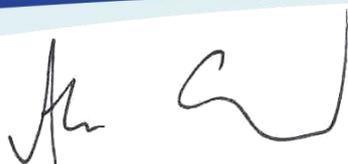


Ministry of Social Development

Valuation of the Benefit System for Working-age Adults

As at 30 June 2015



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The 2015 Valuation at a glance

The purpose of this report is to provide useful 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 2015 is \$68.4 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 2014/15 fiscal year.

Top tier segment	Segment	2015 Valuation				2014 Valuation			
		Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit	Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit
Jobseeker Support	JS-WR <1 year	44,527	4,189	94	9.7	44,395	4,058	91	9.7
	JS-WR >1 year	32,242	3,672	114	10.3	34,337	3,911	114	10.5
	JS-HCD <1 year	22,374	2,678	120	10.5	22,106	2,523	114	10.4
	JS-HCD >1year	42,353	5,866	138	11.0	44,006	5,959	135	11.3
	Sub-total	141,496	16,405	116	10.4	144,844	16,452	114	10.5
Sole Parents	Youngest child 0-2	26,232	5,519	210	15.9	27,205	5,767	212	16.4
	Youngest child 3-4	14,681	2,840	193	14.6	16,325	3,227	198	15.3
	Child 5-13, <1 year	4,570	610	133	10.5	4,141	563	136	10.9
	Child 5-13, >1 year	25,950	4,441	171	12.8	28,876	5,072	176	13.4
	Sub-total	71,433	13,410	188	14.1	76,547	14,628	191	14.7
Supported Living	Carer	8,812	1,360	154	10.7	8,675	1,297	149	10.9
	Partner	8,041	872	108	8.4	8,098	853	105	8.5
	HCD	87,113	15,398	177	12.7	86,863	14,842	171	12.8
	Sub-total	103,966	17,630	170	12.2	103,636	16,992	164	12.3
Youth	Youth prog (<18)	1,923	294	153	16.7	1,829	251	137	15.2
	Young Parent (<19)	1,086	232	214	16.9	1,192	254	213	17.5
	Sub-total	3,009	526	175	16.8	3,021	506	167	16.1
Not On Main Benefits	Sup only, <1 year	29,907	1,405	47	6.5	32,556	1,488	46	6.5
	Sup only, >1 year	68,885	3,666	53	7.4	63,844	3,414	53	7.5
	Orphan only	5,289	510	96	7.3	5,107	486	95	7.5
	Sub-total	104,081	5,581	54	7.1	101,507	5,388	53	7.2
Recent Exits	Recent exits, <1 year	132,421	7,099	54	5.7	148,333	7,461	50	5.5
All segment sub-total		556,406	60,650	109	9.511	577,888	61,427	106	9.541
Expenses + Net loans			7,740				7,575		
Grand total			68,390				69,002		

This result is **\$0.6 billion lower** than the estimate in the previous valuation for the liability as at 30 June 2014 (a reduction of about 1%). This net change incorporates both an underlying *increase* due to a number of economic and labour force factors, and an offsetting *decrease* due to the forecast fall in the liability over the year combined with better than expected performance. Of the **\$2.2 billion decrease in liability due to better than expected performance**, one half is due to fewer people in the system and the other half is due to reduced duration of benefit receipt. Most of the improvement can be explained by:

- Faster welfare exit rates amongst Sole Parent Support clients with school aged children
- Faster welfare exit rates amongst Work-Ready Jobseekers
- Lower benefit re-entry rates amongst clients who have recently exited benefits

The cumulative impact related to Welfare Reform and management influence over the past four years is estimated to be a reduction of \$12.0 billion, or about 15% of the 2011 liability.

The \$2.2 billion reduction due to experience observed this year was not wholly uniform across New Zealand. Auckland, Northland and Central regions had the largest proportional decreases, while Canterbury, Waikato and Taranaki regions had the smallest.

The 2015 Valuation at a glance

WHAT DRIVES LONG-TERM BENEFIT RECEIPT?

Looking at the benefit population as a whole, the strongest predictors of future long-term benefit receipt are:

- **current benefit type** – reflecting reasons for benefit receipt such as severe disability and sole parenthood
- **benefit history** – which indirectly incorporates age of entry and the amount of time since entry spent on benefit
- **current age** – partly because younger beneficiaries have more years ahead of them, but also due to risk factors associated with entering benefits as a youth; such as young parenthood and family breakdown.

Age of entry, and family risk factors early in life that drive early entry clearly have an important influence on lifetime benefit pathways. The first valuation as at 30 June 2011 showed that youth had the highest lifetime cost. The second and third valuations looked at lifetime pathways across benefit types, revealing that nearly a third of current youth beneficiaries were likely to be on benefits at any given time to retirement age. A key finding was that **75% of the future cost of the benefit system was associated with early entrants who first came into contact with the benefit system as teenagers**; this remains true in the current valuation.

WHAT DRIVES EARLY ENTRY INTO THE BENEFIT SYSTEM?

Last year's valuation considered for the first time what happens prior to entry into the benefit system. We used a linked dataset provided by MSD to look at **the influence of family benefit history on early entry and patterns of benefit receipt** for young adult beneficiaries aged 24 or less (for whom data was available). About three quarters had a parent on benefit during their teen years; 83% of the liability for their age cohort. The average lifetime cost for young adults from families who received benefits for 80% or more of their teen years was \$63,000 higher than for those whose parents did not receive main benefits. For the youth segment, 9 in 10 were from beneficiary families; a third from families who received benefits nearly continuously during their teen years. These rates were so high that **we concluded that early entry—75% of the liability—was a partial proxy for intergenerational family benefit history** (except for beneficiaries with severe health conditions and disabilities). New analysis this year shows that just under half of all children born in 1993/94 and 1994/95 with a parent on benefits during their childhood went on to become beneficiaries themselves before age 23; 75% of those from long-term benefit families.

We also looked for the first time this year at **how vulnerability during childhood and youth affects early entry and patterns of benefit receipt** using a new linked dataset with current beneficiaries' (up to age 25) history of contact with Child Youth and Family (CYF) – both care and protection (CP) and youth justice (YJ) services. These are indicators of abuse, neglect, and/or youth offending. A third of all young adult beneficiaries had CYF history (more than half of Māori beneficiaries under 18), and they made up a disproportionately high share (47%) of the liability for their age cohort. Their average lifetime costs were on average \$47,000 higher than for other young adults – the impact of CYF history on lifetime cost is more significant than gender or ethnicity. Two-thirds of the youth segment had CYF history (predominantly CP). We conclude that last year's finding should be further nuanced in light of this new evidence – **early entry is a partial proxy not only for intergenerational benefit receipt, but for broader family vulnerability including abuse and neglect in childhood and youth. Entering early is in turn associated with a considerably elevated risk of long-term benefit receipt in adulthood.**

COMPOUNDING RISK FACTORS AND CROSS-AGENCY SERVICE USAGE

This year's valuation also considers interactions between risk factors and cross-agency service usage incorporating new data provided by the Department of Corrections that covers prison, community service, supervision and other related sentences. These are indicators of a history of criminal activity. A quarter of all beneficiaries had one or more criminal convictions – four in ten males. These beneficiaries accounted for 32% share of the liability, and had lifetime costs on average \$37,000 higher than other beneficiaries. Young adult beneficiaries with CYF-CP history are 1.6 times more likely to come from a long-term beneficiary family, and 1.7 times more likely to have had CYF-YJ or criminal conviction history. Those from long-term beneficiary families are 1.5 times as likely to have YJ or conviction history. Meanwhile, about 70% of beneficiaries aged 22 to 24 with YJ history also have criminal convictions as adults (five times the rate of those without YJ history). This shows that **risk factors are closely inter-related, and that family vulnerability in childhood and youth are associated with early contact with both welfare and justice systems – and more intensive contact in adulthood.**

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PART A

INTRODUCTION

1 EXECUTIVE SUMMARY

INSIDE THIS REPORT:

This valuation of the future cost of New Zealand's (NZ) working-age benefit system (as at 30 June 2015) 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

1.1 Introduction

Underpinning recent Welfare Reforms is 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 2015 report values the lifetime cost of approximately 555,000 working-age clients who received income support in the 2014/15 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**.

This 2015 valuation sees that Welfare Reform continues to have an impact on benefit dynamics – particularly for Sole Parents and Work-Ready Jobseekers – but also that such impacts are stabilising as the changes become embedded.

As in previous years, the valuation includes analysis of characteristics that influence long-term benefit receipt. For the first time, we incorporate cross-MSD and cross-agency data to explore how **vulnerability during childhood and youth** – measured through contact with the Child, Youth and Family (CYF) care and protection (CP) and youth justice (YJ) services – **and criminal history** – measured through contact with the criminal justice system **influence benefit pathways**. We note that this is **not** a valuation of the CYF or Corrections systems; rather we are improving the welfare valuation analysis with this new information. New analysis this year also looks at **clustering of risk factors**, and brings a new perspective to the analysis of **intergenerational benefit receipt** introduced last year.

A more comprehensive cross-agency view will begin with an upcoming extension of the welfare valuation to include **social housing** payments as part of the Government's reform programme for social housing. This will introduce a new evidence base about long-term housing pathways and expected future trends to inform management of the social housing system; as well as a client-centred, cross-agency view of interactions between welfare and housing systems.

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 2014/15

The valuation provides a forecast of how beneficiaries move through the system—benefit dynamics—and their associated future cost. Factors that influence these 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 within 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.
- **Operations:** Ongoing impacts of the new service delivery model introduced in 2013 and continuing improvement through the investment approach; trials, practice enhancement and role specialisation.
- **Labour market:** Higher than expected unemployment increased last year's liability estimate by 0.5%.
- **Demographics:** An increase in net migration to NZ during the valuation year.

Changes to other financial drivers:

- **Benefit rates:** No significant changes to the benefit rate structure during the valuation year.
- **Inflation rate:** Actual for 2014/15 lower than expected and forecasts for future lower than previous assumptions, reducing the liability by \$3.7 billion (5.4%).
- **Discount rate:** Forecast interest rates now lower than previously, increasing the liability by about \$5.7 billion (8.4%).

1.3 Main result and analysis of change

1.3.1 Main estimate and impact of changes to key drivers in 2014/15

Table 1.1 Current client liability forecasts by client segment at 30 June 2015 and previous valuation. Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2015 Valuation				2014 Valuation			
		Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit	Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit
Jobseeker Support	JS-WR <1 year	44,527	4,189	94	9.7	44,395	4,058	91	9.7
	JS-WR >1 year	32,242	3,672	114	10.3	34,337	3,911	114	10.5
	JS-HCD <1 year	22,374	2,678	120	10.5	22,106	2,523	114	10.4
	JS-HCD >1 year	42,353	5,866	138	11.0	44,006	5,959	135	11.3
	Sub-total	141,496	16,405	116	10.4	144,844	16,452	114	10.5
Sole Parents	Youngest child 0-2	26,232	5,519	210	15.9	27,205	5,767	212	16.4
	Youngest child 3-4	14,681	2,840	193	14.6	16,325	3,227	198	15.3
	Child 5-13, <1 year	4,570	610	133	10.5	4,141	563	136	10.9
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	HCD	87,113	15,398	177	12.7	86,863	14,842	171	12.8
	Sub-total	103,966	17,630	170	12.2	103,636	16,992	164	12.3
Youth	Youth prog (<18)	1,923	294	153	16.7	1,829	251	137	15.2
	Young Parent (<19)	1,086	232	214	16.9	1,192	254	213	17.5
	Sub-total	3,009	526	175	16.8	3,021	506	167	16.1
Not On Main Benefits	Sup only, <1 year	29,907	1,405	47	6.5	32,556	1,488	46	6.5
	Sup only, >1 year	68,885	3,666	53	7.4	63,844	3,414	53	7.5
	Orphan only	5,289	510	96	7.3	5,107	486	95	7.5
	Sub-total	104,081	5,581	54	7.1	101,507	5,388	53	7.2
Recent Exits	Recent exits, <1 year	132,421	7,099	54	5.7	148,333	7,461	50	5.5
All segment sub-total		556,406	60,650	109	9.511	577,888	61,427	106	9.541
Expenses + Net loans			7,740				7,575		
Grand total			68,390				69,002		

The **main estimate** of the liability in the benefit system as at 30 June 2015 is \$68.4 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 2014/15. Table 1.1 shows the liability divided by client segment at the valuation date.

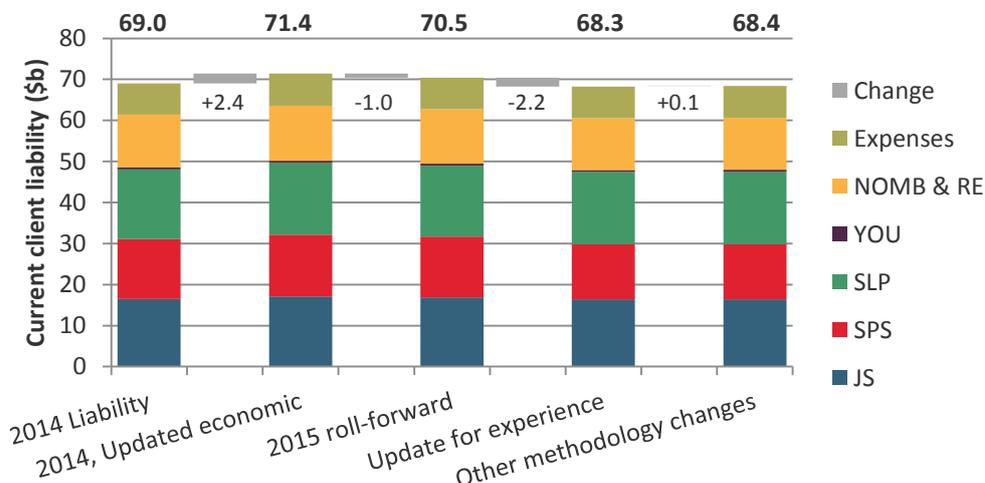
Compared to last year, the number of clients in each segment has generally decreased, despite an increase in unemployment rates over the year. Average liabilities have increased slightly, although generally this increase is less than would have been expected given changes to inflation and discount assumptions.

The only segment to see a material increase in future duration on benefit is Youth Payment (YP). The impact relates to a combination of higher unemployment, slowing transition rates off benefit, a higher proportion of clients with CYF care and protection history, a greater share of young women in YP versus Young Parent Payment (YPP) as teen pregnancies are decreasing, and the addition of the new CYF history data.

This result is **\$0.6 billion lower than the estimate in the previous valuation** for the liability as at 30 June 2014 (a reduction of about 1%). The difference from last year to this year breaks down as follows:

- A \$2.4 billion upwards revision of the 2014 liability due updates to economic parameters such as unemployment, inflation and interest rates
- An expected decrease in the liability over the year of \$1.0 billion as part of the roll-forward to 2015
- An additional decrease of \$2.2 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
- A marginal change due to methodology changes – unrelated to experience during the year

Figure 1.1 Analysis of change in liability between 2014 and 2015 valuations, by segment at valuation

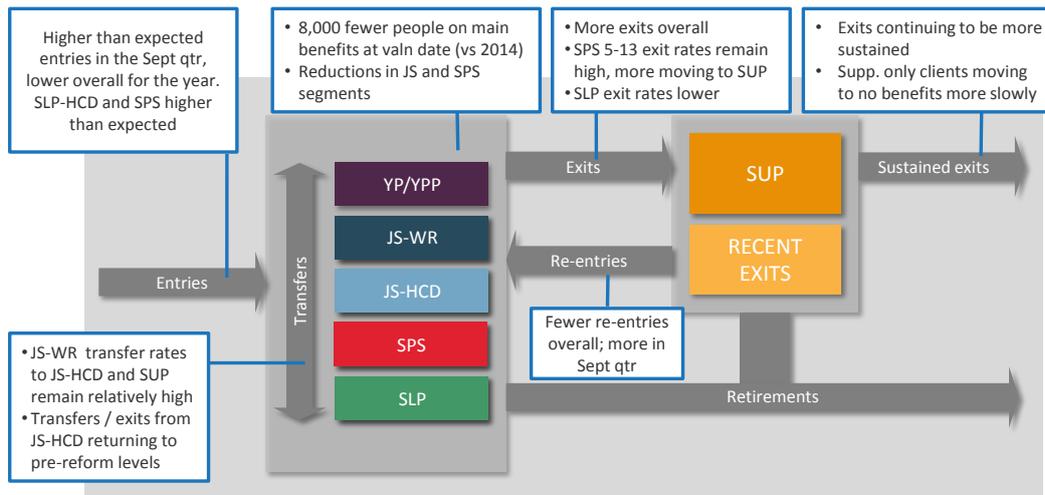


The relatively small net change in the liability relative to last year's estimate (a decrease of \$0.6 billion) masks an underlying **\$2.2 billion performance improvement** of a similar magnitude to last year's result. This improvement more than offset the impact of the unemployment rate not falling as projected in the last valuation.

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 the figure below.

Figure 1.2 Significant changes to benefit dynamics in 2014/15, relative to expectations



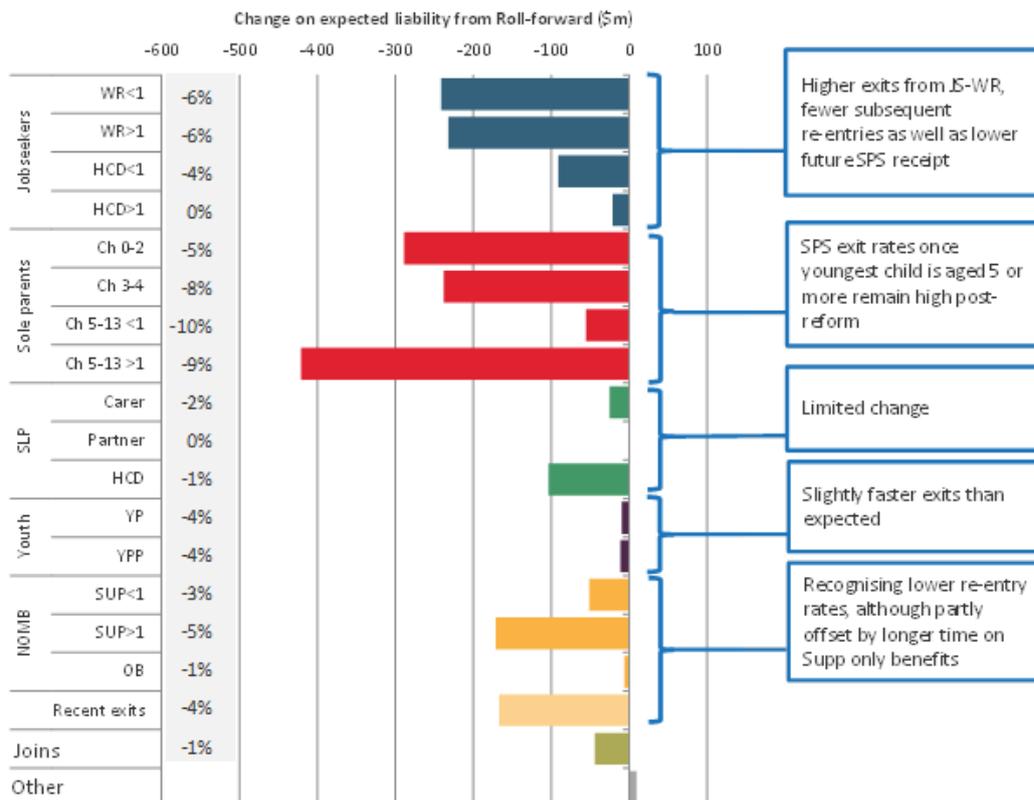
The labour market is a key driver of benefit dynamics. The unemployment rate increased over the 2014/15 year in contrast to the trend forecast that was used in the previous valuation. Some groups, such as youth, tend to be more sensitive to changes in the unemployment rate.

The increase in the unemployment rate over the year, combined with a slower forecast reversion to full employment, has materially increased the current and future client liability estimates.

1.3.3 Breakdown of change under management influence by segment

Figure 1.3 provides a breakdown of the \$2.2 billion decrease in liability that is considered to be within management influence by client segment (as at the previous valuation date).

Figure 1.3 Breakdown of \$2.2 billion decrease due to experience, by segment as at June 2014. Percentage change calculated before addition of net loans and expenses.

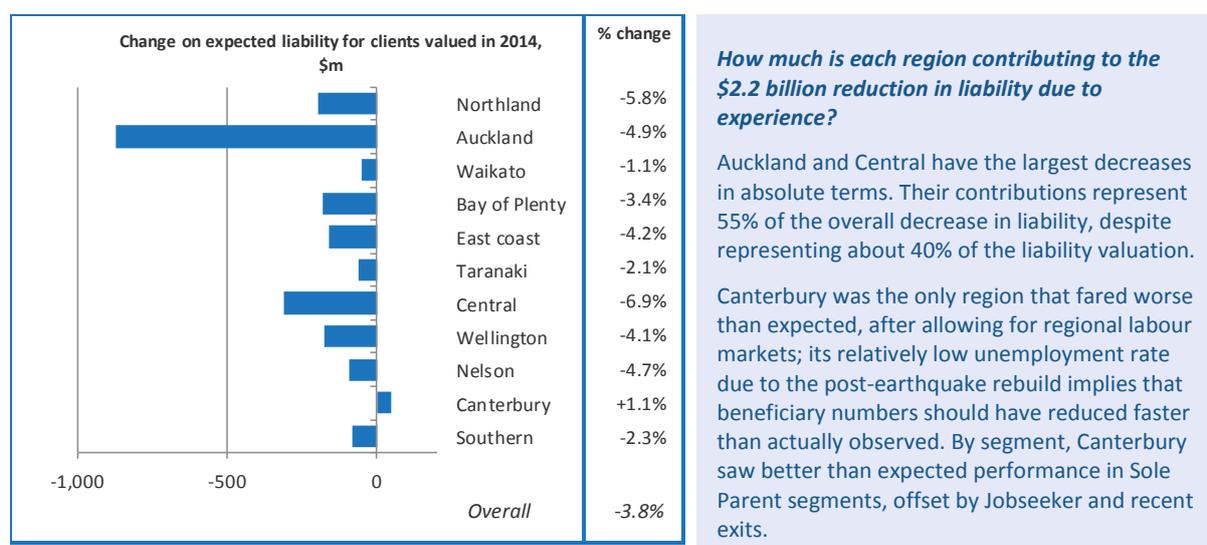


We have calculated how the projected future lifetime cost for these clients has changed relative to what we would have expected. Factors beyond MSD's influence, such as unemployment, inflation, and discount rates have been excluded. At a segment level, it is clear that **the improvements are due primarily to more Sole Parents and Work-Ready Jobseekers than expected exiting benefits, and more sustainable exits from the benefit system.**

1.3.4 Breakdown of change under management influence by region

The \$2.2 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). The column on the right shows the percentage change, which recognises the relative size of regions.

Figure 1.4 Breakdown of \$2.2 billion decrease in change due to experience, by June 2014 region. Percentage change calculated before addition of net loans and expenses.



1.3.5 Impacts of Welfare Reform on the benefit system

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 \$1.3 billion over three years.** About 70% of these savings can be attributed to Welfare Reform policy and operational changes. The remainder is primarily due to lower than expected benefit inflation.

The cumulative impact over four years of the change considered to be under management influence is about 15% of the value of the liability as at 2011, or \$12.0 billion. These changes mean that compared to the pre-reform benchmark valuation current clients are expected to spend about **900,000 fewer years on benefits** over their working lifetime. More than three quarters of this reduction in future years on benefits can be attributed to policy and operational changes.

1.4 Features of interest

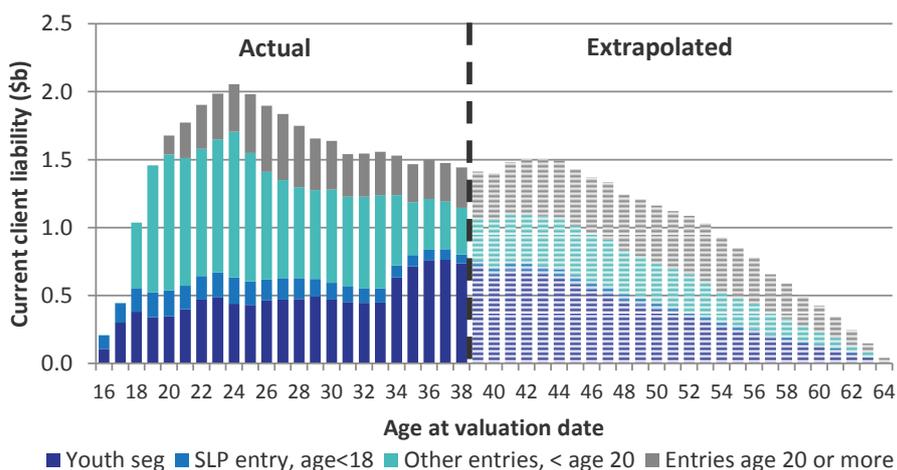
1.4.1 Early entry and long-term benefit receipt

Age of entry, and family risk factors early in life that drive early entry clearly have an important influence on lifetime benefit pathways. Previous valuations have highlighted the importance of age of entry as a predictor of long-term benefit receipt. Beneficiaries who enter as youth via either Youth Payment (YP) or Young Parent Payment (YPP) or as young Supported Living Payment (SLP) clients have

significantly higher average lifetime costs. Early entrants of all current ages make up a significant share of the overall liability.

- We previously estimated that **about 75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20** – this remains true.
- Despite the very small number of beneficiaries who enter through a youth segment (YP/YPP) each year, **over a third (34%) of the total liability is attributable to clients who first entered benefits via a youth segment.**

Figure 1.5 Current client liability split by current client age and status when first entering the benefit system¹



1.4.2 What drives early entry?

Intergenerational benefit receipt is very high amongst clients who are under 18. Amongst these clients, 8 out of 10 had parents who received main benefits (9 out of 10 for Māori clients). **They are also far more likely than other New Zealanders to have had a history of abuse, neglect and/or youth offending.** Using the new matched dataset provided this year, we observe that 6 out of 10 clients who are under 18 have had contact with CYF, an indicator of abuse, neglect, or youth offending (7 out of 10 for Māori clients).

Māori are over-represented in the benefit population, and have higher average lifetime costs—due in part to their over-representation in these two high risk cohorts, as well as other causal factors that are not fully visible in the valuation. We note that it would be incorrect to interpret ethnicity-related findings in this report as being *caused* by ethnicity. Rather, they capture differences in patterns of benefit receipt that are associated with each ethnic group, reflecting for example differences in likelihood of receiving a particular benefit type (such as SPS), age and regional distribution, qualification levels, etc. This is an area that continues to warrant further analysis.

We also note that education level would be a very important consideration for understanding how youth make the transition to adulthood and the labour market (or, conversely, to long-term benefit receipt). However, we do not have access to reliable qualifications data to undertake such analysis.

Intergenerational benefit receipt

Intergenerational benefit receipt data was introduced in the 2014 valuation, enabling us to look for the first time at what happened in young people’s lives prior to entry into the benefit system. The prevalence of family benefit history amongst current clients aged under 25 is very similar to that reported in the

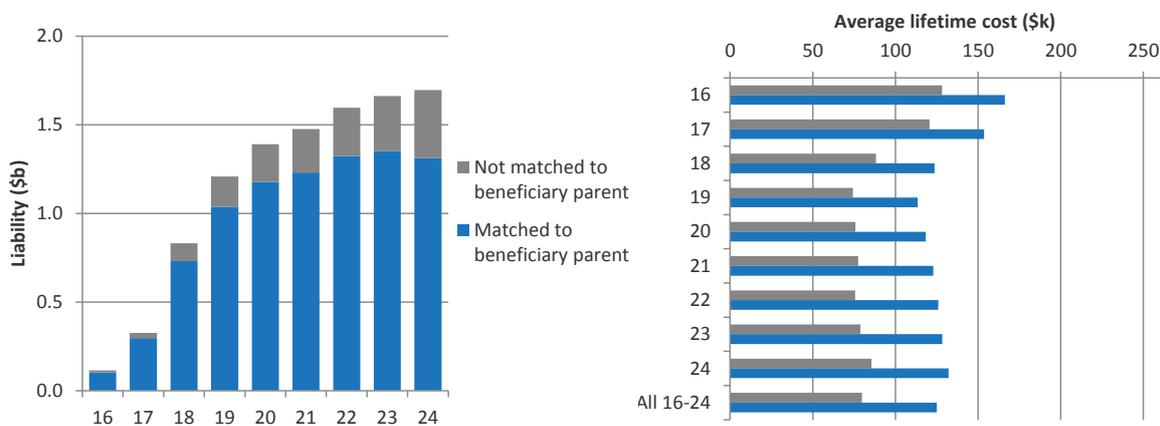
¹ Extrapolation is required for older beneficiaries, as historical data is not available.

previous valuation. **About three quarters of clients in this age cohort had a parent who received benefits at some point during the client’s childhood.**

For youth segments (YP/YPP), 9 in 10 were from a beneficiary family – over a third had a parent who was on benefit almost continuously (80% or more of the time) during their teenage years. These rates were so high that last year **we concluded that early entry—75% of the liability—was a partial proxy for intergenerational family benefit history** (except for beneficiaries with severe health conditions and disabilities).

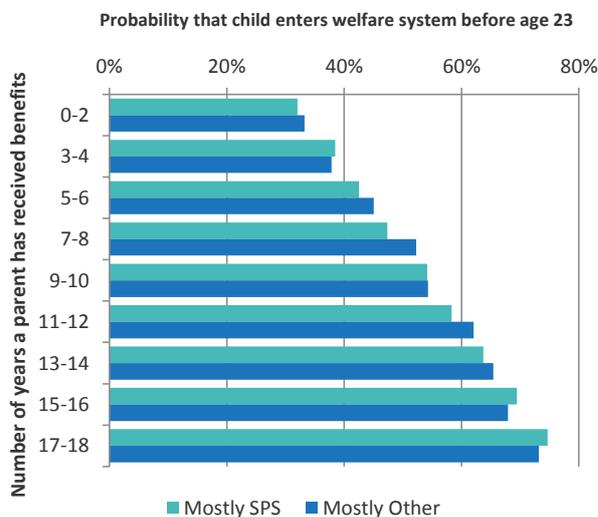
Family history is highly predictive of future welfare benefit receipt. For young adult beneficiaries whose parents were on benefits more than 80% of their teen years (‘intensively’), we observe **an average future welfare cost that is \$63,000 higher** than those without. In all, **83% of the total liability for under 25s** is attributable to clients who had a parent who received benefits at some point during the client’s childhood.

Figure 1.6 Current client liability (left) and average future lifetime cost (right), split by current client age and family benefit history, for clients under age 25



This year, we also looked at a cohort of all beneficiaries’ children born in 1993/94 and 1994/95. Of the 83,000 children, **47% of them had entered the benefit system themselves before age 23**. This proportion increases strongly with the number of years the parents received benefits – **75% of children from families with intensive benefit histories had received a benefit themselves before age 23**.

Figure 1.7 Proportion of children born to beneficiaries in 1993/94 and 1994/95 entering benefits by age 23



Vulnerability in childhood/youth and long-term benefit receipt

A new dataset this year enables us to look further into beneficiaries' circumstances before entering the welfare system to understand their influence on benefit dynamics. Child, Youth and Family (CYF) history data includes current beneficiaries' historical contact with the care and protection (CP) and/or youth justice (YJ) systems. This is **an indicator of vulnerability in childhood and youth due to abuse or neglect in childhood** – ranging from a notification to repeated or extended periods of foster care, and/or **youth offending**.

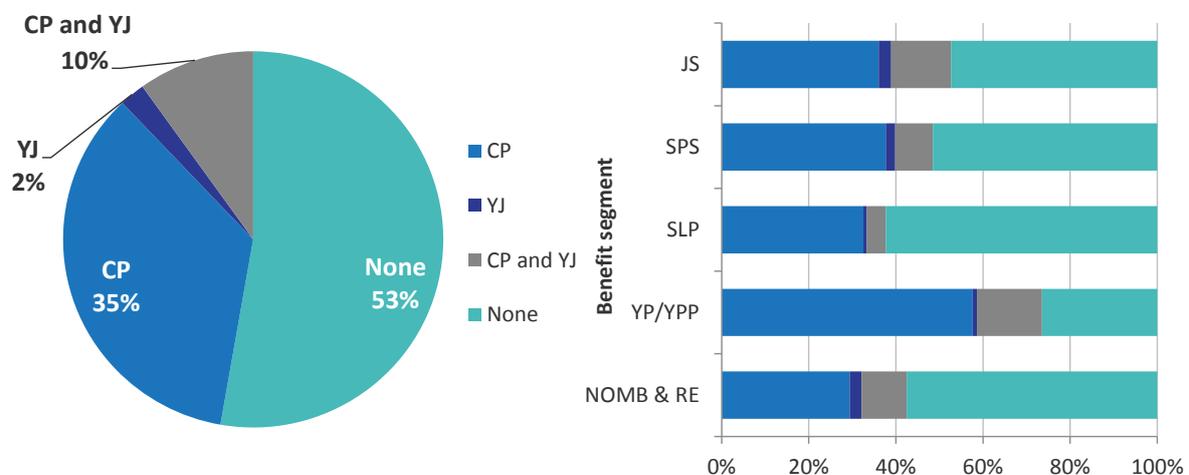
It is important to note that any findings here are statistical findings of association rather than causation. For example, although contact with CYF is associated with high future welfare cost, it would be wrong to assume that the CYF contact causes the increase; the causes are likely to be a combination of factors including increased barriers to employment due to the consequences of vulnerability during childhood and youth.

Over a third of all current and recent beneficiaries aged 16 to 25 (for whom linked datasets are available) have some CYF-CP or CYF-YJ history. One key effect of childhood vulnerability (as evidenced by CYF history) on benefit dynamics is to cause a **higher risk of early entry** – which has already been established in previous valuations to significantly increase the risk of long-term benefit receipt. Youth segments (YP/YPP) are very likely to have had CYF contact; **two thirds of all beneficiaries in the Youth segment have had some level of interaction with the CYF system**.

There is also an increase in risk of long-term benefit receipt associated with childhood/youth vulnerability (as measured by CYF history) in addition to the heightened entry risk. People in the 2015 valuation cohort with CYF history have **an average future lifetime welfare cost that is about \$47,000 higher** than those without such history. This effect is seen across all major segments except SLP. About 30% of this is directly attributable to the childhood/youth vulnerability itself *over and above* other risk factors. The remainder reflects correlation of other risk factors – such as intergenerational benefit receipt, which is highly correlated with CYF exposure. For those with **an event before age three this CYF effect on benefit receipt is twice as large** as those who have an event after age three.

We conclude that last year's finding should be further nuanced in light of this new evidence – **early entry is a partial proxy not only for intergenerational benefit receipt, but for broader family vulnerability including abuse and neglect in childhood and youth. Entering early is in turn associated with a considerably elevated risk of long-term benefit receipt in adulthood.**

Figure 1.8 Distribution of current liability by CYF-CP and CYF-YJ history (clients aged 16-25)



Welfare beneficiaries with CYF (care and protection and/or youth justice) history represent a disproportionately large share of the current liability. Figure 1.8 provides further details on the relative distribution of liability by CYF history.

People who had exposure to CYF-CP and/or CYF-YJ as children and youth were over-represented in the benefit population; making up 38% percent of all beneficiaries aged 16 to 25 in the valuation year, which is well over their 15% share of the general population. Moreover, they made **up a disproportionately large share (47%) of their age cohort's future welfare cost**, reflecting their relatively higher risk of long-term benefit receipt.

1.4.3 Compounding risk factors and cross-agency service usage

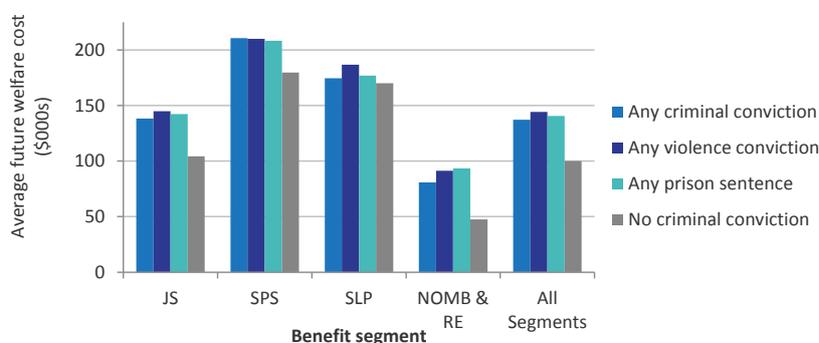
History of criminal conviction and long-term benefit receipt

Another new dataset this year enables us to look for the first time at cross-agency patterns of service usage, and how they affect benefit dynamics. Data provided by the Department of Corrections covers prison, community service, supervision and other related sentences. This is an indicator of an individual's criminal history. As with CYF history, it is important to note that any findings here are statistical findings of association rather than causal. For example, although time in prison is associated with high future welfare cost, it would be wrong to assume that the time in prison causes the increase; the causes are likely to be a combination of factors including increased barriers to employment related to a criminal history.

Offenders who have been convicted of a crime and served some type of criminal sentence are heavily over-represented in the welfare population. **About a quarter of the 2014/15 beneficiary population have had a criminal conviction at some point; for males it is 4 in 10.** About two thirds of these clients have served a sentence sometime within the last ten years, with younger males most likely to have done so in their recent past. Welfare clients with a criminal conviction in their past are heavily skewed towards Jobseeker segments. Over 13,000 clients have been serving sentences for 5 or more years of the last 10. One in ten clients has been to prison and one in ten has been convicted of a violence-related crime.

There is a strong statistical relationship between clients who have been convicted and served a sentence and long-term benefit receipt. As illustrated in Figure 1.9, people in the 2015 valuation cohort who have served a sentence have **an average future lifetime welfare cost that is over \$37,000 higher** than those without such history.

Figure 1.9 Difference in average future lifetime cost compared for those with and without a past community or custodial sentence



Benefit payments to current welfare clients with a past community or custodial sentence **represent a third of the total current client liability** – well over their 25% share of the welfare population.

The difference is particularly pronounced within benefit segments; average lifetime costs were 40% higher for Jobseekers with a criminal history than without; and 89% higher for clients with a criminal history who were not currently on a main benefit or were recent exits – reflecting a greater risk of re-entry. Of the \$37,000 difference about 40% is directly attributable to the circumstances of those having criminal histories (as measured by the existence of criminal convictions). The remainder reflects correlation with other risk factors. The proportion directly attributable to the circumstances related to having a criminal history is larger for people who have spent more time serving sentences.

For all clients aged 22 to 24 (inclusive – for whom CYF-YJ data and several years of adult Corrections data are available):

- About one in every ten have YJ history and two in every ten have an adult criminal conviction
- **About 70% of clients with YJ history have an adult criminal conviction** on record (five times the rate of those without CYF-YJ history)
- **About 36% of clients with an adult criminal conviction have a YJ history too** (nearly ten times the rate of those without an adult criminal conviction).

Correlations amongst risk factors

For clients aged less than 25, we now have a significant number of factors to understand their risk of long term benefit receipt.

Table 1.2 Incidence of risk factors amongst the 95,000 clients aged 18-24, and how they vary in the presence of other risk factors

Risk factor	Base rate	Change to incidence rate in the presence of...				
		CYF-CP History	YJ or adult conviction	Māori	Inter-generational receipt	Extensive JS history
CYF-CP History	36%		x1.7 59%	x1.3 45%	x1.6 56%	x1.3 47%
YJ or adult conviction	16%	x1.7 26%		x1.4 22%	x1.5 23%	x2.0 32%
Māori	40%	x1.3 50%	x1.4 56%		x1.4 54%	x1.2 47%
Intensive inter-generational receipt (>80%)	36%	x1.6 57%	x1.5 52%	x1.4 49%		x1.3 46%
Extensive JS history (>2 years)	28%	x1.3 36%	x2.0 56%	x1.2 33%	x1.3 36%	

One important feature is that these factors correlate - that is, **people with one risk factor tend to have higher incidences of other risk factors**. For example:

- 36% of the cohort has some CYF-CP history, but this rate is 1.6 times higher (56%) for the subset of the cohort with intensive family benefit history.
- Young adult beneficiaries with CP history are 1.7 times more likely to have had YJ or criminal conviction history.

- Those from long-term beneficiary families are 1.5 times as likely to have a YJ or conviction history.

Meanwhile, as noted above, about 70% of beneficiaries aged 22 to 24 with YJ history also have criminal convictions as adults (five times the rate of those without YJ history).

This shows that **risk factors are closely inter-related, and that family vulnerability in childhood and youth are associated with early contact with both welfare and justice systems – and more intensive contact in adulthood.**

This report looks at the likelihood of dual correlations for selected risk factors. A natural next step will be to consider the correlations between three and more risk factors and the liability impacts of such correlations.

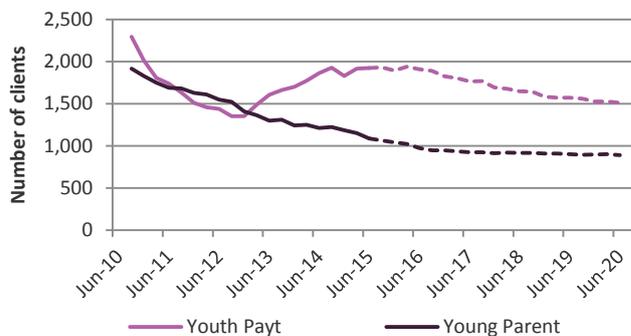
1.4.4 Youth segments

Valuing the lifetime cost of benefits makes it clear that an effective strategy for working with youth and young entrants is essential to achieving the goal of reducing long-term benefit receipt.

In August 2012, MSD introduced a new approach to working with youth. The objective is to keep this high risk group in school, training or employment so as to improve their skills and reduce their reliance on working-age benefits

Since August 2012 there has been a 20% increase in the number of Youth Payment (YP) clients, for the most part offset by a 20% decrease in Young Parent Payment (YPP) clients. This offsetting effect means that there are about 400 fewer YPP, and 400 more YP clients. While YP numbers are rising, this is not necessarily inconsistent with the policy objectives for this group (to improve skills and reduce reliance on working-age benefits).

Figure 1.10 Actual and projected youth segment numbers



This valuation shows signs of potential headwinds for management's attention; such as youth sensitivity to rising unemployment rates, falling transition rates off benefit, and also a significantly increased flow in from CYF-CP.

At the same time, we also observe that growth in YP numbers masks several important underlying positive trends for youth that are consistent with the objectives for the Youth Service, and government's broader Better Public Services (BPS) agenda:

- Some of the increase in YP numbers appears to be explained as an off set of decreasing YPP numbers – that is to say, fewer teen beneficiaries are becoming young parents, and some young women are receiving YP instead of YPP benefits.
- New data this year enables us to show that there has also been a significant decrease in contact by the youth beneficiary cohort with youth justice and corrections.
- We also understand that skills-related BPS results have been positive - particularly for Māori youth, who are over-represented amongst youth beneficiaries. This could point to a ‘lock-in effect’ whereby youth remain longer on benefits while completing qualifications.

Positive trends for youth beneficiaries such as decreased teen pregnancies, decreased criminal behaviour, and improving qualifications could appear as increased YP numbers, but in fact represent significant improvements in long-term outcomes consistent with the government's broader agenda. At the same time, attention to how youth fare in a changing labour market is likely warranted.

1.4.5 Young adults 18-24

Young adults are an interesting cohort for analysis for a number of reasons:

- They have a wide variety in their projected outcomes. For example, young JS-WR clients have an average liability of \$111k, but a fifth have a liability less than \$50k and a fifth are above \$150k.
- We have complete histories of CYF-CP and CYF-YJ events, criminal convictions and intergenerational benefit receipt.

The addition of new risk factors allows more nuanced segmentations of the young adult cohort. We show an illustrative segmentation of young adult beneficiaries in JS-WR segments in the table below. The segmentation shows that a relatively small number of factors are able to identify subgroups with markedly different expected future outcomes. The highest group has average future welfare cost that is more than three times that of the lowest group.

Table 1.3 Illustrative segmentation of work-ready Jobseeker clients aged 18-24

Cohorts		Number	Expected lifetime cost (\$000s)
Males	No sentence served in the past 10yrs	Non-Māori	4,860 61
		Māori	3,120 91
	Sentence served in the past 10yrs	No JS-HCD	2,473 105
		Some JS-HCD	878 142
Females	Non-Māori	No CP or YJ	3,171 98
		Some CP or YJ	1,770 150
	Māori	No CP or YJ	2,108 150
		Some CP or YJ	2,248 196
All		20,628	111

1.5 Analysis by segment

1.5.1 Transfers between segments

Each quarter, about 60,000 beneficiaries either leave benefits or transfer to a different benefit; this represents about 14% of the client base. About two thirds 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.

In the last valuation, we reported in detail on transitions between segments in order to understand the impact of changes to benefit types. This year's analysis shows that **benefit transfers have stabilised as the system settles into the new benefit categories.**

Table 1.4 summarises the number of movements per quarter for some of the most important transfers. One of the biggest transfers of clients is within Jobseeker Support – from work-ready to health condition/disability and vice versa, which decreased slightly in 2014/15 after a marked increase in 2013/14. There has also been a decrease in transfers from JS-HCD to SLP-HCD. However this is still above pre-reform levels. Another large pair of movements is from JS-WR and SPS to SUP, reflecting exits from main benefits.

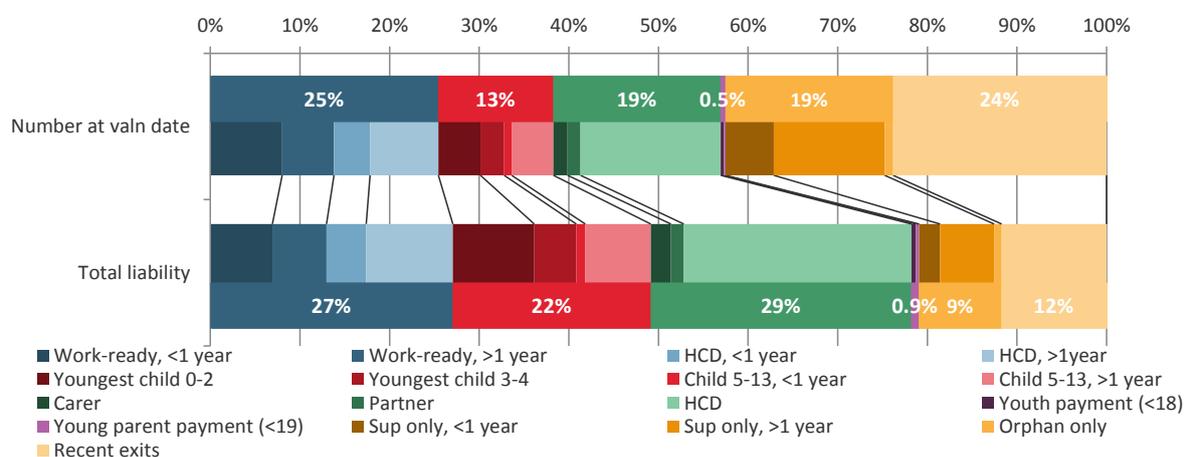
Table 1.4 Major transfers between benefit types in 2014/15 and discussion on changes compared to previous year.

