clients, although material increases are visible for Jobseeker and SLP benefits. While the impact of the increase is straightforward to calculate in theory, the change may also create other behavioural changes such as how people move between benefits. We attempt to estimate this through observed experience, but there is some uncertainty as we have observed only a single quarter of experience. In particular, the average benefit rate paid to **new** clients in the June 2016 quarter is a little higher than expected, and would add an additional $0.3 billion if fully recognised. We will review whether the effect persists in next year's valuation, and whether it appears attributable to the child hardship package. We discuss the impact of the increase further in Section 3.4.

2.3.6   Other financial drivers

Developments in 2015/16 and impact of changes

Inflation and discount rates affect the liability results, but are outside of the control of MSD. The valuation uses assumptions set by Treasury. Inflation forecasts affect the projected increase in benefit levels, so lower assumed levels of annual inflation will tend to reduce the liability. We discount the liability to June 2016 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. These effects are outlined below, and in Figure 2.4.

Figure 2.4 Assumed risk-free discount and inflation rates
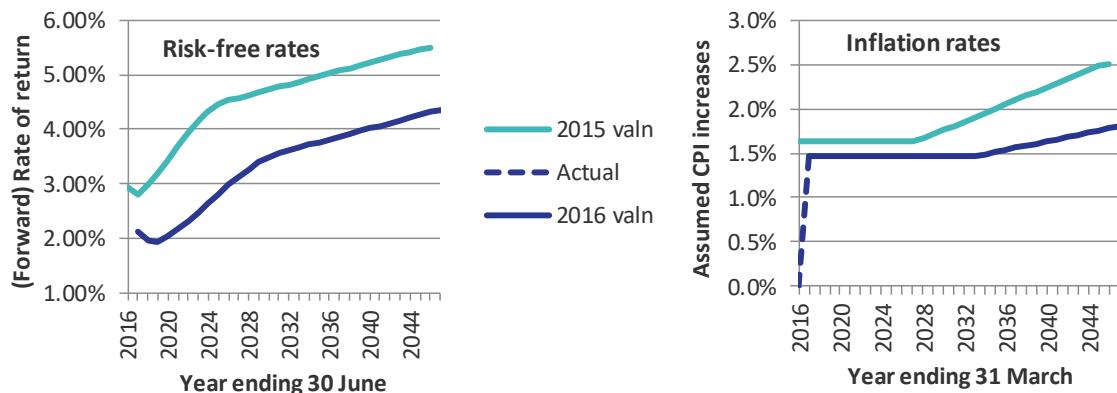
» **Inflation experience was lower than expected.** Benefits were unchanged compared to the increase of 1.6% assumed in the previous valuation and the Treasury has reduced their long-range forecasts by reverting to a lower long-term rate (2.0%) and doing so at a slower rate. This decreases the valuation estimate by $2.6 billion, or 3.6%.

» **Discount rates have fallen** significantly since the previous valuation with material falls in short and medium-term rates. The long-term forward rate has also been reduced from 5.5% to 4.75%. This increases the liability by $8.7 billion, or 12.3%.

Overall the real rates of return (discount rate minus inflation) have fallen. The combined effect is an increase in the liability of about $6.2 billion (or 8.7%).

3   MAIN RESULT AND ANALYSIS OF CHANGE

Inside this chapter

3.1   Introduction and highlights

This chapter discusses the main results of the valuation as at 30 June 2016. It provides detailed analysis of actual experience in 2015/16 against forecasts, including analysis of the change under management influence. This chapter also discusses how changes to the key drivers of future cost discussed in Chapter 2 have influenced the liability. 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** of the liability in the benefit system as at 30 June 2016 is $76.0 billion. This is the expected cost of benefit payments and related expenses from the valuation date until retirement for clients who received income support in 2015/16.

This year's liability is 11% higher relative to last year's estimate – an increase of $7.6 billion. This is primarily driven by changes to drivers of the long-term cost of benefit receipt – economic assumptions and benefit rates. Revised economic assumptions have added $7.2b to the liability, and the Budget 2015 increase to benefit rates for those with children has added $1.5b.

However, this increase masks a **$1.7 billion performance improvement**, almost as large as the decreases in each of the previous two years. An additional year's worth of data shows positive trends in sustained SPS exits and re-entries among those who have left benefits which have been recognised in the model assumptions, and explain the bulk of the change.

Over the course of 2015/16, the number of people on benefits were close to expected; SPS segments were lower, while JS-WR and SUP-only segments were higher. Average payment levels were slightly higher than expected. These results for client numbers and payment levels combine to give total payments 1.5% or $86m higher than expected in 2015/16; more than half of this is attributable to the child hardship package introduced in the fourth quarter of the financial year.

Compared to pre-reform baseline forecasts in the 2012 valuation, there has been **a cumulative reduction in payments of $2.07 billion over four years**. About 70% of these savings can be attributed to Welfare Reform policy and operational changes.

The cumulative impact over five years of the change considered to be under management influence is about 17.5% of the value of the liability as at 2011, or $13.7 billion. This is partly offset by the introduction of the child 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 1,300,000 fewer years on main benefits over their working lifetime, up from 1,040,000 last year[12]. About three quarters of this reduction in future years on main benefits can be attributed to policy and operational changes.

3.2 Current and future client liability estimates

Table 3.1 Current client liability forecasts by client segment at 30 June 2016 and previous valuation (updated for methodology changes[13]). Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2016 Valuation				2015 Valuation (restated for methodology change)			
		Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits	Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits
Jobseeker Support	JS-WR <1 year	44,538	4,983	112	8.6	44,174	4,357	99	8.8
	JS-WR >1 year	32,419	4,365	135	9.4	31,802	3,670	115	9.2
	JS-HCD <1 year	23,033	2,957	128	9.0	22,306	2,692	121	9.6
	JS-HCD >1year	41,435	6,164	149	9.9	41,961	5,853	139	10.3
	Sub-total	141,425	18,469	131	9.2	140,243	16,572	118	9.5
Sole Parents	Youngest child 0-2	24,590	5,851	238	12.7	26,631	5,838	219	13.8
	Youngest child 3-4	13,403	2,874	214	11.4	14,620	2,927	200	12.5
	Child 5-13, <1 year	4,836	734	152	8.5	4,560	631	138	9.0
	Child 5-13, >1 year	24,903	4,839	194	10.5	25,939	4,596	177	11.0
	Sub-total	67,732	14,299	211	11.3	71,750	13,992	195	12.2
Supported Living	Carer	8,811	1,543	175	9.9	8,791	1,361	155	9.7
	Partner	7,577	899	119	8.0	8,089	859	106	7.9
	HCD	86,482	16,861	195	12.4	87,650	15,416	176	12.3
	Sub-total	102,870	19,303	188	11.9	104,530	17,637	169	11.8
Youth	Youth prog (<18)	1,762	315	179	13.8	1,957	330	169	15.3
	Young Parent (<19)	990	253	255	14.3	1,103	251	227	15.3
	Sub-total	2,752	568	206	14.0	3,060	581	190	15.3
Not On Main Benefits	Sup only, <1 year	26,356	1,467	56	2.9	30,352	1,458	48	3.1
	Sup only, >1 year	74,598	4,512	60	2.8	71,460	3,770	53	3.1
	Orphan only	5,519	597	108	2.0	5,195	485	93	2.1
	Sub-total	106,473	6,576	62	2.8	107,007	5,713	53	3.0
Recent Exits	Recent exits, <1 year	126,286	7,917	63	4.6	132,802	7,443	56	4.8
All segment sub-total		547,538	67,131	123	7.7	559,392	61,938	111	8.0
Expenses + Net loans			8,890				7,909		
Grand total			76,022				69,847		

The current client liability is defined as the expected cost of future benefit system payments to age 65 for clients receiving a benefit in 2015/16, plus associated net loans and expenses. Clients included in scope are referred to as 'current clients'. Common acronyms are listed in Chapter 11.

The future client liability is defined as the projected benefit system payments to age 65 for clients who receive benefits in each year but did not receive benefits in the previous year, plus associated net loans

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[12] The 900,000 stated last year related to main benefits plus supplementary benefits; see Section 3.9.
[13] These are changes related to the integration of social housing into the model, particularly the improved projection of future AS payments.

and expenses. In particular, the 2016/17 future clients are those people not in the 2015/16 current client cohort, but are expected to be in the 2016/17 current client cohort.

The estimated current client liability as at 30 June 2016 is $76.0 billion. The result is broken down in two different ways; by current client segment in Table 3.1 above and by future benefit payment type in Table 3.2 below. Note the difference between the two tables; the first is shown by a client's current status (so the average $131k lifetime cost for Jobseeker Support clients includes future spells, such as SPS and SLP), whereas the second shows that future spells in JS-WR will total to $5.6b. We provide many other breakdowns of this result throughout the report. For instance, Chapter 5 covers the liability by segment in greater detail, while Chapter 6 looks at the liability at a regional level.

Table 3.2 Current and future client liabilities subdivided by future benefit type, inflated and discounted[14]

Component	Current client liability $billion	Future client liability $billion, for clients entering the benefit system in:				
		2016/17	2017/18	2018/19	2019/20	2020/21
Tier 1						
JS-WR	5.6	0.93	0.90	0.84	0.80	0.79
JS-HCD	8.0	0.94	0.93	0.89	0.85	0.85
SPS	9.9	1.16	1.13	1.08	1.05	1.02
SLP-HCD	22.2	1.34	1.33	1.27	1.23	1.19
SLP-Carer	2.1	0.17	0.19	0.18	0.17	0.17
EB	0.2	0.03	0.03	0.03	0.03	0.03
OB	1.6	0.16	0.16	0.15	0.15	0.14
Subtotal	**49.5**	**4.73**	**4.67**	**4.45**	**4.28**	**4.21**
Tier 2:						
AS	10.6	1.21	1.19	1.15	1.11	1.11
DA	1.9	0.13	0.13	0.12	0.12	0.12
CDA	1.0	0.12	0.12	0.11	0.11	0.11
CCS	1.1	0.17	0.17	0.16	0.16	0.16
Subtotal	**14.6**	**1.64**	**1.60**	**1.54**	**1.50**	**1.49**
Tier 3:						
HS	2.9	0.28	0.28	0.27	0.26	0.26
EI	0.1	0.02	0.02	0.02	0.02	0.02
Subtotal	**3.0**	**0.31**	**0.30**	**0.29**	**0.28**	**0.27**
Other:						
Expense	8.5	0.86	0.85	0.81	0.78	0.77
Net loans	0.4	0.05	0.05	0.05	0.05	0.05
Subtotal	**8.9**	**0.91**	**0.90**	**0.86**	**0.83**	**0.81**
Grand total	**76.0**	**7.58**	**7.47**	**7.15**	**6.88**	**6.79**

Table 3.2 also shows the liability estimates for '**future clients**'; incoming clients in each of the next five years. **The estimate for new entrants in 2016/17 is $7.58 billion, slowly falling to $6.79 billion in 2020/21.** The pattern of decrease is in line with 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 the main liability estimate in future years.

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[14] Current client liability is discounted to 30 June 2016. Future liability years are discounted to the middle of that year. For example, 2015/16 future client liability is discounted to 31 December 2016. Numbers presented may not add perfectly due to rounding. See glossary at the end of the report for acronyms.

The 2015 current client liability (after allowing for methodology changes) was $69.8 billion. Compared to the 2015 valuation, several changes are visible this year. First, the proportion of SPS payments has decreased a percentage point to 13%, reflecting both a decrease in numbers currently on that benefit and recognition of shorter durations once on benefit. The proportion of JS-HCD payments has decreased slightly, this is offset by a similar size increase in JS-WR payments. Payments of SLP-HCD benefits (formerly Invalid Benefit) and SLP-Carer benefits have remained constant; together these SLP payments represent half of all Tier 1 benefit payments in the current client liability.

The key questions to understanding this year's results are:

» What events occurred in 2015/16 to drive change?

» What changes materialised in the 2015/16 year, and how was this different from what we expected in the last valuation?

» How have these changes been incorporated into our projections for future years?

We discuss each of these in turn in the next subsections.

3.3   Summary of changes to key cost drivers in 2015/16

This section summarises the events that occurred in 2015/16 to drive change, discussed in Section 2.3.

Changes to drivers of benefit dynamics:

» **Policy setting:** Ongoing impacts of Welfare Reform. Introduction of the child hardship package. Some changes to SPS and part-time work requirements.

» **Operations:** Shift to continual improvement through the investment approach; trials, practice enhancement and role specialisation.

» **Labour market:** A higher long-term unemployment rate assumption.

» **Demographics:** An increase in net migration to NZ during the valuation year.

Changes to other financial drivers:

» **Benefit rates:** Increase related to the child hardship package of $25 per week for clients with dependent children.

» **Inflation rate:** Zero benefit inflation applied in 2015/16, lower than expected.

» **Discount rate:** Assumed forward rates at 30 June 2016 were significantly lower than 2015.

3.4   Movement in the liability between 2015 and 2016 valuations

The 2016 current client liability is $7.6 billion higher than last year's estimate as at 30 June 2015; about 11% higher. This year to year difference is dominated by changes to inflation and discount rates, but this masks significant underlying changes, as summarised in the text and Figure 3.1.

» **A $1.5 billion upwards revision of the 2015 liability due to methodology changes**: These changes can be largely ignored for assessment of performance. The biggest component of this change was a $0.9 increase in future Accommodation Supplement (AS) payments, as part of our re-modelling for the social housing integration. The new model recognises the increase in (AS) with regional rents; regions with higher rents tend to claim AS more, and do so with a higher average weekly rate. Rents are forecast to grow faster than CPI and AS is now projected to grow at a rate faster than CPI too. The second biggest change ($0.3 billion increase) was a scope change to include supplementary payments to pensioners aged under 65 (who have a partner over the retirement age). These

payments are mainly AS and are important for the housing valuation; it is more consistent to include them in the benefit system valuation too.

» **A $7.2 billion upwards revision of the 2015 liability due to changes to economic parameters:** If we had our current knowledge of economic variables (their evolution over 2015/16 and the latest Treasury forecasts), the 2015 current client liability would have been $77.0 billion. Most of this change is due to lower discount rates (+$8.7 billion), partially offset by lower inflation (-$2.6 billion). The remaining $1.0 billion relates to the higher unemployment rates assumed from 2015/16. Lower assumed average weekly earnings (AWE) growth in the short run also plays a secondary role through longer social housing durations.

» **An expected decrease in the liability over the year of $0.7 billion:** The liability does not remain static over time; benefit payments are made through the year, some clients exit, and new beneficiaries enter the system. There is also an unwinding process where the inflation and discount rates assumed over 2015/16 are allowed for. In the previous valuation report, our expected decrease for the year to 30 June 2016 was $1.1 billion (see Section 8.3 of the previous valuation report). However, updated economic conditions change this expectation to a $0.7 billion decrease; the decrease mainly reflects the lower expected numbers on benefit over the year.

» **An additional decrease of $1.7 billion reflecting better than expected performance over the year:** After allowing for changes to economic parameters, the liability has fallen more than expected. This reflects both the actual results (more people exiting the system compared to forecasts) and our response to those results in modelling future patterns of benefit receipt (projecting ongoing improvements in exits and re-entries). This $1.7 billion change includes the impact of policy and operational changes, and is discussed in greater detail in Section 3.7. It is composed of a $2.0 billion decrease in future benefits, offset by a $0.3 billion increase in expenses. It excludes the change related to the benefit increase for the child hardship package. Of the decrease, $0.25 billion relates to observed changes in numbers and benefit types, and $1.43 billion relates to updated model assumptions that seek to better reflect recent experience. These model changes are concentrated in the SPS exit rates and lower benefit re-entry rates after exit.

Figure 3.1 Analysis of change in current client liability between 2015 and 2016 valuations, split by client segment at valuation date. Numbers may not add due to rounding.
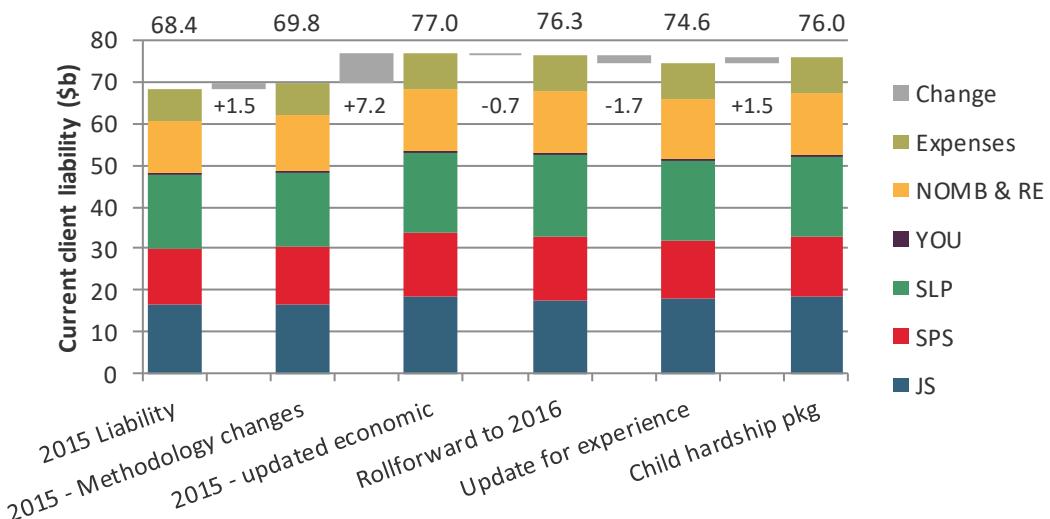
» **A $1.5 billion increase related to the child material hardship package:** We have assumed that the higher benefit rates observed in the June 2016 quarter will largely persist in the future. We have estimated the increase in two ways. The first is based on a simple aggregate analysis of beneficiary numbers, expected durations, and the proportion with registered children. This gave an expected increase of up to $1.5 billion. The second approach measured the lift in quarterly benefits seen in June 2016 and projected it forward and measures potential behavioural changes. This gave an

increase of $1.8 billion, driven by higher than expected average benefits for new clients. The latter finding appears unreasonably large, particularly for the Jobseekers benefit; it would imply significantly more households with dependent children than expected. The difference may thus be attributable to other behavioural factors. We have adopted $1.5 billion and will estimate the effect size again in 2017 when there will be an additional four quarters of experience.

Fewer beneficiaries and improved benefit dynamics recognised in the projection mode have led to an underlying $1.7 billion performance improvement over 2015/16. This is offset by a $1.5 billion increase attributable to the increased benefit rates of the child hardship package.

3.5 Actual versus expected results for 2015/16

3.5.1 Benefit dynamics

At its simplest, the liability can be understood as a snapshot of how many beneficiaries are currently included in the valuation population, their expected benefit dynamics (particularly expected duration of benefit receipt), and the cost of associated payments.

Client movements through the benefit system, relative to those predicted in the previous valuation, are illustrated in the figure below.

Figure 3.2 Significant changes to benefit dynamics in 2015/16
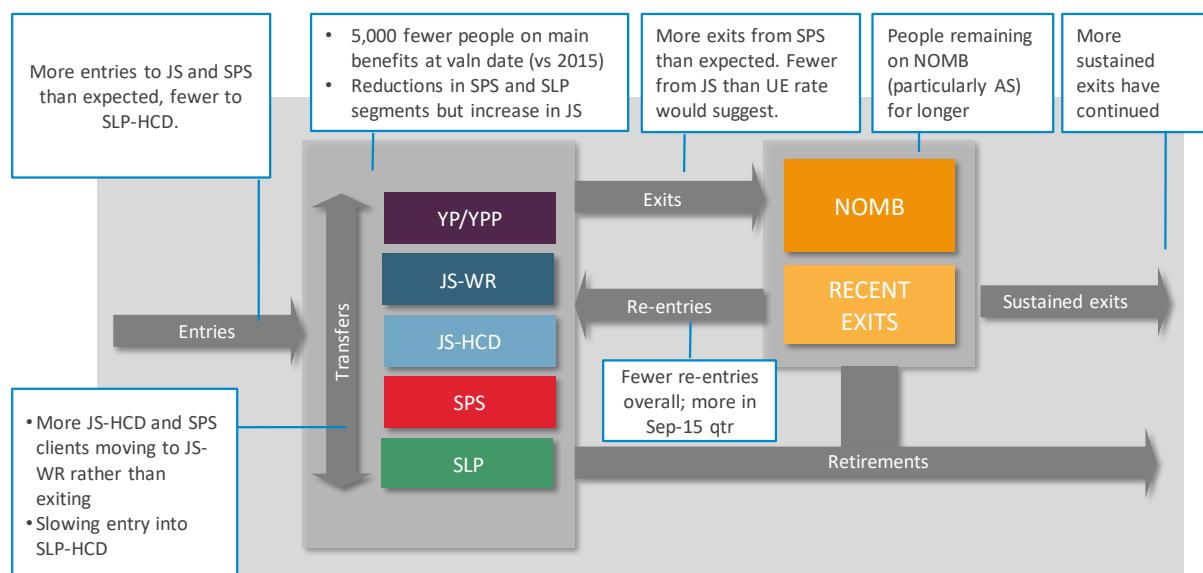
3.5.2 Actual versus expected results by segment in 2015/16

This section compares actual and expected numbers of beneficiaries and payment amounts for 2015/16, split by client segment as at 30 June 2015, the previous valuation date. Future clients who were expected to enter in 2015/16 are also included as a separate group. The results are summarised in Figure 3.2 as well as in Table 3.3. Total results have emerged a little higher than what was forecast a year ago, although there is significant variation by segment.

Table 3.3 Actual versus expected[15] benefit results for the 2015/16 year, by segment as at 30 June 2015

Top tier segment	Segment	Avg # on benefit in qtr			Avg Qtrly Benefit			Total payments 2015/16		
		Actual 000s	Expected 000s	Ratio	Actual $	Expected $	Ratio	Actual $m	Expected $m	Ratio
Jobseeker Support	WR < 1	33.9	34.0	100%	2,708	2,751	98%	367	375	98%
	WR > 1	28.7	27.7	103%	3,526	3,356	105%	404	372	109%
	HCD < 1	19.2	19.4	99%	3,290	3,340	99%	252	259	97%
	HCD > 1	39.7	39.5	101%	3,824	3,739	102%	607	590	103%
Sole Parent	Ch 0-2	25.5	25.7	99%	5,534	5,342	104%	565	549	103%
	Ch 3-4	13.9	14.0	99%	5,375	5,304	101%	299	298	100%
	Ch 5-13 < 1	4.0	4.1	98%	4,707	4,772	99%	76	79	97%
	Ch 5-13 > 1	24.9	25.0	100%	5,288	5,184	102%	527	518	102%
Supp Living	Carer	8.4	8.4	100%	4,933	4,824	102%	165	162	102%
	Partner	7.6	7.6	100%	3,578	3,582	100%	108	108	100%
	HCD	83.9	83.6	100%	4,381	4,379	100%	1,469	1,465	100%
Youth	Youth payt	1.6	1.7	97%	2,780	2,668	104%	18	18	101%
	Young parent	1.0	1.1	98%	4,848	4,766	102%	20	20	100%
NOMB	Sup <1yr	26.0	25.5	102%	1,062	1,042	102%	110	106	104%
	Sup >1yr	65.8	63.4	104%	1,129	1,130	100%	297	287	104%
	Orp only	4.8	4.8	101%	3,708	3,602	103%	72	69	104%
Recent exits	Recent exits	27.3	27.6	99%	2,448	2,548	96%	267	281	95%
Future clients		50.1	50.3	100%	1,988	1,887	105%	399	380	105%
Total		466.2	463.4	100.6%	3,230	3,202	100.9%	6,023	5,936	101.5%

Total payments for the year were $86m, or 1.5% higher than expected. However, more than half of this is attributable to the child material hardship package in just the June quarter; payments were only 0.6% higher than expected for the first three quarters. For this reason, the difference in number of people on benefit is more indicative of performance over the year, as shown in Figure 3.3.

» Benefit numbers were lower than expected for clients starting in SPS and recent exit segments. This continues the trend seen in the previous two valuations. SPS exits are the sustained impact of welfare reforms, while benefit re-entry rates have also been lower over the past few years.

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

» JS-HCD numbers were also close to expected.

» JS-WR numbers were higher over the year in the high duration segment. This is the biggest driver of the actual client numbers being more than expected over 2015/16. The results are suggestive of a 'hardening' of the segment, where the significant decrease in numbers seen in the segment over the past few years (there were 45,000 in the segment in 2012 and less than 29,000 during the year) has left a group that has lower exit rates than previously predicted.

» Not on main benefits (NOMB) numbers are also higher than expected. Clients have been remaining on SUP-only benefits (particularly AS) for longer than expected. This trend was also visible last year but not allowed for in the valuation projections.

[15] Expected results here are those with the updated methodology changes

Figure 3.3 Actual versus expected client numbers over the 2015/16 year, by segment as at 30 June 2015
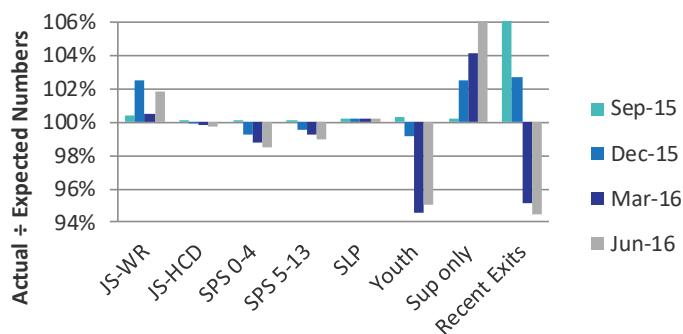
With the exclusion of the final quarter, trends are visible in the average payment levels too:

» JS-WR average quarterly payments were also higher than expected (about 2%). This is consistent with the result for numbers; higher than expected numbers causes more people to receive a full quarter of benefits, which in turn leads to a higher average payment in the quarter.

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

» Youth Payment levels were about 3% higher than expected.

» Other segments were generally close to expected levels.

> These results for client numbers and payment levels combine to give total payments 1.5% or $86m higher than expected in 2015/16; more than half of this is attributable to the child hardship package introduced in the fourth quarter of the financial year.

3.5.3   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. Much of this reduction had already been accounted for in the 2013 valuation, where faster exit rates were observed.

Figure 3.4 shows actual benefit payments against our expectations in the 2012, 2013 and 2014 valuations. The 2012 valuation had a relatively flat projection, with lower unemployment offset by benefit inflation at CPI and most other elements stable.

> The 2012 valuation 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%
>
> In total, payments to date for the four years since 2012 were 7.7% lower than forecast in the 2012 valuation, reflecting an actual saving of $2.07 billion compared to what was expected. About 70% of these savings can be attributed to Welfare Reform policy and operational changes.

We have estimated about 70% 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 other 30% of the difference is attributable to lower than expected benefit rate inflation. 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.

Figure 3.4 Actual and expected quarterly benefit payments
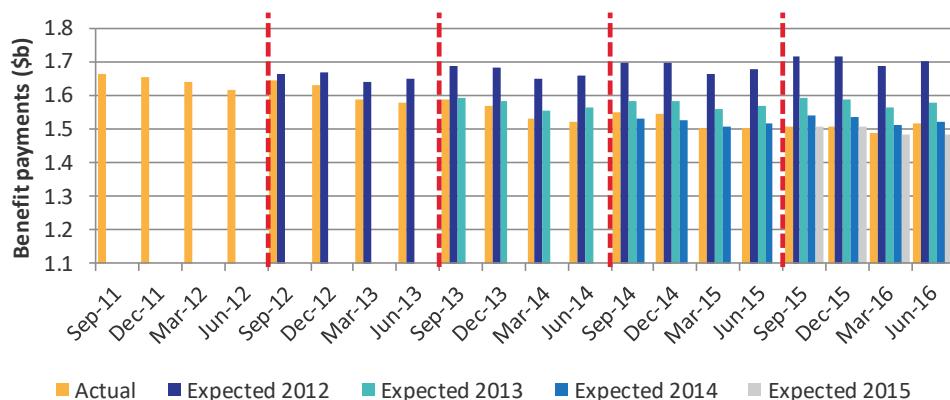
3.5.4 Other comments on actual versus expected payment experience

There are many ways to subdivide actual versus expected payment results. The segment split results above are important, but obscure some other interesting effects. For example, here we focus on differences in client numbers by:

» **Age:** Numbers of clients by age band for the 2015 current client cohort were generally slightly above expected, with the exception of the 18-19 year old group, where numbers were lower than expected (-2%). There was more variation for new clients entering the system; entries amongst clients aged 20-29 were 2% higher than expected across 2015/16, but were 3% lower for the 30-49 age group.

» **Regions:** Most regions were in line with the national average; that is, slightly higher than expected. Taranaki, Bay of Plenty and East Coast had relatively lower client numbers, particularly in the last two quarters. Canterbury had a poor result, with client numbers 5% higher than expected in the June 2016 quarter. 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 initiative. Regional effects are discussed further in Chapter 6.

More detailed breakdowns examining the experience over 2015/16 can be found in Appendix J.

3.6 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 3.5.

Figure 3.5 Number of clients at end of quarter by segment (left), and quarterly payments in actual values (right, excluding expenses and net loans cost)
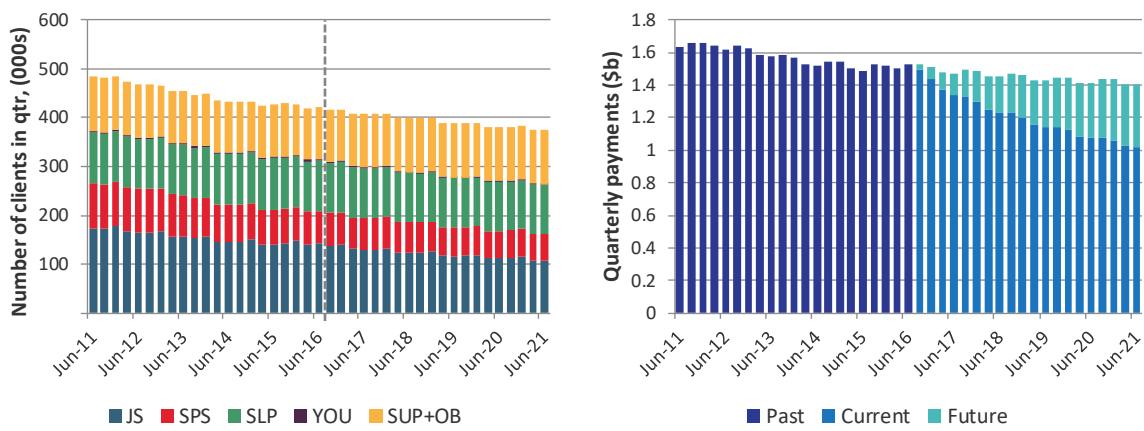
The projections reflect recent trends plus forecast future improvement in labour market conditions:

» Over the next five years, client numbers in all segments except SLP are expected to decrease by an average of 13%. The projected decrease is slightly less than in the previous valuation and compares to an actual decrease of 16% over the five years from June 2011. Some of the projected decrease is related to continuing impacts of Welfare Reform. However most of the decrease, particularly amongst Jobseeker Support clients, is tied to the forecast decrease in unemployment rates over the next five years.

» The number of SLP clients is expected to decrease only very slightly over the next five years (a 3% decrease), with SLP-HCD and SLP-Carers entries mostly balancing out exits.

» Total payments are forecast to fall by 8% over the next five years, despite assumed benefit inflation of 6% over the period. Note this comes after the 2% increase in the June 2016 quarter associated with the child hardship package. 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. The future client liability represents an increasing proportion of future 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.

3.7 Analysis of the change under management influence

3.7.1 Segment level impact

There is a $1.7 billion decrease in the change due to experience. This reduction is broken down at a segment level with commentary in Figure 3.6. An equivalent breakdown by region is provided in the next section.

**Figure 3.6 Breakdown of $1.7 billion decrease in change due to experience, by segment as at June 2015**

Change on expected liability from Roll-forward ($m)

		Change %	
Jobseekers	WR<1	-5%	
	WR>1	2%	
	HCD<1	-6%	
	HCD>1	-2%	Slower exits, particularly for WR >1, but fewer re-entries once exit has occurred.
Sole parents	Ch 0-2	-9%	
	Ch 3-4	-10%	Higher SPS exit rates assumed, consistent with experience over the year
	Ch 5-13 <1	-11%	
	Ch 5-13 >1	-5%	
SLP	Carer	-1%	Limited change
	Partner	1%	
	HCD	0%	Lower re-entries after exit. More transitions into JS rather than SPS.
Youth	YP	-12%	
	YPP	-5%	
NOMB	SUP<1	1%	Materially slower exits from SUP
	SUP>1	2%	
	OB	11%	Lower re-entry rates sustained in 2015/16
	Recent exits	-3%	Lower average duration on benefits
	Joins	-2%	
	Other		Higher expense rates

For clients in the 2015 valuation cohort, the most substantial reductions have been for Jobseeker, Sole Parent and Recent exit segments. The biggest contributors to the liability reductions in all these segments are:

» Lower future SPS payments: SPS clients have lower forecast duration and Jobseekers who do move into SPS are expected to have shorter duration.

» Lower benefit re-entry rates: Recent exits are less likely to re-enter main benefits. Existing clients, particularly Jobseekers, have a lower likelihood of return once they exit.

In the opposite direction, JS-WR clients are remaining on benefit longer than expected, with a marked drop in exits particularly in the second half of the financial year. Clients on Supplementary only benefits are also remaining in that benefit state longer. The average quarterly payments to these clients are obviously lower than those on main benefits, so the relative impact on total lifetime cost is lower.

The increase in 'other' relates to net loans and expense assumptions; excluding this effect, the decrease due to experience is $2.0 billion. We have strengthened the expense rates relative to benefit levels; fewer beneficiaries and expense increases above benefit inflation rates have led to a higher **rate** of expenses than we previously assumed. We note this higher rate does not necessarily mean a higher absolute level compared to forecasts. In fact, the premise of the Investment Approach is that investing in clients by providing tailored services and programmes will lead to improved employment outcomes and a consequent reduction in lifetime costs. Higher expense rates are therefore an unsurprising consequence of Welfare Reform and the Investment Approach. We discuss the net loans and expense components in Chapter 7.

The future lifetime cost for former Sole Parent clients is now 8% lower than we had expected, with exit rates for those with youngest child 5-13 remaining at the elevated post-reform levels seen in 2013/14 and 2014/15. This is a function of Welfare Reform, which included increased work obligation coupled with employment support in the form of Work Focused Case Management.

The decrease in liability amongst 'Not on main benefits' and 'Recent exits' segments ($0.15 billion, or 3.4%) shows continued improvement in the sustainability of exits. We have less data on these clients, so it is more difficult to assign cause. However, it is likely that a combination of better employment outcomes for those who exit, plus revised work expectations have contributed to the result.

There has been less change relative to expected for Jobseekers with health conditions and disabilities, for Supported Living clients, and for Youth (YP/YPP).

3.7.2   Region level impact

The $1.7 billion decrease in the change due to experience can also be broken down at the regional level, shown in Figure 3.7. Most North Island regions saw a decrease due to experience of around 4%. This included the Auckland region which represents about 30% of total future cost and saw a decrease of $0.8 billion.

