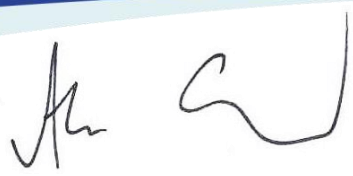
Taylor Fry

Ministry of Social Development

Valuation of the Benefit System for Working-age Adults

As at 30 June 2014



Alan Greenfield
Fellow of the Institute of Actuaries of Australia

Hugh Miller
Fellow of the Institute of Actuaries of Australia

Kari Wolanski
M.A. Social Development

Gráinne McGuire
Fellow of the Institute of Actuaries of Australia

Sydney

Level 11, 55 Clarence Street
Sydney NSW 2000

P 02 9249 2900
P 02 9249 2999

Melbourne

Level 6, 52 Collins Street
Melbourne VIC 3000

P 03 9658 2333
P 03 9658 2344

ACN 087 047 809
ABN 29 087 047 809

www.taylorfry.com.au

Taylor Fry Pty Ltd – Consulting Actuaries & Analytics Professionals

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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 2014) 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

The purpose of this report is to provide insight into the benefit system and how it is changing over time.

Over the last few years the Government of NZ has significantly reformed the benefit system. Underpinning recent policy and operational changes 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 are a core component of the investment approach.

The 2014 valuation covers the final round of policy changes through Welfare Reform. This includes consolidation of benefits into Jobseeker Support (JS), Sole Parent Support (SPS), Supported Living Payment (SLP) and Youth benefits. Please note that key terms and acronyms are listed in the Glossary.

The 2014 liability values the lifetime cost of approximately 570,000 working-age clients who received income support in 2013/14; one fifth of New Zealand's working-age population. In this report, we sometimes break this population into **Beneficiary segments**—based primarily on current benefit and duration of continuous receipt (< or > 1 year)—and **Work and Income regions**.

1.2 Key drivers of future cost and developments in 2013/14

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 broadly categorised into drivers of benefit dynamics and other financial drivers; or into factors that can and cannot be influenced by management.

Changes to drivers of benefit dynamics in 2013/14:

- **Policy settings:** Welfare Reform changes effective July 2013 (such as consolidation of benefit types) and ongoing effects from earlier changes (such as those effective October 2012 and August 2012)
- **Operations:** National roll-out of a new service delivery model from July 2013 and other key initiatives, such as data matching from early 2013 to identify over-payments
- **Labour market:** A lower than expected unemployment rate, reducing last year's estimated liability by 0.5%, plus an additional lowering of new client entries in 2013/14
- **Demographics:** No significant change from expected in the valuation year

Changes to other financial drivers in 2013/14:

- **Benefit rates:** No significant change from expected in the valuation year
- **Inflation rate:** Lower than expected, reducing the liability by 2.7%
- **Discount rate:** Similar but slightly higher than expected, reducing the liability by 0.4%

1.3 Main result and analysis of change

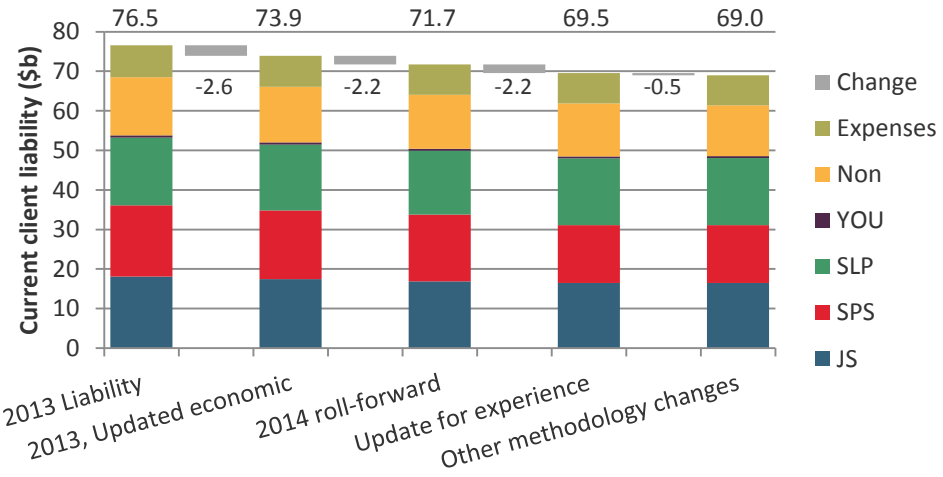
1.3.1 Main estimate and impact of changes to key drivers in 2013/14

The **main estimate** of the liability in the benefit system as at 30 June 2014 is $69.0 billion. This is the expected cost of benefit payments and related expenses for clients who received income support in 2013/14 from the valuation date until they reach retirement age.

This result is $7.5 billion lower than the estimate in the previous valuation for the liability as at 30 June 2013 (a reduction of about 10%). The difference from last year to this year breaks down as follows:

- A $2.6 billion downwards revision of the 2013 liability due to changes to economic parameters -- unemployment, inflation and discount rates
- An expected decrease in the liability over the year of $2.2 billion—expected exits and entries; in other words, the benefit dynamics anticipated for the 2013/14 year
- An additional decrease of $2.2 billion reflecting better than expected performance over the year—as a result of policy and operational changes over the year that influenced benefit dynamics
- A decrease of $0.5 billion due to methodology changes – unrelated to experience—or performance during the year

Figure 1.1 Analysis of change in liability between 2013 and 2014 valuations, by segment at valuation



1.3.2 Overall impacts of Welfare Reform

A combination of fewer beneficiaries (on average 3,400 per given quarter) and lower overall payment levels reduced total payments by 0.5% or $34 million compared to forecast in 2013/14.

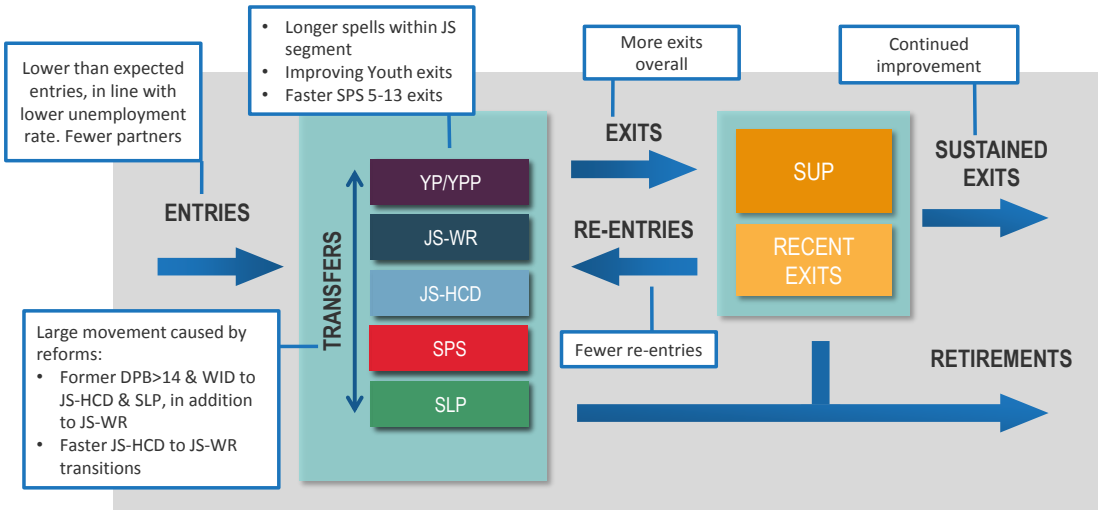
Expected payments had already been lowered in last year's valuations to reflect improved experience in 2012/13. Compared to pre-reform baseline forecasts in the 2012 valuation, there has been a cumulative reduction in payments of $606 million over two years.

Welfare Reform appears to have reduced expected years of future benefit receipt by a total of 12%. This is due to both fewer current beneficiaries than expected (reducing expected future years by 8%), and reduced expected benefit years of current beneficiaries over their lifetimes (by 4%). The results are particularly strong for Sole Parents and Youth. Welfare Reform has reduced the average expected duration of benefit receipt by 1.2 years for each Sole Parent over their lifetime and by 2.8 years for Youth clients.

1.3.3 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.

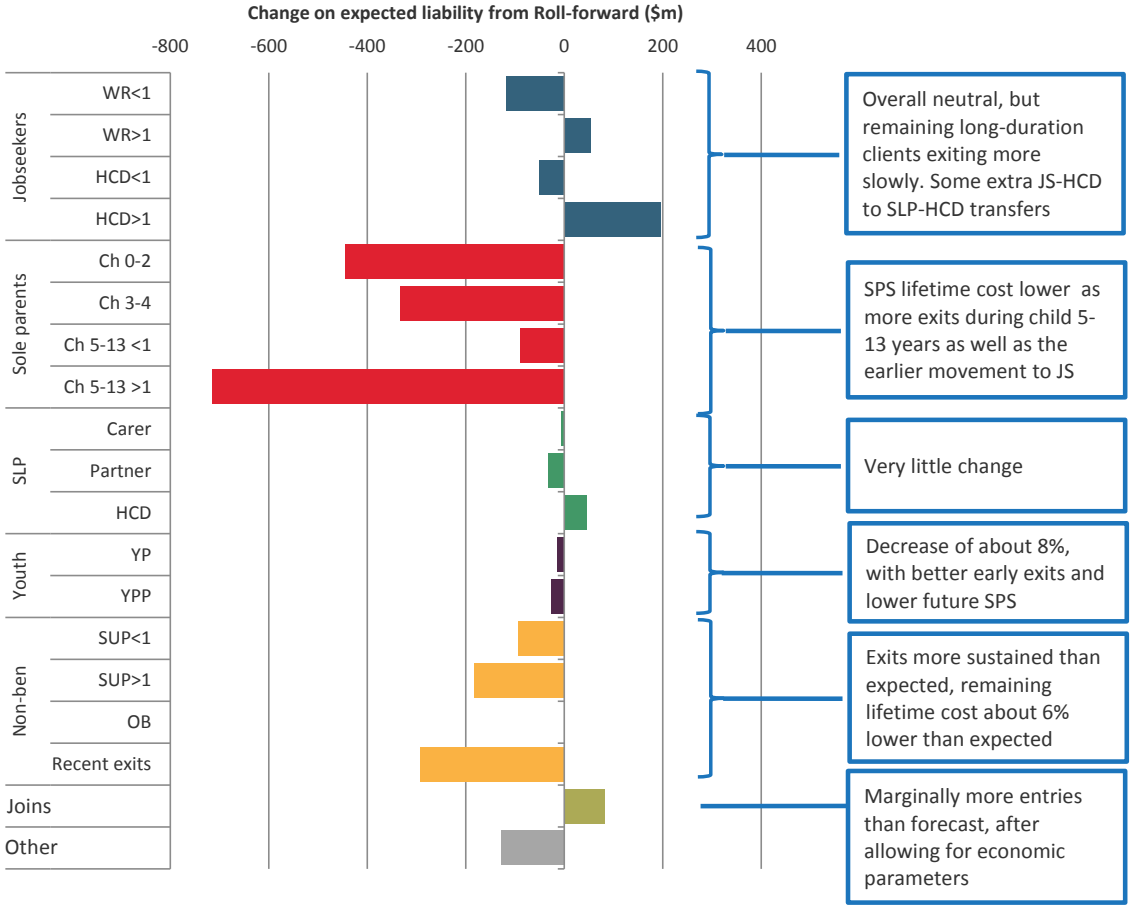
Figure 1.2 Significant changes to benefit dynamics in 2013/14, relative to expected



1.3.4 Breakdown of change under management influence

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

Figure 1.3 Breakdown of $2.2 billion decrease due to experience, by segment as at June 2013



We have calculated how the projected lifetime cost for these clients has changed relative to what we would have expected. Factors beyond MSD's control, 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 than expected exiting benefits, and more sustainable exits from the benefit system.

1.3.5 Impacts of Welfare Reform

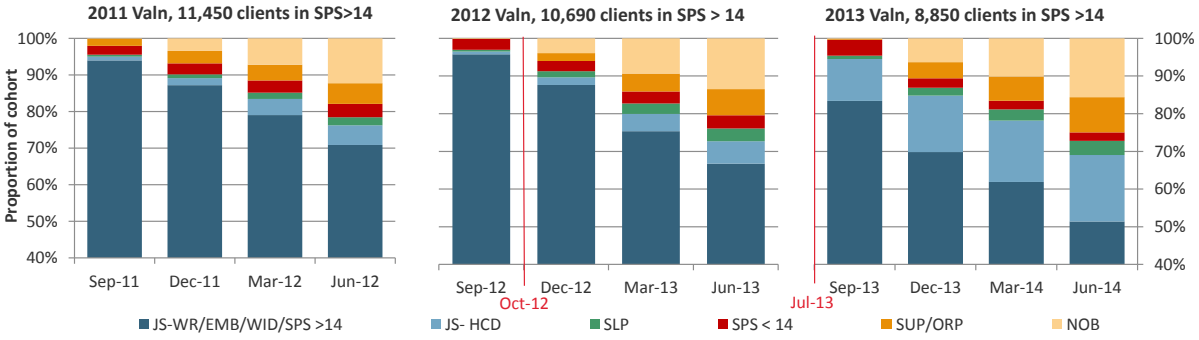
July 2013 changes

Assessing the impacts of Welfare Reform is a key aspect of the 2014 valuation.

To demonstrate the impact of July 2013 changes, Figure 1.4 illustrates quarterly movements over the last three years for Sole Parents with children age 14 or older, reclassified as Jobseekers in July 2013 (shown in dark blue).

The title above each graph shows how many Jobseeker-Sole Parents (with children age 14 or older) there were on each of the three previous valuation dates. This cohort has shrunk from 11,450 in June 2011 (left) to 8,850 in June 2013 (right). Each of the four bars per valuation year shows what share of the cohort who began that year as Jobseeker-Sole Parents remains Work-ready Jobseekers by quarter. Each bar also shows the share of the cohort that has either transferred to another benefit type, or exited benefits. The share of Jobseeker-Sole Parents exiting main benefits increased each valuation year (shown in light and dark yellow). There is also a marked increase in transfers by this cohort to Jobseeker-health condition, illness or disability (HCD, shown in light blue) immediately following the July 2013 changes. This is not entirely unexpected, in that a significant share of this cohort receives Disability Assistance (DA) payments, indicating a health issue. In 2013/14, 12% of Sole Parents received DA payments.

Figure 1.4 Quarterly movements for Jobseeker-Sole Parents with child 14+ clients (Jobseekers), from 2011 valuation (left), from 2012 valuation (centre) and from 2013 valuation (right)



Highlights of impacts of the July 2013 Welfare Reform changes include:

- More of the beneficiaries newly classified as Jobseekers (JS) — particularly Sole Parents with children 14 and older, but also former Widows/Women Alone — are exiting benefits faster
- There is also growth in transfers by this group to other benefits, particularly JS-HCD
- The number of JS Partners appears to be dropping significantly, accounting for much of the decrease in overall JS numbers

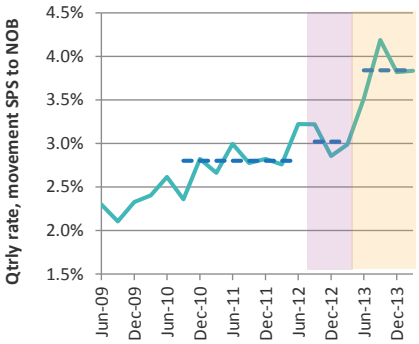
We have been deliberately conservative in our assumptions about how much of the behavioural change observed in the valuation year is likely to be sustained. This allows for the possibility that behavioural adjustment to the new policy settings in future may offset some of the improved experience. We believe this is reasonable, and reflects the heighted uncertainty in projection that occurs during reform phases.

Policy versus operational impacts

The past three valuations have all shown very large decreases in the liability under management influence, reflecting significant policy changes each year as well as the introduction of a new operating model. In the absence of further policy changes, incremental operational performance improvements alone would be expected to drive smaller year on year changes than in previous years. This would not be an indication of weakening performance, as current performance has already been reflected in projections for future years.

Most of the impacts through Welfare Reform have been improved work outcomes for Sole Parents, particularly those with school-aged children. Part-time work obligations have been progressively introduced for this group over the past five years. Most recently, part-time expectations were extended to parents with children age 5, from October 2012 (pink shaded area in Figure 1.5) and a new work preparation expectation introduced for those with younger children. The most significant increase in exit rates is from July 2013 onwards (yellow shaded area). While there was no policy change for this group in July 2013, outcomes improved significantly when active case management was introduced nationally. This is likely an indication that ***policy and operational impacts are compounding***, not independent. In other words, active case management enhanced the impact of new work expectations and other policy changes.

Figure 1.5 SPS 5-13 welfare exit rates, Oct-12 and Jun-13 impacts shaded



Youth Service

Valuing the lifetime costs 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. These beneficiaries, particularly Young Parents, have very high life-time costs, on average.

Since the Youth Service was introduced in August 2012, there has been an increase in Youth Payment (YP) beneficiaries (under age 18), for the most part offset by a decrease in Young Parent (YPP) beneficiaries (under age 19). The increase in YP numbers is potentially due to lower levels of teen pregnancy (more young women receiving YP who would previously have received YPP), combined with proactive outreach to Youth not in education, employment or training (NEETs).

Key indicators of success of the Youth Service are 1) improved qualifications, and 2) whether Youth are less likely to age into working-age benefits. Better qualifications data would be required to assess how improved qualifications are impacting patterns of lifetime benefit receipt.

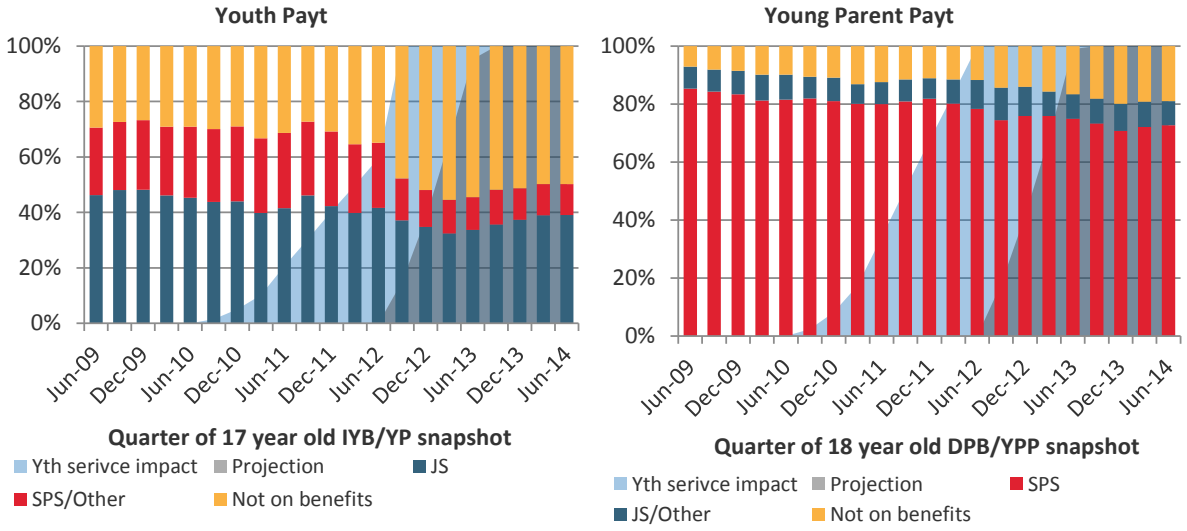
While it still is early days, the trends are promising with respect to benefit outcomes for Youth Service participants when they reach working age:

- More young adults who received YP at 17 are off benefits when they turn 19, and fewer have transferred to SPS
- More young adults who received YPP at 18 are off benefits when they turn 20
- The timing of these improvements is closely aligned with the introduction of the Youth Service.

To show what happens after Youth leave the Youth Service, Figure 1.6 illustrates former Youth's benefit status one year after they become eligible for working-age benefits. There is a clear pattern of growth in the proportion of former Youth leaving main benefits (the yellow share of each bar). The left panel shows that the proportion of Youth Payment clients exiting benefits by age 19 has grown from 31% to 51% over three years, with the timing of this improvement aligning with the introduction of the new Youth Service.

Similarly the proportion of Young Parent Payment clients exiting benefits by age 20 has grown from 11% to about 19%.The light blue shaded background area shows the timing of the Youth Service introduction; clients from August 2012 onwards were entirely in the new program and that the improvement in off-benefit outcomes are most pronounced from this point. The grey area shows our projected continuation of these early trends.

Figure 1.6 Benefit status for 17 year old YP when they reach age 19 (left); 18 year old YPP at age 20 (right)



1.4 Features of interest

The valuation takes into account a range of client characteristics in estimating lifetime cost. Current segment and benefit type, benefit history and current age are the most important determinants of lifetime cost for the benefit population as a whole. Certain risk factors associated with initial entry into the system provide additional insight into which entrants have a higher likelihood of remaining on benefit long-term. More detailed analysis of risk factors associated with entry, important determinants of lifetime costs, and sub-groups of interest such as Youth and Young Adults is available in Chapter 3.

1.4.1 Risk factors associated with entry into the benefit system

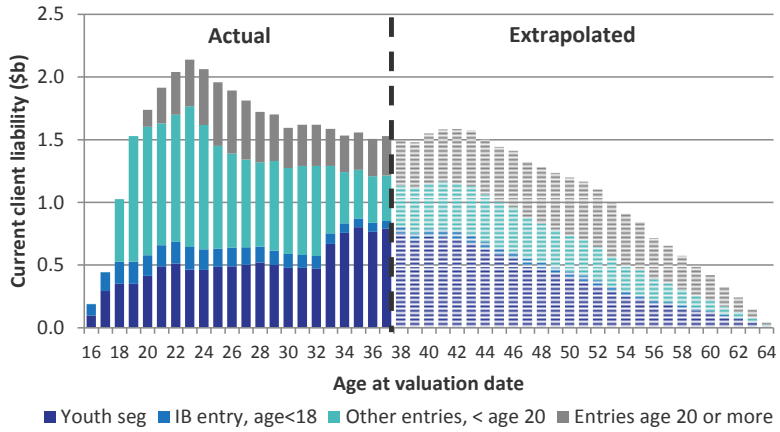
Age of entry

Previous valuations have highlighted the importance of age of entry as a risk factor for long-term benefit receipt, and the large share of the overall liability associated with young entrants. Figure 1.7 shows the total liability for all clients, split into age bands, and shaded by age of first entry into the benefit system.

This shows that:

- We estimate that about 75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20 (all shades of blue, combined).
- Despite the very small number of beneficiaries who enter through a Youth segment each year, approximately a third of the total liability is attributable to clients (of all ages) that would have first entered benefits via a youth segment (or the historical equivalent, shown in dark blue).

Figure 1.7 Current client liability split by current client age and age of entry into the benefit system



Intergenerational benefit receipt

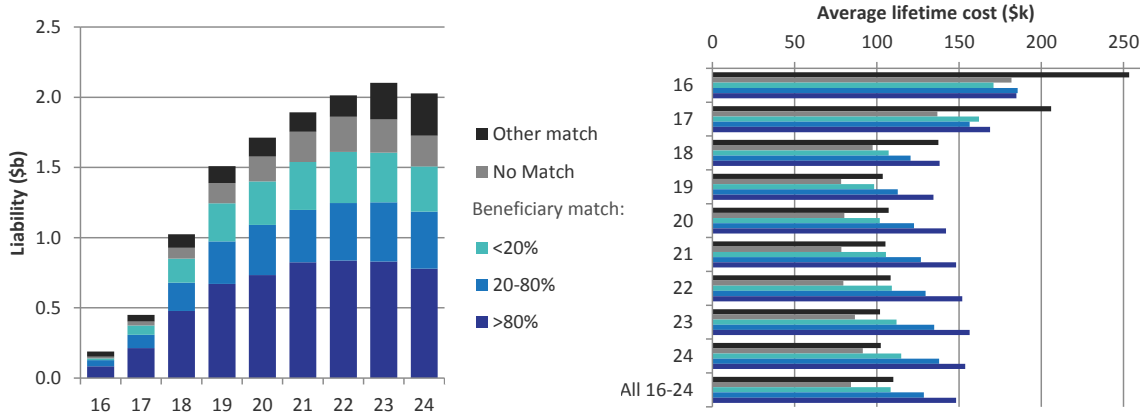
The 2014 valuation introduces new data on family benefit history, available only for clients currently under age 25. This enables us to look at patterns of intergenerational benefit receipt.

Intergenerational benefit receipt is prevalent among young adult beneficiaries. Nearly three quarters had a parent on benefit while they were a child. Just over a third had a long-term beneficiary parent, that is, a parent who received a main benefit for 80% or more of their teen years (age 13 to 18). The liability associated with this group was $5.4 billion; this is 42% of the liability for all beneficiaries under 25 (shown below in the darkest blue).

Being from a beneficiary family – particularly a long-term beneficiary family – significantly increases lifetime costs, probability of remaining on JS-WR, and probability of re-entering benefits after exit.

Average lifetime costs increase with the intensity of family benefit history during the teen years. The exception is for 16-18 year olds, where average lifetime costs are higher for families with no benefit history. This difference is driven by a small group of young entrants to SLP with very high average lifetime costs entering from families with no benefit history. If SLP beneficiaries are removed, the same pattern – higher lifetime costs associated with intensity of family exposure – occurs for the 16-18 age group.

Figure 1.8 Current client liability (left) and average lifetime cost (right), split by current client age and family benefit history, for clients <25



Clients with more family benefit history tended to stay on benefits longer, particularly for the Jobseeker benefit where there is typically more variation in probability of long-term benefit receipt (compared with longer-term benefits). For instance, a client whose parent was intensively in the system during ages 13-

18 was then 48% more likely to remain on JS-WR after a year compared to those clients matched to an 'other match' parent without a recorded history of benefit receipt. Their exits are also less sustainable; the rate of re-entry into the benefit system within two years is 11 percentage points higher (47% versus 36%) for a client matched to a non-beneficiary parent.

Correlation between intergenerational benefit receipt and age of entry

In order to better understand family benefit history, we looked at how it is correlated with a range of other characteristics. These correlations also help to reveal why other factors tend to be associated with higher or lower lifetime cost.

There is a strong correlation between young entries and family benefit history. For Youth as at 30 June 2014, 9 in 10 were from beneficiary families, the majority of whom received a main benefit for most of their teen years. The extent of the overlap suggests that early entry—associated with 75% of the liability—is a partial proxy for intergenerational benefit receipt, with the notable exception of young SLP entrants.

While the valuation scope limits our ability to fully explore these dynamics, chronology dictates that family benefit receipt naturally precedes—and is thus a likely driver of—early entry into the benefit system, which is associated with significantly higher average lifetime costs.

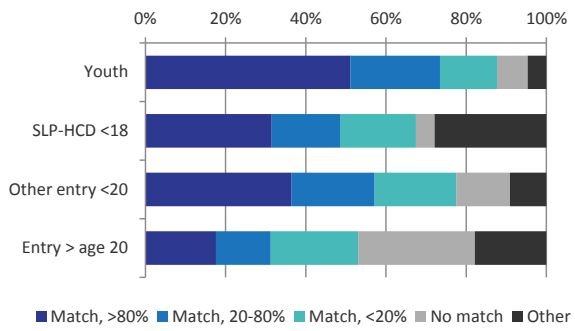
It is also likely that the higher prevalence of intergenerational benefit receipt amongst Maori clients influences their higher average lifetime costs.

Amongst current clients aged less than 25:

- We see that 19% enter the welfare system via a youth segment. Of these, the rate of family benefit history is extremely high; 88% of youth entries had a beneficiary parent and 51% of them had an intensive beneficiary parent; that is, on benefit 80% of the time while the client was aged 13-18.
- Another 54% entered before age 20, but not in a youth segment or underage SLP-HCD entry. The incidence of family benefit history is still very high; 77% have a beneficiary parent and 36% of them have an intensive beneficiary parent.
- Those clients entering between ages 20-24 (22% of the total) have relatively low incidence of family benefit history; just 53% have a beneficiary match and only 18% to an intensive beneficiary parent.
- The remaining 5% enter before age 20 via Supported Living Payment – health condition, illness or disability.

These statistics are also summarised in Figure 1.9. They demonstrate that family benefit history is associated with early entry, and could possibly be a direct predictor of it. To express this result another way, we see that of all clients aged less than 25 with an intensive beneficiary parent, 89% entered before age 20. This compares to 61% for clients currently in the valuation without a beneficiary parent.

Figure 1.9 Cohorts split by age and category of entry and family benefit history, for clients <25



1.4.2 Subgroups of interest

Young adults aged 18-24

Current age is an important determinant of future benefit cost because younger beneficiaries have more future years in which to receive benefits. There is a high volume of 18-24 year old beneficiaries, but significant variation in their patterns of benefit receipt and lifetime cost. As at 30 June 2014, there were 102,300 clients aged 18-24 (and not in YP/YPP), with an average lifetime cost of about $122,000.

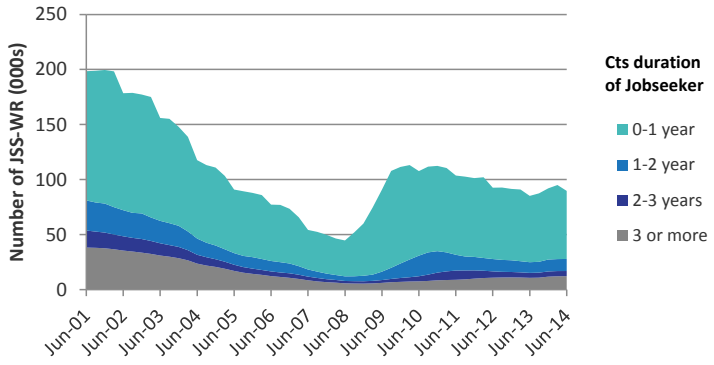
The probability of young clients being on benefit two years later varies significantly with client segment; 25% of those in JS-WR benefits remain on some main benefit every quarter for the next two years, compared to 91% for SLP.

Age of entry is very important in predicting future costs for young adult beneficiaries, and ***family benefit history is nearly as important***. Since data is only available for beneficiaries up to age 24, this is the best test of its relative significance in predicting long-term benefit receipt, especially for new entrants. The two effects are highly correlated, as noted earlier. There is a significant cohort of beneficiaries who enter young and have intensive family benefit history; these clients are particularly at risk of being on benefit two years later.

Long-term jobseekers

Duration of past benefit receipt is also an important determinant of future benefit receipt. The number of long-term jobseekers tends to cycle up and down with the unemployment rate, with a lag, as illustrated in Figure 1.10.

Figure 1.10 Number of Work Ready Jobseekers (excluding DPB>14 and WID/WA) per quarter, split by continuous duration since last entering the benefit system.