From	To	Avg client transfers per qtr, 2014/15	Change in transfer rate, compared to 2013/14	Comment
JS-WR	→ JS-HCD	3,114	-4%	Slight reduction after large increase in 2013/14
JS-HCD	→ JS-WR	2,784	-4%	Slight reduction after large increase in 2013/14
JS-WR	→ SUP	2,346	+2%	Fairly stable
SPS	→ SUP	1,849	+3%	Continued improved performance for SPS and some substitution from SPS exits
JS-HCD	→ SLP-HCD	1,473	-8%	Reduction after large increase in 2013/14
SPS	→ JS-WR	1,470	-4%	Reduction after increase in 2013/14
SUP	→ JS-WR	1,354	-2%	Fairly stable
SUP	→ SPS	945	+11%	Continues trend
JS-HCD	→ SPS	849	-7%	Returns transfer rate closer to pre-reform levels
JS-WR	→ SPS	826	-14%	Returns transfer rate closer to pre-reform levels
JS-HCD	→ SUP	807	-1%	Fairly stable
SUP	→ JS-HCD	777	+8%	Continues trend of less direct entry to JS-HCD

1.5.2 Distribution of future lifetime cost

The differential risk of long-term benefit receipt and resulting 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, Sole Parents represent 13% of the number of clients valued, but 24% of the total liabilities.

Figure 1.11 Contributions of segments towards client numbers and liability total



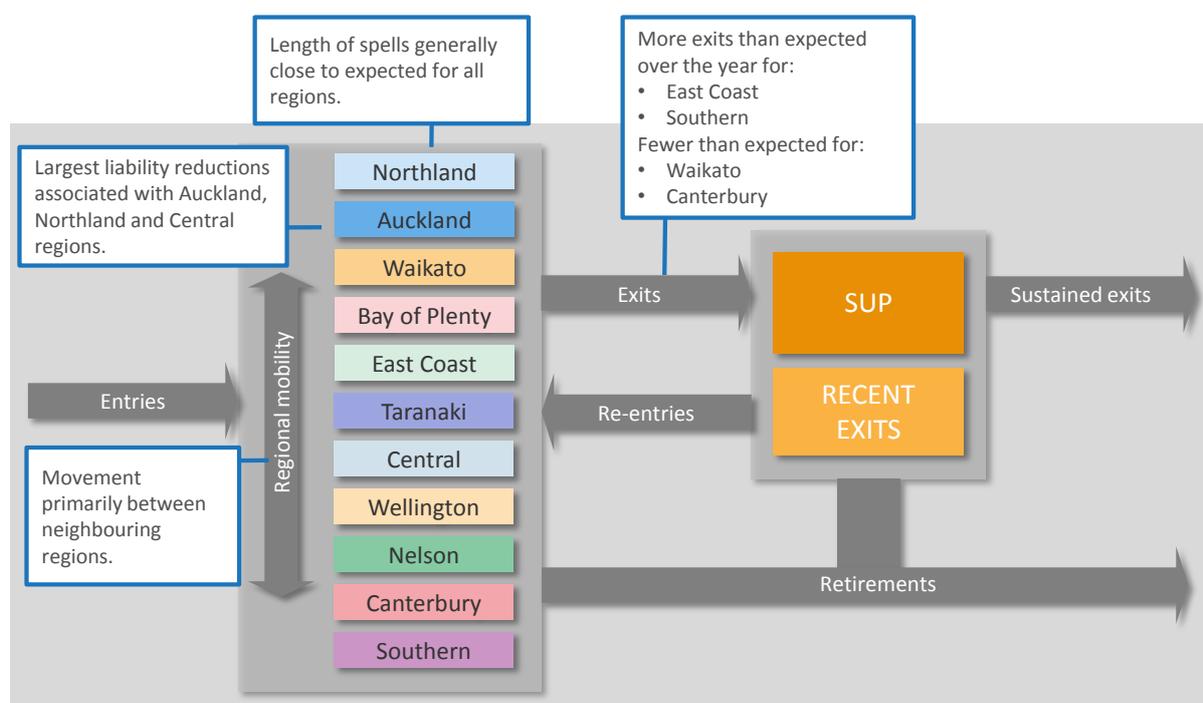
There are also significant differences in the risk of long-term benefit receipt (and as a result, future costs) within segments. For example, **amongst Work-ready Jobseekers 10% of clients have a lifetime cost that is double the median.** The addition of new risk factors to the valuation has tended to increase this spread, allowing us to better differentiate between clients' relative risk of extended spells on benefit.

The ten percent of clients with the highest future lifetime cost (on average \$285,000) make up just over a quarter of the total liability in the benefit system. Supported Living segments represent over half of this group, and a third are Sole Parents. One in nine clients receiving a main benefit has an average future welfare liability less than \$50,000, reflecting their relatively low risk of long-term benefit receipt.

1.6 Analysis by region

Figure 1.12 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 2014.

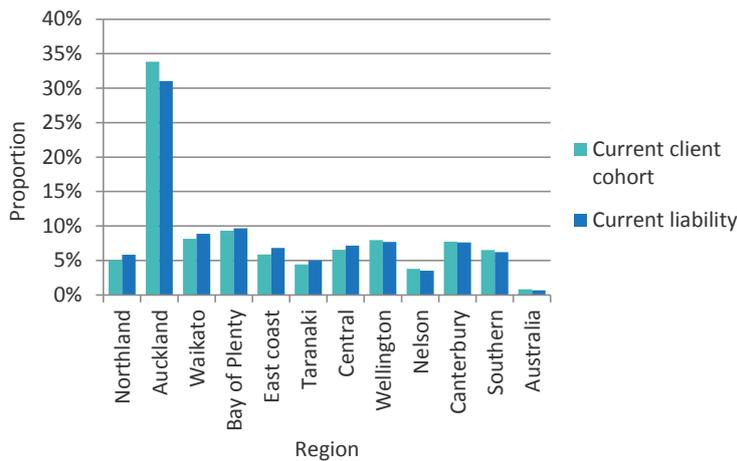
Figure 1.12 Significant changes to benefit dynamics at the regional level in 2014/15 compared to expected



Benefit dynamics are influenced by regional, as well as national, unemployment trends. In the 2014 valuation, we introduced a new indicator and projections of regional unemployment rates to better capture regional differences. Unemployment trends vary considerably across the country, with relatively high current unemployment in Northland (9.2%) and East Coast (7.7%), in contrast to the relatively low unemployment rates in the Canterbury (3.3%), Nelson (4.7%) and Southern (4.3%) regions. A small group of SLP-HCD beneficiaries living in Australia is included for the first time this year. Further detail can be found in Section 6.2.

Figure 1.13 shows each region's contribution to the current client cohort numbers and current liability. Overall, the distribution of the liability between regions roughly corresponds to the distribution of the benefit population between regions.

Figure 1.13 Contribution of each region to current client cohort and current liability



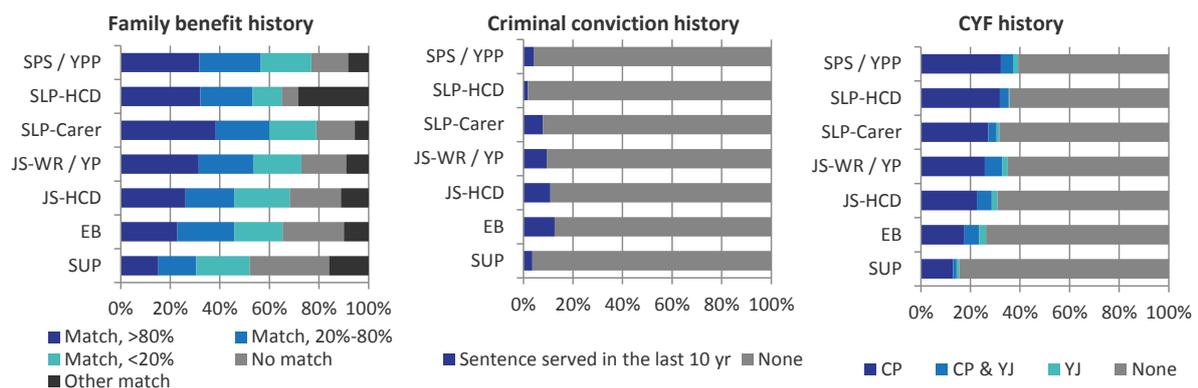
1.7 Projected changes to the benefit system

Client entries into the welfare system (from outside the current client group) are expected to be stable and close to 2014/15 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 about 70 to have had a parent on main benefit, 30 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. CYF history is particularly high for SPS, SLP and JS-WR entrants, while criminal convictions are more prevalent for JS-HCD and EB entrants.

Figure 1.14 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 25.²



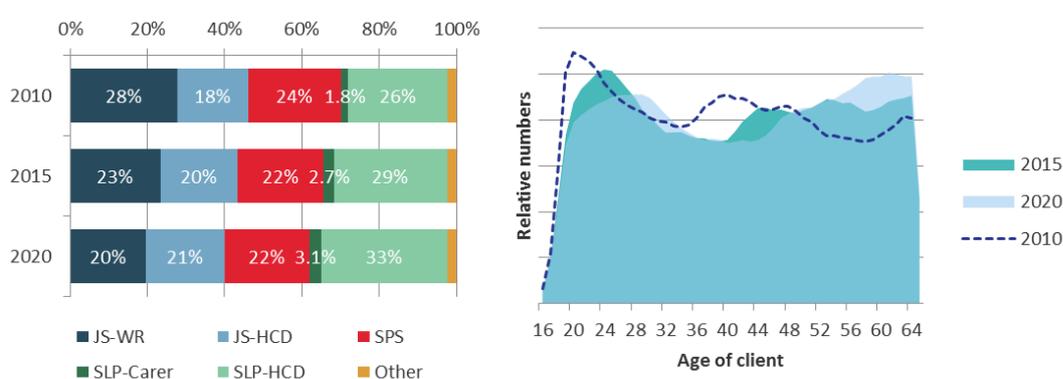
Forecasts assume that past trends will largely continue, and are sensitive to assumptions such as unemployment rates. We note that:

² See Section 4.3.1 for details of the family benefit history match definitions.

- 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 2010, compared to an expected 33% in 2020, 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 welfare clients is projected to fall by over 10% over the next five years, with significant downward trends in JS-WR and SPS numbers.

By combining the projections for current and future client liabilities, we are able to estimate the characteristics of the welfare population in five years' time. This is subject to the caveat that future client liability numbers and characteristics are more difficult to predict than those for current clients. There are 'lumps' in the age distribution (currently centred at ages 23 and 45) that correspond to those who first enter the labour force during recessions. These demonstrate the **significant long term impact of recessions**, particularly on those entering the labour force.

Figure 1.15 End of quarter benefit type and age distribution for June 2010, June 2015 and June 2020



Our forecast for the main estimate in the **next valuation** (as at 30 June 2016) is a further reduction in the liability to \$67.3 billion. The liability is forecast to reduce gradually each year to \$61.5 billion (as at 30 June 2020).

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 2014/15

INSIDE THIS CHAPTER:

- ❖ The contents and structure of this report
- ❖ New features in the 2015 valuation
- ❖ Impact of 2014/15 changes to key cost drivers

2.1 The contents and structure of this report

The purpose of this report is to provide useful information to MSD about 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 future cost of the benefit system.

This valuation of the future cost of the benefit system (as at 30 June 2015) 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
- 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 2014/15.

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 2015 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 NZ's benefit system and the purpose and structure of valuations. In particular, Appendix B gives further background to the motivation and definition of the valuation.

2.2 New features in the 2015 valuation

Shifting from Welfare Reform to continual improvement

This is the fifth annual valuation of the benefit system for working-age adults. The first valuation (as at June 2011) set a baseline. Each valuation since then has reported on the impacts of significant legislative changes, such as new benefit categories and work obligations; and 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.

As the system and behavioural changes associated with these reforms become the new normal and related outcomes are built into the projections, the scale of incremental new changes each year would be expected to become more gradual. In the absence of significant new policy and operational changes, we would anticipate a transition in future years to more incremental impacts arising from MSD's management of the system. This would reflect a shift from a state of 'reform' to a state of 'continual improvement' consistent with the objectives of the investment approach to reducing long-term benefit receipt. Greater performance gains may well be possible – these would most likely stem from future policy or operational reforms. We make no attempt to predict future reforms. In the event of such changes, historical valuations such as this one would serve as a baseline to demonstrate their effectiveness.

The 2015 valuation covers the continuing effect of Welfare Reform. The long-term impacts of the reforms introduced in 2013 were partly allowed for in the previous report, but an additional year permits better estimates of the ongoing effects.

Including cross-MSD and cross-agency datasets

Vulnerable families often have contact with multiple social services. For the first time, the 2015 valuation assesses the additional predictive value of service usage outside the benefit system on benefit pathways. Introducing matched cross-MSD and cross-agency datasets to this year's valuation has enabled analysis of how Child, Youth and Family (CYF) history – both care and protection (CP) and youth justice (YJ) – and Corrections' history of criminal convictions give improved insights into beneficiaries' risk of long-term benefit receipt.

These indicators are highly predictive of entry into the welfare system as well as long-term benefit receipt. The additional datasets significantly enhance the insight provided into lifetime welfare trajectories, particularly for younger people in the welfare system.

We note that this is **not** a valuation of the CYF or Corrections systems; rather we are improving the welfare valuation estimates by incorporating new information.

Risk clustering

Another new feature of the 2015 valuation is a focus on how multiple risk factors – such as CYF history, family benefit history, early entry to welfare and history of criminal convictions – compound the risk of long-term benefit receipt.

The 2015 valuation also takes a further look at the characteristics that were introduced in the 2014 valuation; such as regional and intergenerational dynamics.

2.2.1 Future development of a social housing valuation that will integrate with the welfare valuation

The New Zealand Government is embarking on a reform programme for social housing³. The objectives of the reform programme 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.

³ <http://www.msd.govt.nz/documents/about-msd-and-our-work/work-programmes/social-housing/improving-social-housing.pdf>

- 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.

As part of the reform programme, and recognising the close interaction between the benefit and social housing systems, a valuation of social housing payments is being developed that will be able to integrate with the welfare valuation. This will give a powerful client-centred view of future welfare and housing pathways and will be used to calculate both future lifetime welfare cost and future lifetime social housing cost.

Understanding clients' lifetime costs across both systems will further inform which clients to target for support so that services can be designed to address their needs. The model will also provide a longer term view of housing demand and use which will inform the type and location of social housing required.

The first integrated modelling is to be completed in the first half of 2016, with a housing valuation report to be issued thereafter. This report will set a baseline for future social housing costs associated with households, as well as providing insight into other elements of the social housing system related to the reform programme.

2.3 Impact of 2014/15 changes to key cost drivers

2.3.1 Policy changes

Developments in 2014/15

There have been no new policy changes in 2014/15 that significantly influence benefit dynamics.

A number of key policy changes were made as part of Welfare Reform in 2012/13 and 2013/14. There was some uncertainty at the time of the previous valuation as to how much of the initial impact of changes would endure over time. The 2015 valuation shows that Welfare Reform changes continue to have substantial impacts on welfare trajectories.

Policy changes in 2012 included:

- The **Youth Service**, which aims to support youth and young parents to pursue education, training and work-based learning

The introduction of **new work requirements** for (now) SPS clients and Partners. Policy changes in 2013 included the creation of **new benefit types**:

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

Impact of these changes

This valuation looks at the extent to which behaviour changes associated with reforms have been sustained, versus short-term.

In last year's valuation report, we provided detailed analysis of the behavioural response to benefit category changes that took effect in July 2013. In particular, we showed that some of the reclassified beneficiaries had moved to benefit types with lower work expectations. Highlights of impacts of the July 2013 Welfare Reform changes included:

- More of the beneficiaries newly classified as Jobseekers (JS) — particularly Sole Parents with children 14 and older, but also former Widows/Women Alone — were exiting benefits faster

- There was also growth in transfers by this group to other benefits, particularly JS-HCD.

This year, we find that **the behavioural response to policy reforms, including new work obligations and benefit categories, has stabilised**. In other words, the new trends observed in 2013/14 have largely been sustained in 2014/15. As discussed in Section 3.8, most of the trends observed for JS-WR and SPS clients have continued in 2014/15. There has been some reduction in the churn through JS-HCD benefits.

2.3.2 Operational changes

Developments in 2014/15

Welfare Reform also introduced a number of significant operational changes. The principal operational change in 2013/14 was the national roll-out of a **new service delivery model**, introducing a differentiated service tailored to beneficiaries' level of support needs.

As Welfare Reform policy and operational changes become embedded, the system is shifting from large policy reforms to a focus on **continual improvement**. This includes differentiating roles and strengthening practice by case managers, aided by centralisation of processing functions. Also, in 2014/15 MSD's service lines, including Work and Income, merged into a broader Service Delivery arm. This enables better integration in providing service to clients.

Disciplined innovation is 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. Trial evaluation results are not yet available.

Finally, on 31 August 2014 there was a shooting at the Ashburton Work and Income office. This tragic event caused significant disruption to Work and Income in Ashburton and surrounding offices – and throughout MSD – for several months following the incident. We discuss this in the commentary, but do not explicitly quantify the impact in this valuation.

Impact of these changes

Since operational and policy impacts are occurring simultaneously and evaluation results are not available, the attribution of impacts between the two carries a degree of uncertainty. In the previous valuation, we provided analysis attempting to disentangle these effects. About half of the \$2.2 billion reduction in current client liability due to experience identified in the 2014 valuation was attributed to reduced payments to SPS clients with school-aged children (both those currently in that group, or those previously projected to enter into it). This group was affected by both policy changes, increased work obligations from October 2012; and operational changes, active case management with employment and work-readiness support from July 2013. Our analysis found slight improvements when the policy reforms were introduced, and marked improvements when the operational changes were introduced. We concluded that **policy and operational impacts were compounding, rather than independent**.

Operational impacts tend to be smaller and more incremental in nature. This implies that the decreases in liability due to experience observed over time would be smaller than that observed in the current and previous valuations. This would not be an indication of weakening performance, as current performance has already been reflected in projections for future years. Understanding the impact of operational changes is likely to become increasingly important in future valuations.

In-work support

Work and Income has responded to valuation findings regarding high levels of re-entry to benefits with trials of increased levels of in-work support to recent beneficiaries. These trials include extension of case management services following exit to encourage sustained employment. They also include new incentive payments for sustained employment.

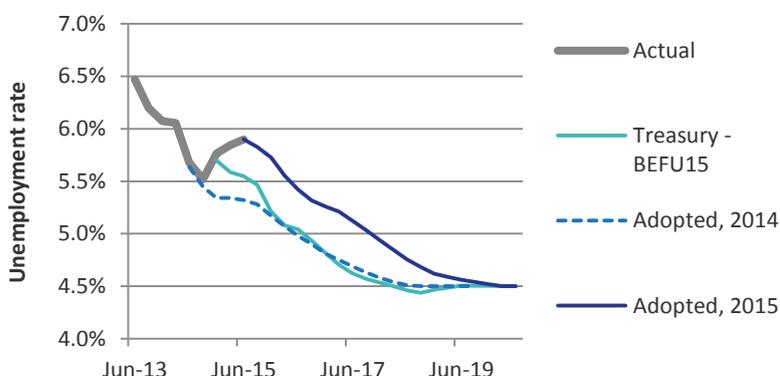
2.3.3 Labour market changes

Developments in 2014/15

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.

The **unemployment rate increased over the 2014/15 year**, in contrast to the trend forecast by Treasury that was used in the previous valuation. In the June 2015 quarter, the unemployment rate increased to 5.9% compared to the 2014 forecast rate of 5.3%. As in previous valuations we have used Treasury forecasts (here from the 2015 Budget Economic and Fiscal Update, or BEFU) and updated for the June 2015 quarter results. In contrast to previous years, we have also extended the number of years until reversion to full employment relative to Treasury forecasts; we felt that given the higher June quarter observation, a projection of a return to full employment in March 2018 would be too rapid. As in previous valuations, full employment is taken to be a national unemployment rate of 4.5%.

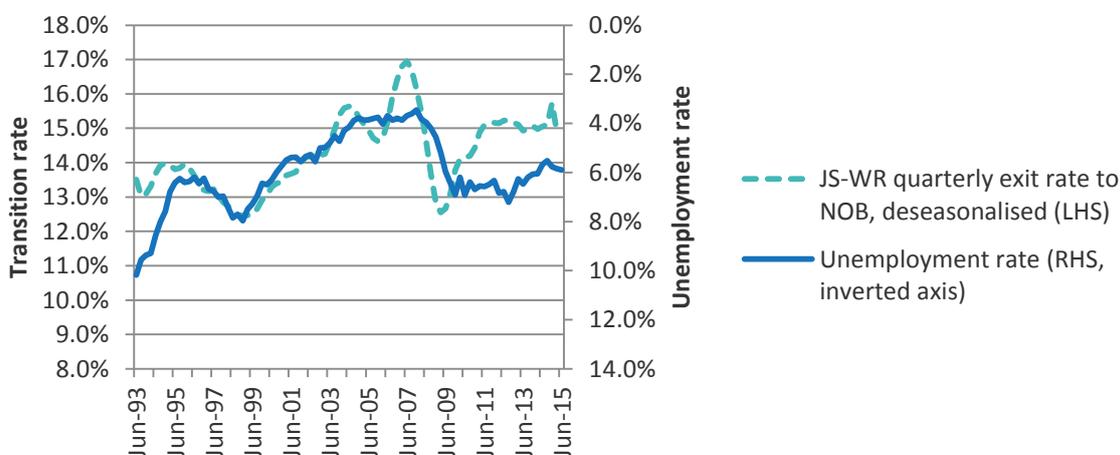
Figure 2.1 National unemployment rates



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, but virtually all benefit types exhibit some sensitivity.

Figure 2.2 Historical unemployment rate and quarterly transition rate from JS-WR to NOB



The net effect is a **materially higher** adopted unemployment rate assumption for the next five years. If today's forecasts were applied to last year's valuation, the liability would have been 0.5% (or \$0.4 billion)

higher. We also would have expected more new clients entering the system over 2014/15. The impact of this change is discussed further in Section 3.4.

The increase in the unemployment rate over the year, combined with a slower projected reversion to full employment, has materially increased the current and future client liability estimates.

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 2014/15

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 2014/15 saw the **highest net migration gain ever recorded** (58,300).⁴ 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.

There are also dynamic changes that may have significant impacts on the liability. These could include behavioural changes in the NZ population, such as fewer teen pregnancies. They also include changes to the composition of the benefit population, such as more exits to work by younger beneficiaries. Active management of the benefit system may have the potential to influence these dynamic effects. Therefore, no attempt is made to isolate them from the attribution of changes due to policy and operations in the next chapter.

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 2015⁵, the working age population has grown by about 10%. Population growth often sees matching increase in the welfare population.
- Over the 10 years to June 2015, the proportion of working age people over 50 has increased from 25% to 29%. 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 29% to 31%); these people are more likely to enter Jobseeker benefits.

Some of these issues are explored further in Section 8.4.

2.3.5 Benefit rates

There have been **no changes to benefit rates** through Welfare Reform, apart from indexation. These were indexed at CPI rates at 1 April 2015 as usual. The only exceptions to this are the Accommodation Supplement (AS) rates, which can be adjusted for local housing conditions. These historical changes are

⁴ 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>

⁵ Statistics New Zealand, Infoshare

allowed for in the regional level modelling of AS payment rates, but future increases have been indexed at the forecast CPI.

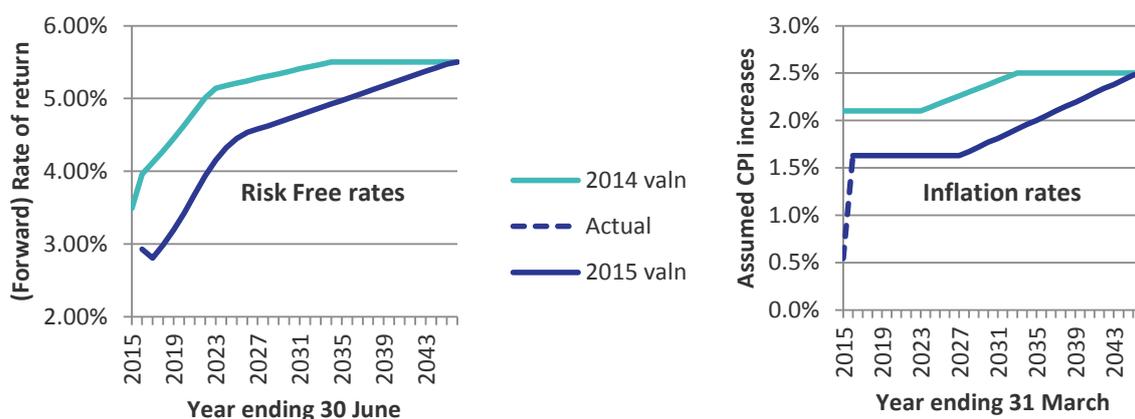
We note that the 2015 Budget announced a benefit increase for families of up to \$25 per week from April 2016, as well as an increase to the child care subsidy through the child material hardship package. These changes come into effect in April 2016. We have **not** allowed for these increases as part of the current valuation; they will be measured and quantified next year after the changes have come into force. **The next valuation will therefore show an increase in the liability that 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).

2.3.6 Other financial drivers

Developments in 2014/15 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 benefit increase will tend to reduce the liability. We discount the liability to June 2015 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 2.3.

Figure 2.3 Assumed risk free discount and inflation rates



- **Inflation experience was lower than expected.** Benefits were increased by 0.5% compared to the 2.1% assumed in the previous valuation and the Treasury has lowered their long range forecasts by reverting to 2.5% at a slower rate. This means that by 2046 we now assume benefit payment rates to be 13% lower than forecast in the previous valuation, and that the overall liability will fall by \$3.7 billion (5.4%).
- **Discount rates have fallen** since the previous valuation with reversion to the long term rate of 5.5% extended to 2046, increasing the liability by about \$5.7 billion (or 8.4%).

These two effects impact the liability in different directions; the net impact is an increase of about \$2.0 billion or about 3%.

PART B RESULTS

3 MAIN RESULT AND ANALYSIS OF CHANGE

INSIDE THIS CHAPTER

- ❖ Introduction and highlights
- ❖ Current and future client liability estimates
- ❖ Summary of changes to key cost drivers in 2014/15
- ❖ Movement in the liability between 2014 and 2015 valuations
- ❖ Actual versus expected results for 2014/15
- ❖ Projected client numbers and payments
- ❖ Analysis of the change under management influence
- ❖ Model changes in light of 2014/15 experience
- ❖ Cumulative impact of management's influence

3.1 Introduction and highlights

The previous chapter identified the key drivers of the future cost of the benefit system, and changes that have influenced the valuation result.

This chapter discusses the main results of the valuation as at 30 June 2015. It provides detailed analysis of actual experience in 2014/15 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 2015 is \$68.4 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 2014/15.

The relatively small net change in the liability relative to last year's estimate – a decrease of \$0.6 billion – masks **an underlying \$2.2 billion performance improvement** of a similar magnitude to last year's result. This improvement more than offsets the effect of worse than expected unemployment rate movements.

The \$2.2 billion improvement under management influence is largely driven by **improvements for Sole Parents and work-ready Jobseekers, but also by a reduction in re-entries to benefits**. At a regional level the largest contribution to the \$2.2 billion was from Auckland, while the greatest percent change from expected was in the Central region.

Over the course of 2014/15, the number of actual people on benefits was very close to expected – just a difference of 0.1%. Average payment levels were slightly lower than expected. These results for client numbers and payment levels combine to give total payments 0.4% or \$26m lower than expected in 2014/15; very close to expected levels despite higher than expected unemployment.

Compared to pre-reform baseline forecasts in the 2012 valuation, there has been **a cumulative reduction in payments of \$1.3 billion over three years**. About 70% of these savings can be attributed to Welfare Reform policy and operational changes.

The cumulative impact over four years of the change considered to be under management influence is about 15% of the value of the original liability as at 2011, or \$12.0 billion. These changes mean that, compared to the pre-reform benchmark valuation in 2012, **current clients are expected to spend about 900,000 fewer years on benefits over their working lifetime**. More than three quarters of this reduction in future years on benefits can be attributed to policy and operational changes.

3.2 Current and future client liability estimates

The estimated current client liability as at 30 June 2015 is \$68.4 billion. This is the expected cost of future benefit payments and related expenses for clients who received income support in 2014/15 – ‘current clients’. The result is broken down in two different ways below; by current client segment in Table 3.1 and by future benefit payment type in Table 3.2. 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 a regional level.

Table 3.1 Current client liability forecasts by client segment at 30 June 2015 and previous valuation. Results based on client’s segment at each respective valuation date.

Top tier segment	Segment	2015 Valuation				2014 Valuation			
		Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit	Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit
Jobseeker Support	JS-WR <1 year	44,527	4,189	94	9.7	44,395	4,058	91	9.7
	JS-WR >1 year	32,242	3,672	114	10.3	34,337	3,911	114	10.5
	JS-HCD <1 year	22,374	2,678	120	10.5	22,106	2,523	114	10.4
	JS-HCD >1year	42,353	5,866	138	11.0	44,006	5,959	135	11.3
	Sub-total	141,496	16,405	116	10.4	144,844	16,452	114	10.5
Sole Parents	Youngest child 0-2	26,232	5,519	210	15.9	27,205	5,767	212	16.4
	Youngest child 3-4	14,681	2,840	193	14.6	16,325	3,227	198	15.3
	Child 5-13, <1 year	4,570	610	133	10.5	4,141	563	136	10.9
	Child 5-13, >1 year	25,950	4,441	171	12.8	28,876	5,072	176	13.4
	Sub-total	71,433	13,410	188	14.1	76,547	14,628	191	14.7
Supported Living	Carer	8,812	1,360	154	10.7	8,675	1,297	149	10.9
	Partner	8,041	872	108	8.4	8,098	853	105	8.5
	HCD	87,113	15,398	177	12.7	86,863	14,842	171	12.8
	Sub-total	103,966	17,630	170	12.2	103,636	16,992	164	12.3
Youth	Youth prog (<18)	1,923	294	153	16.7	1,829	251	137	15.2
	Young Parent (<19)	1,086	232	214	16.9	1,192	254	213	17.5
	Sub-total	3,009	526	175	16.8	3,021	506	167	16.1
Not On Main Benefits	Sup only, <1 year	29,907	1,405	47	6.5	32,556	1,488	46	6.5
	Sup only, >1 year	68,885	3,666	53	7.4	63,844	3,414	53	7.5
	Orphan only	5,289	510	96	7.3	5,107	486	95	7.5
	Sub-total	104,081	5,581	54	7.1	101,507	5,388	53	7.2
Recent Exits	Recent exits, <1 year	132,421	7,099	54	5.7	148,333	7,461	50	5.5
All segment sub-total		556,406	60,650	109	9.511	577,888	61,427	106	9.541
Expenses + Net loans			7,740				7,575		
Grand total			68,390				69,002		

Table 3.2 Current and future client liabilities subdivided by future benefit type, inflated and discounted⁶

Component	Current client liability \$billion	Future client liability \$billion, for clients entering the benefit system in:				
		2015/16	2016/17	2017/18	2018/19	2019/20
Tier 1						
JS-WR	4.9	0.91	0.84	0.79	0.75	0.74
JS-HCD	7.3	0.94	0.89	0.86	0.83	0.82
SPS	9.4	1.15	1.10	1.07	1.05	1.04
SLP-HCD	21.1	1.37	1.32	1.28	1.26	1.25
SLP-Carer	1.8	0.16	0.16	0.15	0.15	0.15
EB	0.2	0.03	0.03	0.03	0.03	0.03
OB	1.3	0.13	0.13	0.12	0.12	0.12
Subtotal	46.0	4.70	4.46	4.30	4.18	4.16
Tier 2:						
AS	8.5	1.07	1.02	0.98	0.96	0.95
DA	1.7	0.12	0.12	0.12	0.11	0.11
CDA	0.8	0.08	0.08	0.07	0.07	0.07
CCS	1.0	0.18	0.17	0.16	0.16	0.16
Subtotal	12.0	1.45	1.38	1.34	1.30	1.30
Tier 3:						
HS	2.5	0.28	0.26	0.26	0.25	0.25
EI	0.1	0.03	0.02	0.02	0.02	0.02
Subtotal	2.7	0.30	0.29	0.28	0.27	0.27
Other:						
Expense	7.4	0.79	0.75	0.72	0.70	0.70
Net loans	0.3	0.05	0.04	0.04	0.04	0.04
Subtotal	7.7	0.83	0.79	0.77	0.74	0.74
Grand total	68.4	7.28	6.93	6.68	6.50	6.46

The liability estimates for ‘future clients’; that is, incoming clients in each of the next five years are also presented in Table 3.2. **The estimate for new entrants in 2015/16 is \$7.28 billion, slowly falling to \$6.46 billion in 2019/20.** In the previous valuation these estimates were flat (rather than decreasing) with earlier years now higher than previously and later years lower. The updated pattern of future client liabilities largely reflects the updated shape of the unemployment rate forecast which now starts from a higher point and falls further. Chapter 8 includes a more detailed discussion of clients entering the benefit system and projections of the main liability estimate in future years.

The 2014 current client liability was \$69.0 billion. Compared to the 2014 valuation, a number of changes are visible this year. First, payments of SLP-HCD benefits (formerly Invalid Benefit) have increased from 30% to 31% of the total liability, continuing a long term trend. SLP-Carer have also increased as a portion of total liability. This reflects the lower number of clients starting in other benefit types, as well as faster movement out of SPS. SLP benefit payments (HCD + Carers) now represent half of all Tier 1 benefit payments in the current client liability. Future SPS payments have reduced \$1.2b (over 10%) compared to

⁶ Current client liability is discounted to 30 June 2015. Future liability years are discounted to the middle of that year. For example, 2015/16 future client liability is discounted to 31 December 2015. Numbers presented may not add perfectly due to rounding.

last year, reflecting both a decrease in numbers currently on that benefit and recognition of shorter durations once on benefit.

Broadly, in understanding this year's result, there are a number of important steps:

- What events occurred in 2014/15 to drive change?
- What changes materialised in the 2014/15 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 2014/15

This section summarises the events that occurred in 2014/15 to drive change, discussed in Section 2.3.

Changes to drivers of benefit dynamics:

- **Policy settings:** Ongoing impacts of Welfare Reform.
- **Operations:** Ongoing impacts of the new service delivery model introduced in 2013. More integrated service delivery, as well as a shift to continual improvement through the investment approach; trials, practice enhancement and role specialisation.
- **Labour market:** A higher than expected unemployment rate, increasing last year's estimated liability by 0.5%, which would typically lead to greater numbers of entries over 2014/15, especially amongst young workers.
- **Demographics:** An increase in net migration to NZ during the valuation year.

Changes to other financial drivers:

- **Benefit rates:** No significant changes to the benefit rate structure during the valuation year
- **Inflation rate:** Actual for 2014/15 lower than expected and forecasts for future lower than previous assumptions, reducing the liability by \$3.7 billion, or 5.4%.
- **Discount rate:** Forecasts now lower than previously, increasing the liability by about \$5.7 billion, or 8.4%.

3.4 Movement in the liability between 2014 and 2015 valuations

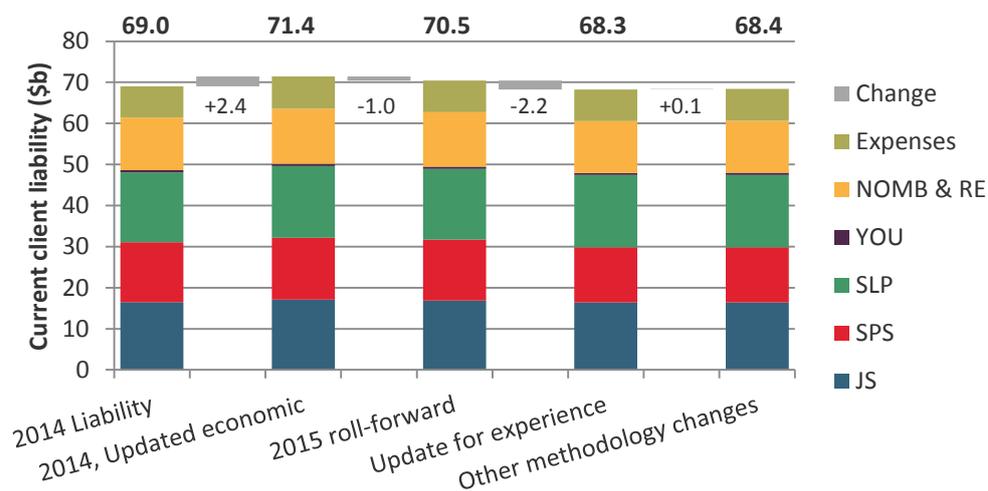
The 2015 current client liability is \$0.6 billion lower than last year's estimate as at 30 June 2014; about 1% lower. This year to year difference is small, but masks significant underlying changes, as summarised below.

- **A \$2.4 billion upwards revision of the 2014 liability due to changes to economic parameters:**
If we had our current knowledge of economic variables (their evolution over 2014/15 and the latest Treasury forecasts), the 2014 current client liability would have been \$71.4 billion. Most of this revision (\$2.0b) is due to changed inflation and discount assumptions (with about two thirds of the increase associated with lower discount rates offset by lower forecast inflation). The remaining \$0.4b relates to the higher unemployment rates seen in 2014/15 and the slower reversion to full employment in our projection.
- **An expected decrease in the liability over the year of \$1.0 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. In the 2014 valuation our expected decrease for the year to 30 June 2015 was \$2.0b. However, updated economic conditions change this expectation to a \$1.0b decrease; the revision reflects increased entries and fewer exits in light of higher than

expected unemployment. However, we still expected numbers in the valuation cohort to decrease marginally over the course of the year.

- An additional decrease of \$2.2 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 \$2.2 billion change includes the impact of policy and operational changes, and is discussed in greater detail in Section 3.7. About \$0.9 billion of this decrease relates to observed changes in numbers and benefit types, and \$1.2 billion relates to updated model assumptions that seek to better reflect recent experience.
- A marginal change due to methodology changes unrelated to experience or performance:**
 A number of changes were made for this valuation, to provide further insight into drivers of benefit dynamics. In particular, CYF and criminal conviction information has been incorporated into the valuation model. We measure the difference before and after this methodological change to ensure the integrity of the valuation. Overall the liability increased by \$0.1 billion; a mechanical increase unrelated to performance.

Figure 3.1 Analysis of change in current client liability between 2014 and 2015 valuations, split by client segment at valuation date.



The small net change in the liability relative to last year's estimate (a decrease of \$0.6 billion) masks an underlying \$2.2 billion performance improvement of a similar magnitude to last year's result. This improvement more than offsets the effect of worse than expected unemployment rate movements.

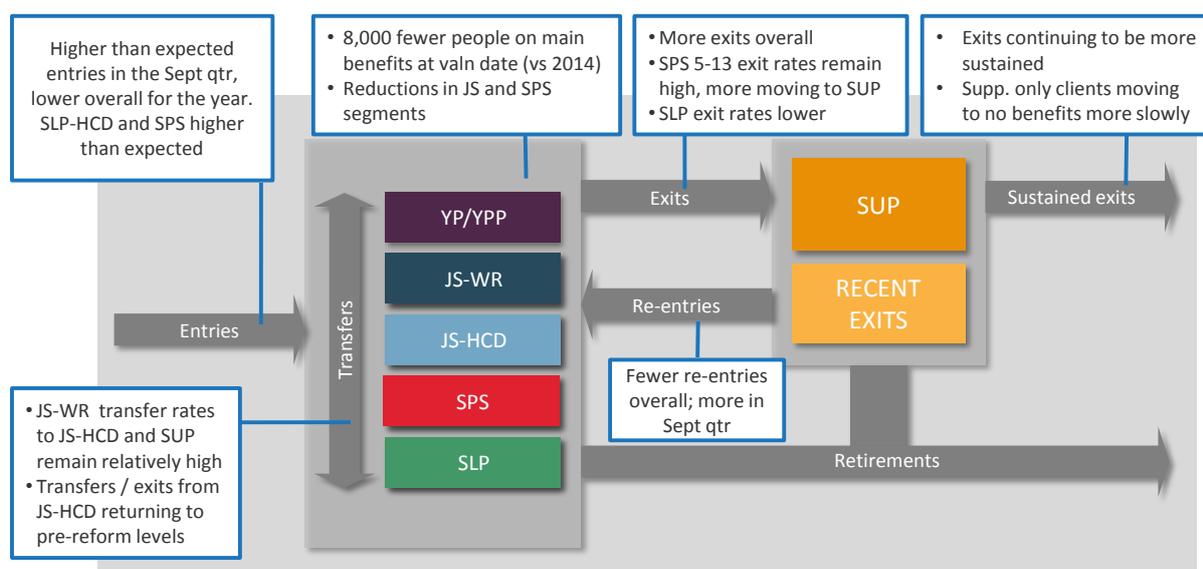
3.5 Actual versus expected results for 2014/15

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 2014/15



3.5.2 Actual versus expected results by segment in 2014/15

This section compares actual and expected numbers of beneficiaries and payment amounts for 2014/15, split by client segment as at 30 June 2014, the previous valuation date. Future clients who were expected to enter in 2014/15 are also included as a separate group. The results are summarised in as well as in Figure 3.3. Total results have emerged close to what was forecast a year ago.

Table 3.3 Actual versus expected benefit results for the 2014/15 year, by segment as at 30 June 2014

Top tier segment	Segment	Avg # on benefit in qtr			Avg Qtrly Benefit			Total payments 2014/15		
		Actual 000s	Expected 000s	Ratio	Actual \$	Expected \$	Ratio	Actual \$m	Expected \$m	Ratio
Jobseeker Support	WR < 1	33.7	34.6	97%	2,683	2,743	98%	362	380	95%
	WR > 1	30.6	30.4	101%	3,467	3,351	103%	424	407	104%
	HCD < 1	18.8	19.0	98%	3,262	3,361	97%	245	256	96%
	HCD > 1	41.5	41.1	101%	3,766	3,671	103%	625	604	103%
Sole Parent	Ch 0-2	26.1	26.1	100%	5,404	5,404	100%	565	565	100%
	Ch 3-4	15.6	15.7	99%	5,241	5,317	99%	327	333	98%
	Ch 5-13 < 1	3.7	3.8	98%	4,580	4,890	94%	67	74	92%
	Ch 5-13 > 1	27.6	27.7	100%	5,158	5,173	100%	570	574	99%
Supp Living	Carer	8.2	8.2	100%	4,811	4,771	101%	158	157	101%
	Partner	7.6	7.6	100%	3,575	3,566	100%	108	108	100%
	HCD	82.9	83.0	100%	4,330	4,353	99%	1,436	1,445	99%
Youth	Youth payt	1.5	1.5	98%	2,679	2,480	108%	16	15	106%
	Young parent	1.1	1.1	100%	4,730	4,731	100%	22	22	100%
NOMB	Sup <1yr	27.5	27.0	102%	1,043	1,047	100%	115	113	101%
	Sup >1yr	57.5	56.7	101%	1,144	1,151	99%	263	261	101%
	Orp only	4.7	4.7	100%	3,640	3,580	102%	68	67	102%
Recent exits	Recent exits	29.2	29.5	99%	2,428	2,521	96%	284	297	95%
Future clients		51.9	51.6	100%	1,899	1,914	99%	394	395	100%
Total		469.7	469.6	100.0%	3,220	3,234	99.5%	6,049	6,074	99.6%

A large proportion of the difference in total payments is from the fourth quarter, where actual payments were 1.5% or \$23m less than expected. This is largely due to the actual benefit inflation rate of 0.5% being lower than the rate assumed at the previous valuation of 2.1%; benefit increases are applied in April, so only the fourth quarter is affected.

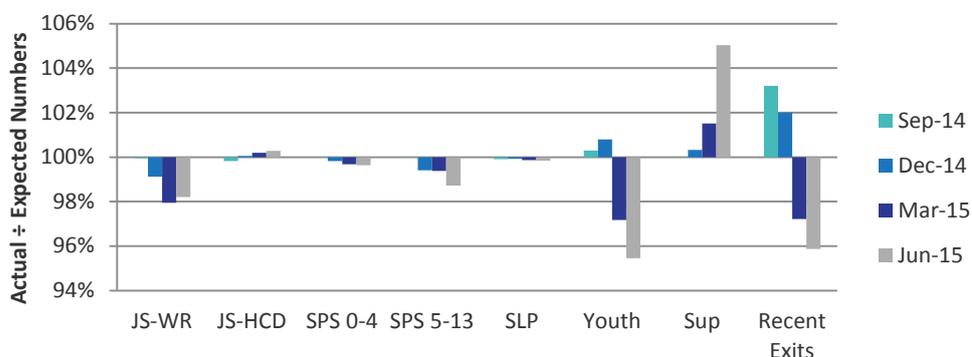
Over 2014/15 the difference between the expected and actual number of people on benefits was less than 0.1%. This result included slightly higher numbers (+0.4%, or 1,700 clients) over the latter half of 2014 and slightly lower numbers in the first half of 2015 (-0.3% or 1,400 clients). The higher than expected number of beneficiaries in the first half of the 2014/15 year was driven by more future client entries as well as re-entries amongst recent exits.

Higher entry and re-entry rates may have been influenced to some extent by the Ashburton incident in August 2014. Some offices were temporarily closed, and there was considerable disruption to Work and Income’s staff and clients for some time afterwards. There is no indication that these effects were restricted to a single region; and performance in the second half of the year appears to have stabilised to expected levels.

While the number of beneficiaries overall tracked close to expected across the 2014/15 year, performance varied between client segments.

- **Jobseeker support:** Amongst clients who started in JS-WR benefits; by the June quarter 2015 there were 1,000 fewer clients remaining on benefits compared to expected. This was despite an increase in the unemployment rate over the year– Jobseekers are typically most sensitive to changes in the unemployment rate. Clients who started in JS-HCD segments were closer to expectations.
- **Sole parent:** Of clients who started in SPS segments, 500 fewer were on benefits in the June 2015 quarter compared to expectations. The effect was particularly visible for low duration clients whose youngest child was between the ages of 5 and 13.
- **Not on main benefits:** Of clients who started in Supplementary benefit segments, significantly more of them remained on benefits by June 2015 (3,600, or +5%). This is consistent with more benefit exits by groups (such as Sole Parents) requiring additional support once in work.
- **Recent exits:** The number of people who were recent exits at the previous valuation and were on a main benefit in the June 2015 quarter was lower than expected (1,800 people, or 3% lower). This suggests that exits from benefits are becoming more sustained.