South Island regions fared worse. Nelson and Southern regions saw a slight increase compared to expectations while Canterbury region had a substantial increase. Canterbury was the only region with an increase in the 2015 valuation too; this suggests that the welfare dynamics for the region have been evolving in a genuinely different way. It is worth noting that Canterbury's context is unique due to its stronger labour market, in part tied to earthquake reconstruction – which sets a higher bar for performance relative to other regions – and higher levels of migration from other regions and countries.

Figure 3.7 Breakdown of $1.7 billion decrease in change due to experience, by June 2015 region. Prior to the increase for the child hardship package.

Change on expected liability for clients valued in 2015, $m	% change
Northland	-4.0%
Auckland	-4.5%
Waikato	-3.9%
Bay of Plenty	-6.7%
East Coast	-5.9%
Taranaki	-3.7%
Central	-4.0%
Wellington	-1.5%
Nelson	+0.6%
Canterbury	+9.3%
Southern	+1.4%
Overall	*-2.9%*
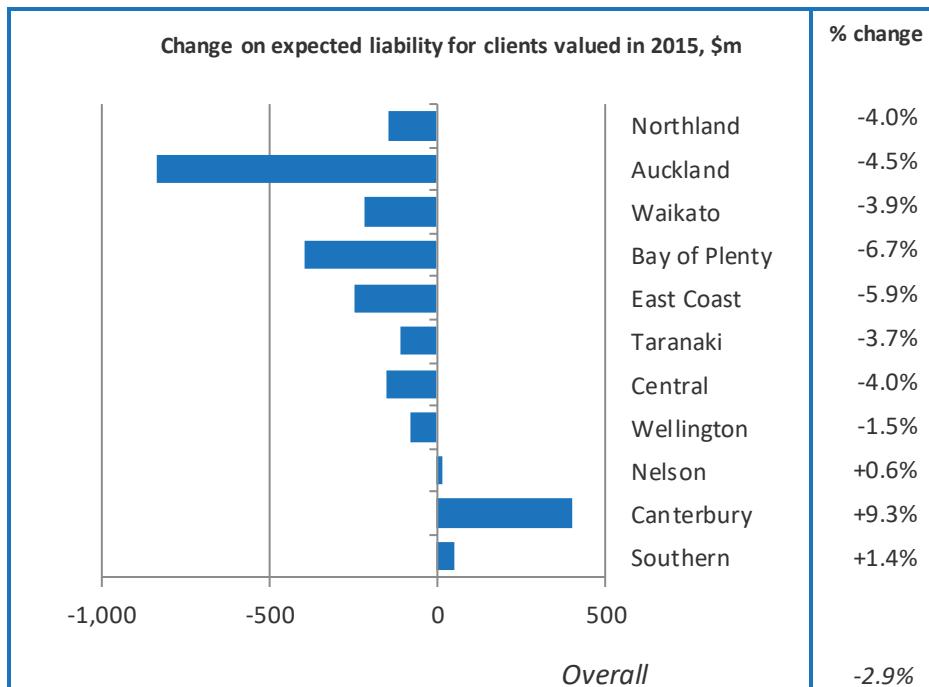
Figure 3.8 shows unemployment rates for the North and South Islands, which have been moving in opposite directions in the past year. While our model allows for the differing trends in the regional unemployment, there is a possibility that aspects of the labour market not captured by the unemployment rate have also contributed to the divergence seen this year.

Figure 3.8 Comparison of unemployment rates for North and South Islands
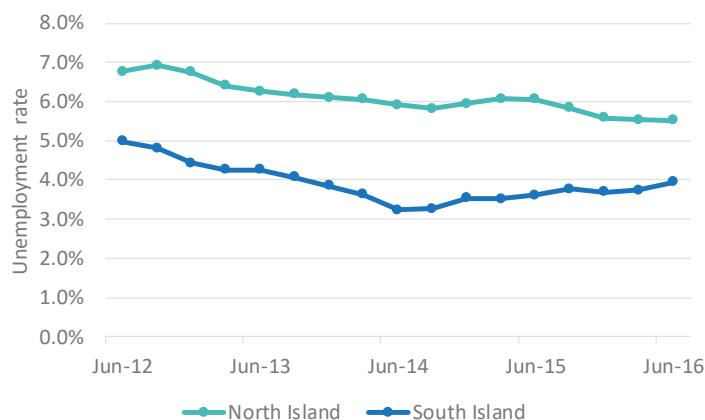
The Canterbury result is also driven by significant changes in benefit dynamics, including markedly higher benefit re-entry rates amongst recent exits. These changes are much larger than the unemployment rate change would imply. We discuss further in Section 6.4.3.

3.8   Model changes in response to 2015/16 experience

Each valuation we incorporate the new experience during the previous year into our projections. Some changes are gradual and can be allowed for naturally. Other 'step' changes (such as those arising from a reform) are larger in size and some judgement must be used to decide how much of the step should be recognised (or equivalently, whether the change observed will partially revert to previous levels). This is an issue common to many types of long-term benefit schemes, such as accident and workers' compensation schemes.

The 2013 Welfare Reforms saw significant step changes, particularly for JS-WR and SPS clients. The changes that we observed have largely been sustained over the subsequent three years. The 2015 valuation recognised roughly two-thirds of the observed change (leaving some allowance for reversion). The current valuation marks the first year that we are fully 'post-reform', and we give little weight to benefit transition rates observed before the reform.

This year we have made model changes that decrease the liability by $1.4 billion. We discuss the most material changes below. The setting of model assumptions always carries some uncertainty, and we explore the sensitivity to model assumptions in Chapter 8.

Transition rates for Sole Parents with school-aged children (5-13)

Figure 3.9 Leave rate (= exit plus transfer rate) by child age (left) and by quarter for SPS child 5-13 (right). The left chart shows only actual rates experienced over the past three years, while the right shows actual leaving rates and future rates projected in the 2015 and 2016 valuations.
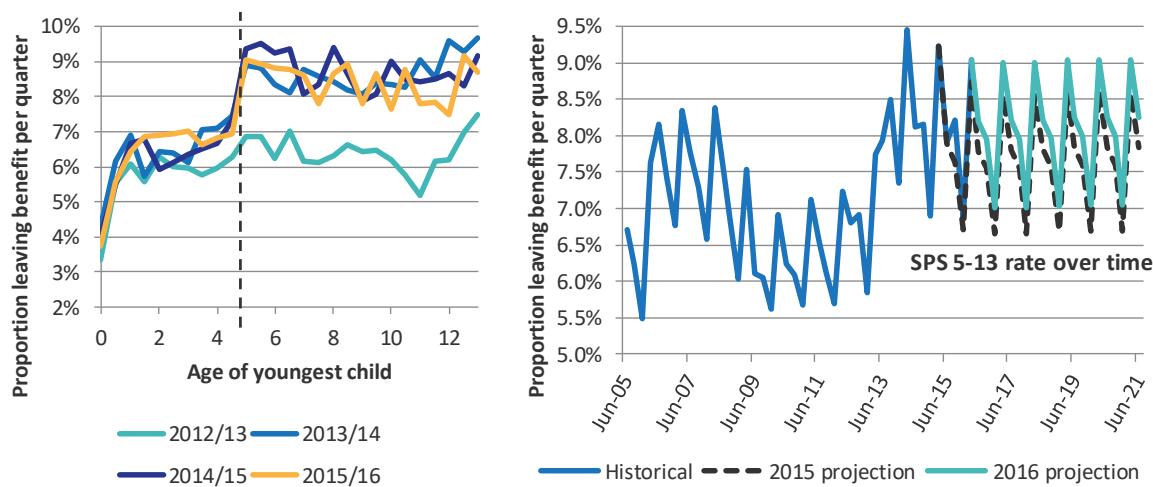
Transition rates out of SPS (either out of the benefit system or to another benefit) for those with youngest child aged 5-13 increased markedly in 2013/14. The revised assumptions are illustrated in Figure 3.9.

These higher rates of transitions have seen some slight reversion in 2015/16. We have adopted these observed rates going forward, which represents an increased leave rate compared to last year's assumption. The observed improvement since 2012/13 is likely a combination of the new benefit types, part-time work requirements, and active case management through the new service delivery model.

Benefit re-entry rates

While benefit re-entry rates in the first year after exit have been lower than expected, the biggest changes in our model assumptions for re-entries have been at the longer durations. The left panel of Figure 3.10 shows the re-entry rates for those who have been off benefits for more than 1 year but less than or equal to 4 years. The re-entry rate for these clients have fallen markedly since the years of the global financial crisis, and we have lowered our assumptions in line with the rates seen in the past two years. Similarly, for the right panel (5-10 years since last benefit); low re-entry rates have persisted and have been recognised this year.

Figure 3.10 Quarterly benefit re-entry rates. The left panel shows rates for those off benefits for more than 1 year up to 4, and the left panel for more than 4 years up to 10.
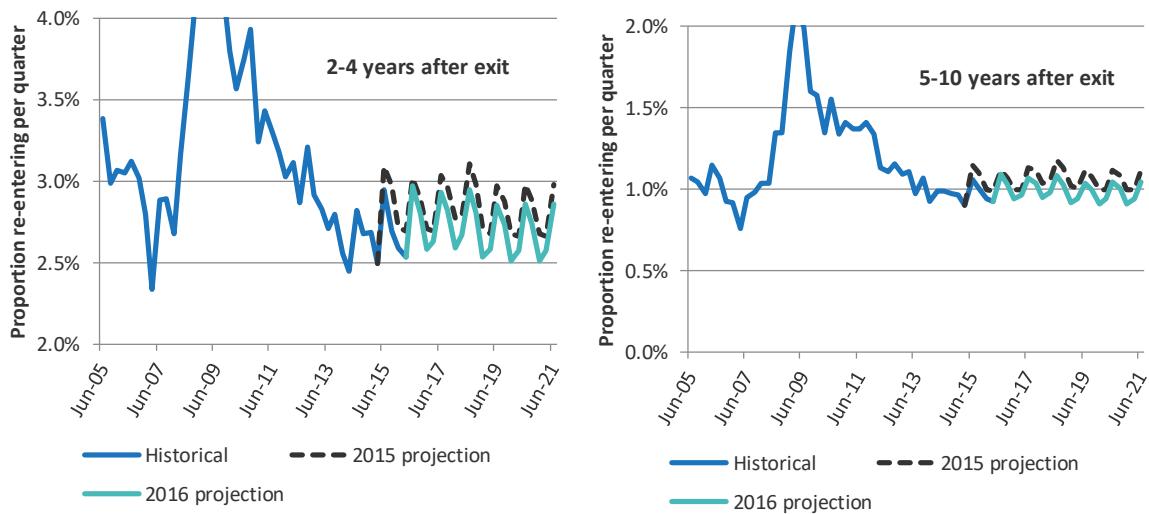
Leave rates for JS-WR clients

JS-WR clients are made up of clients from the old Unemployment Benefit (UB), Widows' Benefit (WID) and Domestic Purposes Benefit (DPB) with children at least 14. Figure 3.11 shows historical leave rates for clients in the old benefit types and the average.

Leave rates have fallen slightly over the year, whereas we would have expected them to rise with the falling unemployment rate (the JS-WR leave rate has the largest unemployment rate sensitivity in our model). We have recognised this by lowering our assumption overall. The upward trend visible in our assumption in Figure 3.11 is consistent with the projected decrease in the unemployment rate.

Figure 3.11 Probability of leaving benefit for traditional and new JS-WR cohorts (experience since July 2013 shaded)
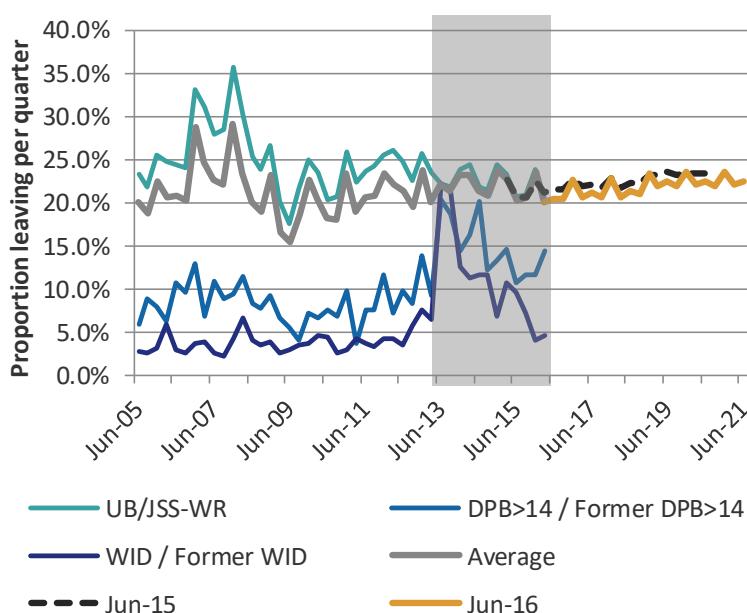
The changes in exit rates also vary for different subgroups of JS-WR clients. For instance, exit rates slowed significantly for males under 25, but were largely unchanged for those aged 25-34.

Leave rates for SLP-HCD clients

Leave rates for SLP-HCD clients are 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 payments represent a large proportion of total lifetime cost; small changes will have large dollar value impacts. Leave rates have fallen slightly over the past two years. We lowered our assumption in 2014/15 and have left it largely unchanged this year.

Figure 3.12 Leave rate by quarter for SLP-HCD clients
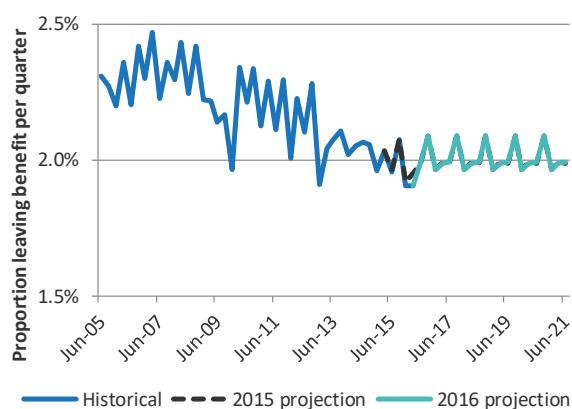
Leave rates for JS-HCD clients

Leave rates rose for JS-HCD immediately after Welfare Reform, which we attributed to an influx of clients formerly on SPS and Widows' benefits, some of whom then exited quickly. We assumed that most of this effect was transitory and that leave rates would fall back closer to levels seen prior to reform. This did occur, and we have lowered rates slightly this year in response to recent experience.

Figure 3.13 Leave rate by quarter for SLP-HCD clients
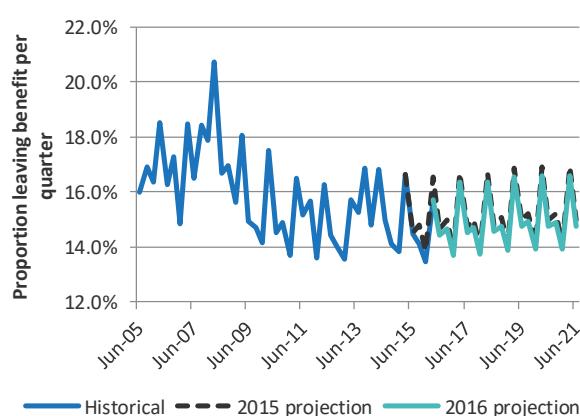
Regional differences are visible, with Auckland JS-HCD clients exiting faster than expected and clients in the Canterbury region slower.

Leave rates for Supplementary only clients

Leave rates for Supplementary only clients have fallen significantly in 2015/16, as shown by the gap between the two lines in Figure 3.14. Interestingly, the fall seems to affect the pattern of exit by duration (of the number of quarters on SUP). Whereas previously a spike in exits was observable at each anniversary (1 year after entry, 2 years after entry etc.), this pattern has largely disappeared in 2015/16 and the line in the chart is significantly smoother. We have recognised this trend and reduced our leave assumptions accordingly.

Figure 3.14 Leave rate by quarter for Supplementary only clients
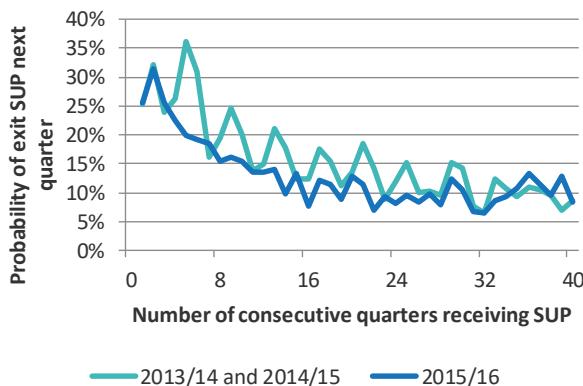
3.9   Cumulative impact of management's influence

This is the sixth welfare valuation, meaning that there is now five years' worth of analysis attributing the change in liability amongst key drivers.

Each year, there has been a material **decrease** in the liability due to experience – that is, due to the combination of Welfare Reform and MSD's management of the benefit system. These decreases in liability comprise reductions due to both decreases in the number of beneficiaries (and potentially beneficiaries moving to lower liability segments) and due to model changes (that is, recognition of how benefit trajectories are changing over time).

These decreases are summarised in Figure 3.15.

Figure 3.15 Current client liability reductions due to experience, past five valuations
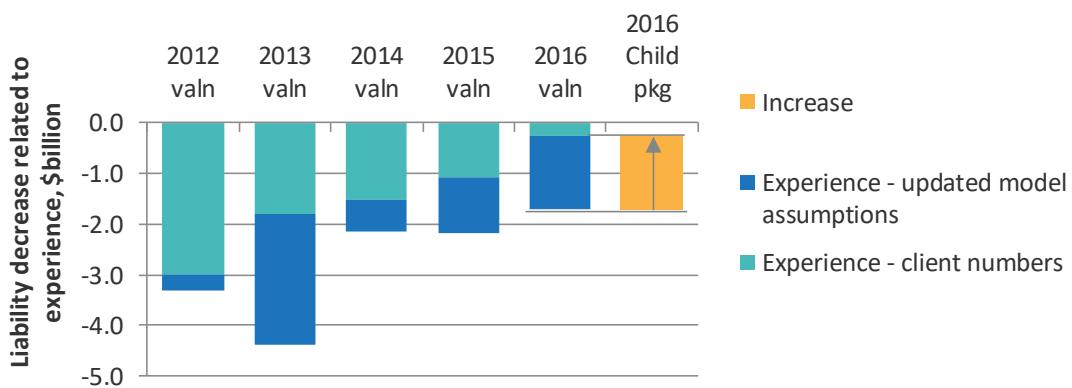
The **cumulative decrease** over five years of the change considered to be under management influence is about 17.5% of the value of the liability as at 2011, or $13.7 billion. This is partly offset by the introduction of the child hardship package, which adds $1.5 billion.

The change under management influence can also be understood in terms of numbers of beneficiaries and their expected duration on benefit[16]:

» Since 2012, Jobseeker segment numbers have reduced by 14%, 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 in SPS 5-13 segments are down 25%, while numbers in other SPS segments are 24% lower. Current SPS clients are expected to spend over 2 years less on benefit.

» SLP numbers are 1% higher (Carers +13%), with small changes in duration.

» Youth segments have 7% fewer clients, with a large substitution from YPP to YP. Average future duration on benefits is 2.4 years less (3.5 for YPP).

» Future duration on main benefits for Supplementary only clients has reduced, by about a year. However, their expected time on Supplementary only benefits has increased by one-and-a-half years.

> These changes mean that, compared to the pre-reform benchmark valuation (as at June 2012), current clients are expected to spend more than 1,300,000 fewer years on main benefits over their working lifetime, up from 1,040,000 last year. About three quarters of this reduction in future years on main benefits can be attributed to policy and operational changes.

Last year we reported 900,000 fewer future years on benefits, which included both main benefits and years on Supplementary only assistance. This number has actually reduced this year to 775,000 fewer years on benefits due to the substantial increase in durations on Supplementary benefits observed over the year. That is, since the last valuation we are projecting fewer years on main benefit and more years on supplementary benefits, with a net effect of a further decrease in liability.

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[16] 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 3.5.3. The changes shown inFigure 3.15 do allow for unemployment rate changes.

Part B – Results

4 FEATURES OF INTEREST

Inside this chapter

4.1   Introduction and highlights

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

Firstly, this year's valuation continues the exploration of a cross-MSD view of drivers. In the 2015 valuation we included, for the first time, matched data on clients' history of contact with Child Youth and Family (CYF). This included data on both care and protection (CP) and youth justice (YJ). This valuation extends this approach by adding social housing status and history into welfare trajectories. Nearly half of adult tenants in social housing are also in the benefit system valuation cohort and pathways for those in both benefit and social housing systems are materially different from those only in one or the other.

The chapter also explores the incidence of multiple risk factors. Our projection model now has several strong indicators of long-term benefit receipt, and these tend to be over-concentrated in particular subgroups of the benefit population. This is true of Māori clients, and we explore Māori disadvantage by looking at the higher incidence of risk factors.

We provide results for the group of clients on JS-HCD and SLP-HCD with mental health conditions. The number of clients in this group has grown steadily over the past two decades and it is an area of both policy and operational interest.

We next explore the ability to predict pathways at client's first point of entry into the benefit system. This is a tougher challenge than predicting lifetime cost for the entire valuation, as pathways for those with significant benefit history are easier to predict. Finally, we review recent trends in the youth segments.

Interaction between social housing and benefit system

This is the first benefit system valuation where housing and welfare cohorts have been projected simultaneously. The intersection between the two groups is a large portion of the housing cohort, and a small but significant portion of the benefit system cohort. Of those in social housing, **relatively more** of them are SPS and SLP clients compared to the general welfare population.

Average benefit system cost (to age 65, excluding AS) is $30k higher for those in social housing. When housing support (AS and income-related rent subsidies) are included in the comparison, we see those in social housing have an average future cost $100k (or 60%) higher than the average.

The higher future benefit cost for social housing tenants is driven by longer spells on main benefits. Those in social housing are typically projected to remain on benefits for 1-2 years longer, but social housing only explains part of these higher costs and durations. In addition, we find that many other factors associated with long-term benefit receipt are concentrated amongst social housing clients. The 25,000 benefit system clients under age 25 with social housing history are twice as likely to have had a child protection event, or an adult corrections spell (as a result of a criminal conviction), compared to young clients without social housing history.

Māori clients

Māori clients are significantly overrepresented in both the benefit system and housing cohort. While only 15% of the general population, Māori comprise 31% of the benefit system cohort and 36% of the housing cohort. The average future lifetime cost for Māori clients is $55,000 higher (about 50%) than non-Māori clients. About a third of the gap is directly attributed to ethnicity in the model and the remainder is distributional (that is, related to other factors that are more prevalent for Māori clients). We have identified six factors associated with higher lifetime cost, with Māori clients overrepresented in each—in some cases by a factor of two. The proportion of Maori clients with five or more of these six risk factors is three times the overall rate for non-Māori clients.

Mental health conditions

Mental health conditions are the most common type of health condition group for both JS-HCD and SLP-HCD clients, being 45% and 35% of clients respectively. Moreover, their number and relative share have been growing substantially over time.

Average future lifetime cost is significantly higher for mental health clients. The cost is $33k higher for JS-HCD clients and $52k higher for SLP-HCD clients compared to clients with other types of incapacity. This difference is almost entirely distributional, rather than attributable to the condition itself. The most influential factor is that mental health conditions tend to affect younger clients.

Characteristics at entry and prediction of outcomes

About 75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20. Given the importance of age of entry, a natural question is how well can we predict lifetime cost at the point of entry? While there is significant insight offered by the model at this point, predictions become more accurate as benefit history accumulates. While benefit type is most important for predicting lifetime cost at the point of entry, there are also substantial contributions from gender (females are more likely to move to long-term SPS), child protection history, age (the earlier the entry, the longer the likely duration on benefits) and ethnicity.

A review of youth segments

Previous valuations have highlighted the importance of age of first entry into the benefit system, including the significant share of the liability associated with early entrants. YP and YPP numbers have fallen over the year, with fewer entries and more exits. Further, the improvements previously noted for two-year benefit system outcomes for youth segments have been sustained in 2015/16, and possibly improved further for YPP.

4.2   Interaction between social housing and benefit systems

4.2.1   Intersection of housing and welfare cohorts

As noted in Chapter 2, this is the first benefit system valuation where the housing and welfare cohorts have been projected simultaneously. While the results of social housing are covered in a separate valuation report, the dynamics of social housing are highly relevant to the benefit system. The combination of these two cohorts allows us to draw out a number of insights about the combined

population. Figure 4.1 below shows the intersection of these two cohorts. Nearly half of those in the social housing cohort (that is, in social housing or on the register in 2015/16) are in the benefit system cohort (those on welfare in 2015/16). The intersection is a large portion of the housing cohort, and a small but significant portion of the benefit system cohort.

Figure 4.1 Left panel shows the intersection of housing and welfare cohorts[17]. The right panel compares the relative numbers of clients for the whole benefit system versus those in both benefit and social housing.
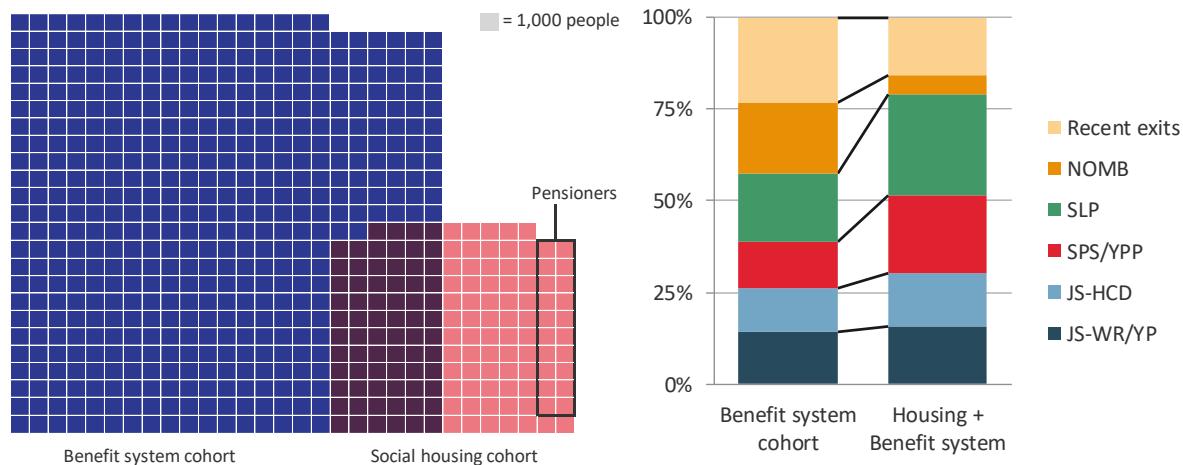
The incidence of social housing use is not uniform across the benefit system. As shown in Figure 4.1 (right panel) of those in social housing, **relatively more** of them are SPS and SLP clients compared to the general welfare population. SPS clients make up 13% of the benefit system cohort, but 21% of the intersection group. Similarly, 19% of the benefit system cohort are SLP clients, compared to 28% of the intersection.

Of those in the housing but not the welfare cohort (the red squares in left-hand panel of Figure 4.1):

» A quarter are pensioners
» A third are less than 65 years old but have never received a benefit
» The remaining 40% are less than 65 years old and have had some history of benefit receipt.

4.2.2 Duration and costs to age 65

The projected pathways and costs of those in social housing are markedly different from other benefit system clients, although this difference is only partly due to the 'effect' of social housing (as measured in our model).

Figure 4.2 shows projected lifetime costs for those who are in social housing and those who are not. The comparison is complicated by housing support; those not in social housing will tend to receive Accommodation Supplement (AS) and those in social housing will instead receive the income-related rent subsidy (IRRS) – which is typically a greater amount than AS. We have separated these components in the figure for easier comparison. Clients not currently in social housing may enter in the future, so their average projected IRRS amounts are nonzero.

Average lifetime cost (excluding both AS and IRRS) is $30k higher for those in social housing. The largest absolute increase in lifetime benefits (again excluding both AS and IRRS) for those in social housing is for SPS clients. The average liability is $47k higher at $212k for those who are in social housing, in part driven by a tendency to remain on benefits longer. The largest relative difference is for those not on main

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[17] Cohorts refer to those active in the benefit or social housing systems respectively in the 2015/16 year.

benefits (NOMB); those in social housing have future lifetime benefit cost $36k (or 83%) higher than those not in social housing. This is driven by a significantly higher entry rate into main benefits.

When housing support (AS and IRRS) are included in the comparison, we see those in social housing have an average future cost $100k higher, or 60%, than those not in social housing. The IRRS component is significantly larger than AS due to the higher average level of support, the projected faster growth in IRRS rates over time and the long durations in social housing tenancies. Note that IRRS is **not** within the scope of the benefit system valuation.

Figure 4.2 Average individual costs to age 65 for clients, split by current benefit type and social housing status
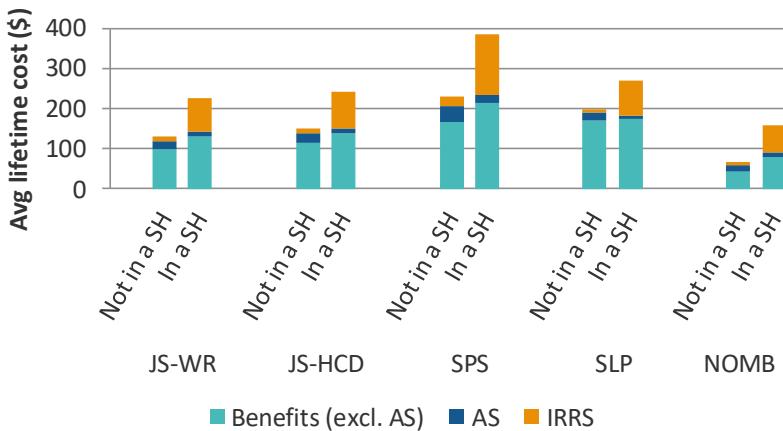
The higher future benefit cost for social housing tenants is driven by longer spells on main benefits. Figure 4.3 shows this by comparing the expected number of years on main benefits for those not in social housing against those in social housing. For each top tier segment excluding SLP and Recent exits, those in social housing are projected to remain on benefits for 1-2 years longer. The reverse is true for SLP clients who remain on benefits one year less when in social housing. Recent exits expected number of years on main benefits is unchanged. The difference can be split into:

» **Direct**: Our model projects higher lifetime costs for social housing clients, all else equal. We also refer to the direct effect as 'partial dependence'. We stress that the direct (or partial) effect observed is not necessarily causative; it may be that other causes not captured by the model are driving the results.

» **Distributional**: Relatively more social housing tenants are in higher cost segments (such as SPS). Even within segments, more social housing clients have other factors associated with long-term benefit receipt.

We have attempted to isolate the direct effect of social housing status in our projection in the chart, shown in orange. This is always positive (the direct effect adds about one year on benefits) but is not the only component of the difference. For SPS, this direct effect is about 70% of the total difference in projected time on benefits, with the remainder attributable to other distributional factors – those that correlate with social housing status. It is 47% for NOMB clients. Similarly, the decrease in SLP durations is due to other factors, in this case the greater average age of SLP clients in social housing.

Figure 4.3 Number of future years on main benefits, by current benefit and social housing status
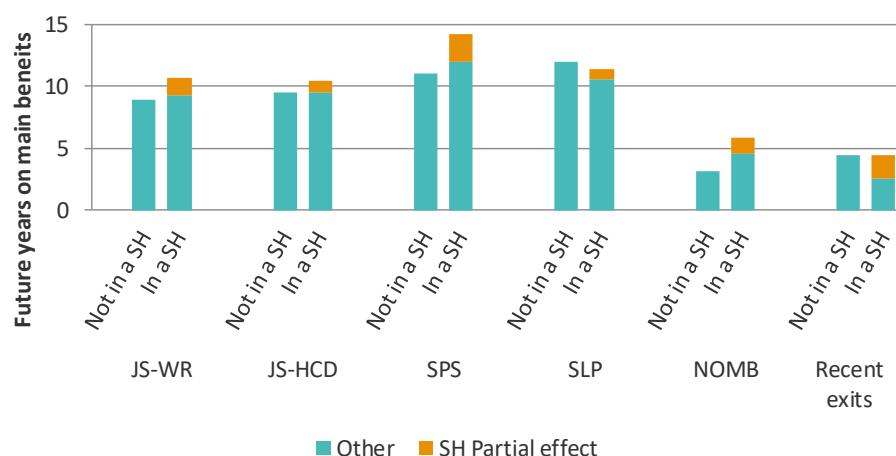
4.2.3   Risk factors for those with history in social housing

We have observed that social housing status only explains part of the higher costs and durations for social housing clients in our projection. What other factors are driving the remaining difference? We have found that many other factors associated with long-term benefit receipt are concentrated amongst social housing clients, as summarised in Table 4.1.

Table 4.1 Incidence of risk factors of long-term benefit receipt, clients aged 18-24, split for those with time in social housing (SH) and those without.

	Education NCEA <L1 or L1	CYF A child protection event	Inter-gen. Parent on ben >80%, ages 13-18	Justice (Adult) corrections spell	At least 1 other risk factor	At least 2 other risk factors	At least 3 other risk factors	At least 4 other risk factors
No SH history	24.7%	31.5%	22.0%	10.8%	56.2%	24.7%	7.1%	1.0%
Time in SH	29.8%	61.0%	53.0%	21.9%	84.0%	55.1%	22.3%	4.3%
Increase	**x1.21**	**x1.94**	**x2.41**	**x2.02**	**x1.49**	**x2.24**	**x3.12**	**x4.38**

Of the 89,400 clients aged 18-24 in the benefit system cohort, about 30% (or 25,000) have had time in social housing. These 25,000 people are somewhat more likely to have low education attainment, are twice as likely to have had a child protection event, or an adult corrections spell (as a result of a criminal conviction), or a parent heavily on benefit for their teenage years. The incidence of child protection and intergenerational receipt are both very high, covering more than three fifths of those with social housing history. This concentration of risk factors underpins the higher lifetime benefit system costs.

Importantly, these risks tend to compound; they themselves are not uniformly distributed across the 25,000 people. Whereas only 7% of clients aged 18-24 without social housing history have at least 3 of the 4 risk factors in the table, this is true of 22% of those with some social housing history; more than three times as much.

4.3   Māori clients

Māori clients are significantly overrepresented in both the benefit system and housing cohort. While Māori comprise only 15% of the general population, they are 31% of the benefit system cohort and 36% of the housing cohort. They represent 42% of JS-WR clients and 48% of SPS clients.

The average future lifetime cost for Māori clients is $55,000 (or about 50%) higher than non-Māori clients. This is a large difference. As with social housing, we can break this difference into direct and

distributional effects. These impacts are shown in Figure 4.4, with the partial dependence effect split out in orange; the remaining effects are distributional.