Between June 2001 and June 2009, the proportion of Work-Ready Jobseekers (equivalent) who had been on benefits continuously for at least three years fell from 19.2% to 6.7%. However the global financial crisis (GFC) in 2008 and 2009 reduced exit rates and caused an influx of newly unemployed clients. The proportion of Jobseekers who had been on benefits for at least three years began to grow again, with a surge in 2012 as the remaining GFC entrants joined the three-years plus category. The figure sits at 13.6% as at June 2014. Of the 12,200 Work Ready Jobseekers on benefits continuously for the last three years, about 4,000 entered in this GFC period. This is illustrated in Figure 1.10.

Churn and sustainability of exits

People who exit main benefits for a full quarter still have a 23% chance of returning to a main benefit at any point within the next year. This includes both those who receive supplementary assistance, as well as those who do not. Some groups are much more likely to re-enter benefits, particularly clients exiting

from EB, JS-WR or JS-HCD. The probability of re-entry decreases significantly after more than a year off main benefits; the likelihood is halved in the second year, and the risk of re-entry falls to 5% by the fifth year off benefits.

1.5 Analysis by segment

1.5.1 Results by segment

Table 1.1 shows the segment level current client liability results. 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.

Table 1.1 Current client liability forecasts by client segment at 30 June 2014 and previous valuation. Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2014 Valuation				2013 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	Work-ready, <1 year	44,249	4,058	92	9.7	44,859	4,141	92	9.6
	Work-ready, >1 year	34,033	3,911	115	10.6	40,116	4,608	115	9.9
	HCD, <1 year	22,002	2,523	115	10.4	24,132	2,897	120	10.8
	HCD, >1year	43,715	5,959	136	11.4	46,729	6,458	138	11.4
	Sub-total	143,999	16,452	114	10.5	155,836	18,104	116	10.4
Sole Parents	Youngest child 0-2	27,204	5,767	212	16.4	29,502	6,949	236	17.6
	Youngest child 3-4	16,322	3,227	198	15.3	17,669	3,850	218	16.2
	Child 5-13, <1 year	4,140	563	136	10.9	4,041	614	152	11.5
	Child 5-13, >1 year	28,867	5,072	176	13.4	33,685	6,591	196	14.2
	Sub-total	76,533	14,628	191	14.7	84,897	18,005	212	15.7
Supported Living	Carer	8,633	1,297	150	11.0	8,203	1,184	144	10.5
	Partner	8,017	853	106	8.6	8,353	928	111	8.7
	HCD	85,840	14,842	173	13.0	84,888	15,043	177	13.2
	Sub-total	102,490	16,992	166	12.5	101,444	17,155	169	12.6
Youth	Youth payment (<18)	1,829	251	137	15.2	1,496	219	146	15.5
	Young parent payt (<19)	1,192	254	213	17.5	1,361	335	246	18.9
	Sub-total	3,021	506	167	16.1	2,857	553	194	17.1
Non-beneficiaries	Sup only, <1 year	32,525	1,488	46	6.5	34,604	1,762	51	6.7
	Sup only, >1 year	63,786	3,414	54	7.5	63,210	3,655	58	7.7
	Orphan only	5,085	486	96	7.6	4,928	474	96	7.5
	Recent exits, <1 year	148,006	7,461	50	5.5	154,704	8,762	57	5.9
	Sub-total	249,402	12,849	52	6.2	257,446	14,653	57	6.5
All segment sub-total		**575,445**	**61,427**	**107**	**9.6**	**602,480**	**68,470**	**114**	**9.9**
Expenses + Net loans			**7,575**				**8,070**		
Grand total			**69,002**				**76,540**		

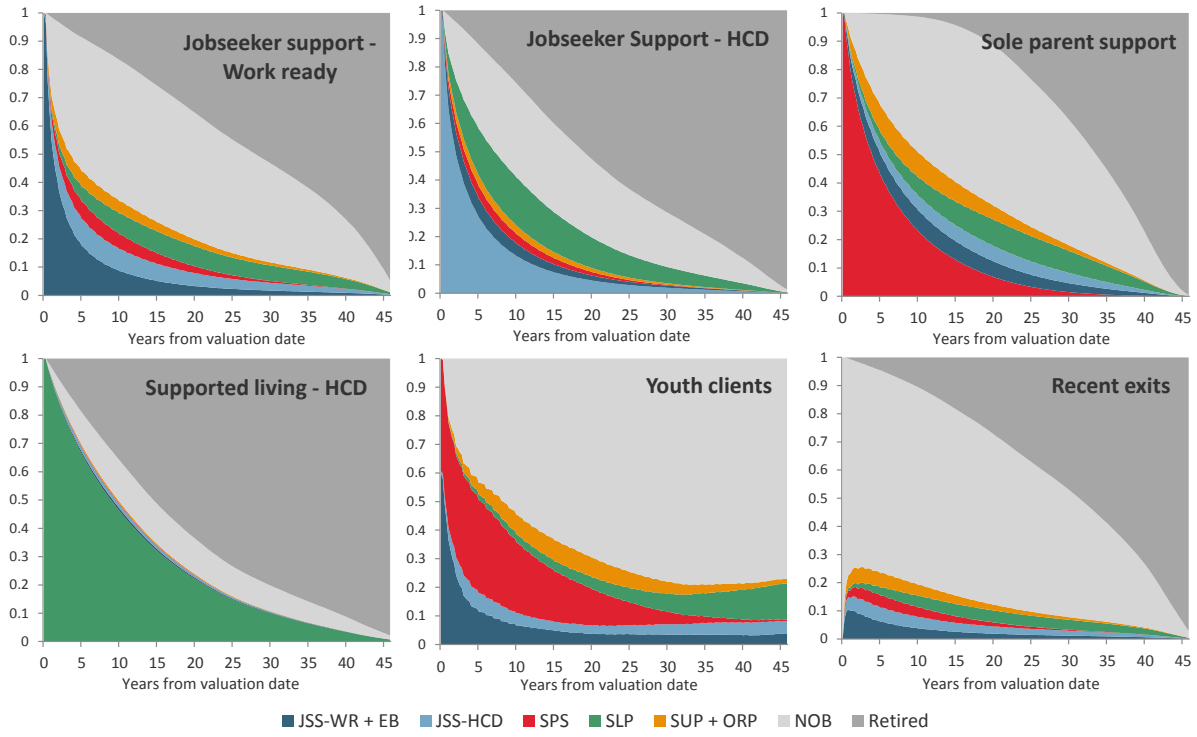
Compared to last year, the total current client liability has decreased for all segments except Carers (client numbers and average lifetime costs have both increased), Youth Payment (numbers have increased, but lifetime costs have decreased) and Orphan Only (numbers have increased, but lifetime costs have remained stable). Average lifetime costs have also decreased for all of the other segments, except for Work-ready Jobseekers, for whom they have remained stable.

1.5.2 Lifetime projections

Figure 1.11 illustrates expected transitions by segment over the next 45 years. The cohort of beneficiaries belonging to each segment on the valuation date represent 100% on the y axis of each figure. Colour coding shows whether they remain on that benefit or transfer to another. The dark grey area shows exits due to retirement, and the light grey area shows working-age exits for other reasons.

This shows, for example, that Work-ready Jobseekers have the lowest duration profile, but a significant share transfer relatively quickly to other benefits. HCD Jobseekers have a relatively high rate of transfers to SLP, while most SLP remain on that benefit until they reach retirement. Youth clients have high rates of transfers to SPS (by both Young Parents and Youth), and Sole Parents have high rates of transfers to other benefit types in the medium to longer term. The biggest changes from the previous year are in the Sole Parent and Youth segments. Shorter SPS spells mean markedly fewer current beneficiaries are expected to still be on SPS in 10 years' time.

Figure 1.11 Lifetime projections as at 30 June 2014, selected segments



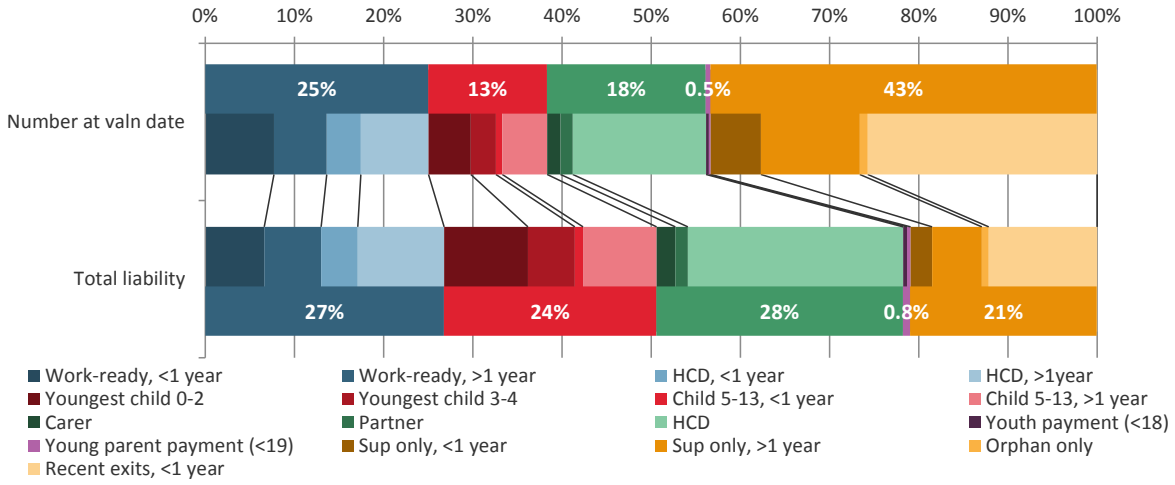
1.5.3 Relative contribution to overall liability

The difference in average lifetime cost across segments means that some segments have a disproportionately large or small impact on total liability relative to the number of clients in that segment. For instance, Sole Parents represent 13% of the clients valued, but 24% of the total liabilities. These differences are illustrated in Figure 1.12 for the various segments.

Compared to two years ago, the proportion of liabilities attributable to Supported Living segments has risen 5 percentage points (from 23% to 28%), while Non-beneficiary and Sole Parent segments have fallen by about 2 percentage points each.

Current segment is among the most important predictors of lifetime cost. Segment-level estimates are made up of individual estimates within the segments that capture other risk factors. The ten percent of clients with the highest lifetime cost (on average $275,000) make up about 26% of the total liability in the benefit system. The ten percent of clients with the lowest lifetime costs (on average $12,000) make up about 1.1% of the total liability. More detailed analysis by segment is available in Chapter 5.

Figure 1.12 Contributions of segments towards client numbers and liability total

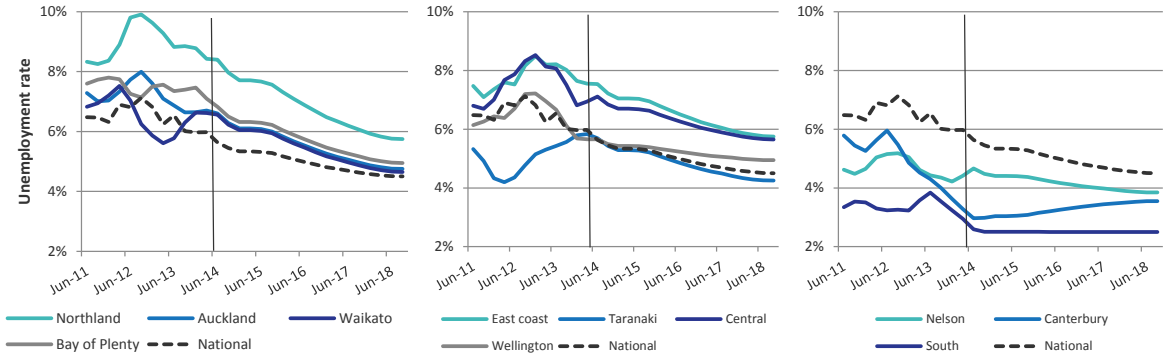


1.6 Analysis by region

1.6.1 Regional unemployment trends

Benefit dynamics are influenced by regional, as well as national unemployment trends. In this valuation, we have 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 (8.9%) and East Coast (7.8%) contrasted with the relatively low unemployment rates in Canterbury (4.9%), Nelson (4.7%) and Southern (3.3%). Further detail can be found in Section 6.2.

Figure 1.13 Actual and forecast regional unemployment rates[1]



1.6.2 Actual versus expected results for 2013/14

There has been a decrease in the number of people receiving main benefits since 30 June 2013 in all regions. Average lifetime costs have also decreased in all regions. More specifically:

- There were fewer entries than expected in all regions except Central
- Spells were shorter than expected in Central, Canterbury and Southern, and longer in Northland, Bay of Plenty and East Coast

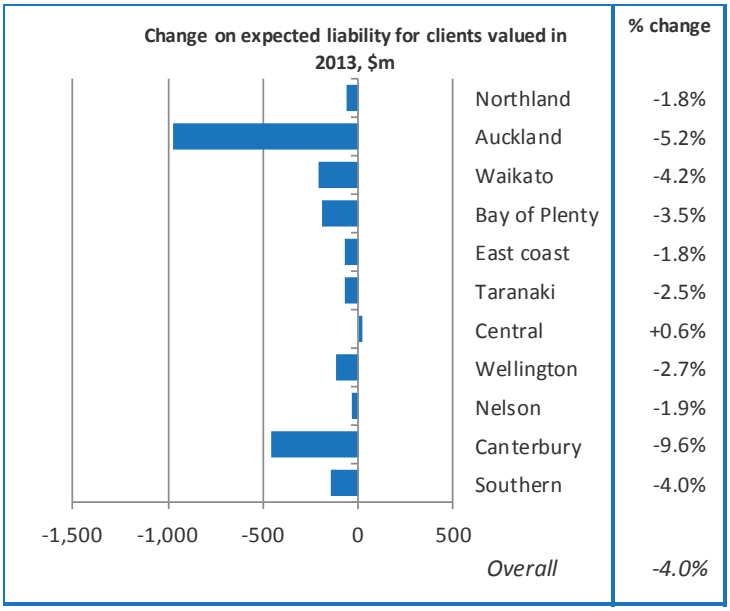
[1] Historical rates are seasonally adjusted and smoothed. See Section 6.2.

- There were more exits than expected in Auckland, Canterbury and Southern; and fewer than expected for Nelson, Bay of Plenty, Waikato and Wellington

1.6.3 Breakdown of change under management influence

Recalibrating the 2013 estimate enables us to also break down by region the $2.2 billion decrease in liability that is considered to be under management influence. Note that comparing the percentage change for each region (as in the right column in Figure 1.14) controls for population size.

Figure 1.14 Breakdown of $2.2 billion change in experience by region



How much is each region contributing to the $2.2 billion change due to experience?

The decreases in liability are spread relatively evenly, with a few exceptions.

- A decrease of nearly $ 1 billion in Auckland (5.2% below expected) explains almost half of the overall decrease.
- The Canterbury region had a very large decrease—almost 10% below expected.
- The Central region was the only region that fared (very slightly) worse than expected. The region still had a large decrease in liability, but it appears mostly explained by the significant fall in the regional unemployment rate

1.6.4 Understanding regional differences

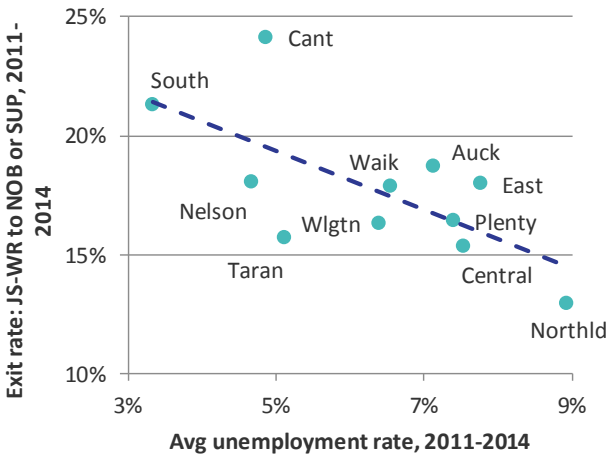
Many welfare themes are common across regions. Overall, the distribution of the liability between regions roughly corresponds with the distribution of the benefit population by region, though some regions make up a slightly greater or lesser share of the liability than of the beneficiary population.

However there are significant differences between regions. There is a difference of approximately $30,000 in average liability from highest – East Coast ($128,000) and Northland ($124,000) – to lowest – Canterbury ($97,000) and Southern ($94,000). Differences in mix of beneficiary types, regional labour markets, and demographic composition each have an impact on expected future cost. The high average lifetime costs in the East Coast are due to a greater than average proportion of Sole Parents, Supported Living and Youth.

The ranking of average lifetime costs by region for JS-WR is broadly consistent with regional unemployment rates. Figure 1.15 shows that faster exit rates amongst JS-WR clients tend to correlate with the average unemployment rate in the region (trend shown in dotted line). Notably Canterbury lies significantly above trend, with more exits than expected, relative to its unemployment rate, and Taranaki is significantly below the trend.

The corresponding table compares current unemployment rates with the average lifetime costs for JS-WR segments. The range is significant, with the East Coast and Northland regions having an average lifetime cost 13% above the national average and Canterbury 20% below. The ordering of cost tallies closely, but is not entirely aligned, with the regional unemployment rate.

Figure 1.15 Average JS-WR exit rates against average regional unemployment rate (June 2011 – June 2014); left. Average JS-WR lifetime costs vs (smoothed) regional UR (June 2014 quarter); right.



Region	Avg JS-WR segment Liability ($000s)	UE rate, Jun-14
East coast	116	7.5%
Northland	115	8.4%
Taranaki	111	5.7%
Central	109	7.1%
Bay of Plenty	108	6.8%
Waikato	106	6.6%
Nelson	102	4.7%
Auckland	97	6.6%
Wellington	96	5.7%
Southern	92	2.6%
Canterbury	81	3.0%

Differences in 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 lifetime costs in specific regions. Maori 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 co-relation with other factors, such as higher rates of intergenerational benefit history, and increased likelihood of receiving SPS.

More detailed analysis of differences between regions is provided in Chapter 6. This includes analysis comparing average lifetime costs in each region to the national average that breaks down how much of the difference can be explained by each factor.

Overall, benefit type plus benefit history explain 36% of the total difference in average lifetime cost between regions. Specific regional factors (including labour market differences) explain another 23%, while four additional demographic variables (ethnicity, age, gender and education) explain 34%.

1.7 Analysis by payment type

Most of the discussion above focuses on what benefit or segment clients are in at the valuation date. Segment-level estimates include take-up of other payment types, such as supplementary assistance, and costs associated with anticipated future transfers to other benefit types. However, the **type** of benefits (both main and supplementary) they will receive in the future is also of importance. For instance, although 25% of the current client liability is attributable to clients currently receiving SLP, future SLP benefit payments represent 32% of the liability. This reflects the movement of current clients not receiving SLP into that benefit type in the future.

Tier 2 and 3 assistance is also highly significant; Accommodation Supplement payments represent 12% of the liability, more than Jobseeker Work-ready main benefit payments. These results are discussed further in Chapter 7. It presents results by payment type, as well as further detail on 2nd and 3rd Tier assistance, loans and expenses.

1.8 Projected changes to the benefit system

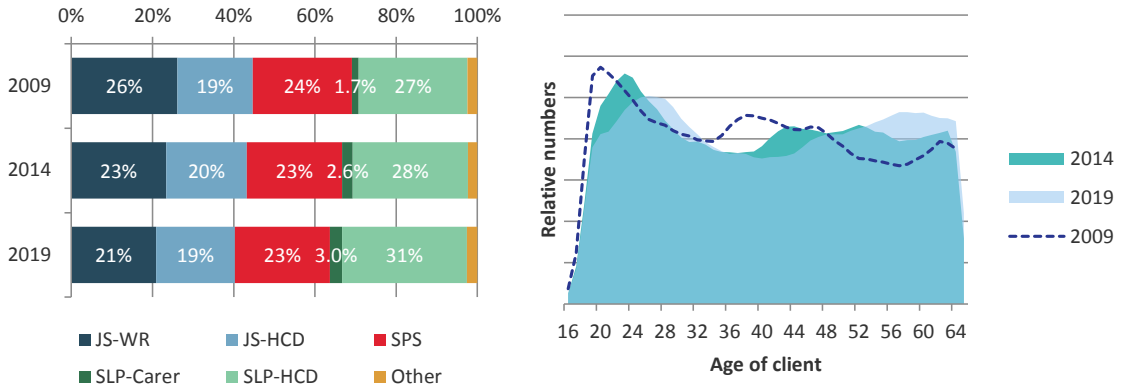
In addition to looking at clients who are currently in the benefit population, the valuation also considers who is expected to enter in the future, as well as implications for how the benefit system is forecast to evolve over time. We also estimate the extent to which the total estimates are sensitive to different parameters, such as a change in the unemployment rate.

Our forecast for the total estimate in the next valuation (as at 30 June 2015) is a further reduction in the liability to $67.0 billion. This amount is forecast to reduce gradually each year to $63.7 billion (as at 30 June 2019). Changes to any of the key drivers discussed in Section 1.2 will influence this result.

We expect past trends in characteristics to largely continue. Our forecasts show that:

- The make-up of the benefit population is shifting away from Jobseeker benefits and towards Supported living payments. SLP clients represented 29% of the main benefit client base in 2009, compared to our forecast 34% in 2019, an increase of five percentage points.
- The benefit population is getting older, partly due to the mix of benefits but also within benefit types. The average client age will increase by nearly a year by 2019.
- The share of clients will decrease for the Auckland and Canterbury regions, but increase for Central, Wellington and Nelson.

Figure 1.16 Benefit type and age distribution for June 2009, June 2014 and June 2019



2 BACKGROUND AND KEY DEVELOPMENTS

INSIDE THIS SECTION:

- The contents and structure of this report
- The context — an investment approach to welfare
- Key drivers of future cost
- Developments in 2013/14 that affect these key drivers, such as Welfare Reform changes

2.1 The contents and structure of this report

This report provides insight into New Zealand's benefit system. The purpose of this report is to provide useful information to MSD about the effect of reforms to the benefit system, and to provide insight into how the benefit system is changing over time. 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 2014) 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 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, Background and Key Developments. Chapter 2 is primarily for readers seeking context about NZ's benefit system and the purpose and structure of valuations.

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 2014 valuation and its implications.

Part C — Approach is comprised of Chapters 9 to 11. 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.

New features in the 2014 valuation

The 2014 valuation covers the final round of policy changes through Welfare Reform. This includes consolidation of benefits into Jobseeker Support (JS), Sole Parent Support (SPS), Supported Living Payment (SLP) and Youth benefits. While these changes have been telegraphed in previous reports through the structure of client segments, there are necessarily some changes to reporting as the new benefit types come into effect.

The 2014 valuation also includes new characteristics that provide additional insight into patterns of benefit receipt, risk factors for long-term benefit receipt, and lifetime costs. A data match by MSD has enabled us to include information on family benefit history for the first time, for those beneficiaries

currently aged under 25. We have also added a regional unemployment indicator and developed projections of regional unemployment rates, to better estimate lifetime costs and interpret regional differences. An indicator of 'last benefit receipt' has also been introduced. This particularly strengthens analysis of the sustainability of exits from and re-entries into main benefits.

2.2 Background

During the last few years the Government of NZ has reformed the benefit system significantly. Successive legislative changes have strengthened the system's 'return to work' focus. Operational changes are being made to provide active support to people receiving a benefit, in order to better help clients gain employment.

Underpinning these policy and operational changes is an investment approach to reducing long-term benefit receipt and its associated social and financial outcomes. This approach was a key recommendation of the Welfare Working Group, established by Cabinet in 2010 to develop options for reducing long-term dependency.

Annual actuarial valuations of the benefit system, such as this one, are a key enabler of the investment approach. Valuations make visible the key drivers of the future cost— including policy and labour market changes—and quantify their impact on the future cost. Annual valuations, combined with monitoring and evaluation, also tell a performance story about how MSD is managing the future cost of the benefit system.

Taylor Fry has been working in partnership with MSD and the Treasury since June 2011 to help develop the investment approach in the benefit system. Further detail is provided in our initial report on the feasibility of an investment approach,[2] and in our three prior valuations of the benefit system.[3] All four reports are publicly available on MSD's website.

2.2.1 Definition of liability in the welfare context

The investment approach borrows from insurance, where valuations of outstanding claims liabilities are required to ensure schemes' financial solvency. With no precedent for valuing a welfare system, we have worked closely with MSD and the Treasury in previous years to develop a valuation definition that best facilitates the investment approach for welfare. Further detail is available in our previous valuation reports and in Chapter 9.

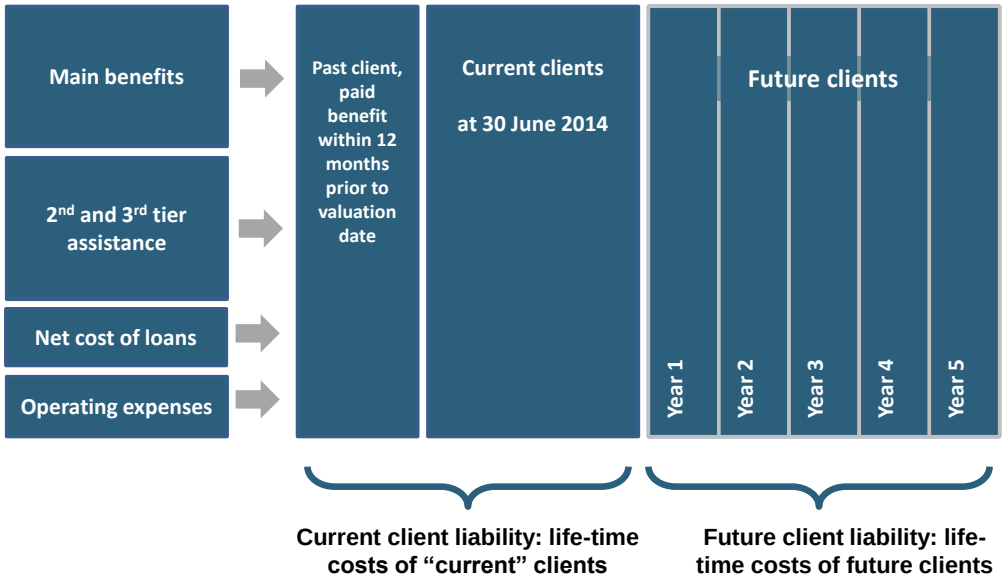
Liability – for current clients – is defined as: The estimated future lifetime costs of all benefit payments and associated expenses for working-age clients who received a benefit payment in the 12 months up to and including the effective date of the valuation.

The main estimate of the future liability in the benefit system, as defined above, is the lifetime cost of **current** clients. We will sometimes refer to this simply as the 'liability' when the context is clear. As illustrated in Figure 2.1, we also include estimates of the lifetime costs associated with **future** clients—that is, the people we expect to enter the benefit system during the next five years, based on projections.

[2] https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/evaluation/taylor-fry-ia-feasibility/taylor-fry-feasibility-of-an-ia-for-benefit-report.pdf

[3] 2011 Valuation: http://www.msd.govt.nz/about-msd-and-our-work/newsroom/media-releases/2012/valuation-report.html
2012 Valuation: https://www.msd.govt.nz/about-msd-and-our-work/newsroom/media-releases/2013/taylor-fry-welfare-valuation.html
2013 Valuation: https://www.msd.govt.nz/about-msd-and-our-work/newsroom/media-releases/2014/taylor-fry-welfare-valuation.html

Figure 2.1 Definition of liability



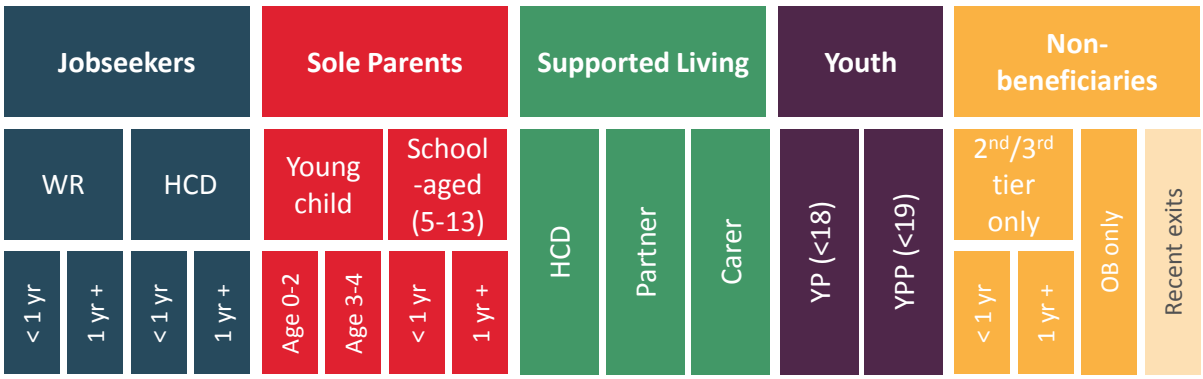
2.2.2 Benefit population

The 2014 current client liability values the lifetime cost of about 570,000 working-age residents, representing one fifth of New Zealand's working-age population. The benefit population is diverse. To discuss trends more meaningfully, this large population has been partitioned into more homogenous subgroups, particularly **Beneficiary segments** and **Work and Income regions**.

Beneficiary segments

Client segments are stable groupings of clients that are mutually exclusive; each client belongs to one and only one segment at any given time. This is particularly useful to give insight into different patterns of lifetime benefit receipt and risk factors, and enables system-wide operational control. Taylor Fry worked with MSD to develop a segmentation that would be meaningful both statistically (differentiating clients with high and low lifetime cost) as well as operationally (useful in managing the benefit system).

Figure 2.2 Beneficiary segments



The top level of segmentation is based on a clients' main benefit on the valuation date. Beneath the top level, segments are based on factors specific to each client group. Jobseekers (JS), for example, are either 'Work-ready (WR)' or have deferred work expectations due to 'health conditions, illnesses or disabilities (HCD).' They are further split into those who have received benefits for less than a year or more than a year. Sole Parents (SP) are segmented by the age of the youngest child, which affects their work and

work preparation obligations. Further detail on the rationale for the segmentation is available in the 2012 valuation report.

Chapter 5, the segment level analysis section of this report, gives us a picture of clients' lifetime movements through the benefit system. Segment level analysis includes take-up of second-tier and third-tier assistance, and expected transfers to other benefit types. This means that the estimated lifetime cost for a Jobseeker on the valuation date includes not only Jobseeker Support (JS) payments, but also supplementary assistance, and expected transfers to other benefit types in the future.

Work and Income regions

Regional break-downs of the benefit population provide a useful overview of the benefit system. Within regions, clients can be further sub-divided into segments for detailed operational control at the regional level.

Regions and sites play an important role in managing the benefit system. However, important differences between regional labour markets have been obscured in previous valuations, which were based on a national unemployment rate indicator. For the first time in this valuation we have included region-specific unemployment rate indicators. This is particularly useful to begin to distinguish between labour market impacts and performance at a regional level.

Chapter 6, the regional analysis section of this report, explains our approach, and provides analysis of differences in lifetime patterns of benefit receipt by region.