Average payment levels were slightly lower than expected, although payment levels for high duration JS and Youth Payment (YP) segments were above expected. Figure 3.3 Actual versus expected client numbers over the 2014/15 year, by segment as at 30 June 2014



These results for client numbers and payment levels combine to give total payments 0.4% or \$26m lower than expected in 2014/15; very close to expected levels despite higher than expected unemployment.

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.

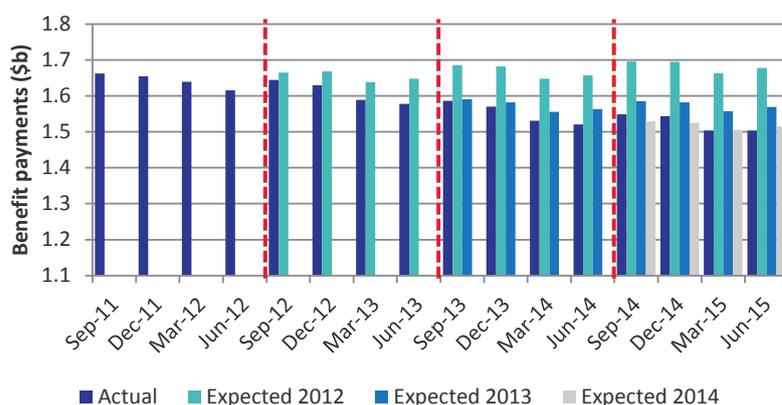
The 2012 valuation set a benchmark prior to Welfare Reform. Compared to pre-reform levels forecast in the 2012 valuation:

- 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%

In total, payments to date for the 3 years since 2012 were 6.4% lower than forecast in the 2012 valuation, reflecting an actual saving of \$1.27 billion compared to what was expected. About 70% of these savings can be attributed to Welfare Reform policy and operational changes.

About 30% of the total 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. The remainder appears to be due to experience separate to economic factors; policy and operational changes undertaken by Government and MSD.

Figure 3.4 Actual and expected 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:

- **Age:** Results by age for the 2014 current client cohort were generally close to expected, with the exception of the 18-19 year old group (+3.5%). There was more variation for new clients entering the system; entries amongst clients aged below 25 were 2% lower than expected across 2014/15 and 4% lower than expected in the second half of the year. This result is driven by fewer supplementary

benefit only clients. As these clients generally receive smaller benefits, the effect at a payment level was less significant.

Notably, the results look quite different when restricted to people who were JS-WR clients at the previous valuation date. In the June quarter numbers on benefit were 2% higher than expected for clients under 30, and slightly lower than expected for all older age bands. We discuss Youth outcomes in more detail in Section 4.7

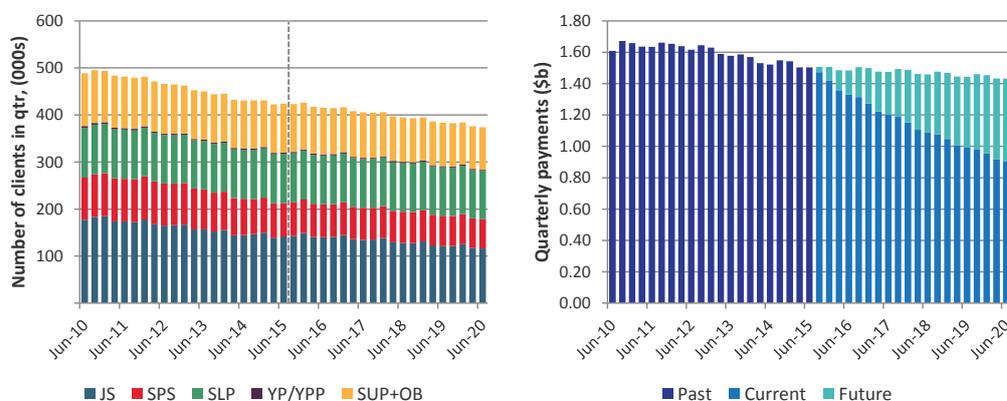
- **Regions:** Auckland, East Coast and Northland regions have had particularly good results compared to expected payments over 2014/15. No region had materially higher than expected payments over the year, although Canterbury and Taranaki were higher than the national average. Regional effects are discussed further in Chapter 6.
- **SLP by Duration:** Numbers on benefit in the June 2015 quarter were lower than expected for newer clients (those who had been on benefit for less than a year as at June 2014); they were 4% lower than expected. All other duration bands were within 1% of expectations.

More detailed breakdowns examining the experience over 2014/15 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 15%. The projected decrease is stronger than in previous valuations and compares to an actual decrease of 17% over the five years from June 2010. 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 remain fairly flat over the next five years (a 1% decrease), with SLP-HCD and SLP-Carers entries balancing out exits.
- Total payments are forecast to fall by 5% over the next five years, despite assumed benefit inflation of 8.4% over the period. Note this does not allow for the planned benefit increases announced in the 2015 budget. Over three quarters of total projected payments over the next five years are

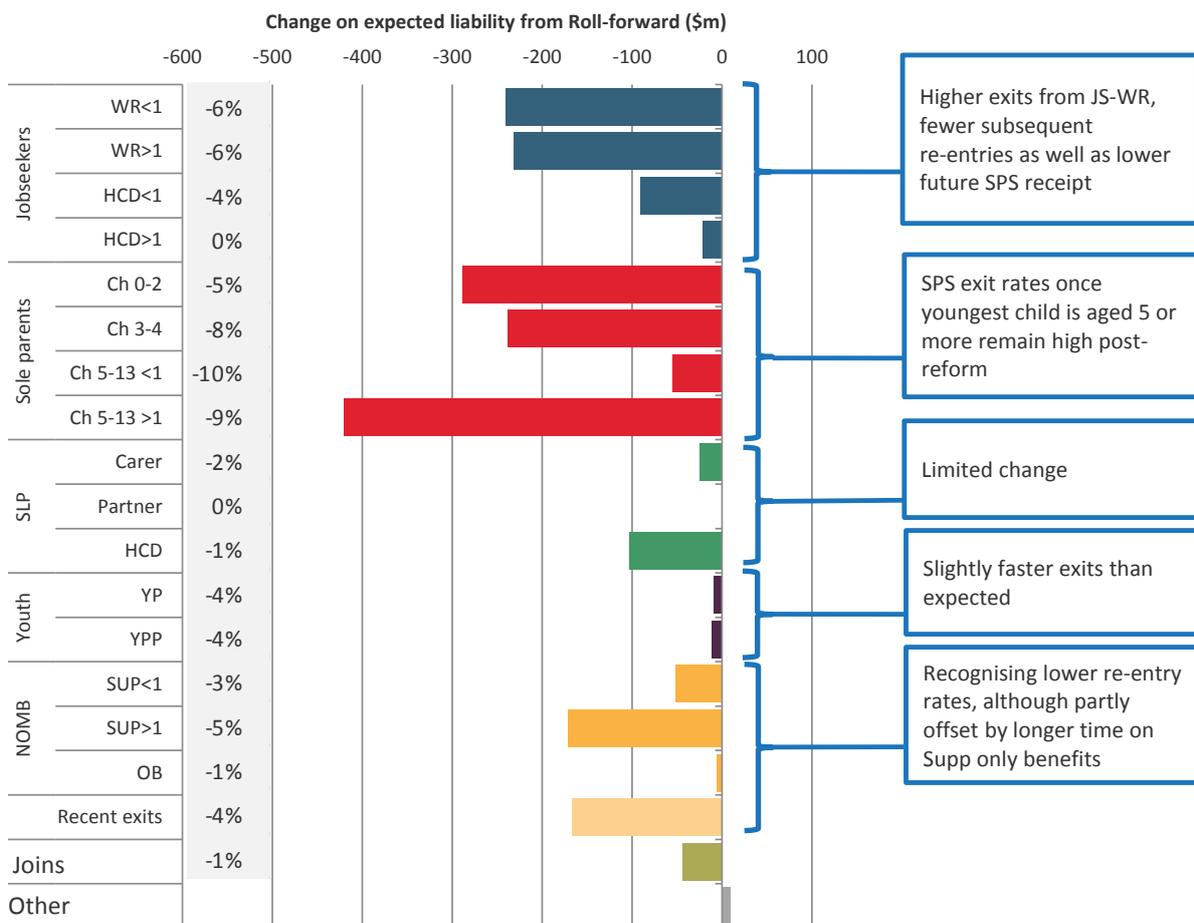
attributable to the current client cohort, with the remainder attributable to future clients. The future client liability represents an increasing proportion of future payments over time.

3.7 Analysis of the change under management influence

3.7.1 Segment level impact

There is a \$2.2 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 \$2.2 billion decrease in change due to experience, by segment as at June 2014



For clients in the 2014 valuation cohort, the most substantial reductions have been for Jobseeker, Sole Parent, Not on main benefit and Recent exit segments. The biggest contributor to all these segments is lower future SPS payments; for example, Jobseekers who do move into SPS are expected to have shorter duration. There have also been higher than expected movements from JS-WR off main benefits and slower than expected re-entries, which have also contributed to the result.

The future lifetime cost for former Sole Parent clients is now 7% 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. Higher work expectations were introduced for some of these clients (youngest child age 5) through the October 2012 reforms; the remainder already had part-time work expectations. Most Sole Parents have received work-focused case management since June 2013, which appears to have had a marked effect;

for instance, clients with youngest child aged 3 or 4 have also seen faster than expected movement off SPS benefits.

The decrease in liability amongst Not on main benefits and Recent exits segments (\$0.4 billion, or 4.2%) 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 (for WID/WA and former DPB clients with child >14) 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

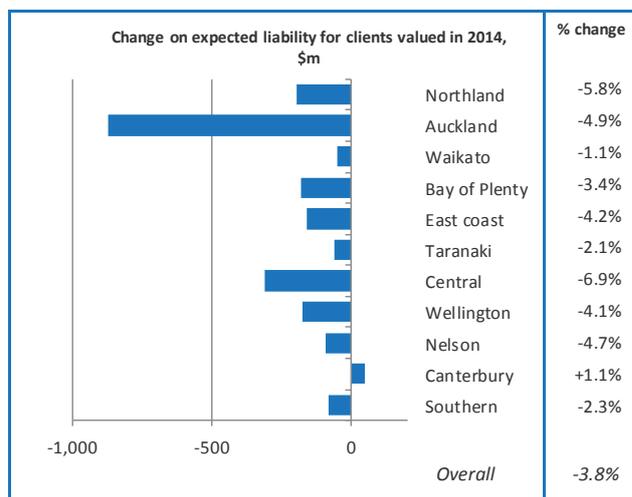
The \$2.2 billion decrease in the change due to experience can also be broken down at the regional level.

For clients who were receiving benefits in 2014, the most substantial reductions considered to be under management influence have been for those who were beneficiaries in Auckland in 2014, a total reduction of \$0.9 billion, or 4.9% compared to expected.

Analysis of the percent change, rather than absolute dollar amounts, controls for differences in the size of regions. The greatest reduction in the liability considered under management influence was in the Central region; a reduction of 6.9%, or \$313 million. Northland's liability was 5.8% or \$195 million lower than expected, and Nelson's was 4.7% or \$91 million lower than expected.

Only Canterbury saw a small increase in the change due to experience, an increase of 1.1% or \$48 million relative to expected. This 1.1% net increase incorporates decreases for Sole Parents that are more than offset by increases amongst Jobseekers and recent exit segments. It is worth noting that Canterbury's context is unique due to its stronger labour market – 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 \$2.2 billion decrease in change due to experience, by June 2014 region



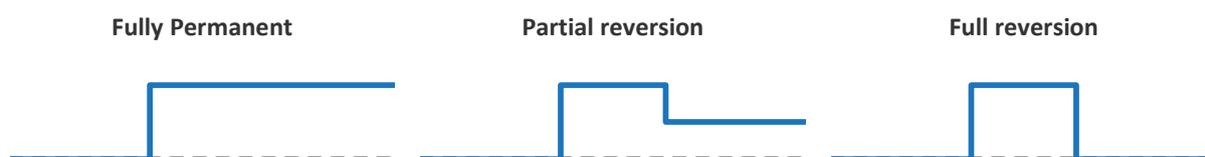
3.8 Model changes in light of 2014/15 experience

As beneficiaries' behaviour changes in the valuation year, we need to differentiate between one-off changes, and changes that reflect a new, ongoing behaviour pattern. In particular, last valuation we had to estimate how much of the behaviour response to Welfare Reform was permanent, and how much was

temporary. In this section, we consider the experience that materialised to test our assumptions, and refine them for future years.

Each year we incorporate the new experience during the valuation year into our valuation projections for future years. Appropriately reflecting the extent to which behaviour immediately following reforms will continue long term is generally difficult; there is usually some degree of reversion to behaviour prior to reform as time goes by. This is an issue common to many types of long-term benefit schemes, such as accident and worker’s compensation schemes. Alternative approaches to projection are illustrated in Figure 3.8. All lead to a decrease in liability, but judgement on the degree of reversion will heavily influence the magnitude of the decrease.

Figure 3.8 Illustration of typical exit rate patterns observed after a reform



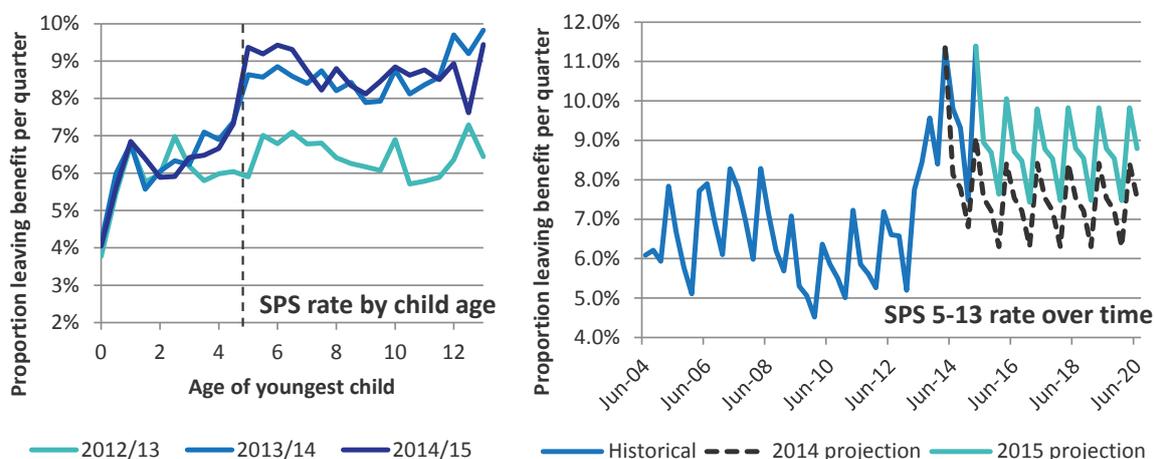
In the previous valuation we generally allowed for a partial reversion. That is, we allowed for the reform impacts to have a **permanent improvement** in benefit dynamics, but that the improvement would only be a portion of that seen in the 2013/14 dynamics – a **‘partial reversion’**. The approach was a natural response to the projection uncertainty, to allow evidence of sustained trends to develop over time.

In this valuation we have made model changes that decrease the liability by \$1.2 billion. These almost entirely relate to effects that we observed in 2013/14 that have now been sustained in 2014/15. These trends are now more fully recognised in the projections – that is, they are closer to a **‘fully permanent’** behavioural change. We discuss the main transition rate assumptions below.

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.

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 2014 and 2015 valuations.



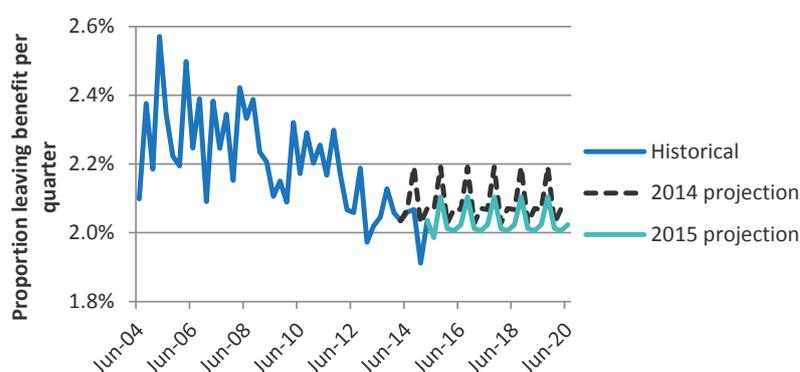
Transition rates out of SPS (either out of the benefit system or to another benefit) for those with youngest child 5-13 increased markedly in 2013/14; in fact, they almost doubled. The revised assumptions are illustrated in Figure 3.9.

These higher rates of transitions have been maintained in 2014/15. We have increased our transition rate assumption for these groups, but still have not fully recognised the change. We have assumed a rate that recognises about two thirds of the uplift in rates observed post-reform. The observed improvement is likely a combination of the new benefit types, part-time work requirements, and active case management through the new service delivery model.

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 financially significant as SLP-HCD payments represent a large proportion of the outstanding liability. Leave rates have fallen slightly in 2014/15, which we have reflected in our assumptions.

Figure 3.10 Leave rate by quarter for SLP-HCD clients



Leave rates for JS-HCD clients

Last valuation we observed an increase in leave rates, which coincided with an influx of clients formerly on SPS and Widow benefits. We assumed that most of this effect was transitory and that leave rates would fall back down closer to levels seen prior to reform. This in fact did occur in 2014/15, and we have left our assumptions unchanged.

Likelihood of remaining on JS-WR benefits and likelihood of re-entering the system

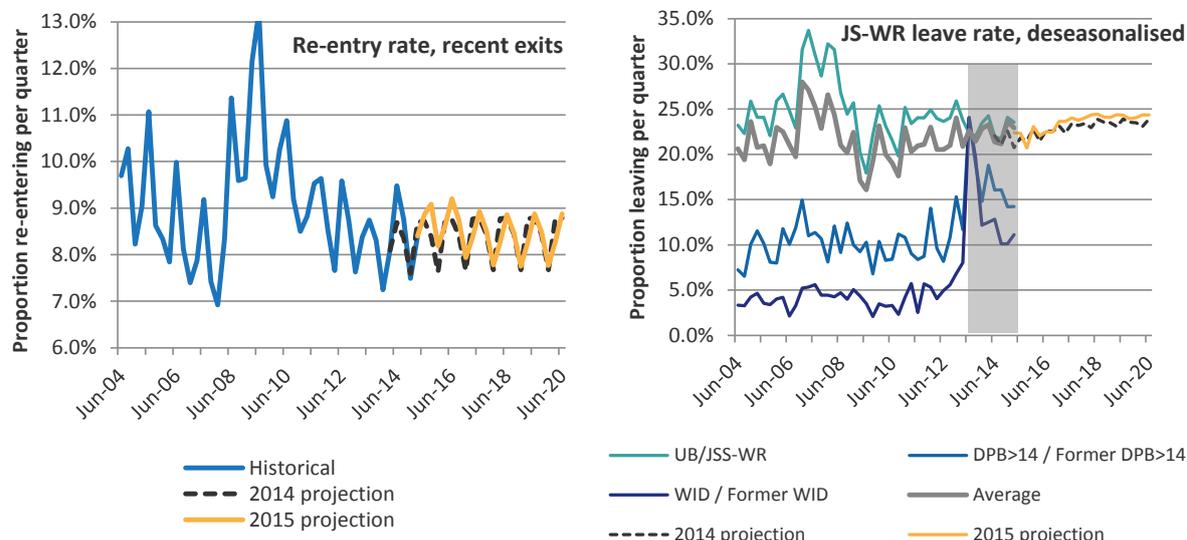
Two of the biggest transitions in terms of number of clients per quarter are the rate that clients leave JS-WR (either off benefits or to another benefit) and the rate at which recent exits (those off benefits for less than a year) re-enter the welfare system. Both transitions are shown in Figure 3.11. Changes to these models have had virtually zero net impact on the liability this year:

- Re-entries were a little higher than expected for the most recent exits; we have increased our assumption in the short term, but our long term rate is close to unchanged.
- We have lowered the re-entry rate slightly for people who have been out of the welfare system for longer (1-5 years), in response to emerging experience.
- The JS-WR leave rate remained flat, despite an increase in the unemployment rate. To reflect this we have increased the long term transition rate slightly.

Clients on the new JS-WR benefit are a mix of the clients that would formerly have received Unemployment Benefit, WID/WA and DPB with youngest child 14 and over. Our assumption last year was to effectively take a weighted average of these historical groups. We have continued using a similar

approach, but also have started transitioning to a rate that is based on the observed experience that is now available for actual JS-WR clients (as opposed to the pre-reform weighted average).

Figure 3.11 Probability of re-entering benefits each quarter for recent exits (left) and probability of leaving benefit for traditional and new JS-WR cohorts (right, experience since July 2013 shaded)



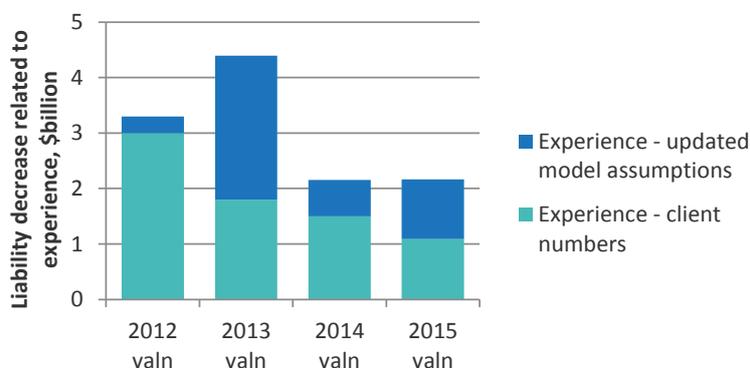
3.9 Cumulative impact of management’s influence

This is the fifth welfare valuation, meaning that there is now four 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. Each year, there has been a decrease both 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 the chart below.

Figure 3.12 Current client liability reductions due to experience, past four valuations



The cumulative impact over four years of the change considered to be under management influence is about 15% of the value of the liability as at 2011, or \$12.0 billion.

The change under management influence can also be understood in terms of numbers of beneficiaries and their expected duration on benefit⁷:

- Since 2012, Jobseeker segment numbers have reduced by 14%, with a relatively larger reduction in the work-ready segments. Expected number of future years on benefit are slightly shorter; 0.4 years for JS-HCD clients.
- Numbers in SPS 5-13 segments are down 23%, while numbers in other SPS segments are 18% lower. SPS clients are expected to spend about 1.5 years less on benefit.
- SLP numbers are 3% higher (Carers +13%), with small changes in duration.
- Youth segments have 2% more clients, with a large substitution from YPP to YP. Average future duration on benefits is 2.1 years less (3.2 for YPP).
- Future duration on benefit for Not on main benefits segments has reduced, by about half a year.

These changes mean that, compared to the pre-reform benchmark valuation (as at June 2012), current clients are expected to spend about 900,000 fewer years on benefits over their working lifetime. More than three quarters of this reduction in future years on benefits can be attributed to policy and operational changes.

⁷ 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 3.12 do allow for unemployment rate changes.

4 FEATURES OF INTEREST

INSIDE THIS CHAPTER

- ❖ Introduction and highlights
- ❖ Early entry and long-term benefit receipt
- ❖ Intergenerational benefit receipt
- ❖ Vulnerability in childhood/youth and long-term benefit receipt
- ❖ History of criminal convictions and long-term benefit receipt
- ❖ Correlations amongst risk factors
- ❖ Youth segments – a detailed view
- ❖ Subgroups of interest

4.1 Introduction and highlights

This chapter dives deeper into some of the key drivers of risk associated with both entering benefits – particularly at a young age – and remaining on benefits long term. Benefit type is the strongest predictor of risk of long-term benefit receipt; in effect a proxy for some of the principal reasons for benefit receipt, such as sole parenthood, or presence of a severe health condition/disability. However, there is significant diversity within segments in terms of lifetime welfare trajectories.

This year's valuation introduces a cross-MSD and cross-agency view of drivers of entry and risk of long-term benefit receipt through new matched data on beneficiaries' history of contact with Child Youth and Family (CYF): care and protection (CP) and youth justice (YJ); and Corrections. These are indicators of vulnerability in childhood and youth, and of criminal convictions in adulthood. We also revisit some drivers such as intergenerational receipt; introduced in the previous valuation.

We also attempt to bring these risk factors together; we explore how the existence of one risk factor is associated with higher incidence of other risk factors. We also explore the relative influence of these factors on particular cohorts of interest.

EARLY ENTRY

Previous valuations have highlighted the importance of age of first entry into the benefit system, in particular the significant share of the liability associated with early entrants.

- The estimate that about **75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20** remains true.
- Despite the very small number of beneficiaries who enter YP/YPP each year, just over a third (34%) of the total liability is attributable to clients who first entered benefits via one of these youth segments.

INTERGENERATIONAL BENEFIT RECEIPT

- About three quarters of current clients aged 16 to 25 (for whom data is available) had a parent who received benefits during their childhood. **45% of the overall liability for all beneficiaries under age 25** is associated with children from families that received benefits for 80% or more of their teen years. These clients have **an average lifetime benefit \$63,000 higher** than those with no beneficiary match.

- **Intergenerational benefit receipt is very high amongst clients who are under 18.** For youth segments (YP/YPP), 9 in 10 were from a beneficiary family – over a third had a parent who was on benefit almost continuously during their teenage years. These rates are so high that **last year we concluded that early entry—75% of the liability—was a partial proxy for intergenerational family benefit history** (except for beneficiaries with severe health conditions and disabilities).
- Of children born in 1993/94 and 1994/95 (who had at least one parent who received a main benefit), new analysis this year finds that over a third of these children had parents on benefit for more than eight years while they were under age 18. Almost half go on to enter the benefit system as young adults, with this figure highly dependent on the number of years the parent received benefits -- **75% of children from intensive beneficiary families had received a benefit by age 23.**

VULNERABILITY IN CHILDHOOD AND YOUTH

- Over a third of all current and recent beneficiaries aged 16 to 25 (for whom data is available) have some history of contact with CYF care and protection and/or youth justice services. People with CYF history make up about 15% of the general population, but 38% of the welfare population in their age cohort and **a disproportionately large amount (47%) of their age cohort's current liability.**
- Beneficiaries who are under 18 are also far more likely than other New Zealanders to have had a history of abuse, neglect and/or youth offending. Youth segments (YP/YPP) are very highly correlated with CYF-CP and CYF-YJ interaction; **two thirds of all beneficiaries in the youth segments (YP/YPP) have had some level of interaction with the CYF system.**
- One key effect of CYF history on benefit dynamics is **higher risk of early entry** – which has already been established in previous valuations to be a very significant driver of risk of long-term benefit receipt.
- There is also an increase in risk of long-term benefit receipt associated with childhood/youth vulnerability (as measured by CYF history) in addition to the heightened entry risk. People in the 2015 valuation cohort with CYF history have **an average future lifetime welfare cost that is about \$47,000 higher** than those without such history. This effect is seen across all major segments except SLP.
- About 30% of this is directly attributable to the childhood/youth vulnerability itself *over and above* other risk factors. The remainder reflects correlation of other risk factors – such as intergenerational benefit receipt, which is highly correlated with CYF exposure. For those with **an event before age three this CYF effect on benefit receipt is twice as large** as those who have an event after age three.

We conclude that last year's finding should be further nuanced in light of this new evidence – **early entry is a partial proxy not only for intergenerational benefit receipt, but for broader family vulnerability including abuse and neglect in childhood and youth. Entering early is in turn associated with a considerably elevated risk of long-term benefit receipt in adulthood.**

HISTORY OF CRIMINAL CONVICTIONS⁸

Offenders who have been convicted of a crime and served some type of criminal sentence are heavily over-represented in the welfare population.

- **About a quarter of the 2014/15 beneficiary population have had a criminal conviction in their past; for males it is 4 in 10.** One in ten welfare clients has been to prison and one in ten has been convicted of a violence-related crime.

⁸ Criminal conviction is used throughout as shorthand for a conviction which leads to correctional activity, typically a community or custodial sentence.

- **There is a strong statistical relationship between clients who have been convicted and served a sentence and long-term benefit receipt.** People in the 2015 valuation cohort who have committed a crime leading to a sentence have an average future lifetime welfare cost that is over \$37,000 higher than those without such history. About 40% of this difference is directly attributable to the circumstances of those having criminal histories (as measured by the existence of criminal convictions). The remainder reflects correlation with other risk factors. The proportion directly attributable to the circumstances of having a criminal history is larger for people who have spent more time serving sentences.
- Benefit payments to current welfare clients with a past community or custodial sentence represent **a third of the total current client liability** – well over their 25% share of the welfare client population.

For all clients aged 22 to 24 (inclusive – for whom CYF-YJ data and several years of adult Corrections data are available):

- About one in every ten have YJ history and two in every ten have an adult criminal conviction
- **About 70% of clients with YJ history have an adult criminal conviction** on record (five times the rate of those without YJ history)
- **About 36% of clients with an adult criminal conviction have a YJ history too** (nearly ten times the rate of those without an adult criminal conviction).

CORRELATIONS AMONGST RISK FACTORS

For clients aged less than 25, we now have a significant number of factors to understand their risk of long term benefit receipt. One important feature is that these factors correlate - that is, **people with one risk factor tend to have higher incidences of other risk factors**. For example:

- 36% of the cohort has some CYF history, but this rate is 1.6 times higher (56%) for the subset of the cohort with intensive family benefit history.
- Young adult beneficiaries with CP history are 1.7 times more likely to have had YJ or criminal conviction history.
- Those from long-term beneficiary families are 1.5 times as likely to have a YJ or conviction history.

Meanwhile, as noted above, about 70% of beneficiaries aged 22 to 24 with YJ history also have criminal convictions as adults (five times the rate of those without YJ history). This shows that **risk factors are closely inter-related, and that family vulnerability in childhood and youth are associated with early contact with both welfare and justice systems – and more intensive contact in adulthood**.

YOUTH SEGMENTS – A DETAILED VIEW

Valuing the lifetime costs of benefit makes it very clear that an effective strategy for working with youth and young entrants is essential to achieving the goal of reducing long-term benefit receipt.

Since August 2012 there has been a 20% increase in the number of Youth Payment (YP) clients, for the most part offset by a 20% decrease in Young Parents. This corresponds to about 400 clients.

This valuation shows signs of potential headwinds for management's attention; such as youth sensitivity to rising unemployment rates, a significantly increased flow in from CYF-CP, and falling transition rates off benefit.

At the same time, we also observe that growth in YP numbers masks several important underlying positive trends for youth that are consistent with the objectives for the Youth Service, and government's broader Better Public Services (BPS) agenda:

- Some of the increase in YP numbers appears to be explained as an off set of decreasing YPP numbers – that is to say, fewer teen beneficiaries are becoming young parents, and some young women are receiving YP instead of YPP benefits.

- New data this year enables us to show that there has also been a significant decrease in contact by the youth beneficiary cohort (YP/YPP) with youth justice and Corrections.
- We also understand that skills-related BPS results have been positive - particularly for Māori youth, who are over-represented amongst youth beneficiaries. This could point to a 'lock-in effect' whereby youth remain longer on benefits while completing qualifications.

Positive trends for youth beneficiaries such as decreased teen pregnancies, decreased criminal behaviour, and improving qualifications could appear as increased YP numbers, but in fact represent significant improvements in long-term outcomes consistent with the government's broader agenda.

4.2 Early entry and long-term benefit receipt

4.2.1 Age at entry into the welfare system

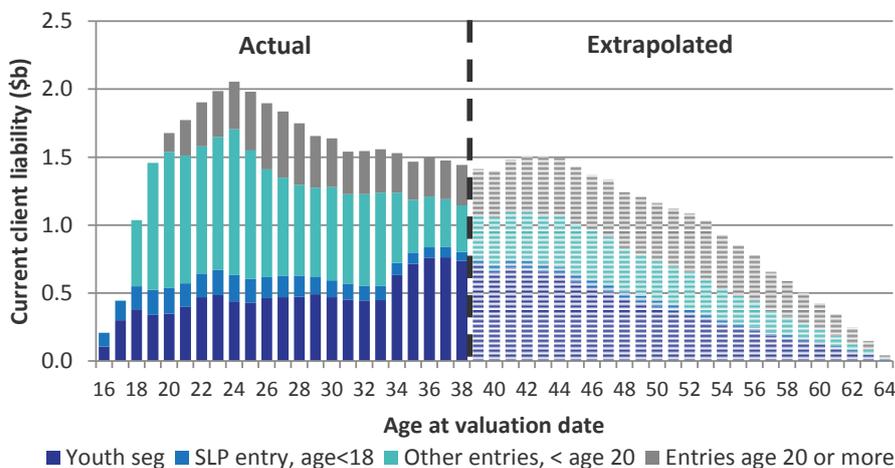
Age of entry, and family risk factors early in life that drive early entry clearly have an important influence on lifetime benefit pathways. Previous valuations have highlighted the importance of age of entry as a predictor of long-term benefit receipt. Beneficiaries who enter as youth via either Youth Payment (YP) or Young Parent Payment (YPP) or as young Supported Living Payment (SLP) clients have significantly higher average lifetime costs. Early entrants of all ages make up a significant share of the overall liability.

- The estimate that about **75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20** remains true.
- 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 4.1 shows the distribution of the liability by age/status of first entry into the benefit system (shown in colour coding) split by current age band (on the horizontal axis). This shows that early entrants make up a majority of beneficiaries at virtually any age; though less so later in life. It also shows that the vast majority of the liability in the benefit system is associated with early entrants (all three shades of blue combined).

The data used in this report has about 22 years of history, so age at entry is only accurately known for clients under 40. The estimation below has extrapolated trends for clients over age 39, owing to the lack of available data for age at first entry for these clients.

Figure 4.1 Current client liability split by current client age and status when first entering the benefit system



Within an age group, age of entry continues to be a powerful predictor of average lifetime cost, despite not being explicitly modelled in the valuation (it is allowed for indirectly via age, duration and benefit history). Figure 4.2 shows the age at entry for clients aged 30-39 at the valuation date. Of these clients, 63% entered the system on some benefit under the age of 20. Furthermore, these clients contribute more heavily to the liability. Of the total liability attached to the 30-39 year old age band, 80% is attributable to those clients who entered before age 20. This highlights the importance of the Youth segment and the potential long-term effects of early intervention. These figures have been relatively stable since the 2013 valuation.

Figure 4.2 Numbers and liability by age at entry (proportion of clients aged 30-39 on the left, relative contribution to future lifetime liability on the right)

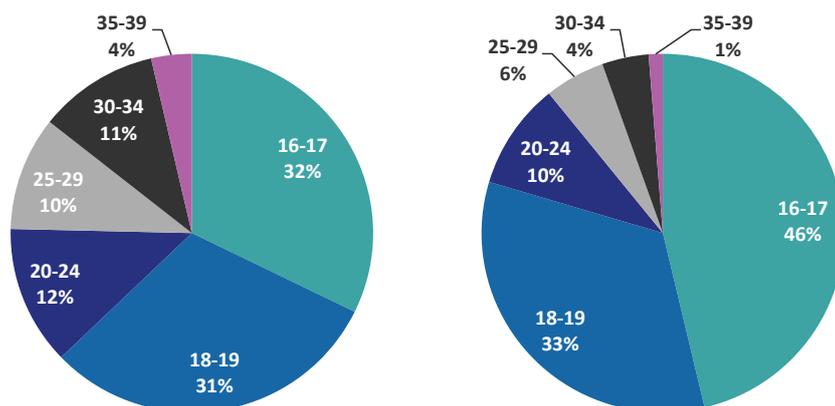


Table 4.1 shows the average future lifetime liability for age at valuation versus age at entry into the system. Again, age at entry proves to be a powerful differentiator for future lifetime cost within age groups. The future liability for clients **currently** aged 35-39 but entering in the 16-19 age band (about \$155,000) is almost 65% higher than those entering in the 20-24 band (about \$94,000), more than double those entering in the 25-29 age band (about \$77,000) and more than triple the average liability for those entering age 35-39 (about \$43,000).

Table 4.1 Average liability 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	135					135
20-24	148	68				126
25-29	168	92	49			131
30-34	161	96	60	42		125
35-39	155	94	77	54	43	123
Average	155	84	58	48	43	127

4.2.2 What drives early entry?

There are limited reasons minors can be granted benefits, typically limited to;

- Presence of a severe health condition or disability – SLP
- Young parenthood – YPP
- Primarily family breakdown, though some other circumstances apply – YP

Figure 4.3 shows the distribution of early entrants on the valuation date by benefit type, an indicator of their high level reason for entering benefits. Note that there are significantly fewer clients under age 18,

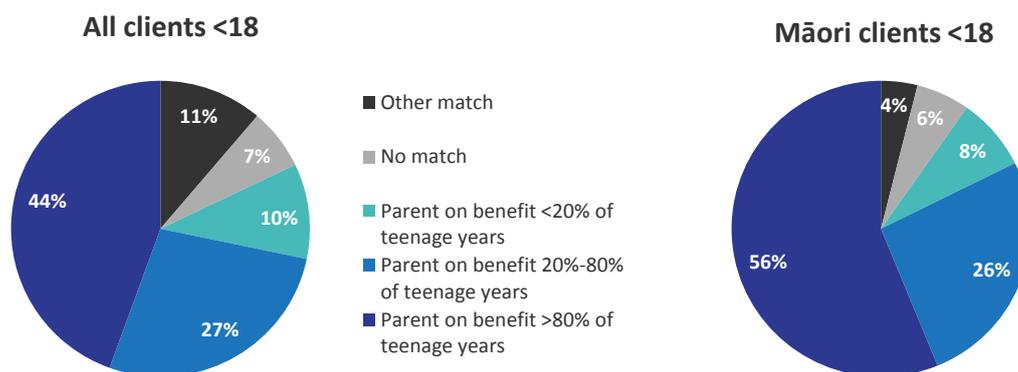
reflecting the limited circumstances. Also note the prevalence of YP beneficiaries – which shows that **family breakdown is an important driver of entry into benefits before age 18**. Young SLP clients also make up an important share of entrants under 18.

Figure 4.3 Benefit type of young clients at 30 June 2015



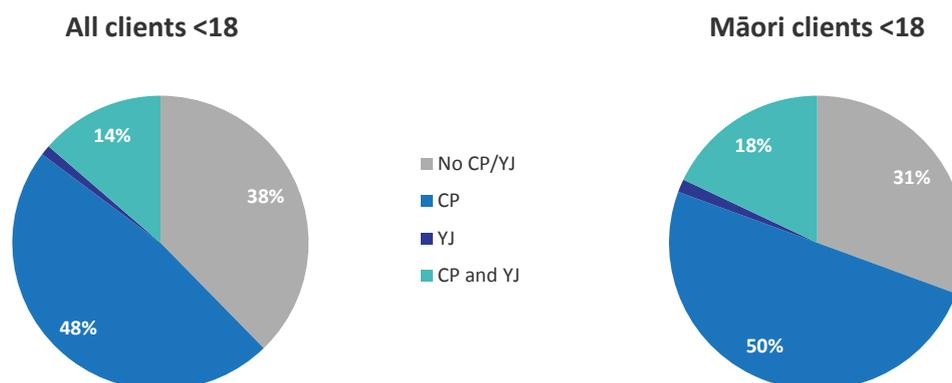
Intergenerational benefit receipt is very high amongst clients who are under 18. Amongst these clients, 8 out of 10 had parents who received main benefits (9 out of 10 for Māori clients) at some point in their teen years. The majority of these parents received benefits for at least 80% of the current beneficiary’s teen years – we refer to this as intensive family benefit history. These findings are discussed further in Section 4.3.

Figure 4.4 Intergenerational benefit receipt amongst clients in valuation cohort aged less than 18, the categorisation is discussed section 4.3



They are also far more likely than other New Zealanders to have had a history of abuse, neglect and/or youth offending. A similar story exists for CYF-CP and CYF-YJ history. Using the new matched dataset provided this year, we observe that 6 out of 10 clients who are under 18 have had some level of contact with CYF, which is an indicator of abuse, neglect, or youth offending (7 out of 10 for Māori clients). These findings are discussed further in Section 4.4.

Figure 4.5 CYF-CP or YJ history amongst clients in valuation cohort aged less than 18



Māori are over-represented in the benefit population, and have higher average lifetime costs— due in part to their over-representation in these two high risk cohorts, as well as other causal factors that are not fully visible in the valuation.

We note that it would be incorrect to interpret ethnicity-related findings in this report as being *caused* by ethnicity. Rather, they capture differences in patterns of benefit receipt that are associated with each ethnicity, reflecting for example differences in likelihood of receiving a particular benefit type (such as SPS), age and regional distribution, qualification levels, etc. This is an area that continues to warrant further analysis and management attention.

We also note that education level would also be a very important consideration for understanding how youth make the transition to adulthood and the labour market (or, conversely, to long-term benefit receipt). However, we do not have access to reliable qualifications data to undertake such analysis.

4.2.3 Age and lifetime cost of benefit receipt

Age itself is a fundamental characteristic for understanding future welfare cost:

- Younger clients have more potential future working-age years on benefit, so will typically have higher future lifetime estimates. This effect applies to all segments, but is particularly visible for long duration segments such as SLP.
- Age tends to drive other factors and interactions in the future. For instance, younger females are much more likely to move into SPS than other females. Younger males are more likely to serve a sentence than older males. These tend to contribute to additional future lifetime cost beyond what would be expected of age alone.
- Younger clients on the benefit system will tend to have other risk factors in the past; for instance, we have explored the heightened risk of welfare entry for clients with intergenerational benefit history or a CYF interaction.
- The age distributions of the various segments are very different; the future trajectories of segments themselves are heavily dependent on these differing compositions. For example, SLP lifetime costs would be dramatically higher if it had the younger age skew that other segments have.
- The gradual aging of the general and welfare population (see Section 8.4) will have implications for future lifetime welfare estimates.

When drivers of risk are discussed by segment in Section 5.5.2, we see that age is the most important factor in predicting future lifetime cost across the majority of segments. This is primarily because there is more time remaining until age 65 to receive benefit payments, but still presents a strong rationale for early intervention to reduce future benefit receipt and related costs.

Previous valuations have explored partial dependence effects for age in some detail. For instance, we found that a 20-year-old Jobseeker will have an average future lifetime cost \$51,000 higher than one aged 35 (all other factors being held constant) and that this figure rose to \$77,000 for Sole Parents. We have not repeated those calculations in this valuation, but conclusions should remain broadly applicable.

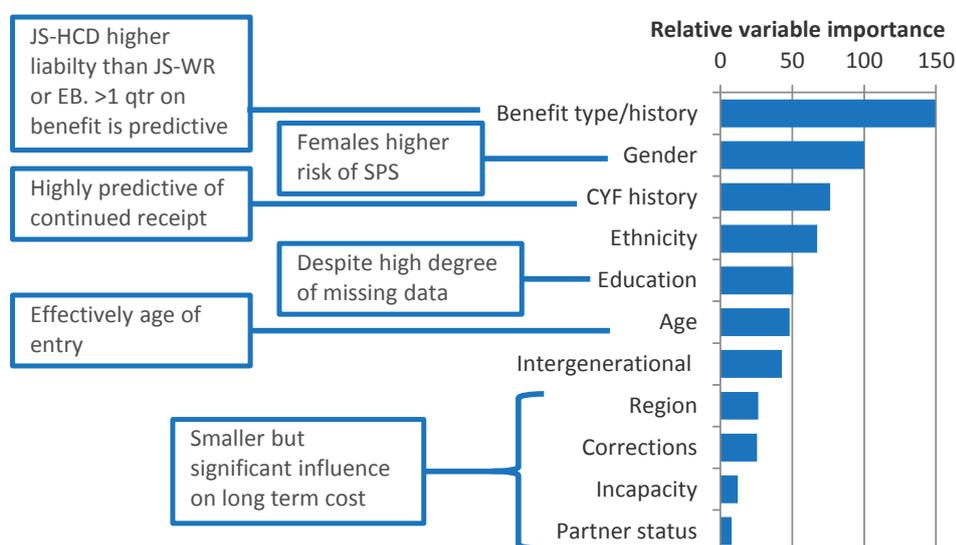
4.2.4 New entrants into the welfare system

To put early entry into context, we have compared the importance of a number of variables in predicting lifetime benefit cost for young clients in JS segments at the valuation date who have entered the welfare system for the first time in 2014/15.

There are just under 9,000 clients in this cohort, with a median future lifetime welfare cost of \$84,000. There is **significant variation** across this group. For instance, **one in ten** clients has a future lifetime cost estimate above \$165k, **twice the median**. Another **one in ten have a future lifetime cost less than half the median**. Thus there is a wide spread of predicted outcomes, even though there is not much benefit history to draw from.

We see in Figure 4.6 that the ordering of variable importance has some significant changes. Benefit type and benefit history (albeit less than a year) still has the most important influence on future cost; Clients who are in or have been in JS-HCD are more likely to continue on benefits. Gender features more highly, as a predictor of potential SPS receipt. CYF history, education and intergenerational benefit receipt all emerge as important predictors; we have seen that these are risk factors associated with both early entry and long-term benefit receipt. Of note, **CYF history emerges as being more significant than intergenerational benefit history** in predicting risk of long-term benefit receipt for new JS entrants aged 18-24.

Figure 4.6 Relative variable importance for predicting future lifetime welfare cost of JS clients aged 18-24, who entered benefits for the first time in 2014/15



4.3 Intergenerational benefit receipt

4.3.1 About the intergenerational benefit history data match

Intergenerational benefit receipt data was introduced in the 2014 valuation, enabling us to look for the first time at **what happened in young people's lives prior to entry into the benefit system**. The dataset links child IDs on the MSD system to adult IDs, so that a parent's interaction with MSD can be compared to that of the child when they become an adult.

Intergenerational trends are inherently very long-term in nature. The limited history of the data means that we are modelling this information for clients currently up to age 25. For these clients we also examine the intensity of exposure to the benefit system as children, in particular whether a current adult beneficiary's family received benefits for none of, some of, or all of the period between ages 13-18.

The previous valuation focused on the prevalence of such receipt and the resulting effect on long term welfare cost. One new feature of this valuation is that we explore **how intergenerational benefit receipt affects entry into the welfare system**. We do this by looking at the proportion of beneficiary children who later move into the welfare system as adults.