Figure 4.4 Average individual future costs, split by current benefit type and ethnicity
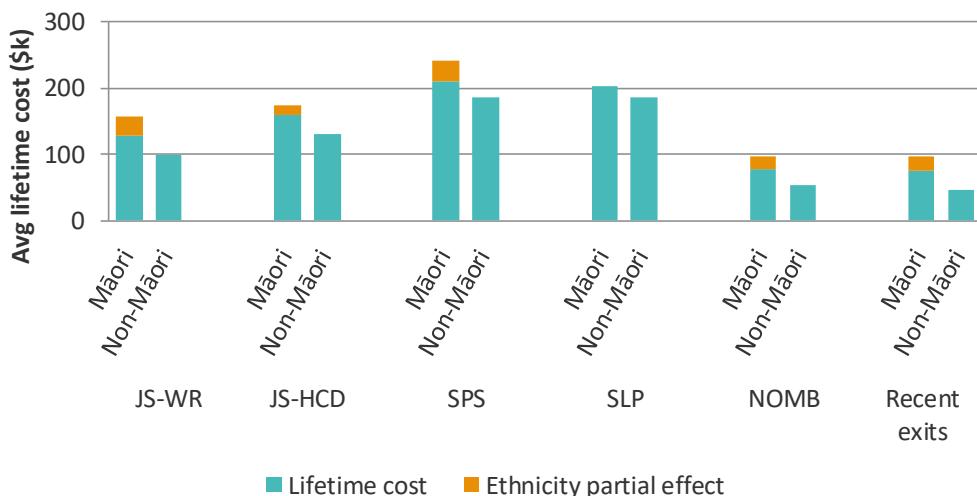
As stated earlier, direct (or partial) effects observed are not necessarily causative. It may be that other causes not captured by the model are present that disproportionately affects the pathways of Māori clients. That said, the direct effect is a minority of the observed difference in our models; about a third of the gap is direct and the remainder is attributable to other distributional characteristics built into the projection.

Table 4.2 explores some of these factors. For each of the six factors associated with higher benefit system lifetime cost Māori clients are overrepresented, in some cases by a factor of two. The higher rates of intergenerational benefit receipt and corrections spells (as a result of a criminal conviction) are particularly strong. The higher incidence means that Māori clients are also more likely to have multiple risk factors; twice as many have at least three out of the six risk factors presented in the table. The proportion of Maori clients with five or more of these six risk factors is three times the overall rate for non-Māori clients

This differing incidence of risk factors (coupled with more extensive benefit history) explains the bulk of the 'distributional' difference between Māori and Non-Māori.

Table 4.2 Incidence of risk factors of long-term benefit receipt, clients aged 18-24, split by ethnicity.

| | **Single risk factors** | | | | | | **Mult-risk factors** | | | | |
| | Education | CYF | Justice | Inter-gen. | Welfare | Housing | At least 1 other risk factor | At least 2 other risk factors | At least 3 other risk factors | At least 4 other risk factors | At least 5 other risk 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	24.4%	33.0%	9.8%	22.6%	24.5%	20.1%	66.4%	38.7%	19.2%	7.6%	2.1%
Māori	28.7%	50.0%	20.2%	43.1%	33.9%	40.6%	84.3%	63.2%	40.4%	20.1%	7.2%
Increase	**x1.18**	**x1.51**	**x2.06**	**x1.91**	**x1.39**	**x2.02**	**x1.27**	**x1.63**	**x2.10**	**x2.65**	**x3.42**

The multi-risk columns on the right of the table allow us to see the level of concentration of various combinations of risk factors. These indicators tend to co-occur more than you would expect by chance. This is true for both Non-Māori and Māori clients. For example, if the risk factors were randomly assigned to Non-Māori clients we'd expect only 21% of them to have no risk factors, whereas 33.6% of them do not. Conversely, we'd expect 2.3% of Māori clients to have five or more risk factors, whereas 7.2% do (just over 2,500 people). Such concentration of risk factors leads to subgroups with very high risk of long-term benefit receipt.

4.4   Mental health conditions

Mental health conditions are the most common type of health condition group for both JS-HCD and SLP-HCD clients, comprising 45% and 35% of clients respectively. Moreover, their number and relative share have been growing substantially over time. The share for both benefit types has increased over the past decade; by nearly 10 percentage points for JS-HCD; and by 5 points for SLP-HCD. Additionally, mental health is a common secondary incapacity; an additional 7.5% of clients for both benefit types.

Figure 4.5 Proportion of clients with a mental health incapacity as their primary incapacity
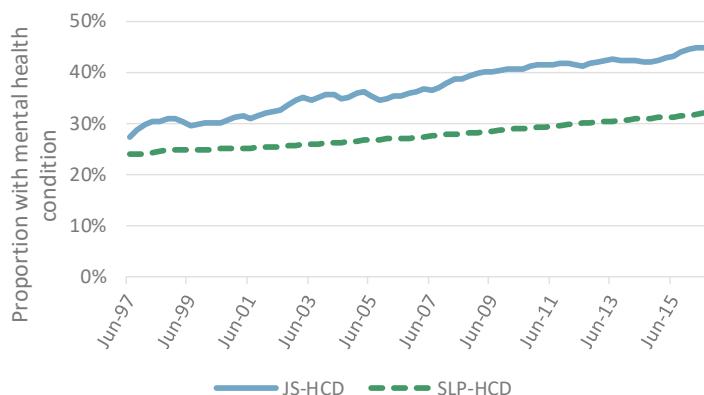
Mental health conditions cover a broad range of specific diseases. Stress and depression represent a significant portion (41%) of JS-HCD mental health clients, whereas bipolar disorder and schizophrenia represent a larger portion of the SLP-HCD mental health cohort (47%). In both cases 'other psychological condition' is also a large category.

Figure 4.6 Type of mental health conditions by benefit type
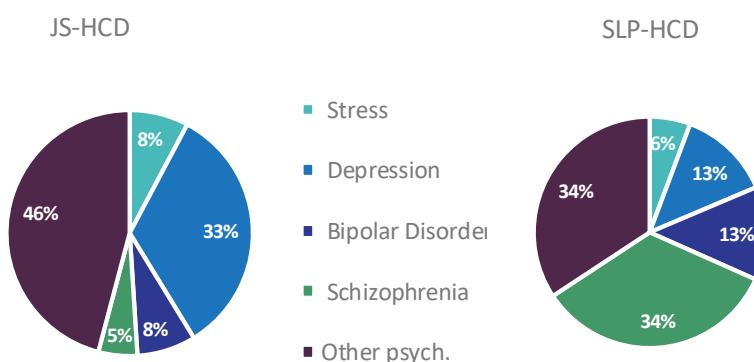
Average future lifetime cost is significantly higher for mental health clients. The cost is $33k higher for JS-HCD clients and $52k higher for SLP-HCD clients; see Figure 4.7. Interestingly, almost none of this difference is attributable to the condition type itself – the partial effect in the chart is very small. This means that the difference is largely distributional, and the biggest factor is that mental health conditions tend to affect younger clients. The average age of mental health JS-HCD clients is 7.6 years younger than other JS-HCD clients, and the difference is 4.4 years for SLP-HCD clients.

Figure 4.7 Average future lifetime cost by benefit and HCD type. Split by mental health partial effect.
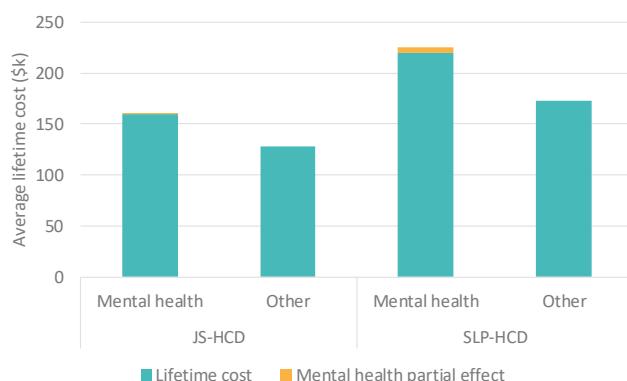
The incidence of mental health incapacity at younger ages has significant implications for longer-term benefit receipt and employment. The increased lifetime benefit system costs aligns with a reduced potential time in employment, as well as increased healthcare costs over an extended period.

Appropriate policy responses require an understanding of the complexity of the interactions between youth mental health and employment. Youth with a mental disorder often struggle in the education system, and poor performance at school tends to lead to leaving school earlier (with negative repercussions in working life). Furthermore, in many countries people with a mental disorder are granted a disability benefit at a relatively young age, steering them away from the labour market on a permanent basis. This can further compound mental health issues, as treatment and work reinforce each other: without treatment labour market participation is difficult to sustain and, without work, treatment is much less effective. Additionally, there is a considerable lack of awareness – often leading to non-disclosure and under-treatment amongst adolescents and young adults. This means there is a long gap of typically more than ten years between the onset of the mental disorder and the first contact with the treatment system, and more than 15 years until the first contact with the rehabilitative system. Treatment, unsurprisingly, is far more effective in the early stages of illness when people are still generally well-integrated into their communities, schools, and jobs[18,19].

Figure 4.8 shows how the incidence of mental health issues vary by age and ethnicity. It shows that half of HCD clients under 35 have a mental health condition, and less than a third of older clients. The relative incidence is particularly low for older people with Māori, Pacific peoples or Asian ethnicity. Age and ethnicity are not the only factors with distributional differences for mental health clients. There are other important differences by duration (longer term JS-HCD clients are more likely to have mental health conditions), gender (higher incidence for females) and education (relatively more people with higher levels of education attainment).

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[18] OECD (2015) *Fit Mind, Fit Job: From Evidence to Practice in Mental Health and Work*

[19] OECD (2012) *Sick on the Job? Myths and Realities about Mental Health and Work*

Figure 4.8 Proportion of HCD clients (JS and SLP combined) with a mental health condition, by age and ethnicity
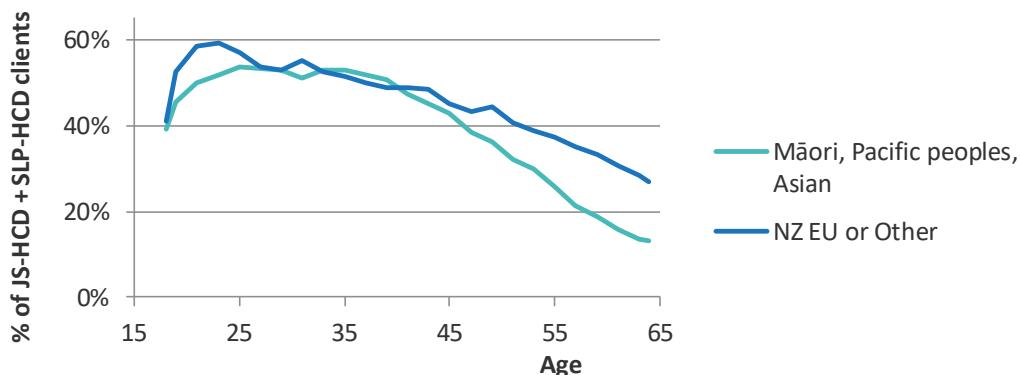
4.5   Characteristics at entry and prediction of outcomes

Our previous valuation reports have highlighted the importance of early entry into the benefit system in understanding the total future cost. This idea is encapsulated in Figure 4.9 and Table 4.3 below.

Figure 4.9 splits the benefit system future cost by current age and age of entry. We estimate that about 75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20. Further, despite the very small number of beneficiaries who enter through a youth segment each year, just over a third (34%) of the total liability is attributable to clients who first entered benefits via a youth segment.

Other features are visible in the plot; for instance, the 'hump' around age 45 corresponds to clients who were around 20 at the time of the 1992 downturn, where unemployment peaked at over 11%.

Figure 4.9 Current client lifetime cost split by current client age and status when first entering the benefit system[20]

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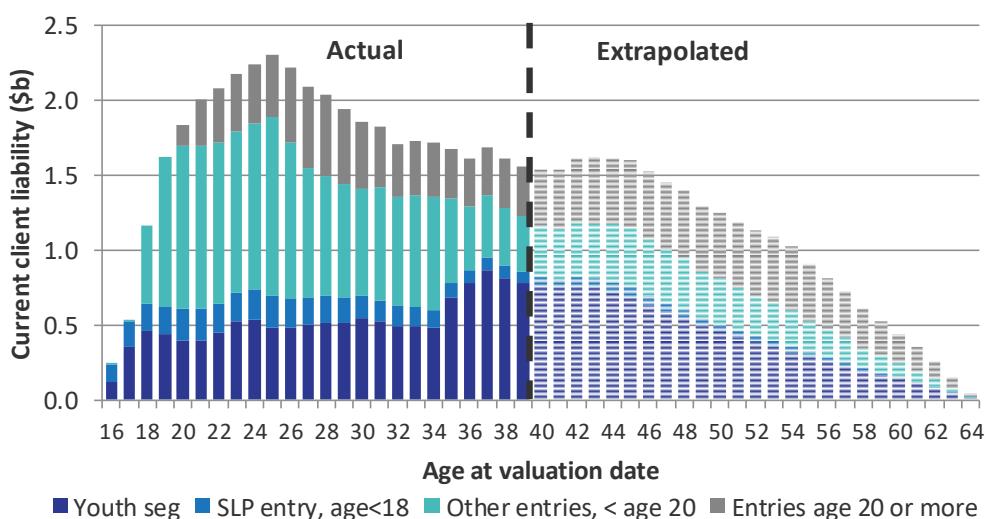
[20] The length of data available only permits us to accurately estimate the age of entry for clients up to age 40. We have extrapolated rates for older clients.

Table 4.3 shows that more variation in average lifetime cost is seen across age of entry, compared to age at valuation date. The future liability for clients **currently** aged 35-39 but entering the system from the 16-19 age band (about $175,000) is almost 60% higher than those entering from the 20-24 band (about $109,000), more than double those entering from the 25-29 age band (about $86,000) and more than triple the average liability for those entering between ages 35-39 (about $49,000). On this simple tabulation, age of entry is in fact more predictive than current age in determining future cost.

Table 4.3 Average lifetime cost for clients by age at valuation and age at entry, for clients less than 40.

Age at valuation	Age first entering the system					Average
	16-19	20-24	25-29	30-34	35-39	
	$k	$k	$k	$k	$k	$k
16-19	159					159
20-24	173	80				147
25-29	192	105	59			152
30-34	186	113	70	50		145
35-39	175	109	86	61	49	140
Average	**178**	**98**	**69**	**55**	**49**	**147**

Given the importance of age of entry, a natural question is how effectively can we predict lifetime cost at the point of entry? This is an inherently harder question, as there is no benefit history information to guide likely trajectories. Accuracy in long-term cost prediction is lower, but increases over time as experience develops.

To gain some understanding into this process we have examined the cohort of people aged under 25 who entered benefits (main or Sup only) for the first time in 2013/14. Of the 27,700 clients, at the end of their quarter of entry, half are receiving JS-WR or YP benefit, 30% are NOMB or recent exits and the remaining 20% split across the other main benefit types.

The first panel in Figure 4.10 shows our lifetime cost predictions for these clients at the end of their first quarter. Most clients have a moderate lifetime cost in the range of $50k-$150k. The average for those on main benefits is $132k. A small group of high cost SLP clients are also identified, with projected lifetime cost more than $300k. Total lifetime cost for the cohort is about $3 billion.

The second panel shows the lifetime cost projections for this cohort one year later. Most (72%) clients have exited main benefits (NOMB or recent exit), but those who remain now have a much wider spread of lifetime cost; the average lifetime cost for someone remaining on main benefits has risen 36% to $180k. The spread is wider, with two fifths of those on a jobseeker benefit having a lifetime cost of more than $200k.

The third panel shows benefit status and lifetime cost projections two years after entry. Three quarters of the cohort are no longer on main benefits and had a relatively low lifetime cost. However, those that remain now have very high lifetime costs, with the average rising again to $198k. Fully 13% of those remaining on benefits have a projected liability of over $300k. The relative proportion of SLP and SPS clients has also increased.

Figure 4.10 Distribution of future lifetime cost for clients who entered the benefit system in 2013/14 under age 25. Colour shading is by benefit status at the end of the corresponding quarter.

JS-WR ■ JS-HCD ■ SPS ■ SLP ■ NOMB
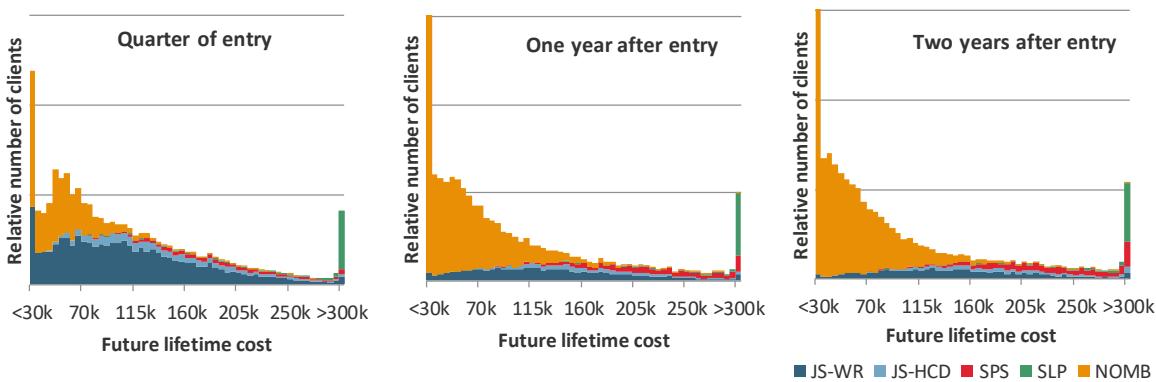
This pattern illustrates how the model predicts those entering welfare. At entry, we know that some clients will exit for relatively low cost, while others will remain with ultimate cost very high. Initially we do not know who will fall into which group, so more clients are placed into intermediate values. Thus, while the 'spread' of liabilities we can forecast in the left panel is already quite wide, it continues to increase as benefit history accumulates.

That is not to say that prediction is poor at the point of entry. The table below gives an illustrative segmentation of clients (aged under 25 and entering in 2015/16) with their predicted lifetime cost at the end of their quarter of entry. In the table a combination of benefit type, CYF history and ethnicity creates substantial variation in lifetime cost. The overall average liability for new entrants under 25 in 2015/16 is $129k. SLP and SPS entrants are substantially more than the average. Lifetime costs are significantly higher for Māori clients and those with child protection history; in each case the liability is roughly 50% higher in the table. Such splits may be useful for understanding the potential future needs of new clients.

Table 4.4 Illustrative segmentation of clients under 25 entering the benefit system for the first time in 2015/16, who are still on main benefits at the end of their quarter of entry.

Cohorts			Number	Avg lifetime cost ($000s)
SLP-HCD			920	335
SPS	CP history		550	224
	No CP		590	164
Other main ben	CP history	Māori	2,810	177
		Not Māori	3,100	126
	No CP	Māori	3,080	129
		Not Māori	7,290	77
All			**18,350**	**129**

Even finer-grained detail (down to a full distribution as per Figure 4.10) is possible by considering the role of more factors. Figure 4.11 below shows the relative importance of variables in predicting lifetime cost at the point of entry. While benefit type is most important, there are also substantial contributions from gender (females more likely to move to long-term SPS), child protection history, age (the earlier the entry, the longer the likely duration on benefits) and ethnicity.

Figure 4.11 Relative variable importance for predicting lifetime cost at quarter of entry into the benefit system, clients aged 16-25.
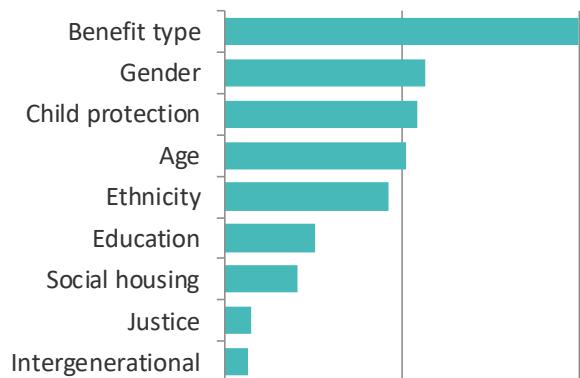
4.6   A review of youth segments

The previous valuation reviewed the youth segments in significant detail (see Section 4.7 of the previous valuation report). In particular, it noted some headwinds and the increased number of clients on YP. This section provides an update of some of those results. Note that recent changes to the Youth Service – namely increasing the upper age limit to receive YPP from 18 to 19 years – occurred after 30 June 2016, so are not allowed for in this report.

Cohort numbers in the youth segments are relatively small, which adds some additional uncertainty compared to other results in this report.

Trends in numbers and composition

While the previous report discussed the increase in YP clients since the introduction of the Youth Service, YP numbers have actually fallen over the last year. This can be seen in Figure 4.12. By way of comparison, the numbers of clients in the JS segments have increased over the year. Both exit rates and entry rates have been more favourable (more exits and fewer entries) than expected based on recent historical experience.

YPP numbers have continued to decrease over the past year. Exit rates in this segment have also been higher than expected, a result also seen in the SPS segments.

The total number of clients in the youth segments is now lower than what it was prior to the introduction of the Youth Service. However, reducing client numbers is not the sole objective of the program and in isolation can be misleading; in the previous valuation report we discussed some of the broader metrics and indicators of progress. These comments still stand.

Figure 4.12 Actual and projected youth segment numbers
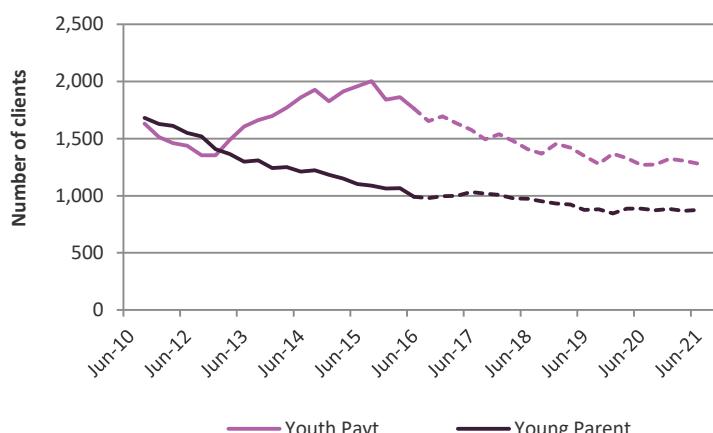
Compositional changes

In the previous valuation report, we highlighted that clients with certain risk characteristics are accounting for an increasingly large proportion of the total cohort receiving YP. An update of the trends is shown in Figure 4.13, but this time we have extended the analysis to also include those in JS-WR aged below 20. Over the past year, the existing trends have continued apart from the trends for Māori clients and those with a high level of intergenerational benefit receipt. Clients with CYF history now account for 57% of the cohort. The increased representation of clients with these risk characteristics potentially reflects the way YP is targeted. We note that these compositional changes have not increased the average liability of the cohort. In fact, the average liability has decreased after standardising for economic factors, driven by lower more sustained exits for those who do leave main benefits.

Figure 4.13 Proportion of YP and JS-WR clients under 20 with certain risk characteristics
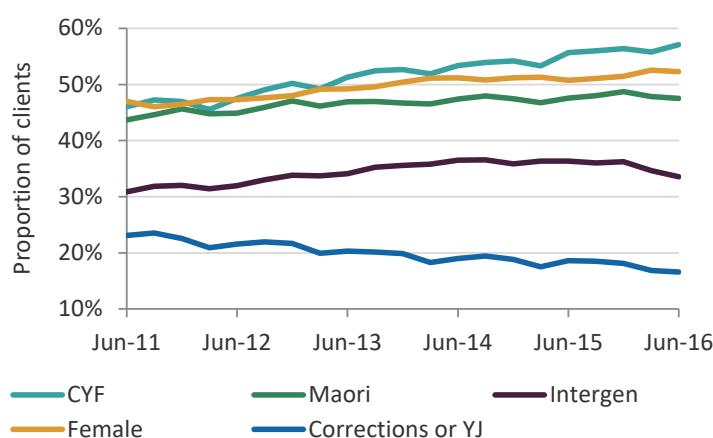
Youth segment welfare outcomes and transition rates

One way of measuring the performance of the Youth Service is to examine the exit rate for clients at the end of the service. That is, looking at the benefit status by the time they reach age 19 (for YP clients) or 20 (for YPP). Trends over time are summarised in Figure 4.14; the June 2014 cohort is the latest one for which we have full actual outcome data.

We describe the leftmost bar of the chart to help interpretation. For clients who were in (the equivalent of) YP and aged 17 at June 2011, we can track their outcome at age 19. We observed that 48% had exited benefits (the yellow bar), 32% were still on a Jobseeker type benefit (blue) and 20% were receiving

another type of benefit (red, mainly SPS). The bar graph on the right replicates the equivalent analysis for 18-year-old clients receiving YPP (or equivalent), showing their benefit status two years later.

Figure 4.14 Status for 17-year-old YP clients when they reach age 19 and 18 year old YPP clients at age 20
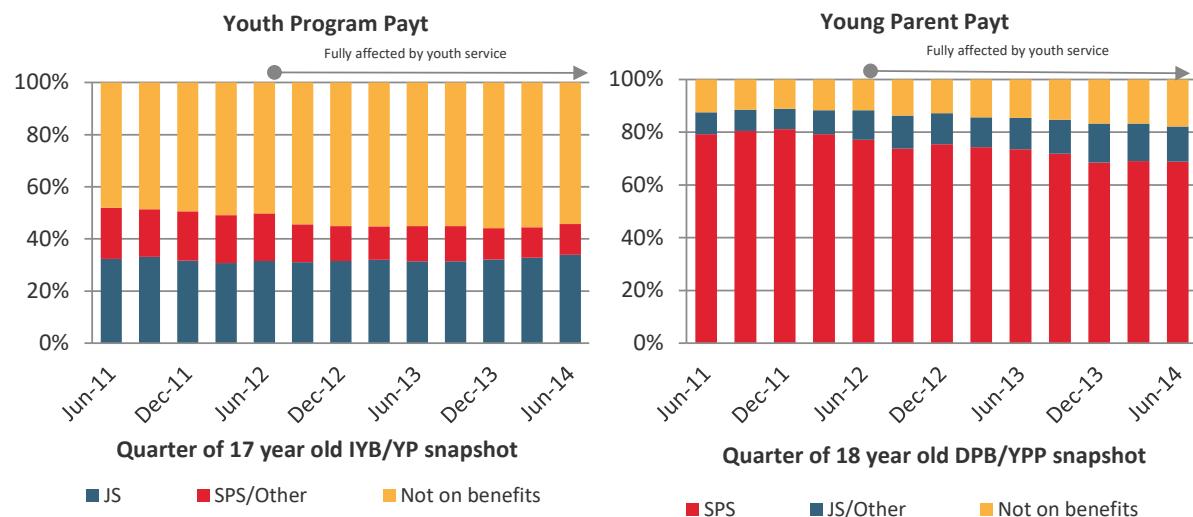
As noted in the previous report, there has been clear improvement in the proportion of clients who have exited the benefit system after the introduction of the Youth Service in August 2012.

> The improvements previously noted for two-year benefit system outcomes for youth segments have been sustained in 2015/16, and possibly improved further for YPP.

For YP clients, those remaining on JS increased from 31% to 33% compared to the previous year. However, this has been offset by a lower proportion transitioning to SPS. This means that the proportion who are not on benefits by age 19 remains at 55%, noticeably higher than 48% for the June 2011 cohort. For YPP clients, their proportion remaining on SPS has continued to decrease from 80% in 2011 to 75% in 2013 to 71% in 2014.

Expected future lifetime duration on benefits

Compared to June 2015 projections, the average projected future years on main benefits for YP has decreased 10%, from 15.3 years to 13.8 years. This reflects higher exit rates out of JS and lower transition rates into SPS. This reverses the result from 2015 where durations increased 8%. It also illustrates some of the potential volatility in forecasting the segment; the last two years have been more volatile than usual, as is visible in client numbers in Figure 4.12.

The average projected future years on benefit for YPP has decreased 6%, from 15.3 years to 14.3 years. This reflects improved employment outcomes for clients on SPS more generally.

These results are broadly comparable with a recent Treasury evaluation[21] on the impact of the YP and the YPP strands of the Youth Service on numerous outcomes (including benefit receipt) compared to the previous approach to youth beneficiary case management. Looking at outcomes over a 30-month period, the study found that:

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[21] The Treasury (2016), Evaluation of the Impact of the Youth Service: Youth Payment and Young Parent Payment: http://www.treasury.govt.nz/publications/researchpolicy/wp/2015/16/07

» In the short term (in the first 12 months) there was some evidence that the Youth Service results in beneficiaries on YP being more likely to say on benefit, consistent with a focus on education rather than employment. The authors estimated that YP beneficiaries are 8% more likely to still be on benefit 6 months after first coming onto benefit than if they hadn't participated in Youth Service, and 5% more likely after 12 months.

» Over the long term both YP and YPP participants are estimated to be more likely to move off benefit and into employment as a result of the Youth Service, although this was only significant for YPP (an estimated 6% effect after 30 months).

The evaluation notes that interpretation of the results from the study should be treated with caution. Primarily as there was no obvious contemporaneous comparison group as the programme was universally accessible to youth as soon it was implemented, as well as the fact that the Youth Service was introduced over a period of considerable change.

5   ANALYSIS BY SEGMENT

5.1   Introduction and highlights

We use beneficiary segments, developed in consultation with MSD, to better understand sub-groups within the benefit population. Segmenting the beneficiary population gives a whole-of-system view. It also provides a client-centred perspective on lifetime patterns of benefit receipt. This chapter providers further detail of the results at a segment level.

As noted in the previous chapter, current benefit type is the most important determinant of future cost. As such, segments are structured around a 'top tier' split based on benefit types. Lower tier splits use other characteristics such as continuous duration and child age. Figure 5.1 shows the segments used in this report – the same as those in 2015.

Figure 5.1 Beneficiary segments

Highlights

» In the June 2016 quarter, there were 5,000 fewer clients on main benefits than a year ago. There were 10% fewer clients than expected in the SPS child aged 0-2 segment at June 2016.

» Compared to last year, the average future number of years on main benefits has decreased for all segments except JS-WR and SLP. Sole parents are now expected to average one less future year on main benefits.

» Numbers on benefits have decreased for many segments, but have increased for some JS-WR and JS-HCD segments. Average liabilities have increased for all segments but this is mainly due to inflation and discount rate changes which on average add 10% to liabilities.

» The decile of clients with the highest average future lifetime cost (on average $334,000) comprise just over a quarter of the total liability in the benefit system. SPS clients make up nearly a third of this group, and another half is SLP clients. At the other extreme, around one in six main beneficiary clients have an average future welfare liability of less than $60,000.

» Last year's valuation report found that transfer levels had stabilised into new patterns post reform. This year we find SPS transition rates off main benefits are fairly stable, but movements from JS-HCD to JS-WR have increased.

5.2   Actual versus expected results for 2015/16

We have reproduced Figure 3.2 below, summarising significant changes to benefit dynamics seen over the past year relative to the previous year. This illustrates how changes to key drivers such as the unemployment rate combined with policy and operational changes have influenced benefit dynamics in the valuation year.

Figure 5.2 Significant changes to benefit dynamics in 2015/16 compared to expected
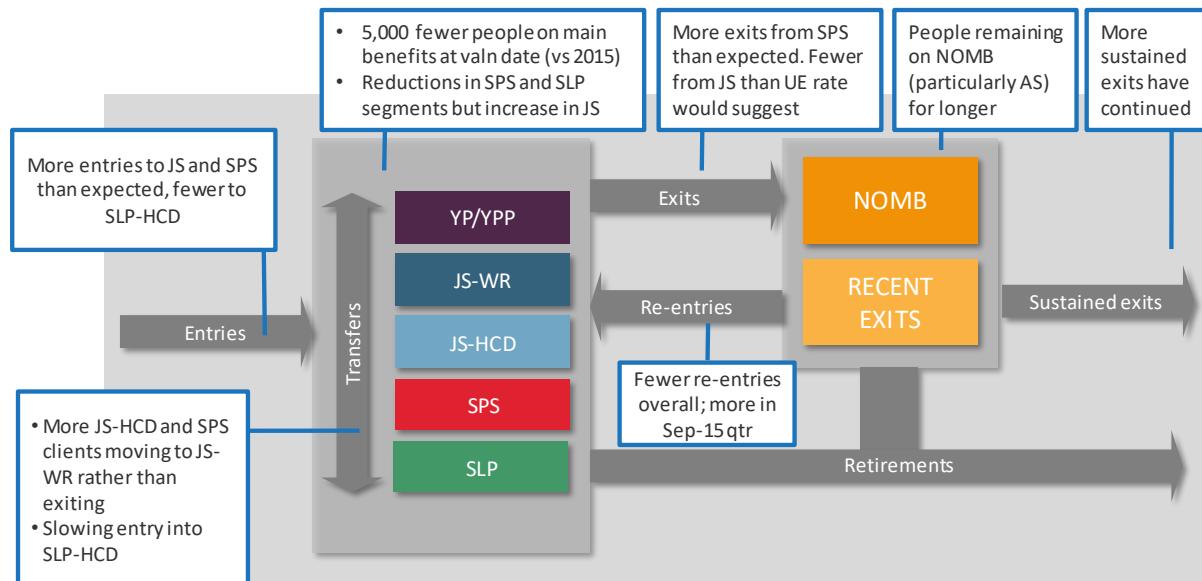
Overall the number of people on main benefits has further decreased, following a decrease in 2014/15. Decreasing numbers in SPS and SLP have more than offset an increase in JS. The increase in JS clients is driven by an increase in transitions from SPS and JS-HCD to JS-WR instead of exiting, as well as a slowing of the exit rate for JS-WR. The transfer rate from other benefits into SLP-HCD has decreased. Exit rates have increased for SPS, but decreased for JS. Exits appear more sustainable with a reduction in re-entries.

In the June 2016 quarter, there were 5,000 fewer clients on main benefits than a year earlier. The number of SPS clients with youngest child aged 0-2 is 10% lower than expected.

Table 5.1 compares how many clients were expected in the last valuation to be in each segment by quarter, compared to how many clients were actually in each segment. This provides a comparison of actual versus expected segment numbers at any given time since the previous valuation.

Table 5.1 Actual and expected numbers (000s) by segment at the end of quarter

	Quarter	JS-WR	JS-HCD	SPS 0-2	SPS 3-4	SPS 5-13	SLP-Carer	SLP-HCD	Youth	Sup	OB
Actual	**Sep-15**	78.9	64.5	25.5	15.1	29.9	8.9	95.4	3.1	102.3	5.3
	Dec-15	81.4	65.5	25.1	14.9	30.4	8.8	94.9	2.9	99.2	5.4
	Mar-16	75.3	63.4	24.6	14.5	29.8	8.8	94.4	2.9	100.5	5.5
	Jun-16	77.0	64.5	24.2	13.9	29.6	8.8	94.1	2.8	101.0	5.5
Expected	**Sep-15**	73.5	64.8	26.8	14.5	30.5	8.8	95.0	3.1	99.7	5.1
	Dec-15	78.5	65.7	27.0	14.6	30.7	8.9	94.9	3.2	96.4	5.0
	Mar-16	73.7	63.8	26.8	14.5	30.2	8.8	94.7	3.1	97.1	5.0
	Jun-16	70.4	64.4	26.8	14.2	30.1	8.9	94.6	3.0	96.3	5.1
Ratio A/E	**Sep-15**	107%	100%	95%	104%	98%	101%	100%	100%	103%	103%
	Dec-15	104%	100%	93%	102%	99%	99%	100%	92%	103%	106%
	Mar-16	102%	99%	92%	100%	99%	100%	100%	94%	104%	110%
	Jun-16	109%	100%	90%	98%	98%	99%	99%	92%	105%	109%

We note:

» There are significantly more JS-WR clients than were expected at June 16; numbers in JS-WR have increased marginally despite a fall in the unemployment rate.