Figure 2.3 Work and Income regions

2.2.3 Scope of valuation

The valuation considers the following component payments and expenses:

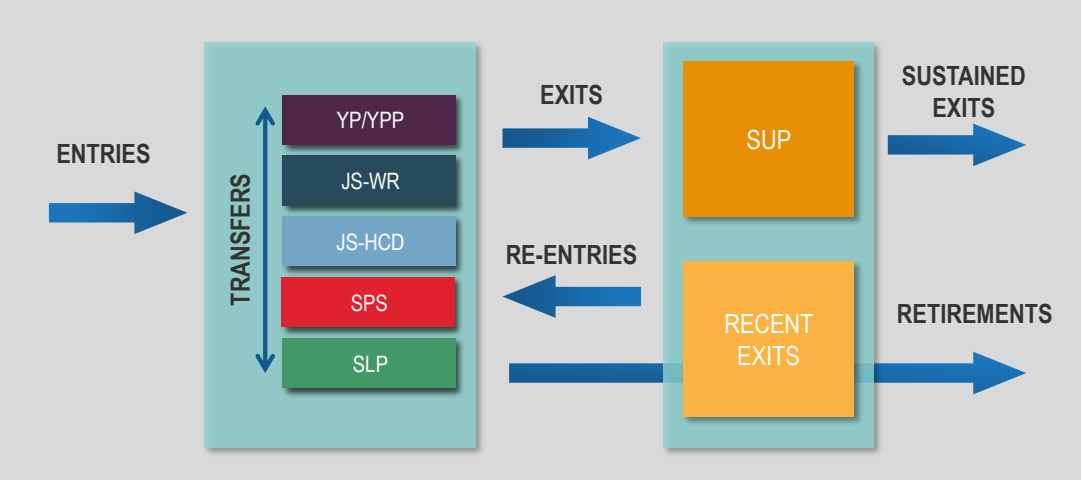
- **Benefit payments:**
  - Main benefits: Principally Jobseekers Support (JS), Sole Parent Support (SPS), Supported Living Payment (SLP), and Youth/Young Parent Payments (YP/YPP)
  - Supplementary (SUP) and Hardship Assistance: Principally Accommodation Supplement (AS) and other supplementary assistance
- **Net loans/debts:** Recoverable Assistance and over-payments, including fraud, net of recoveries
- **Operating expenses:** MSD's investments in employment and work-readiness outcomes, and administrative expenses.

Most of the analysis in this report focuses on income support payments which comprise over 85% of the annual cost of the benefit system. Chapter 7 provides a breakdown of valuation results by payment component. Further detail on the valuation components and rationale for scope inclusions and exclusions is also provided in Chapter 9.

2.3 Key drivers of future cost

The valuation is an estimate of how beneficiaries move through the system (referred to here as benefit dynamics) and the future cost associated with those patterns of benefit receipt. The figure below illustrates, from a client perspective, how individuals may move through the benefit system.

Figure 2.4 Benefit dynamics: Client transitions through the benefit system



The valuation first models how likely clients are to transition through given benefit types in the benefit system, as well as the rate at which they exit and re-enter benefits. Benefit payments and related costs are estimated throughout these transitions. We model factors that influence benefit dynamics, such as the labour market and policy changes, as well as factors that influence cost, such as benefit rates.

Further detail on our approach to modelling the valuation is provided in Chapter 9.

There are a number of factors that will impact the liability estimates from year to year. These can be broadly categorised into drivers of benefit dynamics and other financial drivers. These drivers can also be split into items that can potentially be influenced directly through Government's management of the benefit system (such as policy changes and performance), and those that cannot (such as the unemployment rate and inflation).

Drivers of benefit dynamics

- **Policy settings:** eligibility parameters and obligations (such as work and participation expectations)
- **Operations:** active management of the benefit system, in particular investments in employment and work-readiness outcomes
- **Labour market:** levels of benefit take-up, particularly JS, are highly sensitive to the unemployment rate (UR)
- **Demographics:** changes to the number and age distribution of working-age New Zealanders influence who is eligible and for how long; these changes tend to occur over long periods of time

Other financial drivers of future cost

The future cost associated with these expected patterns of benefit receipt depends on:

- **Benefit rates:** payments associated with each type of benefit
- **Inflation rate:** benefit rates are indexed to inflation (CPI), in the absence of other changes to the benefit structure
- **Discount rate:** reflecting the decreasing value of money over time.

An analysis of change to these drivers over the year to June 2014, and which of these changes can be influenced by Government forms a central part of the valuation.

2.4 Developments in 2013/14

2.4.1 Policy changes

The 2014 valuation is the first to include the last round of policy changes through Welfare Reform, which were effective mid-July 2013. Analysis of the impacts of these changes is a key feature of this valuation report.

Key policy changes effective July 2013 are as follows.

- Creation of a new **Jobseeker's Support (JS)** benefit:
  - Clients formerly on Unemployment Benefit (UB), Sickness Benefit (SB), Woman Alone or Widow's Benefit and Domestic Purposes Benefit with youngest child at least 14 (WA/WB/DPB) are treated as a single group in terms of benefits and review
  - There are work and work preparation expectations for more clients
  - A subcategory within JS exists for those who can only work part-time or cannot look for work temporarily (for example, if they have a health condition, injury or disability)
- Creation of the **Sole Parent Support (SPS)** benefit:
  - SPS replaces DPB or WA/WB for beneficiaries with a youngest child aged under 14
  - Eligibility conditions and payment levels are the same as the previous DPB
- Creation of **Supported Living Payments (SLP)**:
  - This covers people who previously received Invalid's Benefit (IB) or DPB Care of the Sick and Infirm (CSI) Benefit

In addition, there are some new obligations related to overseas travel and the placement of dependent children in education. The option for full-time study while on benefit has also been extended to cover some JS clients, whereas previously it was available to SPS and SLP clients.

The valuation also captures ongoing impacts from reforms that took place prior to the reporting period, notably policy changes in August and October 2012, as outlined below.

- Introduction of **new work requirements** for DPB, WB/WA and Partners from October 2012:
  - Increased work and work preparation obligations for SPS, and related changes to WB/WA and Partners
  - Introduction of a subsequent child rule, which changes eligibility for SPS beneficiaries with further children born while on benefit
- Introduction of the **Youth Service** from August 2012:
  - A new program to support youth and young parents to pursue education, training and work-based learning was introduced in August 2012
  - Changes included payment cards, incentive payments for activities such as parenting courses, childcare assistance for education and training, and outcomes-based external case management.

Section 3.8.3 analyses the impact of these changes on benefit dynamics and on the liability.

2.4.2 Operational changes

This valuation also captures significant changes to Work and Income's operating model during, and in the lead-up to, the reporting period.

The past three valuations have all shown very large decreases in the share of the liability under management influence, reflecting significant policy changes each year as well as the introduction of a new operating model. In the absence of further policy changes, incremental operational performance improvements alone would be expected to drive smaller year on year changes. This would not be an

indication of weakening performance, as current performance has already been reflected in projections for future years.

The principal operational change in 2013/14 has been the national roll-out of a **new service delivery model**, including the following significant modifications.

- In October 2012, Work and Income began to trial a new service delivery model in 24 sites.
- The new model represents a reallocation of resources that customises the level of work-focused support, with the most active case management provided on a one-to-one basis for clients at risk of long-term benefit receipt who can work, with support. In particular, this increases case management support for young Jobseekers, and Sole Parents.
- Investments in employment and work-readiness services purchased from external providers have been similarly realigned.
- The model was rolled out nationally from July 2013, with progressive improvements such as more tailored case management for young entrants, as well as HCD beneficiaries. Further trials of new approaches for specific groups are scheduled after 30 June 2014.

Since operational and policy impacts are occurring simultaneously amongst the benefit population, the attribution of impacts between the two carries a degree of uncertainty. Our approach is to begin in this valuation with a high level analysis of the relationship between consecutive and concurrent policy and operational changes. In future valuations, we will attempt to distinguish between these changes in attribution analysis.

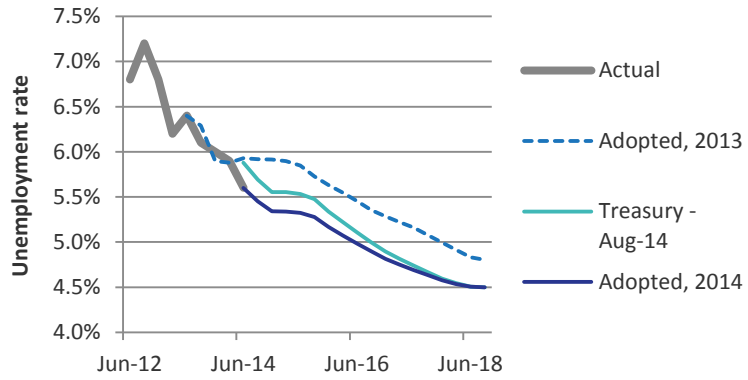
We do assess impacts from an **Internal Revenue Department (IRD) data match** to identify over-payments, as these are visible in the data available to us. This analysis is discussed in Section 3.8.4.

2.4.3 Labour market changes

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 was reasonably similar to what was forecast for most of 2013/14, but fell to 5.6% at June 2014, which was lower than the expected rate of 5.9%. The latest Treasury forecasts (made before official June 2014 numbers were available) have reduced the average 2014/15 unemployment rate by 0.35% and allowed for a faster transition to the long term forecast rate of 4.5% by June 2018 (previously June 2022).

Figure 2.5 Updated Treasury actual and forecast unemployment rates vs. expected



The net effect is a **materially lower** forecast unemployment rate from 2014 through to 2020. If today's forecasts were applied to last year's valuation, the liability would have been 0.5% (or $0.4 billion) lower. The liability attributable to new entries over 2013/14 would also have been lower by a similar absolute amount. Figure 2.5 illustrates these changes.

2.4.4 Demographic changes

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.

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.

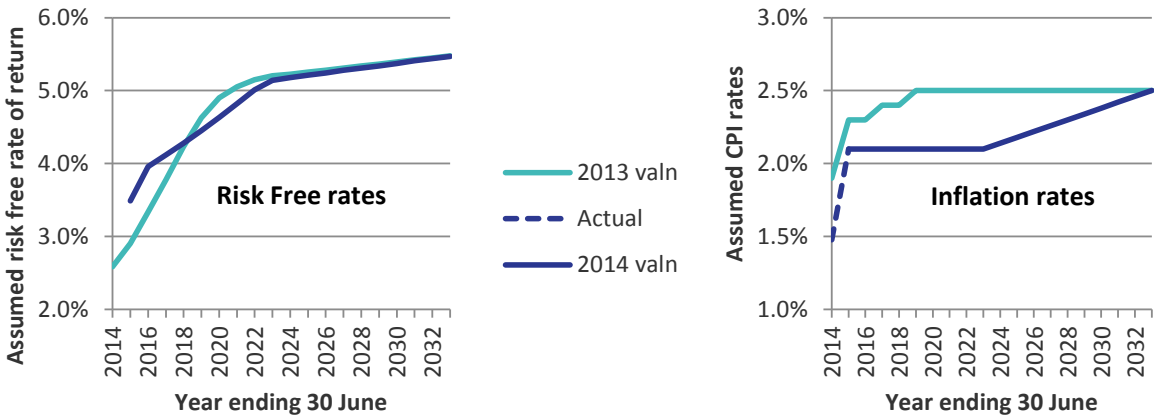
2.4.5 Financial drivers

There have been no changes to **benefit rates** through Welfare Reform. These were indexed at CPI rates at 1 April 2014 as usual. The only exceptions to this are the Accommodation Supplement (AS) rates, which can be adjusted for local housing conditions. These changes are allowed for in the regional level modelling of AS payment rates.

Inflation and discount rates affect the liability results, but are outside of the control of MSD. The valuation uses rates set by NZ Treasury. Inflation forecasts affect the projected increase in benefit levels, so lower assumed levels will tend to reduce the liability. We discount the liability to June 2014 dollars using risk free investment rates of return 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 2.6.

- **Inflation** experience was lower than expected, and the Treasury has lowered their long range forecasts by reverting to 2.5% at a slower rate. This means that by 2030 we now expect benefit payment rates to be 5% lower than forecast in the previous valuation, and that the overall liability will fall by $2.0 billion (2.7%).
- **Discount rates** are fairly similar to expected, but a little higher in the short term, reducing the liability by about $0.3 billion (0.4%).

Figure 2.6 Assumed risk free discount and inflation rates



PART B
RESULTS

3 MAIN RESULT AND ANALYSIS OF CHANGE

INSIDE THIS SECTION

- Main result and movement in the liability between 2013 and 2014 valuations
- Actual versus expected results for 2013/14
- Projected numbers and payments
- Impact of reforms on the duration of benefit receipt
- Current and future client liability estimates
- Analysis of the change under management 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 2014. It provides detailed analysis of actual experience in 2013/14 against forecasts, and how changes to key drivers of future cost have influenced the liability. This chapter also includes an analysis of the impacts of Welfare Reform policy and operational changes. Impacts of the Youth Service are examined separately in Chapter 4, in the context of related features of interest.

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 2014 is $69.0 billion. This is the expected cost of benefit payments and related expenses for clients who received income support in 2013/14 from the valuation date until they reach retirement age.

This result is $7.5 billion lower than the estimate in the previous valuation for the liability as at 30 June 2013 (a reduction of about 10%). The difference breaks down as follows:

- A $2.6 billion downwards revision of the 2013 liability due to changes to economic parameters
- An expected decrease in the liability over the year of $2.2 billion (expected exits and entries)
- An additional decrease of $2.2 billion reflecting better than expected performance over the year
- A decrease of $0.5 billion due to methodology changes unrelated to experience or performance.

Over the course of 2013/14, there were on average 3,400 fewer beneficiaries in any given quarter, and payments over the year were $34 million lower than forecast in the 2013 valuation. Expected payments had already been lowered in last year's valuations to reflect improved experience in 2012/13. Compared to pre-reform baseline forecasts in the 2012 valuation, there has been a cumulative reduction in payments of $606 million over two years.

Welfare Reform over the past two years appears to have reduced expected future benefit receipt by a total of about 650,000 benefit years, or 12%. This is due to both fewer beneficiaries than expected (reducing expected future years by 8%), and reduced expected benefit years by current beneficiaries over their lifetimes (by 4%).The results are particularly strong for Sole Parents and Youth. Welfare Reform has reduced the average expected duration of benefit receipt by 1.2 years for Sole Parents, and by 3 years for Youth.

Highlights of impacts of the July 2013 Welfare Reform changes include:

- More of the beneficiaries newly classified as Jobseekers (JS) — particularly Sole Parents with children 14 and older, but also former Widows/Women Alone — are exiting benefits faster
- There is also growth in transfers by this group to other benefits, particularly JS-HCD
- The number of JS Partners appears to be dropping significantly, accounting for much of the decrease in overall JS numbers.

3.2 Current and future client liability estimates

The estimated current client liability as at 30 June 2014 is $69.0 billion. This is the expected cost of future benefit payments and related expenses for clients who received income support in 2013/14. The result is broken down by benefit payment type. We provide many other breakdowns of this result throughout the report. For instance, Section 5 covers the liability by segment, while Section 6 looks at a regional level.

Table 3.1 Current and future client liabilities subdivided by future benefit type, inflated and discounted[4]

Component	Current client liability $b	Future client liability $b				
		2014/15	2015/16	2016/17	2017/18	2018/19
Tier 1						
JS-WR	5.4	0.88	0.86	0.85	0.85	0.86
JS-HCD	7.0	0.85	0.85	0.85	0.85	0.87
SPS	10.6	1.19	1.20	1.20	1.21	1.23
SLP-HCD	20.5	1.28	1.29	1.29	1.31	1.32
SLP-Carer	1.8	0.17	0.17	0.17	0.17	0.17
EB	0.2	0.04	0.04	0.04	0.04	0.04
OB	1.3	0.12	0.13	0.13	0.13	0.13
Subtotal	**46.9**	**4.53**	**4.54**	**4.52**	**4.56**	**4.62**
Tier 2:						
AS	8.6	1.00	1.00	1.00	1.01	1.02
DA	1.7	0.12	0.12	0.12	0.12	0.12
CDA	0.7	0.07	0.07	0.07	0.07	0.07
CCS	1.0	0.17	0.17	0.17	0.17	0.18
Subtotal	**12.0**	**1.36**	**1.37**	**1.36**	**1.37**	**1.39**
Tier 3:						
HS	2.4	0.25	0.25	0.25	0.25	0.25
EI	0.1	0.03	0.03	0.03	0.03	0.03
Subtotal	**2.6**	**0.27**	**0.27**	**0.27**	**0.28**	**0.28**
Other:						
Expense	7.2	0.73	0.73	0.73	0.73	0.74
Net loans	0.3	0.05	0.05	0.05	0.05	0.05
Subtotal	**7.6**	**0.77**	**0.78**	**0.78**	**0.78**	**0.79**
Grand total	**69.0**	**6.94**	**6.96**	**6.94**	**6.99**	**7.08**

[4] Current client liability is discounted to 30 June 2014. Future liability years are discounted to the middle of that year. For example, 2014/15 future client liability is discounted to 31 December 2014. Numbers presented may not add perfectly due to rounding.

The future client liability estimates associated with incoming clients in each of the next five years are also presented in the table. The estimate for new entrants in 2014/15 is $6.94 billion, slowly rising to $7.08 billion in 2018/19. Compared to the previous valuation these numbers are slightly lower and flatter. This largely reflects the updated shape of the unemployment rate forecast, shown in Figure 2.5. Chapter 8 includes a more detailed discussion of clients entering the benefit system and projections of the main valuation estimate in future years.

This is the first valuation to project benefit types according to the post-reform environment. As a result, there is a sub-set of the former DPB benefit population now included within the JS-WR benefit, and WA/WID benefit payments have also been rolled into JS-WR.

The equivalent 2013 current client liability was $76.5 billion. Compared to the 2013 valuation, a number of changes are visible. First, payments of SLP-HCD benefits (formerly Invalid Benefit) have increased from 28% to 30% of the 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 nearly half of all Tier 1 benefit payments in the current client liability. Broadly, in understanding this year's result, there are a number of important steps:

- What events occurred in 2013/14 to drive change (Section 3.3)?
- What changes materialised in the 2013/14 year (Section 3.4, with analysis in following sections)?
- How have these changes been incorporated into our projections for future years (Section 3.8.5)?

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

3.3 Summary of changes to key cost drivers in 2013/14

Drivers of benefit dynamics:

- **Policy settings:** Welfare Reform changes effective July 2013 (such as consolidation of benefit types) and ongoing effects from earlier changes, particularly those effective October 2012 and August 2012
- **Operations:** National roll-out of new service delivery model from July 2013 and other key initiatives, such as IRD data matching from early 2013
- **Labour market:** A lower than expected unemployment rate, reducing last year's estimated liability by 0.5%, plus lower entries over 2013/14
- **Demographics:** No significant change from expected in the valuation year.

Other financial drivers:

- **Benefit rates:** No significant change from expected in the valuation year
- **Inflation rate:** Lower than expected, reducing the liability by 2.7%
- **Discount rate:** Similar but slightly higher than expected, reducing the liability by 0.4%.

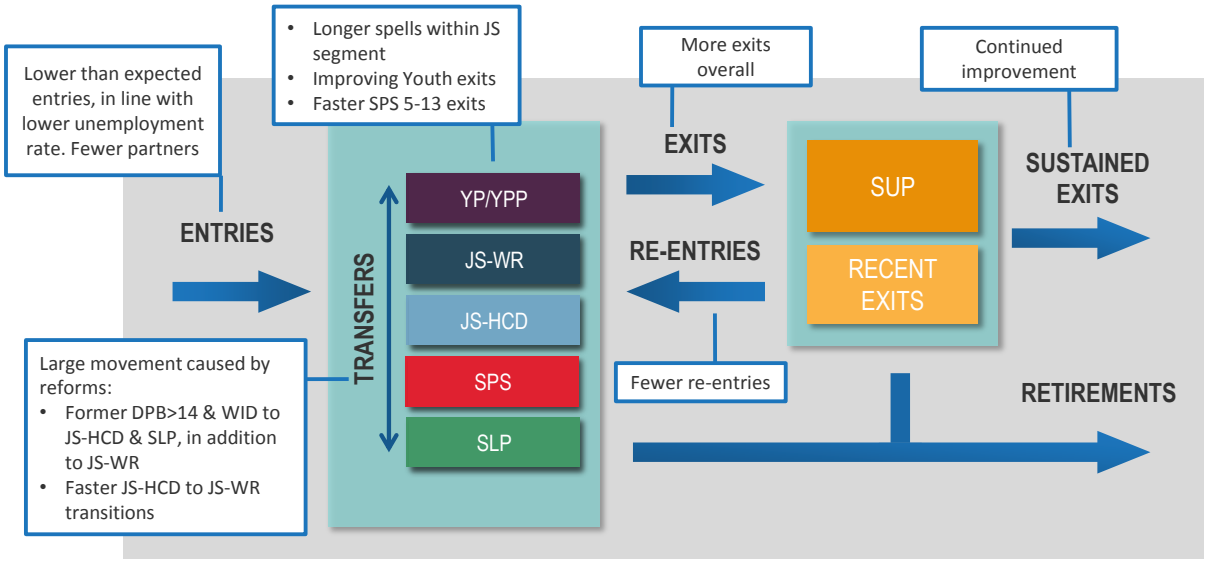
3.4 Actual versus expected results for 2013/14

3.4.1 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 3.1 Significant changes to benefit dynamics in 2013/14



3.4.2 Actual versus expected results by segment in 2013/14

This section compares actual and expected numbers of beneficiaries and payment amounts for 2013/14, split by client segment as at 30 June 2013. Future clients who were expected to enter in 2013/14 are also included as a separate group. The results are summarised in Table 3.2 as well as in Figure 3.2. Total results have emerged reasonably close to what was forecast a year ago.

On average across the 2013/14 year, there were 0.7% fewer beneficiaries in any given quarter than predicted at the previous valuation, which is about 3,400 clients. This difference increased over the course of the year; there were 6,200 fewer beneficiaries than expected in the June 2014 quarter. Of clients on benefit at 30 June 2013, SPS (child 5-13) and Youth clients have seen the biggest reductions in numbers compared to expected. Re-entries from recent exits were also significantly below expected levels; this also occurred in the last valuation.

Many client segments emerged very close to projected levels. For example, numbers of SLP clients (Carer, Partnered and HCD) were all within half a percentage point over the year. Supplementary and Younger SPS segments were also very close to expected.

The only main benefit to see higher than expected client numbers over the year related to JS-WR clients.Exit rates for these clients have decreased relative to expectations, for a number of reasons discussed in further detail in Chapter 5.

Average payment levels were slightly higher than expected, particularly for JS, Youth Payment and SLP-Carer segments. This difference is partly attributable to the decrease in partnered spells (see Section 3.8.3), which have a lower rate of payment, as well as an increased number of sole parent clients, who receive a higher rate. Payment rates for clients on SLP-Carer were about 4% larger than expected.

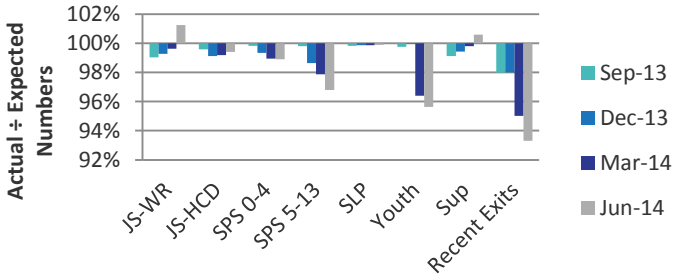
These results for client numbers (on average 3,400 fewer beneficiaries) and payment levels combine to give total payments 0.5% or $34m lower than expected in 2013/14.

Although results appear fairly stable when viewed at this segment level, there has been significant transfer activity across benefit types, primarily as a result of Welfare Reform. This is discussed further in Section 3.8.3.

Table 3.2 Actual versus expected benefit results for the 2013/14 year, by segment as at 30 June 2013

Top tier segment	Segment	Avg # on benefit in qtr			Avg Qtrly Benefit			Total payments 2013/14		
		Actual 000s	Expected 000s	Ratio	Actual $	Expected $	Ratio	Actual $m	Expected $m	Ratio
Jobseeker Support	WR < 1	33.4	34.0	98%	2,662	2,651	100%	356	361	99%
	WR > 1	36.0	35.6	101%	3,622	3,497	104%	522	499	105%
	HCD < 1	20.1	20.8	97%	3,192	3,191	100%	257	265	97%
	HCD > 1	44.1	43.8	101%	3,648	3,537	103%	643	620	104%
Sole Parent	Ch 0-2	28.3	28.4	99%	5,393	5,352	101%	610	608	100%
	Ch 3-4	16.8	17.0	99%	5,231	5,261	99%	351	357	98%
	Ch 5-13 < 1	3.6	3.7	95%	4,591	4,921	93%	65	73	89%
	Ch 5-13 > 1	32.1	32.5	99%	5,127	5,188	99%	658	675	97%
Supp Living	Carer	7.7	7.8	99%	4,712	4,545	104%	146	142	103%
	Partner	7.9	7.9	100%	3,553	3,544	100%	112	112	100%
	HCD	81.9	82.0	100%	4,304	4,255	101%	1,411	1,396	101%
Youth	Youth payt	1.2	1.3	98%	2,673	2,407	111%	13	12	109%
	Young parent	1.3	1.3	98%	4,718	4,947	95%	24	26	93%
Non-ben	Sup <1yr	28.3	28.7	99%	1,015	1,039	98%	115	119	96%
	Sup >1yr	56.1	56.0	100%	1,106	1,088	102%	248	244	102%
	Orp only	4.5	4.5	100%	3,574	3,474	103%	65	63	103%
	Recent exits	28.7	30.0	96%	2,353	2,563	92%	271	308	88%
Future clients		52.6	52.8	100%	1,852	1,948	95%	390	411	95%
Total		484.7	488.1	99.3%	3,227	3,222	100.2%	6,256	6,290	99.5%

Figure 3.2 Client numbers over the 2013/14 year, by segment as at 30 June 2013



3.4.3 Actual payments versus pre-reform expectations

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

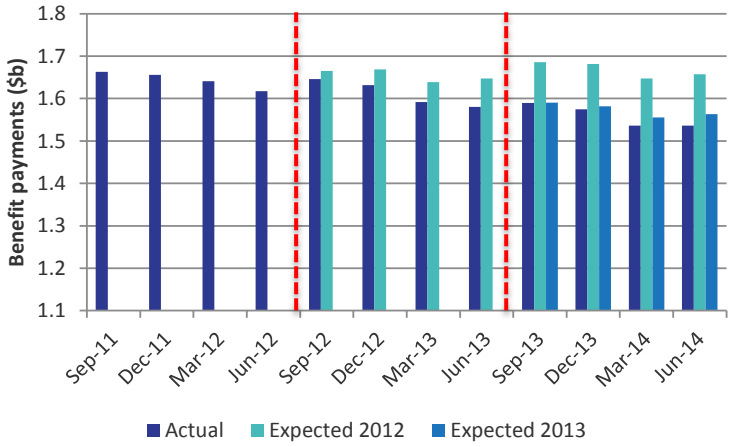
Figure 3.3 shows actual benefit payments against our expectations in the 2012 and 2013 valuations. The 2012 valuation had a relatively flat projection, with lower unemployment offset by benefit inflation at CPI and most other elements stable.

Compared to pre-reform levels forecast in the 2012 valuation

- Payments in 2012/13 were $170 million lower, or 2.6%
- Payments in 2013/14 were $436 million lower, or 6.5%
- Payments in 2014/15 are projected to be $656 million lower, or 9.8%

A quarter of this 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 seen since 2012 have been broadly in line with forecasts made at the time. The remainder appears to be due to policy and operational changes undertaken by Government and MSD.

Figure 3.3 Actual and expected benefit payments



3.4.4 Other comments on actual versus expected experience

There are many ways to view actual versus expected results. The segment split results above are important, but obscure some other interesting effects:

- **Partnered Jobseekers:** The number of partners of Jobseekers also receiving benefits has fallen sharply. While the number of Jobseekers as primary beneficiaries has fallen by about 2% over the year, the number of Jobseeker partners has fallen by 30%. We are not completely certain as to the cause of the decrease, although the following are likely explanations:
  - Pre-benefit activities and other case management of partners
  - Changing work expectations for partners (in line with Sole Parents when there are children)
  - A reduced tendency to record partnered spells under the new benefit definitions

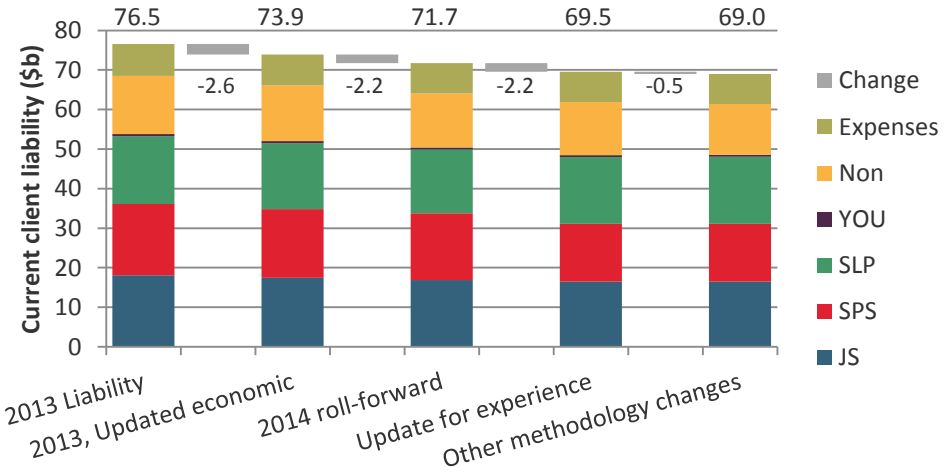
- **Age:** Results by age for the 2013 current client cohort were generally close to expected (within 1-2% for all age groups). However there was more variation for new clients entering the system; entries amongst clients aged below 20 were 16% higher than expected, while entries from clients 20 or more were 13% below the levels expected.

- **Regions:** Auckland and Canterbury regions have had particularly good results compared to expected over 2013/14. Conversely, the Central region performed relatively poorly against the previous valuation. Regional impacts are discussed further in Chapter 6.

More detailed breakdowns examining the experience over 2013/14 can be found in Appendix I.

3.5 Movement in the liability between 2013 and 2014 valuations

Figure 3.4 Analysis of change in current client liability between 2013 and 2014 valuations, split by client segment at valuation date.



The 2014 current client liability is $7.5 billion lower than last year's estimate as at 30 June 2013; about 10% lower. This difference is large, but attributable to a number of sources, as summarised below.