We discuss intergenerational benefit receipt in terms of the type of 'match':

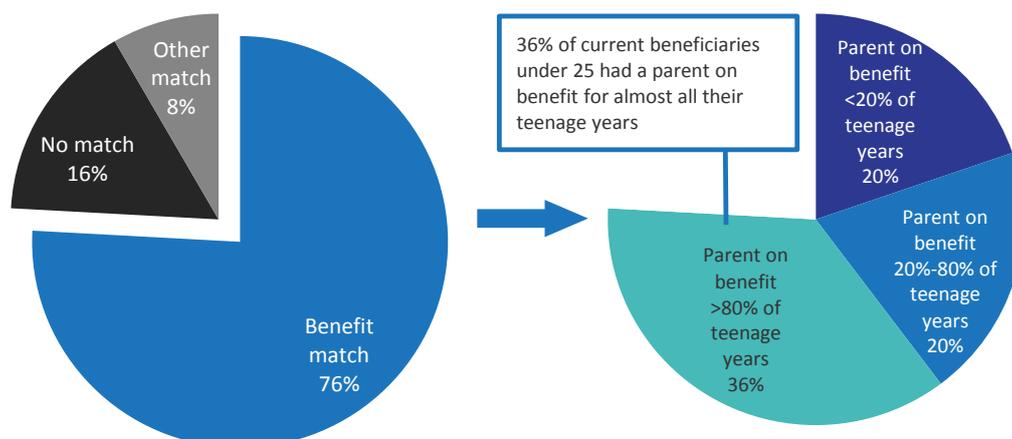
- A 'benefit' match means that at least one of the parents of that child received main benefits at some point during childhood.
- An 'other' match refers to those children who are matched via a payment not in the scope of the valuation (mainly the now discontinued family benefit, which was not means tested). This group provides a good comparison for the benefit match group, because the client's family history can be identified in the data, but there is no history of receiving main benefits or supplementary benefits. We refer to this as the baseline case for intergenerational comparisons.
- 'No match' refers to those current adult beneficiaries not matched to a corresponding child ID. This means that their parents either did not receive any MSD benefits, or they did and MSD were unable to correctly pair. For this reason it is likely to contain a mixture of different family history backgrounds, which means the comparison is useful, but perhaps less so than the comparison to the 'other' match group.

We also explore benefit intensity, which we have defined as the proportion of time the parents received benefits while the child was aged between 13 and 18.

4.3.2 Prevalence of intergenerational benefit receipt

The prevalence of family benefit history amongst current clients aged under 25 is very similar to that reported in the previous valuation. **About three quarters of this age cohort had a parent who received benefits during their childhood.**

Figure 4.7 Prevalence of family benefit history amongst current clients aged under 25



To provide some context, we estimate that about 45% of all 18-35 year old people have received some main benefits in their lifetime; thus the three quarters with a benefit match is significantly higher than might be expected by random chance. While this simple comparison is complicated by factors such as **either** parent possibly receiving benefit, or the relative likelihood of parents receiving benefits compared

to non-parents, it does suggest a **heavy over-representation of current clients with intergenerational benefit history**.

For youth segments (YP/YPP), 9 in 10 were from a beneficiary family – over a third had a parent who was on benefit almost continuously during their teenage years (80% or more of the time). These rates are so high that last year **we concluded that early entry—75% of the liability—was a partial proxy for intergenerational family benefit history** (except for beneficiaries with severe health conditions and disabilities).

These figures have increased slightly since the previous valuation, a finding that MSD may wish to investigate further.

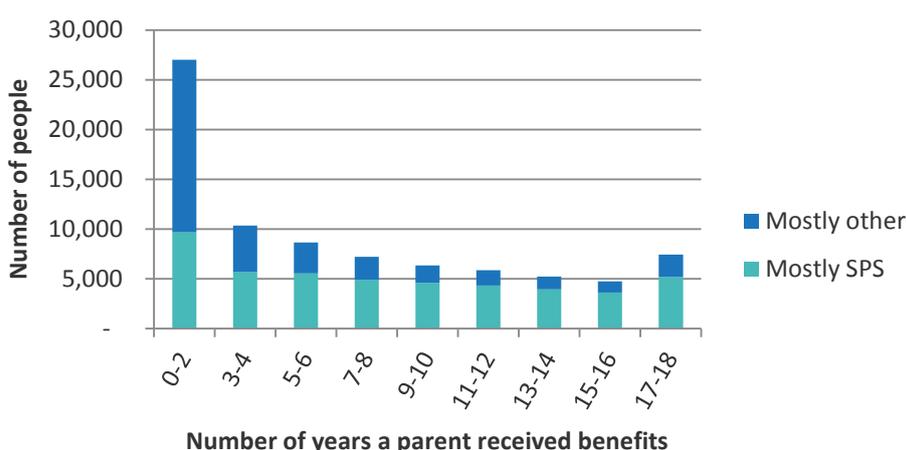
The previous valuation also explored compositional differences between clients who had more intensive family benefit history. In particular, it found an **over-representation of Māori clients with intensive benefit history**, thus contributing to the higher average lifetime cost for this group.

4.3.3 Intergenerational benefit receipt and entry into the benefit system

The intergenerational link allows us to report **how many children of beneficiaries subsequently enter into the benefit system**. To do this, we have analysed a specific cohort of children of clients who were born in 1993/94 and 1994/95. For this group we have both a good history of intergenerational benefit receipt as well as statistics related to their entry into the benefit system as young adults. Data regarding parent benefit histories is available whenever a child is registered; this registration is done for most benefit types as number of children (and their age) affects benefit payment levels.

There were just under 83,000 people in this cohort, summarised in the figure below. We have divided them based on whether the parent received mostly SPS (that is, SPS or DPB), or mostly other (typically Jobseeker Support or Supported Living type benefits). We see that 57% of the cohort fall in the ‘mostly SPS’ category, but this proportion increases the greater the number of years the parent receives benefits. About a third of the cohort had parents who received benefits for 2 years or less. At the other end of the spectrum, over a third had parents who received benefits for more than 8 years while the child was growing up.

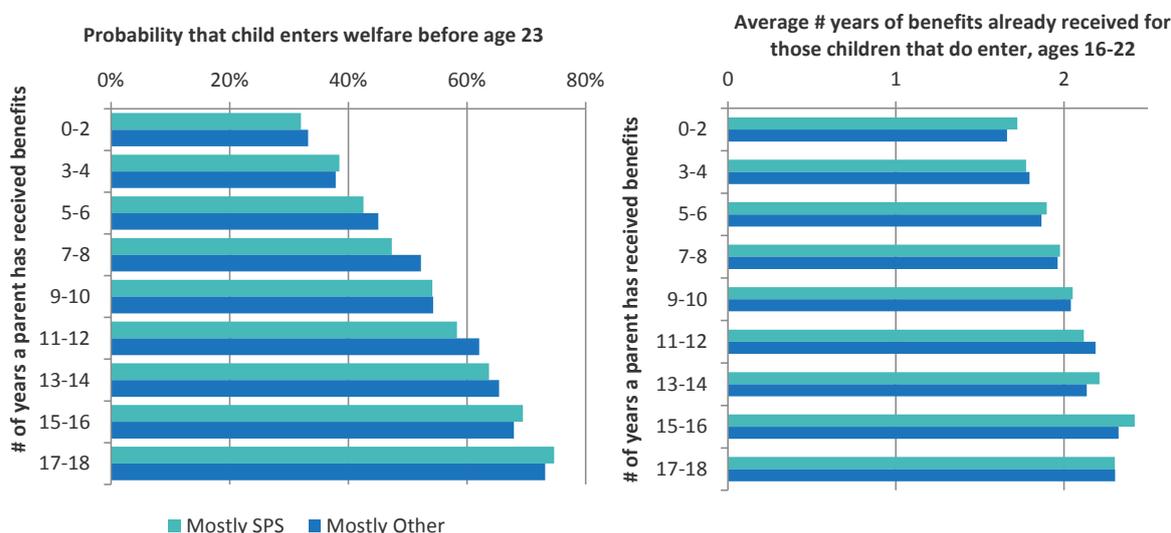
Figure 4.8 Parents benefit receipt for child born in 1993/94 and 1994/95



We have found that **47% of these children of beneficiaries subsequently entered the benefit system** themselves before they reached age 23. Moreover, this rate was **highly sensitive to the amount of time parents received benefits**; from about 35% when parental benefit receipt was of low intensity, through to about 75% when parental benefit receipt was intensive. This is shown in the left panel of Figure 4.9.

Furthermore, the number of years that the young adult has already spent on benefits (assuming they entered between the ages of 16 and 22) was also sensitive to the amount of parental benefit receipt. This is shown in the right panel of Figure 4.9; **every two years a parent received benefits correlates to about an extra month of benefit receipt by their adult child (before age 23).**

Figure 4.9 Proportion of children born to beneficiaries in 1993/94 and 1994/95 entering benefits before age 23 (left), and years of benefits received assuming they do enter (right)

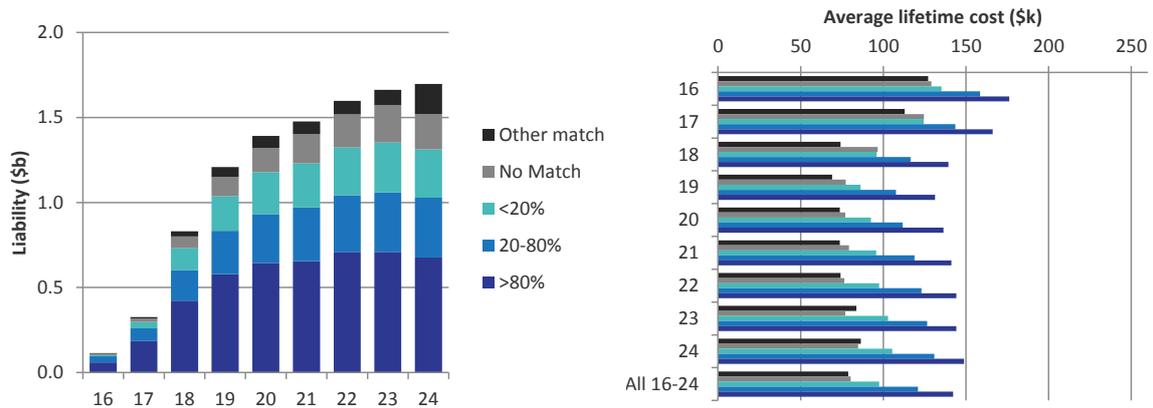


Over a third of beneficiary children in the 1993/94 and 1994/95 birth cohort had parents on benefit for more than eight years when they were children. **Almost half of the cohort went on to enter the benefit system as young adults.** The probability of a child in this cohort entering the benefit system and the amount of time they had spent on benefits as a young adult is highly dependent on the number of years the parent received benefits.

4.3.4 Intergenerational benefit receipt and lifetime cost of benefit receipt

We observe that the **average** liability for clients with intergenerational benefit history is significantly higher than those under age 25 clients without a match to a beneficiary parent. The right panel of the figure below shows that for clients with an **intensive family benefit history** (on benefit more than 80% of the time while aged 13-18), **the average liability is about \$63,000 higher overall** (compared to the baseline case) and reasonably uniform across age bands. This increased level means that intergenerational recipients represent a disproportionate amount of the valuation estimate. In all, **83% of the total liability for under 25s is attributable to clients with an intergenerational benefit match.**

Figure 4.10 Current client liability (left) and average future lifetime cost (right), split by current client age and family benefit history, for clients <25

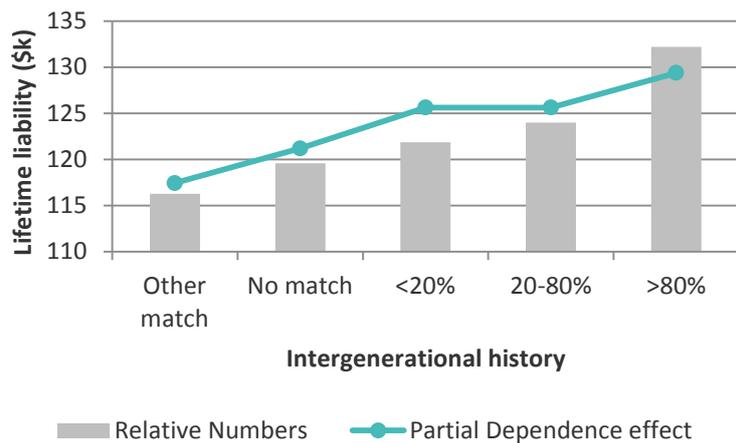


We observe that **45% of the overall liability** for all beneficiaries under age 25 is attributable to children from families that received benefits for 80% or more of their teen years. These clients have **an average future lifetime benefit \$63,000 higher** than the baseline case.

In order to isolate the influence of intergenerational benefit receipt from other factors, it is also helpful to explore the **partial dependence** effect. This is a way to explore the influence of this history while holding all other modelled client characteristics constant. Effectively, this shows the effect of intergenerational benefit history *over and above* other correlated characteristics. This information is provided by the partial dependence plot of intergenerational benefit history shown in Figure 4.17.

We calculate that intergenerational benefit receipt adds up to \$12k to future lifetime cost, holding other factors constant. This effect increases with the amount of time parents received benefits in the child's teenage years; see the figure below. It is also larger for JS, NOMB and RE clients, but less pronounced for SLP and YP/YPP segments.

Figure 4.11 Partial dependence effects for intergenerational benefit receipt, clients <25



The fact that the partial dependence effect is significantly smaller than the observed average effect reflects the correlation of other risk factors with these groups.

4.4 Vulnerability in childhood/youth and risk of long-term benefit receipt

4.4.1 About the welfare/CYF history data match

Previous valuations have focused on the high risk of long-term benefit receipt by early entrants to the welfare system and intergenerational benefit receipt, as discussed in the two previous sections. We have highlighted in past years in-house research by MSD that identified the high incidence of contact with Child Youth and Family (CYF) by the 1993 birth cohort of youth beneficiaries as vulnerable children and/or young offenders.

For the first time this year, MSD has provided us with matched CYF administrative data for beneficiaries up to age 25, for whom this historical data is available. This includes both CYF care and protection (CP) and youth justice (YJ) events: a notification, an investigation, a CP placement, or a YJ process. CYF history is **an indicator of vulnerability in childhood and youth due to abuse or neglect in childhood** – ranging from a notification to repeated or extended periods of foster care, and/or **youth offending**. This new data allows us to analyse how these experiences affect patterns of welfare receipt. Detailed data descriptions are provided in Chapter 9.

It is important to note that any findings here are statistical findings of association rather than causation. For example, although contact with CYF is associated with high future welfare cost, it would be wrong to assume that the CYF contact causes the increase; the causes are likely to be a combination of factors including increased barriers to employment due to the consequences of vulnerability during childhood and youth.

This new information has been incorporated into our valuation, extending the detail of the average future lifetime cost estimates. Specifically, the valuation model now considers whether beneficiaries came into contact with care and protection or youth justice services (or both) during their childhood. For those with contact with CYF services, the number of CP and YJ events, number of days in care and age of entry into the CYF system are also used as predictors of future client benefit pathways.

We note that there is no significant change to the overall welfare liability due to this new information. **The effect is primarily to ‘spread’ the liability more accurately between beneficiaries.** That is, the absence of CYF history information in past valuations meant that prior estimates of average future lifetime cost assumed an average level of interaction with the CYF system for each client – potentially explaining some of the high risk previously associated with early entry to the welfare system.

We have grouped much of our CYF-CP and CYF-YJ commentary together due to some of their similarities; they are both managed by MSD, have similar data availability and tend to occur before entry into the welfare system. Further, over three quarters of YJ contacts also have CP contact: **abuse and neglect in childhood increase the likelihood of youth offending**. CP and YJ exposure also have a comparable influence on future welfare cost.

Not surprisingly, interaction with the youth justice system also has implications for future patterns of adult criminal conviction; **youth offending increases the likelihood of adult offending**. We explore this further in Section 4.5.

4.4.2 Prevalence of CYF history

There are 102,000 current beneficiaries aged 16 to 25. Figure 4.12 shows the proportion of this cohort that has had some level of interaction with CYF-CP, CYF-YJ or both.

Over a third of all current and recent beneficiaries aged 16 to 25 have some CYF-CP or CYF-YJ history. Of beneficiaries with some level of CYF interaction, about 95% had contact with CP and 25% had contact with YJ. 20% had contact with both services. This also implies that over three quarters of beneficiaries involved with YJ also had contact with CP services.

The proportion of beneficiaries with some level of CYF-YJ interaction varies by benefit segment. Youth segments are very highly correlated with CYF interaction; **two thirds of all beneficiaries in the Youth segments (YP/YPP) have had some level of interaction with the CYF system.** Of all JS and SPS beneficiaries age 16 to 25, 45% have had some level of interaction.

Figure 4.12 Type of CYF history for the 102,000 clients aged 16-25 in the current cohort

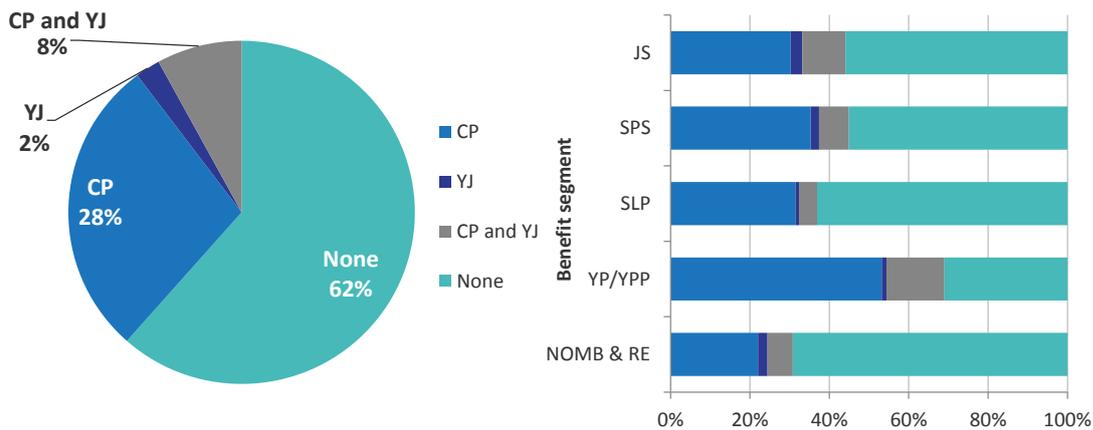


Figure 4.13 Number of CYF events (either CP or YJ) and average age at entry for those with some level of interaction with CYF system

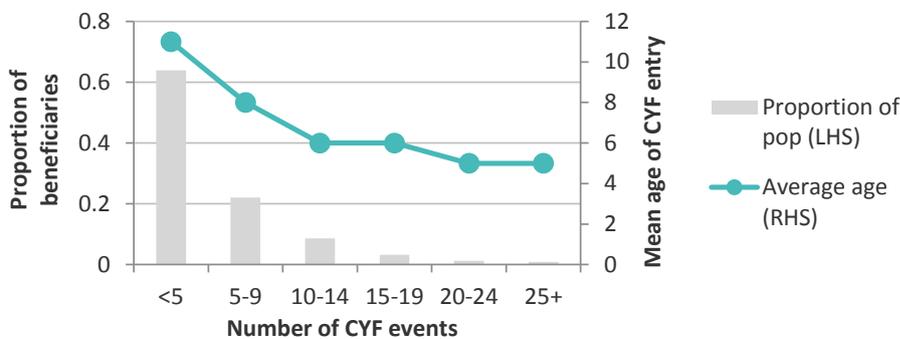


Figure 4.13 shows the distribution of the number of past CYF events in clients' histories as well as the average age they first interacted with the CYF system.

As noted earlier, an event here refers to a notification, an investigation, a CYF placement, or a Youth Justice process. The event data is provided in a 'last in the chain' basis, so that a report leading to an investigation and placement will only be recorded as a placement event, and a report leading to an investigation is recorded as an investigation. This avoids double-counting of events.

- Of the **CYF-CP event** data provided, three-fifths relate to investigations, one-third relates to CP reports with no further action and the remainder relates to placements; however, some of the older (prior to 2005) reports without action are not on the dataset.
- Of the **CYF-YJ event** data, nearly 90% relates to Family Group Conferences and the remainder are referrals to the Youth Court.

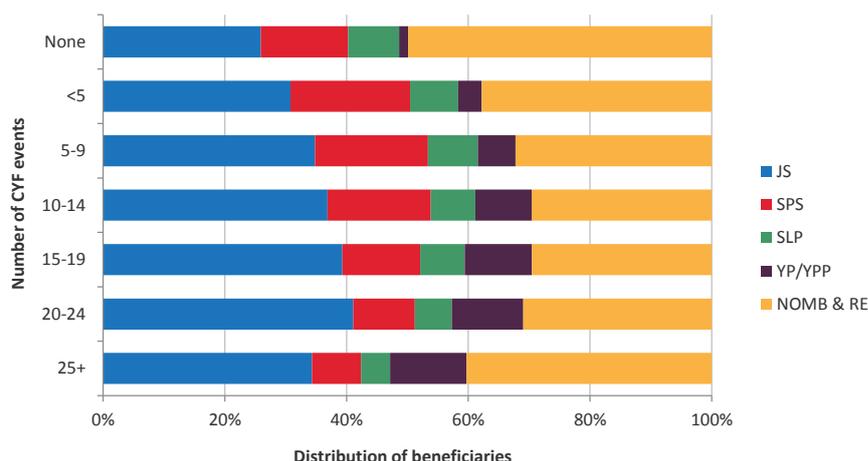
- It should be noted that multiple events can be associated with the same episode of abuse, neglect, or youth offending.

There is a significant portion of people who have had heavy involvement with CYF; **a third have had five or more events**. A client with CYF history will have had five events on average – and 28% have their first contact with care and protection services before age 6. Unsurprisingly, those with more events tend to be those who also enter into the system earlier.

The level of frequency of interactions with CYF tends to influence the type of benefit that clients receive. Clients with no CYF history were more likely to be in NOMB or Recent exit segments. As the number of events increase, so too does the likelihood of entering the JS and YP segments (with lower relative numbers of NOMB and Recent exits).

Sole parents are over-represented amongst beneficiaries with 1-14 recorded events (compared to the ‘no history’ group) – but under-represented at the highest exposure end of the spectrum. The share receiving SLP is relatively consistent throughout, with the exception of those with the highest exposure to CYF. The trends are illustrated in Figure 4.14 below. The reversal for 25+ in the figure is compositional rather than a true effect; it is primarily because of the heavy over-representation of males in the group, who are much less likely to be receiving SPS. This is generally true for other bars in the chart.

Figure 4.14 Distribution of clients under 25 between segments by level of interaction with CYF-CP or CYF-YJ



4.4.3 Vulnerability in childhood/youth and entry into the benefit system

Interaction with CYF-CP or CYF-YJ is associated with higher propensity to enter the welfare system, and to enter at a young age. The recent interim report on Modernising Child, Youth and Family⁹ estimates that the likelihood of benefit receipt before age 21 is double for those with a CFY contact. About a third of clients without this history enter the benefit system, compared to over two-thirds for those with CYF history. The risk of entry also increases with the type of interaction.

These insights, plus the descriptive results in the previous sub-section, suggest that **one key effect of these factors on the welfare system is this higher risk of early entry** – which has already been established to be a significant contributor to high risk of long-term benefit receipt in previous valuations. While there is also an additional increase in subsequent future lifetime welfare cost, the heightened risk of entry is particularly marked.

⁹ Modernising Child, Youth and Family, Expert Panel Interim report, Section 4.4
<http://www.msd.govt.nz/documents/about-msd-and-our-work/work-programmes/cyf-modernisation/interim-report-expert-panel.pdf>

4.4.4 Vulnerability in childhood/youth and lifetime cost of benefit receipt

While those with CYF-CP or CYF-YJ history are at higher risk of early welfare entry, they also have higher risk of remaining on welfare, which increases their long term average welfare cost. Interaction with CYF services proved to be significant in predicting future long-term benefit receipt. Integrating this information into the valuation model allows for better individual level estimates, without materially affecting the aggregate results. There are two related questions we answer here:

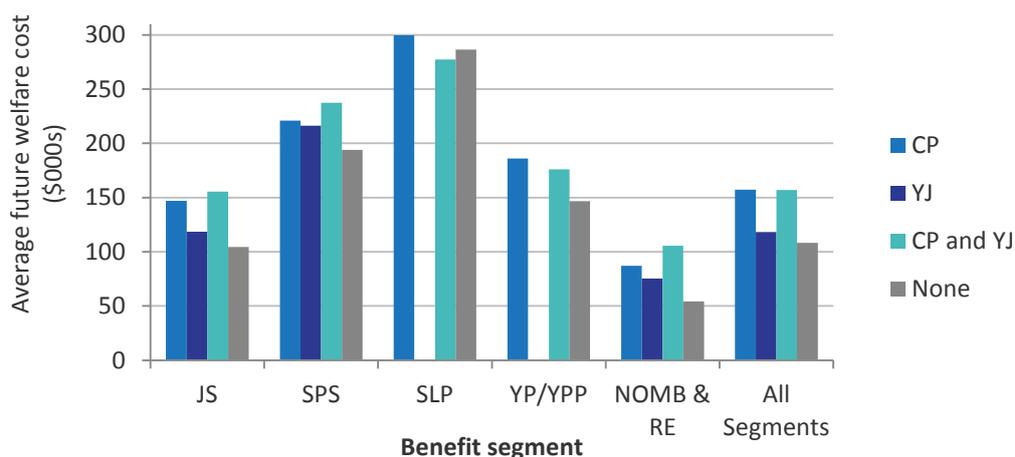
- What is the average change in future lifetime cost associated with CYF history (the ‘average’ effect)?
- What is the influence of CYF history in isolation from correlated factors; that is, holding other factors constant (the ‘partial dependence’ effect)?

With regard to the **average** effect, we can examine the difference between average future lifetime cost for those with and without CYF history. This is shown in Figure 4.15. We observe that:

- Across all segments those clients with history have an average liability that is \$47k (or over 40%) higher than clients with no history. About 30% of this is directly attributable to the history itself; the remaining 70% reflects the coincidence of other risk factors – which may not in fact be unrelated to the abuse, neglect, or youth offending.
- The effect tends to be most pronounced for CP matches, with a smaller increase associated with YJ only clients in the benefit system.
- The largest relative difference is for the Not on main benefits and Recent exits segments, with future lifetime welfare cost 66% higher. This reflects the generally lower risk of these benefit types overall combined with a materially higher re-entry rate for clients with CYF history; and has a fairly large effect for CYF-YJ too.
- Less than a hundred SLP and YP/YPP clients fall in the ‘CYF-YJ only’ category, and they have not been included on the chart.

Beneficiaries with CYF history have an average lifetime welfare cost that is **\$47,000 (over 40%) higher** than those without such history. This effect is seen across all major segments except SLP.

Figure 4.15 Difference in average future lifetime cost by segment for clients matched to CYF variables compared to clients with no CYF history, ages 16 to 25.

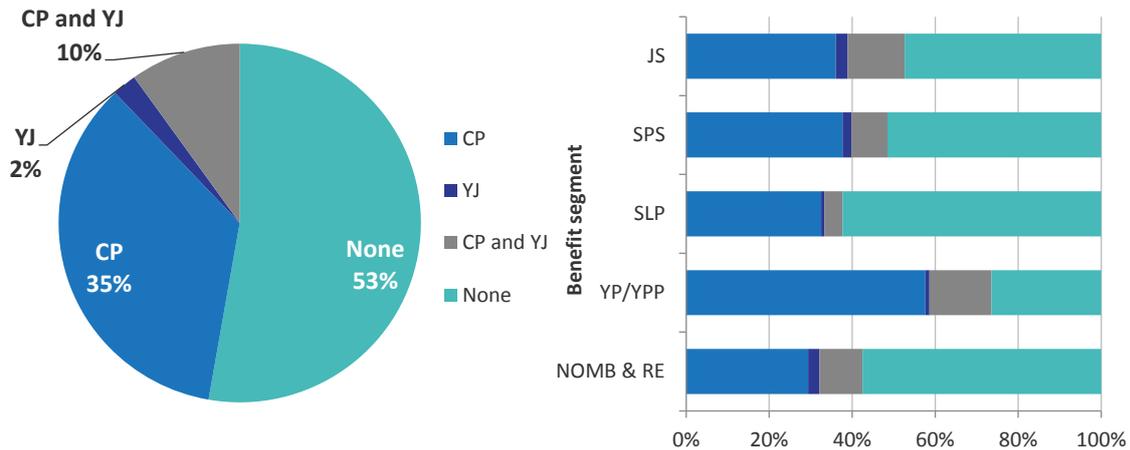


This leads to a dual effect; **those with CYF history are more likely to enter main benefits, and once on those benefits they are more likely to remain.** The combined effect is that welfare beneficiaries with CYF history represent a disproportionately large amount of the current liability. Further details are shown in Figure 4.16.

Current beneficiaries aged 16 to 25 with exposure to CYF services represent **47% of that age cohort's future welfare cost**, reflecting their greater risk of long-term benefit receipt. This result is despite these clients representing only 38% of the welfare population in that age range and an even lower proportion of the general population.

By way of comparison, one report estimates that 15% of the general population had an interaction with CYF by age 18.¹⁰

Figure 4.16 Distribution of current liability for clients aged 16 to 25 by CYF history



We conclude that last year's finding should be further nuanced in light of this new evidence – **early entry is a partial proxy not only for intergenerational benefit receipt, but for broader family vulnerability including abuse and neglect in childhood and youth. Entering early is in turn associated with a considerably elevated risk of long-term benefit receipt in adulthood.**

We can also calculate the **partial dependence** effect of CYF exposure in isolation versus other factors. This information is provided by the partial dependence plot of CYF history shown in Figure 4.17.

In the left panel we observe that, holding all other factors constant, contact with:

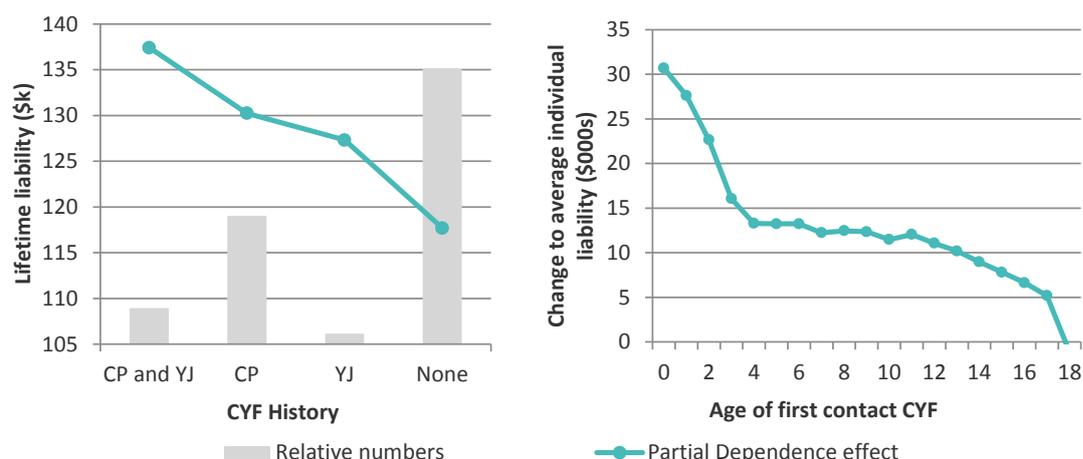
- **CYF-YJ** is associated with an increase of \$10,000 in average future lifetime cost
- **CYF-CP** is associated with an increase of \$13,000 in average future lifetime cost
- **Both YJ and CP** is associated with an increase of \$20,000 in average future lifetime cost.

These partial dependence effects possibly understate the true influence due to data limitations and correlation with other variables such as benefit history. This is the incremental effect *over and above* such factors as intergenerational benefit receipt and early entry.

Further, these increases are not uniformly distributed across clients with CYF history; for example, as shown in the right panel, those who have a very early CYF event have a larger partial dependence effect observed. **Those with an event before age three have an effect that is twice as large as those who have an event after age three.**

¹⁰ For people born in 1990/91. See Figure G.1 in the Modernising Child Youth and Family Interim report: <https://www.msd.govt.nz/documents/about-msd-and-our-work/work-programmes/cyf-modernisation/interim-report-expert-panel.pdf>

Figure 4.17 Partial dependence effect of CYF history



4.5 History of criminal convictions and long-term benefit receipt

4.5.1 About the welfare/corrections history data match

Another new data set this year enables us to look for the first time at cross-agency patterns of service usage, and how they affect benefit dynamics. Matched data from the Department of Corrections details the criminal conviction history of current welfare beneficiaries and the associated time serving sentences, including both prison and community service. These are **indicators of beneficiaries' history of criminal convictions** – their inclusion in the valuation as risk factors provides further insight into benefit pathways. The term 'criminal conviction' is used throughout as shorthand for a conviction which leads to correctional activity, typically a community or custodial sentence.

As with CYF history, it is important to note that any findings here are statistical findings of association rather than causal. For example, although time in prison is associated with high future welfare cost, it would be wrong to assume that the time in prison causes the increase; the causes are likely to be a combination of factors including increased barriers to employment related to a criminal history.

In contrast to the CYF data, data from the Department of Corrections is available for the whole welfare population, with history going back to the 1940s. The valuation model has been extended to incorporate predictors (of welfare receipt) related to both recent as well as long-term criminal conviction history. We investigated a wide variety of possible sentencing variables for inclusion to attempt to best characterise how this history correlates with welfare outcomes.

- For recent history, we consider the time over the last year serving any sentence, as well as specifically the time in prison.
- For long-term history, we consider the time in the last ten years spent serving sentences following a criminal conviction.
- Theft-related crimes had some distinctive properties; these effects were allowed for but are not discussed in detail here.
- Driving offences were generally found to be non-predictive and are ignored unless they have resulted in prison time in the last year.
- While we have limited our modelling to sentences served within the past 10 years, some of our commentary makes use of the longer history available.

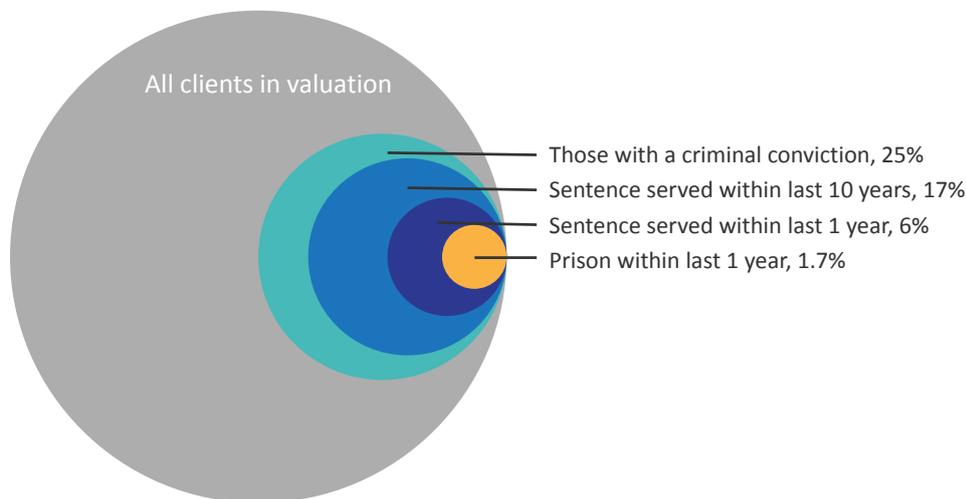
As with the addition of CYF variables, the overall liability is not materially altered by this new data; rather, the resulting analysis **better differentiates between the patterns of benefit receipt by individuals with and without a history of criminal convictions.**

4.5.2 Prevalence of criminal conviction history

About a **quarter of the beneficiary population have had a criminal conviction** in their past, with younger males most likely to have had a recent conviction and related sentence. Welfare clients with a criminal conviction in their past are heavily skewed towards Jobseeker segments. Over 13,000 clients have been serving sentences for 5 or more years of the last 10.

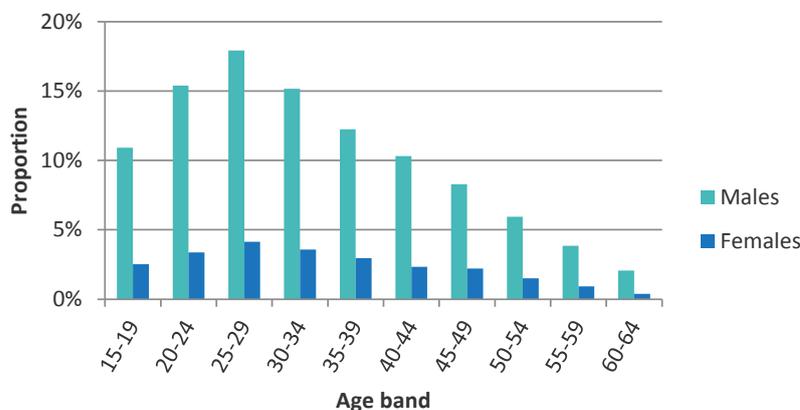
Just over a quarter of clients in the valuation cohort have one or more matched criminal convictions (with a corresponding community or custodial sentence), with two thirds of these clients serving part of their sentence within the last ten years. One in ten clients has been to prison and one in ten has been convicted of a violence-related crime. The rates are highest amongst Jobseeker segments, with over a third of clients having a criminal conviction in their history. The rates are very low in Youth segments due to age; they have not had much time in adulthood to have a conviction and then enter the benefit system. Perhaps surprisingly, SLP have about average levels of criminal convictions (about a quarter of clients) rather than a lower level; however, not surprisingly, they have lower rates of such history in the recent past.

Figure 4.18 Criminal conviction history within the beneficiary population



The incidence of criminal conviction history is not evenly spread amongst the welfare population. For instance, it varies markedly by age and gender.

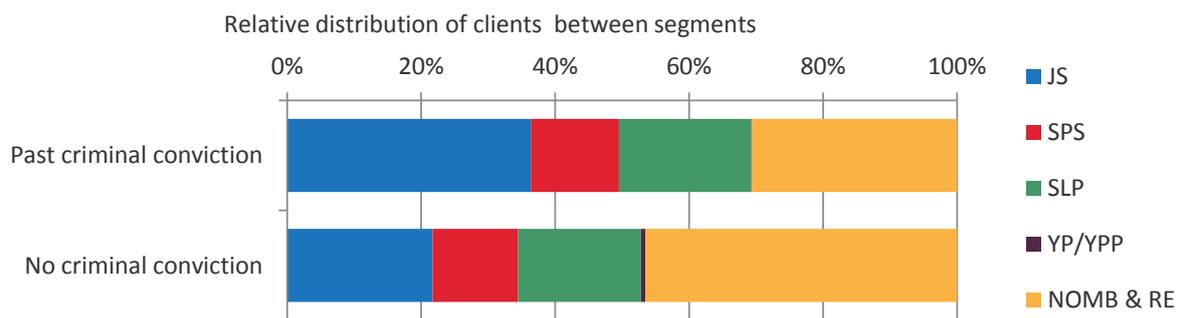
Figure 4.19 Fraction of beneficiary population who served a criminal sentence sometime in 2014/15, by age and gender



With respect to the beneficiary population, **males are about four times more likely to have served a sentence** related to a criminal conviction within the past year, with **the 20-34 age group significantly higher than average**. See Figure 4.19.

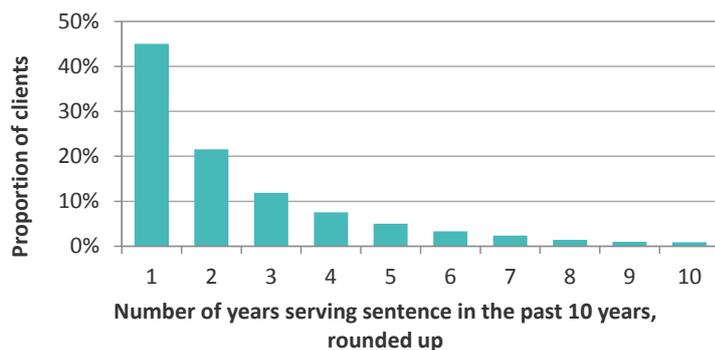
The variation in prevalence between benefit segments means that the benefit mix also differs between the cohorts with and without criminal conviction history. This can be seen in Figure 4.20. Current welfare beneficiaries with a past conviction are more likely to be receiving main benefits. Specifically, a beneficiary with a conviction is about **70% more likely to be in a JS segment**. The skew is even more pronounced when focusing on clients who have recently served sentences.

Figure 4.20 Segment distribution of clients who have served a sentence related to a criminal conviction in last ten years (excluding driving offences)



It is also worth noting the variation in the total time clients have spent serving custodial or community sentences related to their convictions. Figure 4.21 shows the distribution of the total number of years serving sentences out of the last ten years for those beneficiaries who have spent at least some time serving a sentence. It can be seen that **45% of clients have served sentences for less than a year while 10% (about 13,000 clients) have been in corrections related services for more than five years**. We allow for this variation in our modelling.

Figure 4.21 Number of years serving sentences for clients who served at least some time in the last ten years (excluding driving related offences)



4.5.3 History of criminal conviction and entry into the welfare system

There are about 40,000 people under the management of the Department of Corrections at any given time¹¹. This compares to the 33,000 welfare clients in the valuation cohort who have served a custodial or community sentence sometime in 2014/15. Similar results apply for prison spells; between 8,000 and

¹¹ 38,997 as at 31 December 2013, http://www.corrections.govt.nz/resources/offender-volumes-report/offender_population_report_2013.html

9,000 people are in prison at any given time, and about 10,000 welfare clients in the valuation cohort have had a prison spell in the past year.

Offenders with a prior criminal conviction are thus heavily over-represented in the welfare population.

This is not surprising; one of the roles of the benefit system is to provide support to those looking for work, which includes a large percentage of those finishing a sentence. Also many jobs require criminal record checks which can increase the challenge for former offenders in finding work.

4.5.4 History of criminal conviction and lifetime cost of benefit receipt

There is a strong statistical relationship between clients who have been convicted and served a sentence and long-term benefit receipt. As with CYF in Section 4.2, we discuss both the average effect (which includes correlation of other risk factors) and the partial dependence effect (which holds other factors constant).

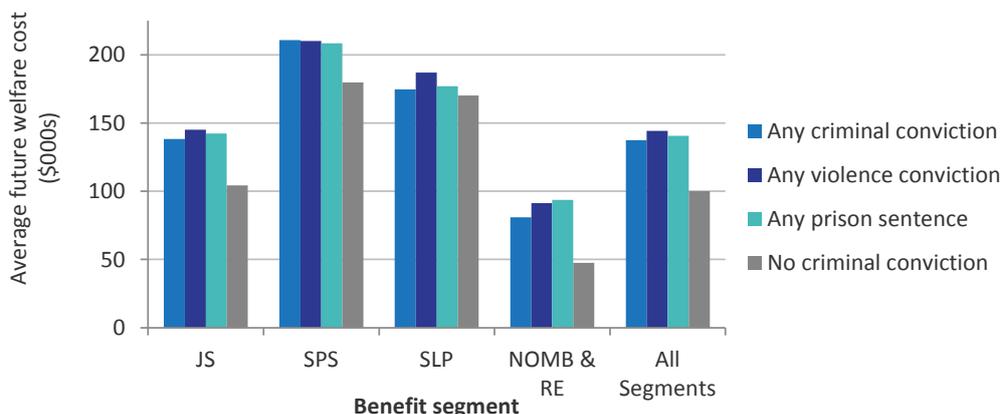
Figure 4.22 shows the **average** difference between future lifetime liabilities for clients with various types of criminal conviction history (compared to those without such history).

The existence of a prior criminal conviction is associated with a **\$37,000 increase in average liability**. About two-fifths of this increase is directly relatable to variables derived from the Department of Corrections data; the remainder relates to correlations amongst other risk factors.

We also observe that:

- The differences in future lifetime costs are largest for Jobseeker, Not on main benefits and Recent exits segments, with less change for SLP segments – as the latter are already at high risk of long-term benefit receipt.
- There are very few people in Youth segments with criminal conviction history and so these are not included in the figure, though Youth segments’ history of CYF-YJ was highest of any segment (See Figure 4.14).
- Jobseeker, Not on main benefits and Recent exits segments exhibit additional increases for those with prison spells as well as convictions related to violent crimes. Lifetime costs for clients with a criminal conviction are 40% higher for Jobseekers compared to those without, and 89% for clients in Not on main benefits and Recent exits segments.
- The pronounced effect for Not on main benefits and Recent exits segments is probably a dual effect; it is made up of people who have served a custodial or community sentence in the past, and are at higher risk of re-entry into the benefit system. It also includes some people who are currently serving a sentence; when they finish the sentence, they potentially move directly to welfare benefits. Note we do not explicitly model a serving sentence ‘state’ to distinguish between these effects.

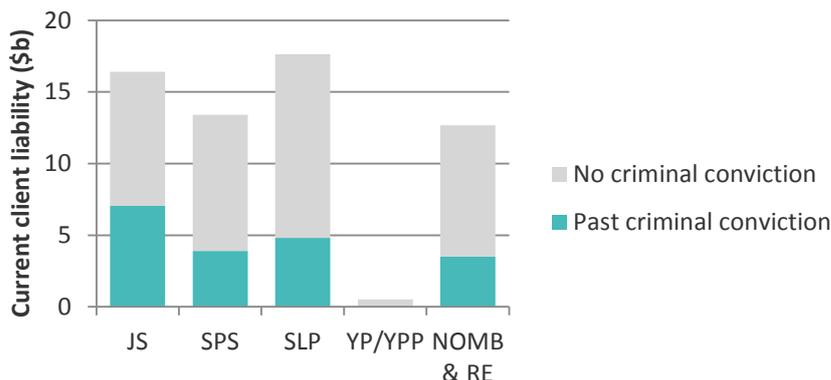
Figure 4.22 Difference in average future lifetime cost compared for those with and without criminal conviction history



As discussed, clients in the valuation population with criminal conviction history are relatively over-represented in Jobseeker segments and under-represented in NOMB and recent exit segments. Furthermore, from Figure 4.22 it can be seen that the average future lifetime cost within benefit segments is also relatively higher for this group.

The combined effect is that welfare beneficiaries who have a past criminal conviction account for a disproportionately large amount of the current liability. Specifically, the 25% of current beneficiaries with a criminal conviction account for **32% of future welfare cost**.