» JS-HCD segment numbers were close to expected and fairly stable.

» The numbers in the SPS 0-2 segment were below expectations for all quarters. There has been some increase in the transfer rate from SPS to JS-WR, and at June 2016 there were 10% fewer clients than expected.

» The number of clients in the remaining SPS segments were closer to expected. Numbers were higher than expected in the first two quarters for the SPS 3-4 segments offset by lower than expected numbers in the SPS 5-13 segments.

» Overall SLP-HCD numbers are in line with expectations but this masks the underlying effects. Partner numbers are 14% higher at June 2016 than expected, this is offset by a decrease in primary SLP-HCD numbers. A similar effect was seen last year.

» Numbers in SUP only segments have increased and were 5% higher than expected at June 2016. SUP only clients are exiting the benefit system more slowly. This effect was also observed last year, but not fully recognised in our projection.

» There were 2,300 more OB clients than expected in the Jun-16 quarter. We had forecast a 3% decrease in numbers but observed a 5% increase in numbers, driven by both longer durations for existing clients and higher numbers of new OB recipients.

» Changes in numbers are matched by corresponding differences in payments to segments. For the first three quarters average payment levels were generally in line with expectations. In the June 2016 quarter average payments were generally about 3% higher than expected due to increases related to the child hardship package; this was not allowed for in the previous projection.

5.3 Segment level liability results

5.3.1 Results

Table 5.2 shows the segment level current client liability result (as at 30 June 2016), as well as the equivalent results from the previous valuation.

Table 5.2 Current client liability forecasts by client segment at 30 June 2016 and previous valuation. Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2016 Valuation				2015 Valuation (restated for methodology change)			
		Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits	Number at valn date	Total liability ($m)	Average lifetime cost ($k)	Average future years on main benefits
Jobseeker Support	JS-WR <1 year	44,538	4,983	112	8.6	44,174	4,357	99	8.8
	JS-WR >1 year	32,419	4,365	135	9.4	31,802	3,670	115	9.2
	JS-HCD <1 year	23,033	2,957	128	9.0	22,306	2,692	121	9.6
	JS-HCD >1year	41,435	6,164	149	9.9	41,961	5,853	139	10.3
	Sub-total	141,425	18,469	131	9.2	140,243	16,572	118	9.5
Sole Parents	Youngest child 0-2	24,590	5,851	238	12.7	26,631	5,838	219	13.8
	Youngest child 3-4	13,403	2,874	214	11.4	14,620	2,927	200	12.5
	Child 5-13, <1 year	4,836	734	152	8.5	4,560	631	138	9.0
	Child 5-13, >1 year	24,903	4,839	194	10.5	25,939	4,596	177	11.0
	Sub-total	67,732	14,299	211	11.3	71,750	13,992	195	12.2
Supported Living	Carer	8,811	1,543	175	9.9	8,791	1,361	155	9.7
	Partner	7,577	899	119	8.0	8,089	859	106	7.9
	HCD	86,482	16,861	195	12.4	87,650	15,416	176	12.3
	Sub-total	102,870	19,303	188	11.9	104,530	17,637	169	11.8
Youth	Youth prog (<18)	1,762	315	179	13.8	1,957	330	169	15.3
	Young Parent (<19)	990	253	255	14.3	1,103	251	227	15.3
	Sub-total	2,752	568	206	14.0	3,060	581	190	15.3
Not On Main Benefits	Sup only, <1 year	26,356	1,467	56	2.9	30,352	1,458	48	3.1
	Sup only, >1 year	74,598	4,512	60	2.8	71,460	3,770	53	3.1
	Orphan only	5,519	597	108	2.0	5,195	485	93	2.1
	Sub-total	106,473	6,576	62	2.8	107,007	5,713	53	3.0
Recent Exits	Recent exits, <1 year	126,286	7,917	63	4.6	132,802	7,443	56	4.8
All segment sub-total		547,538	67,131	123	7.7	559,392	61,938	111	8.0
Expenses + Net loans			8,890				7,909		
Grand total			76,022				69,847		

Note that these results are split based on a client's segment at the valuation date, and totals include future cash flows arising from different benefit types for that person. Net loan cost and expenses have not been allocated across segments but have been included as a separate line item in the table.

> Compared to last year, the average future number of years on main benefits has decreased for all segments except JS-WR >1 year and SLP. Sole parents are now expected to average one less future year on main benefits.

The results can be further understood by splitting the liability into its two components: beneficiary numbers and average individual future lifetime cost. This is shown in Figure 5.3.

Figure 5.3 Numbers and average liabilities by segment (30 June 2016 compared to 30 June 2015)
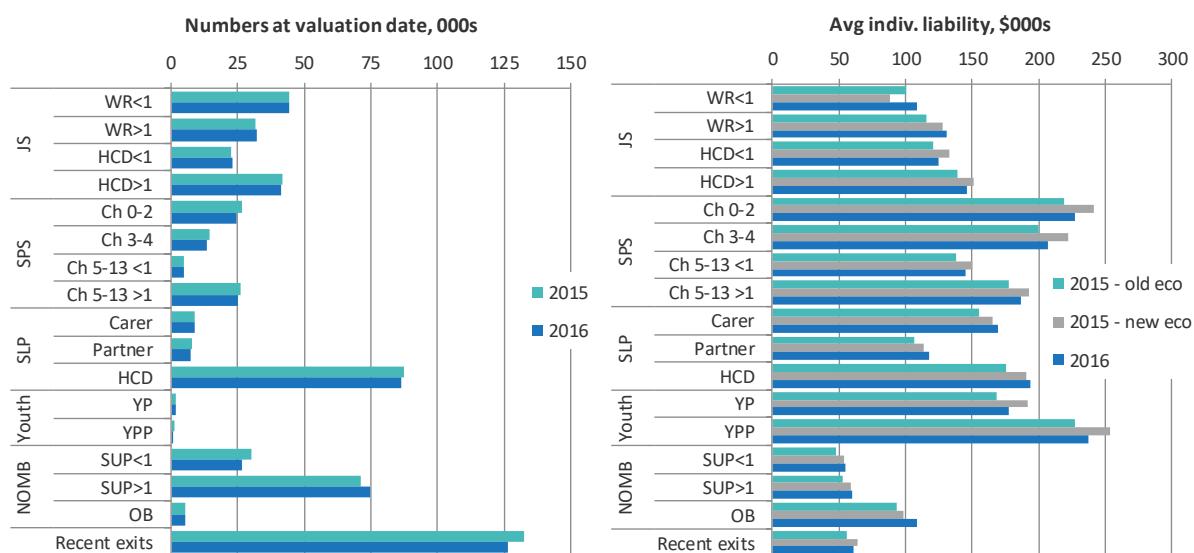
Numbers have decreased for most segments, but have increased for some JS-WR and JS-HCD segments. Average liabilities have increased for all segments. A large part of this is due to inflation and discount rate changes which on average increase liabilities by 10%.

There have been significant changes to the long-term inflation and discount rate forecasts which have increased average liabilities. We therefore compare the 2016 average liabilities to those in 2015 but using the new discounting and inflation assumptions. Using this adjusted basis we make the following additional comments:

» For work ready Jobseekers the average liability has increased since the last valuation; numbers have increased slightly in both. The liability for JS-WR segments has increased around 4%.

» For Jobseekers – HCD, the slight growth in the shorter duration segment has outstripped the reduction in the longer duration segment. However, unlike for JS-WR, the total liability has decreased by 2% and the average liabilities have also decreased 2%.

» As in recent years Sole Parents have again seen the largest decrease in numbers. The average costs are similar to last year, so the reduction in numbers leads to a reduction in the total liability. Across the three SPS segments, there has been a decrease of 7% in total liability.

» Supported Living segments have seen an increase in average cost which outweighs the slight reduction in numbers, pushing up the overall liability for these segments by 1%. The average costs have increased across all SLP segments.

» The number of clients in Not On Main Benefit (NOMB) segments is consistent with decreased rates of exit from NOMB. Sup only (>1 year continuous duration) numbers are higher, as are those on Orphan's benefit (up by 6%). The average costs associated with these segments have increased with slowed rates of exit from NOMB.

» Client numbers in Recent Exits are 5% lower than last year; this partially reflects a slowed exit rate from JS-WR. Average costs are unchanged from last year and so the total liability is lower.

5.3.2   Lifetime projections

The valuation projects future benefit receipt over the 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. We can run the projection and assess the propensity for various groups to remain on benefits, and to move between different benefits over the long term.

Figure 5.4 illustrates expected transitions over the next 45 years, for clients who were Work Ready Jobseekers on the valuation date. The dark grey area shows exits due to retirement, and the light grey area shows working-age exits for employment or other reasons. The figure shows that for these clients:

Figure 5.4 Lifetime projection as at 30 June 2016 for Jobseekers (Work Ready)

» There is a relatively rapid drop-off over the first three years, by the end of which about half of the starting clients have moved off benefits. By this stage about 11% of the starting cohort is expected to have transferred to JS-HCD and 5% to SPS.

» By five years out from the valuation date, about 5% of current Jobseekers (13% of those still on main benefits) are expected to be receiving SLP. The relative prevalence of this continues to grow over the course of the projection; many of those who move to JS-HCD may subsequently move to SLP.

» After 10 years, about 33% of those who are still of working-age are expected to be on a main benefit, with benefit receipt shared fairly evenly across the main benefit types. A further 7% are expected to be receiving a supplementary benefit.

» After 20 years about a third of current JS-WR have reached retirement age. About 25% of those under 65 remain on main benefits, with more receiving SLP than any other benefit. The second most common expected main benefit at this point is JS-HCD.

Figure 5.5 illustrates expected lifetime transitions for other segments:

» JS-HCD clients have a high rate of transfers to SLP-HCD, and relatively few working-age exits compared to all other segments except SLP.

» Sole parents tend to remain on SPS, exit to work or transfer to JS or SLP when their child reaches 14. In the medium term there is a growth in transfers to other benefits as their children age. They also tend to move into Supplementary segments more than other clients.

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

» Youth have a very high probability of remaining on benefits, particularly Sole Parents (both those starting in Youth Payment and Young Parents Payment); There are no retirements within the 45 years shown due to the young age of this group.

» Supplementary only clients show relatively fast transitions off benefits. After 5 years around 12% of those who are still working age are expected to have transferred to a main benefit, with SPS being the most common. A further 25% are expected to be receiving Supplementary assistance.

» The number of Recent Exits who are back on benefits reaches a peak two to three years into the projection, at about 25% of the group. Entries are mainly JS initially, but an increasing proportion move into SPS and SLP segments in the longer term.
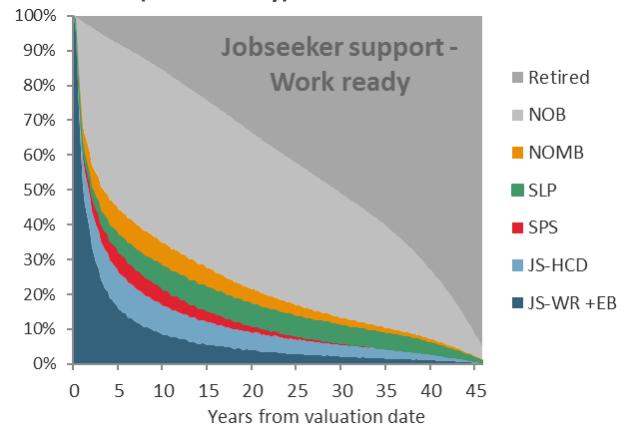
Figure 5.5 Lifetime projections as at 30 June 2016, selected segments
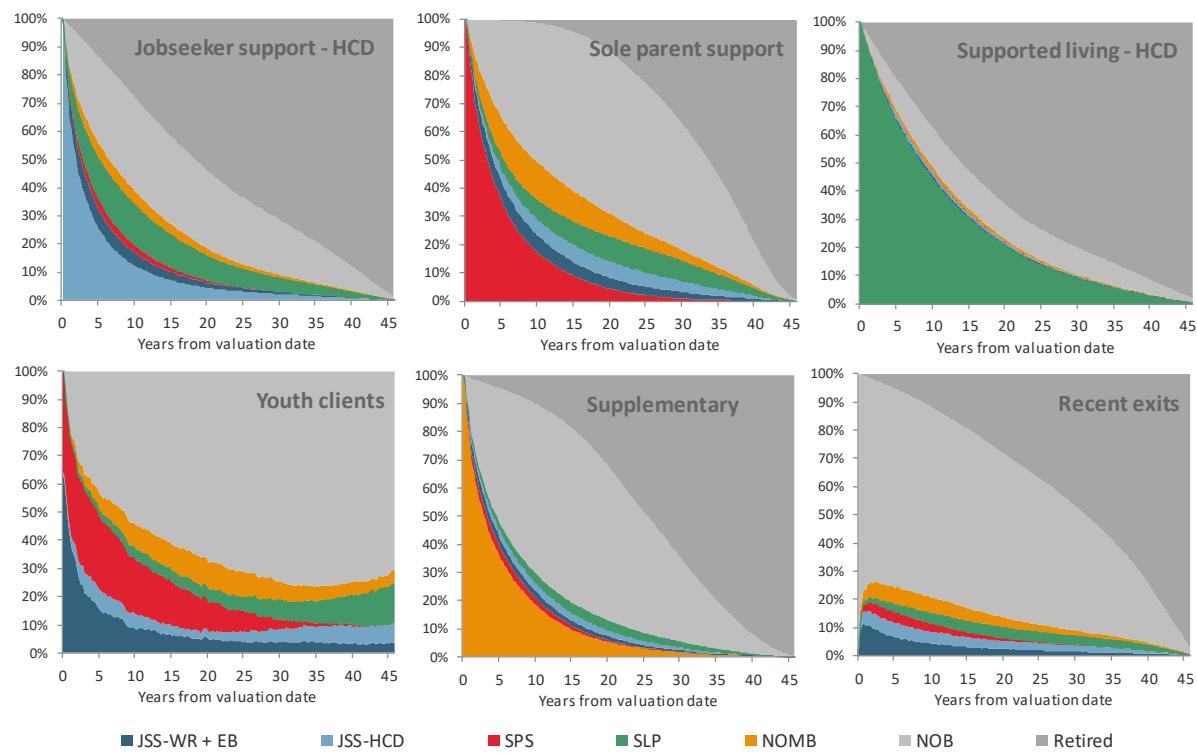
Figure 5.6 illustrates how the overall shapes of these trends have changed from the previous valuation. Changes visible in this plot will tend to mirror changes to average future duration in Table 5.2.

Figure 5.6 Lifetime projections of time on main benefit; change since previous valuation
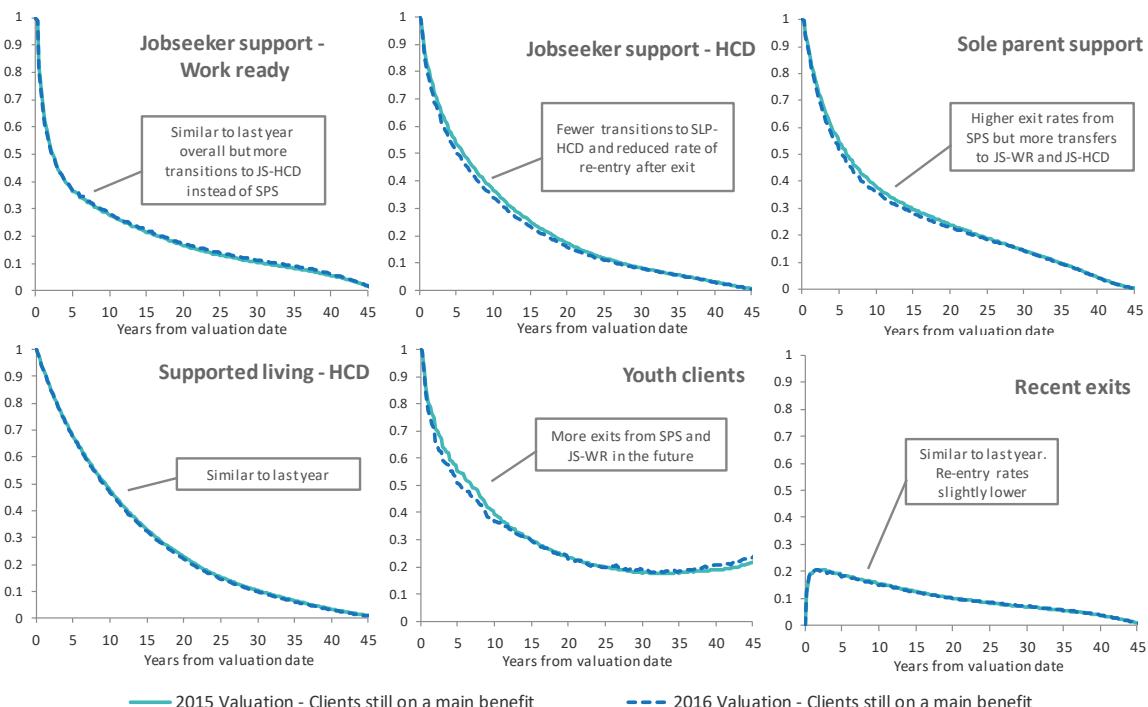
Highlights of these changes are as follows:

» The largest changes are visible in the JS-HCD, SPS and Youth segments.

» JS-HCD shows a reduction in proportion on main benefit due to less transfers from JS-HCD to SLP-HCD as well as a reduced re-entry rate. Markedly fewer people are expected to still be on this benefit in 10 years' time. The decrease corresponds to the reduction in average future time on benefit consistent with the JS-HCD results in Table 5.2

» SPS exit rates have increased, but this is partially offset by an increase in transfers to JS. The decrease corresponds to the reduction in average future time on benefit from 12.2 years to 11.3 seen in Table 5.2.

» Youth clients are now projected to have more exits, mainly due to faster exits from future SPS spells.

5.3.3 Relative contribution to overall liability

The difference in average future lifetime cost across segments means that some segments make up a disproportionately large or small share of the total liability relative to the number of clients in that segment. For instance, SPS clients represent 12% of the number of clients valued, but 21% of the total liabilities. These differences are illustrated in Figure 5.7 for the various segments.

Figure 5.7 Contributions of segments towards client numbers and liability total
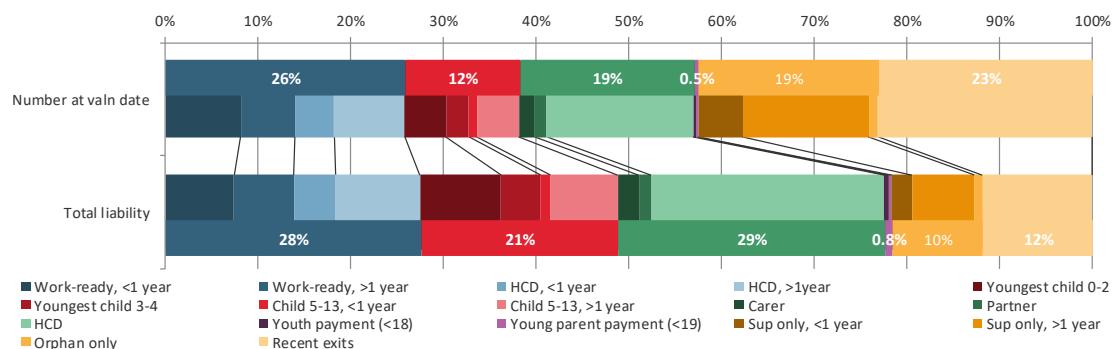
Current segment is among the most important predictors of future lifetime cost. Segment-level estimates are made up of individual estimates within the segments that capture other risk factors. Figure 5.7 shows the distribution of individual level liabilities and how they relate to (top tier) segments. It is highly skewed, with a small subset of people representing a large proportion of the future welfare cost.

The spread of individual level liability, even within segments, is significant. For example, amongst JS-HCD clients aged over 25, 8% of clients have a future lifetime cost that is double the median. This indicates that a sub-group of JS-HCD clients are at significantly higher risk of long-term benefit receipt (including younger JS-HCD clients who have already accrued extensive benefit history).

Figure 5.8 Relative numbers of clients, individual liability. (Relative contribution by current segment is shown in colour. Excludes expenses and net loans.)
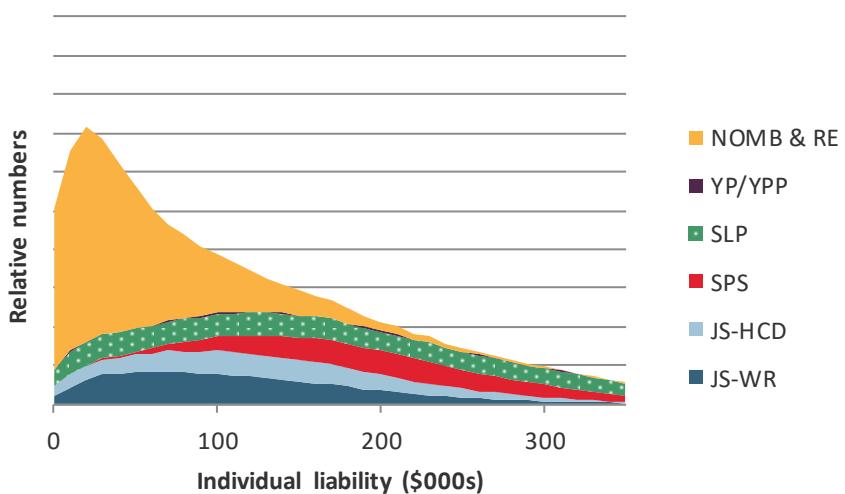
It is interesting to note that this spread – reflecting the differences between higher and lower-risk beneficiaries – tends to increase as additional risk factors (such as social housing history) are incorporated into the model. The addition of CYF, corrections, social housing and intergenerational data over the past few years have significantly enhanced the ability to predict which clients will spend extended time on benefits.

> The ten percent of clients with the highest average future lifetime cost (on average $334,000, inflated and discounted) make up just over a quarter of the total liability in the benefit system. SPS clients make up nearly a third of this group, and another half is SLP clients. At the other extreme, around one in six main beneficiary clients has an average future welfare liability less than $60,000.

5.4   Analysis of transfers between segments

Each quarter, about 55,000 beneficiaries either leave benefits or transfer to a different benefit; this represents about 14% 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 switching to a different benefit.

> Last year's valuation report found that transfer levels had stabilised into new patterns post reform. This year we find SPS rates are fairly stable, but movements to JS-WR have increased while the exit rate has decreased.

Transfers are a key feature of the welfare system. A client's future lifetime cost is affected both by their current benefit spell plus future spells on different benefits, so movements through the benefit system can materially increase (or decrease) their expected future lifetime cost. 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 valuation. 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. Transitions give insight into the long-term mix of benefits likely to be paid. For instance, in the last 10 years movements into the SLP segments have tended to outstrip exits over many years, and the SLP

portion of the client base receiving main benefits has increased from 29% in June 2006 to 33% in June 2016.

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 3.8).

We make the following observations:

» 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 increased significantly in 2015/16, the inverse transfer rate decreased slightly.

» There has also been a decrease in the transfer rate from JS-WR to SUP (an important transition as it represents an exit from main benefits). This, along with the slowing exit rate for JS-WR clients, has led to an increase in the number of JS-WR clients.

» There has also been a further decrease in transfers from JS-HCD to SLP-HCD; this is now at the pre-reform level.

» 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 once again been relatively stable over the year, as has the SPS to not on benefit (NOB) transition. This is consistent with Welfare Reforms for SPS clients being sustained over time.

» The SUP to SPS transfers appear to have stabilised following an increase last year.

» The 11% decrease in transfers from JS-HCD to SPS is notable as it continues the trend of recent years.

Table 5.3 Major transfers between benefit types in 2015/16 and discussion on changes compared to previous year.

From		To	Avg client transfers per qtr, 2015/16	Change in transfer rate, compared to 2015/16	Comment
JS-HCD	→	JS-WR	3,008	+10%	Increase
JS-WR	→	JS-HCD	2,998	-2%	Fairly stable
SPS	→	JS-WR	2,766	+0%	Stable
JS-WR	→	SUP	2,084	-10%	Reduction. Exit rate also reduced.
SPS	→	SUP	1,670	-4%	Fairly stable
SUP	→	JS-WR	1,304	-5%	Slight reduction
JS-HCD	→	SLP-HCD	1,266	-14%	Reduction continues recent trend
SUP	→	SPS	968	+2%	Fairly stable
JS-HCD	→	SUP	793	-4%	Slight reduction, continues recent trend. Exit rate also reduced.
JS-WR	→	SPS	789	-1%	Fairly stable
SUP	→	JS-HCD	746	-6%	Small reduction following small increase
JS-HCD	→	SPS	741	-11%	Reduction, continues recent trend

5.5 Understanding segment-level differences

5.5.1 Year-on-year changes to segment composition

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

The change in average client future lifetime benefit cost was discussed in Section 5.3. There are three primary causes of change:

» Economic assumptions (including benefit levels) might change between valuations
» Projection models might change the estimate for various client cohorts
» The type of clients within each segment may change.

We refer to this third category of change as 'distributional' or demographic – that is, the mix of beneficiaries within the segment is different, and those differences have a bearing on average future lifetime costs 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 liability, even if everything else remained unchanged. As with the average client liabilities themselves, the influence of distributional changes over the year are mixed. We have attempted to quantify the influence of this distributional change for each top-level segment, summarised in Table 5.4.

If the distribution of JS-WR clients were exactly the same as the 2015 valuation, we would have expected the average liability to be $2,100 lower. In other words, distributional changes to the mix of clients within the segment have caused the average liability to be $2,100 higher. This means that some of the increase in liability under management influence occurring in this segment is due to distributional impacts – such as a relative increase in JS-WR clients whose prior spell was JS-HCD and a relative decrease of clients who have not previously been on benefits. This is consistent with the increase in transition from SPS and JS-HCD to JS-WR. A higher proportion of JS-WR clients are receiving support to meet housing costs (in a social house or AS) leading to an increase of around $350. For NOMB clients a similar increase can be seen which relates to an increase in the proportion of clients whose prior spell was SPS.

In contrast, the distributional impacts for JS-HCD have caused a $1,400 decrease in the average future lifetime cost. Again, the biggest influence is the type of benefit history for these clients; there has been a decrease in proportion of clients whose prior spell was SLP-HCD and an increase in those who have most recently been off benefits.

Table 5.4 Estimation of the influence of distribution change over the year to June 2016 on the average future lifetime liability for selected segment groups

Segment	Composition change breakdown	Commentary
Under 25s **-$2,200**		Distributional changes to the mix of clients within the Under 25 segments have caused the average liability to be $2,200 lower. The changes are all quite small but in the same direction. The largest effects are: » On average have slightly less historical benefit receipt » Slightly lower proportion of females » Average current duration slightly reduced » Lower proportion receiving AS.

Segment	Composition change breakdown	Commentary
JS-WR **+$2,100**		Distributional changes to the mix of clients within the JS-WR segments have caused the average liability to be $2,100 higher. The main effects are: » Average age decreased half a year » On average have an extra half year of historical benefit receipt » Reduced proportion in social housing.
JS-HCD **-$1,200**		Distributional changes to the mix of clients within the JS-HCD segments have caused the average liability to be $1,200 lower. The main effects are: » Average age decreased half a year » On average have an extra half year of historical benefit receipt.
SPS **+$100**		Distributional changes to the mix of clients within the SPS segments have caused the average liability to be just $100 higher. The main effects are: » Slight increase in historical time not on benefits » Slight reduction in average duration on benefits » Increases in the proportion of females and Māori clients » Increase in the proportion of clients receiving AS.
SLP **+$700**		Distributional changes to the mix of clients within the SLP segments have caused the average liability to be $700 higher. This is primarily related to an increase in average duration on benefits.
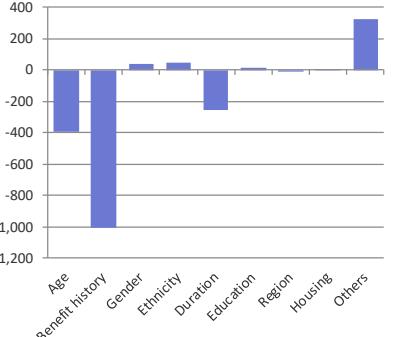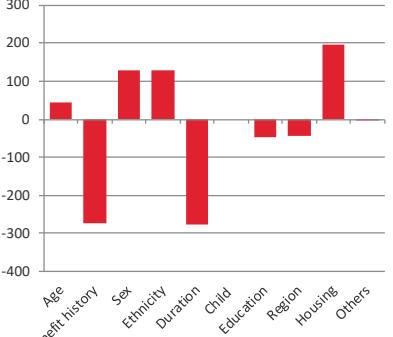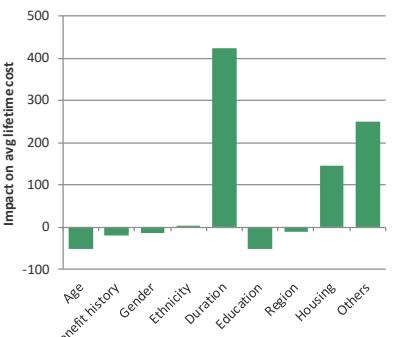
Segment	Composition change breakdown	Commentary
NOMB **+$0**		Distributional changes to the mix of clients within the NOMB segments have had a net $0 effect. However, this masks underlying shifts, the main effects are: » Slight increase in age profile » On average an extra two quarters of historical benefit receipt » Increase in proportion of females.
Recent Exits **+$800**		Distributional changes to the mix of clients within the Recent Exit segments have caused the liability to be $800 higher. The main effects are: » Slight increase in age profile » On average an extra quarters of historical benefit receipt » Increase in proportion of Māori.

5.5.2   Predictors of long-term risk

The valuation models enable us to compare the relative importance of various client characteristics in causing a future lifetime cost to be low or high. These relativities vary across different segments, with the top eleven characteristics that best differentiate risk of long-term benefit receipt within each segment shown for various segment groups in Figure 5.9.

We note the following:

» Age is very important across all segments. However, it is particularly important for JS-HCD and SLP segments, where younger clients have a high possibility of long-term SLP spells. Age is relatively unimportant within the YP/YPP segment only because all of these clients are close in age. Thus, current age is important in future lifetime cost estimates for the YP/YPP segment itself, but less important in differentiating between the future lifetime costs of those aged under 20.

» SLP segments are very sensitive to age – about 30% of the total variability in future lifetime cost is explained by current age.

» Benefit history is also very important in most segments. In this case, we have split the benefit history effect into components such as the number of quarters on various benefit types, and other items such as current duration and previous benefit received. These variables appear particularly strong for NOMB segments where they may predict a return to main benefits.

» Both family benefit history and CYF data have only been incorporated for a sub-set of younger clients (those up to age 25), and as a result are significantly understated in segments other than YP/YPP. Amongst the YP/YPP segments CYF history ranks second as a risk factor. Family benefit history and CYF history are predictors of early entry onto benefits – and are so prevalent among the YP/YPP segments that this likely understates their relative importance in differentiating between members of the segment – similar to the age effect described above.

» The new variable social housing state is moderately strong amongst JS-HCD and SLP segments. This may indicate an extended period of elevated need level for these clients.

» The new variable measuring number of historical quarters in social housing comes through weakly for JS-WR and Recent Exit segments.

» The new variable measuring number of historical quarters receiving AS comes through strongly for JS segments.

» Having a criminal conviction comes through strongly amongst the recent exit segments.

» Ethnicity is a significant indicator of future lifetime cost. This is particularly true for the YP/YPP, JS-WR, SPS, NOMB, and Recent exits segments.

» Education remains moderately important, particularly for younger clients.

» Partner information is only relevant for JS-WR, JS-HCD and SLP segments. It comes through reasonably strongly for the latter two.

» The type of heath condition, injury or disability is important for predicting SLP-HCD future lifetime cost, but less so for JS-HCD.

» For YP/YPP, gender is the most important variable reflecting the higher likelihood that young women—including those who are already Young Parents—will go on to receive SPS in future.

Figure 5.9 Relative variable importance for estimating future lifetime benefit cost, for top tier segment groups; top eleven variables shown for each segment group
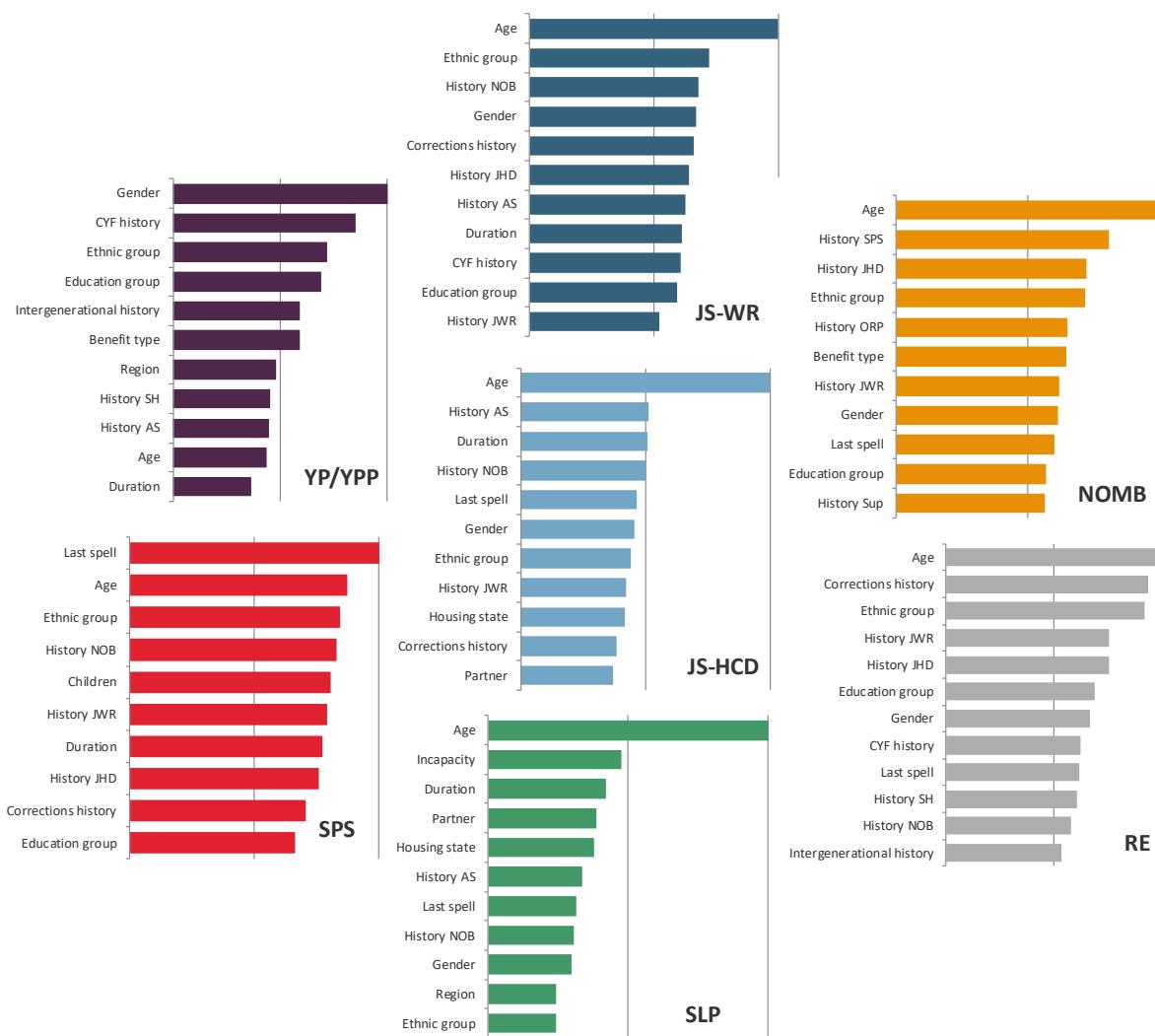
We can understand how these drivers are affecting the future lifetime cost estimates by examining the partial dependence effects. These effects show what the influence of each variable is, holding all other risk factors constant. They can also be used to understand the interactions between different variables; that is, how does future lifetime cost vary due to the **joint** status of variables. In Figure 5.10 we further show the influence of age, split by both current housing state and ethnicity for the JS-WR segments. Differences are more pronounced at younger ages as the average cost is higher.