- **A $2.6 billion downwards revision of the 2013 liability due to changes to economic parameters:** If we had our current knowledge of economic variables (their evolution over 2013/14 and the latest Treasury forecasts), the 2013 current client liability would have been $73.9 billion. Most of this ($2.0b) is due to lowered inflation expectations in the short to medium term, which reduces benefit levels. The remainder is evenly split between slightly lower unemployment rates and slightly higher discount rates.

- **An expected decrease in the liability over the year of $2.2 billion**: We do not expect the liability to remain stable over time; benefit payments are made over the course of the year, some clients exit, and new beneficiaries enter the system. The falling rate of unemployment meant that at the last valuation we expected the liability to fall $1.9 billion as exits outnumbered entries. When updated for the lower than expected unemployment rates over 2013/14, this becomes an expected $2.2 billion decrease.

- **An additional decrease of $2.2 billion reflecting better than expected performance over the year:** Even allowing for changes to economic parameters, the liability has still 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 3.8. In previous years we have split this amount into 'Changes due to leaves and joins' and 'Update to actuarial models'. This distinction is more difficult this year, and is also discussed in Section 3.8.

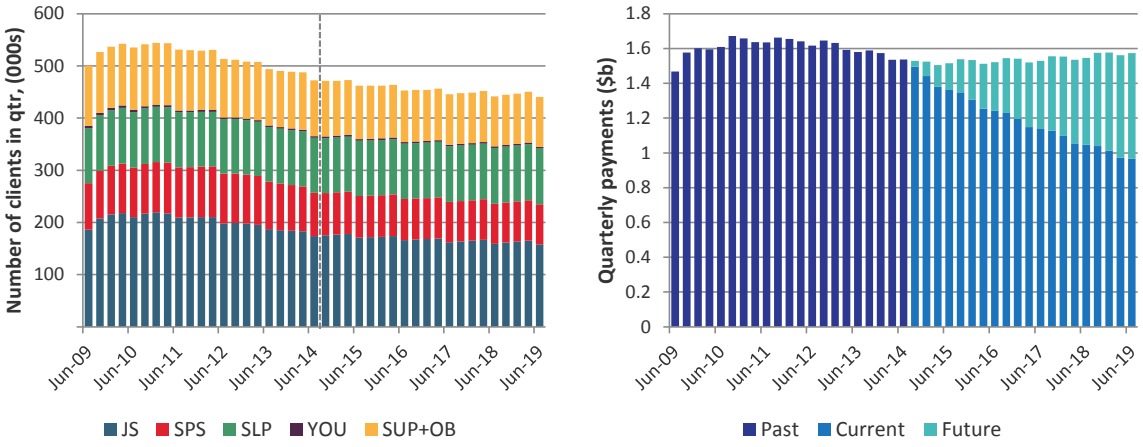
- **A decrease of $0.5 billion due to methodology changes unrelated to experience or performance:** A number of changes were made for this valuation, to provide further insight into drivers of benefit dynamics and to make lifetime cost estimates more accurate. The $0.5 billion decrease is almost entirely due to better spell modelling applied to non-beneficiaries (recent exits and those receiving supplementary benefits only). We have introduced a new variable to explicitly allow for a client's previous benefit; this increases the likelihood of clients exiting from JS re-entering benefits and returning to JS, and decreases the likelihood of this occurring with clients exiting longer duration benefits. This modification improves insight into churn behaviour and results in more accurate

estimates of individual lifetime costs – see Section 4.5.4 for further discussion. If we had used the same approach in the previous valuation, the 2013 current client liability would have been lower by an equivalent amount.

3.6 Projected 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 by segment (left), and quarterly payments in actual values (right, excluding expenses and net loans cost)



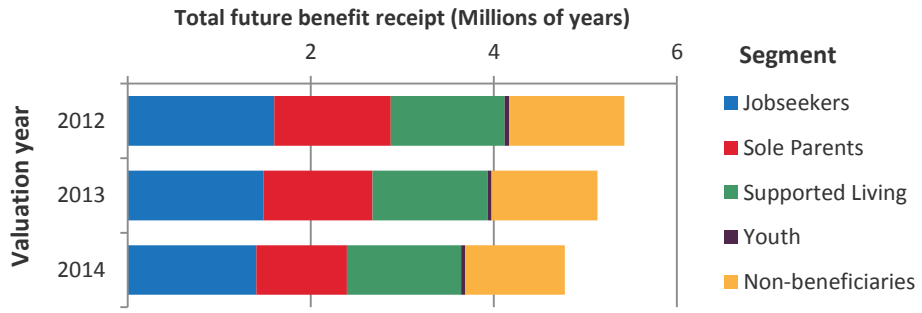
The projections reflect recent trends plus continued improvement in labour market conditions:

- Over the next five years, numbers in all segments except SLP are expected to decrease by an average of 9%. The decrease in SPS is stronger than in previous years.
- The number of SLP clients is expected to increase 2% over the next five years, with more SLP-HCD and SLP-Carers entries than exits.
- Total payments are forecast to increase by 2% over the next five years. This is despite an expected 11% increase in benefit rates due to inflation indexation. 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 Impact of reforms on time spent in the benefit system

Two of the main determinants of total client liability are how many people are in the benefit system, and the length of time they are expected to remain in the benefit system. These are multiplied together to give total expected number of years of benefit receipt. We have calculated this for the past three valuation years on a like-for-like economic basis using consistent unemployment rates (actual to 2014, consistent forecasts beyond that). The results show that Welfare Reform, controlling for changes in unemployment, is significantly reducing the duration of benefit receipt.

Figure 3.6 Number of future years on Tier 1 benefits, current client liability (number times duration)



Welfare Reform appears to have reduced expected future benefit receipt by a total of about 650,000 years, or 12%. This is due to both fewer beneficiaries than expected (reducing expected future years by 8%), and reduced expected benefit years by current beneficiaries over their lifetimes (by 4%). The results are particularly strong for Sole Parents and Youth. Welfare Reform has reduced the average expected duration of benefit receipt by 1.2 years for each Sole Parent over their lifetime, and by 2.8 years for Youth clients.

Overall, projected years on main benefits have fallen 12% from 2012 to 2014. This represents an aggregate reduction of 650,000 years of benefit receipt over the next 50 years. This is made up of an 8% drop in client numbers and a 4% fall in the average number of years of benefits received. Results differ between segments:

- The number of clients in Jobseeker segments is 12% lower, but the average number of future years on benefit has remained stable at 9.7 years
- Sole parent numbers are 15% lower and benefit durations are 9% lower, leading to a 22% reduction in future benefit years for Sole parents (from a total of 1.27 million years to a total of 0.99 million years of future benefit receipt)
- Supported Living numbers and durations have been stable
- Youth segments have slightly increased in aggregate numbers, but there is an 17% decrease in number of future years (from an average of 16.9 years down to an average of 14.1 years) – in other words, Youth are expected to spend on average 2.8 years less on benefits, due partly to improved employment outcomes while in Youth segments but also later while in JS and Sole Parent segments
- Non-beneficiary numbers are 7% lower, and the number of expected years on benefit is 9% lower.

3.8 Analysis of impact of change under management influence

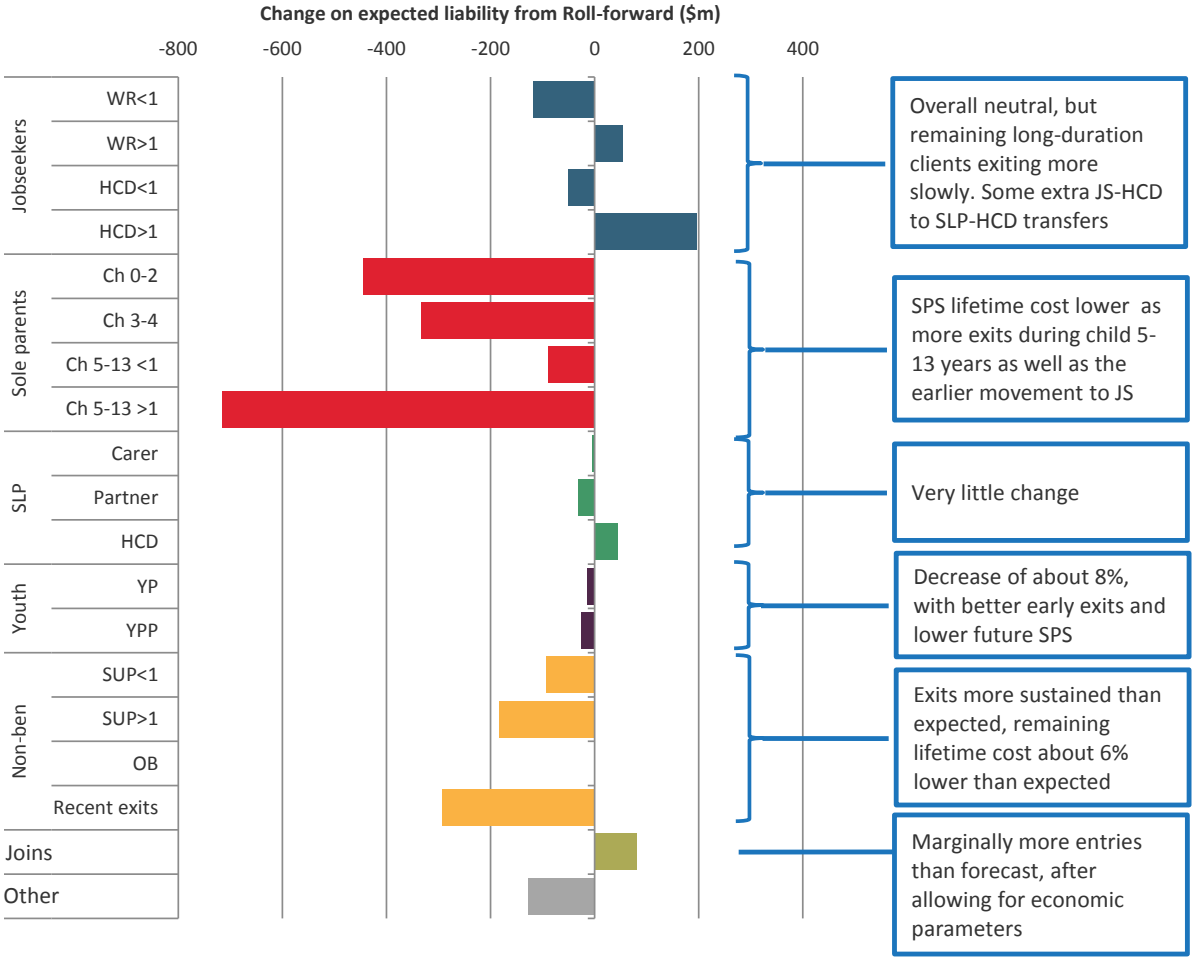
3.8.1 Segment level impact

There is a $2.2 billion decrease in the change due to experience, which primarily reflects the impact of Welfare Reform and operational changes taken over the year. This reduction is broken down at a segment level, as shown in Figure 3.7. An equivalent breakdown by region is provided in Section 6.4.

For clients in the 2013 valuation cohort, the most substantial reductions have been for those who were in Sole Parent and Non-beneficiary segments.

The lifetime cost for the Sole Parent clients is now 10% lower than we had expected, with marked changes in behaviour visible over 2013/14. The decrease is driven by faster exits amongst clients with a youngest child aged 5-13. 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 impact.

Figure 3.7 Breakdown of $2.2 billion decrease in change due to experience, by segment as at June 2013.



The decrease in liability amongst Non-beneficiary segments 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.

3.8.2 Split of liability reduction between actuals to date and models

In past valuations change due to experience (the $2.2 billion reduction) has been split between 'Changes due to leaves and joins' and 'Update to actuarial models'. This year such a split is complicated by the collapsing of benefit categories for Jobseekers, older DPB clients and WID/WA clients. For this reason we do not have an accurate split of the $2.2 billion reduction between the two categories. We do have, however, an approximate split based on the actual and expected numbers in segments at June 2014.

After allowing for updates to economic parameters, we expected the 2014 current client liability to include 582,000 clients, whereas the actual number was 6,100 lower. The bulk of this difference was concentrated in SPS and JS-HCD segments, offset by increases in JS-WR segments. This gives an approximate $1.5 billion decrease due to actual leaves and joins, with the residual $0.7 billion attributable to model updates.

3.8.3 Analysis of impacts of policy changes on benefit dynamics in the valuation year

Section 2.4.1 described key policy changes that took effect in July 2013 affecting primarily Widows/Women Alone (WID/WA), Sole Parents with children 14 and older, and Jobseekers with health conditions, illnesses and disabilities (HCD).

The July 2013 policy changes could potentially be expected to have less impact than those in October 2012, because most of the eligibility rules and client obligations are not markedly different. However, we have observed very significant movements in benefit dynamics from the date of the reforms. The biggest change is that former DPB clients with older children and former WID/WA clients are moving off benefits at greater rates than before the July 2013 reforms. However, many have also moved elsewhere in the benefit system; typically to benefits with lower work expectations.

Sole Parents with children 14 years and older (re-classified as Jobseekers from July 2013)

Sole Parents with older children have had full time work obligations since October 2012, but the benefit was not combined with Jobseekers Work Ready (JS-WR) until July 2013, at which point a new service delivery model for case management of these clients was also introduced.

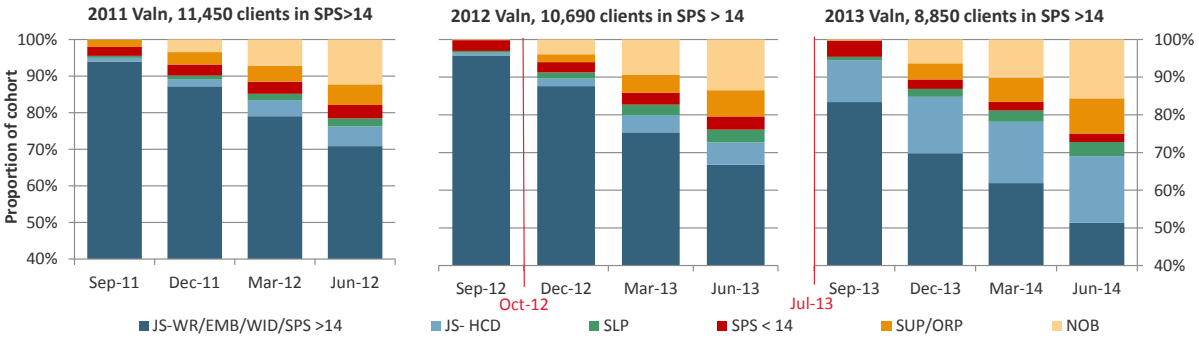
Behavioural responses are noticeable from October 2012, but are significantly more pronounced from July 2013 onwards. This is illustrated in the figure below where we track, for each past valuation date, how Sole Parents with older children (now reclassified as Jobseekers, shown throughout in dark blue) are moving through the benefit system each quarter.

The title above each graph shows how many Jobseeker-Sole Parents (with children age 14 or older) there were on each of the three previous valuation dates. This cohort has shrunk from 11,450 in June 2011 (left) to 8,850 in June 2013 (right). Each of the four bars per valuation year shows what share of the cohort who began that year as Jobseeker-Sole Parents remains on the Jobseeker (Work-ready) benefit by quarter. Each bar also shows the share of the cohort that has transferred to another benefit type, or exited benefits.

The share of Jobseeker-Sole Parents exiting main benefits increased each valuation year (shown in light and dark yellow). Of the 11,450 clients in the June 2011 valuation, 18% left benefits (SUP or NOB) within the year. This increased to 20% for the June 2012 cohort, and 25% for the June 2013 cohort.

There is also a marked increase in transfers by this cohort to JS-HCD (shown in light blue) immediately following the July 2013 changes. Since the July 2013 reforms, the rate of movement to JS-HCD has tripled, meaning that only 51% of Jobseeker-Sole Parents with children 14 and older at June 2013 remain in a work ready benefit state, far lower than in previous years. Transfers to an HCD benefit by Jobseeker-Sole Parents are not entirely unexpected. Sole Parents may well also have a health condition, illness or disability; in 2013/14, 12% received DA payments.

Figure 3.8 Quarterly movements for Jobseeker-Sole Parents with child 14+, from 2011 valuation (left), from 2012 valuation (centre) and from 2013 valuation (right)

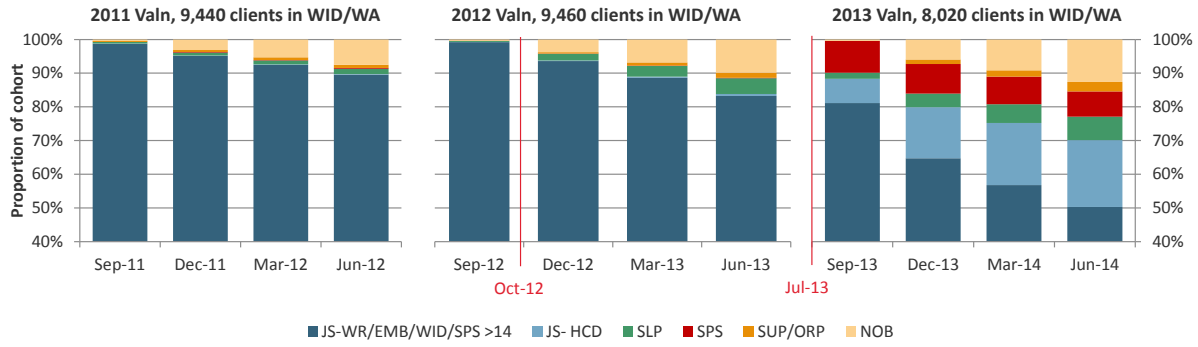


Widows/Women Alone

As was the case for Sole Parents with older children, Widows and Women Alone beneficiaries' behaviour has changed markedly over the course of Welfare Reforms, particularly following the July 2013 changes. While these clients are exiting the benefit system 80% faster, many more of them have now moved to other benefits with lower work requirements. Many of these transfers indicate the client would have qualified for either benefit (for example, a widow who is also a sole parent with young or school-aged children), so some degree of transfer was always to be expected. Figure 3.9 illustrates this movement over the past three years.

While the number of WID/WA clients dropped over 2012/13, this decrease accelerated in 2013/14, with 15% of those on benefit at June 2013 exiting over the year, compared with 8% and 11% in 2011/12 and 2012/13 respectively. Only 50% of June 2013 WID/WA clients remained in work ready type benefits at the end of the year; 20% moved to JS-HCD while another 7% moved to each of SPS and SLP.

Figure 3.9 Quarterly movements for WID/WA clients (Jobseekers), by valuation year

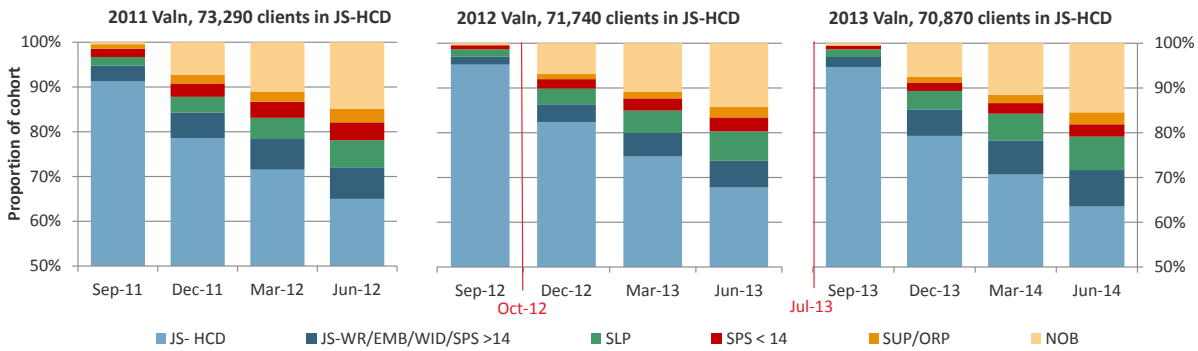


Jobseekers with health conditions, illnesses and disabilities

Requirements for JS-HCD have been adjusted as part of the benefit reforms, so that starting numbers have fallen steadily each year while transfer rates have increased slightly. While numbers have decreased, this was more due to transfers than exits. While the exit rate was only fractionally higher in 2013/14, transfers to JS-WR and SLP grew by 37% and 14% respectively. Overall:

- Starting numbers have fallen steadily each year
- The proportion exiting main benefits after a year has remained steady, at about 18%.
- The proportion remaining in JS-HCD after 4 quarters has fallen somewhat, from 68% in 2012/13 to 63% in 2013/14
- The proportion moving to SLP over a year has risen from 6.0% for the 2011 cohort to 6.6% for 2012 and 7.5% for 2013, representing a 20% increase and an extra 800 such transfers per year.

Figure 3.10 Quarterly movements for JS-HCD clients, by valuation year



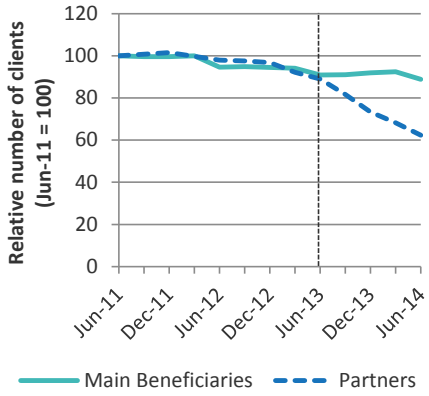
Partners of Jobseekers

The number of partners on benefit appears to be dropping significantly; see Figure 3.11. In fact, this accounts for much of the overall decrease in Jobseeker numbers in 2013/14. This trend appears to begin with the October 2012 changes and accelerates from July 2013. There are a number of possible explanations for this trend:

- Changes to work expectations for Partners in line with changes for Sole Parents (that is, changes based on youngest child age)
- More active case management of partners, including their involvement in pre-benefit activities
- A reduced tendency to record partnered spells under the new benefit definitions

At this stage, we do not know which of these is the primary reason.

Figure 3.11 Comparison of JS and JS-Partner exits by quarter over time



3.8.4 Analysis of impacts of operational changes on benefit dynamics in the valuation year

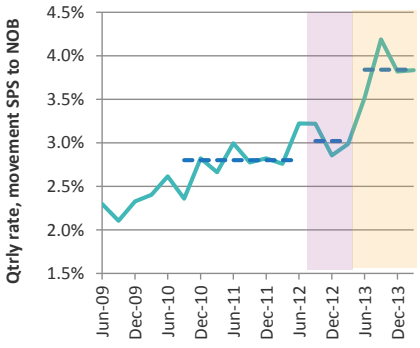
The past three valuations have all shown very large decreases in the liability under management influence, reflecting significant policy changes each year as well as the introduction of a new operating model. In the absence of further policy changes, incremental operational performance improvements alone would be expected to drive smaller year on year changes than in previous years. This would not be an indication of weakening performance, as improved experience observed over the period of Welfare Reform has already been accounted for in future projections. Understanding the impact of operational changes is likely to become increasingly important in future valuations.

National roll-out of the new service delivery model

Work and Income made significant operational changes in 2013/14. A new service delivery model was rolled out nationally in July 2013, and is described in Section 2.4.2. The new model introduced active case management, including for Sole Parents. About 70% of the $2.2 billion reduction in current client liability due to experience can be attributed to reduced payments to SPS-child aged 5-13 (current and future). This is driven by the faster exit rates seen amongst these clients, particularly in 2013/14.

Part-time work obligations have been progressively introduced for this group over the last five years. Most recently, part-time expectations were extended to parents whose youngest child is age 5 from October 2012. A new work preparation expectation was also introduced for Sole Parents with younger children.

Figure 3.12 SPS 5-13 exit to NOB rates, Oct-12 and Jun-13 impacts shaded

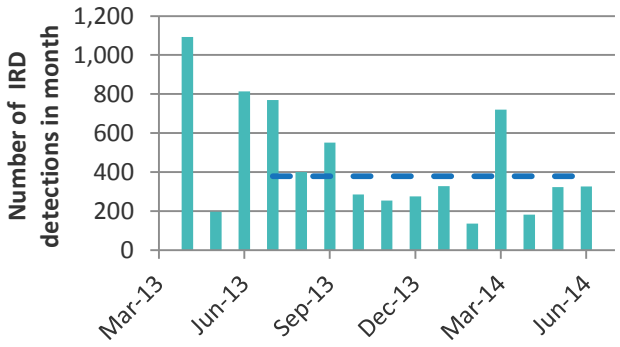


As illustrated in Figure 3.12, Sole parents with school-aged children saw slight improvements after the October 2012 reforms (pink shaded area), but more marked improvements after the June 2013 operational changes (yellow shaded area). This might initially suggest the new service delivery model—and other operational enhancements—have been the catalyst for most of the recent reductions. However, we believe that these results show that activating obligations through case management is necessary to achieve the full impact of policy change; that is to say, ***operational and policy impacts are compounding***, rather than independent.

IRD data match

The IRD data matching program is the second operational innovation measureable in this year's valuation. Since April 2013 MSD has been data matching beneficiary information with the IRD to detect cases of overpayment. These generally occur when a client is incorrectly receiving benefits while simultaneously receiving income from employment. Over 2013/14 there has been an average of 380 such cases detected a month. This activity has a direct saving component, since past payments can be recovered; and an indirect impact which lowers the current client liability, as clients detected with overpayments are less likely to receive benefits in the future. Here we estimate this indirect impact over the 12 months to 30 June 2014.

Figure 3.13 Number of monthly overpayment detections from IRD matching



We have been provided a list of 6,660 clients who have been found to be overpaid via the data matching. Of these:

- 6,000 were valued in the 2013 current client liability cohort, with a combined lifetime liability of $619 million. Of these 3,700 were on benefits and 2,300 were recent exits
- 2,983 of these clients were expected to be on benefit at 30 June 2014 (in the absence of IRD matching), whereas 2,182 actually were. Their expected liability at June 2014 was $483 million, compared with actual of $411 million, a $72 million reduction

Thus IRD activity over the past 12 months has reduced the liability by over $72 million. While significant, we note that this figure is likely to be an **underestimate** of the total IRD impact on the liability for two reasons. First, it ignores the impact of data-matching undertaken before 30 June 2013 (this would have been allowed for indirectly in the previous valuation). Second, the data provided to us is net of overpayments; so if a new client in 2013/14 was detected as part of the program, this reversal would be invisible to us as a direct impact of the intervention and not counted as part of the savings attributable to the measure. The overall liability estimate would automatically adjust to reflect the decrease in beneficiaries and associated future cost.

3.8.5 Change to actuarial models to reflect experience in 2013/14

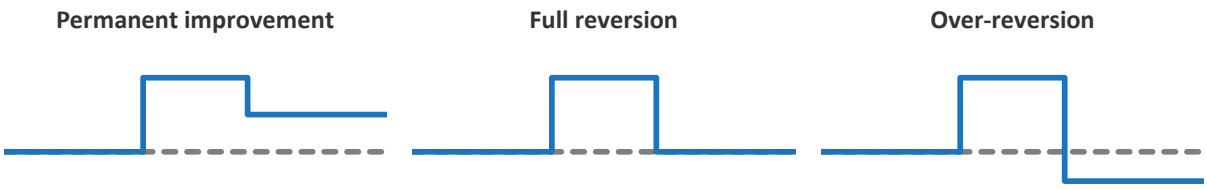
The changes observed in Sections 3.8.3 and 3.8.4 require us to incorporate the new experience into our valuation projections. Allowing for reform impacts is generally difficult and is an issue common to many types of long-term benefit schemes, such as accident and worker's compensation schemes. In observing changes to behaviour (such as system exit rates) during the recent experience post-reform, a judgement has to be made about the extent to which these changes have caused the following effects.

- **Permanent improvement:** A tightened eligibility criterion for clients would typically be expected to lead to a permanent increase in exit rates, with a possible 'surge' immediately after the reforms.
- **Full reversion:** A one off exclusion criterion, such as a single IRD data match, will cause a short term saving and temporary increase in exits but not affect system exit rates long term. Thus this is a one-off reduction in liability.

- **Over-reversion:** A temporary surge in exits may be then partly offset by lower than usual exit rates on an ongoing basis. Such effects are associated with reforms that target those clients easiest to move out of the system, leaving those harder to help.

These alternatives are illustrated in Figure 3.14. All lead to a decrease in liability, but judgement on the degree of reversion will heavily influence the magnitude of the decrease.

Figure 3.14 Illustration of typical exit rate patterns observed after a tightening reform



Given the observed experience, the types of reforms implemented and our discussions with MSD, we believe that most of the reform impacts will lead **to permanent improvement** in benefit dynamics, with a partial reversion as behaviour adjusts to the new policy and operational environment. We have been deliberately cautious in reflecting the degree of the change in our projection assumptions, to allow evidence of sustained trends to develop over time. We believe this is reasonable, and reflects the heighted uncertainty in projection that occurs during reform phases.

We also note that the need for such judgement in the face of reform leads to somewhat greater uncertainty than if no reforms had taken place. Further detail on this uncertainty is provided in Section 8.5.

In Section 3.8.2 we attributed $0.7 billion of the liability reduction to model changes responding to experience. As in that section, allocation of this to specific model changes is very difficult in light of the benefit consolidation. However, the four biggest contributors to the result are as follows.

- An increase in the rate at which clients leave SPS 5-13 (whether transferring to another benefit or leaving the benefit system). This causes a reduction of about $1.1 billion.
- A decrease in the rate at which people re-enter the benefit system. This causes a reduction of about $0.3 billion.
- An increased likelihood of clients remaining on JS-WR benefits. This is particularly hard to estimate, but increases the liability by about $0.5 billion.
- An increase in the expense rate assumption, as benefit payments have fallen faster than MSD's expenses. This increases the liability by about $0.3 billion.

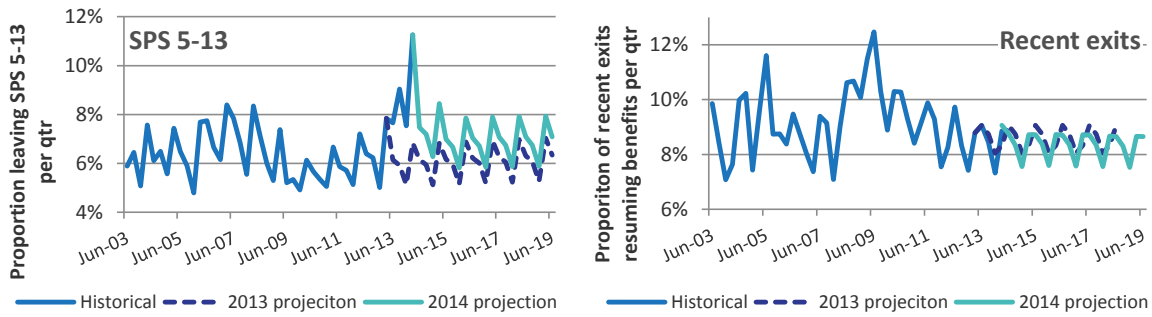
The residual change is then made up of the roughly 75 other transition and payment models used in the projection. We discuss the particular assumptions listed above in turn.