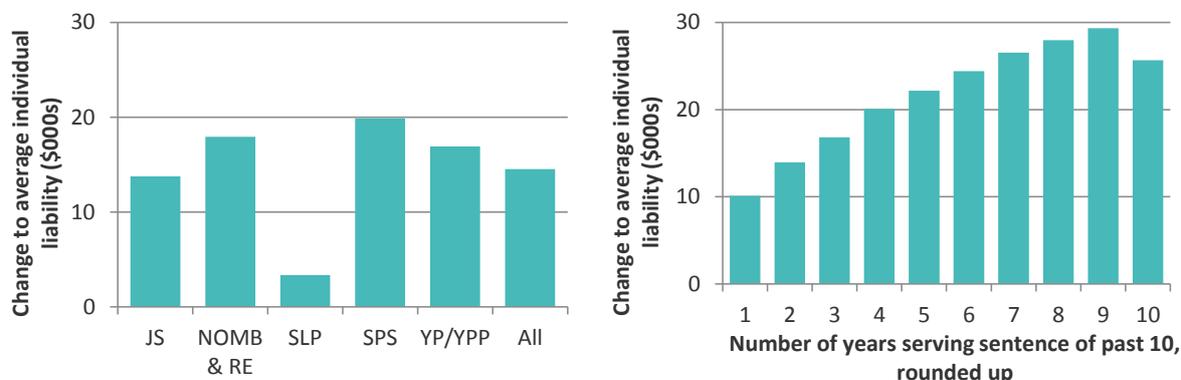
Figure 4.23 Current client liability split by top tier segment and presence of past criminal conviction



We also measure the **partial dependence** effect of criminal convictions and their associated sentences; that is, the marginal effect of the variables in the model holding other factors constant. The left panel of Figure 4.24 shows this effect by segment. All segments see an increase in future lifetime cost; about \$15,000 on average. The effect is significant for all segments except SLP. The effect of criminal conviction history is less marked for JS, NOMB and RE segments compared to what we observe in Figure 4.22, which reflects a greater role of correlated risk factors in these segments.

The effect also differs depending on the amount of time served in sentences, an indicator of criminal history. For instance, the right panel of the figure shows how the effect varies depending on how many years of the past 10 were spent serving sentences. With all other risk factors held constant, up to a year of sentences served increases average future lifetime cost by \$10,000 while more than six years increases average future lifetime cost by over \$26,000.

Figure 4.24 Partial dependence effect of criminal conviction history on average future lifetime cost by segment (left) and by number of years in serving sentences



People in the 2015 valuation cohort who have served a sentence have a **future lifetime welfare cost that is over \$37,000** higher than those without such history. This effect is particularly pronounced for Jobseeker, Not on main benefits and Recent exits segments. Benefit payments to such clients represent a third of the total current client liability.

Of the \$37,000 difference about 40% is directly attributable to the circumstances of those having criminal histories (as measured by the existence of criminal convictions). The remainder reflects correlation with other risk factors. The proportion directly attributable to the circumstances related to having a criminal history is larger for people who have spent more time serving sentences.

4.5.5 Youth offending and adult criminal convictions

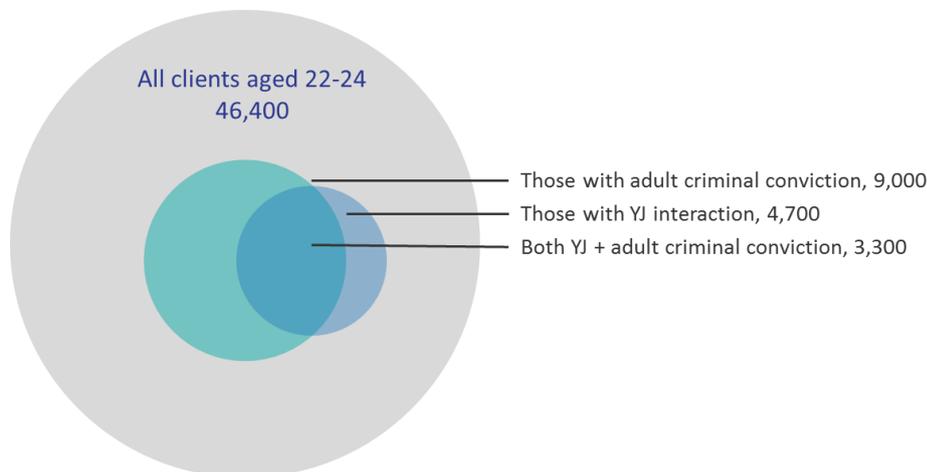
We can look at subsets of the projection cohort to better understand the interaction between CYF-YJ and Department of Corrections data. We refer to the latter as ‘adult’ criminal convictions, although it includes crimes committed by 17 year olds and sometimes younger.

As shown in Figure 4.25, for clients aged 22 to 24 (inclusive) in the projection dataset:

- About one in every ten have YJ history and two in every ten have an adult criminal conviction
- **About 70% of clients with YJ history have an adult criminal conviction on record** (five times the rate of those without YJ history)
- **About 36% of clients with an adult criminal conviction have a YJ history too** (nearly ten times the rate of those without an adult criminal conviction).

The heavy overlap between the two systems means that viewing them jointly is intuitive. However, to do so more comprehensively would require a longer data series for YJ interactions.

Figure 4.25 Relationship between CYF-YJ and adult criminal conviction history, clients aged 22-24.



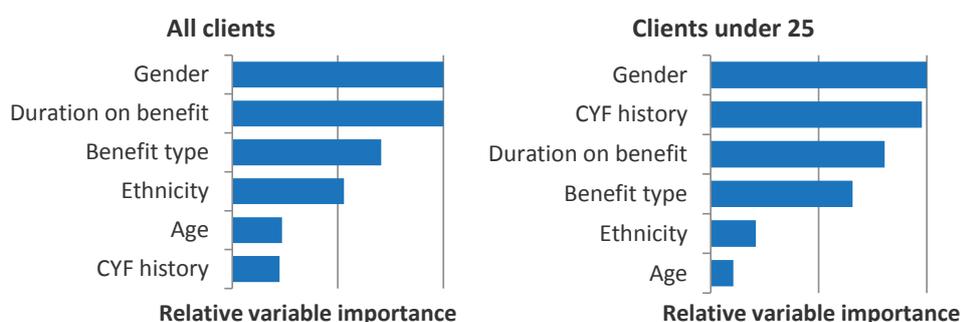
4.5.6 Predicting future criminal conviction and sentence events

The projection simulations require us to predict how the corrections related variables ‘evolve’ for each individual over the course of the projection. This includes the prediction of when a new conviction and related sentence will start. We have a set of sub-models to do this (Figure 4.26 shows the relative importance of variables used in these models), about which we make the following comments:

- New criminal convictions are heavily concentrated: about 80% of new sentences (related to the beneficiary population) can be attributed to just 20% of the cohort.

- Welfare status is important for prediction: Those on benefit for extended periods of time such as long duration SPS and SLP clients will tend to have lower incidence of new convictions activity. In fact, benefit duration was about as predictive as gender.
- **Childhood CYF-CP and CYF-YJ interactions also proved to be predictive of adult criminal convictions.**

Figure 4.26 Variables used (in addition to past sentence history) to predict sentences related to new criminal convictions, and their relative importance. In the left panel, the CYF effect is reduced as data is only available for clients up to age 25.



This report looks at the likelihood of dual correlations for selected risk factors. A natural next step will be to consider the correlations between three and more risk factors – as well as the influence of such correlations on the liability.

4.6 Correlations amongst risk factors

A key observation when investigating risk of long term benefit receipt is that people with one risk factor tend to have higher incidences of other risk factors. For example, amongst 18-24 year old clients:

- 16% have a criminal conviction or CYF-YJ history
- 36% have had intensive intergenerational benefit receipt
- 40% are Māori.

All these factors are associated with higher future lifetime welfare cost. Multiplying these together, we would expect that, if these factors were randomly distributed amongst the benefit population that just over 2% of people would have all three characteristics. In fact, the actual proportion is two and a half times higher at 5.5%. This correlation amongst risk factors tends to concentrate the spread of future welfare cost; the subgroups with multiple factors carry a relatively large proportion of future cost.

The table below attempts to explore the two-way relationships between five factors that have been found to increase average future lifetime welfare cost amongst beneficiaries aged between 18 and 24 inclusive. For example, 36% of the cohort has some CYF-CP history, but this rate is 1.6 times higher (56%) for the subset that has intensive intergenerational receipt, and 1.3 times higher for those who have at least 2 years' worth of JS benefit receipt.

There are a number of interesting observations:

- **All correlations are highly positive:** Of the five selected factors, the incidence of one is always higher in the presence of another.
- **Intergenerational benefit receipt is very highly correlated with all the other risk factors:** the subset of clients who have intensive history are much more likely to have CP history, criminal conviction or YJ events, extensive JS benefit history. They are also disproportionately Māori.
- **The largest relative increase is the relationship between JS receipt and criminal/YJ history:** About 28% of the cohort have at least two years of JS receipt, but this figure is 56% amongst those with a criminal conviction or YJ event. This is likely a two-way relationship, with unemployment increasing

risk of committing crime and those exiting a corrections sentence being at higher risk of unemployment. Moreover, early experiences and/or anti-social traits may predispose some individuals towards poor social integration, reflected in high contact with both systems.

- **Very high correlations amongst CP, crime and intergenerational risks:** For instance, 59% of those with YJ or criminal conviction history also have a CP interaction.

Table 4.2 Incidence of risk factors amongst the 95,000 clients aged 18-24, and how they vary in the presence of other risk factors

Risk factor	Base rate	Change to incidence rate in the presence of...				
		CYF-CP History	YJ or adult conviction	Māori	Inter-generational receipt	Extensive JS history
CYF-CP History	36%		x1.7 59%	x1.3 45%	x1.6 56%	x1.3 47%
YJ or adult conviction	16%	x1.7 26%		x1.4 22%	x1.5 23%	x2.0 32%
Māori	40%	x1.3 50%	x1.4 56%		x1.4 54%	x1.2 47%
Intensive inter-generational receipt (>80%)	36%	x1.6 57%	x1.5 52%	x1.4 49%		x1.3 46%
Extensive JS history (>2 years)	28%	x1.3 36%	x2.0 56%	x1.2 33%	x1.3 36%	

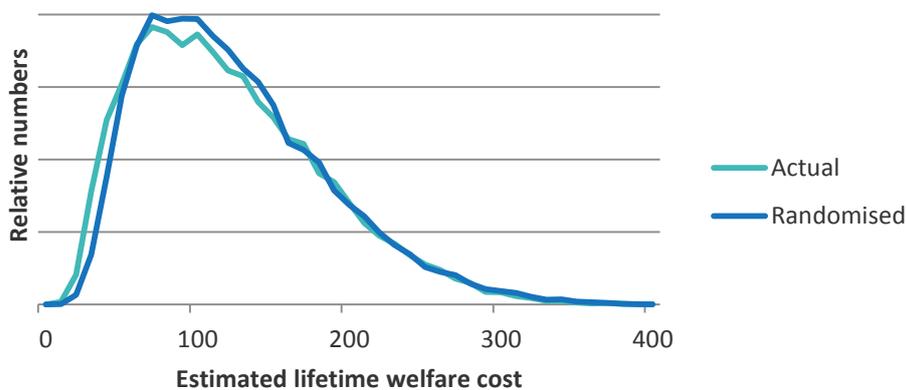
The relationship between youth offending and criminal conviction history is also very strong, and was discussed in Section 4.5.5. While we note important differences between youth offending (which may be associated with youth development and transitions to adulthood) and Corrections exposure (which reflects criminality), given the strong correlation between the two, we have in limited circumstances presented the findings together to simplify communication.

Another way to explore the relationships between variables is to explore how the liability would change if the risk factors were in fact independent of each other. We have estimated future lifetime cost for all Jobseekers aged 18 to 24, as if their ethnicity, benefit history, CYF-CP, CYF-YJ and intergenerational benefit history were randomly reallocated across the population. The distribution of future lifetime cost for this group is compared to the actual distribution in the figure below.

The most distinctive feature is that if this were actually the case, there would be fewer clients with low liability. There would hypothetically be about 1,000 fewer younger jobseeker clients with future lifetime cost estimate below \$80,000. On the other hand, there would be an increase in the number of Jobseekers in the \$80k - \$120k range.

The results suggest that in the actual distribution there is a subset of clients with few of these risk factors. They form a low risk cohort that potentially requires less management intervention. On the other hand, the results also show a pocket of liability disproportionately concentrated amongst Jobseekers with mid-range lifetime cost estimates who do have multiple risk factors.

Figure 4.27 Comparison of future lifetime welfare cost distributions, jobseekers aged 18-24. The comparison is between actual estimates and the distribution if key risk factors were randomised.



One important feature is that these factors correlate - that is, **people with one risk factor tend to have higher incidences of other risk factors**. For example:

- 36% of the cohort has some CYF-CP history, but this rate is 1.6 times higher (56%) for the subset of the cohort with intensive family benefit history.
- Young adult beneficiaries with CP history are 1.7 times more likely to have had CYF-YJ or criminal conviction history.
- Those from long-term beneficiary families are 1.5 times as likely to have a YJ or conviction history.

Meanwhile, as noted in the previous section, about 70% of beneficiaries aged 22 to 24 with YJ history also have criminal convictions as adults (five times the rate of those without YJ history).

This shows that **risk factors are closely inter-related, and that family vulnerability in childhood and youth are associated with early contact with both welfare and justice systems – and more intensive contact in adulthood**.

4.7 Youth segments – a detailed view

4.7.1 Background

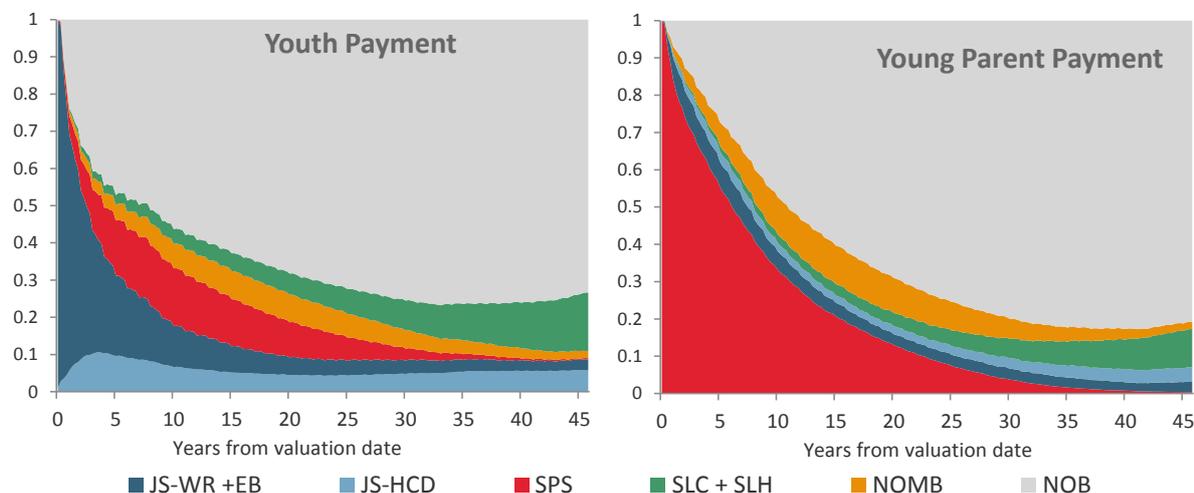
Valuing the future lifetime costs of benefit makes it very clear that an effective strategy for working with youth and young entrants is essential to achieving the goal of reducing long-term benefit receipt. While segments are covered more fully in Chapter 5, the importance of the youth segments warrants particular attention.

In August 2012, MSD introduced a new approach to working with youth. The objective is to keep this high risk group in school, training or employment so as to improve their qualifications and reduce their reliance on working-age benefits. Key elements include a new focus on proactive outreach to youth Not in Education, Employment or Training (NEETs), an increased role for external providers (who are rewarded based on milestone payments), guaranteed childcare support for Young Parents and the use of incentive payments.

Figure 4.28 illustrates expected transitions over the next 45 years, for clients who were receiving Youth Payment (YP) or Young Parent Payment (YPP) on the valuation date. YP are considered to be Jobseekers (illustrated in darker blue), and YPP are considered to be Sole Parents (illustrated in red). The light grey area shows working-age exits for other reasons (mainly employment).

Note the significant transfers by YP clients from JS to SPS in their late teens and twenties, and the growth in SLP benefits from middle age onwards by both former YP and YPP. **Relative to previous years, shorter SPS spells mean markedly fewer current YPP are expected to be on SPS in 10 years' time.**

Figure 4.28 Future lifetime projection as at 30 June 2015 for clients currently receiving Youth Payment (left) and Young Parent Payment (right)

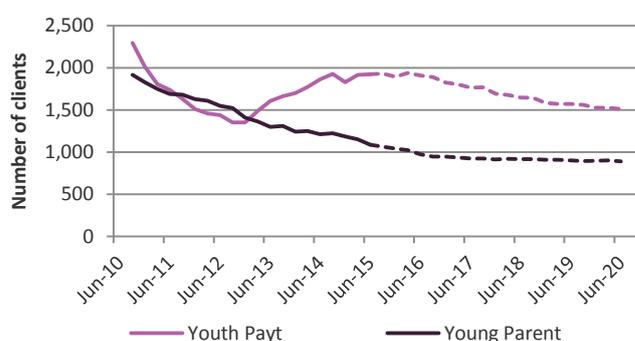


4.7.2 Trends in welfare outcomes for youth segments

Youth segment numbers

Since August 2012 there has been a 20% increase in the number of YP clients, for the most part offset by a 20% decrease in YPP clients. **This offsetting effect corresponds to about 400 more clients receiving YP, while 400 less are receiving YPP.**

Figure 4.29 Actual and projected youth segment numbers



While YP numbers are rising, this is not necessarily inconsistent with the policy objectives for this group (to improve qualifications and reduce reliance on working-age benefits).

- The increase in YP numbers appears to be partly a substitution effect; with lower levels of teen pregnancy, more of the high-risk young women who tend to come into contact with the benefit system at younger ages might be receiving YP instead of YPP. This change is particularly notable because YPP have the highest average lifetime cost of any client segment.
- Other contributing factors could include proactive outreach to youth NEETs; and longer benefit receipt in the near term while Youth complete qualifications.

- At the same time, youth are particularly sensitive to changes in the unemployment rate, and slowing exit rates for YP may be a source of concern to management – thus the underlying trends are mixed, as discussed further throughout this section.

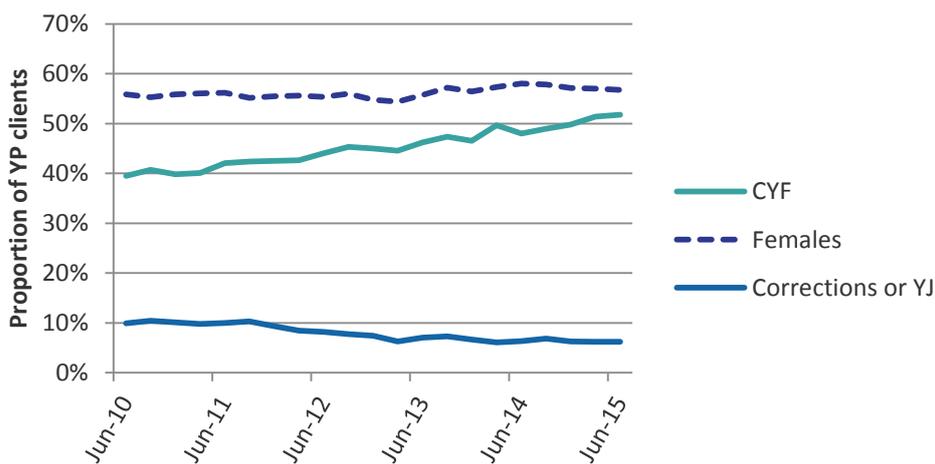
In time, it will become more clear to what extent increased volumes are a cause for concern versus driven by more successful transitions to adulthood by this high risk cohort that will result in longer-term improvements in their employability and reductions in long-term benefit receipt.

Compositional changes

The composition of YP recipients is evolving over time. While the proportion of Māori clients and the level of intergenerational benefit receipt have been relatively stable, as shown in Figure 4.30 we see that:

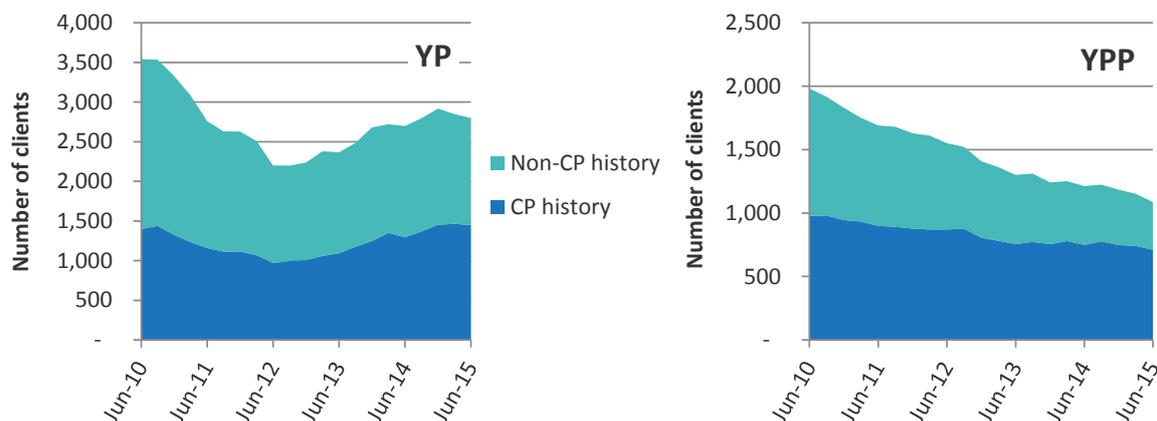
- The proportion of females receiving YP has increased from 55% to 57%.
- The proportion of YP clients with CYF history has grown dramatically from 40% to 52% over the past 5 years. This potentially reflects the way the new Youth Payment is targeted.
- The proportion of clients with corrections or YJ history has fallen by about a third. This potentially reflects lower crime rates amongst these cohorts.

Figure 4.30 Proportion of YP clients who have CYF history, are female, or have Corrections/YJ history



The figure below also shows how the increase in numbers is primarily concentrated amongst clients with previous CYF-CP history. Most of the decrease in YPP numbers relates to clients without CYF-CP history.

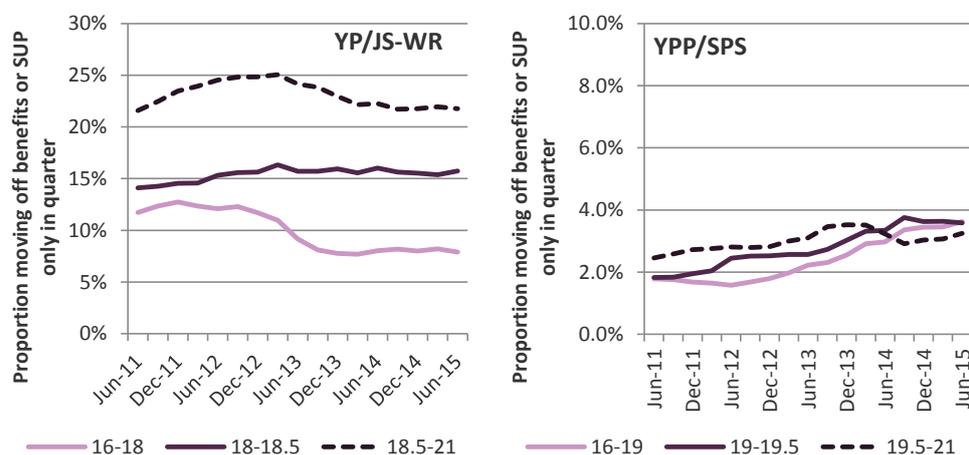
Figure 4.31 Number of YP and YPP clients over time, end of quarter, by CYF-CP history



Youth segment welfare outcomes and transition rates

The figure below shows Youth segment transition rates off benefits for different age bands and benefit types. YP clients who do not exit the benefit system typically move into JS-WR benefit at age 18, whereas YPP clients typically move to SPS at age 19.

Figure 4.32 Quarterly transfer out rates, Youth Payment and Young Parent Payments. Smoothed to remove seasonal variation.



For YP/JS-WR clients we observe that:

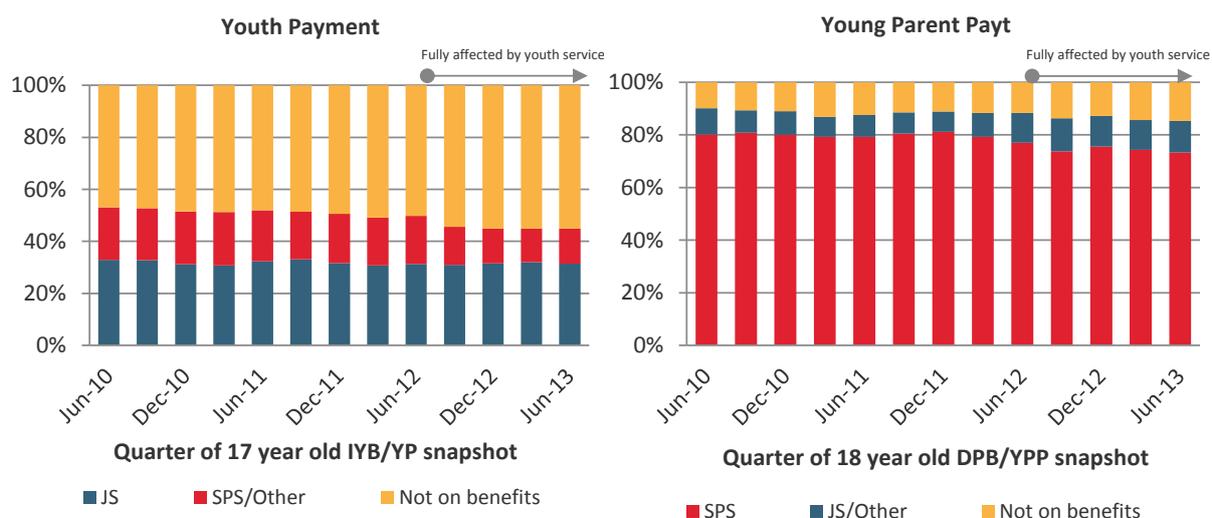
- Exit rates for 16-18 year olds on YP have reduced substantially since the introduction of the Youth Service. Again, this is not necessarily inconsistent with the aims of the program if clients remain in the programme (and therefore receive benefits) until completing qualifications.
- For former YP clients who do age into main benefits, exit rates for 18 to 18.5 year olds have increased slightly; about 30% of the cohort exit benefits in this six month period. It is an objective of the program to increase the rate at which YP leave benefits (with NCEA 2 or above qualifications) after reaching the end of the Youth Service.
- **Exit rates for 18.5 to 21 year old clients on JS-WR have fallen over the past two years in particular.** This fall was not fully recognised in last year's valuation, but has been allowed for this year. This has lengthened the expected future lifetime cost for YP clients who remain on benefit after age 18.5. A softening labour market (which typically affects younger clients more heavily) explains some, but not all, of this trend.

For the YPP/SPS clients we observe that benefit exit rates have generally increased across all the age cohorts. Multiplying these exit rates together, we would now expect that **for every 20 YPP clients on benefit at age 17, that 9 of them would exit benefits by age 21, compared to 6 of them based on June 2011 rates.**

A related view of Youth segment outcomes is looking at what cohort clients move to by the time they reach age 19 (for YP clients) or 20 (for YPP). Trends over time are summarised in the figure below; the June 2013 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 2010, we can track their outcome at age 19 (up to two years later). We observed that 47% had exited benefits (the yellow bar), 33% were still on a Jobseeker type benefit (blue) and 20% were receiving another type of benefit (mainly SPS). The bar graph on the right replicates the equivalent analysis for 18-year olds receiving YPP (or equivalent), showing their benefit status two years later.

Figure 4.33 Status for 17 year old YP clients when they reach age 19 and 18 year old YPP clients at age 20¹²



Since the introduction of the Youth Service, the transfer rate (both exits and movements to other benefits) have slightly decreased for YP and markedly increased for YPP clients. This is consistent with the trends in numbers observed.

The trends associated with the segments generally appear to be promising. For YP clients, the biggest change is the lower transfer rate to other benefits (particularly Sole Parent Support) by age 19. The proportion who are not on benefits by age 19 has grown from 47% (June 2010 cohort) to 55% (June 2013, the latest cohort for which we have full historical data). For YPP clients the proportion has grown from 10% to 15% over the same period, with a substantial drop in the number receiving SPS at age 20. The timing of these improvements is closely aligned with the introduction of the Youth Service.

Expected future lifetime duration on benefits

Compared to June 2013 projections, **the average projected future years on main benefits for YP has increased 8%, from 15.5 years to 16.7 years.** Some of this increase relates to the additional data now available and associated methodological enhancement – the high proportion of clients with CYF history relative to previous years increases the liability; before the change to incorporate the additional data estimated future duration was 15.6 years.

The average projected future years on benefit for YPP has decreased 11%, from 18.9 years to 16.9 years. As noted earlier, this reflects improved employment outcomes for SPS more generally.

The compositional changes in the Youth segments over the past few years noted earlier also contribute to changing lifetime cost – for example, the increase in beneficiaries with CYF history, and the shift of young women from YPP to YP as a consequence of lower rates of teen pregnancy.

4.7.3 Interpreting YP outcomes

Understanding the different metrics

At first glance, there appears to be **mixed signals** from some of the different performance measures for the YP segments:

¹² The equivalent chart in last year's valuation report contained an error where the 'Not on benefits' proportion was materially overstated for YP clients. This issue has been corrected in the current report.

- The change due to experience, as shown in Figure 3.6, was a 4% reduction (apparent improvement)
- The number of 17 year old YP clients remaining in JS-WR at age 19 has been relatively flat (apparent stability, Figure 4.33)
- The rate at which YP clients and young JS-WR clients are leaving that benefit has fallen over the past two years (apparent deterioration, Figure 4.32).

We make a few comments here to reconcile these observations.

First, the change due to experience is a measure of **lifetime** welfare cost relative to our expectations at the previous valuation. Much of the improvement relates to decreased liability associated with lower future SPS benefits; for example, there was very little change due to experience for male youth segment clients.

Secondly, the bar chart in Figure 4.33 measures outcomes over two years. This lag will mean that emerging trends are only recognised slowly; outcomes over shorter time periods would better reflect the decreasing exit rates seen in Figure 4.32. If trends continue, the impact on outcomes will become visible on this chart over the next two years.

Thirdly, the bar chart is further complicated by re-entries; we have seen a lower rate of re-entry amongst those exiting from YP, which partly offsets the decreases in Figure 4.32.

Potential headwinds for YP outcomes

These observations indicate that there is some attention warranted regarding YP welfare outcomes, as presented in Figure 4.33. Although not visible yet in the actual outcomes, **if benefit exit rates remain at their lower rates, we would expect the proportion on JS at age 19 to gradually increase.** While this potential trend is concerning, we note the following:

- Many clients in the current 18.5 to 21 year old group did not go through the new Youth Service; assuming that their welfare exit rates will also be experienced by the 18.5 to 21 year old group in future may be somewhat misleading. It is possible that the Youth Service will drive better outcomes for this cohort over the next couple of years.
- Unemployment rate assumptions are higher than for the previous valuations. This has a particular effect on projections for youth, who typically struggle in a deteriorating employment market.
- Some of the effect may be compositional. One significant change is the proportion of clients with CYF-CP or CYF-YJ history in the YP segment has grown from 42% in June 2011 to 52% in June 2015. This may relate to the targeting of the Youth Service.
- Outcomes for relatively small groups of clients are inherently volatile; projections for these groups are thus more uncertain compared to larger segments.

MSD should continue to monitor outcomes closely for youth, particularly the YP segment.

Other relevant indicators of Youth Service effectiveness

That said, there are also some promising trends underlying the numbers. Ultimately effectiveness should be measured by improved:

- Benefit outcomes after aging out of the Youth Service
- Educational outcomes (reliable data not yet available to us for the valuation)
- Social outcomes.

This report discusses the first bullet in some detail above. However, the other outcomes are largely out of the scope of this report, despite their obvious importance. We nevertheless include some brief comments on them as useful context.

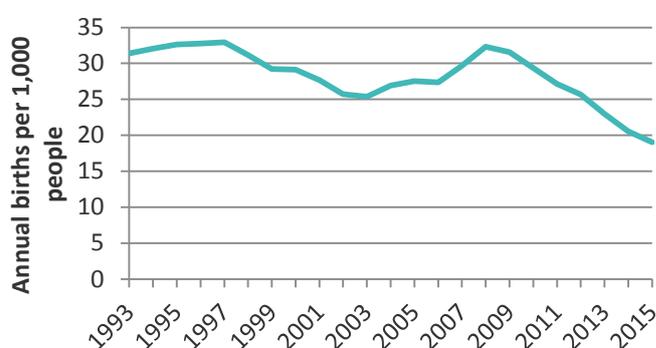
Educational outcomes

Evaluation of the Youth Service by MSD shows that the Youth Service is improving qualifications for participants.¹³ This is consistent with reporting against Better Public Services result area 5 showing that the rate of achievement of NCEA level 2 or equivalent has been increasing.¹⁴ Due to the limitations of qualifications data held by MSD, we are currently unable to measure the impact of improving qualifications on lifetime patterns of benefit receipt and the future cost of benefits.

Other indicators of social outcomes for youth

We noted earlier that numbers of YPP were decreasing, roughly offsetting the increases to YP. Further, a lower proportion of Youth Payment beneficiaries are moving into Sole Parent Support (which has tended to represent a large proportion of lifetime cost). These results appear consistent with lower rates of teen pregnancy. This agrees with a sharp reduction in teen pregnancies to historical lows identified in Statistics NZ data (see figure below); rates have fallen by about a third over the past five years.

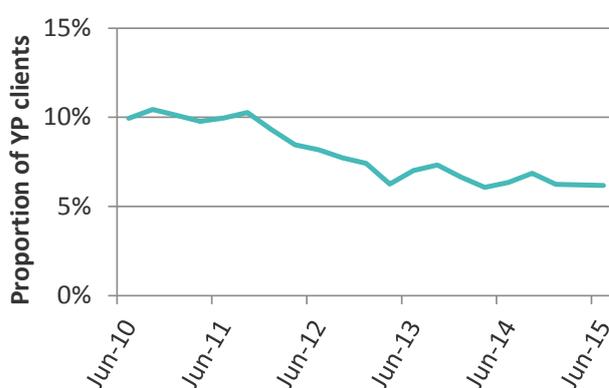
Figure 4.34 Birth rate for 15-19 year olds, NZ population (from Statistics New Zealand Infoshare)



Statistics NZ introduced a NEET indicator in June 2011. According to the June 2015 Household Labour Force Survey (HLFS), the rate of youth aged 15-24 who were NEET fell from 13.2% to 11.1% between June 2012 and June 2014. It has since stabilised and averaged 11.5% over 2014/15.

Section 4.2 of this valuation shows that a material proportion of young clients have had interactions with the youth justice system.

Figure 4.35 Proportion of YP clients with a CYF-YJ event or adult criminal sentence in their history



¹³ <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/youth-service/index.html>

¹⁴ <http://www.ssc.govt.nz/bps-boosting-skills-employment>

Reporting on Better Public Services result area 7; ‘Reducing Crime’ shows that the youth crime rate has been falling consistently.¹⁵ This is corroborated by data provided to us. Figure 4.35 shows that the proportion of YP clients who have either CYF-YJ or Corrections history has fallen by more than a third over the past few years.

With all of these important social indicators continuing to travel in a positive direction, the increase in numbers in the Youth Payment segment should not necessarily be viewed in a negative light, as initial outcomes are consistent with the intent of the Youth Service. At the same time, attention to how youth fare in a changing labour market is likely warranted.

4.8 Subgroups of interest

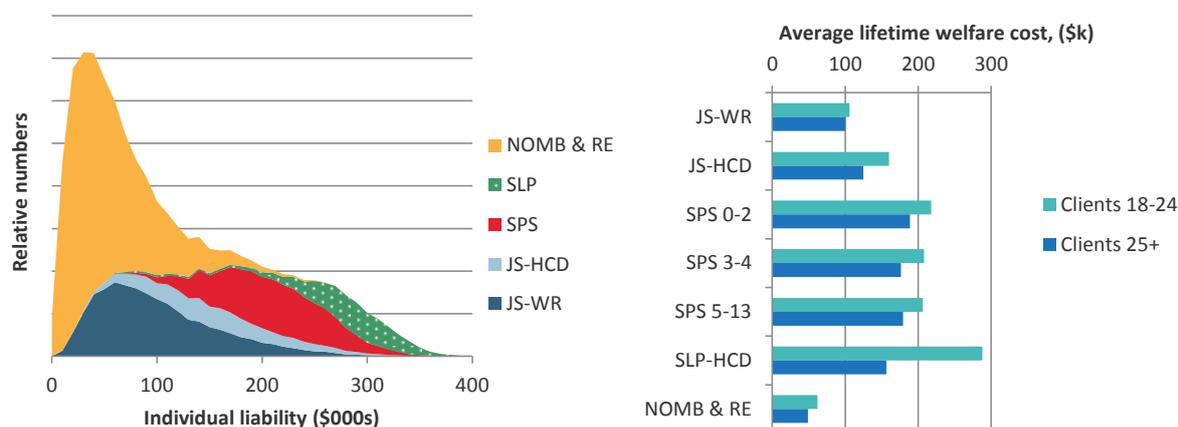
4.8.1 Young adults 18-24

Young adults are an interesting cohort for analysis for a number of reasons:

- They tend to have higher than average liabilities, compared to older clients in similar segments.
- They have a wide variety in their projected outcomes. For example, young JS-WR clients have an average liability of \$111k, but a fifth have a liability less than \$50k and a fifth are above \$150k. They also have significant variation in their patterns of benefit receipt.
- We have complete histories of CYF-CP and CYF-YJ events, history of criminal convictions and intergenerational benefit receipt.

Restricting attention to a particular age cohort also makes some comparisons easier to the extent that broader comparisons are distorted by age effects.

Figure 4.36 Distribution of future lifetime benefit costs for 18-24 year old clients, excluding those in Youth segments (left panel); Average of these future lifetime costs compared with clients aged 25+ (right panel)



As at 30 June 2015, there were about 95,400 clients aged 18-24 (and not in YP/YPP), with an average future lifetime cost of about \$126k. Average liabilities are also higher compared to older clients across all segments – as noted earlier, this is not surprising in that they have more years remaining before they reach retirement age.

These ideas are illustrated in Figure 4.36.

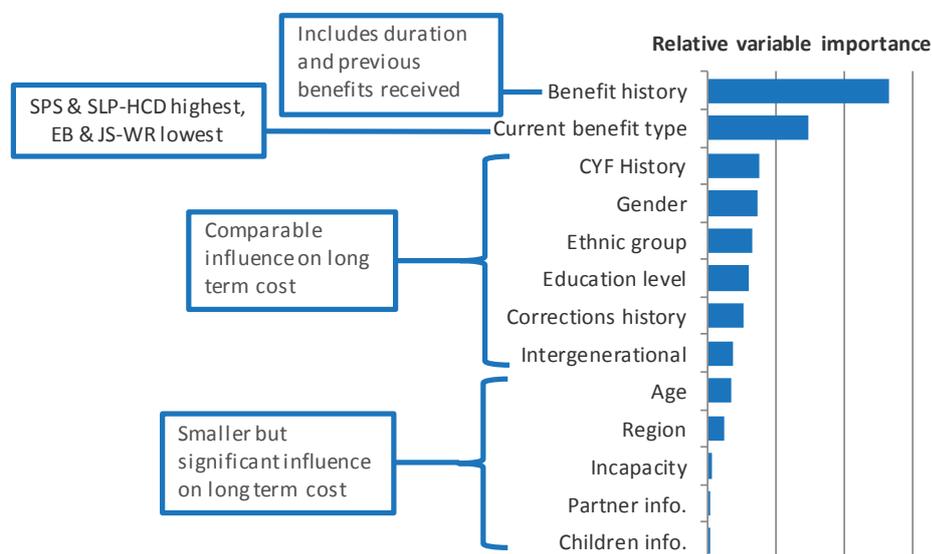
¹⁵ <http://www.ssc.govt.nz/bps-reducing-crime>

In the previous valuation we provided a detailed analysis predicting short term outcomes – specifically the likelihood of remaining on benefit for the next two years. This year we focus on future lifetime cost.

In Figure 4.37 we have ranked the relative influence of the various groups of risk factors used in predicting future lifetime cost – as though they were independent of one another. Benefit type and benefit history prove to be dominant. Clients who have spent several quarters in the system are at higher risk of remaining. This history can then act as a proxy for pre-existing risk factors; for example, if a client with CYF history enters benefits and remains for a substantial period, then over time benefit history will displace CYF interaction as the primary risk factor (even though family breakdown may have been the prime cause for entering the benefit system in the first place, and the long-term trauma the principal reason for remaining on benefit for an extend period of time).

Following benefit history are a number of important non-benefit risk factors. The new data related to CYF and criminal convictions prove to be highly predictive, at a similar magnitude to Gender and Ethnicity. Education proves to also be very significant in predicting outcomes, despite the data quality issues discussed in Section 9.1.6.

Figure 4.37 Ranking of relative variable importance in predicting future lifetime welfare cost for clients aged 18-24



While benefit status and history are vital in understanding the likely future welfare pathway of a client, a number of non-benefit risk factors prove to be very significant. These include (in rough order of importance) CYF history, gender, ethnicity, education attainment, history of criminal convictions and intergenerational benefit receipt.

The addition of new risk factors allows more nuanced segmentations of the young adult cohort. To gain a different perspective on which sub-groups of 18-24 year olds might be at particularly high risk, we also conducted an illustrative segmentation of young adult beneficiaries in JS-WR segments. This is shown in the table below.

An 'average' 18-24 year old client on JS-WR has an expected future lifetime cost of \$111k. The segmentation divides this into groups of comparable size, where the cost varies from \$61k through to \$196k, three times the lowest group. Although a simple segmentation with only eight subgroups, this is enough to explain over half the variation observed in the individual level projection. Also interesting is the important role played by both new datasets added this year – criminal conviction and youth offending history.

For young non-Māori males with no criminal conviction history, exit rates are very high and future lifetime cost is well below average. In contrast female Māori clients have future lifetime cost over \$150k.

Table 4.3 Illustrative segmentation of work-ready Jobseeker clients aged 18-24

Cohorts		Number	Expected lifetime cost (\$000s)
Males	No sentence served in the past 10yrs	Non-Māori	4,860 61
		Māori	3,120 91
	Sentence served in the past 10yrs	No JS-HCD	2,473 105
		Some JS-HCD	878 142
Females	Non-Māori	No CP or YJ	3,171 98
		Some CP or YJ	1,770 150
	Māori	No CP or YJ	2,108 150
		Some CP or YJ	2,248 196
All		20,628 111	

4.8.2 HCD clients

For both JS-HCD and SLP-HCD clients we allow for the type of incapacity in our models, as some incapacity types tend to display slightly different behaviours.

Table 4.4 Health condition or disability type for primary JS-HCD and SLP-HCD clients, as at 30 June 2015

Health condition or disability type	JS-HCD		SLP-HCD	
	Number	Percent	Number	Percent
Psychological	25,315	43%	28,296	32%
Musculoskeletal	9,414	16%	9,231	11%
Intellectual handicap	71	0%	10,409	12%
Cardiovascular	2,773	5%	5,828	7%
Nervous System	1,760	3%	6,611	8%
Accident	4,132	7%	3,853	4%
Metabolic	2,734	5%	2,940	3%
Congenital	280	0%	4,672	5%
Substance	3,246	6%	1,583	2%
Respiratory	1,549	3%	2,724	3%
Sensory	676	1%	2,470	3%
Cancer	836	1%	2,122	2%
Other or missing ¹⁶	6,001	10%	6,374	7%
Total	58,787¹⁷	100%	87,113	100%

Psychological conditions make up two fifths of JS-HCD clients and a third of SLP-HCD clients. The SLP proportion has continued to grow steadily, while the JS-HCD fraction appears to have stabilised in the past couple of years (see figure below). The next largest category relates to musculoskeletal conditions.

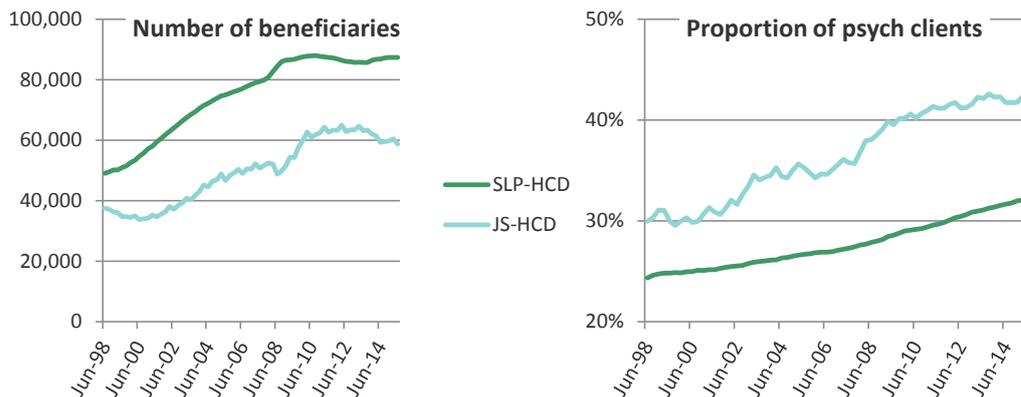
¹⁶ Missing HCD values are allocated for the purpose of modelling.

¹⁷ Numbers here do not match segment numbers in Section 5.3.1 as segment numbers include partners of primary beneficiaries.

SLP-HCD numbers grew rapidly between 1998 and 2008, on average 5% p.a. JS-HCD numbers grew at 3% p.a. in the same period. Numbers of SLP-HCD have been effectively flat since June 2008, while JS-HCD saw a significant rise in 2008/09 and 2009/10, and have been flat thereafter. June 2008 saw significant changes to transfer rules into SLP-HCD.

While most HCD types have grown in absolute numbers over time, the number of clients with psychological conditions has grown significantly faster than average. As such, it represents a significantly larger portion of the client base than ten years ago (see figure below).