Figure 5.10 Partial dependence plots of future lifetime cost for JS-WR segments by age, for social housing state (left panel) and ethnicity groups (right panel)
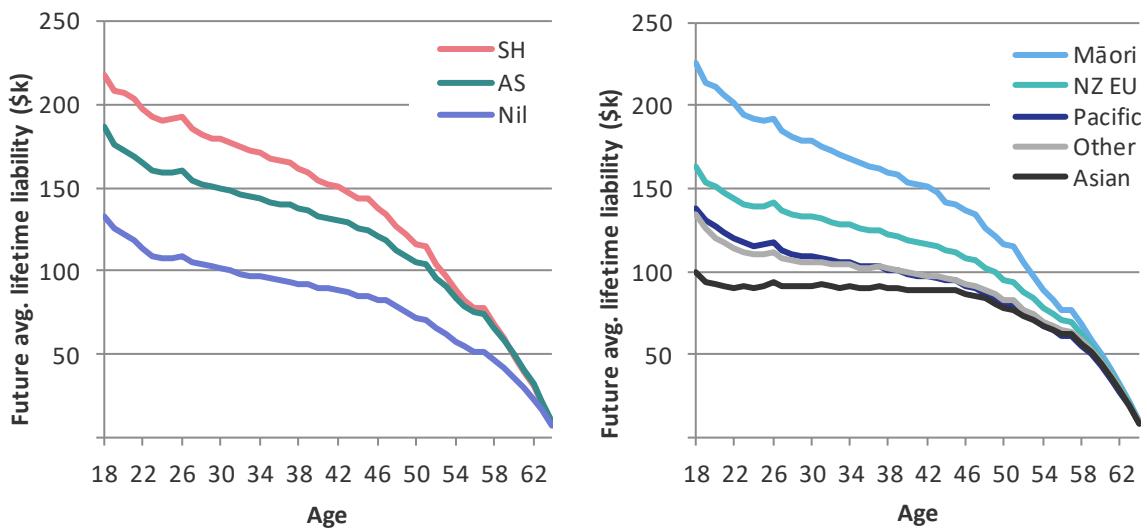
For clients under age 25, Figure 5.11 shows the influence of age, split by both CYF history group and ethnicity. Those entering before age 18 without CYF history tend to have very high liabilities, although this represents a small group of people. Females generally have a higher cost due to the higher probability of receiving SPS in the future.

Figure 5.11 Partial dependence plots by age for clients aged under 25, for CYF history groups (left panel) and gender (right panel).
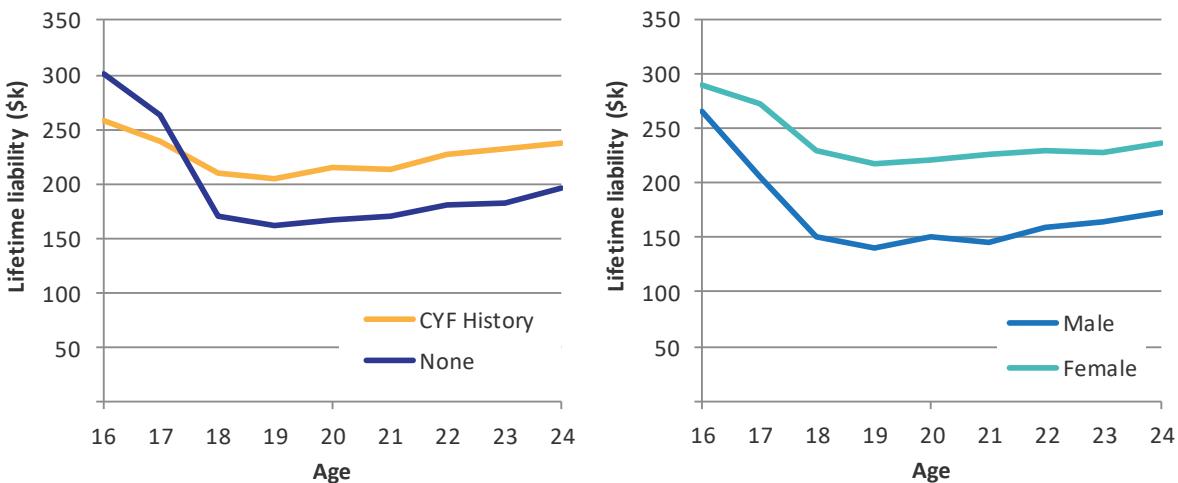
5.6   Forecast segment numbers

Figure 5.12 shows recent trends and forecast end of quarter numbers by segment. The projection is the combination of the current client projection (for those expected to remain on benefits) and future client numbers (incoming clients).

Figure 5.12 Forecast numbers at end of quarter, by segment.
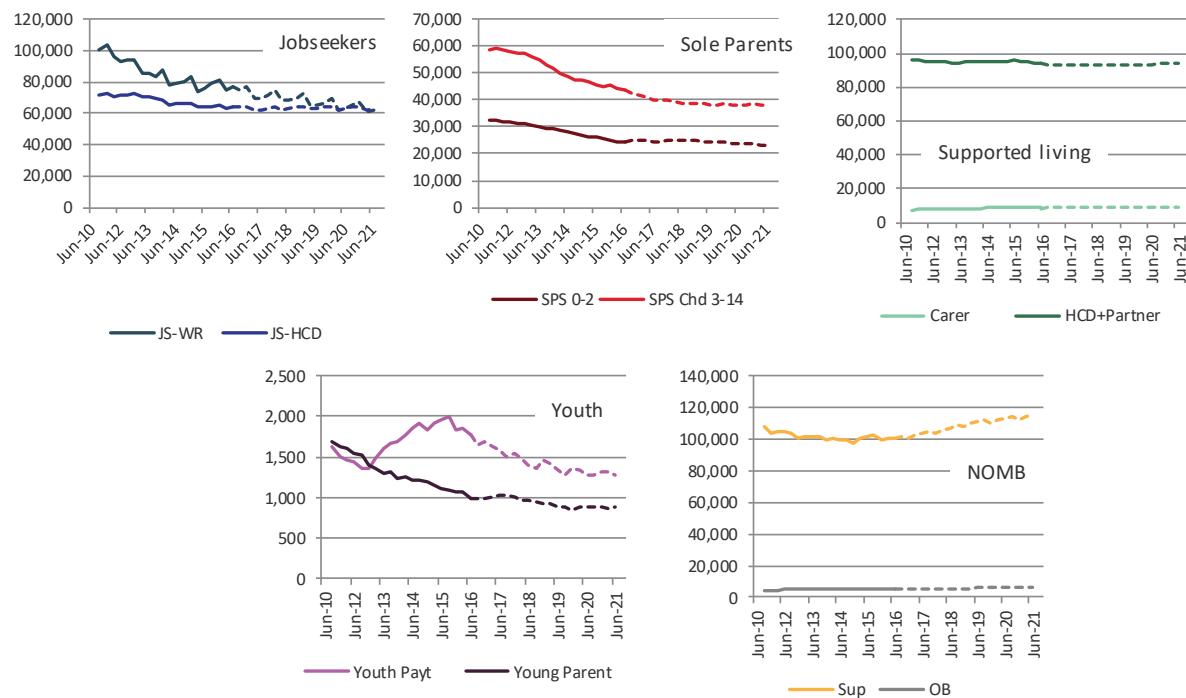
While the forecast numbers relating to current clients are relatively reliably estimated, the numbers related to new entries (and their underlying characteristics) tend to be more uncertain. The number of future entries is dependent on the labour force and other demographic trends, with numbers very 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.

We have forecast:

» JS-WR numbers to continue to fall slowly. Much of this is driven by unemployment rate assumptions, with the national rate projected to fall from 5.0% to 4.3% over the next five years

» JS-HCD numbers to be reasonably stable, with just seasonal effects over the next 5 years

» SPS numbers to continue to decrease (albeit at a slower rate), dropping 10% over the next five years

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

» SUP numbers to increase substantially, up 10-15% over the next five years; this reflects the slowed exits from this segment.

6 ANALYSIS BY REGION

Inside this chapter

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 valuation we have separately modelled these clients' expected welfare cost.

Many welfare 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 they remain on them. These differences mean that there is merit in undertaking a detailed regional comparison.

Figure 6.1 Work and Income regions

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

Unemployment trends vary considerably across the country, with relatively high current unemployment in the Northland (9.6%), Central (6.1%) and East Coast (6.1%) regions contrast with the relatively low unemployment rates in the Canterbury (3.1%), Southern (4.6%) and Taranaki (4.9%) regions.

The $1.7 billion decrease in liability under management influence is not spread evenly between regions. Some regions had a proportionately greater impact on the decrease in liability:

» The Auckland region represents 30% of the total liability, but its $725 million reduction represents nearly half of the overall decrease.
» The Bay of Plenty region represents 9% of the total liability, but its $360 million reduction represents about 23% of the overall decrease.

Three regions (all South Island) saw **increases** in liability:

» The Canterbury region represents 8% of the liability, and saw a $404 million increase. This is almost one quarter the size of the total decrease.
» The Southern and Nelson regions saw small increases of $53 million and $12 million respectively.

The number of people receiving main benefits since 30 June 2015 has increased in Taranaki and Canterbury, and decreased or stayed the same in all other regions. Average future lifetime costs have generally increased slightly, mainly due to inflation and discount rate changes. After allowing for changes in inflation and discounting assumptions, average future lifetime costs have increased in the Canterbury and Southern regions, but decreased elsewhere. The rate of clients exiting JS-WR has fallen dramatically in Canterbury despite the very low unemployment rate.

Overall, the distribution of the liability between regions roughly corresponds with the distribution of the benefit population by region, though some regions make up a slightly greater or lesser share of the liability than that implied by the beneficiary population. The average future costs vary by region by up to $31,000 – from the highest in Northland ($143,000) to the lowest in Auckland ($112,000).

Regional labour markets, mix of beneficiary types, and ethnic composition vary significantly by region, and each has an impact on expected future cost.

» The ranking of average future lifetime costs for JS-WR is broadly consistent with regional unemployment rates.
» The high overall average future lifetime cost in the Northland is partly due to a lower than average proportion of SUP-only clients, and a relatively high proportion of SLP clients.

Other than JS-WR (which is more closely linked to regional unemployment), differences in future lifetime welfare costs between regions are substantially explained by distributional factors rather than just regional differences in welfare dynamics. For example, ethnic composition has a significant influence on differences in the average future lifetime costs in specific regions. Māori beneficiaries are at disproportionate risk of longer benefit durations; regardless of where they live. Those with a history in social housing have a higher average future lifetime cost in all regions. Further investigation, outside the scope of this valuation, would be required to fully understand what is driving these differences, including correlation with other factors, such as a higher propensity to receive SPS.

6.2   Regional unemployment rates

Regional unemployment rates were introduced into the 2014 valuation to better explore how labour markets were evolving at a regional level. We continue to use these regional rates for both the historical modelling and 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 2.2). We project each region to a long-term unemployment level based on their historical experience of 'full employment'[22] while ensuring consistency with the forecast national rate as discussed in Section 2.3.3.

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[22] 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.

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.

As discussed in Chapter 2, the national unemployment rate was 5.0% at June 2016 and is forecast to return to 'full employment' of 4.3% by June 2020. Figure 6.2 shows our forecasts for regional unemployment rates. Regional unemployment rates vary considerably across the country from a high of 9.6% in Northland to a low of 3.1% in Canterbury (in June 2016, seasonally adjusted and smoothed). Our projected rates reflect this spread. The only region that does not closely follow the general national trend is Canterbury. The Canterbury region already has a very low unemployment rate driven by the earthquake recovery which is unlikely to be sustainable. We have adopted a slight increase to a higher long-term rate for the region.

Figure 6.2 Historical and forecast regional unemployment rates
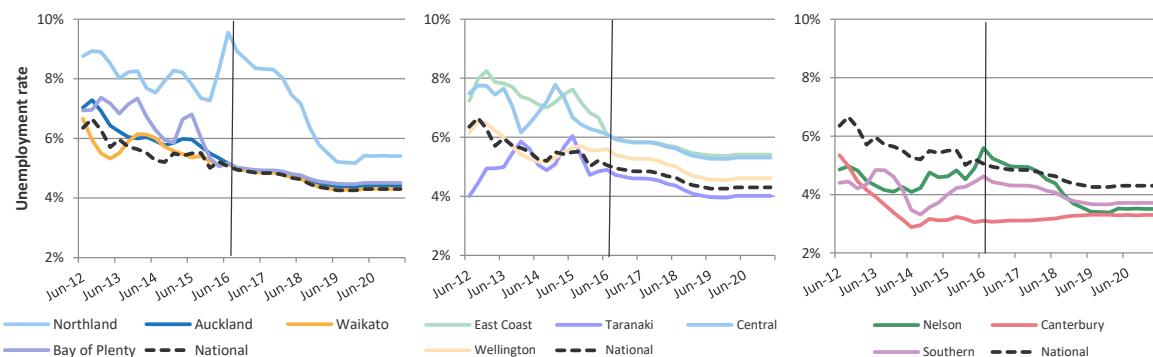
In recent years South Island regions have had substantially lower unemployment than the national average. In contrast, North Island regions such as Northland, East Coast and Central have tended to have higher than average unemployment.

Over the past year there have been significant movements in the regional rates, in particular:

» The rate for Northland has increased almost two percentage points
» Rates for Nelson and Southern regions have also risen – between half and one percentage point
» Rates in the Bay of Plenty, East Coast and Taranaki regions have fallen over a percentage point
» Auckland and Central regions have seen smaller decreases – less than one percentage point
» The rate for the Waikato region decreased slightly
» Rates in Wellington and Canterbury regions are unchanged.

Further details of the assumed unemployment rates by region are given in Appendix C.

6.3   Actual versus expected results for 2015/16

Section 3.5 discussed actual and expected performance over 2015/16 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 projected in the last valuation of the benefit system, as at 30 June 2015.

Figure 6.3 Significant changes to benefit dynamics at the regional level in 2015/16 compared to expected
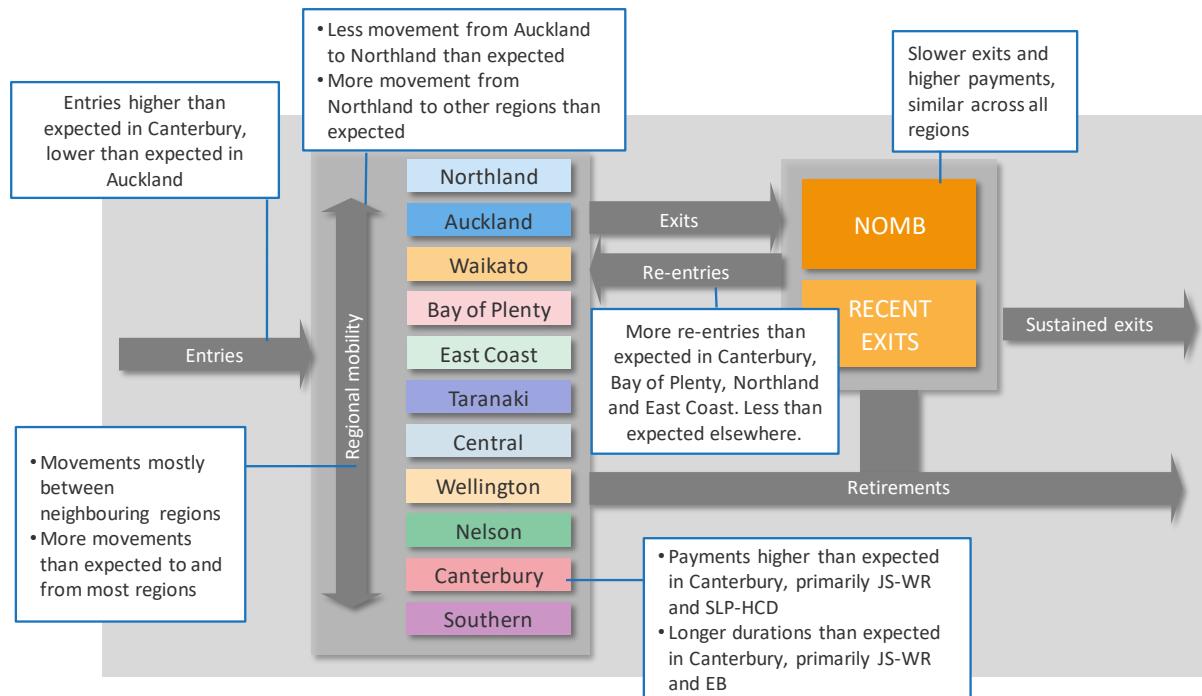
For clients in the current client cohort in the 2015 valuation, actual payments over the year were 1.2% higher than expected. As Figure 6.4 shows payments were higher than expected in all regions; this is in part due to the increase in average payment rates with the introduction of the child hardship package which was not included in the projected payments. There were four regions where the proportion of actual payments compared to expected was less than the national average (101.2%); Auckland (100.4%), Bay of Plenty (100.4%), Taranaki (101.2%) and Southern (100.6%). In Canterbury payments were well above the expected level (106.9%). The result for Canterbury was driven by higher beneficiary numbers in benefit types with work requirements.

Figure 6.4 Actual and expected payments by client's region (as at June 2015)
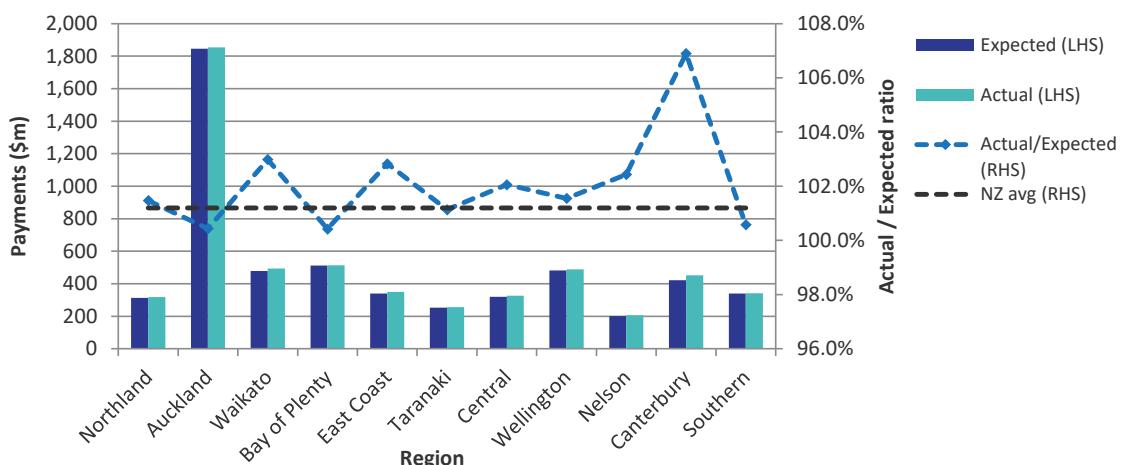
The regional differences are particularly clear when looking at transition rates for JS-WR clients. Figure 6.5 shows the exit and re-entry rates for these clients. The re-entry rate for recent JS exits back into JS has also increased disproportionately in Canterbury, and to a lesser extent in other South Island regions.

Figure 6.5 Regional exit rates from JS-WR (left panel) and re-entry rates (right panel), year to June 2015 compared to year to June 2016
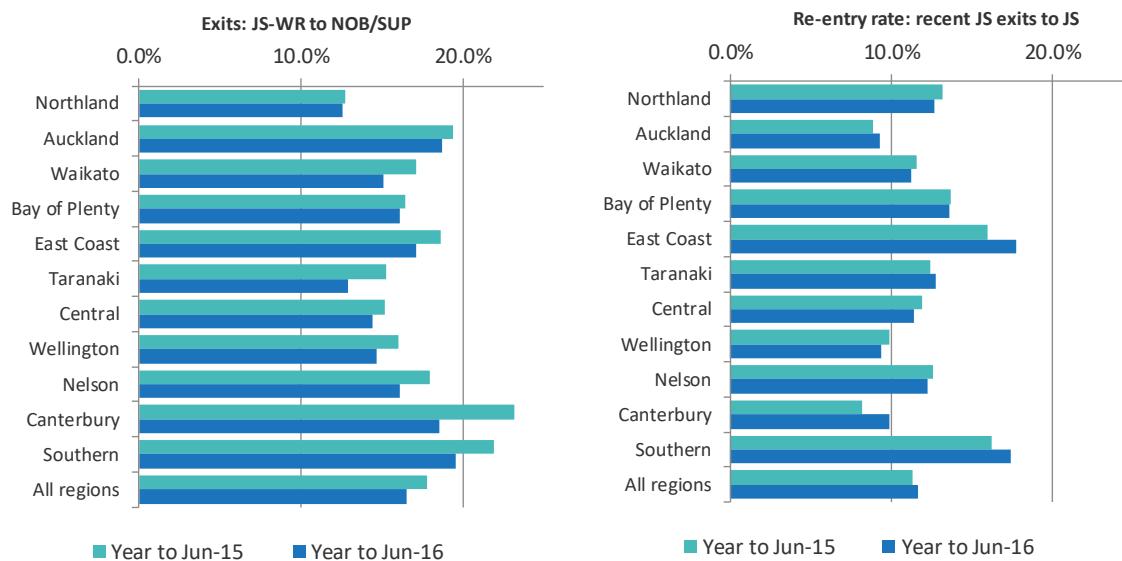
6.4 Regional level liability results

6.4.1 Results

Table 6.1 breaks down the current liability forecasts by client region. Note that these results are split based on a client's region at the 2016 valuation date, and totals include future cash flows arising from all benefit payments regardless of future regional migration of each person. Net loan cost and expenses have not been allocated.

Within New Zealand, Northland has the largest average future lifetime cost of $143,000 while Auckland has the smallest average future lifetime cost of $112,000, a difference of $31,000. Taranaki has the longest average future years on main benefits at 9.2 years and Auckland has the shortest at 6.7 years. The drivers behind the differences in average future lifetime cost between regions are examined in Section 6.5.5.

Table 6.1 Current client liability forecasts by region at 30 June 2016

| Region	# at valn date (000)	Current client liability ($b)	Avg lifetime welfare cost ($000)	Avg # future yrs on main benefits
Northland	27.5	3.9	143	9.0
Auckland	180.7	20.2	112	6.7
Waikato	47.3	6.1	129	8.3
Bay of Plenty	50.5	6.3	124	7.8
East Coast	32.6	4.5	138	8.8
Taranaki	24.3	3.4	139	9.2
Central	31.0	4.1	132	8.4
Wellington	49.0	6.1	123	8.0
Nelson	20.9	2.4	115	7.2
Canterbury	43.4	5.5	126	7.8
Southern	36.3	4.3	118	7.8
Australia	4.2	0.5	114	8.9
All regions	**547.5**	**67.1**	**123**	**7.7**
Expenses and net loans		8.9		
Grand total		76.0		

There are a small number of clients residing in Australia who are exclusively recipients of SLP. Although Supported Living beneficiaries tend to have large future lifetime costs, the average age of clients in the Australia region is about 55, significantly higher than the average of about 40 in other regions. The relatively low average future lifetime cost of $113,000 for the cohort is driven by the shorter average time to retirement.

Figure 6.6 shows each region's contribution to the current client cohort and current liability. Overall, the distribution of the liability between regions roughly corresponds to the distribution of the benefit population by region, with differences due to the variation in average future lifetime cost between regions.

Figure 6.6 Contribution of each region to current client cohort and current liability
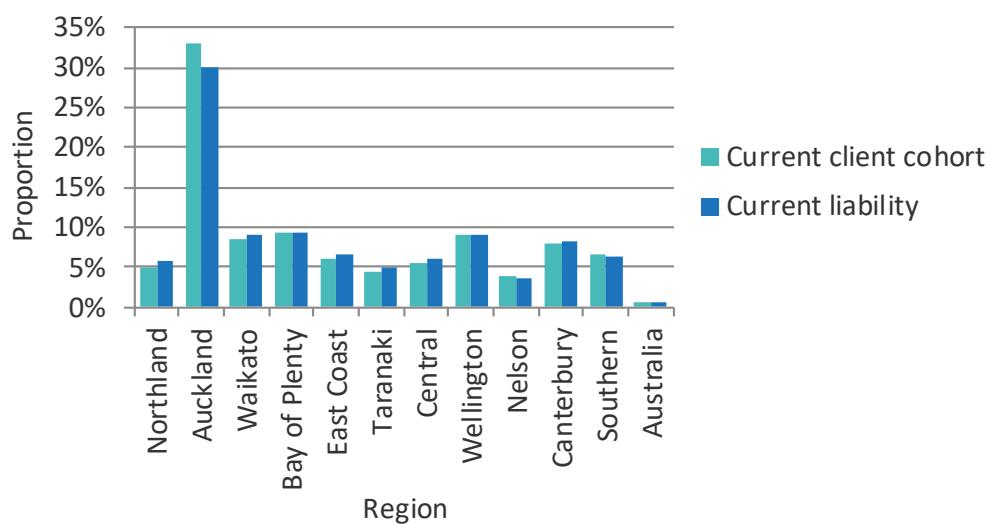
6.4.2   Change from 30 June 2015

As in the segment-level analysis, the total liability in a region combines the number of clients and the average future lifetime cost per client. Both are illustrated in Figure 6.7 below, with reference to the previous valuation.

Figure 6.7 Number of main beneficiary clients and their average future lifetime cost (excluding expenses, loans)
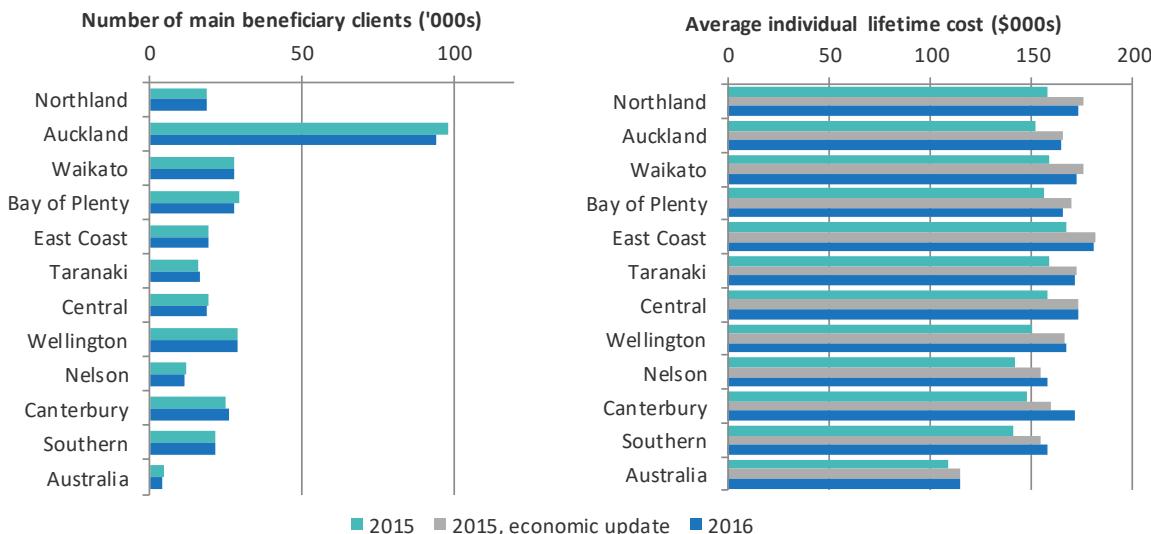
There has been a decrease in the number of people receiving main benefits since 30 June 2015 in all regions except Waikato, which stayed the same, and Taranaki and Canterbury, both increased.

The number of people in the main benefit segments has decreased or stayed the same for all regions except Taranaki and Canterbury. Taranaki and Canterbury both experienced increases of around four percentage points. This is in part due to the reduction of exit rates for JS-WR clients. The number of JS-WR clients has increased dramatically over the last year in Canterbury. Conversely Auckland and Bay of Plenty had decreases of around four percentage points, with numbers of JS and SPS clients decreasing. Northland, East Coast and Central saw smaller decreases in of around two percentage points.

After allowing for changes in inflation and discounting assumptions the average future lifetime cost per main benefit client is similar to last year in most regions; the exceptions being the three South Island regions.

Average future lifetime cost for main beneficiaries in the Canterbury region increased by over 5%, even after allowing for inflation and discounting assumptions. While the unemployment rate is low in this region the exit rate for JS-WR is currently very low. We discuss the impact of changes in demographics of the region in Section 6.5.5.

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

As discussed in Chapter 3, once changes to economic factors and expected evolution of the benefit system over the year have been taken into consideration, there is a reduction of $1.7 billion in this year's liability compared to what was forecast last year. This difference is the share of the liability influenced through policy change and management of the benefit system. This reduction is almost entirely off-set by increased average benefit payment rates due to the child hardship package.

We have split this $1.7 billion decrease by region, as shown in Figure 6.8. The column on the right shows the percentage change, which recognises the relative size of regions.

Figure 6.8 Breakdown of change in liability under management influence, actual vs. expected by region

Change on expected liability for clients valued in 2015, $m	% change
Northland	-4.0%
Auckland	-4.5%
Waikato	-3.9%
Bay of Plenty	-6.7%
East Coast	-5.9%
Taranaki	-3.7%
Central	-4.0%
Wellington	-1.5%
Nelson	+0.6%
Canterbury	+9.3%
Southern	+1.4%
Overall	*-2.9%*

How much is each region contributing to the $1.7 billion reduction in liability due to experience?

Auckland and Bay of Plenty have the largest decreases in absolute terms. Their contributions represent 73% of the overall decrease in liability, despite representing about 39% of the liability valuation.

While liabilities are higher than expected in all South Island regions, Canterbury saw by far the largest increase.

Understanding the increase in Canterbury

Unsurprisingly, the Canterbury labour market has behaved very differently to that of other regions since 2011. 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.

In previous valuations Canterbury has had high benefit system exit rates and low re-entry rates, consistent with its very low unemployment rate and partly attributed to rebuilding activity after the earthquakes. Over the past two years we have seen trends in benefit dynamics revert to levels more comparable with other regions (although unemployment has remained low). This year, the Canterbury region has had a 9.3% (or $404m) increase in expected liability for clients in the June 2015 valuation cohort. Additionally, Canterbury was the only region in the 2015 valuation to have an increase over the previous year. This suggests there is reasonable evidence for a genuine shift in dynamics relative to the baselines set in 2014. Much of the increase this year relates to full recognition of the trends observable in last's year valuation.

Figure 6.9 shows the $404m increase split by segment (at 30 June 2015). The increase in Canterbury is spread across most segments, with the largest absolute increase in SLP-HCD, but the largest proportional increases in recent exits, NOMB and JS-WR segments.

Figure 6.9 Breakdown of increase due to experience in Canterbury, by June 2015 segment
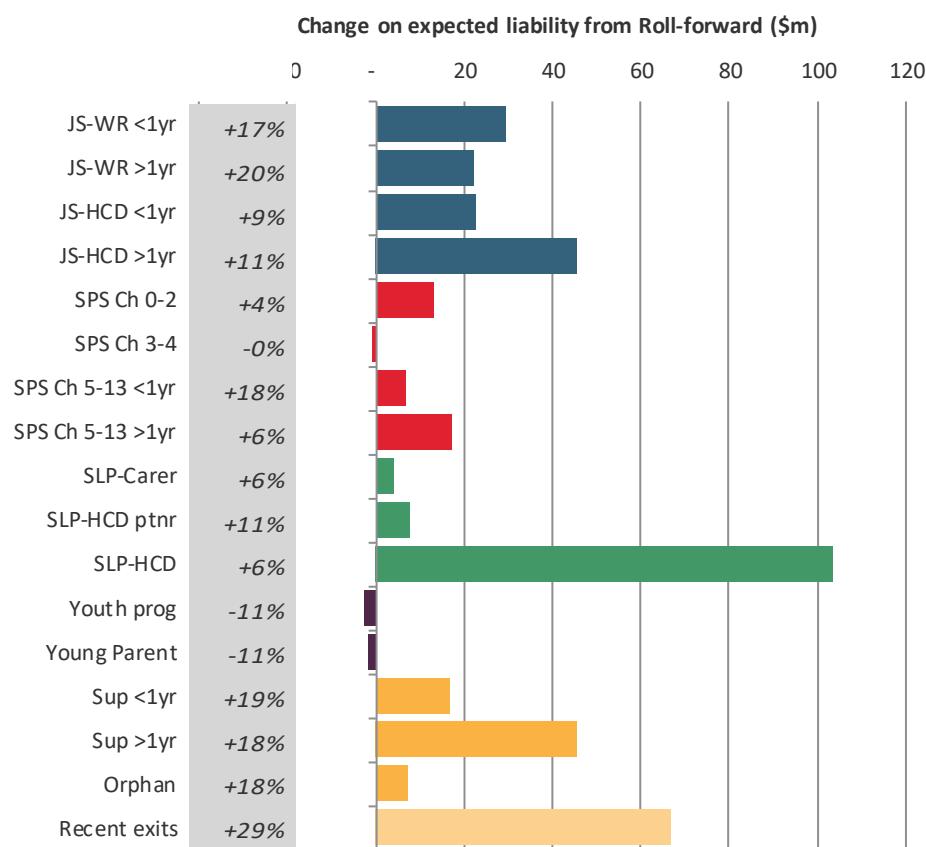
By far the largest factor driving the result is the increased rate of re-entry in Canterbury.

Over 2013/14 the average re-entry in Canterbury rate was 3.8% per quarter (for people not on benefits but who had received a benefit in the previous three years). This was far below the national average, and was attributed to the very low unemployment rate in the region during the earthquake rebuild (average of 3.3% over 2013/14). Since then, the re-entry rate has returned to be much closer to the national average (5.1% over 2015/16), while unemployment has remained low at 3.2%. This change is shown in Figure 6.10.