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

We have observed a marked increase in the rates of leaving SPS (both leaving the benefit system and transferring to other benefit types such as JS-WR and JS-HCD), even before the youngest child reaches age 14. As discussed in Section 3.8.3, this is likely a combination of the new benefit types, part-time work requirements, and active case management through the new service delivery model.

These exit plus transfer rates were at record highs in 2013/14, as illustrated in Figure 3.15. Since the levels are so historically unusual, we have kept only a small component of the improvement, assuming the eventual rates will settle at levels comparable with the pre-GFC years.

Figure 3.15 Exit plus transfer rate by quarter for SPS child 5-13 (left) and Rate of re-entry into the benefit system amongst recent exits (right)



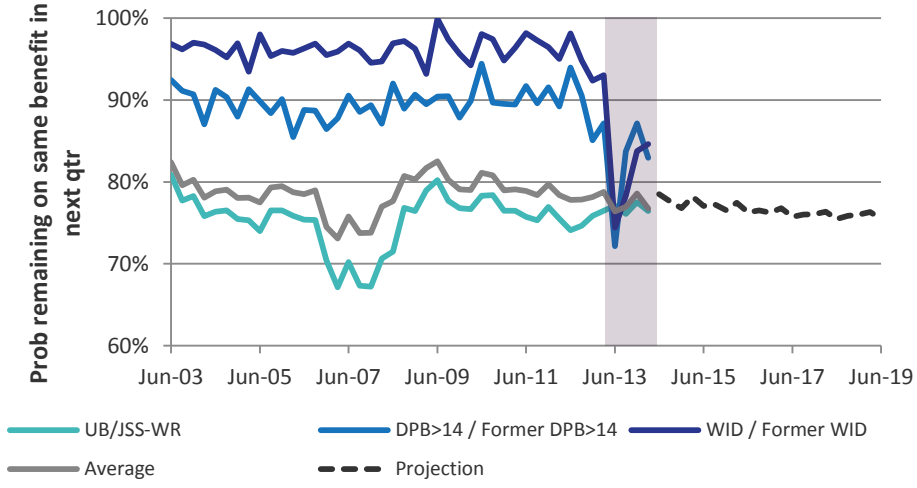
Re-entry rates for clients not on benefits

Re-entry rates have been lower than expected in 2013/14, following on from a similar pattern in 2012/13. Re-entry rates are now close to the lows seen prior to the GFC. We have slightly lowered our projections to reflect this experience, however we have projected fairly flat re-entry rates rather than banking further improvements as the forecast unemployment rate falls.

Likelihood of remaining on JS-WR benefits

Clients on the new Jobseeker Work Ready benefit are a mix of the clients formerly in Unemployment Benefit, WID/WA and DPB with youngest child 14 and over. We have to construct plausible transition rates for this group, with the most natural starting point being the weighted average of the rates (shown in grey in Figure 3.16.

Figure 3.16 Probability of remaining on benefits each quarter for traditional and new JS-WR cohorts (experience since July 2013 shaded)



However, this is complicated by the experience in 2013/14:

- The exit and transfer rates for former DPB>14 and WID/WA clients are very high compared to historical levels (equivalently, the rate of remaining on benefit has fallen sharply). Part of this is temporary, but some is likely ongoing due to the alignment of eligibility requirements and case management with former unemployment benefit recipients.
- The visibility of clients who would have been in DPB>14 and WID/WA over 2013/14 has diminished over the year. This is to be expected, as new clients are no longer assigned to benefit categories that are now obsolete post-reform. However, this makes the 2013/14 experience harder to interpret.

- The likelihood of JS-WR clients remaining on benefits has actually risen slightly over the past year, even though the labour market has continued to improve. This probably reflects the changing mix of clients in the new JS-WR, including less employable traditional Jobseekers left behind as the labour market strengthens, as well as more clients who used to be in DPB>14, WID/WA and Sickness Benefit (benefits with historically higher rates of remaining on benefit). If this strengthening effect has not run to completion, further increases in the rate of remaining on benefits are possible. Relative to previous years, this would reflect a larger group of clients with higher barriers to employment.

Our projected rate of remaining on benefit is shown in Figure 3.16. It is set close to the weighted average rate observed before 2013/14, with a falling rate over time to reflect further projected improvements in the labour market.

4 FEATURES OF INTEREST

INSIDE THIS SECTION

- Risk factors associated with entering benefits, such as early entry and family benefit history
- Important determinants of lifetime costs, such as benefit type, benefit history, and current age
- Sub-groups of interest, such as Youth Service participants and young adults aged 18-24

4.1 Introduction and highlights

This chapter focuses on insights gained through the valuation models into drivers of risk associated with entry into the benefit system, drivers of high lifetime costs, and particular cohorts of beneficiaries at higher risk of long-term benefit receipt. Current benefit and benefit history have the most impact on future cost for the benefit system as a whole. Certain risk factors associated with initial entry into the system provide additional insight into which entrants have a higher likelihood of remaining on benefit long-term, including age of entry and family benefit history. Some sub-groups of beneficiaries are of particular interest from a management perspective due to these risk factors; such as Youth, Young Adult beneficiaries, and long-term Jobseekers.

AGE OF ENTRY

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

- We estimate that about 75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20.
- Despite the very small number of beneficiaries who enter through a Youth segment each year, approximately one third of the total liability is attributable to clients that first entered benefits via a Youth segment.

FAMILY BENEFIT HISTORY

There is a strong correlation between young entries and family benefit history (see Section 4.3.3). The extent of the overlap suggests that early entry—associated with 75% of the liability—is a partial proxy for intergenerational benefit receipt, with the notable exception of young SLP entrants.

- While the valuation scope limits our ability to fully explore these dynamics, chronology dictates that family benefit receipt naturally precedes—and is thus a likely driver of—early entry into the benefit system, which is associated with significantly higher average lifetime costs.
- It is also likely that that higher prevalence of intergenerational benefit receipt amongst Maori clients influences their higher average lifetime costs.

YOUTH SERVICE

Valuing the lifetime costs 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. The Youth Service introduced in August 2012 aims to improve qualifications and decrease reliance on benefit once participants are of working age.

While it is still early days, the trends are promising:

- More young adults who received Youth Payment at 17 are off benefits when they turn 19
- More young adults who received Young Parent Payment at 18 are off benefits when they turn 20
- The timing of these improvements is closely aligned with the introduction of the Youth Service.

4.2 Understanding long-term benefit receipt

The benefit population as a whole is highly diverse, and lifetime patterns of benefit receipt and related costs vary considerably as a result. The valuation accounts for a large number of risk factors in estimating lifetime cost. NZ's simplified benefit structure reflects key reasons that people require a working-age benefit: joblessness, health conditions and disabilities (short-term or long-term in nature), care-giving responsibilities including sole parenthood, and family breakdown. When considering the benefit system as a whole, it is not surprising that current benefit type is the most important predictor of lifetime benefit costs. Thus, current benefit type forms the basis of the client segmentation, and the focus of much of the analysis in this report.

Benefit history and age are the next most important predictors of lifetime cost. The longer someone has already received benefits, the more likely they are to remain on benefits in future. But the younger a beneficiary, the more years remaining to potentially receive benefits until retirement. These two effects offset one another to a certain degree. Older clients are more likely to have a longer benefit history, while the inverse is true for younger beneficiaries. Section 4.4.1 discusses this interaction for different segments.

Skills (recorded qualification levels) and ethnicity (self-identified) are also significant indicators, though to a lesser degree. Section 4.4.2 provides analysis of the relationship between different levels of recorded qualifications and lifetime estimates. Ethnicity is associated with other predictors such as intergenerational benefit receipt, qualification levels, and receipt of different categories of benefit. These correlations have an impact on the variation in lifetime cost estimates between ethnic groups. Further discussion is provided in Section 4.3.3 and Chapter 6.

To understand and reduce long-term benefit receipt, it is also important to identify risk factors at the point of entry into the benefit system that indicate greater likelihood of long-term benefit receipt. Most new beneficiaries enter as Jobseekers, which is a lower-risk benefit type. They naturally have no history of receiving main benefits, which also implies a lower level of risk. But some exit quickly, while others become long-term Jobseekers or transfer to longer-term benefits. Even upon exiting main benefits, some clients churn in and out of the benefit system rather than exiting into sustainable employment.

Previous valuations have identified the high average lifetime costs associated with Youth, and the significant share of the liability associated with beneficiaries of any age who first received benefits when they were teens. New data added to the valuation this year enables us look at the family benefit history of young adult beneficiaries currently under age 25.

This section looks at:

- Risk factors associated with entry into the benefit system that indicate new entrants may be more likely to remain long-term; such as young entry, particularly through a Youth segment, and its correlation with intergenerational benefit receipt
- Important predictors of lifetime benefit cost for all beneficiaries; benefit history, age, and skills
- Sub-groups of interest: particularly, current and recent Youth and the impacts of the Youth Service to date, young adults aged 18-24, long-term Jobseekers, and high churn clients.

4.3 Risk factors associated with entry into the benefit system

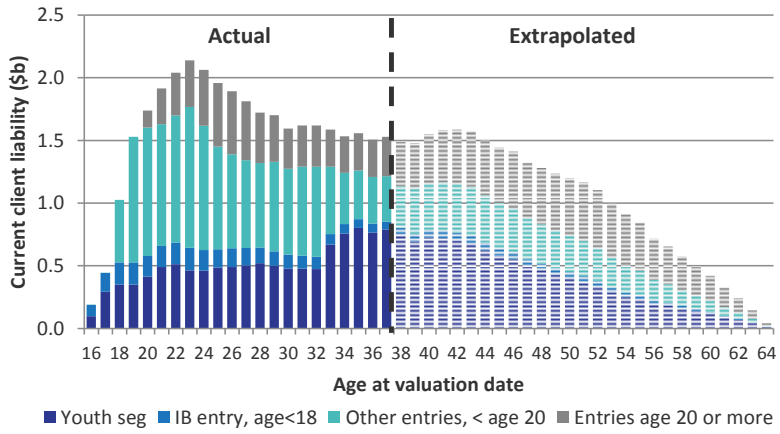
4.3.1 Age of entry

Previous valuations have highlighted the importance of age of entry as a predictor of long-term benefit receipt. Beneficiaries who enter as Youth and young SLP have significantly higher lifetime costs. Early entrants of all current ages make up a significant share of the overall liability.

- We estimate that about 75% of the liability for all current clients is attributable to clients who first entered benefits under the age of 20.
- Despite the very small number of beneficiaries who enter through a youth segment each year, approximately a third of the total liability is attributable to clients that would have first entered benefits via a youth segment.

Figure 4.1 shows the impact of Youth and other young client entries into the benefit system across all ages. The data used in this report has about 20 years of history, so age at entry is only accurately known for clients under 38. This estimation required some extrapolation for clients over age 38, 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



4.3.2 Age versus age of entry

Within an age group, age of entry proves to be a powerful proxy indicator for 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 impacts 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 lifetime liability on the right)

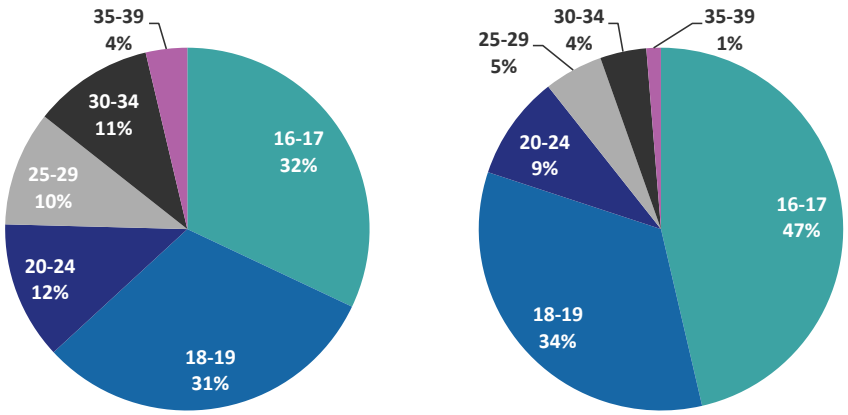


Table 4.1 shows the average lifetime liability for age at valuation versus age at entry into the system. Again, age at entry proves to be a powerful differentiator for lifetime cost within age groups. The liability for clients ***currently aged 35-39*** but entering in the 16-19 age band (about $152,000) is about 65% higher than those entering in the 20-24 band (about $92,000), double those entering in the 25-29 age band (about $75,000) 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	125					125
20-24	145	65				122
25-29	164	87	47			126
30-34	156	92	56	41		122
35-39	152	92	75	53	43	121
Average	150	80	55	47	43	123

4.3.3 Intergenerational benefit receipt

New data available for the 2014 valuation

MSD has undertaken a data-matching exercise to link child and adult IDs. This gives insight into whether a current beneficiary has previously been recorded as a child of a beneficiary, and if so, for how long. Including this in the valuation modelling allows us to measuring the incremental impact of having inter-generational benefit experience as a child, over and above factors already included in the valuation, such as age of entry. It also gives us insight into the prevalence of intergenerational benefit receipt among current beneficiaries, and the share of the liability associated with children of beneficiary families.

Inter-generational 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 beneficiaries' family received benefits for none of, some of, or all of the period between ages 13-18.

We observed that clients with longer-term family benefit history tended to stay on benefits longer, particularly for the Jobseeker benefit. For instance, a client whose parent had received benefits intensively which they were aged 13-18 was 48% more likely to remain on JS-WR after a year compared to those clients matched to a non-beneficiary parent. Their exits are also less sustainable; on leaving the system, the rate of re-entry into the benefit system within two years is 11 percentage points higher (47% versus 36%) than for a client matched to a non-beneficiary parent.

Note there is no significant change to the overall client liability due to this new information. The effect is primarily to 'spread' the liability more accurately between beneficiaries, based on family benefit history.

Prevalence of intergenerational benefit receipt

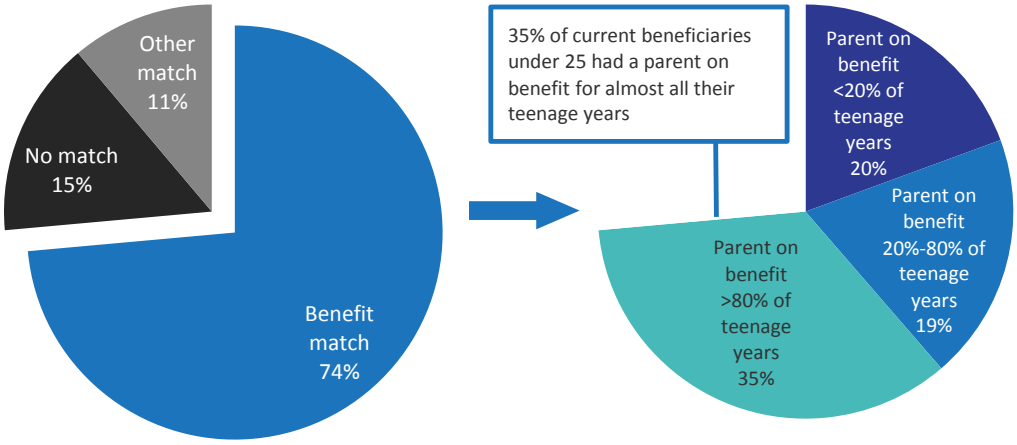
As a first step in understanding the new intergenerational benefit receipt data, we assessed prevalence by determining the proportion of all beneficiaries up to age 25 that can be matched to a record of parental benefit receipt; a 'benefit match'. We also looked at the extent of their family's exposure to benefits, during of each matched beneficiary's teenage years (13-18).

These figures show that inter-generational correlations are very strong – most young clients in the benefit system had some exposure to the benefit system through a parent or guardian. Nearly three

quarters (74%) of all beneficiaries up to age 25 had a parent on benefit while they were a child, and just over a third (35%) had a parent on benefit throughout their teenage years.

Another group, representing 11% of beneficiaries aged up to 25 can be identified in the data, but are matched only to another type of payment that is not included in the valuation (mainly the now discontinued family benefit). This group provides a contrast for the benefit match group, because the clients' family history can be identified in the data, but there is no history of receiving main benefits or supplementary benefits. A further 15% cannot be matched, indicating that either their family has no benefit history, or for some reason this history is not able to be matched in the data. Therefore the 'no match' category is likely to contain a mixture of different family benefit history backgrounds. It is included for completeness, but only limited conclusions can be drawn. The 'other match' category provides a more useful basis for comparison, indicating that a beneficiary's family most likely did not receive a main benefit. Figure 4.3 summarises these findings, showing overall matches on the left, and their breakdown on the right.

Figure 4.3 Prevalence of family benefit history amongst current clients aged under 25



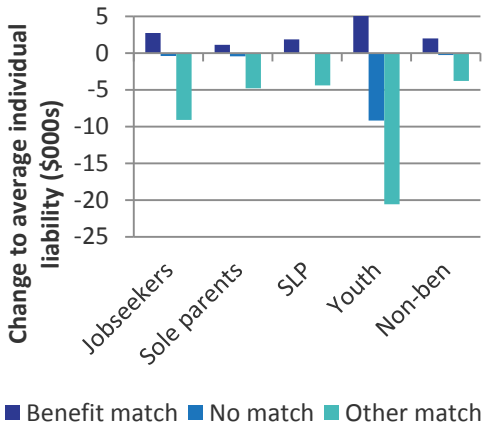
Impact of family benefit history on average lifetime costs

We can measure how individual level liability changes before and after the intergenerational variables are included in the lifetime projection. As illustrated in Figure 4.4, incorporating family benefit history in the data leads to:

- Increases in average lifetime costs for clients with a benefit match
- Larger increases for those whose parents received benefits throughout their teen years (the impact is twice as large as for others with a benefit match)
- Significant decreases for those clients with an 'other match', which is an indicator that their parents received the old family benefit, but no benefit payments during their childhood.

The differences are most pronounced for Youth and Jobseeker segments. SLP and SPS tend to have high lifetime costs irrespective of family benefit history, and the impact of family benefit history on these spell length appears lower.

Figure 4.4 Impact of family benefit history on average liability by top-level segment

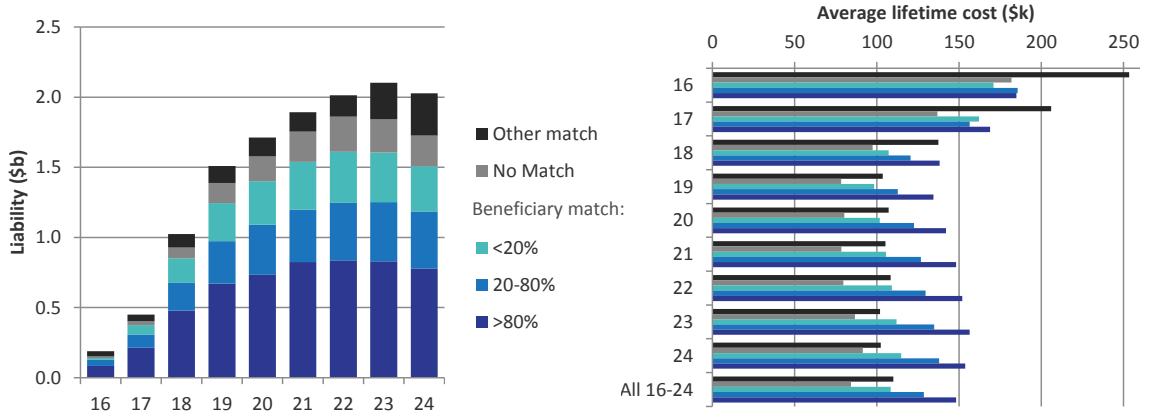


These results show that family history is a useful factor to include in estimating lifetime costs, and can cause a significant increase in estimates for some cohorts. For instance, everything else being equal:

- Having an intensive beneficiary parent (>80% during age 13-18) will increase the lifetime cost of a Youth client by about $34,000 (or 21%), relative to a non-beneficiary parent (as measured by the 'other match' category)
- Having an intensive beneficiary parent will increase the lifetime cost of a Jobseeker client by about $16,000 (or 15%).

Average lifetime costs increase with the intensity of family exposure to benefits during the teen years. The exception is for 16-18 year olds, where average lifetime costs are higher for families with no benefit history. This difference is driven by a small group of young entrants to SLP with very high average lifetime costs entering from families with no history of benefit receipt. If SLP beneficiaries are removed, the same pattern (higher lifetime costs associated with intensity of family exposure) occurs for the 16-18 age group.

Figure 4.5 Current client liability (left) and average lifetime cost (right), split by current client age and family benefit history, for clients <25



In all, 42% 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.

Characteristics associated with intergenerational benefit receipt

In order to better understand family benefit history, this section examines how such history is correlated with a range of other characteristics, in order to determine which may be co-related with intensive family benefit history. These correlations are important; they also help to reveal why other factors tend to be associated with higher or lower lifetime cost.

The left panel of Figure 4.6 shows how the distribution of intergenerational benefit varies by segment (as at the valuation date) for all clients under age 25. Unsurprisingly, the incidence of family benefit history is low for Supplementary Only clients, who are considered to be a lower risk group, in terms of long-term benefit receipt. In contrast, the incidence is very high for the Carer and Orphan segments. This may represent situations where an ongoing care need extends over a generation. The other major beneficiary segments actually have fairly similar levels of family benefit history, with 30-40% of clients having parents who received benefits for 80% or more of their teen years. This consistency is interesting. It is not immediately intuitive that clients with intensive intergenerational benefit history would make up an equivalent share of JS-WR as SPS beneficiaries, and nearly as great a share of JS-HCD and SLP-HCD beneficiaries.

We have looked at a number of dimensions. For example, incidence of intensive family benefit history also varies by region. Northland, the East Coast and Bay of Plenty regions have the highest rates of intensive family benefit history amongst clients less than age 25. Central and Southern regions have the lowest.

The differences by ethnicity are the most notable. The right panel of Figure 4.6 shows significant differences in family benefit history by recorded ethnicity. We see 87% of Maori clients match to a beneficiary parent, compared to 65% for other ethnicities. This provides good evidence that the increased liabilities associated with ethnicity are (at least partly) a proxy for other factors such as intergenerational risk. This relationship is further illustrated in the pie charts of Figure 4.7. Maori clients represent 38% of the current client population under age 25, but 54% of the corresponding subset of clients with intensive family benefit history.

Figure 4.6 Distribution of current clients by benefit history status for (selected) segments and by ethnicity.

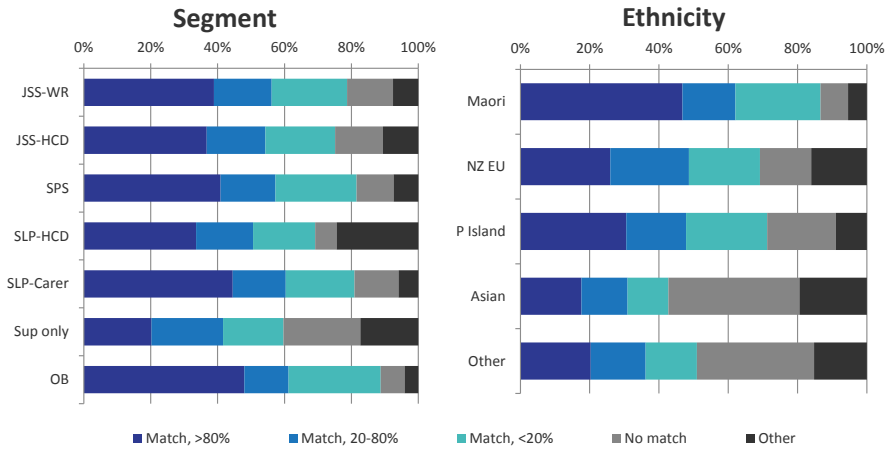
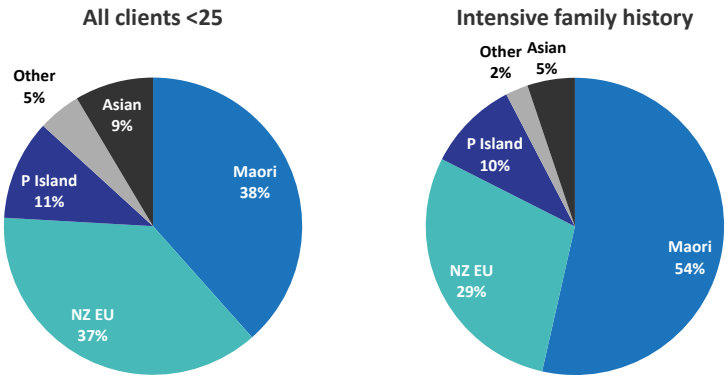


Figure 4.7 Ethnicity distribution for all clients <25 (left) and all clients <25 with intensive family benefit history (80% or more of teen years, right)



It is likely that the higher prevalence of intergenerational benefit receipt amongst Maori clients influences their higher lifetime costs.

4.3.4 Age of entry and intergenerational benefit history

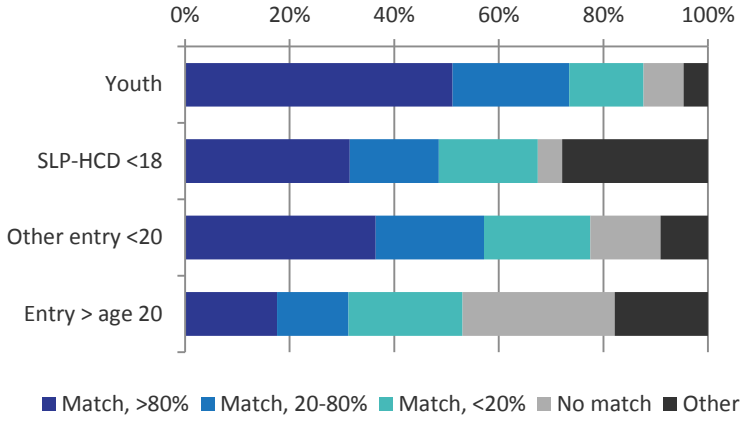
There is a strong correlation between young entries and family benefit history (see Section 4.3.3). The extent of the overlap suggests that early entry is a partial proxy for intergenerational benefit receipt, with the notable exception of young SLP entrants.

Amongst current clients aged less than 25:

- We see that 19% entered the benefit system via a youth segment. Of these, the rate of family benefit history is extremely high; 88% of youth entries have a beneficiary parent and 51% of them have an intensive beneficiary parent; that is, on benefit 80% of the time while the client was aged 13-18.
- Another 54% entered before age 20, but not in a youth segment or underage SLP-HCD entry. The incidence of family benefit history is still very high; 77% have a beneficiary parent and 36% of them have an intensive beneficiary parent.
- Those clients entering between ages 20-24 (22% of the total) actually have relatively low incidence of family benefit history; just 53% have a beneficiary match and only 18% have an intensive beneficiary parent.
- The remaining 5% enter before age 20 via Supported Living Payment – health condition, illness or disability.

These statistics are also summarised in the figure below. They demonstrate that family benefit history is associated with early entry, and could possibly be a direct predictor of it. To express this result another way, we see that of all clients aged less than 25 with an intensive beneficiary parent, 89% of them entered before age 20. This compares to 61% for clients currently in the valuation without a beneficiary parent.

Figure 4.8 Cohorts split by age and category of entry and family benefit history, for clients <25



4.4 Important determinants of lifetime costs

4.4.1 Current age

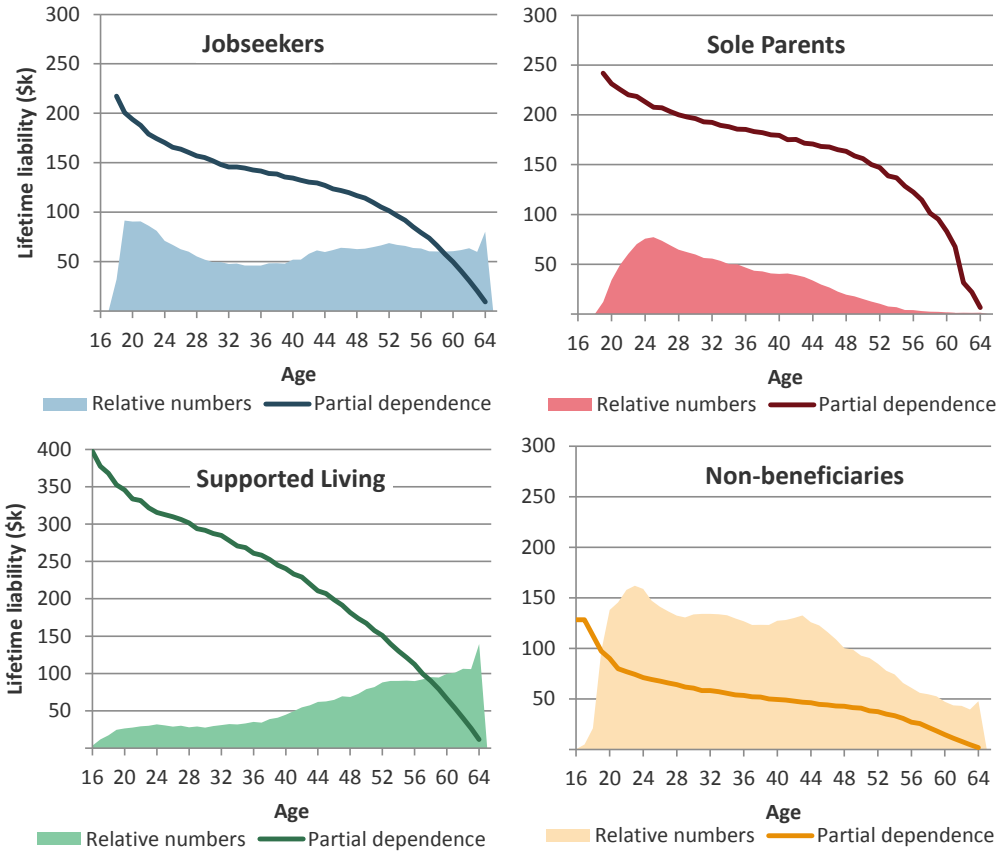
Age is one of the most important predictors of lifetime cost. However, there are interactions between current age and other factors that significantly differentiate between lifetime costs within an age group. For example, younger clients have more potential years to receive benefits, while older clients have the potential to accumulate significant benefit history, which is associated with continuing benefit receipt.

What is a partial dependence plot?

A partial dependence plot calculates the impact of a variable while holding all other variables constant, thus removing correlations. In the case of client age this is particularly useful as it removes the correlation with benefit history, which tends to offset the age effect.

To better understand the impact of age we have produced partial dependence plots for age across each of the large top tier segments, shown in Figure 4.9. For instance it shows that, *all other things being equal*, a 20-year old Jobseeker will have a lifetime cost about $51,000 higher than a Jobseeker aged 35. This compares to a difference of about $77,000 for Supported Living clients. The steep slope at young ages again illustrates the extra risks associated with young clients; the difference between clients aged 20 and 25 is far greater than that between clients aged 25 and 30.