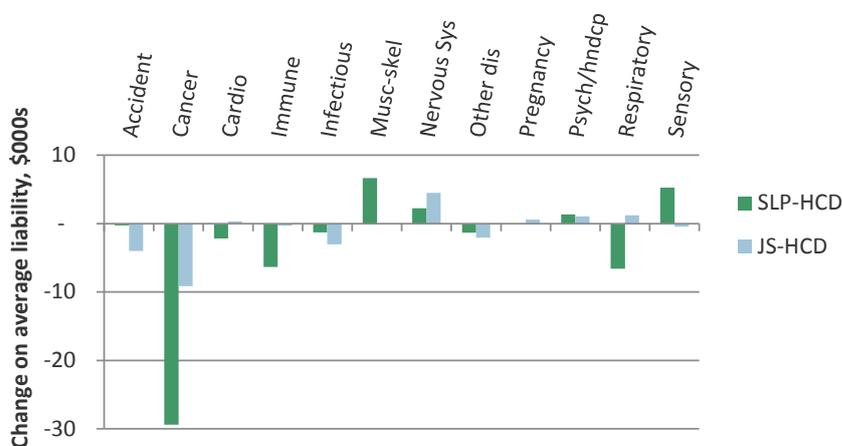
Figure 4.38 Number of beneficiaries and proportion of clients with psychological conditions over time



The type of health condition or disability tends to have a small to moderate influence on a person's future lifetime welfare cost. The partial dependence effect (the effect of incapacity type, holding other factors equal) is shown in the figure below. We observe:

- Psychological conditions tend to be very close to the average, which is perhaps not surprising given they are the predominant type of condition
- Clients with cancer typically have a significantly lower cost, likely due to mortality
- For SLP-HCD clients, musculoskeletal and sensory conditions tend to have higher future lifetime cost, while immune and respiratory conditions tend to be slightly lower. Again, this is potentially due to mortality differences.

Figure 4.39 Partial dependence effect of incapacity type on future lifetime welfare cost. Differences relative to overall average within benefit group. Some conditions have been combined.



5 ANALYSIS BY SEGMENT

INSIDE THIS CHAPTER

- ❖ Introduction and highlights
- ❖ Actual versus expected results for 2014/15
- ❖ Segment level liability results
- ❖ Analysis of transfers between segments
- ❖ Understanding segment-level differences
- ❖ Forecast segment numbers

5.1 Introduction and highlights

In order to better understand sub-groups within the benefit population, we have developed 17 beneficiary segments in consultation with MSD. 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 provides 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. Segments are structured around a 'top tier' split based on benefit types, with lower tier splits that use other characteristics including continuous duration (less than/more than 1 year), child age and partner information.

Figure 5.1 Beneficiary segments

Jobseekers				Sole Parents				Supported Living			Youth		NOMB			Recent exits	
WR		HCD		Young child		School-aged (5-13)		HCD	Partner	Carer	YP (<18)		YPP (<19)		2 nd /3 rd tier only		
< 1 yr	1 yr +	< 1 yr	1 yr +	Age 0-2	Age 3-4	< 1 yr	1 yr +				< 1 yr	1 yr +	OB only				

Segments and transfers between segments

Last year's valuation report provided detailed analysis of how changes to benefit categories influenced transfers within the system. This year, we find that transfer levels between segments have stabilised into new patterns post reform.

Despite an increase in the unemployment rate, numbers have decreased for most segments. Average liabilities have increased slightly for a majority of segments. This is mainly due to inflation and discount rate changes which on average add 3.5%.

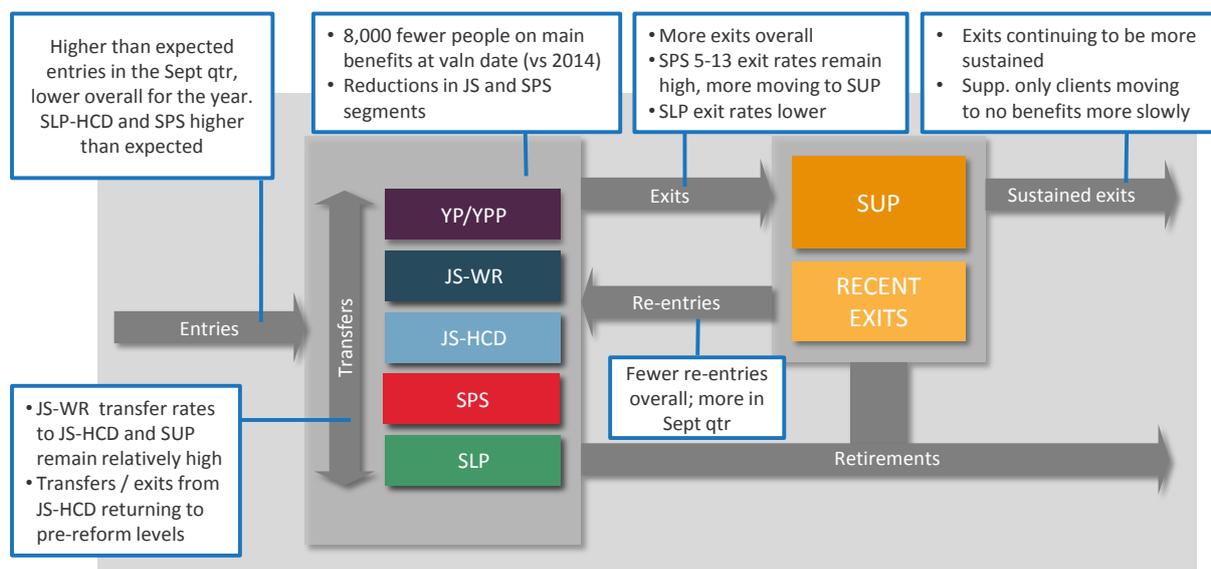
- In the June 2015 quarter, there were 3% more Youth beneficiaries than projected in the previous valuation, 3% fewer JS-WR, 3% fewer SPS and 4% more SUP only beneficiaries. Beneficiary numbers were relatively similar to projections for other segments.
- Compared to last year, the average future years on benefit has decreased for all segments except JS-HCD <1year, Sup only <1 year, Youth Payment and Recent exits. The average future lifetime cost has decreased for Sole Parent segments but increased for all other segments, reflecting inflation and discount changes.

The ten percent of clients with the highest future lifetime cost (on average \$285,000) make up about 26% of the total liability in the benefit system. Supported Living segments represent over half of this group, and a third is Sole Parents. One in nine main beneficiary clients have an average future welfare liability less than \$50,000.

5.2 Actual versus expected results for 2014/15

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 2014/15 compared to expected



The number of beneficiaries has decreased overall with the largest absolute changes in SPS, JS-WR and Recent exit segments. For SPS a higher than expected rate of entry has been more than offset by the sustained higher exit rate by Sole Parents with school-aged children. Exit rates have increased in general although for the SLP-HCD segments the rates are lower, as well as for JS-HCD which has experienced some post-reform reversion in leaving rates.

In the June 2015 quarter, there were 3% more Youth beneficiaries than projected in the previous valuation, 3% fewer JS-WR, 3% fewer SPS and 4% more SUP only beneficiaries.

Table 5.1 compares how many beneficiaries were expected to be in each segment by quarter in the last valuation to how many actually were. This provides a count of actual versus expected segment numbers at any given time.

Table 5.1 Actual and expected numbers by segment for majority of quarter. Numbers are based on benefit receipt during quarter, rather than 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-14	103.0	73.7	28.9	16.4	35.6	9.1	96.8	3.4	100.8	5.3
	Dec-14	104.0	74.3	28.5	16.3	35.0	9.1	97.0	3.3	100.3	5.4
	Mar-15	103.2	73.7	28.2	16.1	35.3	9.1	96.7	3.3	100.6	5.4
	Jun-15	96.4	71.8	27.4	16.1	33.9	9.1	96.6	3.3	101.0	5.4
Expected	Sep-14	101.4	74.1	28.6	16.4	35.7	9.1	96.0	3.3	101.4	5.3
	Dec-14	103.2	73.9	28.8	16.4	35.4	9.2	96.1	3.3	100.0	5.3
	Mar-15	105.0	73.0	28.7	16.6	35.8	9.3	96.2	3.3	100.0	5.3
	Jun-15	99.6	71.3	28.3	16.2	35.3	9.3	96.4	3.2	97.4	5.3
Ratio A/E	Sep-14	102%	100%	101%	100%	100%	100%	101%	103%	99%	100%
	Dec-14	101%	101%	99%	99%	99%	99%	101%	101%	100%	102%
	Mar-15	98%	101%	98%	97%	98%	99%	100%	101%	101%	101%
	Jun-15	97%	101%	97%	99%	96%	98%	100%	103%	104%	101%

While some of the post-reform volatility has reduced over time, there are still some noteworthy elements to these results:

- There are now 3% more clients in Youth segments than projected in the last valuation forecast. While Youth payment numbers are 7% higher than expected, Young Parent payment numbers are 5% lower than expected. Youth segment numbers are particularly sensitive to numbers of new entries over the year, and also generally more variable due to smaller numbers. In 2014/15 there were significantly more entries than expected, particularly in the June 2015 quarter. This coincides with the increase in the national unemployment rate. Youth segments were discussed in more detail in Section 4.7.
- JS-HCD segment numbers have stabilised and numbers were close to expected. The faster transfer rates from JS-HCD into JS-WR segments seen after the introduction of new medical certificate requirements in 2013/14 appear to have been sustained.
- There are significantly fewer beneficiaries in the SPS 5-13 segments than expected (96% of expected by June 2015). The reduced numbers in the SPS 3-4 segment seen last year have been sustained with actual numbers close to expected. There were fewer entries than expected into SPS 0-2; this will have a flow on impact to older child age segments.
- The number of JS-WR clients at June 2015 is significantly lower than expectations (97%) despite the unemployment rate rising over the year. This is primarily due to a reduction in longer duration beneficiaries in this segment. Some of these beneficiaries are exiting the system while some are transferring to JS-HCD or SLP-HCD.
- Overall SLP-HCD numbers are in line with expectations but this masks the underlying effects. Partner numbers are 17% higher at June 2015 than expected, this is offset by a relatively smaller decrease in pure SLP-HCD numbers.
- The number of beneficiaries receiving only SUP benefits has increased; it was 4% higher than expected at June 2015. This is due to SUP only clients moving to no benefits more slowly and more SPS clients transitioning to SUP only instead of no benefits. One consequence of this is the higher proportion of SUP clients with continuous duration over one year.
- Changes in numbers are matched by corresponding differences in payments to segments; average payment levels were generally in line with expectations.

5.3 Segment level liability results

5.3.1 Results

Table 5.2 shows the segment level current client liability results, plus the equivalent table from the previous valuation.

Table 5.2 Current client liability forecasts by client segment at 30 June 2015 and previous valuation. Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2015 Valuation				2014 Valuation			
		Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit	Number at valn date	Total liability (\$m)	Average lifetime cost (\$k)	Average future years on benefit
Jobseeker Support	JS-WR <1 year	44,527	4,189	94	9.7	44,395	4,058	91	9.7
	JS-WR >1 year	32,242	3,672	114	10.3	34,337	3,911	114	10.5
	JS-HCD <1 year	22,374	2,678	120	10.5	22,106	2,523	114	10.4
	JS-HCD >1year	42,353	5,866	138	11.0	44,006	5,959	135	11.3
	Sub-total	141,496	16,405	116	10.4	144,844	16,452	114	10.5
Sole Parents	Youngest child 0-2	26,232	5,519	210	15.9	27,205	5,767	212	16.4
	Youngest child 3-4	14,681	2,840	193	14.6	16,325	3,227	198	15.3
	Child 5-13, <1 year	4,570	610	133	10.5	4,141	563	136	10.9
	Child 5-13, >1 year	25,950	4,441	171	12.8	28,876	5,072	176	13.4
	Sub-total	71,433	13,410	188	14.1	76,547	14,628	191	14.7
Supported Living	Carer	8,812	1,360	154	10.7	8,675	1,297	149	10.9
	Partner	8,041	872	108	8.4	8,098	853	105	8.5
	HCD	87,113	15,398	177	12.7	86,863	14,842	171	12.8
	Sub-total	103,966	17,630	170	12.2	103,636	16,992	164	12.3
Youth	Youth prog (<18)	1,923	294	153	16.7	1,829	251	137	15.2
	Young Parent (<19)	1,086	232	214	16.9	1,192	254	213	17.5
	Sub-total	3,009	526	175	16.8	3,021	506	167	16.1
Not On Main Benefits	Sup only, <1 year	29,907	1,405	47	6.5	32,556	1,488	46	6.5
	Sup only, >1 year	68,885	3,666	53	7.4	63,844	3,414	53	7.5
	Orphan only	5,289	510	96	7.3	5,107	486	95	7.5
	Sub-total	104,081	5,581	54	7.1	101,507	5,388	53	7.2
Recent Exits	Recent exits, <1 year	132,421	7,099	54	5.7	148,333	7,461	50	5.5
All segment sub-total		556,406	60,650	109	9.511	577,888	61,427	106	9.541
Expenses + Net loans			7,740				7,575		
Grand total			68,390				69,002		

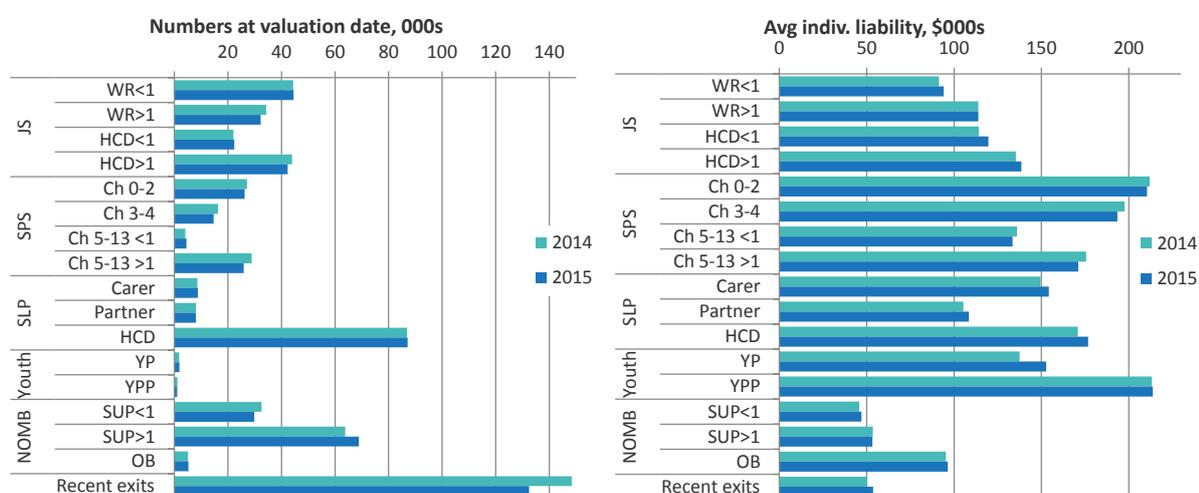
Note that these results are split based on a client's segment at the valuation date, and totals include future cash flows arising from different benefit types for that person. Net loan cost and expenses have not been allocated across segments but have been included as a separate line item in the table.

Compared to last year, the average future years on benefit has decreased for all segments except JS-HCD <1 year, Sup only <1 year, Youth Payment and Recent exits. The average future lifetime cost has decreased for SPS segments but increased slightly for all other segments.

The only segment to see a significant increase in future duration on benefit is Youth Payment. The impact relates to a combination of higher unemployment, slowing transition rates off benefit as well as a higher proportion of clients with CYF history.

This result 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 2015 compared to 30 June 2014)



Despite an increase in the unemployment rate, numbers have decreased for most segments. Average liabilities have increased slightly for the majority of segments. This is mainly due to inflation and discount rate changes which on average add 3.5%.

We make the following additional comments:

- For **Jobseekers** the total liability is very similar to last valuation; the 2% increase in average liability is offset by a 2% decrease in numbers. This is viewed as a favourable result, given the increase in unemployment rates over the year. There has been a shift in numbers towards the lower duration segments for both Work-ready and HCD clients.
- As in 2014 **Sole Parents** have again seen the largest decreases in both absolute and relative terms. Across the four SPS segments, there has been a decrease of 8% in total liability, driven by significantly lower numbers and slightly lower average liabilities.
- **Supported Living segments** have seen both an increase in average cost and a slight increase in numbers, pushing up the overall liability for these three segments by 4%. The increase in numbers is in part due to some transfers from JS segments.
- The total liabilities attached to **Youth** segments are small compared to other segments due to very small numbers. However, outcomes for youth are very important due to their increased risk of remaining on benefits long-term, reflected in high average lifetime costs. There has been a significant increase in average future lifetime cost for Youth Payment beneficiaries (10% higher). Some of this relates to methodological change and the relatively high proportion of clients with CYF history in the segment this year. Numbers in this segment have also increased (5% higher). Partially offsetting this, numbers in Young Parent have decreased by 9%. Note that estimation of future lifetime cost for these segments is subject to particular uncertainty – see Section 4.7.
- The number of clients in **Supplementary only** segments is 2% higher and their average future lifetime cost is up 3%. The increase in numbers partly reflects a slower transition rate out of the benefit system as well as the substitution observed from SPS → NOB transition to SPS → SUP.
- Client numbers in **Recent Exits** are 11% lower than last year. This is a natural by-product of falling numbers of benefit recipients over the last few years (that is, there are fewer recent exits because there are fewer people on benefit to start with) and was expected following the large decrease in

numbers following the reforms. The average future lifetime cost has increased 6.5%, caused by a number of factors:

- A 3.5% increase due to inflation and discount assumption changes
- A 0.5% increase due to actual benefit rate inflation over the year
- A 2.0% increase due to the changing composition of the segment, primarily related to differing benefit history.

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 5.3 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:

- 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 10% 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 (14% 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 40% of those who are still of working-age are expected to be on some form of benefit. Benefit receipt is shared fairly evenly across the various benefit types.
- After 20 years about a third of current JS-WR have reached retirement age. About 30% of those under 65 remain on benefits, with more receiving SLP than any other benefit.

Figure 5.4 Lifetime projection as at 30 June 2015 for Jobseekers (Work Ready)

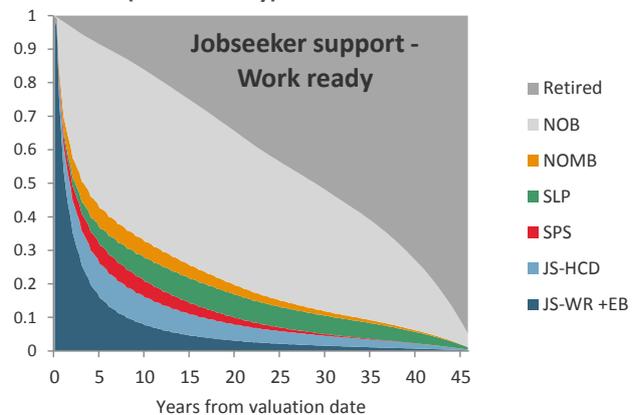


Figure 5.5 illustrates expected lifetime transitions for other segments:

- 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 Assistance 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 most 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.

- The proportion of Recent Exits who have returned to benefits peaks two to three years into the projection, at about 25% of the group. Entries are mainly JS initially, but an increasing proportion move into SLP and SPS segments too.

Figure 5.5 Lifetime projections as at 30 June 2015, selected segments

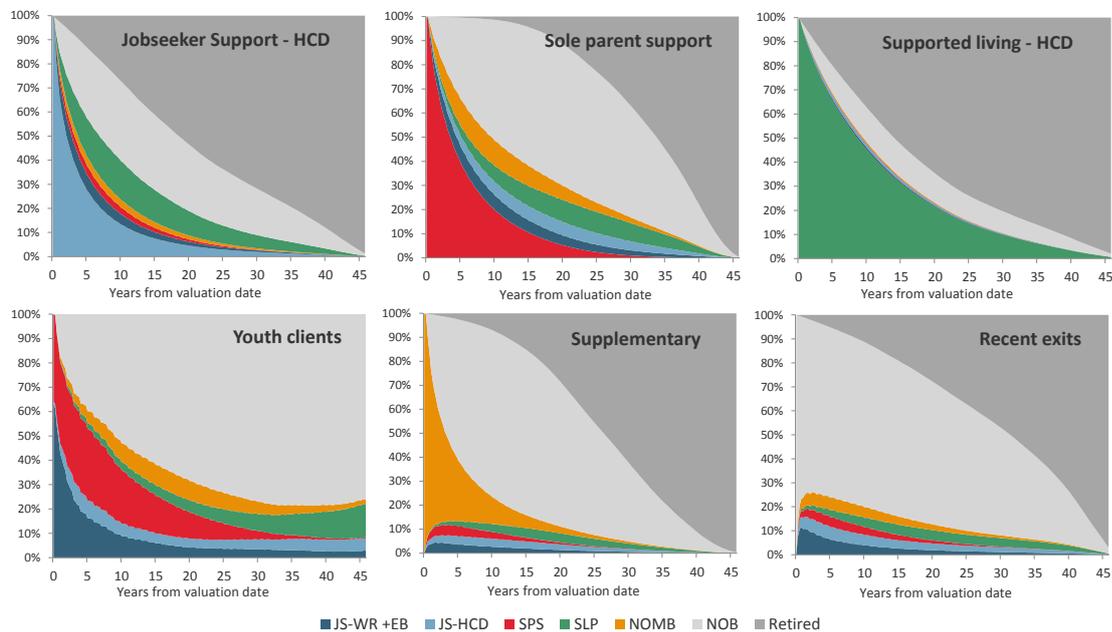
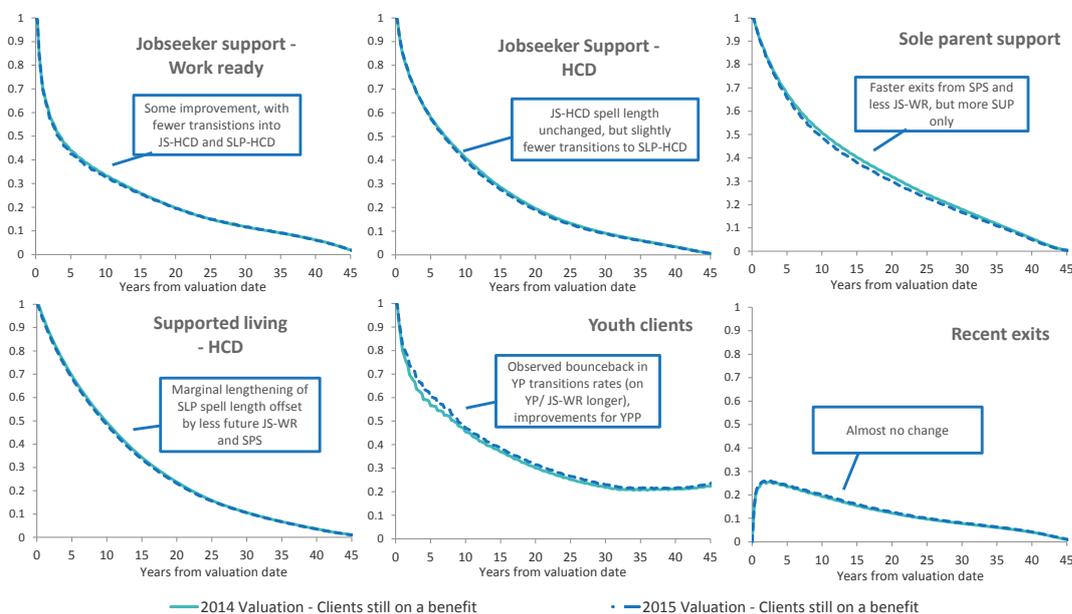


Figure 5.6 illustrates how the overall shapes of these trends have changed from the previous valuation. Changes visible in this plot will tend to mirror changes to average future duration in Table 5.2.

Figure 5.6 Lifetime projections – change from projections of time on any benefit as at 30 June 2015



Highlights of these changes are as follows:

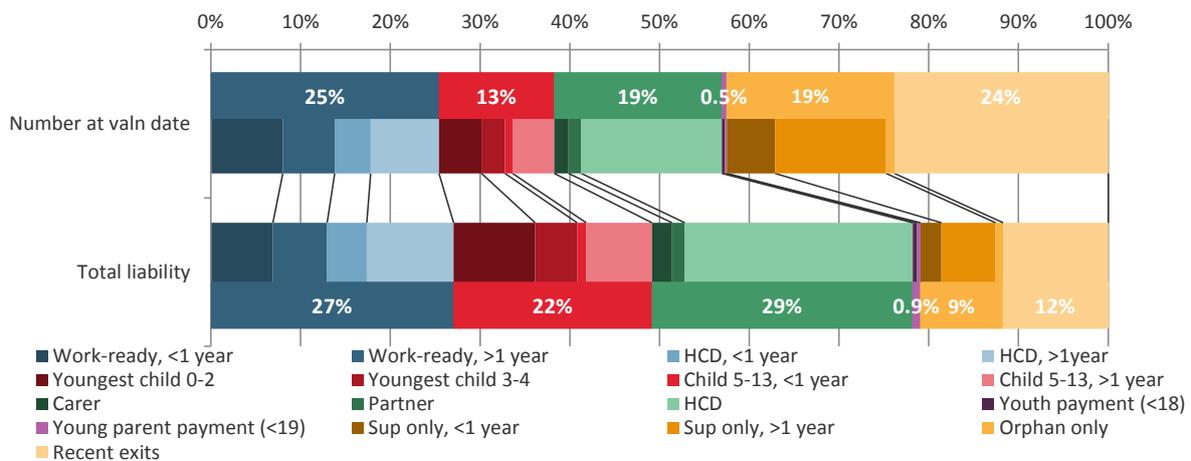
- The largest changes are visible in the Sole Parent support and Youth segments. The faster projected exit rates have contributed to shortening SPS spells in particular, and markedly fewer people are expected to still be on this benefit in 10 years' time. The decrease corresponds to the reduction in average future lifetime on benefit from 14.7 years to 14.1 seen in Table 5.2.

- For Youth, a reduction in benefit exit rates for YP recipients is partly offset by improvements for YPP. The introduction of CYF history partly explains the change for YP clients.
- We have seen less transitions rates out of JS-WR into JS-HCD and SLP-HCD which has resulted in slightly decreased time on benefit, particularly for 3-5 years into the projection.

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, Sole Parents represent 13% of the number of clients valued, but 24% of the total liabilities. These differences are illustrated in Figure 5.7 for the various segments.

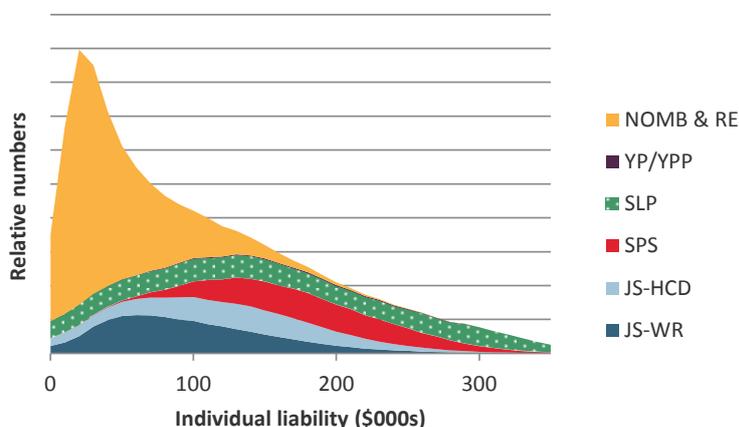
Figure 5.7 Contributions of segments towards client numbers and liability total



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. The figure below 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 Work-ready Jobseekers 10% of clients have a future lifetime cost that is double the median. This indicates that a sub-group of Jobseekers is at significantly higher risk of long-term benefit receipt.

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 CYF and criminal conviction history) are incorporated into the model.

The ten percent of clients with the highest average future lifetime cost (on average \$285,000, inflated and discounted) make up just over a quarter of the total liability in the benefit system. Supported Living segments represent over half of this group, and a third is Sole Parents. One in nine main beneficiary clients has an average future welfare liability less than \$50,000.

5.4 Analysis of transfers between segments

Each quarter, about 60,000 beneficiaries either leave benefits or transfer to a different benefit; this represents about 14% of the client base. About two thirds 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 provided detailed analysis of how changes to benefit categories influenced transfers within the system. This year, we find that transfer levels have stabilised into new patterns post reform.

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. These changes to transfers are typically harder to predict. Finally, transitions give insight into the long term mix of benefits likely to be paid. For instance, movements into the SLP-Carer segments have tended to outstrip exits over many years, and Carers' relative portion of the client base has increased from 0.9% of clients in June 2004 to 2.0% in June 2015.

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). Generally the transfer activity levels in 2014/15 remained similar to the elevated post-reform levels seen in 2013/14.

We make the following observations:

- One of the biggest transfers of clients is the movement from JS-WR to JS-HCD and vice versa. These transfer rates decreased slightly in 2014/15 after a marked increase in 2013/14. Some of the increased rates in 2013/14 reflect additional movements from former DPB>14 and WID/WA clients post-reform, which has largely subsided.
- There has also been a significant decrease in transfers from JS-HCD to SLP-HCD. However this is still above pre-reform levels. The reduction observed probably has the same cause as the previous bullet; that is, a reduced influence of former DPB and WID/WA clients.
- The transition of JS-WR and SPS clients to SUP is also common. They are also important as they represent exits from main benefits. In both cases we have observed an increased transition rate. These are a combination of faster exit from main benefits (which would increase the number to SUP, all else equal), as well as a higher proportion of main benefit leavers moving to SUP rather than completely exiting benefits.
- The 11% increase in re-entries from SUP to SPS is notable and continues the trend of previous years.
- The 14% decrease in transfers from JS-WR to SPS is also notable and returns this transfer rate closer to historical levels.

Table 5.3 Major transfers between benefit types in 2014/15 and discussion on changes compared to previous year.

From	To	Avg client transfers per qtr, 2014/15	Change in transfer rate, compared to 2013/14	Comment
JS-WR	→ JS-HCD	3,114	-4%	Slight reduction after large increase in 2013/14
JS-HCD	→ JS-WR	2,784	-4%	Slight reduction after large increase in 2013/14
JS-WR	→ SUP	2,346	+2%	Fairly stable
SPS	→ SUP	1,849	+3%	Continued improved performance for SPS and some substitution from SPS exits
JS-HCD	→ SLP-HCD	1,473	-8%	Reduction after large increase in 2013/14
SPS	→ JS-WR	1,470	-4%	Reduction after increase in 2013/14
SUP	→ JS-WR	1,354	-2%	Fairly stable
SUP	→ SPS	945	+11%	Continues trend
JS-HCD	→ SPS	849	-7%	Returns transfer rate closer to pre-reform levels
JS-WR	→ SPS	826	-14%	Returns transfer rate closer to pre-reform levels
JS-HCD	→ SUP	807	-1%	Fairly stable
SUP	→ JS-HCD	777	+8%	Continues trend of less direct entry to JS-HCD

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:

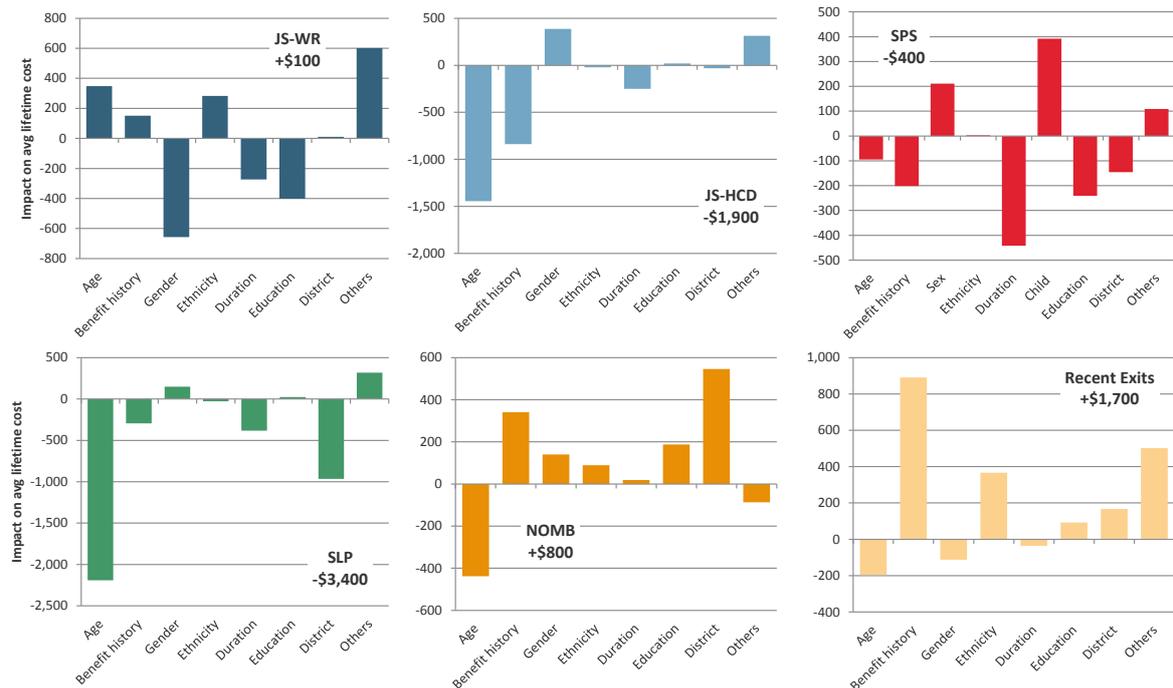
- Economic assumptions (including benefit levels) might change between valuations
- Projection models might change the estimate for various client cohorts
- The type of clients within each segment may change.

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 was 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 Figure 5.9.

If the distribution of JS-HCD clients were exactly the same as the 2014 valuation, we would have expected the average liability to be \$1,900 higher. In other words, distributional changes to the mix of clients within the segment have caused the average liability to be \$1,900 lower. This means that much of the reduction in liability under management influence occurring in this segment is due to distributional impacts – such as a significant reduction in the share of younger JS-HCD beneficiaries. The SLP-HCD segment also sees a decrease associated with an older average age compared to last year. A similar effect is visible for SUP/OB clients too.

In contrast, the distributional impacts for Recent Exits have caused a \$1,700 increase in the average future lifetime cost. The biggest influence is the type of benefit history for these clients. This is consistent with more exits from main benefit by long-term beneficiaries, including Sole Parents – who tend to have a higher need for 2nd and 3rd tier support in work.

Figure 5.9 Estimation of the influence of distribution change on the average future lifetime liability for selected segment groups



5.5.2 Predictors of long-term risk

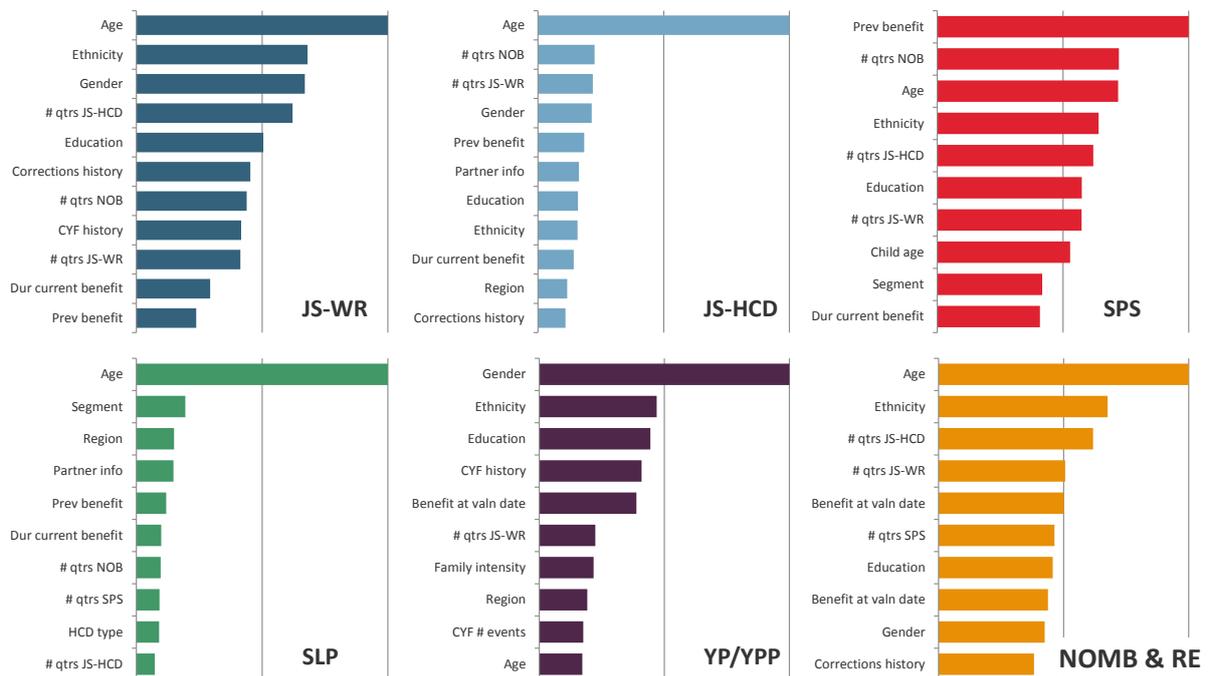
The valuation models enable us to compare the relative importance of various client characteristics in causing a future lifetime cost to be low or high. These relativities vary across different segments, with the top eleven characteristics that best differentiate risk of long-term benefit receipt within each segment shown for various segment groups in Figure 5.10.

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 Youth segment only because all Youth are close in age. Thus current age is important in future lifetime cost estimates for the Youth segment itself, but less important in differentiating between the future lifetime costs of Youth.
- 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 SPS segments.
- 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 these results. The analysis of Young Adult beneficiaries in Section 4.8 gives a better sense of its relative importance. Intensive family history ranks sixth as a risk factor among Youth Segments, where its effect would be expected to be strongest. Family benefit history and CYF history are predictors of early entry onto benefits – and are so prevalent among these segments that this likely understates their relative importance in *differentiating* between members of the segment – similar to the age effect described above.
- The new criminal conviction and CYF variables come through strongly for both JS-WR and Youth segments.

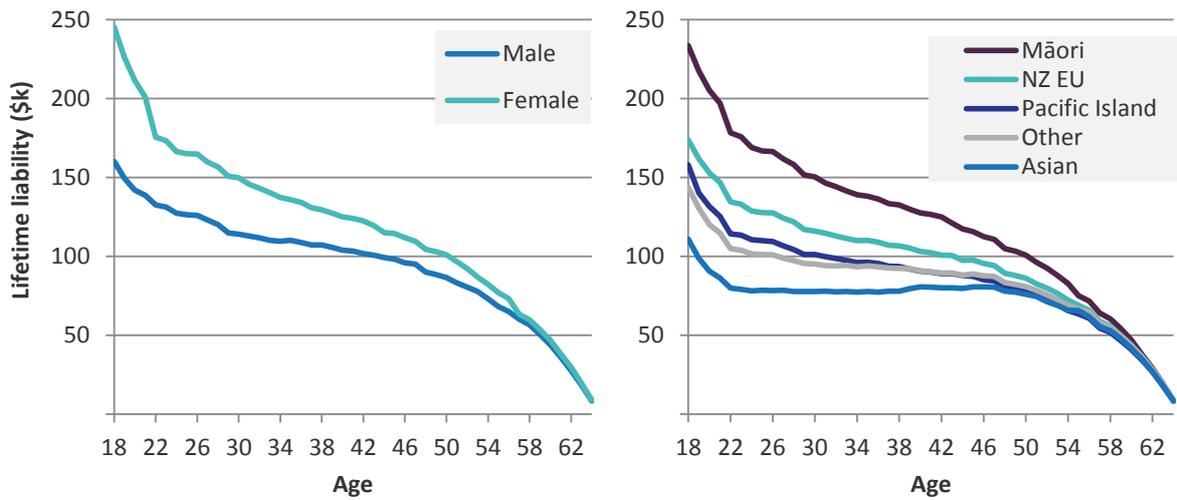
- Ethnicity is a significant indicator of future lifetime cost. This is particularly true for the JS-WR, Not on main benefits, Recent exits, Youth and Sole Parent segments.
- Education tends to have a similar level of influence as ethnicity.
- Partner information is only relevant for JS-WR, JS-HCD and SLP segments. It comes through strongly for the latter two.
- The type of health condition, injury or disability is important for predicting SLP-HCD future lifetime cost, but relatively less so for JS-HCD.
- For Youth, gender is most important, reflecting the higher likelihood that young women—including those who are already Young Parents—will go on to receive SPS in future.

Figure 5.10 Relative variable importance for estimating future lifetime benefit cost, for selected 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. These types of plots were introduced in Section 4.2. 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 5.11 we further show the influence of age, split by both gender and ethnicity for the JS-WR segments. Generally differences are more pronounced at younger ages. In the case of gender, the higher likelihood of female clients entering SPS contributes to the difference.

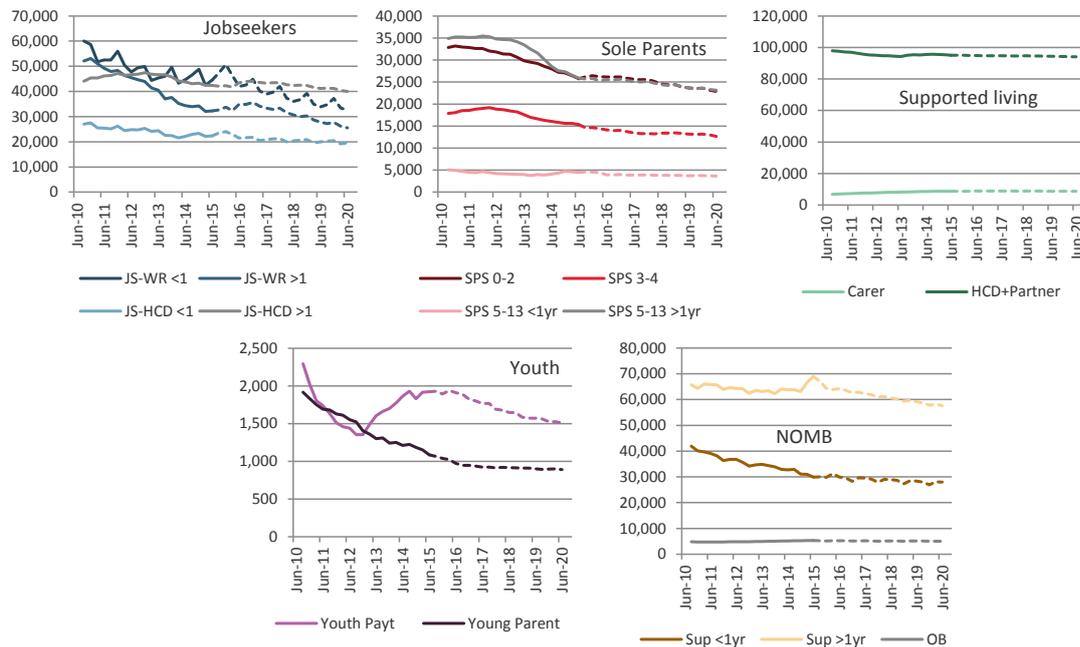
Figure 5.11 JS-WR partial dependence plots by age, for gender and ethnicity groups



5.6 Forecast segment numbers

Figure 5.12 shows recent trends and forecast end of quarter numbers¹⁸ 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

¹⁸ These numbers were presented on a slightly different 'during quarter' basis in the previous valuation, which counted clients who received the benefit during the quarter but not necessarily on benefits at the end of the quarter.

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:

- Substantial decreases in JS-WR, YP and long duration SUP numbers, of the order of 15-20%. Much of this is driven by unemployment rate assumptions, with the national rate projected to fall from 5.9% to 4.5% over the next five years.
- SPS segments are also forecast to drop 10-15%, based on the faster leave rates observed post-reform.
- SLP numbers are forecast to be basically flat over the next five years, with new entrants and transfers in, balancing out exits.

6 ANALYSIS BY REGION

INSIDE THIS CHAPTER

- ❖ Introduction and highlights
- ❖ Regional unemployment rates
- ❖ Actual versus expected results for 2014/15 by region
- ❖ Regional level liability results
- ❖ Understanding regional differences

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.

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.

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.

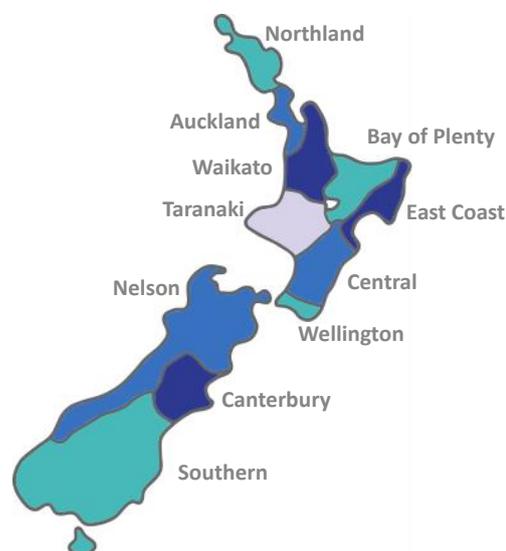
There are also nearly 5,000 SLP-HCD clients with severe disability living in Australia. This valuation identifies these clients for the first time and separately models their expected welfare cost. Previously they had been allocated across New Zealand regions.

Unemployment trends vary considerably across the country, with relatively high current unemployment in Northland (9.2%) and East Coast (7.7%) contrasted with the relatively low unemployment rates in the Canterbury (3.3%), Nelson (4.7%) and Southern (4.3%) regions.

The \$2.2 billion decrease in liability under management influence is spread relatively evenly between regions, with a few exceptions.

- The Auckland region represents 30% of the total liability, but its \$840 million reduction represents about 40% of the overall decrease.
- The Central region represents 8% of the total liability, but its \$300 million reduction represents about 14% of the overall decrease.

Figure 6.1 Work and Income regions



- The Canterbury region was the only region that fared (slightly) worse than expected.

There has been a decrease in the number of people receiving main benefits since 30 June 2014 in all regions except Taranaki and Waikato. Average future lifetime costs have generally increased slightly, mainly due to inflation and discount rate changes. While beneficiary numbers have generally decreased, the average future lifetime cost per client has increased in all regions except Northland and Australia.

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 of the beneficiary population. There is a difference of approximately \$27,000 in average future lifetime cost from the highest in East Coast (\$127,000) to lowest in Auckland (\$100,000), excluding a small number of older aged clients in Australia receiving SLP.

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 East Coast is partly due to a greater than average proportion of Sole Parents, Supported Living and Youth.

Differences in future lifetime welfare costs between regions are substantially explained by compositional 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, in particular, are at disproportionate risk of longer benefit durations; regardless of where they live. 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

The 2014 valuation used regional unemployment rates for the first time, to better explore how labour markets were evolving at a regional level. The 2015 valuation continues 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.