Figure 6.10 Likelihood of a person not on benefits (but having received a benefit in the previous three years) re-entering the benefit system next quarter. Canterbury versus other regions
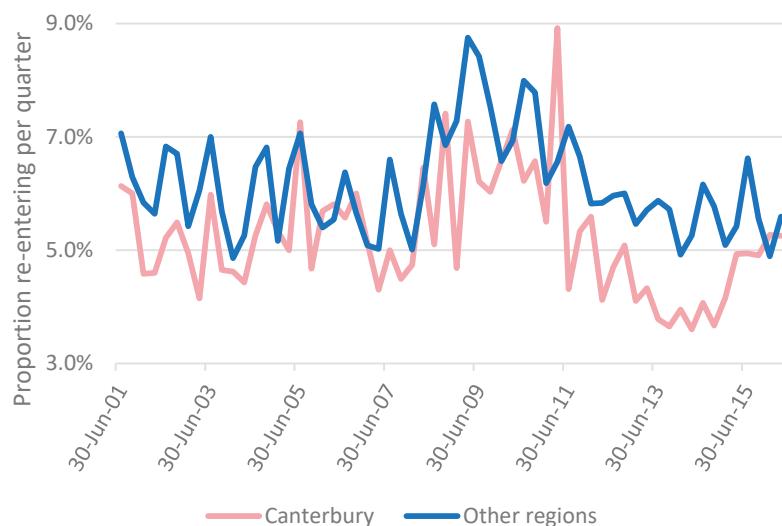
Given trends have persisted, we have now recognised most of this change in re-entry rates for Canterbury. This change causes large increases in lifetime cost; the recent exits segment average lifetime costs are obviously higher, but clients currently on benefits are projected to exit and then re-enter more quickly, so the re-entry model affects all segments.

The other drivers of the change for Canterbury include:

» Exit rates from JS-HCD have fallen significantly lower over the past year or so

» There has been a large increase in the number of JS clients (up 17% whereas most regions saw a decrease).

While durations have increased substantially for most segments, they are still below or close to the national average in most segments.

All these trends have occurred in the absence of a material increase in regional unemployment; the difference between the region and the rest of New Zealand show that ramifications of the earthquakes continue to persist.

6.5 Understanding regional differences

Differences in regional labour markets, mix of beneficiary types, and ethnic composition vary significantly by region, and each has an effect on expected future cost. Each of these factors is discussed in turn.

6.5.1 Regional labour markets and Jobseeker outcomes

As we have reported in previous years, there is a clear relationship between regional level labour markets (as measured by the unemployment rate) and client outcomes. This is particularly true for Work Ready Jobseekers, but is also true to a lesser extent for other client segments. The left panel in Figure 6.11 shows that faster exit rates amongst JS-WR clients continue to correlate with lower average unemployment rates in the region. While the exit rate in Canterbury has fallen rapidly over the last year it still sits above the trend, with slightly more exits than the unemployment rate alone would imply. Southern, Auckland and East Coast all lie significantly above trend; Wellington, Taranaki and Nelson lie significantly below. The difference between observed exit rates and the trend will partly be due to other regional differences that drive the rate of exit, such as the demographic profile of clients and

management influence. We also include in our models these regional effects that are not explained by the unemployment rate.

Figure 6.11 The left panel shows the average quarterly exit rates from JS-WR against average regional unemployment rate (June 2013 – June 2016). The right panel shows the main benefit re-entry rate amongst recent exits whose previous benefit was JS-WR.
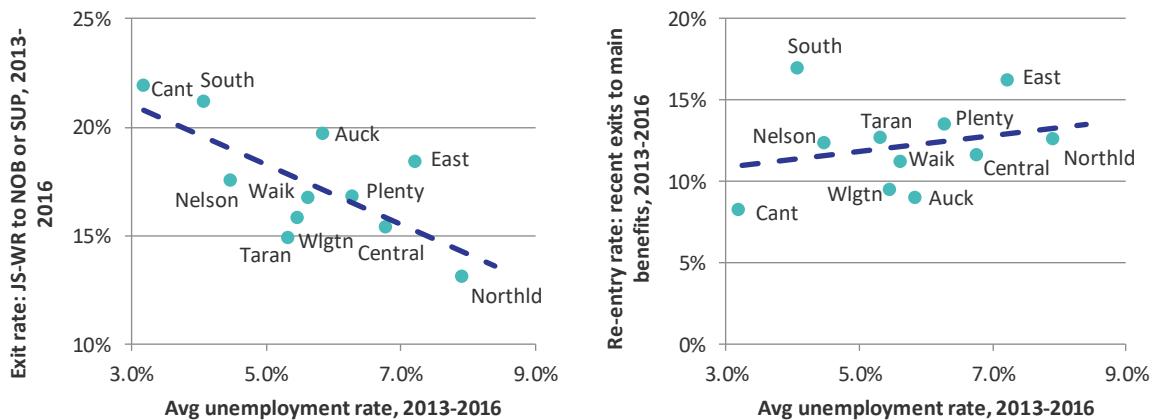
The relationship between benefit re-entry and the unemployment rate (Figure 6.11, right panel) appears weaker. This is due to the relationship being swamped by the seasonality within each region. For instance East Coast and Southern regions have the largest seasonality, reflecting their respective employment markets. This increases the amount of apparent movement on and off benefits. The relative size of seasonal effects is shown in Figure 6.12. We allow for regional seasonality in our projections.

Figure 6.12 The left panel shows the relative seasonality into and out of benefits by region, with larger bars indicating a higher degree of seasonality. The right panel contrasts benefit re-entry rates for Canterbury and Southern regions.
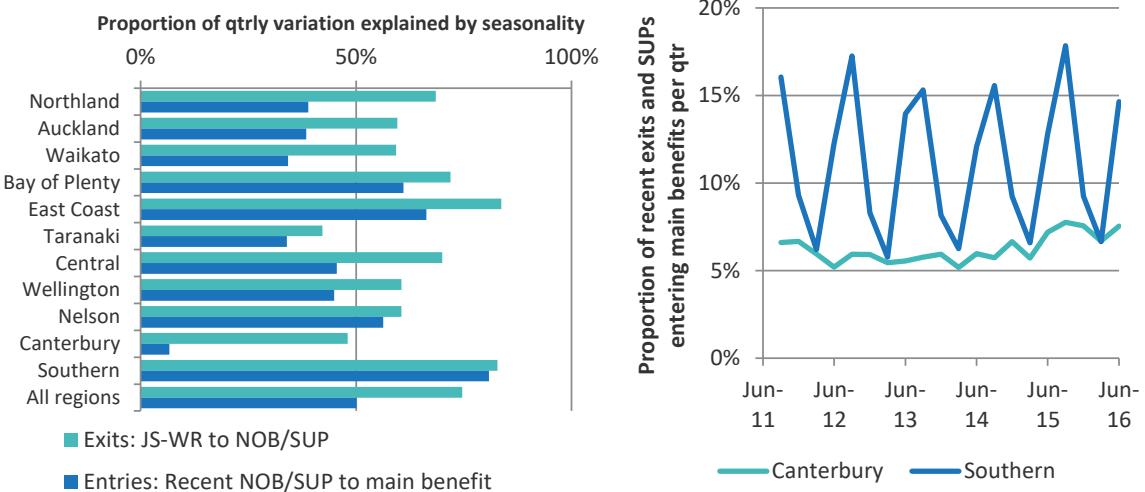
Differences in regional labour markets feed into future duration on benefit, as shown in Table 6.2. Northland Jobseekers are expected to spend an extra year on main benefits compared to the average, and Auckland almost a year less. Similar results are seen across the various segments. East Coast, Northland, Taranaki and Central regions tend to have longer durations on benefit. The South Island regions plus Auckland tend to have shorter projected durations. Much of this difference is attributable to regional labour markets, but they are also explained by the significant demographic differences between regions. We discuss this further below.

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

Region	UE rate, Jun-16	Expected years on main benefit					
		JS-WR	JS-HCD	Sole parent	Supp. Living	Youth	All Main Beneficiaries
Northland	9.6%	10.1	9.5	12.5	11.3	14.6	10.9
Auckland	5.2%	7.9	8.7	11.0	11.8	13.0	10.1
Waikato	5.1%	9.5	10.5	11.9	12.0	15.2	11.0
Bay of Plenty	5.2%	9.5	9.3	11.1	11.9	14.7	10.5
East coast	6.1%	9.8	10.7	12.1	12.2	15.4	11.4
Taranaki	4.9%	10.1	11.2	11.7	12.0	14.8	11.3
Central	6.1%	9.3	10.6	11.2	12.3	14.8	11.0
Wellington	5.6%	8.9	10.2	11.9	12.7	15.5	10.9
Nelson	5.6%	8.4	9.3	10.3	11.3	13.3	9.9
Canterbury	3.1%	8.4	10.3	10.7	12.0	14.1	10.8
Southern	4.6%	8.5	9.9	10.5	12.1	15.0	10.4
Australia					8.9		8.9
All regions	5.3%	8.9	9.6	11.3	11.9	14.0	10.6

6.5.2 Differences in segment composition by region

As with client segments, the mix of clients on benefits will heavily influence each region's average future lifetime cost. Given that benefit (and segment) type is the most important determinant of future lifetime cost of benefit receipt, it is important to understand how differences in the mix of beneficiaries affects each region's total and average liability. Regions with higher (relative) proportions of clients in high liability segments, such as Sole Parent and Supported Living beneficiaries, will tend to have higher average costs as a result. Australia is largely excluded from the discussion below, given it is dominated by SLP. We compare relative numbers of beneficiaries in each region in Figure 6.13, and make the following comments:

» Northland has a very high proportion of Jobseekers and Sole Parents. This, plus a longer future duration amongst these clients, leads to significantly higher overall liability for the region, which has the highest average future lifetime costs of any region.

» Taranaki and Canterbury have high proportions of Supported Living clients; these clients tend to have higher future costs which increases the average liability.

» The Auckland region has the greatest proportion of Not on main benefits and Recent exits segment clients. 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 average liability for the region, with the average future lifetime cost lower than all other regions.

» The share of Jobseeker beneficiaries ranges from 23% in Canterbury to 33% in Northland and correlates with regional unemployment levels.

» The share of Sole Parent beneficiaries ranges from 11% in Wellington, Nelson and Southern to 16% in Northland.

» The share of Supported Living beneficiaries ranges from 15% in Auckland to 25% in Canterbury.

We estimate that differences in the mix by benefit type explain about a third of the differences in average liabilities across regions. In other words, if all regions had similar proportions of clients in the various benefit types, the differences between regions would be on average one third smaller.

Figure 6.13 Split of main beneficiary client numbers by top level segment and region

Region	Jobseeker	Sole parent	Supported Living	Youth	NOMB & RE
Northland	33%	16%	18%		32%
Auckland	24%	12%	15%		48%
Waikato	26%	13%	19%		41%
Bay of Plenty	27%	14%	14%		45%
East Coast	23%	14%	21%		41%
Taranaki	30%	14%	23%		33%
Central	26%	12%	22%		39%
Wellington	30%	11%	18%		41%
Nelson	26%	11%	18%		44%
Canterbury	23%	12%	25%		40%
Southern	27%	11%	21%		41%
Australia			100%		
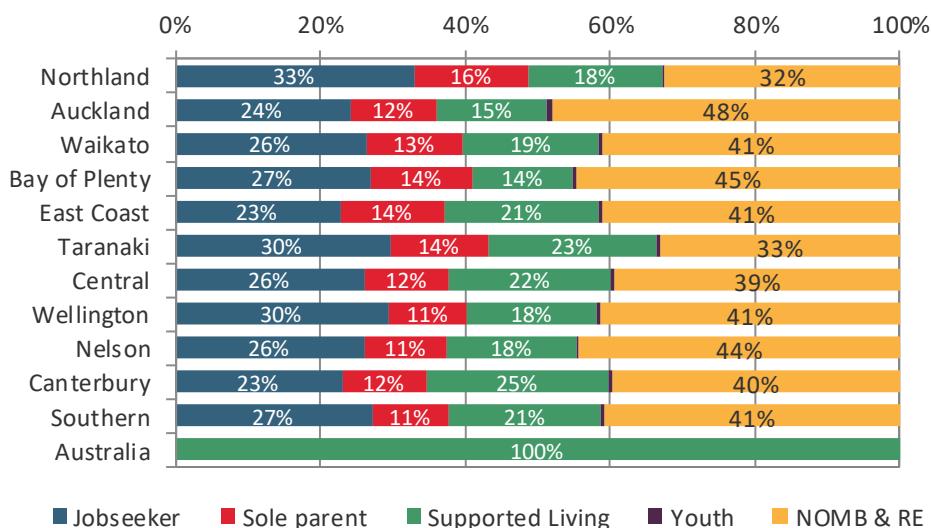
6.5.3 Differences in ethnic composition by region

There is significant variation in ethnic composition of beneficiaries by region; not surprisingly, given the working age population distribution in those regions:

» NZ Europeans make up over 60% of beneficiaries in the South Island regions
» More than 50% of the beneficiaries in Northland, Bay of Plenty, and East Coast are Māori
» Auckland and Wellington have high proportions of Pacific Islander and Asian clients.

Figure 6.14 Ethnic composition by region, all beneficiaries (left) and working age population (right). Working age population taken from Statistics New Zealand (2015), with size of 'Other' category estimated
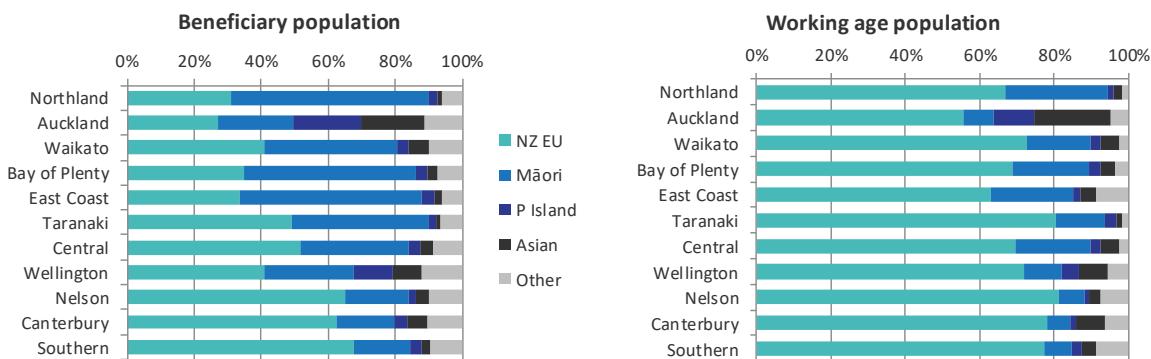
In considering our comments below, it is important to note that the fact that a particular ethnic group has a higher average future lifetime cost does not imply causality. Often the variable will be a proxy for other indicators of risk, such as family benefit history, or other drivers outside the scope of this valuation.

We have previously reported that differences in future lifetime costs by ethnicity cannot be explained by the regional distribution of different ethnic groups and in fact the reverse effect is visible. Ethnic composition appears to have an influence on differences in the average future lifetime costs in specific regions. Māori beneficiaries, in particular, are at disproportionate risk of longer benefit durations, regardless of where they live – we explore this further in Section 4.3.

This means demographic differences are important in understanding regional variation in future lifetime costs, as they vary significantly by ethnicity. For instance, comparing Northland and Auckland regions

shows that some of the variation in regional average future lifetime costs is associated with differences in ethnic composition. On average, future lifetime costs are about $31,500 higher in Northland. However, breaking down average costs in each region by ethnicity—as in Figure 6.15—shows that, perhaps surprisingly, there is more similarity in future lifetime cost estimates between beneficiaries who belong to the same ethnic group whether they live in Northland or Auckland than there is between beneficiaries of different ethnicities within either region. In particular, Māori beneficiaries, whether they live in Auckland or Northland, have a higher average future lifetime cost than any other ethnic group in either region. The overall difference in average future lifetime cost between the two regions occurs in part because Northland has over twice the proportion of Māori beneficiaries.

The average liability also differs across the remaining ethnic groups – Pacific, Asian and Other ethnic groups all have a lower estimated average liability than NZ Europeans.

Figure 6.15 Average future lifetime cost (left) and ethnicity profile (right) in Northland, Auckland, Nelson and Canterbury
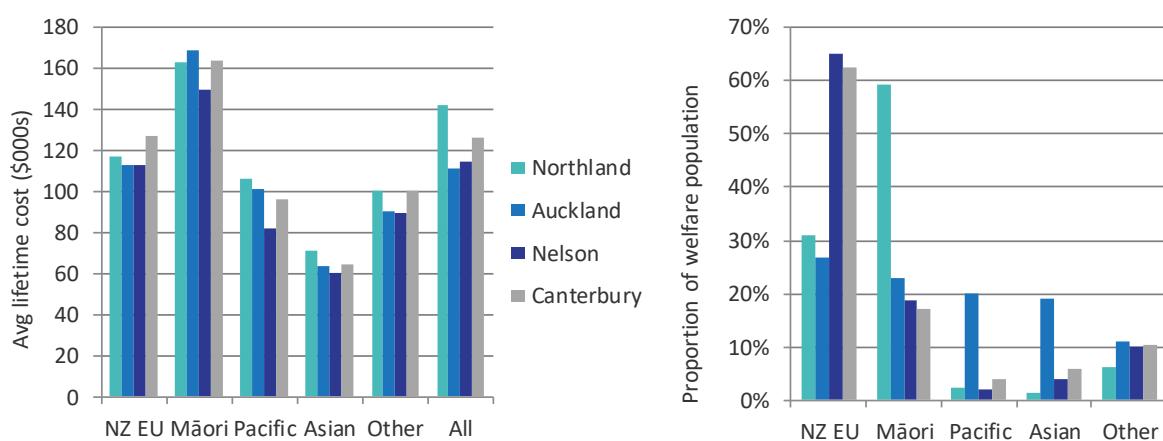
6.5.4   Differences in history of social housing by region

About three in ten main beneficiaries at June 2016 have previously been or are currently in social housing. However, as shown in the left of Figure 6.16, this proportion varies by region from 22% in Southern to 36% in Auckland and the East Coast.

Figure 6.16 Prevalence of history in social housing (left panel) and associated average future lifetime cost (right), both panels amongst main beneficiaries and by region
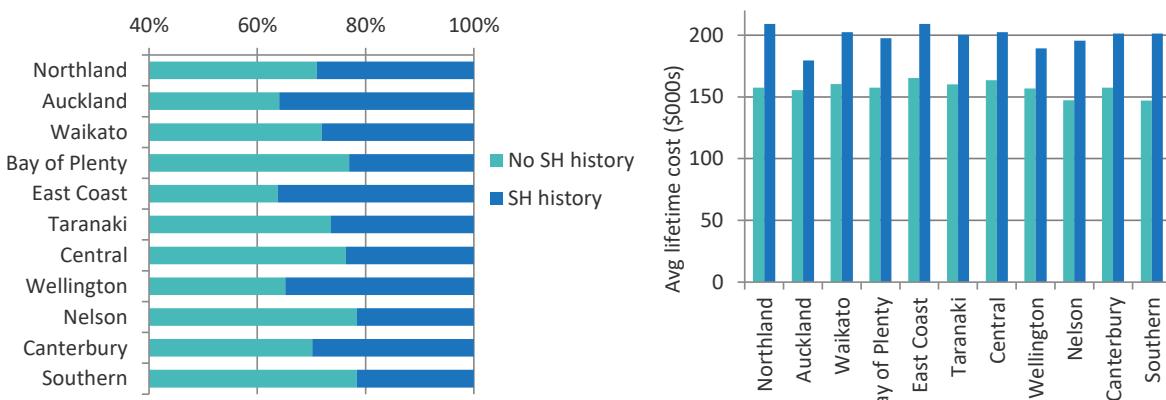
For clients with a history in social housing the average future cost is $37,000 higher. This is reasonably consistent across regions and in part reflects a higher propensity to receive ongoing support in the form of AS. Some of the variation among regions will be due to regional variation in the AS rates.

Similar to consideration of variations by ethnicity, we note it is important to realise that the fact that there is a higher average future lifetime cost among previous and current social housing tenants does not imply causality. Often such a variable will be a proxy for other indicators of risk.

6.5.5   Breakdown of regional differences in average future lifetime cost

The discussion of ethnicity, social housing history and their interrelation with other variables motivates an examination into which drivers are causing differences in future lifetime cost between regions. The valuation models allow us to examine these differences. As an example we examine the $31,500 difference in average future lifetime cost between Northland and Auckland. Figure 6.17 breaks down this $31,500 into components, based on differences in the composition of the benefit population in each region, and how each of these differences in composition contributes to explaining differences in the average future lifetime costs of the two regions. Significantly:

» Benefit type and benefit history explain 75% of the difference. These effects combined add $23,400 to the average client liability. Northland has relatively less clients receiving only supplementary benefits and relatively more clients receiving SPS compared to Auckland. Further, Northland clients have, on average received benefits for three extra years compared to Auckland clients and hence have on average lower exit rates.

» The difference in ethnic mix (or more accurately, differences captured by the valuation as being associated with differential risk by ethnic group) causes the Northland average liability to be $8,500 higher, so it is still a significant driver of difference.

» Regional factors (which combine the impact due to regional unemployment rate differences, plus any other differences captured by the valuation models as region-specific) explain relatively little of the difference.

» Amongst the Northland beneficiary population the age profile of: SLP clients is older, and JS clients is younger than that of Auckland. These effects reduce the average cost by $4,800.

» The Auckland beneficiary population has a higher proportion of females than Northland, which increases average future lifetime cost due mainly to their greater likelihood of receiving SPS in the future.

» A slightly higher proportion of Northland clients have a history in social housing, but the impact is minor.

The remaining drivers of future lifetime cost are generally small, which means that either their influence on future lifetime cost is small (such as partner status), or the distributions are similar across the two regions (for example, educational attainment).

Figure 6.17 Breakdown of differences in average liability (all current clients and recent exits) Auckland to Northland
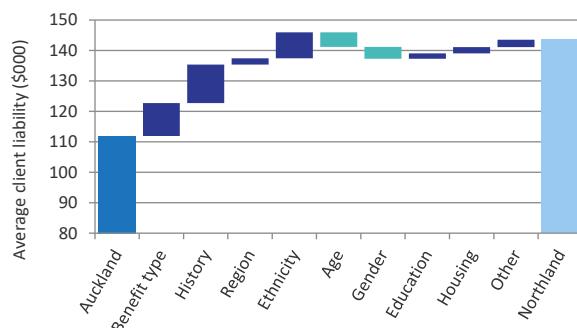
While it is useful to compare two regions in this way, it is also important to consider each region relative to the national average.

Table 6.3 shows how much various predictors contribute to explaining differences between the future lifetime cost estimates in that 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 risk, discussed in Section 5.5.2. The relative importance of variables is fairly 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 lifetime cost 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 lifetime costs due to a shorter average time to retirement.

Overall, benefit type plus benefit history explain 44% of the total differences of average future lifetime cost between regions. Specific regional factors (such as regional unemployment rates, and region-specific events like the Canterbury earthquake) explain another 11%, the four demographic variables shown (ethnicity, age, gender and education) explain 36% and social housing history explains another 4%.

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 liability, regions compared to national average

Region	Cost difference breakdown	Commentary
Northland **+$20,200**		The average future lifetime cost in Northland is $20,200 higher than the national average. Benefit type and benefit history explains over 55% of the difference, adding $11,400 to its average. This is because Northland has the lowest proportion of SUP only clients out of all regions. Furthermore, the region has the largest proportion of Māori clients which adds $5,900 to the average future lifetime cost.
Auckland **-$11,300**		The average future lifetime cost in Auckland is $11,300 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, particularly JS and SLP. These effects reduce the average future lifetime cost by $12,000. It also has a high proportion of Pacific Islander and Asian clients which reduces the cost by $2,700. These are partially offset by age; Auckland has a relatively high proportion of youth clients.

Region	Cost difference breakdown	Commentary
Waikato **+$7,100**	Chart (y-axis: 4,000 to -2,000). Categories: Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, Other	The average future lifetime cost in Waikato is $7,100 higher than the national average. The region has a relatively high proportion of Māori increasing the average cost $2,100. Clients are also younger; for example, the average age of a JS client is 39, more than a year less than the national average. This age effect increases average future lifetime cost by $1,600. These increases are partially offset by a lower proportion of female clients.
Bay of Plenty **+$1,700**	Chart (y-axis: 6,000 to -9,000). Categories: Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, Other	The average future lifetime cost in the Bay of Plenty is close to the national average (only $1,700 higher). Its slightly younger benefit cohort and high proportion of Māori clients results in an increase in average future lifetime cost of $9,700. These effects are almost entirely offset by a reduction in average future lifetime cost due to its lower proportion of clients on SPS and SLP. The Bay of Plenty has a small proportion of clients who have a history in social housing reducing the average liability $600.
East Coast **+$16,500**	Chart (y-axis: 6,000 to -2,000). Categories: Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, Other	The average future lifetime cost in East Coast is $16,500 higher than the national average. The region has a high proportion of clients receiving SLP. Furthermore, clients in the region on average have just over a year longer history of benefit receipt. These two effects combined increase the average cost by $9,800. A high proportion of Māori clients increase the average liability by $4,000 and a higher proportion of clients with a history in social housing increases the average liability by a further $1,600.
Taranaki **+$17,700**	Chart (y-axis: 12,000 to -4,000). Categories: Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, Other	The average future lifetime cost in Taranaki is $17,700 higher than the national average. Taranaki has a relatively low proportion of SUP only clients. Clients tend to have a longer history of benefit receipt. In particular, JS and SLP clients respectively have half a year and one and half years longer benefit histories relative to the national average. These two factors combine to increase the average future lifetime cost by $16,000. Other differences in ethnicity, age and gender approximately offset each other.
Central **+$8,700**	Chart (y-axis: 8,000 to -4,000). Categories: Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, Other	The average future lifetime cost of Central is $8,700 higher than the national average. Central has a relatively high proportion of SLP clients. In addition, SLP clients in Central on average have benefit histories that are a year longer than average. These factors combine to increase the average future lifetime cost by $9,500. There is also a reduction of $2,800 due to its relatively low proportion of female JS clients.
Wellington **+$900**	Chart (y-axis: 6,000 to -6,000). Categories: Ben. type, History, Region, Ethnicity, Age, Gender, Education, Housing, Other	The average future lifetime cost in Wellington is close to the national average. The region has a low proportion of SPS and SLP clients as well as its JS clients having benefit histories that are on average a year shorter. These benefit type and benefit history factors decrease the average future lifetime cost by $5,000. This is partially offset by a slightly younger age profile which increases average future lifetime cost by $3,500. There is a strong regional effect adding $5,300; the unemployment rate in Wellington is above the national average.
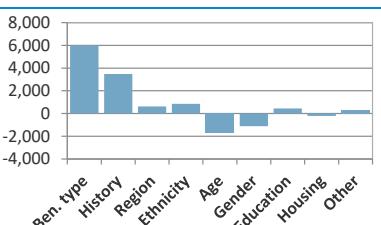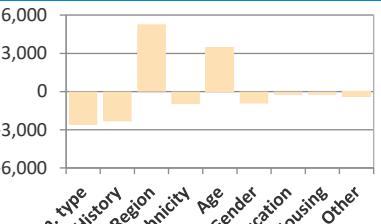
Region	Cost difference breakdown	Commentary
Nelson **-$8,500**		The average future lifetime cost in Nelson is $8,500 lower than the national average. South Island regions have lower unemployment levels. More favourable employment conditions partly explain the $3,400 reduction in average future lifetime cost due to regional factors. Nelson also has a relatively high proportion of SUP only and Recent exits clients and an older age profile, JS and SLP clients are one and half years older than the national average. Relatively few clients in Nelson have previously been in social housing further reducing the average liability by $1,200.
Canterbury **+$3,400**		The average future lifetime cost in Canterbury is $3,400 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 liability by $12,100. This increase is partially offset by an older age profile. Also, Canterbury has a very low level of unemployment which partly explains the $2,800 reduction in average future lifetime cost due to regional factors.
Southern **-$4,000**		The average future lifetime cost in Southern is $4,000 lower than the national average. Southern has a relatively high proportion of SLP clients; benefit type adds $3,300 to the average liability. However as South Island regions have lower unemployment levels there is a reduction in the average future lifetime cost of $3,600 due to regional factors which includes more favourable employment conditions.
Australia **-$11,300**		The average future lifetime cost in Australia is $11,300 lower than the national average. Clients residing in Australia are receiving SLP almost exclusively, increasing the future lifetime cost by $135,900. However, this is more than 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 lifetime cost by $124,000.
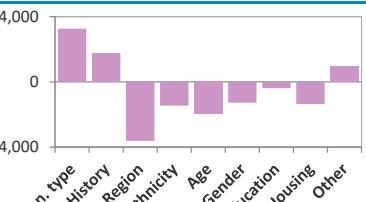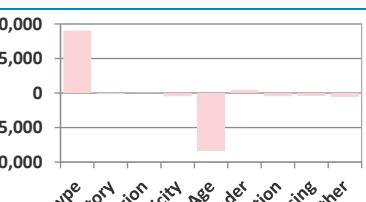
7 ANALYSIS BY PAYMENT TYPE

Inside this chapter

7.1   Introduction and highlights

Chapter 3 discussed the main result of the valuation as at 30 June 2016, 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 payment type. This is different from Chapter 5 which provides an analysis by segment type as at the date of the valuation. That is, this chapter focuses on benefit at the time of payment, rather than the benefit received at the valuation 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 valuation date. Breaking the future liability down this way enables us to analyse specific payment types, such as Accommodation Supplement (AS), Disability Assistance (DA) and Childcare Subsidy (CCS).

This chapter also includes analysis of debts/loans to beneficiaries, as well as operating expenses.

Highlights

» Aggregate payments were 101.2% of expected for the year. Average benefit rates increased in the last quarter of the year due to the introduction of the child hardship package; this was not allowed for in the 2015 projections. Over the first three quarters of the year actual payments were 100.5% of expected.

» Compared to 2012 projections, future JS-WR and SPS payments have fallen from 28.4% of the total to 20.3%, down by 8.1%.

The total net liability associated with overpayments and Recoverable Assistance is $342m for current clients. This is close to the estimate in the previous valuation, although the underlying models have changed; the biggest change for this estimate relates to improvements in the data used for analysis.

The vast majority of overpayments (about 90%) are not fraud-related. Fraud detections used to average 10% of the total, but doubled in 2013/14, mostly explained by MSD's IRD data-matching program. Fraud detections as a portion of total overpayments has fallen back to 15% of the total in 2014/15 and 11% in 2015/16.

7.2 Results by payment type

7.2.1 Actual versus expected payments

Actual versus expected payments were generally in line with the trends observed in Section 3.4. Other comparisons are shown in Appendix J. The main features are as follows:

» Aggregate payments were 101.2% of expected for the year. Average benefit rates increased in the last quarter of the year due to the introduction of the child hardship package; this was not allowed for in the 2015 projections. Over the first three quarters of the year actual payments were 100.5% of expected.

» JS-HCD, SPS, SLP-HCD payments were all within 0.5% of expected levels over the year.

» Over the first three quarters SPS payments were only 98.7% of expected.

» JS-WR payments were nearly 5% higher than expected over the year, representing $33 million over the year. Over the first three quarters JS-WR payments were 103.9% of expected.

» Emergency Benefit payments were 4% higher than expected, use of this benefit has decreased in recent years and this difference only represents $1m over the year.

» Tier 2 benefits were within 0.5% of expected levels. Slightly higher than expected AS payments were offset by lower than expected DA and CDA payments.

» Tier 3 payments were 4.5% higher than expected with higher Hardship (HS) payments partially offset by lower Employment Intervention payments (EI).

7.2.2 Current client liability by payment type

Table 7.1 breaks down the current liability as at 30 June 2015 and 30 June 2016 by payment type, and shows the key changes between the two.

For more discussion on the intermediate steps, see Appendix K. The final results are also summarised in Figure 7.1.

Of most interest is the $1.7 billion reduction due to experience; this is the difference between the roll-forward and the update for experience. The final column reports the liability after increasing payment levels to allow for the child material hardship package. We observe the following:

» The decreases are almost entirely attributable to Tier 1 benefits; Tier 2 and 3 benefits are all stable on aggregate.

» The largest reduction corresponds to future SPS (-$1.4 billion) benefits, which represents about 80% of the reduction. This follows a similar decrease last year.

» Forecast SLP-HCD payments represent another 35% of the decrease, however this is not a significant reduction in proportional terms given the high level of these future payments.

» Forecast JS-HCD payments have decreased, with an offsetting increase in projected JS-WR payments.

» Forecast CDA payments have increased significantly in proportional terms ($0.17 billion increase out of $1 billion forecast). The impact is offset by decreases in AS and DA payments, which are smaller in proportional terms.

Table 7.1 Current client liability by payment type as at 30 June 2015 and 30 June 2016[23]

Component	2015 current client liability ($b)			2016 current client liability ($b)		
	Previous valn	Methodology changes	Updated for Eco. assumps	Roll-forward to 2016	Updated for experience	Final estimate, after child payt increase
Tier 1						
JS-WR	4.9	4.9	5.5	5.3	5.4	5.6
JS-HCD	7.3	7.5	8.4	8.2	7.8	8.0
EB	0.2	0.2	0.2	0.2	0.2	0.2
SPS	9.4	9.9	10.6	10.4	9.0	9.9
SLP-HCD	21.1	20.4	22.5	22.5	21.9	22.2
SLP-Carer	1.8	1.8	2.0	2.0	2.0	2.1
OB	1.3	1.3	1.5	1.5	1.6	1.6
Subtotal	**46.0**	**46.0**	**50.6**	**50.1**	**48.1**	**49.5**
Tier 2:						
AS	8.5	9.6	10.7	10.7	10.6	10.6
DA	1.7	1.8	2.0	2.0	1.9	1.9
CDA	0.8	0.8	0.9	0.9	1.0	1.0
CCS	1.0	1.0	1.1	1.1	1.1	1.1
Subtotal	**12.0**	**13.2**	**14.7**	**14.6**	**14.6**	**14.6**
Tier 3:						
HS	2.5	2.6	2.9	2.8	2.9	2.9
EI	0.1	0.1	0.1	0.1	0.1	0.1
Subtotal	**2.7**	**2.7**	**3.0**	**3.0**	**3.0**	**3.0**
Other:						
Expenses	7.4	7.6	8.3	8.3	8.5	8.5
Net loans	0.34	0.35	0.39	0.39	0.39	0.39
Subtotal	**7.7**	**7.9**	**8.7**	**8.6**	**8.9**	**8.9**
Grand total	**68.4**	**69.8**	**77.1**	**76.3**	**74.6**	**76.0**

Main benefits make up two thirds of the current client liability (65%). The largest contribution is from SLP-HCD (29%), with significant portions related to SPS (13%), JS-HCD (10%) and JS-WR (7%). Accommodation Supplement (AS) is the largest component of the liability (14%) after main benefits.

> Compared to 2012 projections, future JS-WR and SPS payments have fallen from 28.4% of the total to 20.3%, a reduction of 8.1 percentage points.

Main benefit dynamics (1st tier assistance) are the basis for much of the analysis in this report, and are covered in detail in Chapter 5. In this chapter, we focus on analysis of 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.

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[23] For the purpose of this section, YP payments have been grouped with JS-WR and YPP with SPS.