Figure 4.9 Partial dependence plots of age across top tier segments. The axis corresponds to the partial dependence line (all other drivers held constant)



The ***distribution*** of age in different segments is also revealing – part of the reason average liabilities are so high for Sole Parents is that the clients in those segments tend to be younger. Conversely, even though Supported Living clients move out of benefits very slowly, the older age skew in these segments tends to somewhat suppress their lifetime costs. Young SLP clients have lifetime costs far above any other age group on any benefit; up to $400,000.

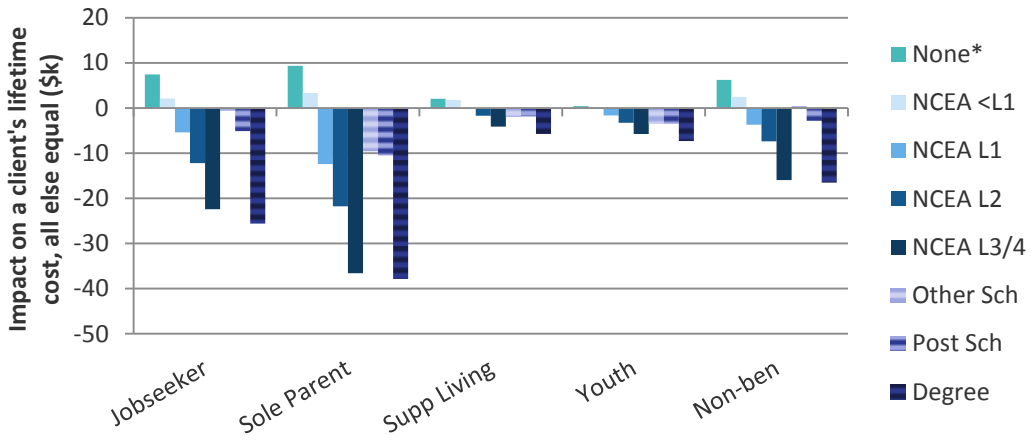
4.4.2 Skills and education

After client segment, benefit history and age, education level continues to be one of the most important predictors of lifetime cost. This is despite the qualifications data available to us being of poor quality; it has a large number of missing entries and is updated irregularly. The figure below shows the partial dependence of lifetime cost on education level as modelled in the valuation, but we note that results would change materially in future valuations if data quality improved. We are hesitant to draw firm conclusions from the results for this reason.

Qualifications of NCEA level II and above appear to significantly reduce risk of long-term benefit receipt. A university degree also significantly reduces the risk. The effects are most pronounced for Jobseekers and Sole Parents, where a better education level can reduce lifetime cost estimates by $20-$35,000. It is relatively weak for Youth partly due to the fact that Youth are unlikely to have attained their ultimate

level of qualifications by virtue of their young age, and the generally low qualification levels for this high-risk group, but also due to the low quality of the education data available for the valuation.

Figure 4.10 Partial dependence plots of qualifications level on lifetime benefit cost



It is important to note that the relationship observed is not necessarily causative; we cannot conclude that improving education outcomes will decrease lifetime cost by the amounts in Figure 4.10. There may be other underlying factors that simultaneously affect a person's likelihood of education outcomes and benefit receipt. Nevertheless, the strong effects are suggestive of a potential lever to reduce long-term benefit receipt.

We also note that one of the stated aims of the Youth Service is to improve educational outcomes. Assessment of this is outside the scope of this valuation.

4.4.3 Benefit history and duration

Improvements to benefit history modelling

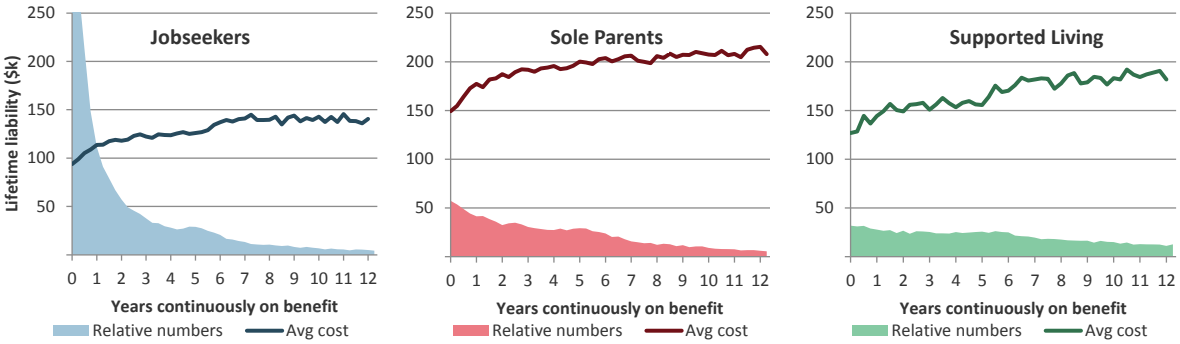
Benefit history is highly significant in predicting future benefit receipt. It can be used to identify those clients who:

- Might be difficult to place in employment, for example due to limited work experience or low skills
- Are prone to suffering from a health condition, injury or disability
- Have been, and still might be, a sole parent
- Have another barrier to employment that is not otherwise captured in the available data

Generally, lifetime cost estimates increase as a client accumulates more quarters of receipt, and increase again if they have tended to receive different types of benefits (that is, they have a history of transfers). Further, the likelihood of exiting the system drops substantially with each quarter on a particular benefit, so the benefit history is compounded by a client's current duration on benefit.

Figure 4.11 shows the average liability according to continuous duration – that is, the time a client has continuously been on benefits at the valuation date. For Jobseekers and Sole Parents, the lifetime cost increases sharply over the course of the first year on benefit. Thereafter the average liability tends to increase steadily. The numbers of clients with different duration lengths is also notable. Jobseekers are heavily skewed towards low duration, as they transfer out quickly. Supported living is the opposite – over 20% of clients have been continuously on benefits for more than 20 years. The 'hump' visible around five years in the chart corresponds to the influx of clients immediately after the GFC. A material proportion of these clients still remain in beneficiary segments.

Figure 4.11 Average liability based on duration of continuous past benefit receipt



Results by duration are particularly relevant as the Government has explicit targets to reduce long-term benefit dependence. It is worth noting that the strong trend in increased average liability occurs despite the fact that age tends to decrease with duration on benefit, offsetting the effect from decreasing future costs as age increases. If the age effect is held constant, the impact of benefit duration on lifetime cost is even stronger.

Improvements to benefit history modelling

In previous valuations we have included some benefit history variables, but we have not included 'previous benefit received' as an explicit predictor. However, analysis of churn, discussed in Section 4.5.4 shows that previous benefit type is an important driver of movement through the benefit system, particularly with respect to accurately predicting re-entries.

Introducing this new variable provides additional insight and accuracy. It also results in a $0.5 billion reduction in the main estimate. This explains about 90% of the decrease due to 'methodology changes' in the analysis of change discussed in Section 3.5. The change is virtually all attributable to Non-beneficiaries (recent exits and supplementary only clients) due to:

- Changes in the probability of re-entering
- Increased probability of re-entering the benefit type last received

This means that the valuation better recognizes that people most likely to churn are from high churn benefit types, and they are likely to re-enter those benefit types. The result is a lower liability, particularly for:

- Recent exits from JS-WR, who are more likely to re-enter benefits but are significantly less likely to move to longer spell benefits such as SPS and SLP
- Recent exits from those who were receiving only Supplementary Assistance, who are more likely to return to supplementary only rather than Tier 1 benefits
- Non-beneficiaries newly receiving supplementary assistance (from recent exit segment,) who are more likely to exit the system again rather than re-enter main benefits

The change also improves our understanding of transitions between benefits. For instance, the probability of a JS-WR client exiting the system is lower if they have transferred in from JS-HCD and higher if they entered from a non-beneficiary segment. Thus we are able to better allocate lifetime cost between these groups of clients.

4.5 Sub-groups of interest

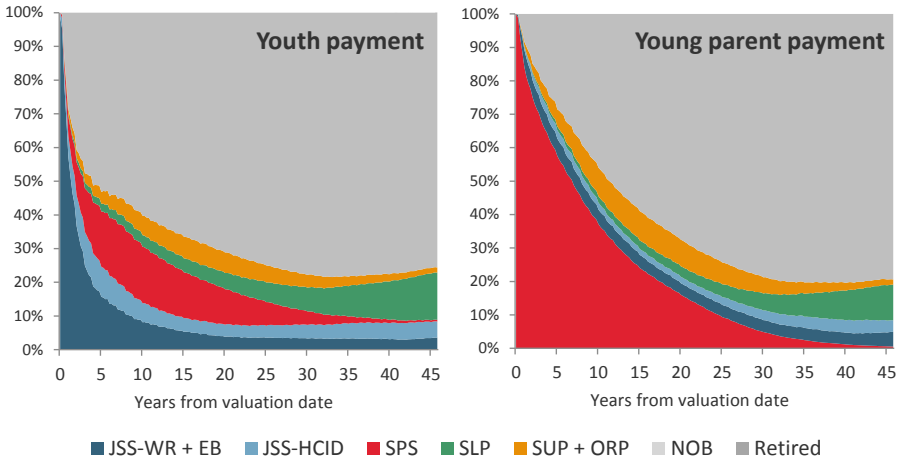
This section looks at a few areas of interest, based in part on the analysis in the previous sections of risk factors associated with long-term benefit receipt.

4.5.1 Youth Service participants

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. Figure 4.12 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 4.12 Lifetime projection as at 30 June 2014 for Youth Payment (left) and Young Parent Payment (right)

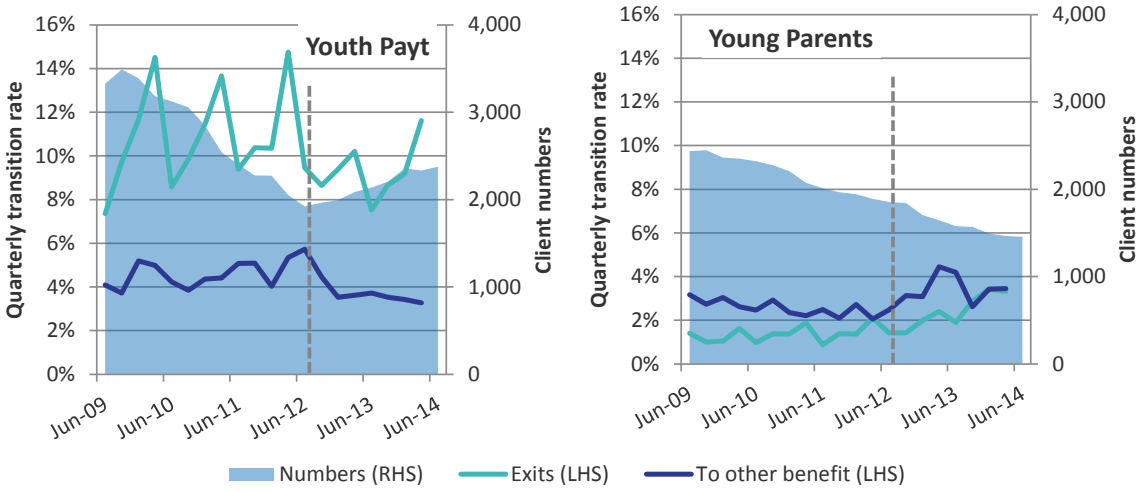


In August 2012, Work and Income introduced a new approach to working with youth. The objective is to keep this high risk group in school, training or employment so as to improve their qualifications and reduce their reliance on working-age benefits. Key elements included a new focus on proactive outreach 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.

Youth segment numbers and transitions

Since August 2012 there has been a 20% increase in the number of Youth Payment clients, for the most part offset by a 20% decrease in Young Parents. This corresponds to about 400 clients. 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 may 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 not in education, employment or training (NEETs); and longer benefit receipt in the near term while youth complete qualifications.

Figure 4.13 Client numbers and quarterly transfer out rates, Youth Payment and Young Parent Payments



We also note that since the introduction of the service, the transfer rate (both exits and movements to other benefits) have slightly decreased for Youth Payment and markedly increased for young parents. This is consistent with the trends in numbers observed.

Expected duration and average liability for Youth segments

Controlling for changes to the unemployment rate, average expected future years on benefit have decreased significantly for Youth since 2012.

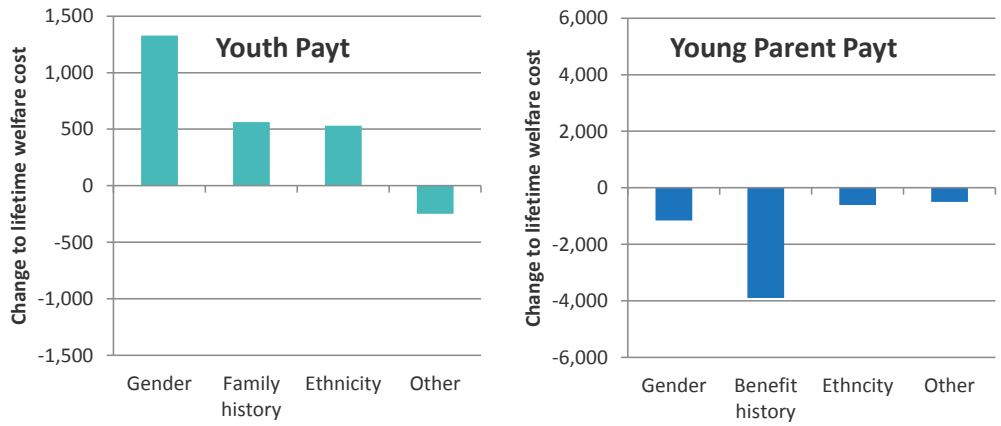
This translates into a corresponding decrease in lifetime cost. Note that part (but certainly not all) of this improvement is driven by changes to overall SPS exit rates; this is particularly the case for current YPP clients who age into SPS.

We note that demographic effects are particularly important in assessing year on year changes. If the demographic characteristics of clients in the Youth Payment segment were identical to last year, we would have expected the average client liability to fall from about $146,100 to $135,100. It is actually estimated at $137,300, so a demographic change has **increased** the average liability by $2,200. The main sources of change are summarised in Figure 4.14.

In particular the proportion of women in the segment has increased by one percentage point and women have a higher lifetime cost associated with their higher likelihood of receiving SPS in the future. This is similar to the point made earlier that higher YP numbers are in part explained by fewer teen pregnancies, with more young women receiving YP instead of YPP as a result.

Conversely, the Young Parent Payment segment has an average liability about $6,200 **lower** due to demographic factors. This is primarily driven by proportionately more men receiving the benefit (since total number of YPP men have remained roughly constant, while as noted above the number of women has decreased) and a shorter average benefit history among clients. Precise quantification of the demographic change to YPP is complicated by the changes to the historical eligibility series for some of these clients.

Figure 4.14 Estimation of the impact of distribution change on the average lifetime liability for the two Youth segments



After allowing for changes to the unemployment rate, the average projected years on main benefits for a Youth Payment client has decreased 15%, from 15.8 years to 13.4 years. The average projected years on benefit for a Young Parent Payment client has decreased 18%, from 18.0 years to 15.2 years.

Impacts of the Youth Service

Ultimately effectiveness should be measured by improved:

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

Some of the following comments fall somewhat out of scope of the valuation, but we nevertheless include them as useful context and as an indication that increased numbers of youth beneficiaries may be reflective of positive rather than negative program outcomes.

Educational outcomes

Evaluation of the Youth Service by MSD shows that the Youth Service is improving qualifications for participants.[5] 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.[6] Due to the limitations of qualifications data, we are currently unable to measure the impact of improving qualifications on lifetime patterns of benefit receipt and the future cost of benefits.

Improved benefit outcomes

A key indicator of success is whether youth clients are less likely to move into, and remain on working-age benefits. MSD's evaluation finds that the Youth Service is increasing the rate at which Youth participants leave the benefit system rather than remaining on working-age benefits.

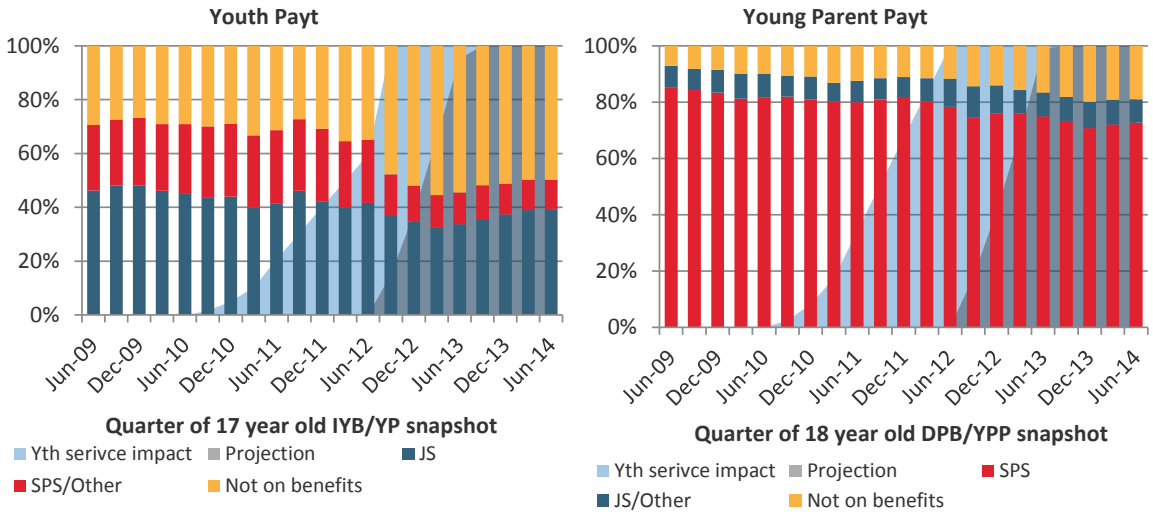
[5] https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/youth-service/index.html
[6] http://www.ssc.govt.nz/bps-boosting-skills-employment

Analysis based on valuation models corroborates these findings by looking at former Youth's status one year after aging into working-age benefits (that is, at age 19 for YP, and at age 20 for YPP). The analysis necessarily involves mixing observed and projected outcomes, and is shown in Figure 4.15.

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 2009, we can track their outcome at age 19 two years later. We observed that 29% had exited benefits (the yellow bar), 46% were still on a Jobseeker type benefit (blue) and 24% 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.

While it still is early days, the trends are promising. There is growth in the share of former Youth leaving main benefits (the yellow share of bars). The shaded background area shows that these off-benefit outcomes are improving progressively as a greater share of Youth participate in the Youth Service. The light blue shaded area covers the period of observed impacts from the Youth Service, while the grey area is a projection based on continuation of these early trends.

Figure 4.15 Status for 17 year old YP clients when they reach age 19 and 18 year old YPP clients at age 20



In particular, Figure 4.15 shows that:

- 51% of clients who are YP aged 17 at the valuation date are projected to be off benefits when they turn 19 compared to just an average of 31% for similarly aged clients in 2010/11. This is driven heavily by lower entry into SPS, but also better JS outcomes.
- 19% of clients who are YPP aged 18 at the valuation date are off benefits by age 20, compared to 12% for equivalent clients in 2010/11.

The timing of these improvements is closely aligned with the introduction of the Youth Service.

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 is consistent with an ongoing reduction in teen pregnancies to historical lows identified in Statistics NZ census data.[7]

[7] http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationEstimates_HOTPAt30Jun14.aspx

Statistics NZ introduced a NEET indicator in June 2011. According to the June 2014 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.[8]

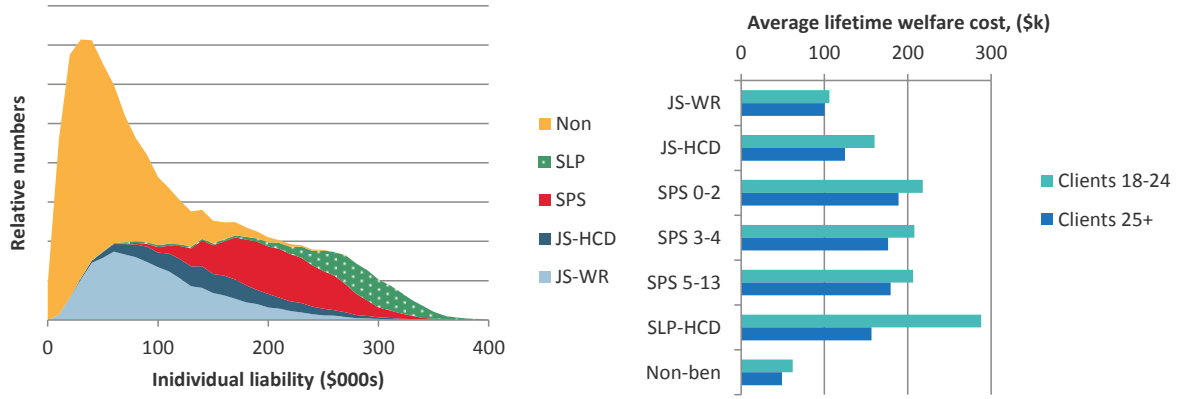
MSD's in-house analysis also shows that the Youth segment has a high rate of involvement with the youth justice system (one in four overall, and one in three for men)[9]. Reporting on Better Public Services result area 7; 'Reducing Crime' shows that the youth crime rate has been falling consistently.[10]

With all of these important social indicators travelling in a positive direction, we view that the increase in numbers in the Youth Payment segment should not be viewed in a negative light, as initial outcomes are consistent with the intent of the Youth Service.

4.5.2 Young adults aged 18-24

Past valuations have focused on the high lifetime costs of the Youth segment, and the high lifetime costs and share of the overall liability associated with young entrants. Given the importance of age as a predictor of liability, this section provides a more detailed analysis of the cohort of beneficiaries aged 18-24 on the valuation date. Restricting attention to this cohort also allows us to better understand age of entry and family benefit history effects, as we have sufficient data to accurately calculate these for younger clients.

Figure 4.16 Distribution of lifetime benefit costs for 18-24 year old clients, excluding those in Youth segments (left panel); Average of these lifetime costs compared with clients aged 25+ (right panel)



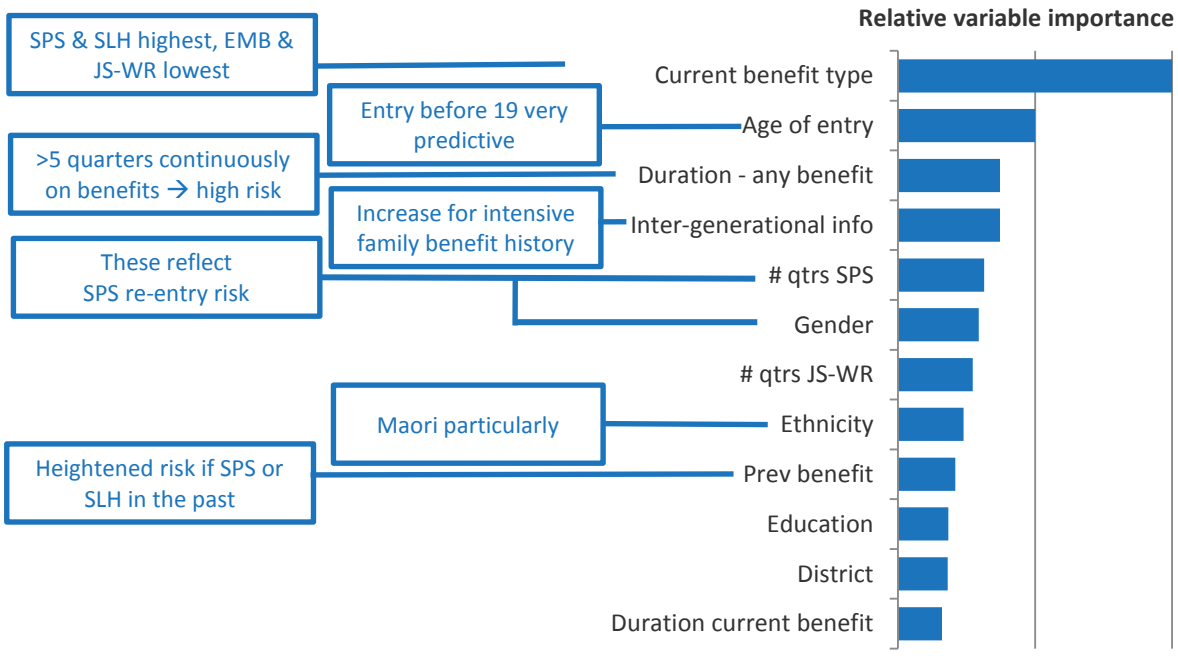
There is a high volume of 18-24 year old beneficiaries, but significant variation in their patterns of benefit receipt and lifetime cost. As at 30 June 2014, there were 102,300 clients aged 18-24 (and not in YP/YPP), with an average lifetime cost of about $122,000. Average liabilities are also higher compared to older clients across all segments. These ideas are illustrated in Figure 4.16.

To better understand short to medium term risk of benefit receipt, we have separately analysed the probability of young clients being on benefit two years later. This varies significantly with client segment; for 18-24 year old clients in the 2012 valuation cohort, 25% of those in JS-WR benefits remain on some main benefit every quarter for the next two years, compared to 51% of JS-HCD, 69% for SPS and 91% for SLP. This is reflected in Figure 4.17, where benefit type is by far the most important predictor of benefit

[8] http://www.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/household-labour-force-survey-info-releases.aspx
[9] *Children's Contact with MSD Services*, MSD 2012. Available at https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research
[10] http://www.ssc.govt.nz/bps-reducing-crime

status in two years. However, the likelihood of still being on benefit is heavily affected by a range of other factors as shown in the figure.

Figure 4.17 Ranking of relative variable importance in predicting future cost for 18-24s



Age of entry is very important in predicting future costs for young adult beneficiaries, and ***family benefit history is nearly as important***. As the two effects are correlated, there is a significant cohort of young clients who enter young and have intensive family benefit history; these clients are particularly at risk of being on benefit two years later.

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 receiving JS-WR (but not emergency benefit).

An 'average' 18-24 year old client on JS-WR has about a 25% chance of being on some main benefit every quarter for the next two years. However, this varies with client characteristics, as illustrated in Table 4.2.

- The probability of being on benefit for the next two years (every quarter) is nearly double for Maori women who enter young and whose parents were long-term beneficiaries (about 8% of all beneficiaries aged 18-24), compared to the average 18-24 year old.
- The probability is less than half the average for non-Maori later entrants who have not already received a significant amount of JS-WR benefits (about a quarter of beneficiaries aged 18-24).

Such segmentations show the significant differences in benefit dependency risk, even amongst clients on the same benefit.

Table 4.2 Illustrative segmentation of young adult JS-WR clients' probability of main benefit receipt for the next eight quarters (numbers and proportions based on the June 2012 cohort)

Cohorts				Number	On benefit for 2 yrs
Age entry < 18.5	Male	# JS-WR qtr < 6	Parents intensive*	1,511	24%
			Parents not intensive	1,302	17%
		# JS-WR qtr ≥ 6		3,471	29%
	Female	Maori	Parents intensive*	1,837	46%
			Parents not intensive	970	36%
		Not Maori		2,549	34%
Age entry > 18.5	# JS-WR qtr < 6	Maori		2,462	20%
		Not Maori		5,103	12%
	# JS-WR qtr ≥ 6	Male		2,415	20%
		Female		1,380	30%
All				**23,000**	25%

* Intensive in this table is parent on benefit >60% of the time when client aged 13-18

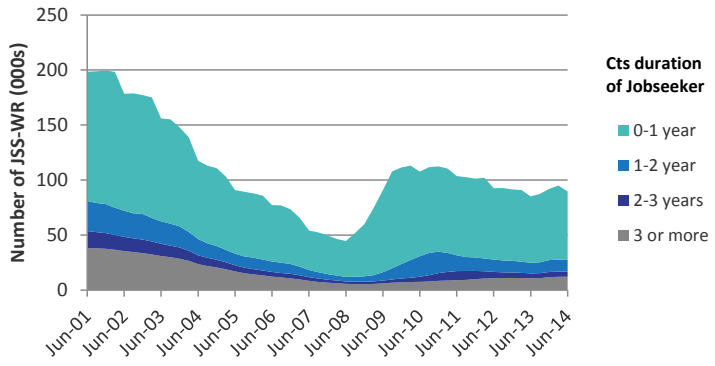
4.5.3 Long-term jobseekers

The number of long-term jobseekers tends to cycle up and down with the unemployment rate, with a lag. The figure below illustrates this effect.

From June 2001 to June 2009 the proportion of Work Ready Jobseekers (those receiving the old Unemployment and Emergency benefits) who had been on benefits continuously for at least three years fell from 19.2% to 6.7%. This meant that at June 2009 82% of Jobseekers had been on benefits for less than 1 year, a record high.

However the GFC in 2008 and 2009 reduced the exit rates of Jobseekers, as well as admitting an influx of newly unemployed clients. The proportion of Jobseekers who had been on benefits for at least three years began to grow again, with a surge in 2012 as the remaining GFC entrants joined the category. The figure sits at 13.6% as at June 2014. Of the 12,200 Work Ready Jobseekers on benefits continuously for the last three years, about 4,000 entered in this GFC period.

Figure 4.18 Number of Work Ready Jobseekers (excluding DPB>14 and WID/WA) per quarter, split by continuous duration since last entering the benefit system.



Assuming the labour market continues to improve (as per Treasury forecasts), we are expecting the proportion of long-duration Jobseekers to stabilise and then fall in the absence of any further policy or operational changes affecting this group. This is already visible in the 1-2 year and 2-3 year bands, but will take an extra couple of years for clients with more than three years duration.

4.5.4 Churn and sustainability of exits

Some clients exit then re-enter the benefit system repeatedly. In some cases this is driven by seasonal factors, but in other cases it reflects the increased risk of poor attachment to the labour force, or other causes of re-entry. Understanding this heightened risk of early re-entry is a crucial part of understanding long-term cost.

People who exit main benefits for a full quarter still have a 23% chance of returning to a main benefit at any point within the next year. This includes those who receive supplementary assistance, as well as those who do not. Some groups are much more likely to re-enter benefits, particularly clients exiting from EB, JS-WR or JS-HCD.

The probability of re-entry decreases significantly after more than a year off main benefits; the likelihood is halved in the second year, and the risk of re-entry falls to 5% by the fifth year off benefits.

For a client who has **just exited** main benefits, the most important predictor of re-entry is what type of benefit they last received before their exit. This is why this factor was explicitly added as a predictor in this valuation (see Section 4.4.3). The risk of re-entry is highest for EB, JS-WR and JS-HCD (in that order), and lowest for Supplementary Only and SLP benefits. Other variables that are particularly important for assessing re-entry risk are JS-WR history, age, ethnicity and region. Analysis of intergenerational benefit receipt suggests this is likely an important indicator as well, though it is not included here as data is only available for a sub-set of the benefit population. We give an illustrative segmentation of re-entry risk in Table 4.3. The probability of re-entry has been calculated for clients who have exited and remained off benefits for a full quarter.