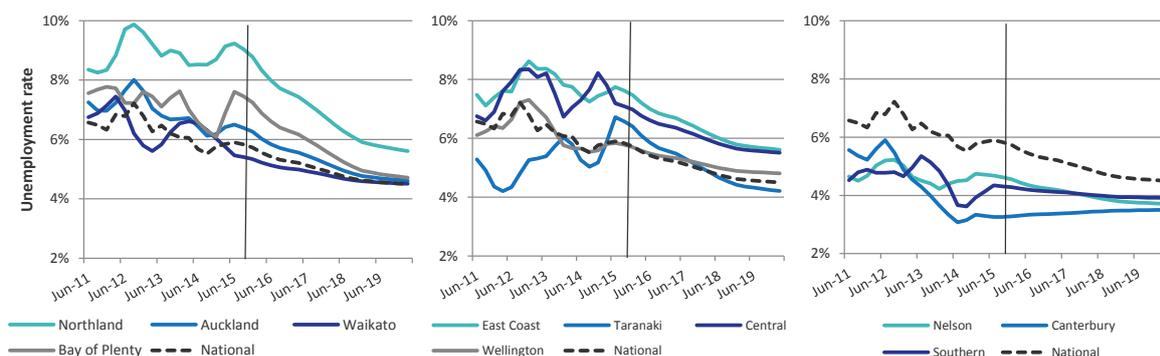
National unemployment is projected with reference to the forecast of the national unemployment rate published by NZ Treasury (see Figure 2.1). We project each region to a long-term unemployment level based on their historical experience of 'full employment' while ensuring consistency with the forecast national rate as discussed in Section 2.3.3.

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 5.9% at June 2015 and is forecast to return to ‘full employment’ of 4.5% 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 9.2% in Northland to a low of 3.3% in Canterbury (in June 2015, 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 Actual and forecast regional unemployment rates¹⁹



The figure also shows how the regional unemployment trends in some regions have differed over the past few years:

- South Island regions have substantially lower unemployment than the national average. In particular, Canterbury has had a sharp reduction in unemployment due to activity related to earthquake recovery.
- 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. The rates for Taranaki and the Bay of Plenty have risen by more than one percentage point over the year. Waikato has seen a decrease, while most other regions have experienced a moderate increase in unemployment.

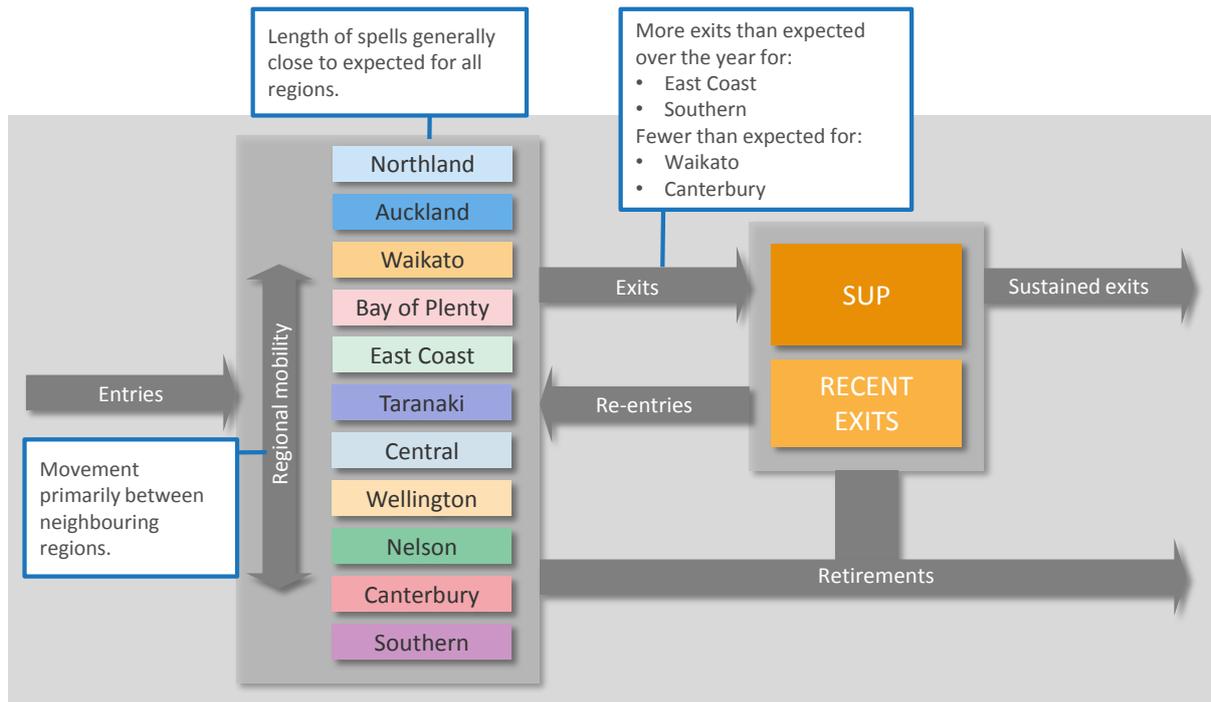
Further details of the assumed unemployment rates by region are given in Appendix C.

6.3 Actual versus expected results for 2014/15

Section 3.4 discussed actual and expected performance over 2014/15 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 2014.

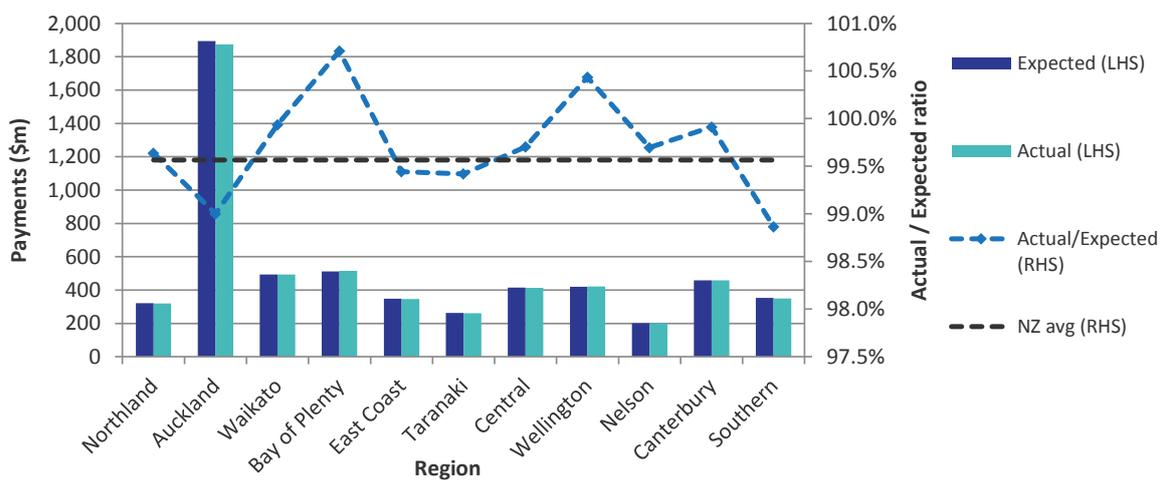
¹⁹ Historical rates for Southern region are different to those presented last year due to a miscalculation. We have corrected the error and allowed for it in the subsequent attribution work.

Figure 6.3 Significant changes to benefit dynamics at the regional level in 2014/15 compared to expected



For clients in the current client cohort in the 2014 valuation, actual payments over the year were 0.4% less than expected. As Figure 6.4 shows there were only two regions where actual payments were greater than expected; Bay of Plenty (100.7%) and Wellington (100.4%). The other regions were all slightly below expected. While the number of exits by the end of the year was close to expected in the Bay of Plenty region, the timing of exits were later than expected resulting in more payments made over the year.

Figure 6.4 Actual and expected payments by client's region (as at June 2014)



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 2015 valuation date, and totals include future cash flows arising from different regional transfers for that person. Net loan cost and expenses have not been allocated.

Within New Zealand, The East Coast region has the largest average future lifetime cost of \$127,000 while Auckland has the smallest average future lifetime cost of \$100,000, a difference of \$27,000. The drivers behind the differences in average future lifetime cost between regions are examined in Section 6.5.

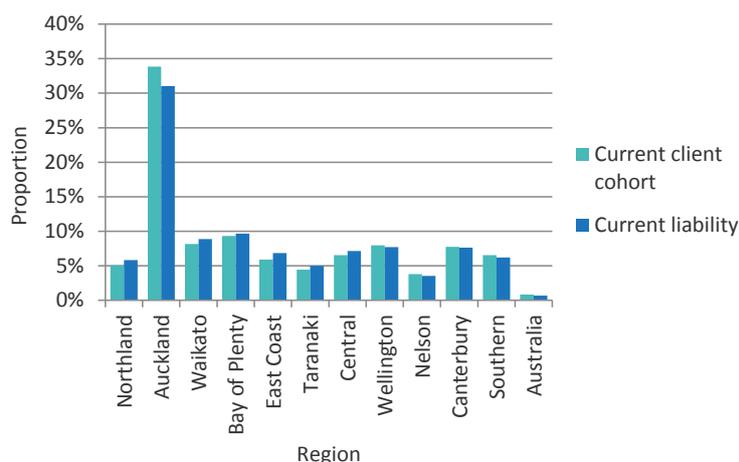
Table 6.1 Current client liability forecasts by region at 30 June 2015

Region	# at valn date	Current client liability (\$b)	Avg lifetime welfare cost (\$000)	Average # yrs on benefit
Northland	28,141	3.5	126	10.6
Auckland	188,255	18.8	100	8.6
Waikato	45,238	5.4	119	10.2
Bay of Plenty	51,796	5.9	113	10.1
East Coast	32,695	4.1	127	11.0
Taranaki	24,560	3.0	123	10.8
Central	36,421	4.3	119	10.4
Wellington	44,205	4.7	105	9.5
Nelson	21,147	2.1	101	9.0
Canterbury	43,012	4.6	107	9.1
Southern	36,310	3.8	104	9.3
Australia	4,626	0.4	86	8.5
All	556,406	60.7	109	9.5
Expenses & net loans		7.7		
Grand total		68.4		

In prior valuations, a small number of clients residing in Australia were allocated proportionately to the New Zealand regions for modelling and reporting purposes. In the 2015 valuation, we have treated this small group of clients separately. These clients 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 low average future lifetime cost of \$86,000 for the cohort is driven by the shorter average time to retirement.

Figure 6.5 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.

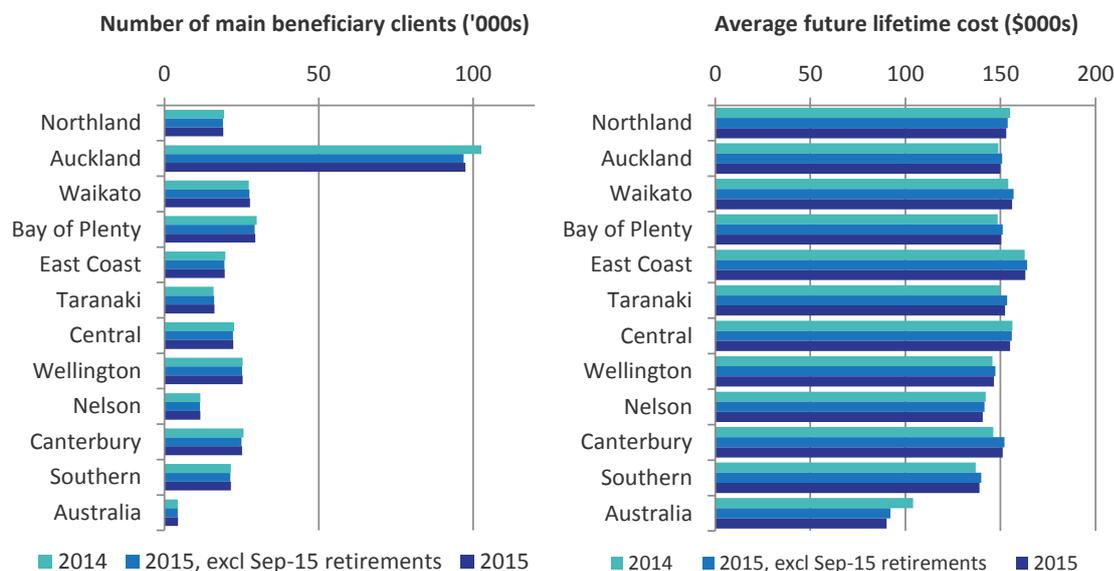
Figure 6.5 Contribution of each region to current client cohort and current liability



6.4.2 Change from 30 June 2014

As in the segment-level analysis, total liability in a region combines the number of clients and the average future lifetime cost per client. Both are illustrated in Figure 6.6 below, with reference to the previous valuation.

Figure 6.6 Number of main beneficiary clients and their average future lifetime cost (excluding expenses, loans)²⁰



There has been a decrease in the number of people receiving main benefits since 30 June 2014 in all regions except Waikato, Taranaki and Australia. Average future lifetime costs have generally increased slightly.

²⁰ Note that 2015 numbers here exclude clients who will retire in the September 2015 quarter, to maximize consistency with the previous valuation.

The number of people in the main benefit segments has decreased for all regions except Waikato, Taranaki and Australia. These regions experienced a slight increase of at most one percentage point. The increase in the number of main beneficiary clients in Waikato is consistent with the observation of lower than expected exit rates in the region over the year. The region with the largest relative change is Auckland where the number of main beneficiary clients decreased by 6%, or about 5,700 clients. The result for Auckland was driven by higher than expected average exits amongst JS-WR and SPS clients, as well as lower than average entries amongst Recent Exits.

While beneficiary numbers have generally decreased, the average future lifetime cost per client has increased slightly in all regions except Northland and Australia. The increase mainly relates to changes to inflation and discounting assumptions.

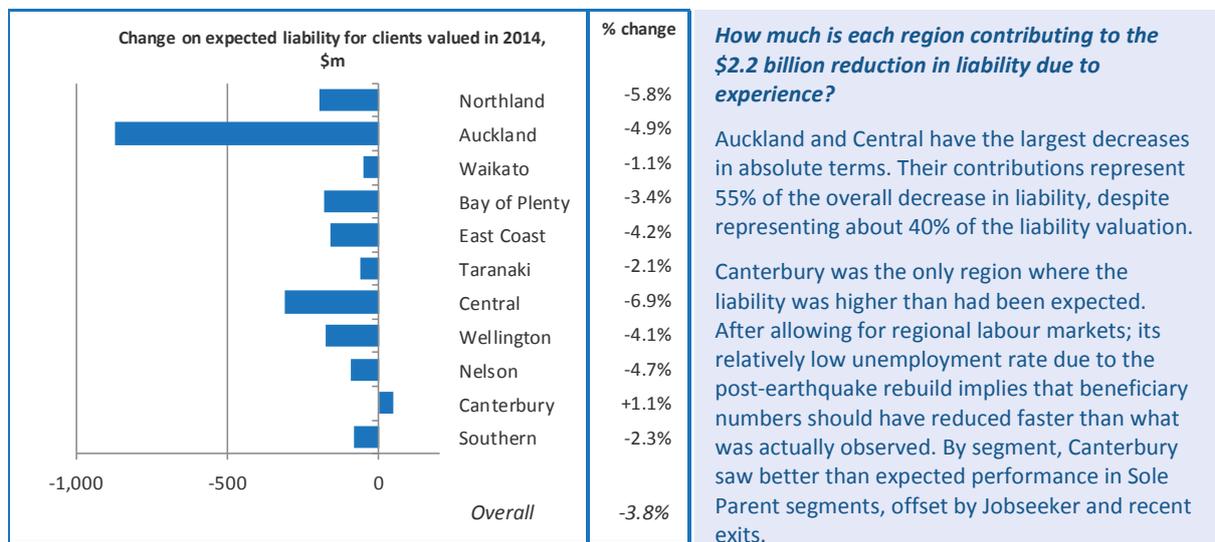
The average future lifetime cost for a client residing in Australia decreased by 12% which is the result of the methodology change described in Section 6.4.1 which has allowed for better modelling of these relatively low cost clients. Average future lifetime cost for the Canterbury region increased by 4%, in line with what we would expect from inflation and discount rate changes; as the only region with an unemployment rate below its full employment assumption, it does not benefit from faster improvements to benefit exit rates over the first five years of the projection.

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 has been an additional reduction of \$2.2 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.

We have split this \$2.2 billion decrease by region, as shown in Figure 6.7. The column on the right shows the percentage change, which recognises the relative size of regions.

Figure 6.7 Breakdown of change in liability under management influence, actual vs. expected by region



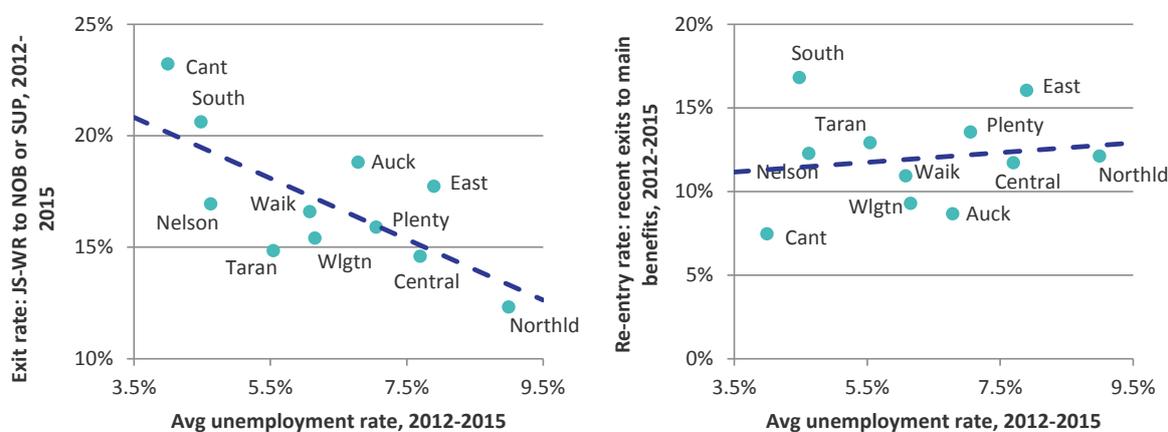
6.5 Understanding regional differences

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

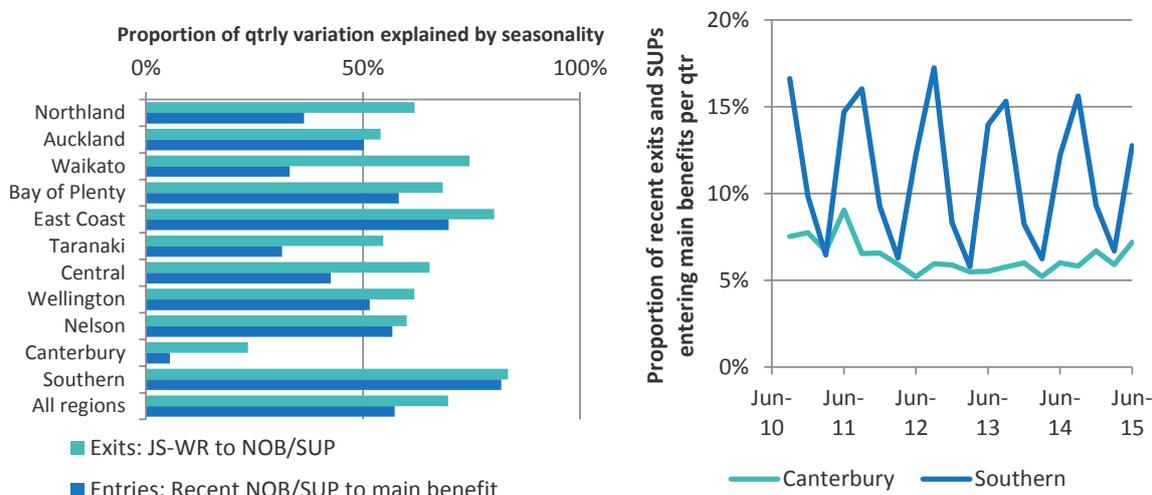
As we reported last year, there is a clear relationship between regional level labour markets (as measured by the unemployment rate) and client outcomes. This is particularly true for Work Ready Jobseekers, but is also true to a lesser extent for other client segments. The leftmost chart in Figure 6.8 shows that faster exit rates amongst JS-WR clients continue to correlate with lower average unemployment rates in the region. Canterbury, Auckland and East Coast all lie significantly above trend, with more exits than their unemployment rate alone would imply; 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 6.8 The left panel shows the average quarterly exit rates from JS-WR against average regional unemployment rate (June 2012 – June 2015). 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 6.8, right panel) appears much 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 6.9. We allow for regional seasonality in our projections.

Figure 6.9 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 the table below. Northland Jobseekers are expected to spend an extra year on benefit compared to the average, and Auckland 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 benefits (including Supp. only) by region and starting segment

Region	UE rate, Jun-15	Expected years on benefit					
		JS-WR	JS-HCD	Sole parent	Supp. Living	Youth	All Main Beneficiaries
Northland	9.2%	11.0	10.6	15.2	11.7	17.6	12.2
Auckland	6.5%	9.0	10.0	13.8	12.3	15.9	11.4
Waikato	5.5%	10.5	12.0	14.5	12.5	17.0	12.4
Bay of Plenty	7.6%	11.0	10.8	14.7	12.2	17.4	12.3
East coast	7.7%	11.1	12.4	15.6	12.6	17.5	13.0
Taranaki	6.7%	11.1	12.3	14.5	12.3	18.0	12.5
Central	7.2%	10.6	12.6	14.6	12.6	17.5	12.5
Wellington	5.8%	9.6	11.6	14.1	13.3	17.1	12.0
Nelson	4.7%	9.6	10.2	13.1	11.7	16.2	11.2
Canterbury	3.3%	8.8	10.8	12.5	12.4	15.1	11.6
Southern	4.3%	9.3	11.0	13.2	12.2	16.2	11.4
Australia					8.9		8.9
All regions	5.9%	10.0	10.8	14.1	12.2	16.8	11.9

6.5.2 Differences in segment composition by region

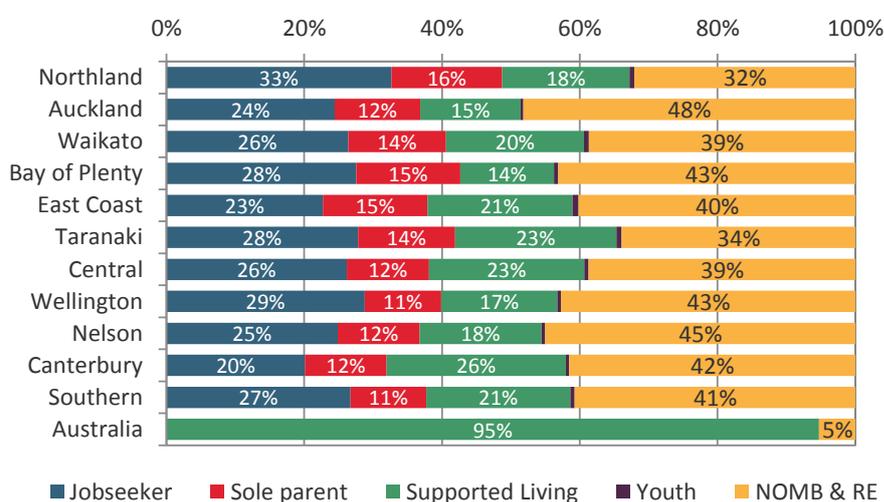
As with client segments, the mix of clients on benefits will heavily influence each region’s average future lifetime cost. Given that benefit (and segment) type is the most important determinant of future lifetime

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 on 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 its predominance of SLP. We compare relative numbers of beneficiaries in each region in Figure 6.10, with the following comments:

- The East Coast region has a greater than average proportion of Sole Parents, Supported Living and Youth. This, plus a longer future duration amongst SPS clients, leads to significantly higher overall liability for the region, which has the highest average future lifetime costs of any region. We estimate that 20% of the East Coast's higher average future lifetime cost is explained by this effect.
- 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 city 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 except Australia.
- The share of Jobseeker beneficiaries ranges from 20% in Canterbury to 33% in Northland and correlates with regional unemployment levels.
- The share of Sole Parent beneficiaries ranges from 11% in Southern to 16% in Northland.
- The share of Supported Living beneficiaries ranges from 14% in Bay of Plenty to 26% in Canterbury.
- The share of Youth beneficiaries ranges from 0.37% in Auckland to 0.91% in East Coast.

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 6.10 Split of main beneficiary client numbers by top level segment

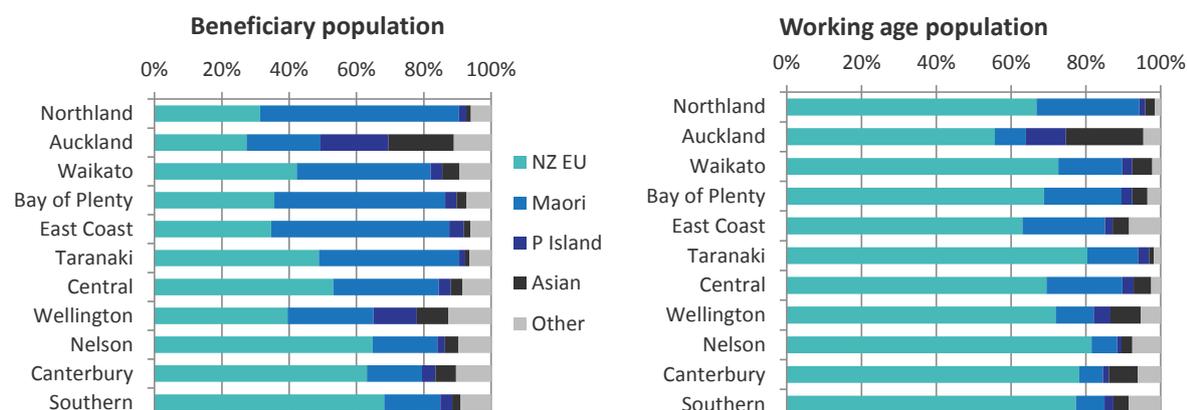


6.5.3 Differences in ethnic composition by region

There is significant variation in ethnic composition of beneficiaries by region; not surprisingly, given the population distribution more broadly 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 6.11 Ethnic composition by region, all beneficiaries (left) and working age population (right). Working age population taken from Statistics New Zealand, with size of 'Other' category estimated



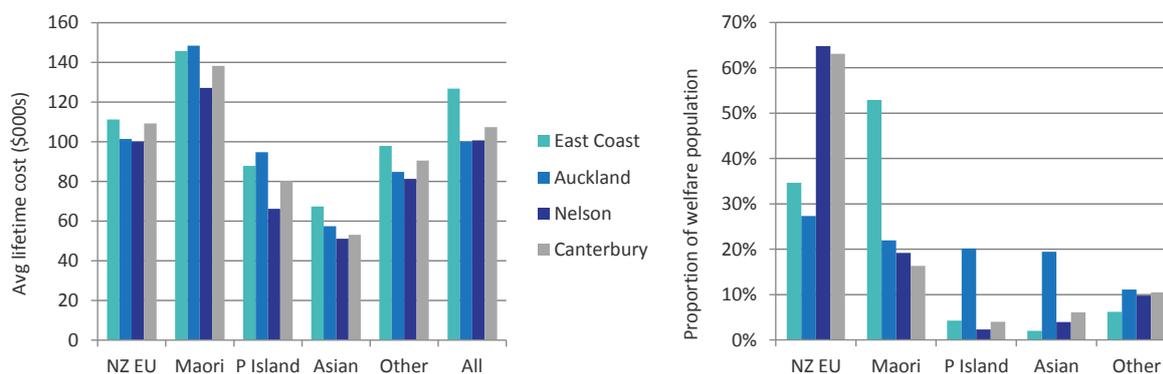
In considering our comments below, it is important to note that the fact that a particular ethnic group having a higher average future lifetime cost does not imply causality. Often the variable will be a proxy for other indicators of risk, such as family benefit history, or other drivers outside the scope of this valuation.

Last year, we reported that differences in future lifetime costs by ethnicity cannot be explained by the regional distribution of different ethnic groups. Instead, 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. Further investigation, outside the scope of this valuation, would be required to fully understand what is driving these differences; including correlation with other factors both included and excluded from the valuation models.

Demographic differences are important in understanding regional variation in future lifetime costs, which vary significantly by ethnicity. For instance, comparing East Coast 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 \$27,000 higher in East Coast. However, breaking down average costs in each region by ethnicity—as in Figure 6.12—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 East Coast or Auckland than there is between beneficiaries of different ethnicities within either region. In particular, Māori beneficiaries, whether they live in Auckland or East Coast, 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 East Coast has over twice the proportion of Māori beneficiaries.

The differences in average liability across the remaining ethnic groups are also interesting. Pacific Islander, Asian and Other ethnic groups all have a lower estimated average liability than NZ Europeans.

Figure 6.12 Average liability (left) and ethnicity profile (right) in East Coast, Auckland, Nelson and Canterbury



Despite this, it would be incorrect to attribute these differences solely to ethnicity; other drivers are related. For instance, Māori and Pacific Islander clients are 80% more likely to be on SPS than other ethnicities, and have lower relative numbers on JS-WR; this is therefore a benefit or segment effect that is correlated with ethnicity. A more sophisticated analysis of drivers is presented below.

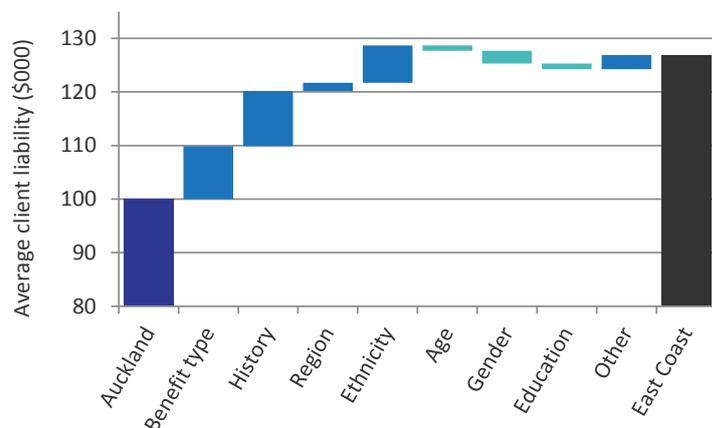
6.5.4 Breakdown of regional differences in average future lifetime cost

The discussion of ethnicity and its interrelation with other variables motivates us to more carefully examine which drivers are causing differences in future lifetime cost between regions. The valuation models allow us to examine these differences. For example, there is a \$27,000 difference in average future lifetime cost between East Coast and Auckland. Figure 6.13 breaks down this \$27,000 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 \$20,200 to the average client liability. As mentioned, East Coast has relatively more clients receiving SLP and SPS; these clients also tend to have received benefits for longer and hence have on average lower exit rates. This is compared to Auckland where a large proportion of its clients are in NOMB or Recent exits segments.
- The difference in ethnic mix (or more accurately, differences captured by the valuation as being associated with differential risk by ethnic group) causes the East Coast average liability to be \$7,000 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.
- The Auckland beneficiary population has a higher proportion of females, which increases average future lifetime cost due mainly to their greater likelihood of receiving SPS in the future.

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 6.13 Breakdown of differences in average liability (all current clients and recent exits), Auckland to East Coast



While it is useful to compare two regions in this way, it is more digestible 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 43% 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 14%, while the four demographic variables shown (ethnicity, age, gender and education) explain 41%.

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 +\$16,700	<table border="1"> <caption>Data for Northland Cost Difference Breakdown</caption> <thead> <tr> <th>Predictor</th> <th>Change (\$)</th> </tr> </thead> <tbody> <tr> <td>Ben. type</td> <td>4,900</td> </tr> <tr> <td>History</td> <td>12,200</td> </tr> <tr> <td>Region</td> <td>1,000</td> </tr> <tr> <td>Ethnicity</td> <td>4,900</td> </tr> <tr> <td>Age</td> <td>-1,000</td> </tr> <tr> <td>Gender</td> <td>-1,000</td> </tr> <tr> <td>Education</td> <td>0</td> </tr> <tr> <td>Other</td> <td>4,900</td> </tr> </tbody> </table>	Predictor	Change (\$)	Ben. type	4,900	History	12,200	Region	1,000	Ethnicity	4,900	Age	-1,000	Gender	-1,000	Education	0	Other	4,900	<p>The average future lifetime cost in Northland is \$16,700 higher than the national average. Benefit type and benefit history explains 70% of the difference, adding \$12,200 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 \$4,900 to the average future lifetime cost.</p>
Predictor	Change (\$)																			
Ben. type	4,900																			
History	12,200																			
Region	1,000																			
Ethnicity	4,900																			
Age	-1,000																			
Gender	-1,000																			
Education	0																			
Other	4,900																			

Region	Cost difference breakdown	Commentary
Auckland -\$9,100		The average future lifetime cost in Auckland is \$9,100 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 \$11,300. It also has a high proportion of Pacific Islander and Asian clients which reduces the cost by \$3,200. These are partially offset by other factors including regional effects such as its above average unemployment rate.
Waikato +\$9,700		The average future lifetime cost in Waikato is \$9,700 higher than the national average. The low proportion of SUP only clients combined with a longer history of benefit receipt accounts for 80% of this difference. The region also has a relatively high proportion of Māori and a younger benefit cohort with the average age of a JS client being 39, two years less than the national average. This age effect increases average future lifetime cost by \$1,900. These increases are partially offset by a lower proportion of female clients.
Bay of Plenty +\$4,200		The average future lifetime cost in Bay of Plenty is \$4,200 higher than the national average. Its slightly younger benefit cohort and high proportion of Māori clients results in an increase in average future lifetime cost of \$8,500. This is partially offset by a reduction in average future lifetime cost due to its lower proportion of clients on SPS and SLP.
East Coast +\$17,800		The average future lifetime cost in East Coast is \$17,800 higher than the national average. The region has a high proportion of clients receiving SPS and SLP. Furthermore, clients in the region on average have almost a year longer history of benefit receipt. These two effects combined increase the average cost by \$9,900. The remaining difference is driven by regional factors which includes higher unemployment levels in the region as well as the high proportion of Māori clients.
Taranaki +\$14,500		The average future lifetime cost in Taranaki is \$14,500 higher than the national average. Taranaki has a relatively low proportion of Supp 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 year longer benefit histories relative to the national average. These two factors combine to increase the average future lifetime cost by \$14,200. Other differences approximately offset each other.
Central +\$10,100		The average future lifetime cost of Central is \$10,100 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 half a year longer. These factors combine to increase the average future lifetime cost by \$8,800. Additional increases are due to regional and ethnicity factors. There is also a reduction of \$1,400 due to its relatively low proportion of female JS clients.

Region	Cost difference breakdown	Commentary
Wellington -\$3,700		<p>The average future lifetime cost in Wellington is \$3,700 lower than the national average. This is driven by the region's 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 \$7,200. This is partially offset by a slightly younger age profile which increases average future lifetime cost by \$4,400.</p>
Nelson -\$8,300		<p>The average future lifetime cost in Nelson is \$8,300 lower than the national average. South Island regions have lower unemployment levels. More favourable employment conditions partly explains the \$4,700 reduction in average future lifetime cost due to regional factors. Nelson also has a relatively high proportion SUP only and Recent exits clients and an older age profile.</p>
Canterbury -\$1,800		<p>The average future lifetime cost in Canterbury is fairly close to the national average. South Island regions have lower unemployment levels. More favourable employment conditions partly explains the \$11,300 reduction in average future lifetime cost due to regional factors. This large reduction is partially offset by the high proportion of SLP clients in the region which increases average future lifetime cost by \$9,100.</p>
Southern -\$5,500		<p>The average future lifetime cost in Southern is \$5,500 lower than the national average. South Island regions have lower unemployment levels. There is a reduction in the average future lifetime cost of \$6,800 due to regional factors which includes more favourable employment conditions.</p>
Australia -\$22,300		<p>The average future lifetime cost in Australia is \$22,300 lower than the national average. Clients in the region are receiving SLP almost exclusively, increasing the future lifetime cost by \$91,200. However, this is more than completely offset by age 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 \$96,200.</p>

7 ANALYSIS BY PAYMENT TYPE

INSIDE THIS CHAPTER

- ❖ Introduction and highlights
- ❖ Results by payment type
- ❖ 2nd and 3rd tier assistance payments
- ❖ Net cost of loans
- ❖ MSD expenditure

7.1 Introduction and highlights

Chapter 3 discussed the main result of the valuation as at 30 June 2015, 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, it 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 includes analysis of debts/loans to beneficiaries, as well as operating expenses.

Aggregate payments were 99.6% of expected for the year. The majority of the current client liability (67%) is associated with main benefit payments. Compared to 2012 projections, future JS-WR and SPS payments have fallen from 28.4% of the total down to 21.0%.

Accommodation Supplement is the largest component of the liability after main benefits (12%). By region, AS payment levels have only increased in Nelson (by 0.3% per year on average for SPS clients), and have fallen the most in Auckland and Canterbury (by 1.9% and 3.3% per year on average respectively).

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.

In the past, fraud typically represented just over 10% of total overpayment detections. The vast majority of overpayments (the remaining 90%) were not fraud-related. Fraud detections doubled in 2013/14, mostly explained by MSD's IRD data-matching program. The rate of detection has fallen back to 15% of the total in 2014/15.

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 increase, increasing the average Recoverable Assistance payment. This effect is offset by the lower expected numbers of clients on benefit.

During 2013/14 MSD introduced a new approach to expenses called a Multi-category Appropriation (MCA). The MCA provides MSD with more flexibility to target expenditure for employment, work-readiness and income support administration. This has affected the allocation of expenses, but the liability related to MSD expenses is at a comparable level to the previous valuation.

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 99.6% of expected for the year.
- SLP-HCD, SLP-Carer, JS-HCD and JS-WR payments were all within 0.5% of expected levels over the year.
- Emergency Benefit payments were 13% lower than expected, continuing a downward trend in this benefit's use. This represented \$4 million over the year.
- Tier 2 benefits were very close to expected levels.
- Tier 3 payments were 3% higher than expected with higher hardship (HSP) payments partially offset by lower Employment interventions (EI).

7.2.2 Current client liability by payment type

Table 7.1 breaks down the current liability as at 30 June 2014 and 30 June 2015 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 \$2.2 billion²¹ reduction due to experience, which is the difference between the roll-forward and the 2015 result. We observe the following:

- The decreases are entirely attributable to Tier 1 benefits plus Accommodation Supplement; other Tier 2 and 3 benefits are all fairly stable.
- The largest reductions correspond to future SPS (-\$1.3 billion) and JS-WR (-\$0.6 billion) benefits, which represents over 90% of the reduction.
- Forecast EB payments have fallen significantly in proportional terms (from \$0.23 billion to \$0.17 billion) over the past year, reflecting the decreased use of the benefit. The impact is small in absolute terms.
- The forecast of future SLP payments is reasonably flat, while future JS-HCD payments have increased slightly.

²¹ Appears as \$2.1 billion in the table due to rounding

Table 7.1 Current client liability by payment type as at 30 June 2014 and 30 June 2015²²

Component	2014 current client liability (\$b)		2015 current client liability (\$b)		
	Previous valn	Updated for Eco. assumps	Roll-forward to 2015	Updated for experience	Final estimate, after method changes
Tier 1					
JS-WR	5.4	5.8	5.6	4.7	4.9
JS-HCD	7.0	7.2	7.1	7.3	7.3
SPS	10.6	10.9	10.7	9.4	9.4
SLP-HCD	20.5	21.2	21.2	21.1	21.1
SLP-Carer	1.8	1.9	1.9	1.8	1.8
EB	0.23	0.2	0.2	0.2	0.17
OB	1.3	1.3	1.3	1.3	1.3
Subtotal	46.9	48.5	47.9	45.9	46.0
Tier 2:					
AS	8.6	8.9	8.7	8.5	8.5
DA	1.7	1.8	1.8	1.7	1.7
CDA	0.7	0.7	0.7	0.8	0.8
CCS	1.0	1.0	1.0	1.0	1.0
Subtotal	12.0	12.4	12.2	12.0	12.0
Tier 3:					
HS	2.4	2.5	2.5	2.5	2.5
EI	0.1	0.1	0.1	0.1	0.1
Subtotal	2.6	2.7	2.6	2.6	2.7
Other:					
Expenses	7.2	7.5	7.4	7.4	7.4
Net loans	0.33	0.33	0.32	0.34	0.34
Subtotal	7.6	7.8	7.7	7.7	7.7
Grand total	69.0	71.4	70.4	68.3	68.4

Main benefits make up two thirds of the current client liability (67%). The largest contribution is from SLP-HCD (31%), with significant portions related to SPS (14%), JS-HCD (11%) and JS-WR (7%). Accommodation Supplement (AS) is the largest component of the liability after main benefits (12%).

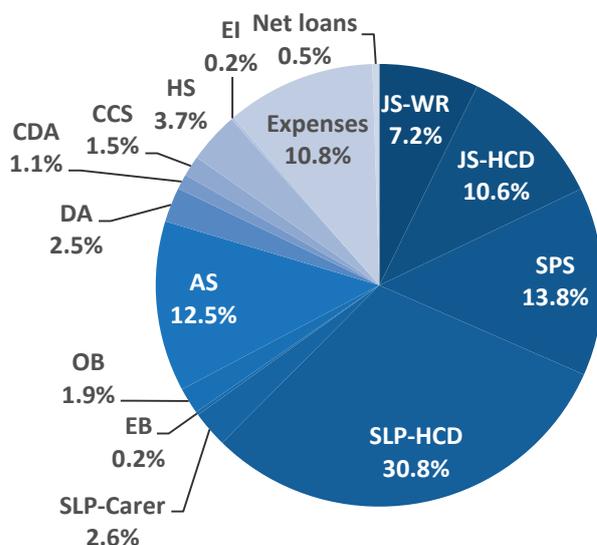
Compared to 2012 projections, future JS-WR and SPS payments have fallen from 28.4% of the total down to 21.0%.

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:

- 2nd and 3rd 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

²² 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.

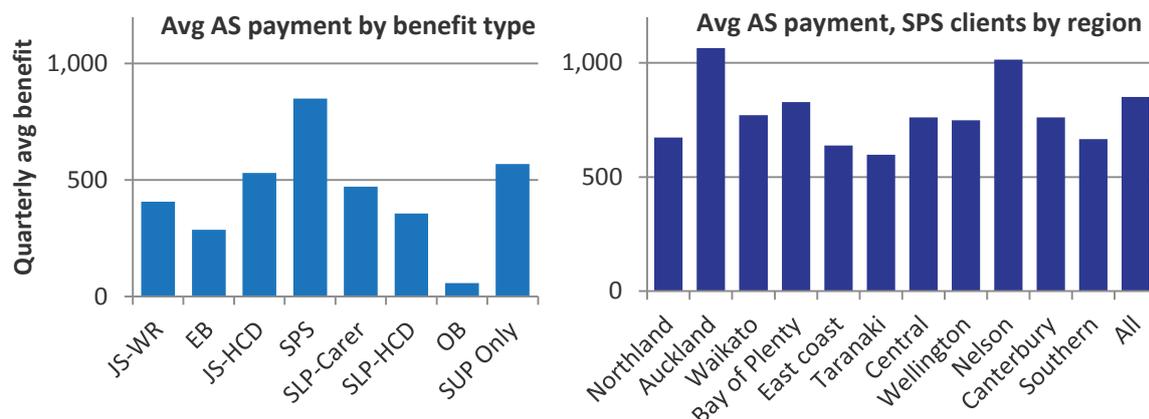
There are a few scope considerations to note in interpreting results in this section, as follows:

- 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 calculations 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). AS assists people who have low incomes and/or 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 12% of the total liability in the benefit system.

Figure 7.2 Average 2014/15 quarterly AS payments by benefit type (left) and by region for SPS clients (right). Figures in June 2015 dollar values.



The highest rates of AS are paid to SPS clients – on average \$850 per client per quarter – though significant AS is 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 two-thirds).

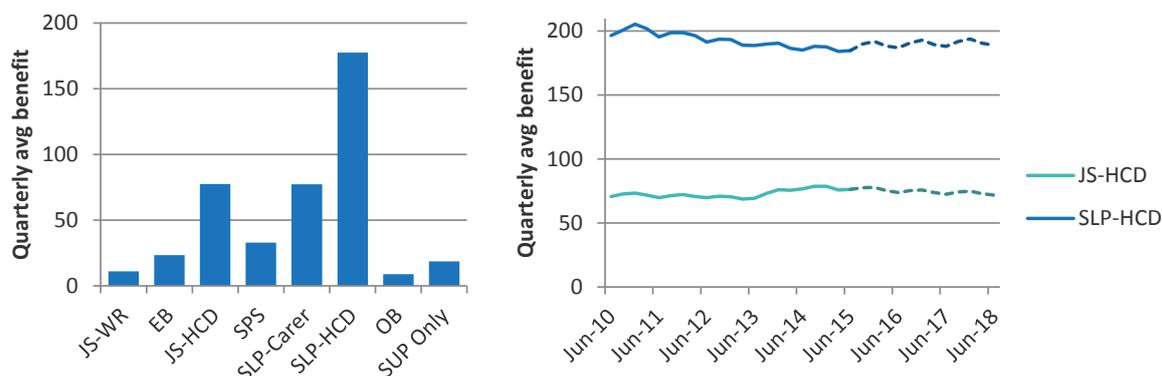
Average AS payments have generally been stable, in inflation-adjusted terms, although the trends vary by benefit type. Average quarterly AS payments to JS-WR and SPS clients have fallen about 3% over the past three years, whereas they are up by 4% to 5% for JS-HCD, SLP-HCD and NOMB clients. Among regions, payment levels have only increased in Nelson (by 0.3% per year on average for SPS clients), and have fallen the most in Auckland and Canterbury (by 1.9% and 3.3% per year on average respectively).

In the valuation we have assumed that average Accommodation Supplement payments grow at the usual benefit inflation rate, tied to CPI. While clearly a simplifying assumption, this appears reasonable given recent experience.

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 2014/15, just 22% of DA payments to working-age adults were paid to non-HCD clients.

Figure 7.3 Average 2014/15 quarterly Disability Allowance payments by benefit type (left) and average benefit over time for JS-HCD and SLP-HCD client (right). Figures in June 2015 dollar values and exclude Australian residents.



Over the past year or so, the average quarterly payment to JS-HCD clients has increased somewhat while SLP-HCD average payments have fallen slightly, visible in the figure above. The JS-HCD increase is most likely related to the changing mix of clients remaining on that benefit; for instance, transfers from JS-HCD to 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, but projected that levels from June 2015 will remain stable in 2015 dollar terms, with the benefit inflation rate applying to future payments.