Figure 7.1 Current client liability by benefit type, proportion of total
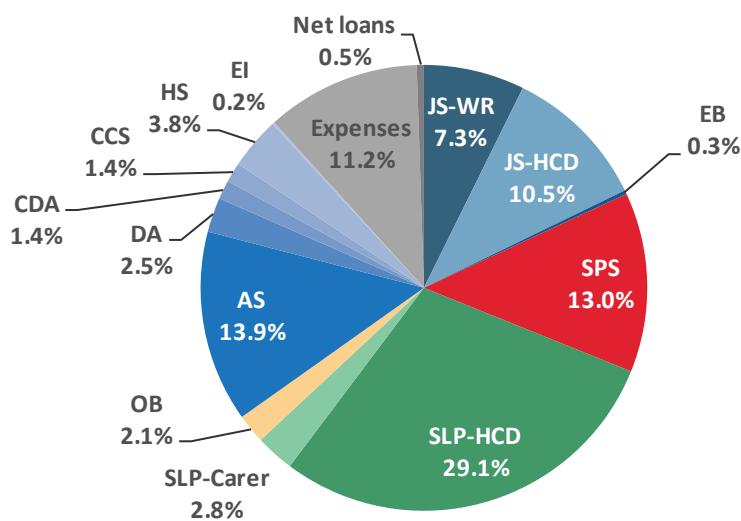
7.3   2nd and 3rd tier assistance

7.3.1   Approach to 2nd and 3rd tier 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 seniors are excluded.

»   We do not include clients who are currently only receiving Childcare Subsidy (CCS), Employment Interventions (EI) and Hardship Assistance (HS) in the valuation scope 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 cost is not reduced through a work outcome.

7.3.2   Accommodation Supplement

By far the largest of the 2nd and 3rd tier payments is Accommodation Supplement (AS). It is also larger than all main benefits except SLP. AS assists people who have low incomes and/or 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 liability after the main benefit payments, representing 14% of the total liability in the benefit system.

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

AS has seen a significant methodology change since the previous benefit system valuation. We model housing status explicitly, so we model both the proportion of clients receiving AS as well as the average benefit for those who do so. These two elements vary significantly by benefit type, as shown in Figure 7.1

below. About 70% 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 74% receiving AS.

Figure 7.2 Average 2015/16 proportion of clients receiving AS and average quarterly payments for those who do receive it, by benefit type.
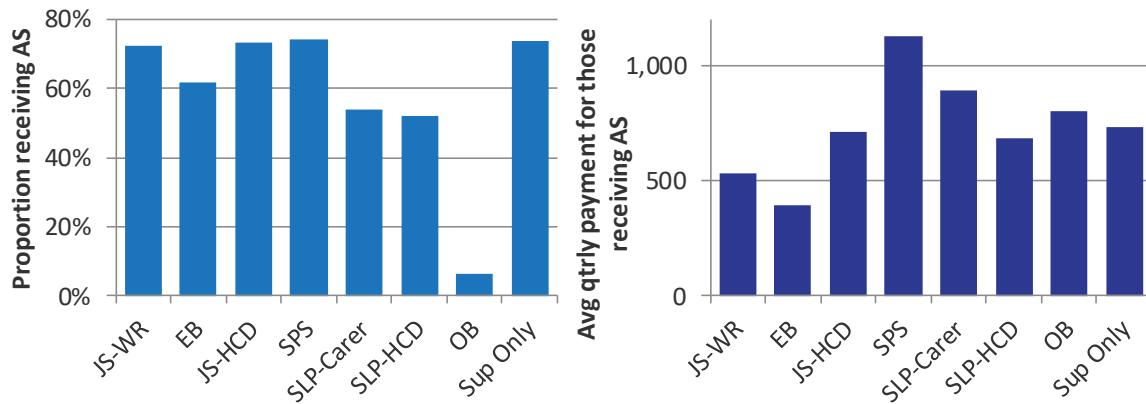
SPS clients tend to have higher rates of AS (the rate is higher with dependent children). The average rate in a quarter also depends on the average length of benefit spell; so EB clients have lower AS in a quarter due to their short spells.

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, as shown in Figure 7.3. Average levels of AS paid in Auckland and Wellington have also grown slightly faster than the national average over the last five years.

Figure 7.3 Average quarterly AS benefit for those receiving it in a quarter, for selected regions
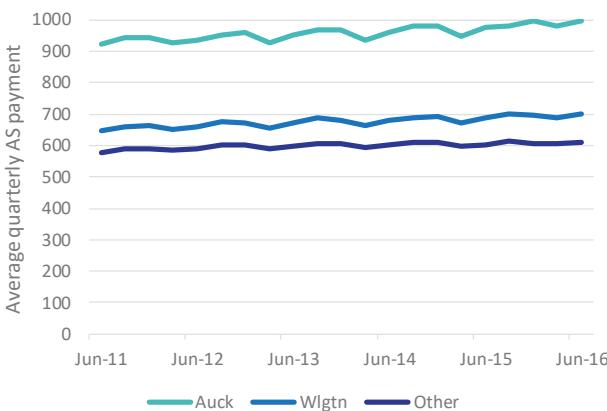
The highest rates of AS are paid to SPS clients – on average $850 per client per quarter – though significant amounts of AS are also paid to other main beneficiary clients. The higher rate for SPS clients is partly attributable to the higher rate paid for having children. Additionally, the assistance is sometimes spread between partners receiving other benefit types, reducing the average individual rate for those not on SPS. AS also represents the bulk of payments to Supplementary Only clients (about three quarters).

Average AS payments have generally been stable, in inflation-adjusted terms, although the trends vary by benefit type. Average quarterly AS payments to JS-WR and SPS clients have fallen about 1% and 2%

respectively over the past two years, whereas they are up by 2%, 4% and 6% for JS-HCD, SLP-HCD and NOMB clients respectively. Among regions, payment levels to SPS clients in the last two years have increased the most in Taranaki (by 1.6% per year on average), and have fallen the most in Bay of Plenty (by 2.1% per year on average).

Our projection now has AS growing at a rate faster than CPI, which is faster than the previous valuation. This is because we have included local rents as a predictor, which we project to grow faster than CPI. This is consistent with a higher uptake of AS and higher average support level over time as a result of higher rents in some areas.

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 that are not covered by another agency. Unsurprisingly, it is most commonly paid to clients who are receiving either JS-HCD or SLP-HCD benefits. In 2015/16, 59% of DA payments to working-age adults were paid to SLP-HCD clients, 19% to JS-HCD clients and just 23% to non-HCD clients.

Figure 7.4 Average 2015/16 quarterly Disability Allowance payments by benefit type (left) and average benefit over time for JS-HCD and SLP-HCD clients (right). Figures in June 2016 dollar values and exclude Australian residents.
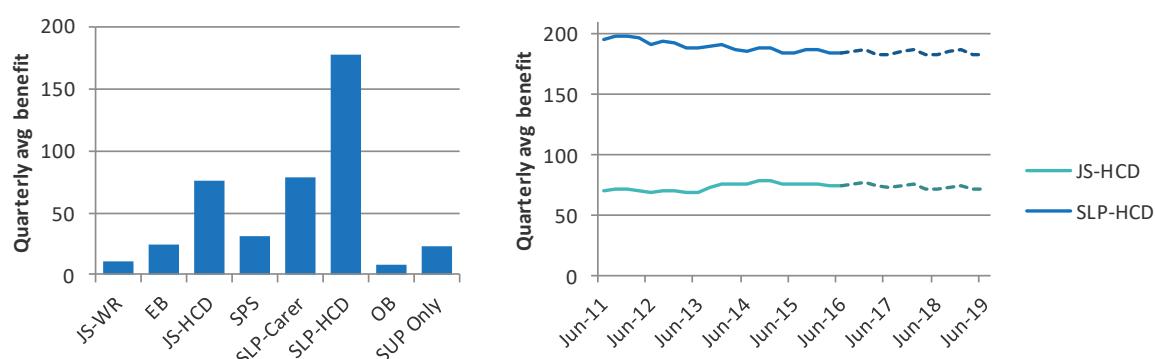
Over the past year or so, the average quarterly payment to JS-HCD clients has fallen slightly while SLP-HCD average payments have remained constant, visible in Figure 7.4. The JS-HCD decrease is most likely related to the changing mix of clients remaining on that benefit; for instance, transfers to JS-HCD from JS-WR tend to have lower rates of DA receipt compared to existing JS-HCD clients. We have reflected these trends in this year's valuation; projected levels from June 2016 remain stable (in 2016 dollar terms) for SLP-HCD clients and decrease slightly (in 2016 dollar terms) for JS-HCD clients, with the benefit inflation rate applying to future payments.

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 segment, and average quarterly benefit payments for the two working-age segments most likely to receive CCS; SPS and SUP.

Average CCS payments to SPS clients have increased substantially over the past three years (+19%, after allowing for inflation). This is consistent with more beneficiaries doing part time work with children in care. The effect is particularly pronounced for clients with youngest children less than 2 years old. In contrast, average payments among SPS clients whose youngest child is aged 2-4 have been relatively stable. This can be seen in Figure 7.5. Average payments amongst Supplementary Only clients have been relatively stable.

Figure 7.5 Average quarterly Childcare Subsidy by child age group over time for SPS clients. Figures in June 2016 dollar values.
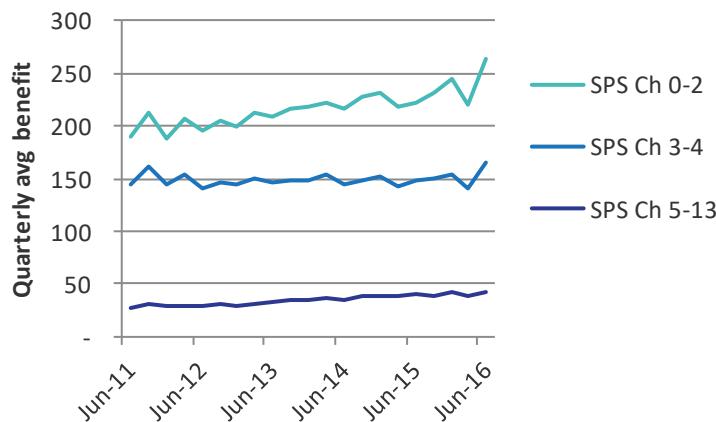
Payments were particularly high for both SPS and SUP-only clients in the June 2016 quarter; given this is just one quarter of experience we have not raised the projected rates to reflect this recent experience. Instead, the projected payment rates follow the longer term trends.

Figure 7.6 Average 2015/16 quarterly Childcare Subsidy payments by benefit type (left) and average payment over time for SPS and SUP-only (right). Figures in June 2016 dollar values.
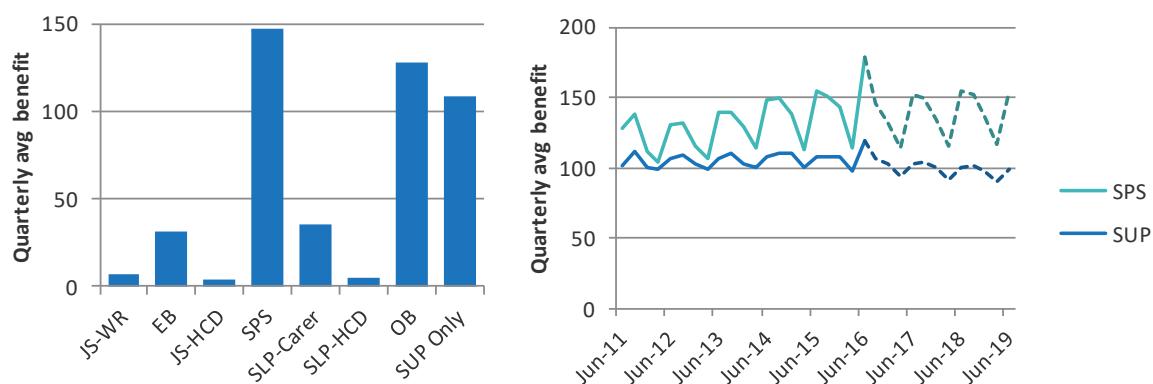
7.3.5   Non-recoverable Hardship Assistance

Hardship Assistance 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 2nd and 3rd tier assistance, after the Accommodation Supplement. It tends to be paid in significant amounts to all types of main beneficiaries. 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 amongst the highest levels around the country, along with Auckland, Nelson and Northland. Hardship Assistance payments are relatively low in the Bay of Plenty and Southern and Taranaki regions.

Figure 7.7 Average 2015/16 quarterly Hardship Assistance payments by benefit type (left) and average benefit over time for various benefit types (right). Figures in June 2016 dollar values.
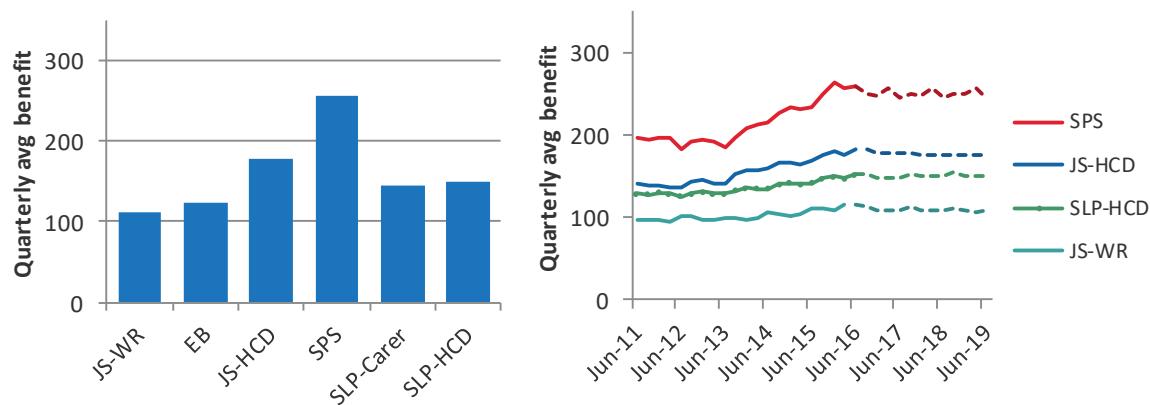
Hardship payments have increased across all major benefit types over the last couple of years, even after allowing for inflation. The largest relative increases have been for SPS and JS-HCD clients. We have reflected these higher payment levels in our assumptions.

7.4   Net cost of loans

We use the term 'loans' to represent any payments from MSD to a client that will later be recoverable. There are a number of 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 overpayments are constant but being detected at a lower rate); we are not in a position to distinguish between these cases.

We were provided data which included information on the relevant benefit type enabling the exclusion of loans related to benefits out of scope for this valuation (e.g. NZ Super). This is the same basis as the revised data provided in the previous valuation. Since 2015 we have excluded about 20% of fraud and overpayment detections related to groups out of scope. This change materially affected the rates at which loans are accrued and recovered, although they have had a smaller effect on the overall net loans estimate and the changes are immaterial in the context of the total liability estimate.

7.4.1   Breakdown of current and future client liability by component of net loans cost

We have valued six separate components related to loans cost, which are largely offsetting. The total cost for the current client liability is $342 million, as reported in the main results of Table 3.2. These six underlying components are shown in Table 7.2. Negative amounts represent recoveries on loans made by MSD.

Table 7.2 Summary of net loans contribution to current and future client liabilities.

| Loans category	Current client liability ($m)	Future client liability ($m)				
		2016/17	2017/18	2018/19	2019/20	2020/21
Further overpayments/fraud on existing debtors	87	0	0	0	0	0
Recoveries on overpayments/fraud on existing debtors	-202	0	0	0	0	0
Overpayments/fraud related to future payments	2,260	197	203	204	204	201
Recoveries on overpayments/fraud related to future payments	-1,933	-168	-174	-174	-174	-172
Net cost – overpayments/fraud	**211**	**28**	**30**	**30**	**30**	**29**
Recoverable assistance payments	1,419	147	114	91	79	72
Recoveries on recoverable assistance	-1,238	-128	-99	-79	-69	-63
Net cost – recoverable assistance	**181**	**19**	**15**	**12**	**10**	**9**
Total net loans cost	**392**	**47**	**44**	**41**	**40**	**39**

The net cost due to overpayments and fraud has increased by 14%. The bulk of this is due to inflation and discounting assumptions. Slightly higher overpayments, partly offset by higher recoveries also contribute.

7.4.2   Overpayments, including fraud

Detected overpayments, including fraud, represent a little over 3% of payments made by MSD, or about $220 million.

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, consistent with experience in the IRD data-matching program, but have decreased since then. The amount of non-fraud related overpayments has increased in 2015/16 while the amount of fraud overpayments has stayed fairly constant. This has led to the rate of fraud detection (as a portion of total overpayments) falling back to 11% of the total in 2015/16. Figure 7.8 shows the history of overpayments since 2011/12.

Figure 7.8 Overpayment and fraud detections per year
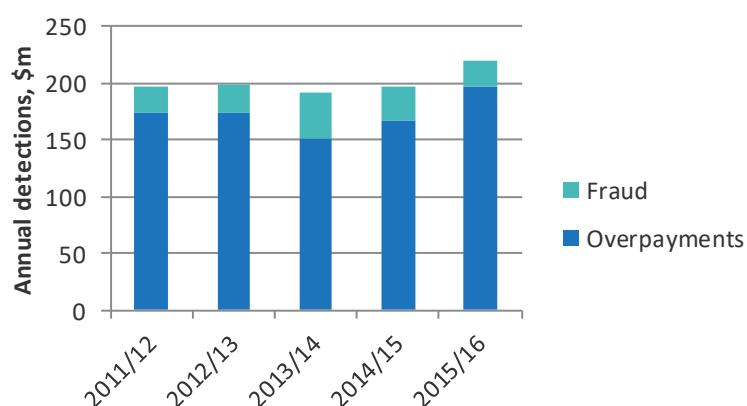
We have modelled the development of existing debts as well as new debts raised relating to future benefit payments. In both cases we allow for subsequent increases in the debt detected, the rate at which debts are recovered, and the proportion that is written off and not recovered. The approach is illustrated in Figure 7.9.

Figure 7.9 Approach to modelling detected overpayments (including fraud) and their related recoveries
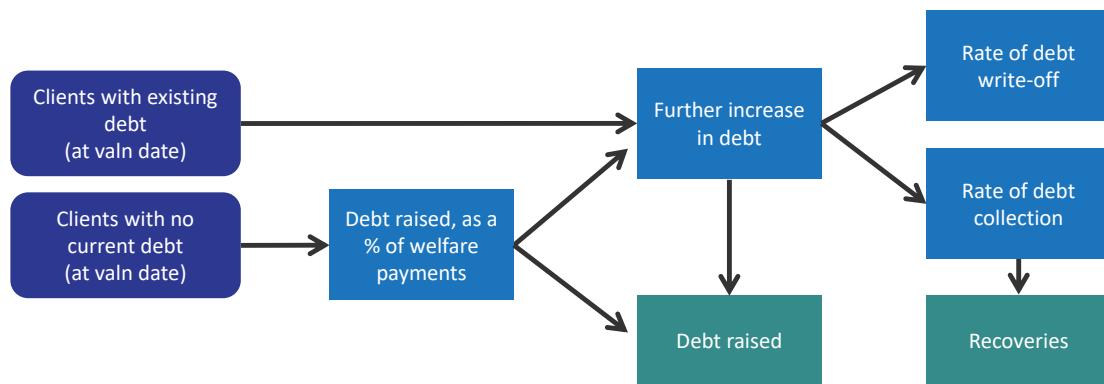
Debts raised

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 3.4% is higher than the 3.2% 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 $1.37 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, $71.5 was recovered in the first two years; this year the corresponding figure is $70.7. 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 40%, up from 32% last year. This represents extra overpayments that will be accrued by a client before their outstanding debt reduces to zero.

» About 87% of overpayments are assumed to be recovered eventually, a little higher 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 85.5%.

» 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 liability are $2.26 billion. The offsetting recoveries are estimated to be $1.93 billion, with a net difference of $211 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 and roughly a sixth going to each of JS-HCD, JS-WR and SLP-HCD clients and the remainder going to clients on the smaller benefit types.

The following table and graph show the recent experience for Recoverable Assistance.

Table 7.3 Historical levels of Recoverable Assistance

Year	Payments ($m)	Average number receiving a loan per quarter (nearest 100)	Average quarterly payment per client ($)
2011/12	142	64,600	550
2012/13	137	62,200	550
2013/14	137	62,800	540
2014/15	131	61,000	540
2015/16	139	61,300	570

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 2016 dollar values. Averages are lower than Table 7.3 as they are taken across all beneficiaries, not just those receiving Recoverable Assistance.
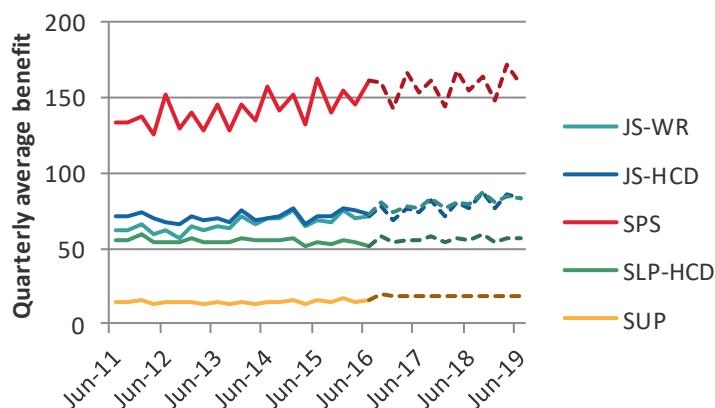
As with previous valuations, we expect the average payment level of Recoverable Assistance to grow slowly over the first few years of the projection, at around 1% per year above inflation. Rather than these being built in trends, they reflect the changing composition of the benefit population over the forecast period. Higher Recoverable Assistance payments per client are associated with higher propensity to stay on benefits. Clients receiving Recoverable Assistance are more likely to:

» Be middle aged or older
» Be Māori or Pacific Islander
» Have a more extensive history of other benefits.

As the unemployment rate drops, the proportion of recipients with these higher propensities tends to rise, which increases the average Recoverable Assistance payment. This effect is offset by the lower expected numbers of clients on benefit.

Recoverable Assistance recoveries

We make a relatively simple assumption that the Recoverable Assistance recoveries in a quarter equal 87.25% of Recoverable Assistance payments. The assumption reflects the average seen over the past three years, excluding the last two quarters. This assumption has been lowered this year from 91.6% in the previous valuation. Last year we adopted a conservative decrease following a data revision, this year we have fully adopted the associated decrease. There is also evidence of falling recoveries in the last few years. However, such a drop would have only a small impact on the overall result; adopting 91.6% would reduce the current client liability by less than 0.1%.

7.5   MSD expenditure

MSD expenses included in scope are those required to administer the benefits for working-age adults and to help clients prepare for and return to work.

The categorisation of expenses has changed over the past couple of years. Budget is now allocated using MSD's Multi-Category Appropriation (MCA) introduced progressively from 1 January 2014. This is designed to offer more flexible targeting of assistance to clients. This reduces comparability with some of the expense categories provided in previous reports.

Additionally, MSD has been undertaking a simplification program, which aims to streamline the service delivery model, with an emphasis on better automation. This program involved increased expenditure in 2014/15 and 2015/16, offset by reduced forecast spending in the subsequent three years. We have

backed out these numbers for the purpose of projection; that is, we have used expense level assumptions as if the simplification program were not underway. This gives a better estimate of likely long-term expense rates, rather than using somewhat inflated levels for 2014/15 and 2015/16.

Treatment of expenses in the valuation 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 cost 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 2020/21.

7.5.1 Approach to determining future liability associated with expenses

We discuss our approach to operating expenses in Chapter 9. It assumes the dollar level of expenses in the 2016/17 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 2016/17 year is $735 million in June 2016 dollars, up 4.7% on the actual expenses in 2015/16 (compared to inflation of 0%). This has led to an increase in the expense rate. The overall expense liability is 2.9% higher than the figure expected from the roll-forward.

The payments made to expense categories over the past six years are shown in Table 7.4 . In many cases, consistent with the intent of the MCA changes, line items from previous years have been consolidated into larger funding envelopes.

Table 7.4 Historical MSD expenses, amounts in actual values, plus 2016/17 budget

Expense category	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 Budget
	$m	$m	$m	$m	$m	$m	$m
Administration							
Benefit Processing / MCA-Administering Income Support	307	306	320	308	304	271	277
Payment Integrity and Loan Collection	49	47	45	46	45	50	50
Special (e.g. quakes)	8	0	0	0	0	0	0
Administration total	**363**	**353**	**366**	**354**	**349**	**320**	**327**
Programs							
Tailored services / training / MCA employment outcomes / MCA work readiness	352	319	328	309	340	364	389
OSCAR	19	20	17	19	18	18	19
Programs total	**370**	**339**	**345**	**328**	**358**	**383**	**409**
Expenses total	**734**	**692**	**711**	**682**	**707**	**703**	**735**

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.

We note the following:

» More than half of the expenses are for work focused investments, with the remainder for income support and administration. This has changed from a 50:50 split last year.

» The splits within these two groups are very similar to last year.

Figure 7.11 Current client liability: MSD expenses by category
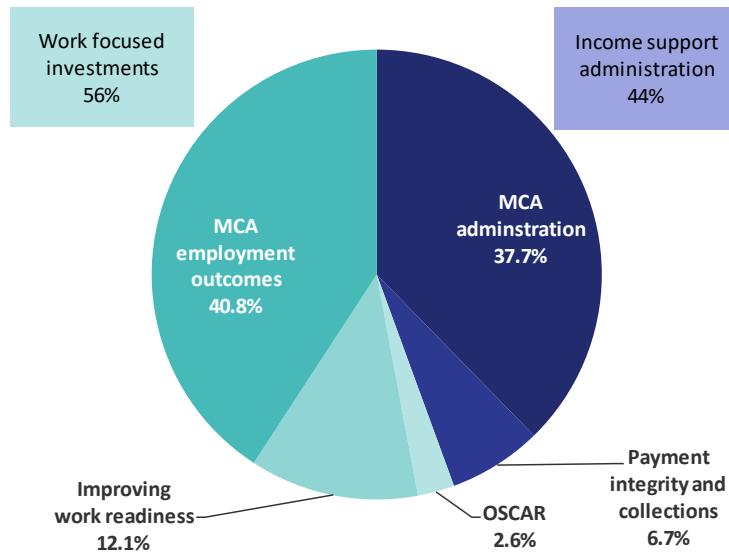
7.5.3 Projected future cash flows

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 valuation), while distant future clients are those entering beyond that.
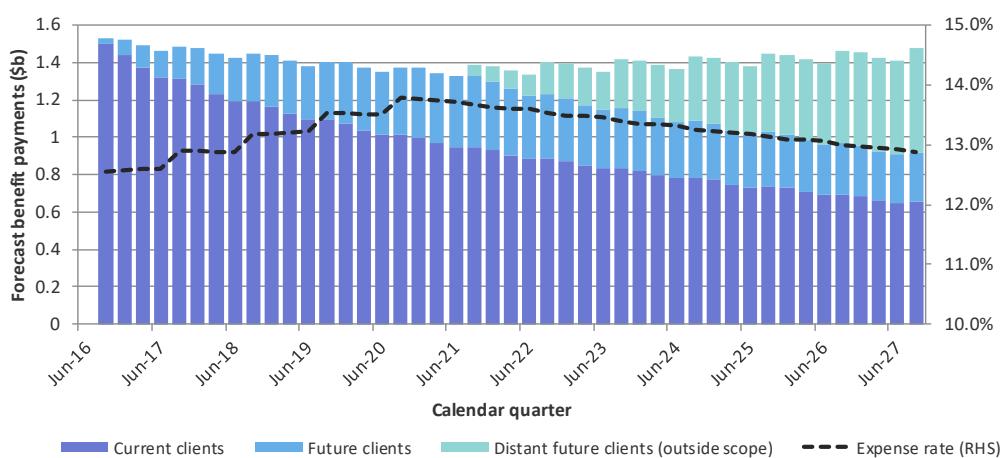
As future client liability has been calculated for the next five years, there are no liability payments outside the scope of the valuation during this period. Thereafter, a growing portion of payments fall outside the scope of the valuation liability, and thus a decreasing amount of future expense is attached to the valuation liability. The expense rate is fairly stable over time, with the long-term rate averaging about 12.8%. This rate is somewhat higher than last year's long-term assumption of 12.1%; a stable expense budget and decreased future benefit payments will increase the effective 'rate' of expenses.

The total operating expense liability attributable to current clients is $8.5 billion, as shown in Table 3.2. This is allocated between expense categories according to Figure 7.11.

8   PROJECTED CHANGES TO THE BENEFIT SYSTEM

Inside this chapter

8.1   Introduction and highlights
8.2   Clients entering the benefit system
8.3   Projection of current client liability
8.4   The beneficiary population in five years
8.5   Sensitivity analysis

8.1   Introduction and highlights

Previous chapters have focused most heavily on current clients, that is, clients who received income support at some point in 2015/16. 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 valuation and the uncertainties involved.

Client entries

New client entries into the welfare system over the next five years are expected to:

» Be stable and close to 2015/16 levels for most benefit types.
» Slowly decrease for JS-WR and Supplementary Only benefits, reflecting the falling unemployment rate. SPS and JS-HCD also have small decreases projected.

About half of these clients are expected to be new to the system, and the other half are anticipated to be former clients returning. JS-WR client entries tend to be younger, whereas new SLP-HCD clients are older and new SPS clients are in between.

Of every 100 young (under age 25) entrants to the system, we expect about 67 to have had a parent on main benefit, 32 to have had contact with the CYF-CP systems and 15 to have either had contact with CYF-YJ or an adult criminal conviction.

Projected liability

Our forecast for the main estimate in the next valuation (as at 30 June 2017) is a reduction in the liability to $74.3 billion. The liability is forecast to reduce gradually each year to $67.8 billion (as at 30 June 2021).

Future demographics of the welfare system

Forecasts assume that current trends will generally continue, and are sensitive to assumptions such as unemployment rates. We note the following:

» The make-up of the benefit population is forecast to shift away from Jobseeker benefits and towards Supported Living Payments. SLP clients represented 26% of the main benefit client base in 2011, compared to an expected 33% in 2021 based on a continuation of current trends, an increase of seven percentage points.
» The benefit population is getting older, partly due to the mix of benefits but also within benefit types. The average client age increased by about a year from 2011 to 2016, but is expected to grow more slowly over the next five years. There are also 'peaks' in the age distribution that correspond to those who first enter the labour force during recessions.

8.2 Clients entering the benefit system

8.2.1 Client numbers

In addition to the current client lifetime cost, we also estimate five years of future client lifetime cost. These amounts are payments to clients who have not received a benefit in the 12 months prior to the previous 30 June, but who receive a benefit payment at some point in the following year. This section gives some further detail regarding how we estimate the number of clients entering the welfare system over this five-year period. We build a model that estimates the number of clients entering the welfare system which takes into account:

» The (regional) unemployment rate
» The benefit type at entry
» The length of time from the valuation date to the entry date
» Other time related trends as needed.

The approach used for modelling the future liability is further discussed in Section 9.4.2. Figure 8.1 shows the historic numbers of entries as well as the projections for future years. The inclusion of those entering social housing (SH) is new to this valuation; many of these clients will subsequently enter the benefit system.

Figure 8.1 Past (solid line) and projected (dashed line) numbers coming onto benefit each quarter, by benefit type. Benefits with larger number of entries shown on the left, others on the right.
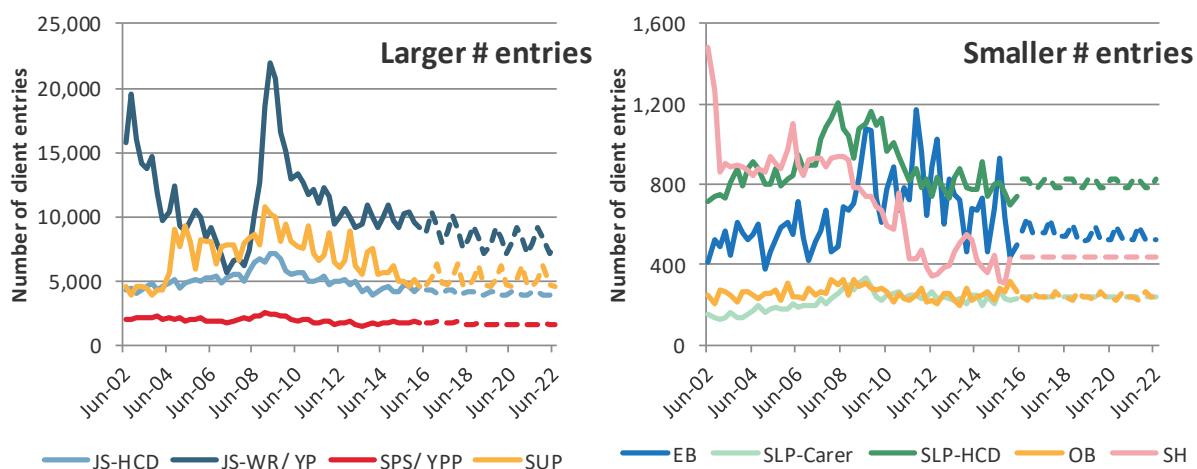
We note:

» 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 UB, 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 10% and 6% 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 2015/16 were about 3% lower than in the previous year, driven by fewer entries to SUP only. For main benefits JS-HCD and SPS entries are up slightly while JS-WR and SLP-HCD entries are down slightly.

8.2.2   Demographics of client entries

The future client liability estimates given in Section 3.2 are affected by both the **number** of clients entering per quarter and the **characteristics** of those clients. For instance, clients who:

» Have previously received benefits in the past are likely to remain on benefits longer upon their subsequent re-entry

» Are younger have more potential years in the benefit system

» Have other high-risk lifetime cost drivers (such as family benefit history or a lower education level) are likely to remain in the benefit system significantly longer.

The characteristics of clients entering are difficult to model in detail because there are many characteristics and they tend to be correlated. For instance, younger clients have less prior benefit history, they have younger children (if SPS) and they are much more likely to enter JS-WR or SPS compared to SLP. We solve this problem by assuming the characteristics of future clients will resemble those who entered in 2015/16. We give some summaries of this population below.

Figure 8.2 Distribution of various characteristics for clients entering as part of the future client liability, by benefit type first received. SH are clients who enter the projection via the social housing register and not via the benefit system.
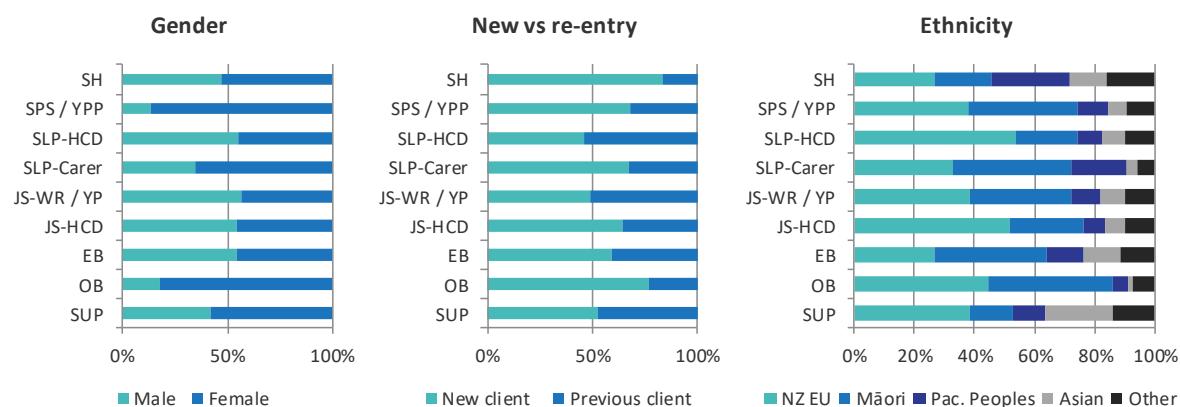
We observe in Figure 8.2 that OB, SPS and SLP-Carer entries tend to be predominantly female, whereas SLP-HCD, JS-WR and EB clients tend to have slightly more male entries. Just over half of all entries relate to new clients, with the remainder being former clients returning to the system. The proportion of new clients is slightly higher than last year. New clients are more prevalent in SPS, SLP-Carer, JS-HCD and OB benefits, as well as social housing entries. SPS and OB entries have a relatively high proportion of Māori clients, SLP-Carer has a high proportion of Pacific peoples clients, and there is a higher proportion of Asian clients entering Supplementary Only benefits. Social housing entries in 2015/16 saw a high proportion of Pacific peoples.