The table shows that 'last benefit type' is the first split of the segmentation analysis, and thus the variable that is most predictive of future re-entries. For the lower-churn benefits, age is the second most predictive variable. For the higher-churn benefits, ethnicity is the second most predictive variable. This approach creates several clusters of beneficiaries, ranked below in terms of their respective probabilities of re-entering benefits.

- The lowest churn cohort has a probability of 16% of re-entering main benefits. It represents about 17% of exiting clients and are those whose last benefit was supplementary assistance only, SLP, or OB, and who are older than 35.
- The highest churn cohort has a probability of 46% of re-entering main benefits. It represents about 14% of exiting clients and are those whose last benefit was JS, EMB, SPS, or YP/YPP; whose ethnicity is Maori, and who have received more than six quarters of JS-WR benefits.

Table 4.3 Illustrative segmentation of risk of re-entry to any benefit within the first year of exiting

Cohort			Prob re-entry	Avg number
Last spell is SUP, SLP, OB	Age > 35		16%	7,160
	Age < 35	Region is Cant, South or Waik	17%	2,610
		Other regions	25%	3,820
Last spell is JS, EMB, SPS, YP/YPP	Non-Maori	Has received <6 qtrs of JS-WR	25%	10,480
		Has received ≥6 qtrs of JS-WR	35%	8,910
	Maori	Has received <6 qtrs of JS-WR	37%	3,510
		Has received ≥6 qtrs of JS-WR	46%	5,730

5 ANALYSIS BY SEGMENT

INSIDE THIS SECTION

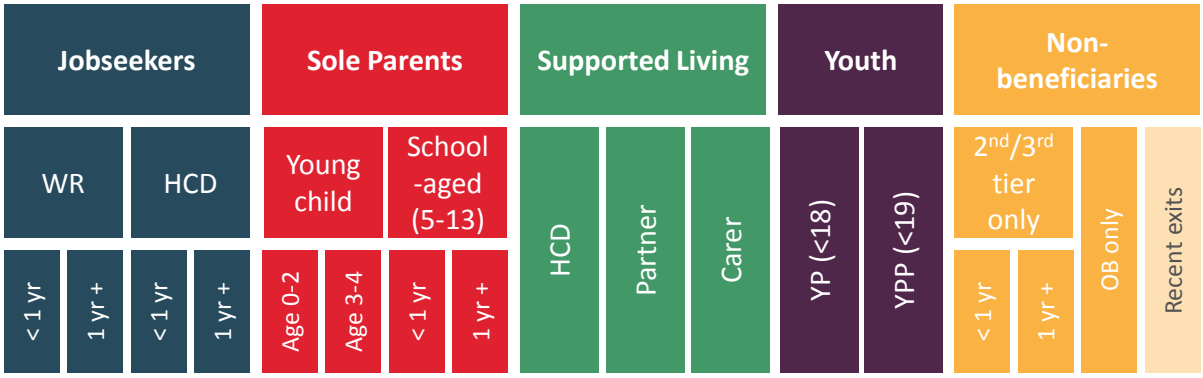
- Actual versus expected results for 2013/14
- Segment level liability results
- Analysis of transfers between segments
- Analysis of distribution and relativity of lifetime costs by segment
- Predictors of long-term risk by segment
- Forecast segment numbers

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 section providers further detail of the results at a segment level.

As noted in the previous chapter, current benefit type is the most important determinant of future cost. 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



As discussed in earlier sections of the report, there have been significant changes to benefit dynamics in 2013/14 due to lower unemployment combined with policy and operational changes through Welfare Reform.

In the last quarter of the valuation there were 20% more Youth beneficiaries than projected the previous year, 8% fewer JS-HCD, 8% fewer SPS with children aged 3-4 and 9% fewer SPS with children aged 5-13. Beneficiary numbers were relatively similar to projections for other segments.

Compared to last year, the total current client liability has decreased for 14 out of 17 segments, with the exceptions being Carers (client numbers and average lifetime costs have both increased), Youth Payment (numbers have increased, but lifetime costs have decreased) and Orphan Only (numbers have increased, but lifetime costs have remained stable). Average lifetime costs have also decreased for all of the other segments, except for Work-ready Jobseekers, for whom they have remained stable.

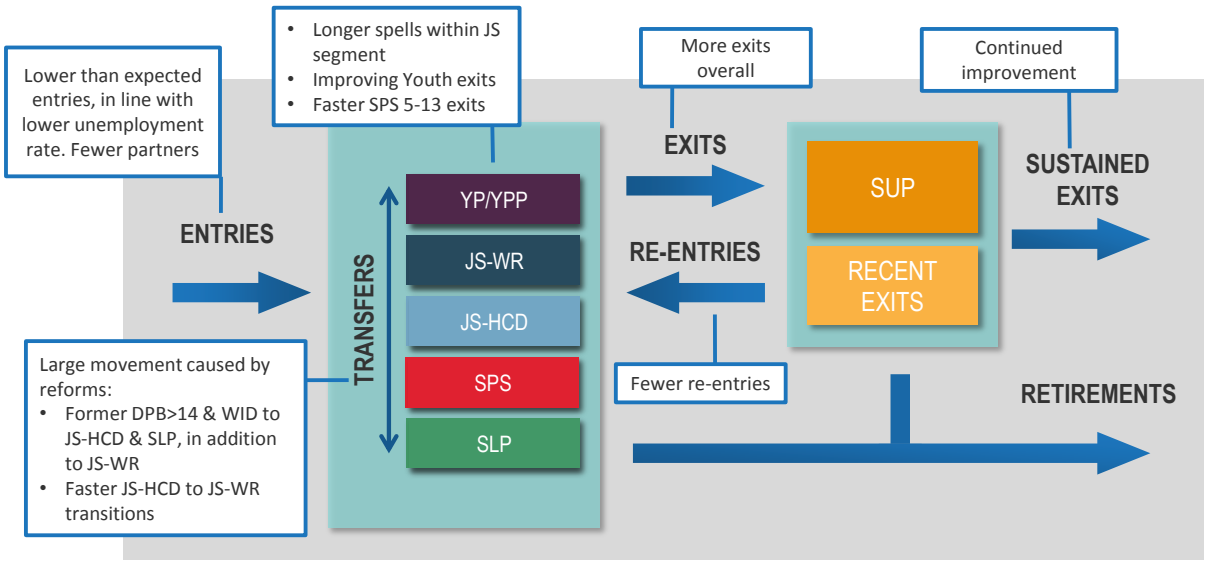
Compared to two years ago, the proportion of future benefits attributable to Supported Living segments has risen 5 percentage points from 23% to 28%, while Non-beneficiary and Sole Parent segments have fallen by about 2 percentage points each.

The ten percent of clients with the highest lifetime cost (on average $275,000) make up about 26% of the total liability in the benefit system. The ten percent of clients with the lowest lifetime costs (on average $12,000) make up about 1.1% of the total liability.

5.2 Actual versus expected results for 2013/14

We have reproduced Figure 3.1 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. Notably, there has been an increase in the number of beneficiaries in the JS-WR segment, partly due to lower than expected exits from these segments. There are also fewer beneficiaries in the SPS and JS-HCD segments due in part to these transfers to other segments such as JS-WR, but also significantly higher exits particularly by Sole Parents with school-aged children.

Figure 5.2 Significant changes to benefit dynamics in 2013/14 compared to expected



In the June 2014 quarter, there were 20% more Youth beneficiaries than projected in the previous valuation, 8% fewer JS-HCD, 8% fewer SPS with children aged 3-4, and 9% fewer SPS with children aged 5-13.

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. Note that this is different to Table 3.2, which look at clients based on their segment at the previous valuation date.

The 2013 valuation was based on a 'pre-reform' basis, in that it did not forecast the impact of the July 2013 changes. Thus some movements from those forecasts are to be expected.

Table 5.1 Actual and expected numbers by segment for majority of quarter

	Quarter	JS-WR	JS-HCD	SPS 0-2	SPS 3-4	SPS 5-13	SLP-Carer	SLP-HCD	Youth	Sup Only	OB
Actual	Sep-13	106.3	78.9	30.2	18.1	41.1	8.7	96.1	3.2	102.4	5.2
	Dec-13	107.7	76.6	30.0	17.8	39.3	8.8	96.5	3.2	103.6	5.2
	Mar-14	107.9	75.1	29.8	17.4	38.8	8.9	96.5	3.3	104.8	5.2
	Jun-14	100.5	73.4	28.9	17.2	36.8	9.0	96.4	3.3	101.5	5.2
Expected	Sep-13	108.8	80.2	30.7	18.2	40.3	8.7	95.1	2.9	103.2	5.2
	Dec-13	107.1	80.8	30.6	18.3	40.5	8.8	94.8	2.7	101.5	5.1
	Mar-14	105.9	80.9	30.5	18.6	41.0	8.9	94.6	2.8	102.4	5.1
	Jun-14	98.2	79.7	30.0	18.6	40.5	8.9	94.6	2.7	99.9	5.1
Ratio A/E	Sep-13	98%	98%	98%	100%	102%	100%	101%	111%	99%	100%
	Dec-13	101%	95%	98%	97%	97%	100%	102%	118%	102%	101%
	Mar-14	102%	93%	98%	93%	95%	100%	102%	119%	102%	102%
	Jun-14	102%	92%	96%	92%	91%	101%	102%	120%	102%	102%

There are a number of noteworthy elements to these results:

- There are now 20% more clients in Youth segments than projected in the last valuation forecast. Youth Payment numbers are particularly sensitive to numbers of new entries over the year, and also generally more variable due to smaller numbers. In 2013/14 there were significantly more entries than expected. This should be read in the context of improved outcomes for Youth, as discussed in Section 4.5.1.
- JS-HCD segment numbers were significantly lower than forecast, by over 6,000 clients in the June 2014 quarter. Changes to medical certificate requirements introduced in 2013/14 appear to transfer clients more quickly into JS-WR segments. A decrease in the number of partnered spells has also contributed.
- There are significantly fewer beneficiaries in the SPS 5-13 segments than expected (91% of expected by June 2014), with a corresponding fall in numbers in the SPS 3-4 segment. Many of these former beneficiaries exited the benefit system, while others transferred to different benefits.
- The number of JS-WR clients has emerged relatively close to expectations, but this masks a number of significant underlying changes:
    - Extra exits and transfers out from former DPB>14 and WID/WA clients
    - Fewer exits from former UB clients
    - Extra transfers in from JS-HCD segments
    - Fewer re-entries from non-beneficiary segments
- Other segments have been broadly in line with expectations. SLP-HCD numbers are up slightly reflecting extra entries from former DPB and WID/WA clients.
- Changes in numbers are matched by corresponding differences in payments to segments; average payment levels were generally in line with or slightly higher than expectations.

5.3 Segment level liability results

5.3.1 Results

Table 5.2 shows the segment level current client liability results. 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 and have been included as a separate line item in the table.

Table 5.2 Current client liability forecasts by client segment at 30 June 2014 and previous valuation. Results based on client's segment at each respective valuation date.

Top tier segment	Segment	2014 Valuation				2013 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	Work-ready, <1 year	44,249	4,058	92	9.7	44,859	4,141	92	9.6
	Work-ready, >1 year	34,033	3,911	115	10.6	40,116	4,608	115	9.9
	HCD, <1 year	22,002	2,523	115	10.4	24,132	2,897	120	10.8
	HCD, >1year	43,715	5,959	136	11.4	46,729	6,458	138	11.4
	Sub-total	143,999	16,452	114	10.5	155,836	18,104	116	10.4
Sole Parents	Youngest child 0-2	27,204	5,767	212	16.4	29,502	6,949	236	17.6
	Youngest child 3-4	16,322	3,227	198	15.3	17,669	3,850	218	16.2
	Child 5-13, <1 year	4,140	563	136	10.9	4,041	614	152	11.5
	Child 5-13, >1 year	28,867	5,072	176	13.4	33,685	6,591	196	14.2
	Sub-total	76,533	14,628	191	14.7	84,897	18,005	212	15.7
Supported Living	Carer	8,633	1,297	150	11.0	8,203	1,184	144	10.5
	Partner	8,017	853	106	8.6	8,353	928	111	8.7
	HCD	85,840	14,842	173	13.0	84,888	15,043	177	13.2
	Sub-total	102,490	16,992	166	12.5	101,444	17,155	169	12.6
Youth	Youth payment (<18)	1,829	251	137	15.2	1,496	219	146	15.5
	Young parent payt (<19)	1,192	254	213	17.5	1,361	335	246	18.9
	Sub-total	3,021	506	167	16.1	2,857	553	194	17.1
Non-beneficiaries	Sup only, <1 year	32,525	1,488	46	6.5	34,604	1,762	51	6.7
	Sup only, >1 year	63,786	3,414	54	7.5	63,210	3,655	58	7.7
	Orphan only	5,085	486	96	7.6	4,928	474	96	7.5
	Recent exits, <1 year	148,006	7,461	50	5.5	154,704	8,762	57	5.9
	Sub-total	249,402	12,849	52	6.2	257,446	14,653	57	6.5
All segment sub-total		**575,445**	**61,427**	**107**	**9.6**	**602,480**	**68,470**	**114**	**9.9**
Expenses + Net loans			**7,575**				**8,070**		
Grand total			**69,002**				**76,540**		

Compared to last year, the total current client liability has decreased for all segments except Supported Living segments, Youth Payment and Orphan Only.

This result can be further understood by splitting the liability into its two components: beneficiary numbers and average individual lifetime cost.

- Average lifetime costs for **Jobseekers** have remained at similar levels to last year, with duration on benefit slightly longer for the JS-WR >1year segment in particular. However, numbers in these segments are 8% lower overall, with a particularly significant decrease of 15% in the JS-WR > 1 year segment. This decrease in numbers (discussed above in Section 5.2) has driven a substantial decrease in the total liability for Jobseekers.
- **Sole parents** have seen the largest decreases in both absolute and relative terms, with a $3.3 billion decrease in total liability. Across the four segments, there has been a decrease of 19%, caused in equal measure by lower numbers (10% lower) and lower average liability (also 10% lower). The most pronounced change is in the Child 5-13 >1 year segment, where the decrease in liability is 23%.
- **Supported Living segments** have seen a decrease in the number of Partners more than offset by increases in Carer and HCD numbers, pushing overall numbers up by 1%. Carer numbers in particular are up by 10% on 2013. The overall liability for these three segments is 1% lower, as the average lifetime cost has dropped slightly.

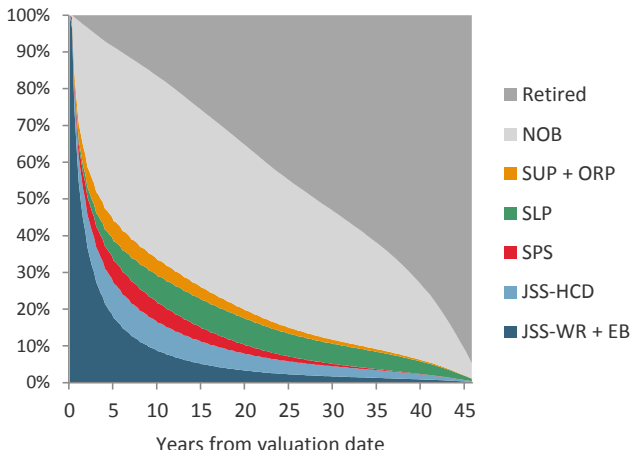
- The total liabilities attached to **Youth** segments are small compared to other segments due to very small numbers, however outcomes for youth are very important due to their increased risk of remaining on benefits long-term, reflected in high average lifetime costs. There have been marked improvements in average liability driven by lower forecast duration. See Section 4.5.1 for more discussion. Note that estimation of lifetime cost for these segments is subject to particular uncertainty.
- The number of clients in **Supplementary only** segments is 1.5% lower, and their average lifetime cost is down 8%. The lifetime cost decrease is partly the result of lower inflation, but also reflects slower re-entry into main benefits.
- Client numbers in **Recent Exits** are 3% lower than last year. This is a natural by-product of falling numbers of benefit recipients over the few years (that is, there are fewer recent exits because there are fewer people on benefit to start with). The lower than expected rates of re-entry observed over the past two years have now been partly reflected in a 9.6% decrease in the average lifetime cost in the segment. The total liability for this segment has decreased by $1.3 billion.

5.3.2 Lifetime projections

Another way of understanding 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:

Figure 5.3 Lifetime projection as at 30 June 2014 for Jobseekers (Work Ready)



- There is a relatively rapid drop-off over the first three years, by the end of which about half of the starting clients have moved off benefits. By this stage about 10% of Jobseekers as at the valuation date are expected to have transferred to JS-HCD and 6% 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.
- 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 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 sole parent benefit, 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 5.4 Lifetime projections as at 30 June 2014, selected segments

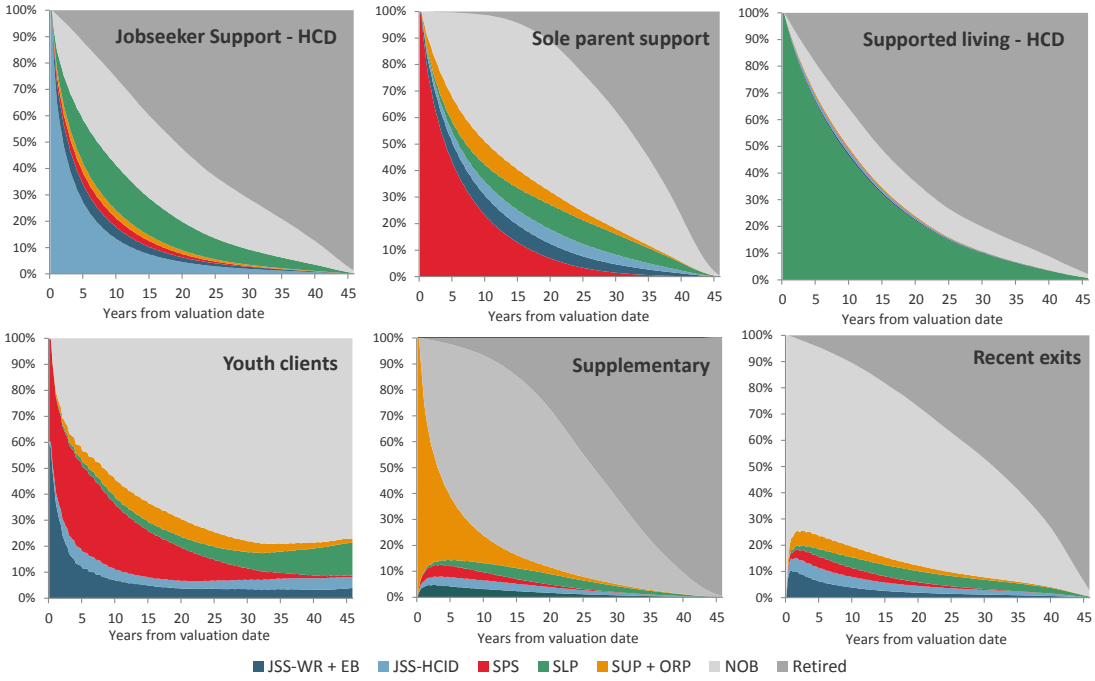
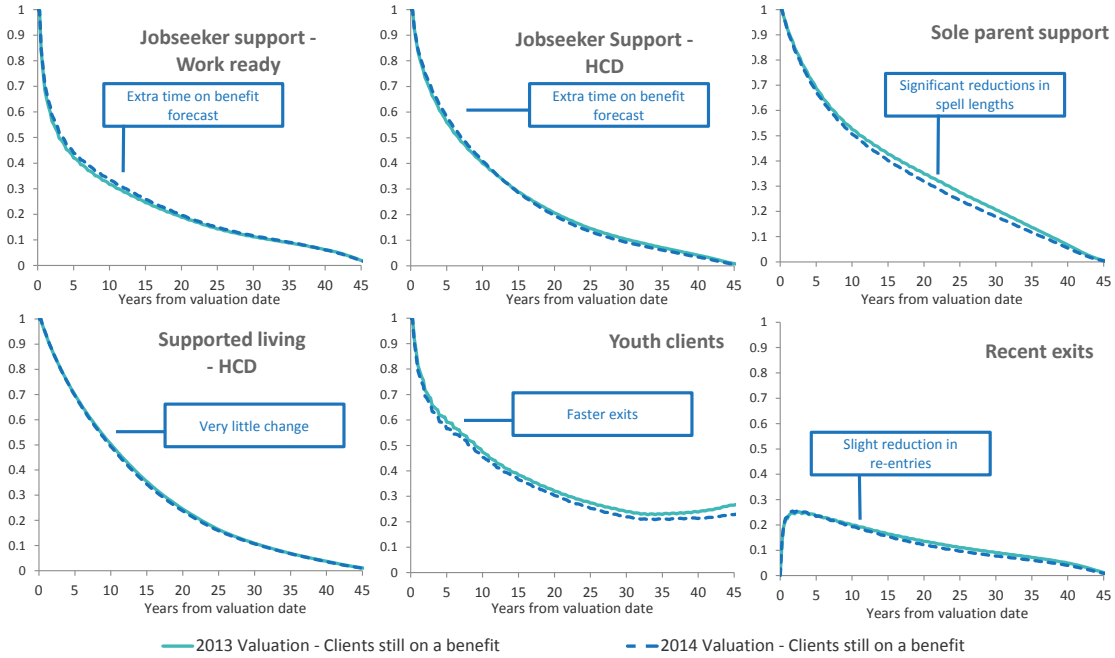


Figure 5.5 illustrates how the overall shapes of these trends have changed from the previous valuation. Changes visible in this plot will tend to mirror changes to average duration in Table 5.2.

Figure 5.5 Lifetime projections – change from projections of time on any benefit as at 30 June 2014



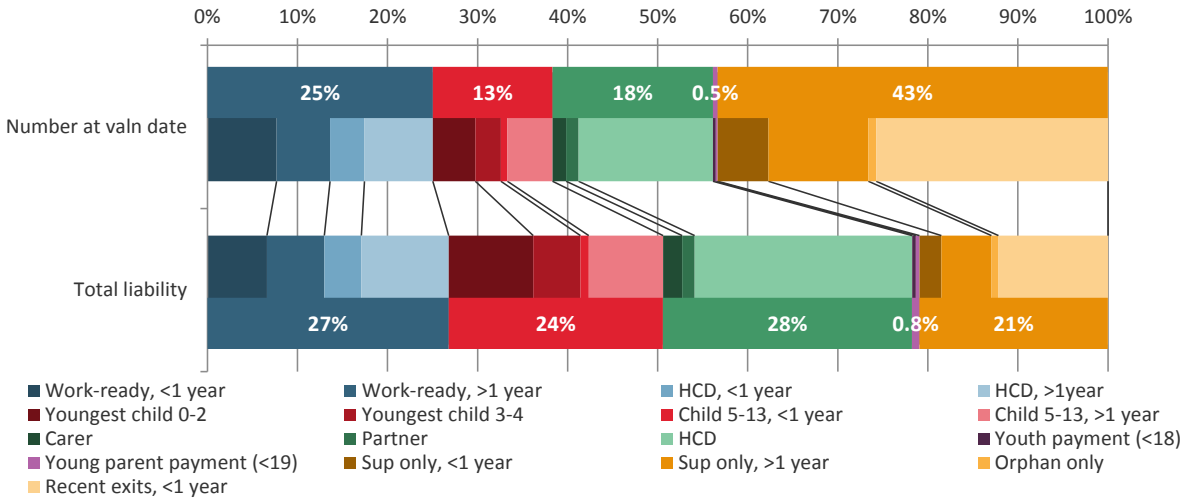
Highlights of these changes are as follows:

- 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 lifetime on benefit from 15.7 years to 14.7 seen in Table 5.2.
- We have seen slower transition rates out of JS-WR segments for various cohorts, which has resulted in increased time on benefit, particularly for 5-10 years into the projection.
- Slightly slower re-entry rates among Recent-Exits have led to fewer people on benefit over the course of the projection. This difference is most pronounced in later years (15-30 years).

5.3.3 Relative contribution to overall liability

The difference in average lifetime cost across segments means that some segments have a disproportionately large or small impact on 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 5.6 for the various segments.

Figure 5.6 Contributions of segments towards client numbers and liability total

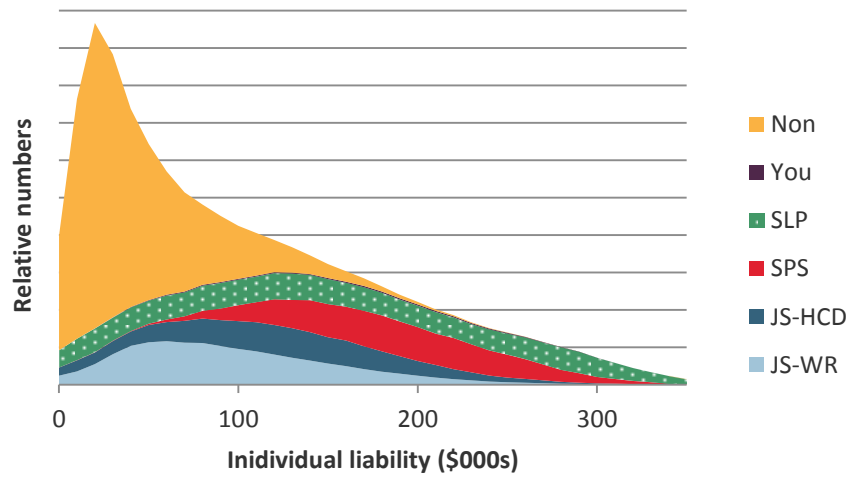


Compared to two years ago, the proportion of liabilities attributable to Supported Living segments has risen 5 percentage points (from 23% to 28%), while Non-beneficiary and Sole Parent segments have fallen by about 2 percentage points each.

Current segment is among the most important predictors of 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.

- The 10% of clients with the highest individual liabilities have an average lifetime cost (inflated and discounted) of $275,000. This group is dominated by clients currently in Sole Parent (35%) and Supported Living (53%) segments.
- The 10% of clients with the lowest individual liabilities have an average lifetime cost of $12,000. The lowest deciles – 7, 8, 9 and 10 are all dominated by recent exits.
- The median liability is about $86,000, and 20% of clients have a liability greater than $178,000.
- The top 10% of clients represent 26% of the total current client liability. The top 30% (those clients with a liability above $141,000) represent 60% of the total.
- The bottom 10% of clients represent about 1.1% of the current client liability, and the bottom 40% account for about 12% of the total.

Figure 5.7 Relative numbers of clients, individual liability. (Relative contribution by current segment is shown in colour. Excludes expenses and net loans).



The ten percent of clients with the highest lifetime cost (on average $275,000) make up about 26% of the total liability in the benefit system. The ten percent of clients with the lowest lifetime costs (on average $12,000) make up about 1.1% of the total liability.

5.4 Analysis of transfers between segments

Each quarter, about 63,000 beneficiaries either leave benefits or transfer to a different benefit; this represents about 13% of the client base. About 70% 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.

Understanding these transfers is important for a variety of reasons:

- A client's lifetime cost is affected both by their current benefit and their benefit history, so movements through the benefit system can materially increase (or decrease) their expected lifetime cost.
- Policy and operational changes (such as recent reforms) tend to affect transfer behaviour in addition to entries and exits. Changes to transfer behaviour are typically harder to predict
- Imbalances in transition behaviour (that is, more people moving from A to B than B to A) will affect the long-term balance of benefits paid in the benefit system. 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 2014.

Table 5.3 summarises the number of quarter movements 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 3.8.5). Generally there has been increased transfer activity in 2013/14 relative to previous years. This is in part the result of Welfare Reform policy changes effective July 2013, discussed in detail in Section 2.4.1.

We make the following observations:

- One of the most important transfer pairs is the movement from JS-WR to JS-HCD and vice versa. These transfer rates have increased markedly in the past year, with some of this increase expected to continue in future years. The proportionally larger increase in movements from JS-HCD to JS-WR means that the overall balance of numbers within Jobseeker Support will move more towards JS-WR.

- The next largest movements are from JS-WR and SPS to SUP, reflecting exits from main benefits. There has been a particularly significant increase (32%) for Sole Parents.
- Transfers from SPS to JS-WR relate in part to children reaching age 14.
- The 21% increase in transfers from JS-HCD to SLP-HCD relative to the previous year is notable.

Table 5.3 Major transfers between benefit types in 2013/14 and discussion on changes compared to previous year.

From		To	Transfers per qtr, 2013/14	Change in transfer rate, compared to 2012/13	Comment
JS-WR	→	JS-HCD	3,349	+25%	Partly former DPB>14 and WID/WA clients, but underlying increase too
JS-HCD	→	JS-WR	3,039	+40%	Increased rate of movement due to med. certificate rules
JS-WR	→	SUP	2,390	+8%	Largely former DPB>14 and WID/WA clients, temporary
SPS	→	SUP	1,971	+32%	Improved performance for SPS 5-13
SPS	→	JS-WR	1,666	+12%	Partly expected from policy changes when youngest child reaches 14
JS-HCD	→	SLP-HCD	1,654	+21%	Partly former DPB>14 and WID/WA clients, some other acceleration visible
SUP	→	JS-WR	1,423	+2%	Stable
JS-WR	→	SPS	1,003	+22%	2012/13 transfers were unusually low
JS-HCD	→	SPS	963	15%	
SUP	→	SPS	873	5%	Continues trend
JS-HCD	→	SUP	856	+3%	
SUP	→	JS-HCD	735	18%	Less direct entry to JS-HCD amongst SUP clients

Some of the increases (particularly some of the movements from JS-WR) are likely to be specific to recent reforms and operational changes. We expect that much of the increase is temporary, and that ongoing transfer rates will revert closer to historical averages.