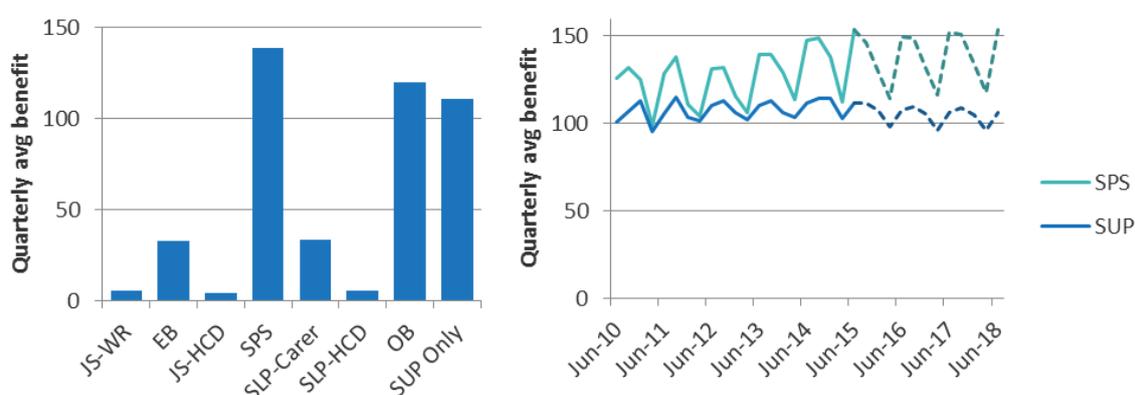
7.3.4 Childcare Subsidy

The Childcare Subsidy (CCS) is paid to the main carer of a dependent child under five to assist with the costs of childcare, usually for up to nine hours per week. It is paid predominantly to SPS and NOMB clients. Figure 7.4 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.

Average CCS payments to SPS clients have increased substantially over the past two years (+12%, 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 (currently about \$250 per quarter).

Average payments amongst Supplementary Only clients have been relatively stable. Among these clients, average payments are highest for clients who have most recently exited main benefits, clients who exited from SPS, and clients aged 25-34.

Figure 7.4 Average 2014/15 quarterly Childcare Subsidy payments by benefit type (left) and average payment over time for SPS and SUP-only (right). Figures in June 2015 dollar values.

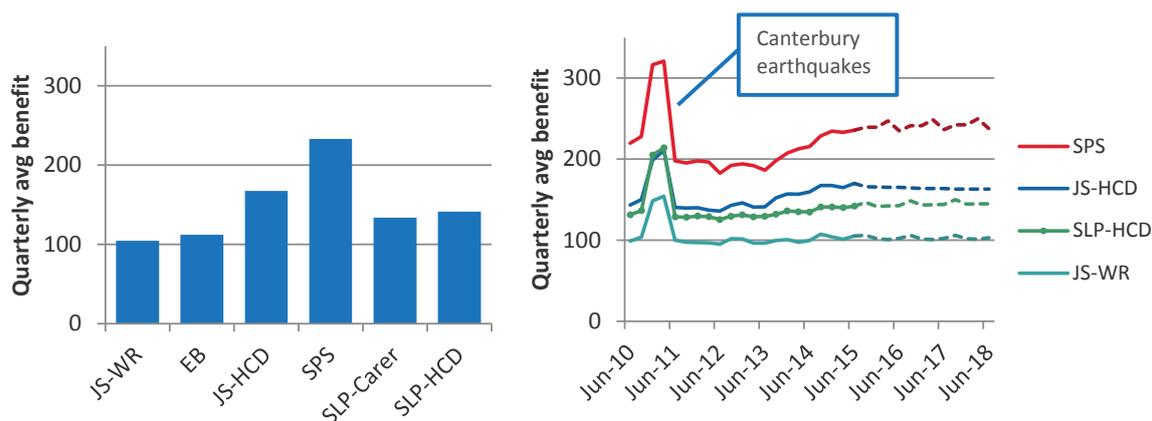


7.3.5 Non-recoverable Hardship Assistance

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. 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 7.5 Average 2014/15 quarterly Hardship Assistance payments by benefit type (left) and average benefit over time for various benefit types (right). Figures in June 2015 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 trends 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 have also been provided with revised data this year that excludes loans related to benefits excluded from this valuation (e.g. NZ Super). About 20% of fraud and overpayment detections are related to groups now excluded. This materially affects 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)				
		2015/16	2016/17	2017/18	2018/19	2019/20
Further overpayments/fraud on existing debtors	79	0	0	0	0	0
Recoveries on overpayments/fraud on existing debtors	-166	0	0	0	0	0
Overpayments/fraud related to future payments	1,926	202	187	175	165	159
Recoveries on overpayments/fraud related to future payments	-1,610	-169	-156	-146	-138	-132
Net cost – overpayments/fraud	230	33	31	29	27	26
Recoverable assistance payments	1,339	155	144	135	127	122
Recoveries on recoverable assistance	-1,227	-142	-132	-123	-116	-112
Net cost – recoverable assistance	112	13	12	11	11	10
Total net loans cost	342	46	43	40	38	37

The net cost due to overpayments and fraud has increased by 4%. This is due to slower rates of loan recoveries related to the data revision, partially offset by a combination of:

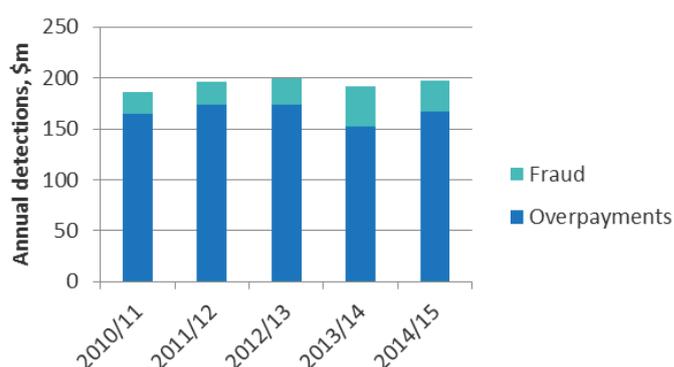
- Lower rates of overpayment/fraud incidence, mainly related to the data provision changes
- Lower forecast benefit payments.

7.4.2 Overpayments, including fraud

Detected overpayments, including fraud, represent slightly more than 3% of payments made by MSD, or about \$197 million. The table below shows the recent experience for payments and recoveries.

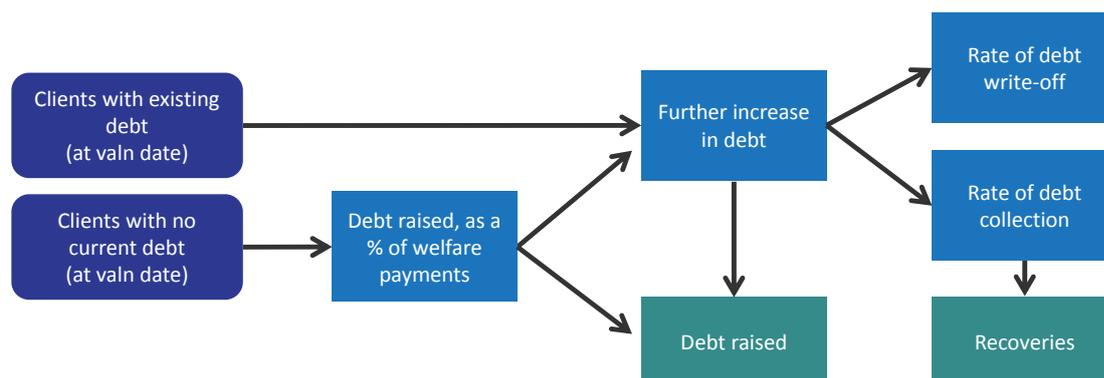
In the past, fraud typically represented just over 10% of the total detections. The vast majority of overpayments (the remaining 90%) were not fraud-related. The past two years have seen a reduction in non-fraud overpayments and an offsetting increase in fraud overpayment detections. Fraud detections doubled in 2013/14, consistent with experience in the IRD data-matching program. The rate of detection has fallen back to 15% of the total in 2014/15.

Figure 7.6 Overpayment and fraud detections per year



We have modelled the development of existing debts as well 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 7.7.

Figure 7.7 Approach to modelling detected overpayments (including fraud) and their related recoveries



Debts raised

The amount of debts raised for overpayments (including fraud) has been fairly constant over the past few years, although as a proportion of total payments this represents a slight increase. The adopted rate of 3.2% is lower than the 3.65% adopted last year due to the revised dataset.

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 \$1.29 of detected debt over the subsequent five years, a rate of growth that is slightly increased from last 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. The revised data has increased the recovery rates, but there is evidence that the underlying recovery rate is increasing slightly too. Last year we forecast that for every \$100 of ultimate debt detected, \$69 was recovered in the first two years; this year the corresponding figure is \$71.50. This slightly lowers the ultimate amount of outstanding debt written off.

This trend is also partly explained by the increased proportion of fraud detections, which tend to be repaid more quickly 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 32%. This represents extra overpayments that will be accrued by a client before their outstanding debt reduces to zero.
- About 85% of overpayments are assumed to be recovered eventually, similar to 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 about 83.6%.
- 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 total \$2.01 billion. The offsetting recoveries are estimated to be \$1.78 billion, with a net difference of \$230 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 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.

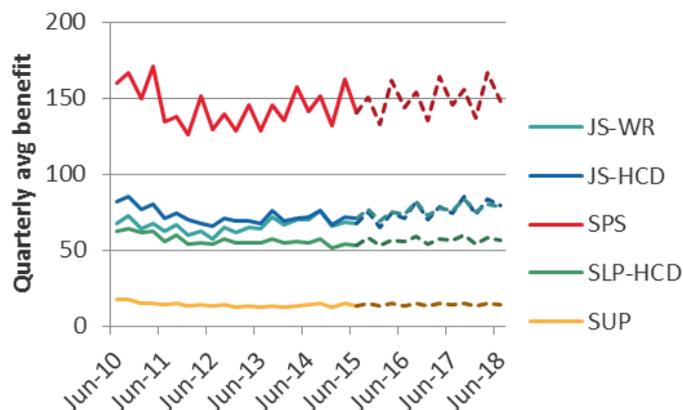
Table 7.3 Historical levels of Recoverable Assistance

Year	Payments (\$m)	Average number receiving loan per quarter (nearest 100)	Average quarterly payment per client (\$)
2010/11	162	74,300	540
2011/12	142	64,500	550
2012/13	137	62,100	550
2013/14	136	62,600	540
2014/15	131	60,900	540

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 7.8.

Figure 7.8 Average Recoverable Assistance quarterly payment per client in main benefit states. Amounts are in June 2015 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 increase, increasing 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 91.6% of Recoverable Assistance payments. The assumption reflects the average seen over the past four years. This assumption has been lowered this year from 94.5% in the previous valuation. Most of the change relates to the data revision, although there is evidence of falling recoveries since they peaked in 2010/11. However, such a drop would have only a small impact on the overall result; adopting 94.5% would reduce the current client liability by less than 0.1%.

7.5 MSD expenditure

MSD expenses included are those required to administer the benefits for working-age adults in the valuation, 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 new 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 involves increased expenditure in 2014/15 and 2015/16, offset by reduced 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 assuming the somewhat inflated level for 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, our 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 2019/20.

7.5.1 Approach to determining future liability associated with expenses

We discuss our approach to operating expenses in Section 9.4.2. It assumes the dollar level of expenses in the 2015/16 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 2015/16 year is \$720 million in June 2015 dollars, up 2.3% on the actual expenses in 2014/15 (compared to inflation of 0.5%). This, combined with the lower than expected ongoing benefit payments, has led to an increase in the expense rate. The overall expense liability is very similar to the figure expected from the roll-forward, so the increased expense rate applied to a lower level of benefits is close to offsetting.

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 2015/16 budget

Expense category	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 Budget
	\$m						
Administration							
Benefit Processing / MCA-Administering Income Support	326	305	304	318	306	302	311
Payment Integrity and Loan Collection	50	49	47	45	42	45	50
Special (e.g. quakes)	0	8	0	0	0	0	0
Administration total	376	361	351	364	348	347	361
Programs							
Tailored services / training / MCA employment outcomes / MCA work readiness	378	350	317	326	307	338	340
OSCAR	20	19	20	17	19	18	19
Programs total	399	368	337	344	326	356	359
Expenses total	774	730	688	707	674	703	720

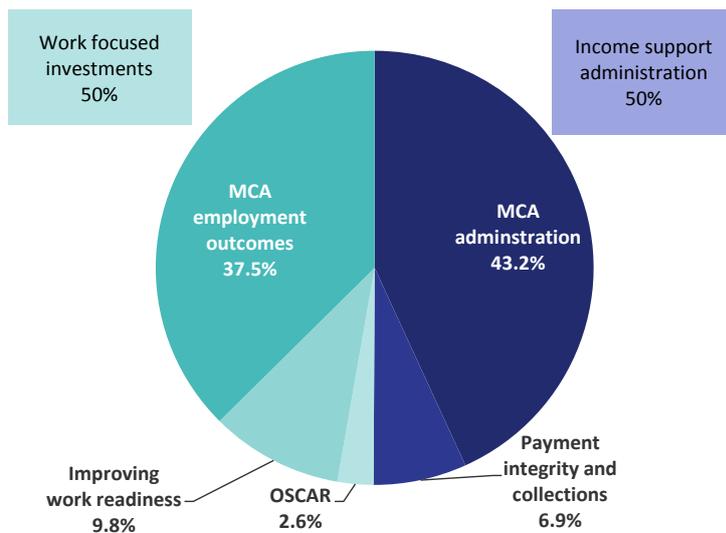
7.5.2 Breakdown of current expenses

We have made the following allocation of expenses to the various categories, shown in Figure 7.9, based on the expense apportionment provided by MSD.

We note the following:

- Half of the expenses are for administration and the remainder are work focused investments. This split is unchanged from last year.
- The splits within each half are very similar to last year; payment integrity and collections are up slightly, as is OSCAR.

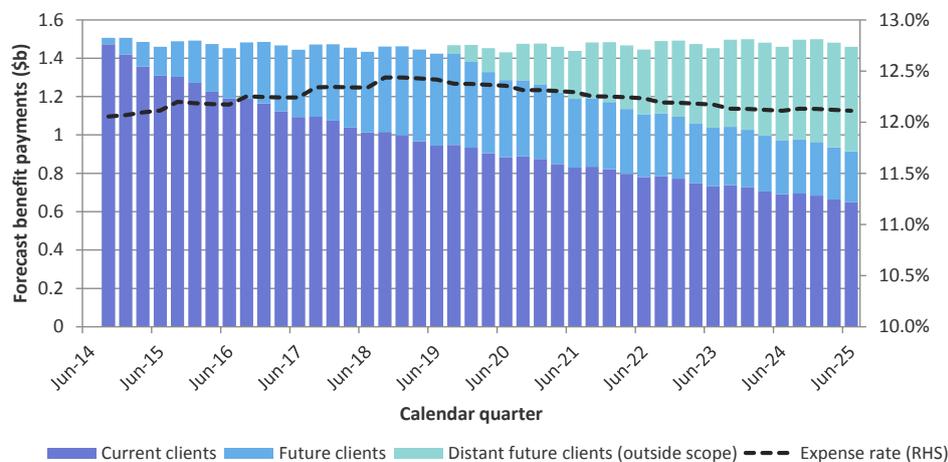
Figure 7.9 Current client liability: MSD expenses by category



7.5.3 Projected future cash flows

Figure 7.10 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 7.10 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 12.1%. This rate compares to last year's long-term assumption of 11.8%.

The total operating expense liability attributable to current clients is \$7.2 billion, as shown in Table 3.2. This is allocated between expense categories according to Figure 7.9.

8 PROJECTED CHANGES TO THE BENEFIT SYSTEM

INSIDE THIS CHAPTER

- ❖ Introduction and highlights
- ❖ Clients entering the benefit system
- ❖ Projection of the current client liability
- ❖ The beneficiary population in five years
- ❖ 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 2014/15. Here we look more explicitly at clients entering the system, those who we expect to enter in the future, 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 2014/15 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 70 to have had a parent on main benefit, 30 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 2016) is a further reduction in the liability to \$67.3 billion. The liability is forecast to reduce gradually each year to \$61.5 billion (as at 30 June 2020).

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 2010, compared to an expected 33% in 2020 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 2010 to 2015, but is expected to grow more slowly over the next five years. There are also 'lumps' in the age distribution that correspond to those who first enter the labour force during recessions.

8.2 Clients entering the benefit system

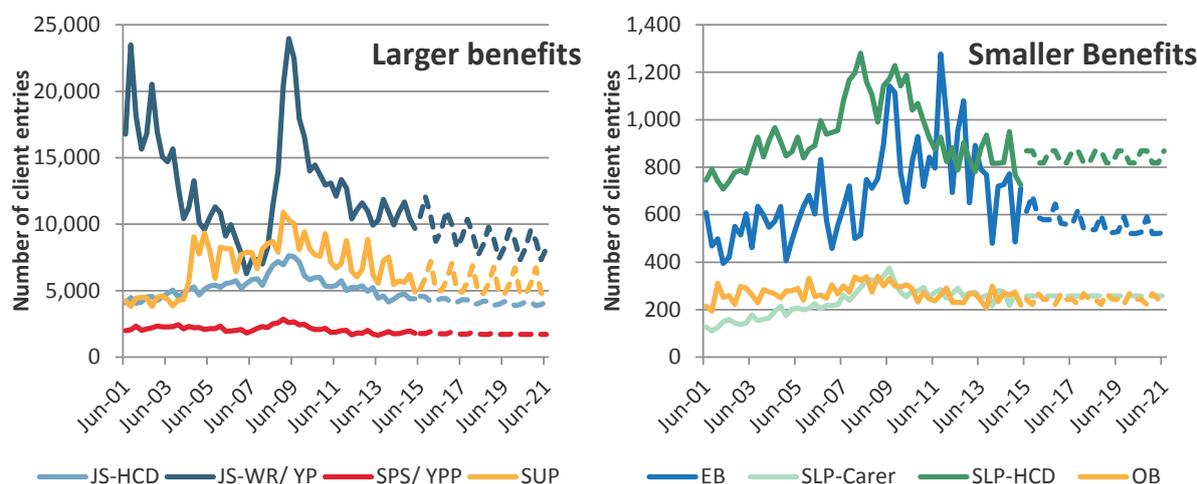
8.2.1 Client numbers

In addition to the current client liability we also estimate five years of future client liability. This relates to clients who have not received a benefit in the 12 months prior to the previous 30 June, but are expected to 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 9.3.2. Figure 8.1 shows the historic numbers of entries as well as the projections for future years.

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 WID/WA entries (about 300 per quarter) and DPB > 14 entries (about 200 entries 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 20% and 12% 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 2014/15 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.

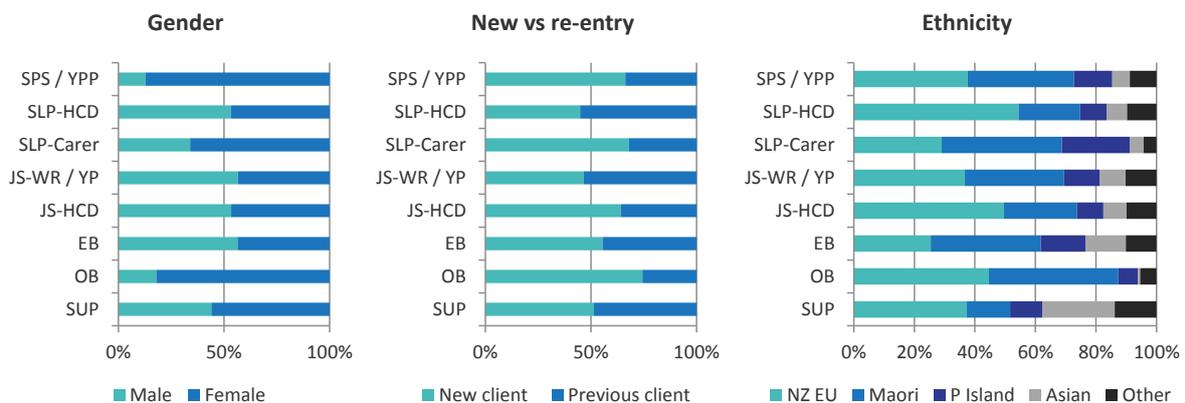
8.2.2 Demographics of client entries

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 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, younger children (if SPS) and are much more likely to enter JS-WR or SPS compared to SLP. We simplify this problem by assuming the characteristics of future clients will resemble those who enter in 2014/15. We give some summaries of this population below.

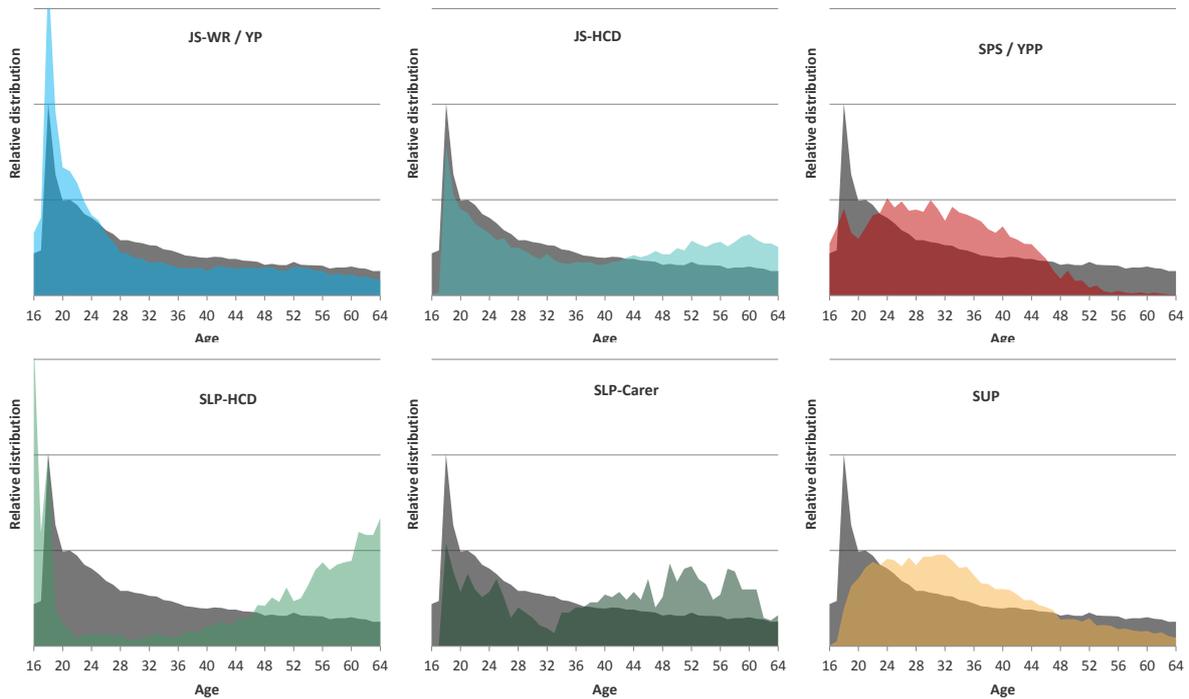
Figure 8.2 Distribution of various characteristics for clients entering as part of the future client liability, by benefit type first received.



We observe in the figure that OB, SPS and 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. SPS and OB entries have a relatively high proportion of Māori clients, SLP-Carer has a high proportion of Pacific Islander clients, and there is a higher proportion of Asian clients entering Supplementary Only benefits.

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 in ages below 20). These age distributions are summarised in the figures below.

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

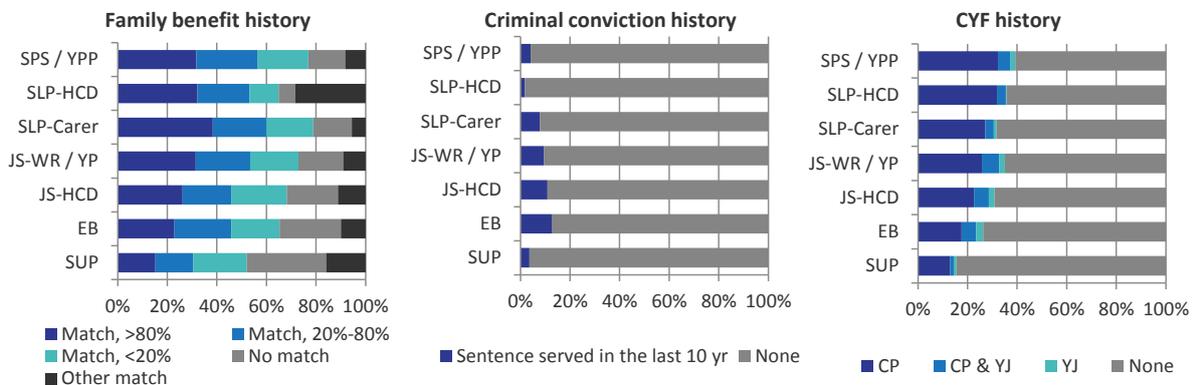


The charts below show the distributions of other service usage history variables for young entrants.

Of every 100 young (under age 25) entrants to the system, we expect about 70 to have had a parent on main benefit, 30 to have had contact with the CYF-CP system 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 tends to have the lowest 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 2016) is a further reduction to \$67.3 billion. The liability is forecast to reduce gradually each year to \$61.5 billion (as at 30 June 2020). 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 4.5% over the next five years. Different unemployment assumptions would induce different expected changes in the liability over time.

As with last year, the reductions are concentrated amongst Jobseeker, Sole Parent, NOMB and recent exits. This decrease is consistent with the forecast reduction in unemployment rates over the time period, as these groups are most sensitive to labour market changes. Note the forecast slight increase in the total liability associated with the SLP segment; client numbers are projected to decrease fractionally over the period, but by less than the rate of benefit inflation.

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

Top tier segment	2015 (current)	2016	2017	2018	2019	2020
Jobseeker- WR	7.9	7.7	7.3	6.7	6.2	5.8
Jobseeker - HCD	8.5	8.5	8.3	8.1	8.0	7.8
Sole Parent	13.4	13.0	12.7	12.3	12.0	11.7
Supported Living	17.6	17.7	17.7	17.7	17.8	17.8
Youth	0.5	0.5	0.5	0.5	0.4	0.4
NOMB & RE	12.7	12.2	12.0	11.7	11.4	11.1
Sub-total	60.7	59.7	58.4	57.0	55.7	54.6
Expenses + Net loans	7.7	7.6	7.5	7.3	7.1	7.0
Total	68.4	67.3	65.8	64.3	62.9	61.5

8.4 The beneficiary population in five years

As noted earlier, the number of welfare clients is projected to fall by over 10% over the next five years with significant downward trends in JS-WR and SPS numbers, consistent with the unemployment rate forecast. By combining the projections for current and future client liabilities, we are able to estimate the 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 characteristics are more difficult to predict.

Figure 8.5 End of quarter benefit type and age distribution for June 2010, June 2015 and June 2020

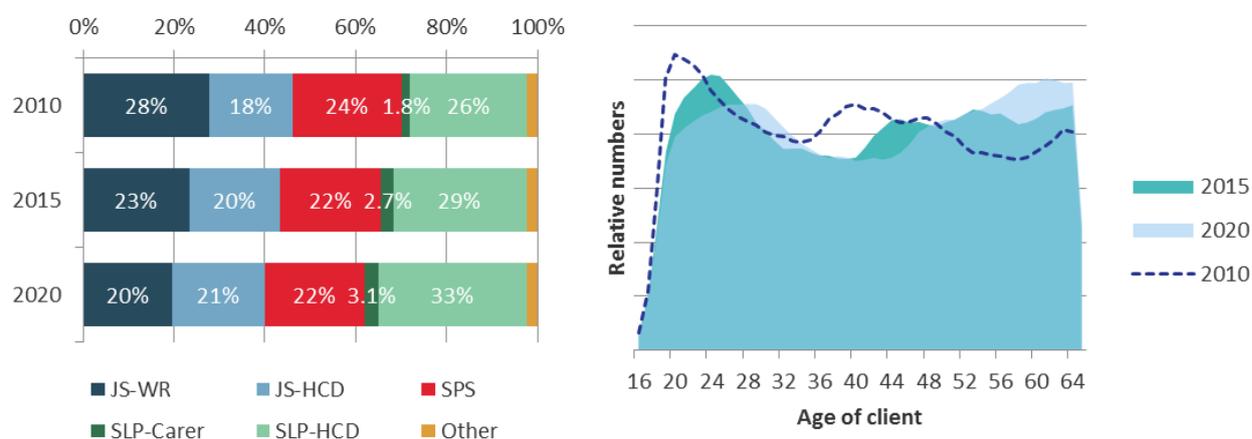
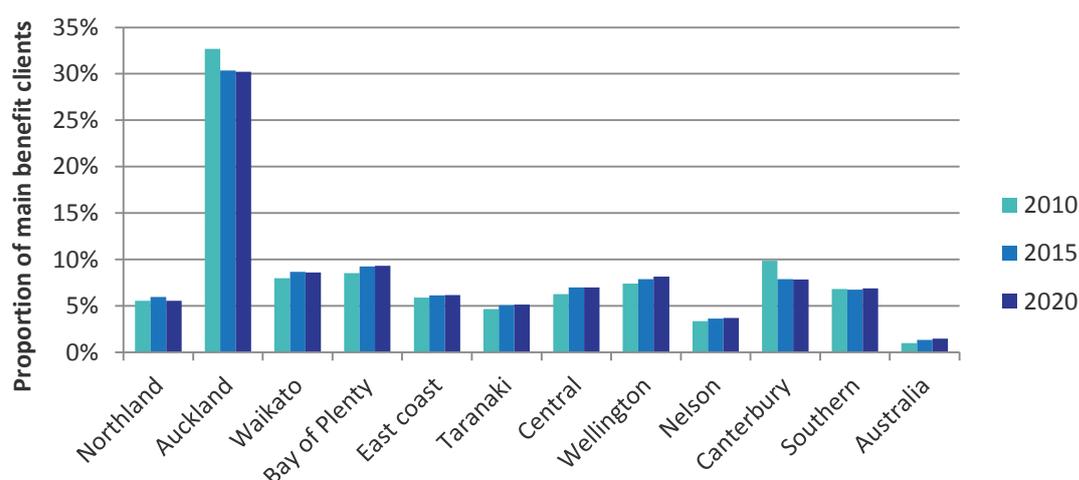


Figure 8.5 shows the types of changes seen over the last five years; we have forecast these to continue. Jobseeker clients are forecast to drop from 43% to 40% of main beneficiary clients between 2015 and 2020. This reflects the projected continuation of downward trends in client numbers in these segments. SPS numbers are forecast to drop 13%, but this is in line with the overall drop in main beneficiary numbers and so the relative share barely changes. Numbers on SLP benefits represent an increasing portion of the future welfare population. The projected relative increase of SLP clients (as other segments reduce in absolute numbers) continues long-term trends.

The right panel of the figure shows that the benefit population is projected to be slightly older in five years, with the average age increasing from 41.2 to 41.5. This compares to the average age of 40.0 in 2010. Visually we can see this shift in two main areas: a flattening of the peak at age 23 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 almost a year older (on average) in 2020 compared to 2015.
- There is a visible ‘lump’ in the age distribution curve corresponding to clients born around 1970. This is centred at age 40 in the 2010 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 lump is also visible related to the GFC, currently centred at age 23. These demonstrate the **significant long term impact of recessions**, particularly on those entering the labour force.

Figure 8.6 Regional distribution for June 2010, June 2015 and June 2020



Finally, Figure 8.6 shows the regional distribution of main benefit clients past, present and future. As with age and benefit type, the future trends largely reflect what we have seen in the past. We observed decreases in relative numbers in Auckland and Canterbury, with relative increases in Central, Wellington and Taranaki regions. There are two regions where the historical trend has been forecast to reverse, as described below:

- **Southern** region saw a small decrease between 2010 and 2015. Its unemployment rate is now very low, and we have not allowed for any further improvement in the labour market there. As a consequence, its relative share increases.
- The **Northland** labour market has performed slightly worse than the national average (over the past two years in particular). We have forecast a relatively strong performance over the next five years, with its unemployment rate projected to fall from its current level of 9.2% to its historical full employment rate of 5.6%. Such a drop would see the region's share of main beneficiaries fall.

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 a number of ways. First, we discuss how sensitive the projection is to various model assumptions regarding key drivers. Sensitivity analysis is helpful in understanding 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

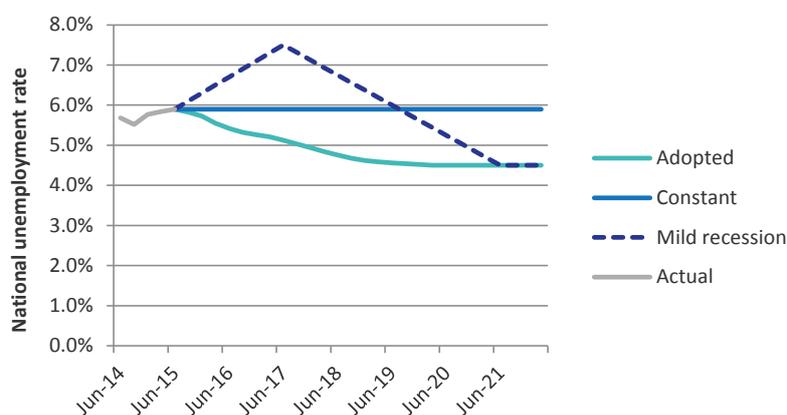
The labour market, and the impact of the economy more broadly, is one of the main sources of uncertainty in our forecasts. The labour market uncertainty is incorporated into our models using the (regional) unemployment rate. There are three elements to the uncertainty:

- 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 the figure below we show two such scenarios; a situation where unemployment remains constant rather than decreasing to a 'full employment' rate, and a mild recession scenario, where the unemployment rate increases before returning to full employment rates.

Figure 8.7 Unemployment rate scenarios



Under the '**constant**' scenario, benefit payments to current clients (that is, the current client liability excluding net loans and expenses) are 7% higher at \$64.6 billion, compared to our central estimate of \$60.7 billion. This is not spread evenly across benefit types. Future JS-WR payments are expected to be 31% higher, compared to 4% for SPS and 0.5% for SLP-HCD.

Under the '**mild recession**' scenario, the current client lifetime benefit payments are expected to be 3% higher (\$62.5 billion). Again this is more pronounced in future JS-WR payments (16% more) compared to other benefit types. We note that the impact under the constant scenario is larger than the recession scenario; this reflects the long term nature of the benefit system.

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.

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 or 1% decrease in discount rates would increase the current client liability (before net loans and expenses) by about 10.6%, or \$6.4 billion. Conversely, a 1% decrease in inflation or 1% increase in discount rates would decrease the current client liability by about 8.9%, or \$5.4 billion.

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

Scenario	Liability (\$b)	Change (\$b)	Change (%)
Base	60.7		
Inflation +1%	67.0	6.4	10.6%
Inflation -1%	55.2	-5.4	-8.9%
Discount rate +1%	55.2	-5.5	-9.0%
Discount rate -1%	67.2	6.6	10.8%

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 most relevant benefit categories: those which experienced significant

change in 2014/15. 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	60.7				
JS-WR leave rate		-0.3	-0.5%	0.3	0.6%
JS-HCD leave rate		-0.3	-0.6%	0.4	0.6%
SPS leave rate		-0.5	-0.8%	0.5	0.8%
Non-beneficiary re-entry rate		1.2	2.0%	-1.2	-1.9%

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 related to the impact of reforms, as there has been limited time to observe the 'new normal' behaviour. The general process is to choose assumptions somewhere between the old and the new levels, based on observed changes and discussion with subject matter experts. This is particularly true for SPS segments, which currently have very high exit rates by historical standards. We have allowed for a partial moderation of these rates. As the behavioural adjustment resulting from Welfare Reform stabilises, these trends are becoming clearer.

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.
- The societal 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 Section 9.3.2.

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 0.05%. This makes simulation error one of the smallest sources of uncertainty in the valuation.

PART C

APPROACH

9 VALUATION APPROACH

INSIDE THIS CHAPTER

- ❖ Data and data quality
- ❖ Valuation parameters
- ❖ Modelling benefit dynamics and payments
- ❖ Modelling net loans cost and operational expenses
- ❖ Model checking and validation
- ❖ Approach to setting assumptions
- ❖ Compliance with actuarial and accounting standards

This chapter explains how Taylor Fry carries out the valuation of the NZ benefit system. It is deliberately brief; additional detail was previously provided in our 2013 valuation report, most of which is still relevant. Other technical details are also available in the appendices to this current report.

At its most basic level, the valuation approach involves four steps:

- Modelling benefit dynamics for current and incoming beneficiaries based on a variety of predictive characteristics to determine how many are likely to receive 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

9.1 Data and data quality

9.1.1 Data supplied

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.

The 2013 report included detailed information about the data supplied by MSD. The equivalent data has been supplied this year, including:

- Data files containing payments up to 30 June 2015 but extracted as at 31 July 2015
- 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.

New data was also supplied by MSD this year. There were two datasets:

- **CYF – care and protection and youth justice:** This dataset had one row per person per type of interaction. For CYF-CP interactions the dataset described the type of event (reports without further action, investigation or placement), dates, number of events and days in placement. For CYF-YJ interactions the dataset included whether the event led to youth court or family group conference, number of events and days.

- **Criminal conviction history:** One record for every conviction and associated sentence in the corrections system. This included the start and end dates, the type of corrections activity (e.g. prison or community service) and a number of fields detailing the type of offence that related to the conviction.

In both cases the de-identified SWN was supplied for merging with the other datasets. This involved MSD performing matching to link people in the CYF and Corrections systems to MSD clients. 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. We have been provided with estimates of these based on an additional variable not used for matching (place of birth). This suggests that the false positive rate is very low (<1%) while the false negative rate might be more significant (of the order of 10%). These rates are manageable in the context of the valuation; they will tend to dilute the signal associated with 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.

9.1.2 Modelling variables

Data provided on the same basis as previous valuations

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)
- **Client-related variables:** Age, gender, ethnicity, education level and region
- **Client 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 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

New data for the 2015 valuation

In this valuation we extended the client history variables using newly supplied Corrections and CYF data.

Criminal convictions history **related variables** used in the modelling include:

- The percentage of time in prison over the past year;
- The percentage of time over the past year in serving any type of criminal sentence, excluding driving related offences;
- The percentage of time over the past 10 years serving any type of criminal sentence, excluding driving related offences; and
- The percentage of time over the past 10 years serving any type of criminal sentence that is specifically related to a theft offence.

CYF-related variables used in the modelling include:

- Whether the client as a child was involved in a care and protection or youth justice event;
- The number of events occurred;
- The age of the client when the first event occurred; and

- The number of days in placement.

CYF related variables are only considered for clients aged up to 25 due to data limitations. For older clients, other variables such as benefit history are likely to be a reasonable proxy for risk, and so CYF variables would be expected to provide less incremental predictive accuracy.

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 still 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.

9.1.3 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, 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 made by MSD.

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.
- 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 either a consequence 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.

9.1.4 Benefit state and payments

Benefit state was generally based on the benefit codes within the payment files. Some minor changes were required (see Section 9.1.8).

All modelling of average benefits paid per quarter has been done in current dollar values, as at 30 June 2015. This means older payments have been increased in line with historical benefit inflation.

9.1.5 Missing values

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

- Ethnicity
- District
- Incapacity (type and number)
- Education and qualifications

Most are of the order of a few percent of records. However, data for the education variable is particularly poor – see the next subsection. District has been substantially improved this year as an additional source has been provided for clients who are on supplementary benefits only.

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 them entirely. Extra check variables were created to indicate when variables had been interpolated.

Apart from the improvements in district, the incidence of missing values this year is similar to previous valuations.

For data that is matched by MSD (intergenerational, CYF and Corrections) there are also ‘missing’ data fields that occur due to a failure to match. This was discussed in 9.1.1. No explicit allowance has been made for this.

9.1.6 Data quality issues for qualifications data

Data issues related to qualifications data are unchanged from the previous valuation. Qualifications are included in our models despite considerable limitations to data quality, such as missing data, uneven collection and lack of consistent updates.

Less than 40% of clients have a useful qualifications level on the dataset provided. For Youth segments this figure is less than 1%.

Despite these limitations, qualifications level is a highly important consideration for MSD’s management of the benefit system. At MSD’s request, we have continued to include 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 improved qualifications data would enhance the quality of education-related insights and accuracy of differentiation between future lifetime estimates in the valuation.

9.1.7 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.

9.1.8 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 30,000 payment spells since the reform dates (0.35% 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 Valuation parameters

9.2.1 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.

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 practical issues related to double-counting of client numbers and cash flows for clients who re-enter after longer than one year. We remove this double counting effect when combining the two (e.g. Figure 3.5 and Figure 5.12) for forecasting purposes.

9.2.2 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.

9.2.3 Reconciling Taylor Fry and MSD definitions

There are a few points of difference in how client status is determined for the purpose of our modelling and projection compared to MSD's standard definitions:

- **Whether a client is on benefit at any given time:** according to 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 have been improving the modelling over the past two valuations to enable better reconciliation. In particular, we now 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.

9.3 Modelling benefit dynamics and payments

9.3.1 Structure of the valuation model

Overview

In the broadest of terms, the valuation methodology is as follows:

- Predicting the **number** of current beneficiaries, in the valuation year, 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 2015 quarter. These are initially estimated in 30 June 2015 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.

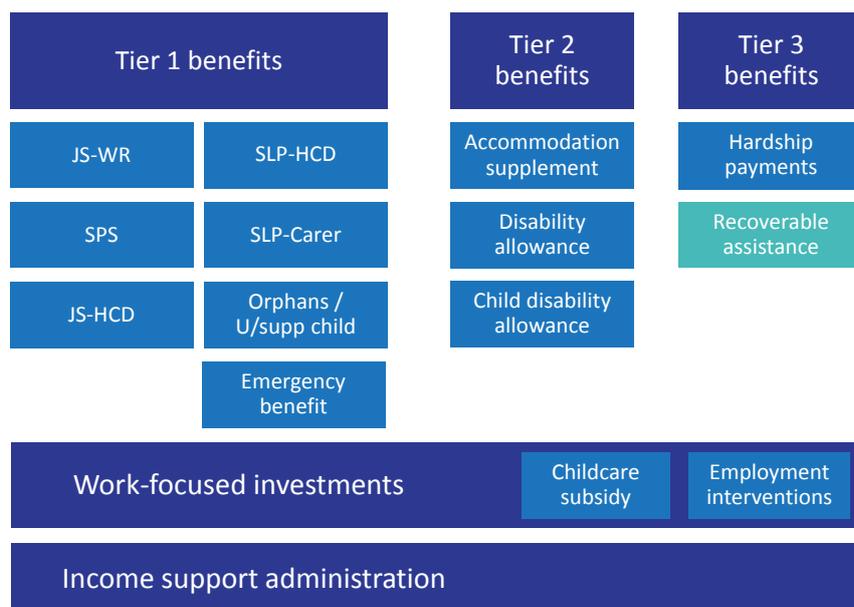
Each client is assumed to be in a single benefit 'state' each quarter, out of a possible nine states (eight benefit types and a 'not on benefit' state). Clients then move between states from quarter to quarter and

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 2015 valuation

The methodology applied for the 2015 valuation is very similar to that used in the previous valuation, which is documented in greater detail in the 2013 report. The most significant changes are:

- Dynamic variables now aim to simulate the last status in the quarter while on benefit, rather than the first status as was done previously. For instance, if a client moves region in a quarter the projection would aim to reflect this in the quarter they move, rather than the subsequent quarter.
- End of quarter benefit status and continuous duration are better estimated.
- Variables related to criminal convictions and CYF history have been incorporated as described in Section 9.1.2. We also model how these evolve dynamically over time.
- A new region, 'Australia', has been added for clients on SLP-HCD residing in Australia. Previously these clients had been allocated randomly to NZ regions.

Modelling benefit dynamics

Quarterly format and allocation to state

We have assigned a single 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.

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 transition possibilities are observed in a given quarter, the likelihood of many of these transitions is very small.

The most frequent 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 Section 8.2.

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, 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 9.1.2.

While there are a large number of 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, payments are modelled as an average value across people in a given benefit state. For example, the average Accommodation Supplement paid to Work Ready Jobseekers, 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 2015 dollars, with inflation applied afterwards to projected payments.

9.3.2 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 50 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 0.05% 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 2015. 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 2014/15.
- Project the sampled clients forward.

This approach treats client returns and new entries simultaneously (the sampling population from 2014/15 includes both returning and new clients). It assumes that the relative numbers of new entrants versus returns will be similar to that seen in 2014/15.

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.

9.3.3 Modelling the evolution of dynamic variables

Some of the modelling variables tend to remain fixed over the projection; for example, gender and date 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 randomly allocated to a region based on their starting region and historical movement patterns.

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 described in Section 9.1.2 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 described in Section 9.1.2 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 number of days spent in care and protection

These models rely on a number of client characteristics. These include existing CYF history, benefit state, age and gender.

9.4 Modelling net loans and expenses

9.4.1 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 in Section 7.4 present the combined total of all subcomponents as a “net loans cost”.

In contrast to previous years, the data provided in 2015 excludes loans and overpayments related to Superannuation. This represents an improvement – the inclusion of these was a stated limitation in the last valuation. Liability estimates were not materially affected, although the dynamics of net loans (in terms of rate of loan raising and recovery) were. Aside from this data change, the general approach to modelling net loans was unchanged.

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.

9.4.2 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. Annual expenses as well as 2015/16 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 2015/16 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.

9.5 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 2014 to 2015
- 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.

9.6 Approach to setting assumptions

9.6.1 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.

9.6.2 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 update each successive valuation to break out the effect of changes relative to the forecast unemployment rate on the liability. 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.

9.6.3 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.

9.7 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

INSIDE THIS CHAPTER

- ❖ Nature and potential implications of risks
- ❖ Other specific limitations of the valuation

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 education data, discussed in Section 9.1.6. 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.

10.1 Nature and implications of risks

10.1.1 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.

10.1.2 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 8.5.4.

10.1.3 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.

10.2 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 0.05% 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 Section 9.1.7, 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.

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-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.
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.
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.
CP	Care and Protection
CPI	Consumer price index
CYF	Child Youth and Family
GFC	Global financial crisis
HLFS	Household Labour Force Survey
IFRS	International Financial Reporting Standards
IRD	Inland Revenue Department
MSD	Ministry of Social Development
NCEA	National certificate of educational achievement
NEET	Not in Education, Employment, or Training
Partial dependence	Refers to the dependence on a variable when isolated from other correlated variables; that is, holding other factors constant.
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 <i>where there is an underlying Tier 1 or Tier 2 benefit / assistance</i> are valued.
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 (<i>other benefits and assistance</i> probability models)
Roll-forward	Used to describe the result of applying revised economic assumptions to the previously estimated liability and deducting any expected payments.
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.
Top tier segment	A high level segmentation of clients based on current benefit type.
Transfer	This term is used to describe a client who transitions from one benefit type (or segment) to a different benefit type (or segment).
WR	Welfare Reform
YJ	Youth justice