Future entrants tend to be skewed towards younger people, but this is not uniform across all benefit types. JS-WR entrants tend to be younger than other benefit types, while SLP-HCD entrants tend to be older (except for an initial influx for ages below 20). These age distributions are summarised in Figure 8.3.

About 10% of entrants have some history of time in social housing. The rate is highest for JS-WR and SPS entrants, at about 13%.

Figure 8.3 Age distribution for clients entering as part of the future client liability, by benefit type first received. The grey distribution is the average across all benefit types
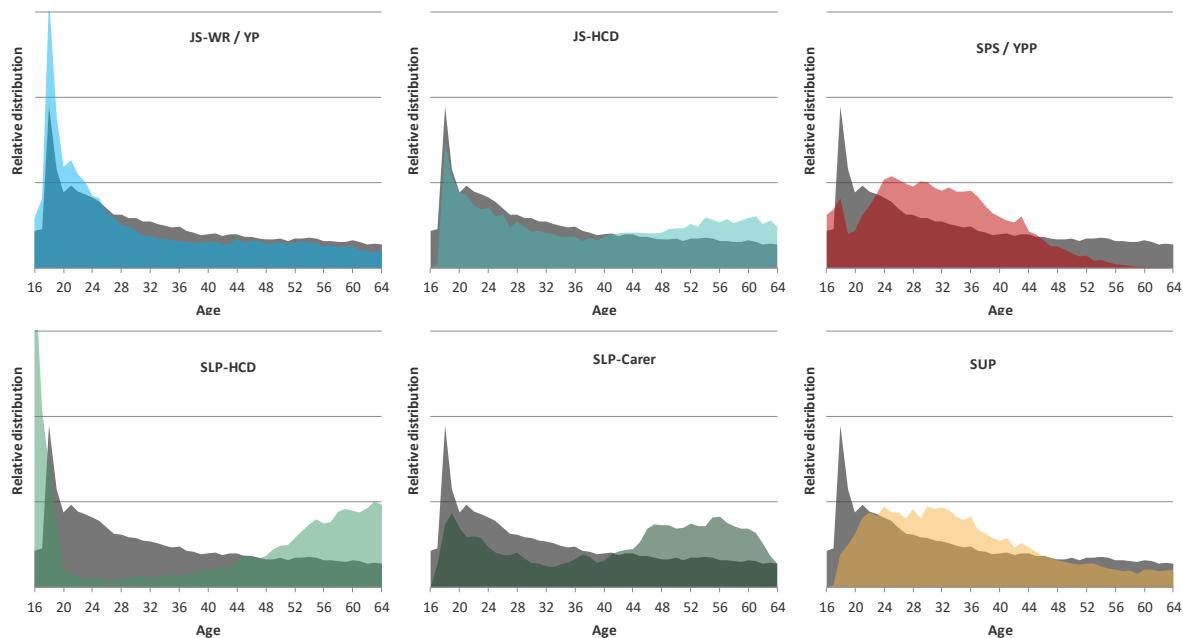
Figure 8.4 shows the distributions of other service usage history variables for young entrants.

Of every 100 young (under age 25) entrants to the system, we expect 67 to have had a parent on main benefit, 32 to have had contact with the CYF-CP systems and 15 to have either had contact with CYF- YJ or an adult criminal conviction.

CYF history is particularly high for SPS, SLP and JS-WR entrants, while criminal conviction history is more prevalent for JS-HCD and EB entrants. SUP and SH tends to have a lower incidence of family benefit, criminal conviction and CYF histories.

Figure 8.4 Distribution of family benefit, criminal conviction and CYF history. For clients entering as part of the future client liability and age less than 25.
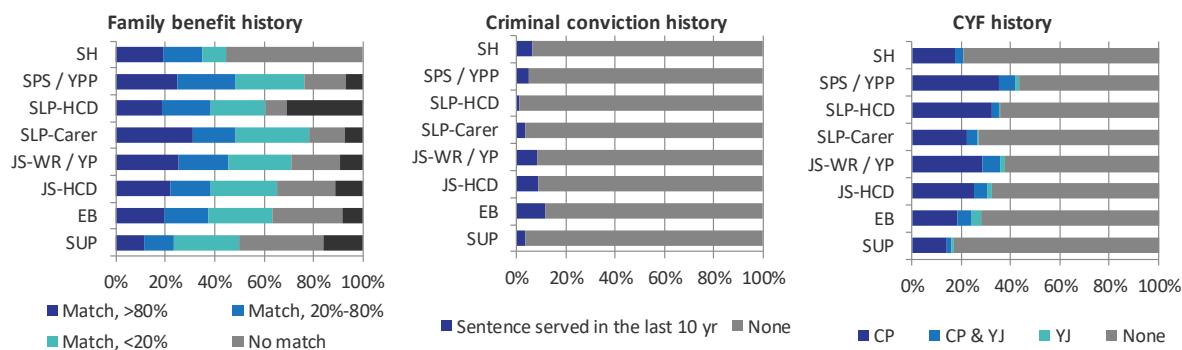
8.3   Projection of the current client liability

We have estimated how the current client liability will evolve over the next five years. Our forecast for the main estimate in the next valuation (as at 30 June 2017) is a reduction to $74.3 billion. The liability is forecast to reduce gradually each year to $67.8 billion (as at 30 June 2021). 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 five years. Different unemployment assumptions would induce different expected changes in the liability over time.

Similar to last year, the reductions are concentrated amongst Jobseeker and Sole Parents. This decrease is consistent with the forecast reduction in unemployment rates over the period, as these groups are most sensitive to labour market changes. The decrease in Sole Parent liability also reflects that currently exit rates are higher than entry rates as an ongoing impact of Welfare Reform. SLP segment forecasts are relatively flat; client numbers are projected to decrease fractionally over the period, offsetting the rate of benefit inflation.

Table 8.1 Forecast current client liability at current and future valuation dates, $billion

Top tier segment	2016 (current)	2017	2018	2019	2020	2021
Jobseeker Support - WR	9.3	8.4	7.9	7.2	6.8	6.5
Jobseeker Support - HCD	9.1	8.8	8.6	8.4	8.1	8.0
Sole Parent	14.3	13.6	13.1	12.6	12.1	11.7
SLP	19.3	19.3	19.3	19.3	19.2	19.0
Youth	0.6	0.5	0.5	0.5	0.5	0.4
NOMB & RE	14.5	15.0	14.8	14.7	14.4	14.2
Sub-total	**67.1**	**65.6**	**64.1**	**62.6**	**61.1**	**59.8**
Expenses + Net loans	8.9	8.7	8.5	8.3	8.1	7.9
Total	**76.0**	**74.3**	**72.6**	**70.9**	**69.2**	**67.7**

8.4 The beneficiary population in five years

As noted earlier, the number of clients on main benefits is projected to fall significantly over the next five years with significant downward trends in JS-WR and SPS numbers, consistent with the unemployment rate forecast and recent trends. By combining the projections for current and future client liabilities, we can examine the projected characteristics of that welfare population in five years' time. This is subject to some of the caveats above; namely, that future client liability numbers and their characteristics are more difficult to predict.

Figure 8.5 End of quarter benefit type and age distribution for June 2011, June 2016 and June 2021
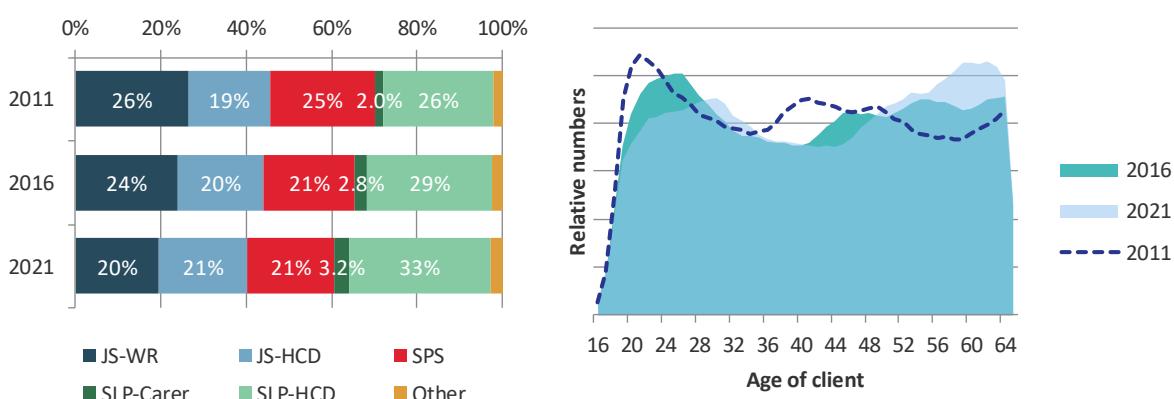
Figure 8.5 shows the types of changes seen over the last five years; we have forecast these to continue. Jobseeker clients are forecast to drop from 44% to 40% of main beneficiary clients between 2016 and 2021. This reflects the projected continuation of downward trends in client numbers in these segments. The number of SPS clients is forecast to drop by 13%, but this is in line with the overall drop in main beneficiary numbers and so the relative share remains steady at 21%. Numbers on SLP benefits represent an increasing portion of the future welfare population, and we do expect absolute numbers to increase slowly too. The projected relative increase of SLP clients (as other segments reduce in absolute numbers) continues long-term trends.

The right panel of Figure 8.5 shows that the benefit population is projected to be slightly older in five years, with the average age increasing from 41.2 to 42.3. This compares to the average age of 40.3 in 2011. Visually we can see this shift in two main areas: a flattening of the current peak at age 24 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. The 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 on benefit. It may also reflect the preventative nature of recent Welfare Reform efforts targeting younger beneficiaries, 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 in particular are expected to improve with the labour market.

» Both SPS and SLP clients are expected to be half a year older (on average) in 2021 compared to 2016.

» There is a visible 'peak' in the age distribution curve corresponding to clients born around 1970. This is centred at age 41 in the 2011 distribution, and shifts five years to the right for the other two curves in Figure 8.5. This corresponds to those clients who were young adults in the recession in the early 1990s; evidence of long-term consequences of recessions for specific age cohorts. A similar peak is also visible related to the GFC, currently centred at age 24. These demonstrate the significant long-term impact of recessions on young people joining the labour force during a downturn.

8.5 Sensitivity analysis

8.5.1 Uncertainty of our estimates

This valuation attempts to estimate the movement of clients through the welfare system 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 inaccurate with the benefit of 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 valuation is a central estimate; loosely speaking, we believe that our liability estimate is 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 liability; by how much would the liability 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 by the valuation 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

»   The limitations to using the unemployment rate as a proxy for the economy's impact on the welfare 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 8.6 we show two such scenarios; a situation where unemployment remains constant rather than decreasing to the full employment rate (the 'constant' scenario, in blue), and 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 8.6 Unemployment rate scenarios
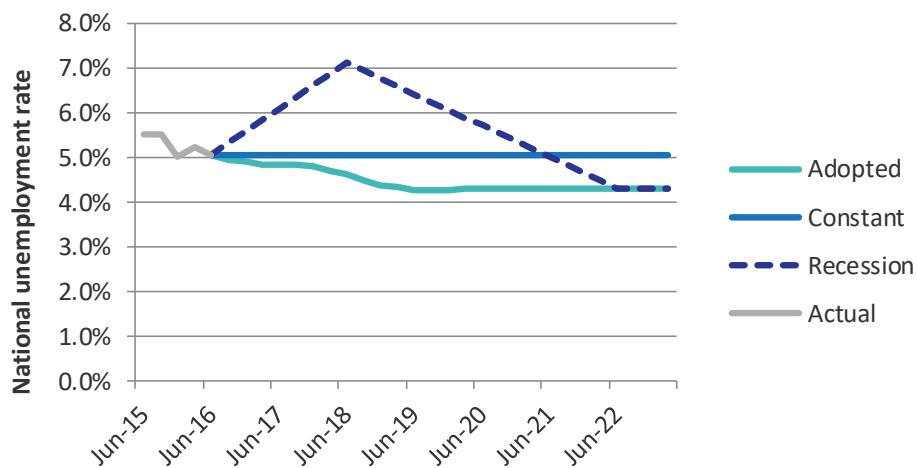
Under **the 'constant' scenario**, benefit payments to current clients (that is, the current client liability excluding net loans and expenses) are 2.7% higher at $68.9 billion, compared to our central estimate of $67.1 billion. This is not spread evenly across benefit types. Future JS-WR payments are expected to be most affected at 19% higher, compared to 7% for JS-HCD and 3% for SPS.

Under the **'mild recession' scenario**, the current client lifetime benefit payments are expected to be 1.8% higher ($68.3 billion). Again, this is most pronounced in future JS-WR payments (16% more) compared to other benefit types. We note that the overall impact on lifetime cost is about the same under the two scenarios; a 2% short-term increase has the same impact as a 0.7% 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 liabilities, with a particularly large effect on the number of JS-WR entries.

Sensitivity of the benefit system

We have used the 22 years of welfare 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 welfare system. This explains in part why the GFC impact was greater than our estimated sensitivity; many other related economic events were occurring simultaneously that compounded the impact on the welfare system. Other important economic variables include participation rates, underemployment rates, short- and long-term interest rates, credit growth, consumer spending and business investment.

We note that the employment rate would also be a credible indicator of the labour market. It is highly correlated to 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 beneficiaries.

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 valuations, we have chosen the unemployment rate as a strong single indicator.

8.5.3   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 liability. Both these rates are set according to NZ Treasury accounting assumptions (see Section 2.3.6). Both these assumptions can change significantly from year to year, and so form part of the annual change in the liability estimates.

Table 8.2 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 current client liability (before net loans and expenses) by 11.4%, or $7.4 billion. Conversely, a 1% decrease in inflation would decrease the current client liability by about 9.6%, or $6.4 billion.

Table 8.2 Current client liability results and sensitivity to changes in inflation and discount rates

Scenario	Liability ($b)	Change ($b)	Change (%)
Base	67.1		
Inflation +1%	74.8	7.6	11.4%
Inflation -1%	60.7	-6.4	-9.6%
Discount rate +1%	60.6	-6.5	-9.7%
Discount rate -1%	75.0	7.9	11.8%

8.5.4 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 liability 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 liability results and changes to key transition model assumptions

	Liability ($b)	5% increase in probability		5% decrease in probability	
		Change ($b)	Change (%)	Change ($b)	Change (%)
Base	67.1				
JS-WR leave rate		-0.3	-0.5%	0.4	0.6%
JS-HCD leave rate		-0.5	-0.7%	0.4	0.7%
SPS leave rate		-0.8	-1.1%	0.5	0.7%
SLP-HCD leave rate		-0.4	-0.6%	0.2	0.3%
Non-beneficiary re-entry rate		1.3	2.0%	-1.6	-2.3%

We see that of the transitions listed, the SPS leave rate and the Non-beneficiary re-entry rate tend to cause larger impacts on the lifetime cost estimates. This helps to explain why these segments have had a significant effect on this year's analysis of change.

We discuss the actual transition rate changes for key models in Section 3.8. 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 SLP-HCD transition rate assumption was 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 has increased from about 6% to 8.7% over the past two years, an increase of more than 40%.

Assumptions in the face of reforms

As already discussed (see Section 3.8) 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 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. Thus, we have not allowed for any future policy changes affecting benefit eligibility or payments. It is highly unlikely that there will be no reforms over the next 50 years, and future reforms would be expected to affect the ultimate cost of current clients.

We regard this 'status quo' approach as an important feature of the valuation. Setting a baseline allows us to measure the effect of future policy and operational changes as they emerge. For example, in the current valuation we have been able to measure the liability change attributable to recent reforms because our prior projections were on a pre-reform basis.

Inability of the valuation 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 or access to public transport, although both have been shown to be relevant for employment outcomes. Should the mix of these factors amongst the welfare population change substantially, we would expect experience to differ from projections.

» Society's attitude to welfare might evolve over time. If it became less socially acceptable to remain on welfare 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 valuation. It still provides important feedback and can allow for material visible factors 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 welfare 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 liability is less than 0.1%. This makes simulation error one of the smallest sources of uncertainty in the valuation.

Part C – Approach

9 VALUATION APPROACH

9.1   Introduction

This chapter explains how Taylor Fry carries out the valuation of the NZ benefit system. As noted throughout the report, this is the first benefit system valuation performed using a combined benefit and social housing projection. This chapter is deliberately brief and focuses on the benefit system valuation approach; those seeking more detail may be interested in reading the following:

»   The 2015 valuation of the social housing system which describes the combined approach in more detail, and

»   The 2013 valuation of the benefit system[24] which describes the benefit system modelling in some 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 valuation 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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[24] http://www.msd.govt.nz/documents/about-msd-and-our-work/newsroom/media-releases/2013/nz-msd-valuation-june-2013.pdf.pdf

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 2016 but extracted as at 31 July 2016

» 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 social 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.

MSD provided information on the required HCD reassessment frequency for SLP-HCD clients as at 30 June 2011, as at 30 June 2015 and 30 June 2016. This was primarily provided for segmentation work and testing for possible inclusion in future modelling.

As the 2016 valuation uses a combined benefit system – social housing model, we were also supplied with historical data for social housing. Responsibility for all social housing data (tenancies, register applications, houses) moved from Housing New Zealand (HNZ) to MSD in August 2015. We have been provided with records from HNZ from 2001 through to August 2015, and from MSD for the period from August 2015 to June 2016. We were provided with the following datasets:

» **Monthly register snapshots**:
  • At a household level showing the status of both new and transfer applications. This provided the application date, reasons for application, household size, type and current location of the applicant household and housing requirements such as number of bedrooms and preferred locations.
  • At an individual level showing all applicants on new or transfer applications. This provided demographic information (age, gender and ethnicity) for household members as well as their relationship to the primary applicant.

» **Monthly tenancy snapshots**:
  • At a household level. This provided information on the size, type and weekly income of the tenant household, the dates of entry into social housing, the current social house and details of income-related rent and subsidies that make up the market rent of the house. Post-August 2015 this also distinguished between HNZ and CHP providers.
  • At an individual level. This provided information on the age, gender and ethnicity of each household member as well as information regarding their relationship to the primary householder and whether they are a signatory.

» **Monthly property snapshot:** The snapshot provides information regarding location, characteristics, rent and occupancy status. Supplied for HNZ properties only.

» **Extra evidence items**: For the data post-August 2015 only. Social housing spell information for tenants missing from the main tenancy snapshots after the data migration. Approximate age was also provided. These tenants are mostly children with some additional occupants and not in receipt of benefits.

Reliability and difficulties associated with the social housing data are discussed in Section 9.2.3.

Social 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, 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, social housing, Corrections and CYF 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, CYF and criminal convictions history slightly, but the mismatch should not affect the main conclusions related to these variables and does not affect the overall liability estimate.

The inclusion of social housing data led to an expanded data matching approach compared to previous years, and this altered some of the existing matches. For example, identity information in social housing may now affect which Corrections identities are linked to benefit system identities. Again, changes to the matching might have minor effects on summary statistics ('proportion of clients with corrections history') and impacts ('the effect of corrections history on long-term cost'), but not materially impact the overall valuation result.

9.2.2   Modelling variables

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, 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.

» **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.

» **Criminal convictions history-related variables:** Of the last year, percentage of time in prison and percentage of time serving any criminal sentence, excluding driving related offences. Of the past ten 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.

» **Social housing related variables:** Whether a client is in social 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 social housing. See below for more detail.

For this valuation new variables based on the social housing data supplied were used – both current social housing situation variables, and historical variables.

Current social housing state variables used in the modelling include whether a client is currently:

» In a social house and some associated variables; being the primary householder, a signatory, the household size, etc.

» In receipt of AS

» On a register application and some associated variables; being the primary applicant, the needs assessment score of the application, etc.

» The duration of the given social housing state; that is, time in social housing or time receiving AS.

Social housing history related variables used in the modelling include:

» Count of quarters spent in social housing
» Count of quarters of AS receipt
» The social housing situation preceding the current.

Variables not used in modelling the liability

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.

9.2.3   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 valuation.

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 liability valuation, 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.

Social housing data

Data provided on the social housing system has materially lower quality than that on the benefit system. We noted several issues as part of the 2015 social housing valuation and these remain in the 2016 valuation. At a high level, this impacts our ability to construct a longitudinal view of clients' social housing history, and understand detailed information about households.

The following data issues apply to the HNZ data (pre-August 2015):

- About 10% of households have a false entry/exit somewhere in their history (ID changing, but a new person with the same date of birth enters at the same time)

- About 10% of identities should be linked to an MSD identity but are not (based on a subset where HNZ recorded an identity)

- Other identity issues (~1% or less), including duplicates, date of birth errors, same ID given to different people

- Information gaps on householder role, particularly for non-primary signatories. In 2009 and 2010 about half the dataset is missing any role, and post-2012 about 60% of signatory flags are missing

- Inconsistencies between register exit and house entry files

- No data on tenancies with CHPs

- About 15% of householders are missing an ethnicity indicator

- Historical system changes in 2009 and 2012 cause some continuity issues in identities, ages and other characteristics of individuals.

The 2016 data also encompasses the system change to MSD (August 2015), with a number of associated data issues:

- Significant changes to some households; some people who were believed to be in houses prior to the transfer are no longer on the system, while others not on the previous data have been added. Total numbers of people in housing has remained broadly constant over the switch, and some of the change may be due to the identity matching process rather than a genuinely different person on system.

- Missing fields, particularly for the first three months of the switchover. Individuals and their roles within a household, rent and subsidy information were all affected.

- Material changes to dynamics. Clients, particularly non-signatory clients, appear to be exiting social housing at faster rates than in the old system. This is likely to be partly due to different recording practices.

- More complex register entries, with duplicates and additional sub-states. This made comparisons to previous register statistics more difficult.

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 appear highly volatile over the last year. The risk of social housing data quality adversely impacting the benefit system valuation is minimal; we have separated out the change associated with the inclusion of social housing. The aggregate trends in the benefit system remain unchanged once we average over all clients. The influence of social housing on benefit dynamics is important but less important than other factors already in the models (see Figure 5.10, for instance).

Changes to identity matching

The expanded approach to identity mapping to combine housing, Corrections, child protection, youth justice, inter-generational and benefit system data has led to different matches compared to the 2015 valuation. These will impact the individual level results (a client with no corrections history last year, but a matched history this year will have a different lifetime cost), but not the lifetime cost at a segment or aggregate level. Our restatement of the 2015 liability also allows for these effects so that they do not impact other parts of the formal analysis of change.

Changes to economic variables

Statistics New Zealand have changed the basis of the unemployment rate. The Ministry of Business, Innovation & Employment (MBIE) have also altered the form of their synthetic first quartile market rents. To ensure these effects don't have an unwarranted impact in the change analysis, the 2015 restatement model uses these variables on the revised basis; the analysis of change is then internally consistent.

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 of 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 valuation data; this allows most of these payment changes to be made while not unduly delaying the valuation.

» This valuation includes a restatement of the 2015 valuation using the latest data provided. While we have not used data beyond June 2015 in building the restated models, the latest data does include retrospective changes to 2014/15 payments. The impact of these changes is small, but does mean that numbers in different segments are different to last year's valuation.

» 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 valuation 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.

9.2.4   Benefit state and payments

Benefit state was generally based on the benefit codes within the payment files. Some minor changes were required (see Section 9.2.7).

All modelling of average benefits paid per quarter has been done in current dollar values, as at 30 June 2016. This means older payments have been increased in line with historical benefit inflation.

9.2.5   Missing values

A number of variables had a significant percentage of missing values:

» Ethnicity
» District
» Incapacity (type and number)
» Education and qualifications
» DOB (for housing clients, as mentioned above).

Most are of the order of a few percent of records. However, data for the education variable is particularly poor – see the next subsection.

In some valuations missing variables are reasonable and can be included in the modelling process as an extra categorical level. In this valuation 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.

Apart from some improvements in education, the incidence of missing values this year is similar to previous valuations among benefit system clients.

For data that is matched by MSD (social housing, Intergenerational, CYF and Corrections) 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.

9.2.6   Data quality issues for education qualifications data

This year MSD provided an updated dataset for qualifications and educational attainment. Historically less than 40% of clients have had a useful qualifications level on the dataset provided. For Youth segments this figure was less than 1%. On this year's data the proportion of clients with a useful qualifications level has increased to around 60%, however for Youth segments this proportion still remains very low, around 1%. This proportion is slightly higher for clients in the current cohort; amongst the current cohort at June 2016, 76% of all clients and 3% of youth segments had a useful qualifications level.

While this is an improvement, it still leaves about 40% of beneficiaries without a useful qualifications level. Despite these limitations, qualifications level is a highly important consideration for MSD's management of the benefit system. As per previous valuations, we have included it by interpolating the missing observations. Persistent limitations to data quality mean that some caution must be advised when interpreting related results.

We again caution that there is a risk, especially if there is a bias in the levels of educational achievement that are missing, of a material bias in the overall liability estimate. Tests with and without qualifications data for the 2012 valuation give some confidence that the results have not been unduly biased. We also advise that **great care must be taken in conclusions regarding individual education level cohorts**. In most cases the bulk of these observations will be interpolated, possibly leading to false conclusions.

It is our view that further improved qualifications data would enhance the quality of education-related insights and accuracy of differentiation between future lifetime estimates in the valuation.

9.2.7   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.

9.2.8   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 50,000 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.

9.2.9   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 only allowed one match per person. This affects about 3% of Corrections records and less than 1% of CYF records.

9.3   Valuation parameters

9.3.1   Benefit population and valuation definition

The definition of liability and the scope of the valuation are discussed in Appendix B and 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 beneficiaries 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 2016 we have 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. We were provided with this data for the first time this year to better understand housing pathways for social housing; we have therefore included these extra payments to maintain consistency between benefit system and social housing valuations. There were 3,000 such clients in the SUP only segments and another 100 in the Recent Exit segment at June 2016. The impact is estimated in Section 3.4.

Current clients include clients who received income support at any point over the 12 months prior to the valuation date. This is consistent with analysis that shows that 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 value partners of beneficiaries 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 are able to work.

Youth Payment (for those under age 18) and Young Parent Payment (for those under 19) have been grouped with JS and SPS respectively for modelling purposes for 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 liability is the lifetime costs of clients who receive a benefit in each future valuation 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 longer

than one year. This double counting is definitional rather than practical – our integrated projections will only contain a given cashflow once.

9.3.2 Other parameters

Valuations are conducted annually as at 30 June, with a one month delay before data extraction to allow data to mature; for example, adjustments due to abatement against earned income. Valuations are gross of tax for consistency with Crown accounts, and to better reflect the liability 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 to not 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 valuation model

Overview

In the broadest of terms, the valuation methodology is as follows:

» Starting from all current beneficiaries in the valuation year, predicting the **number** of which receiving 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 2016 quarter. These are initially estimated in 30 June 2016 dollar values, but subsequently adjusted to allow for **inflation** from that date to the date of payment.

» Estimating the **liability** by:

   • Discounting these inflated claim 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 valuation 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 valuation structure
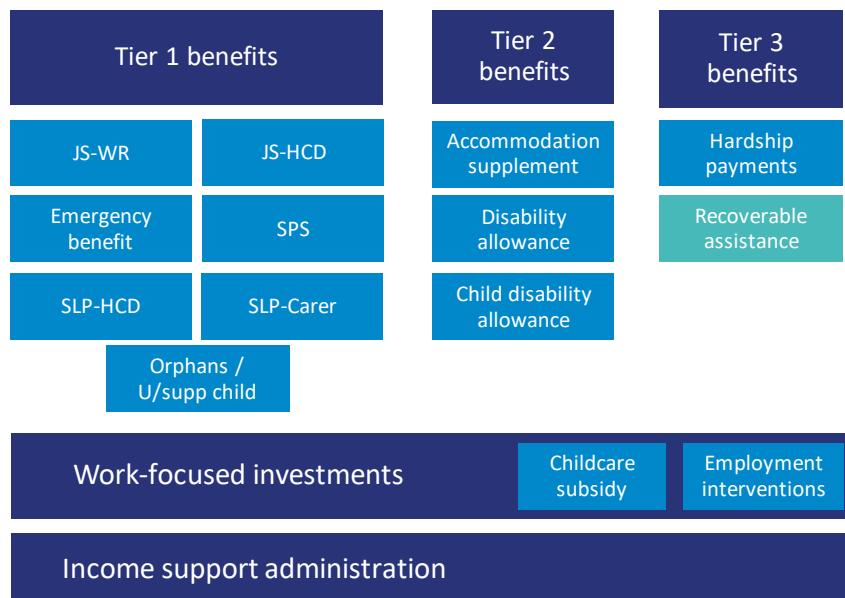
Changes in the 2016 valuation

This is the first benefit system valuation using our combined benefit and housing methodology. This was described in the 2015 Social Housing Valuation report. The most significant changes are:

» Benefit state transition probability and payment models now utilise variables such as social housing state and history in social housing as described in Section 9.2.2.

» AS receipt modelled as a social housing state, with average payment sizes modelled amongst those receiving AS. This gives a more explicit allocation of AS payment rather than averaging over those who do and do not receive AS within a main benefit type.

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 social housing state to each client for every quarter. We use three social housing states, in a social house (SH), receiving AS (AS) and neither.

Similarly, we recognise it is possible for a person to be in more than one social housing state within a quarter; and when this occurs, we use the following hierarchy:

» If in social housing for any portion of the quarter assign 'SH' state.

» If not in social housing at any time in the quarter and receives AS then assign 'AS' housing state.

» If not in social 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 a given 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 liability 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 liability projection. Numbers of new entrants are modelled separately and were discussed in Chapter 8.

Retirements

Recall that the definition of the liability only includes 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 amongst clients aged below 65, we believe this assumption is not unreasonable.

Modelling payment costs

Payment models

Clients in each state can receive a number of 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 7.4.3).

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 in the current client liability payments, 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 a given 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 valuation, but must be carefully interpreted when inspected at an individual level.

Payments are modelled in 30 June 2016 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 valuation. 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 valuation. 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 current client liability 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 liability projection

For the current client liability projection, we take all clients in scope at the valuation 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 liability projection

The future client liability projection works in broadly the same manner as the current client liability. 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 2015/16 includes both returning and new clients). It assumes that the relative numbers of new entrants versus returns will be similar to that seen in 2015/16.

Total results are obtained by summing the 20 quarterly cohorts of future client entries into five annual cohorts and discounting their future lifetime liabilities 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 and previous benefit received. The measures evolve naturally based on incremental changes each quarter, and whether or not 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 have 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 social housing demand.

Incapacity type

While clients are receiving JS-HCD or SLP-HCD their incapacity type is used as a predictor variable, using 14 different incapacity groups – in some cases we use 20 groups for finer grained analysis. 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 their parent's entry 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 a number of client characteristics including previous variable values, benefit state, duration, age, gender, ethnicity, CYF history, and others. The sentence type and length over the last forty 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 a number of client characteristics. These include existing CYF history, benefit state, age and gender.

Social housing variables

While in a social 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 social house we have models for whether a client is part of a new register application.

9.5 Modelling net loans and expenses

9.5.1 Modelling net loans cost

There are a number of 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".

The data provided in 2016 excluded loans and overpayments related to Superannuation for the first time. These payments are identifiable in the 2016 and we have continued to exclude these loans and overpayments as they are to clients out of scope. This modelling approach is unchanged from 2015.

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 liability.

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 valuation 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 liability for loan recoveries is appropriate.

Limitations to the loans methodology

Although we believe our valuation of the net loans cost is a plausible forecast of future cash flows, there are a number of significant limitations to the approach:

» The valuation 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 valuation.

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 2016/17 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 liability 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 liability for administration and programs is:

» To assume the total expense costs are **fixed in real terms** and are based on the 2016/17 budget

» Allocate expense costs to either current client liability, future client liability, or clients outside the scope of this valuation

» 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 2015 to 2016
» 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 3.8. 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 2.3.3, 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 valuation estimate of changes in the forecast unemployment rate; this analysis is provided in Section 3.4. 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 valuation uses the standard Treasury forecasts of the Consumer Price Index (CPI) and Government interest rates for inflation and discounting of the benefit system liability, detailed in Appendix C.

Changes to inflation and discounting assumptions will have a significant effect on the valuation estimate from year to year. However, these are outside the control of MSD. For this reason we separate the change in the valuation attributable to these items from other effects on the valuation. Results of this analysis are provided in Section 3.4. 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 valuation 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 attempted to comply with International Financial Reporting Standards (IFRS). Specifically, estimates of liability 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 has 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.

This year there have also been issues related to data quality, particularly related to social 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 liability 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 liability 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 the current client liability and future client liability is subject to influences whose effects cannot be determined with accuracy. Consequently, it is a virtual certainty that the ultimate liabilities 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 liability 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 liability 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 on the liability 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 liability 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 valuation

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 estimate the liability:** 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.

» **Social housing data:** This data is of lower quality for longitudinal modelling. This inherently limits the degree to which we can accurate model housing history to project likely pathways.

None of the items above undermine the accuracy or usefulness of the valuation. We raise them primarily so MSD are aware of some of the issues likely to arise in future work related to the investment approach.

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); a client might potentially be receiving supplementary benefits only though
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 valuations)
IB	Invalid's benefit
IYB	Independent youth benefit (combined with UB in pre-2014 valuations)
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 liability 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 valuation 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 valuation 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 valuation)
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 social housing application whilst on the social housing register
Average future lifetime cost	Refers to the expected future welfare payments to a client up to age 65, including inflation and discounting. Sometimes shortened to 'average lifetime cost' or 'average cost', but excludes welfare payments to the client made before the valuation date
AWE	Average Weekly Earnings
BEFU	Budget Economic and Fiscal Update
Benefit dynamics	Refers to the way a client moves through the beneficiary system, in particular provides metrics which can be influenced by management. These include (but are not limited to) exit rates, transfer rates and duration of benefit receipt.
Board	Community Board or Local Board - geographical sub-grouping 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 valuation)
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, grouping of people who either share a tenancy or an application to the register
HLFS	Household Labour Force Survey
HNZ	Housing New Zealand - the Crown agent that provides housing services for people in need
Housing state	Current social housing status of a client, this is determined by whether a client is in social house, on the register for a social 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
MSD	Ministry of Social Development
NCEA	National certificate of educational achievement

NEET	Not in Education, Employment, or Training
NIL	Not in a social 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 social 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" and requiring valuation. 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 estimated liability and deducting any expected payments
SH	Social housing – clients are considered in social 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 liability – 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