5.5 Understanding segment-level differences

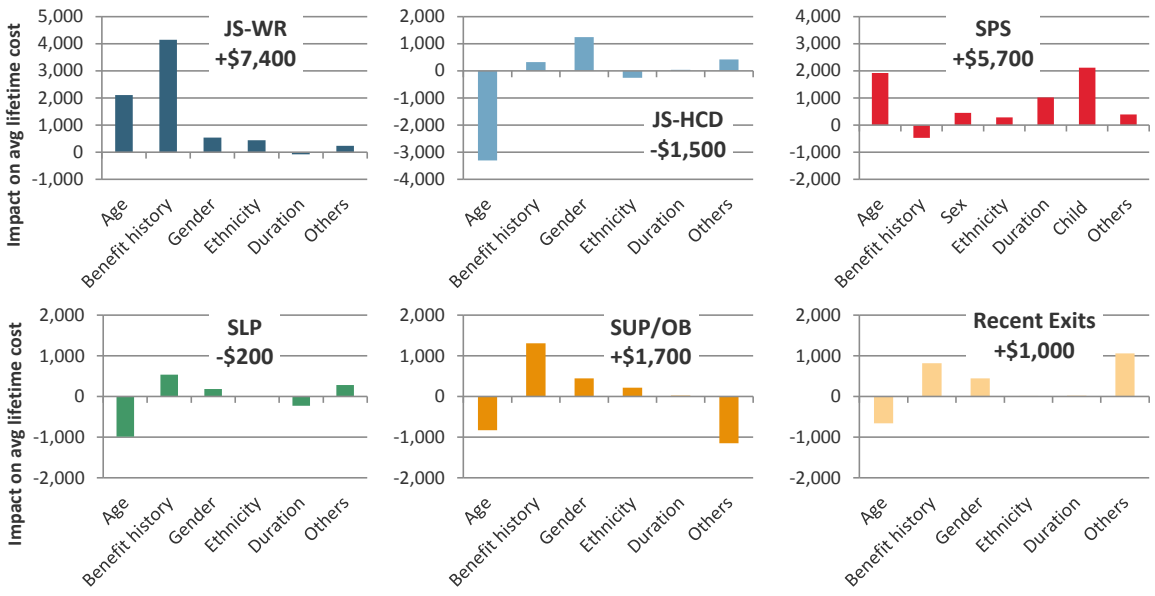
5.5.1 Year-on-year changes to segment composition

The change in average client 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. 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 the valuation models and economic assumptions remained unchanged. The average liability has generally decreased this year to reflect lower inflation and faster exits, but the distributional impacts are broadly the opposite; the types of clients remaining in the system have higher liabilities compared to last year. We have attempted to quantify the impact of this distributional change for each top-level segment, summarised in Figure 5.8. This idea was also introduced for Youth segments in Section 4.5.1.

Figure 5.8 Estimation of the impact of distribution change on the average lifetime liability for selected segment groups



If the distribution of JS-WR clients were exactly the same as the 2013 valuation, we would have expected the average liability to be $7,400 lower. In other words, distributional changes to the mix of clients within the segment have caused the liability to be that much higher. This means that much of the strengthening occurring in this segment is due to distributional impacts. When unpacked into individual risk factors, we see that the result is primarily driven by age (which on average is younger than last year) and benefit history (which on average is longer than last year).

In contrast, the distributional impacts for JS-HCD have caused a $1,500 decrease in the average lifetime cost for JS-HCD clients, with relatively fewer younger clients. These distributional effects may to some extent offset one another; that is, younger beneficiaries are more likely to be on JS-WR than JS-HCD.

Other highlights include:

- The average SPS liability is $5,700 higher, driven by younger clients with younger children. This is consistent with increased exits by older SPS clients with school-aged children (5-13).
- A small distributional decrease in SLP lifetime costs, driven by age.
- The Non-beneficiary segments are higher due to distributional factors, driven by benefit history (that is, more long-term beneficiaries are exiting relative to last year), gender (more female exits) and region.

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 lifetime cost to be low or high. These relativities vary across different segments, with the top 10 characteristics that best differentiate risk of long-term benefit receipt within each segment shown for various segment groups in Figure 5.9.

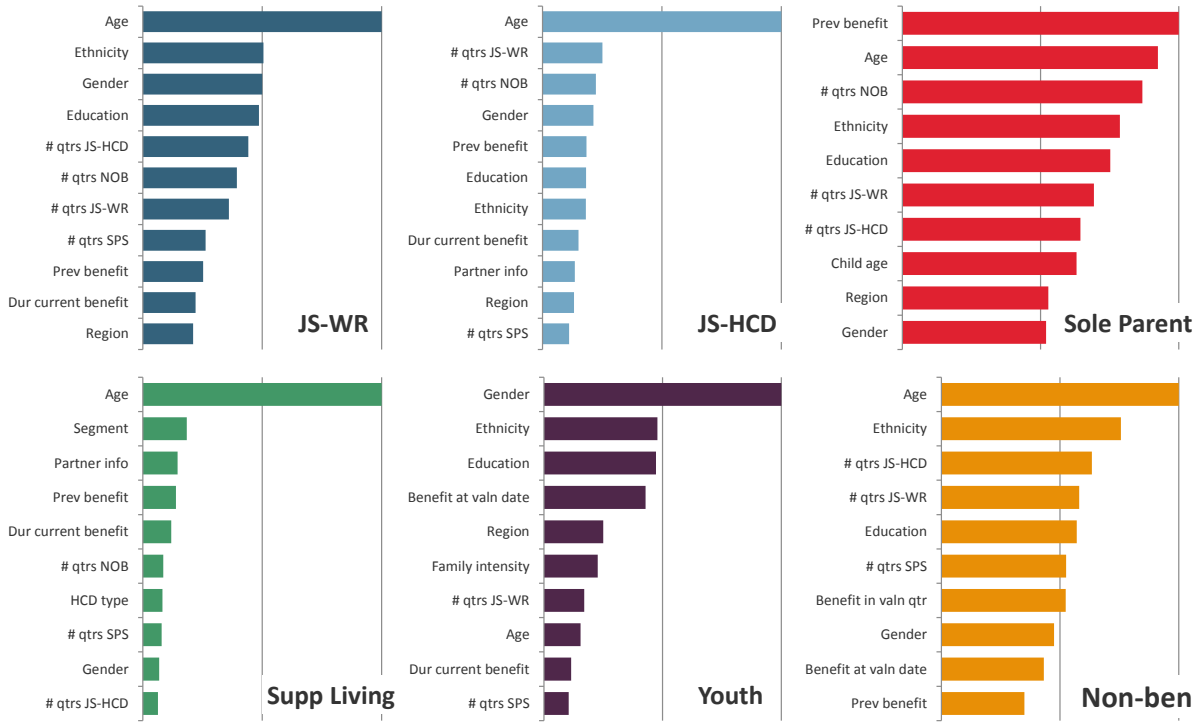
We note the following:

- Age is very important across all segments. However, it is particularly important for JS-HCD and SLP segments, where younger clients have a high possibility of long-term SLP spells. Age is relatively unimportant ***within*** the Youth segment only because all Youth are close in age. Thus current age is important in lifetime cost estimates for the Youth segment itself, but less important in differentiating between the lifetime costs of Youth. Note that analysis of predictors of long-term risk for Young

Adult beneficiaries in Section 4.5.2 provides a different perspective that reduces the influence of current age.

- SLP segments are very sensitive to age – about 30% of the total variability in 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.
- Family benefit history data is only available for a sub-set of younger clients, and as a result does not figure prominently in these results. The analysis of Young Adult beneficiaries in Section 4.5.2 gives a better sense of its relative importance. Intensive family history ranks sixth as a risk factor among Youth Segments, where its impact would be expected to be strongest. While it is perhaps surprising that its importance for Youth is not higher, it does indicate that once a client is in the benefit system, there are many other indicators that are more direct and relevant to lifetime cost estimation.
- Ethnicity is a significant indicator of lifetime cost. This is particularly true for the JS-WR, Non-beneficiary, Youth and Sole Parent segments.
- Education tends to have a similar level of impact as ethnicity
- Some of the important drivers are segment-specific.
- Partner information is more relevant for JS-HCD and Supported living segments, but is not relevant for Sole Parents, who are by definition not partnered; nor is it relevant for Non-beneficiaries, for whom partner status data is not collected in the same way.
- Child-related variables are quite important for Sole Parents.
- The type of heath condition, injury or disability is important for SLP-HCD, 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 5.9 Relative variable importance for estimating lifetime benefit cost, for selected segment groups



We can understand how these drivers are affecting the lifetime cost estimates by examining the partial dependence effects. These effects show what the impact of each variable is, holding all other risk factors constant. Such plots for age were considered in 4.4.

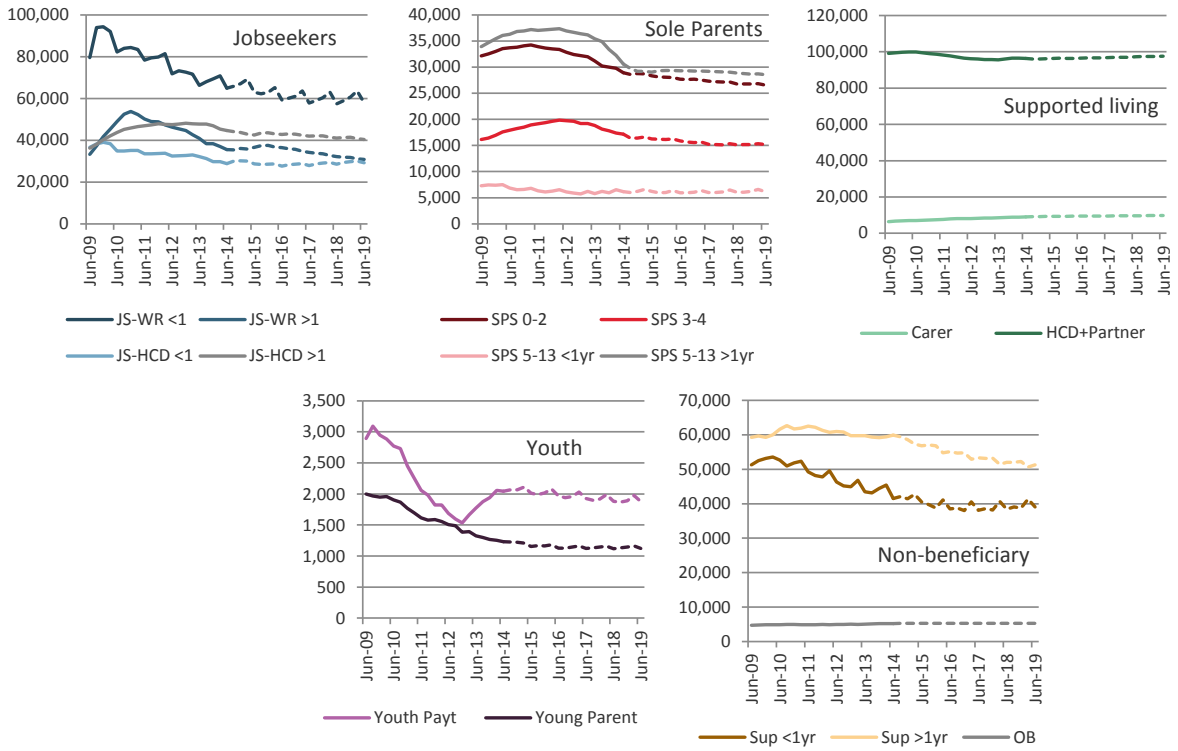
5.6 Forecast segment numbers

Figure 5.10 shows recent trends and forecast numbers in each of the top-level segments. This is a combination of the current client projection (for those expected to remain on benefits) and future client numbers (incoming clients). While the numbers relating to current clients are relatively well estimated, the number of new entries is more uncertain. The number of future entries is dependent on the labour force and other demographic trends, with numbers very sensitive to changes in the economy. The distribution of entries (age, ethnicity, likely benefit type, and so on) is likely to evolve over time, which also increases the difficulty in forecasting. Finally, the impact of reforms on entries is harder to gauge than the impact of current clients, and the lack of visibility of potential clients not currently in the system makes it more difficult to estimate their numbers and characteristics. We have estimated the number and type of entrants seen in future years will be similar to that in 2013/14 (see Section 8.2).

We have generally forecast stable numbers, with decreases for the segments most sensitive to the unemployment rate (JS-WR, YP, Sup only). We have estimated a moderate decrease for Sole Parents in 2014/15, followed by a period of stabilising numbers. These projections are consistent with:

- An unemployment rate forecast to drop significantly over the next couple of years and flatten out beyond that
- Reforms that have led to a temporary surge in exits that slows beyond the next year
- Reforms that have had a limited impact on client entry numbers

Figure 5.10 Forecast numbers by segment.



Within this overall trend, there are a few differences across segments.

- Lower duration segments have been forecast to grow faster than higher duration ones. This reflects the relative trend seen over the past year or so, and the increasing role of new entrants in driving benefit numbers.
- Sole Parents numbers have been forecast to stabilise relatively quickly, with only a small drop in client numbers beyond 2014/15.

- There is a reasonable possibility that exits will outpace entries again as a continuing impact of policy and operational changes, causing segment numbers to continue to fall substantially in 2014/15 and beyond. Such a fall has not been allowed for currently, but would be reflected in next year's valuation.
- Supported Living and OB segments are forecast to grow slowly at their trend rates over the past couple of years.
- Youth segments are expected to fall slightly as the recent number of extra entries move out of Youth (either off benefits or to another benefit).

Note that these numbers have been calculated on a 'per quarter' basis. That is, it is the number of people who spent most of the quarter in that segment. Projected payments are expected to follow the patterns in client numbers, with added benefit inflation over time.

6 ANALYSIS BY REGION

INSIDE THIS SECTION

- Regional unemployment rates
- Actual versus expected results for 2013/14 by region
- Regional level liability results
- Understanding regional differences
- Forecasts by region

6.1 Introduction and highlights

Work and Income has 11 regions that form the basis for service delivery and reporting. 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.

Figure 6.1 Work and Income regions

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

Unemployment trends vary considerably across the country, with relatively high current unemployment in Northland (8.9%) and East Coast (7.8%) contrasted with the relatively low unemployment rates in the Canterbury (4.9%), Nelson (4.7%) and Southern (3.3%) regions.

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

- The Canterbury region had a very large decrease—10% below expected—likely due in part to the strong recovery following the earthquakes in that region (our projections last year only applied a national unemployment rate).
- The Auckland region represents 30% of the total liability, but its $1 billion reduction represents nearly half of the overall decrease. Proportionately, it was second best performing region after Canterbury.
- The Central region was the only region that fared (very slightly) worse than expected.

There has been a decrease in the number of beneficiaries since 30 June 2013 in all regions except Central. Average lifetime costs have also decreased in all regions, with the exception of a marginal increase in Southern, where the average liability remains second-lowest of any region.

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 $30,000 in average liability from the highest in East Coast ($128,000) and Northland ($124,000) to lowest in Canterbury ($97,000) and Southern ($94,000).

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

- The ranking of average lifetime costs for JS-WR is broadly consistent with regional unemployment rates.
- The high average lifetime costs in the East Coast are due to a greater than average proportion of Sole Parents, Supported Living and Youth.
- Differences in 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 lifetime costs in specific regions. Maori 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 co-relation with other factors, such as a higher propensity to receive SPS.

6.2 Regional unemployment rates

6.2.1 Approach

For the first time, the 2014 valuation models make use of regional unemployment rates. These are used in both the historical modelling and projection. Adding these new features to the valuation improves:

- Forecasts of lifetime costs by region
- Insight into differences between regions, and resulting challenges
- Capacity to distinguish between labour market changes and performance by region
- Control in projections and scenario analysis

Regional unemployment is projected with reference to the projection of the national unemployment rate published by NZ Treasury (see Figure 2.5). We ensure that the population weighted average of the regional rates matches the forecast national rate, but project each region to an unemployment level consistent with its historical experience of ‘full employment’.

Statistics NZ produces historical regional unemployment rates, but these are not seasonally adjusted and are also subject to significant volatility. There are no existing long-term forecasts for regional unemployment consistent with NZ Treasury national rates. Our approach to developing these forecasts 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 Treasury’s shape of movement from current unemployment rates to full employment levels over the first five years of the projection

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

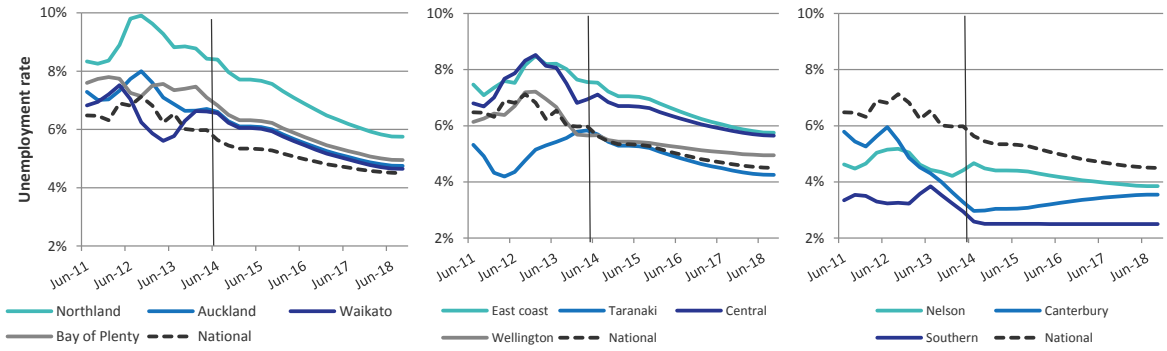
This approach has been developed in consultation with the MSD Actuarial team.

We have altered our projection models so that they use this region-level projection of the unemployment rate instead of the national rate. The approach allocates the liability more accurately between regions, but makes virtually no difference to the overall liability estimate. Details of the assumed unemployment rates by region are given in Appendix B.

6.2.2 Regional unemployment trends

As discussed in Chapter 2, the national unemployment rate was 5.6% at June 2014, and Treasury forecasts a return to 'full employment' of 4.5% by June 2018. Figure 6.2 shows our forecasts for regional unemployment rates, based on the national Treasury forecast. Regional unemployment rates vary considerably across the country from a high of 8.4% in Northland to a low of 2.6% in Southern (in June 2014, seasonally adjusted). Our projected rates reflect this spread. The two regions that do not closely follow the general national trend are the Canterbury and Southern regions. These already have very low unemployment rates; these rates are less likely to fall much further. For the Southern region we have adopted a flat forecast and for Canterbury a slight increase to a higher long-term rate.

Figure 6.2 Actual and forecast regional unemployment rates



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 contrast, North Island regions such as Northland, East Coast and Central have tended to have higher than average unemployment.
- In the Taranaki district the unemployment rate is currently forecast to be close to the national average. However this would not have been true two years ago; its unemployment rate has risen significantly over the past two years, in contrast to most other regions.
- Canterbury has had a sharp reduction in unemployment due to activity related to earthquake recovery.

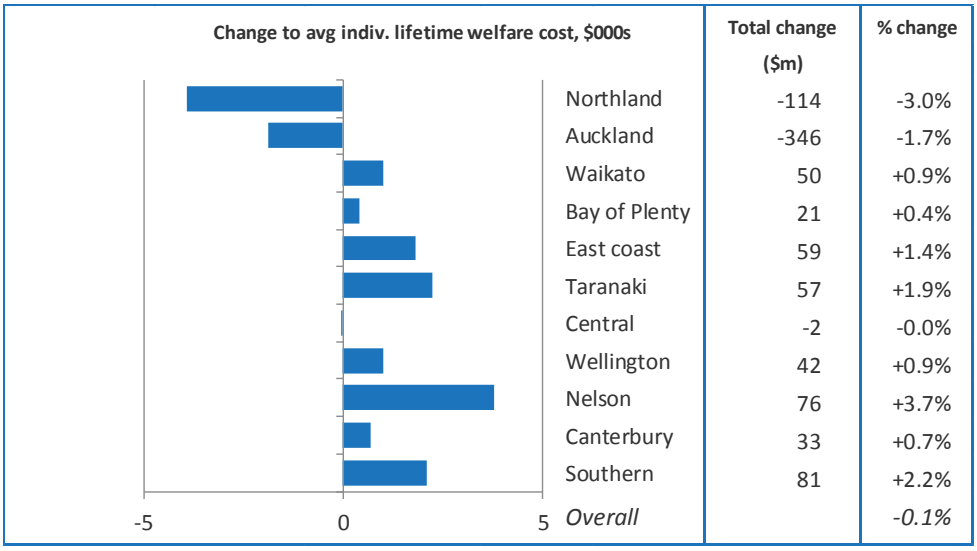
These relative differences will be better allowed for in the analysis of change in future valuations, now that regional rates are embedded in the projection.

6.2.3 Impact of introducing regional unemployment rates on the valuation results

As noted earlier, while the aggregate impact of introducing regional unemployment rates on the estimated liability is virtually zero, there is a ***non-performance-related*** re-distribution of liability across regions that results in changes to overall and average estimates for each region. The results of this redistribution are somewhat counter-intuitive, in that the effect is to *lower* the liability estimates for

regions that currently have the highest unemployment rates (and vice versa). This is because lifetime cost estimates are heavily influenced by projected improvements to unemployment rates. Based on Treasury's projection of full employment by June 2018, our assumption is that each region will reach its level of full employment by that time, as discussed earlier. The implication is that regions with higher current unemployment rates have more room to improve, lowering their lifetime cost estimates relative to estimates in previous years. This means, for example, that while Northland—which has the highest unemployment rate of any region—has seen the largest decrease in lifetime costs due to the new methodology (a decrease of 3%), that region still has the second-highest average lifetime cost of any region (just below East Coast).

Figure 6.3 Change to benefit liability by region, due to inclusion of regional unemployment rate projections. (These changes are NOT performance related).



	Total change ($m)	% change
Northland	-114	-3.0%
Auckland	-346	-1.7%
Waikato	50	+0.9%
Bay of Plenty	21	+0.4%
East coast	59	+1.4%
Taranaki	57	+1.9%
Central	-2	-0.0%
Wellington	42	+0.9%
Nelson	76	+3.7%
Canterbury	33	+0.7%
Southern	81	+2.2%
Overall		*-0.1%*

The results of the redistribution of liability are outlined more specifically below:

- **Decrease in average and total liability for Auckland and Northland**: the current unemployment rates for these two regions are further above their historical averages, and we forecast larger decreases (1.9% and 2.6% for Auckland and Northland respectively) in their regional unemployment rates relative to the national average (1.1%). As their current regional unemployment rates are higher than the national average, there is further room for improvement as these regions move towards their projected 'full employment' rates.
- **Increase across other regions:** to offset the effect of the reductions in Auckland and Northland, the remaining regions increase by an average of 1.2%.
- **Particularly large increases for Nelson and Southern regions:** these two regions have particularly small forecast decreases in unemployment rates, as they are already fairly low.
- **A relatively small increase for Canterbury:** a separate allowance had already been made before the methodology change for Canterbury, so its increase due to the new regional unemployment rate is not as marked.

These results are summarised in the figure above. It shows the average impact at an individual level, as well as the total (sum across all individuals in that region) and percentage changes.

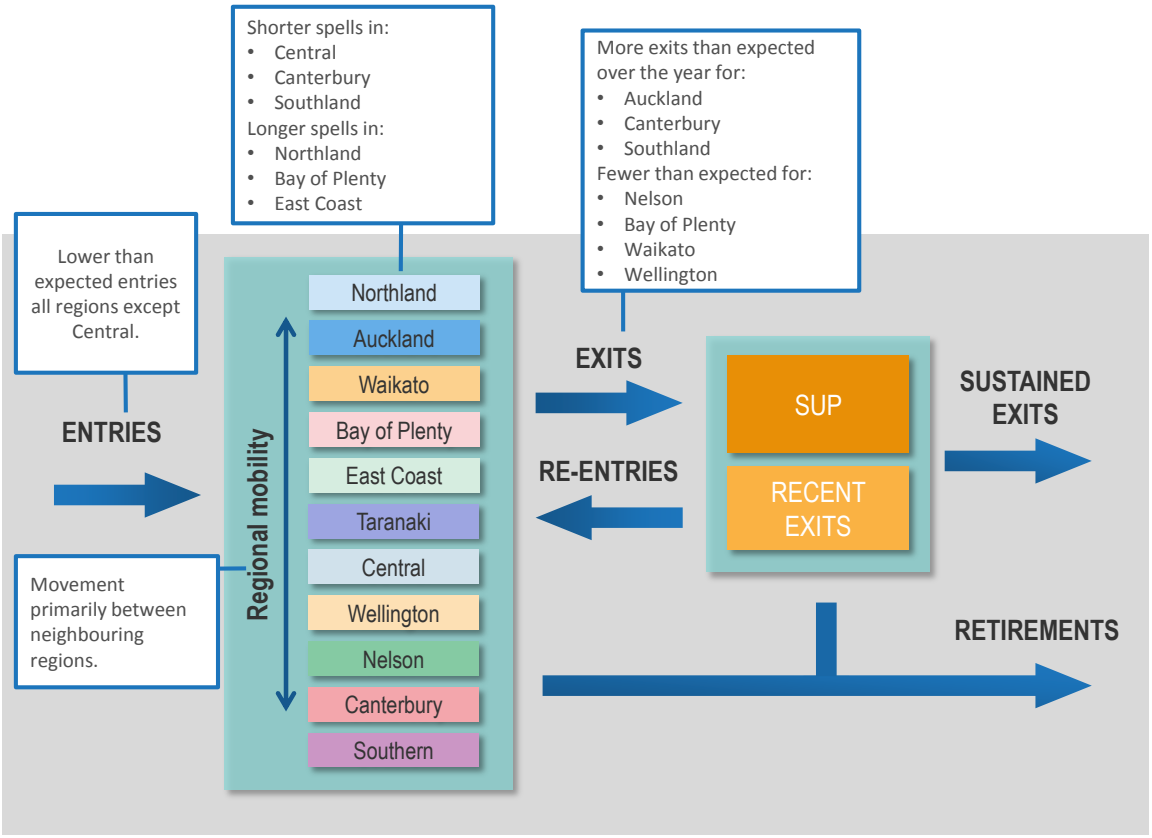
6.3 Actual versus expected results for 2013/14

Highlights of changes to benefit dynamics at the regional level include:

- Fewer entries than expected in all regions except Central.
- Shorter than expected benefit spells in Central, Canterbury and Southern, and longer than expected in Northland, Bay of Plenty and East Coast.
- More exits than expected in Auckland, Canterbury and Southern; and fewer than expected for Nelson, Bay of Plenty, Waikato and Wellington.

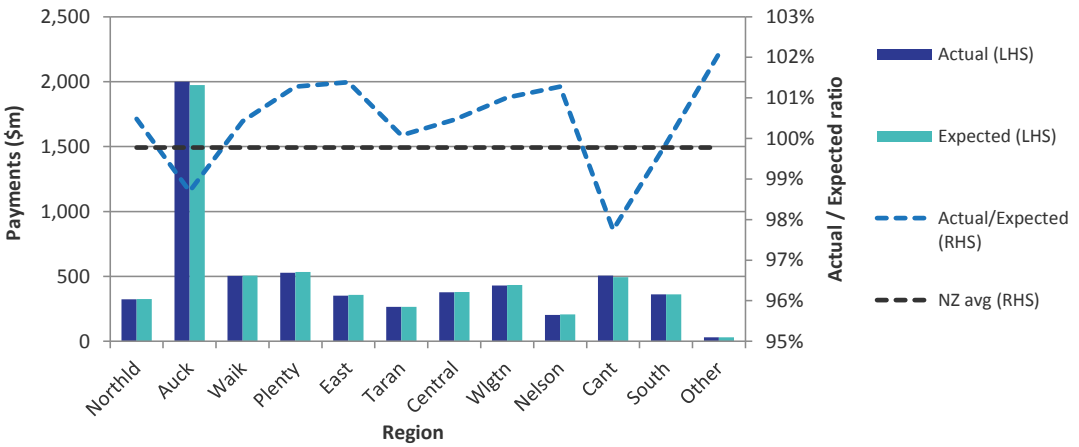
Figure 6.4 illustrates, at a very high level, the most significant changes to benefit dynamics at the regional level compared to what was projected in the last valuation of the benefit system, as at 30 June 2014.

Figure 6.4 Significant changes to benefit dynamics at the regional level in 2013/14 compared to expected



Section 3.4 discussed actual and expected performance over 2013/14 at a general level. This section adds a regional perspective to these results. Actual client numbers and payments were generally very close to expectations; across all clients, numbers on benefit were 99.3% of expected and payments were 99.4%. This relationship was generally true at a regional level as well. For clients in the current client cohort in the 2013 valuation, actual payments over the year were 99.8% of expected. As Figure 6.5 shows there were only three regions where actual payments were less than expected; Auckland (98.7%), Canterbury (97.7%) and Southern (99.9%). The other regions were slightly higher than expected, but only by a couple of percentage points at most.

Figure 6.5 Actual and expected payments by client's region (as at June 2013)



The result above is the average over the year, but in actuality there was an improving trend throughout; payments were 101% of expected in the September and December quarters, and 98% by the June quarter. The relativities between regions did not change very much over the course of the year.

6.4 Regional level liability results

6.4.1 Results

Table 6.1 breaks down the liability forecasts by client region. Note that these results are split based on a client's region at the 2014 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.

Table 6.1 Current client liability forecasts by region at 30 June 2014, excluding expenses net loans

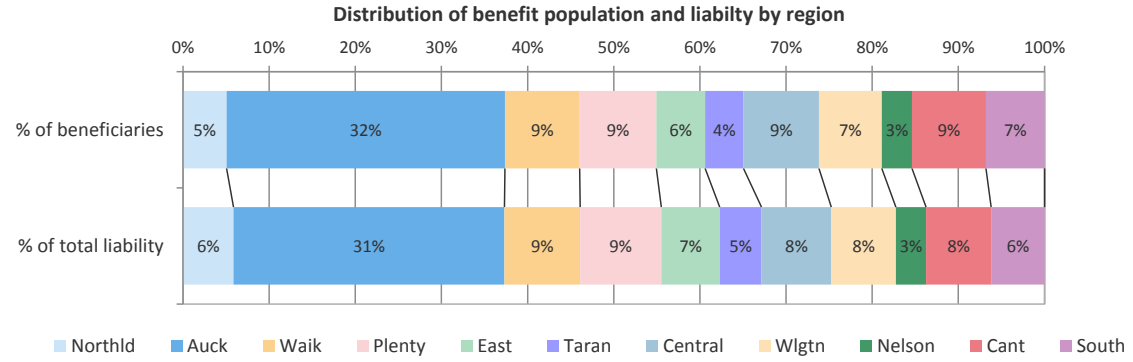
Region	# at valn date	Current client liability ($b)	Avg lifetime benefit cost	Average # yrs on main benefits
Northland	29,016	3.6	124	9.0
Auckland	186,003	19.3	104	7.5
Waikato	49,876	5.4	108	8.1
Bay of Plenty	51,310	5.8	113	8.2
East coast	32,537	4.2	128	9.1
Taranaki	25,639	3.0	116	8.6
Central	50,369	5.0	99	7.5
Wellington	42,028	4.6	110	8.0
Nelson	20,080	2.1	107	7.8
Canterbury	49,537	4.6	94	7.2
Southern	39,050	3.8	97	7.3
All	**575,445**	**61.4**	**107**	**7.8**

6.4.2 Relative contribution to overall liability

Some segments have a significantly larger or smaller impact on total liability relative to the number of clients in that segment. For regions, however, the share of clients and share of liability are roughly proportional:

- Waikato's, Bay of Plenty's and Nelson's share of the total liability is equivalent to their share of the total client population
- Northland, East Coast, Taranaki and Wellington each make up one percentage point more of the liability than of their share of clients
- Auckland, Central, Canterbury and Southern each make up one percentage point less of the liability than their share of clients

Figure 6.6 Contributions of regions toward client numbers and liability

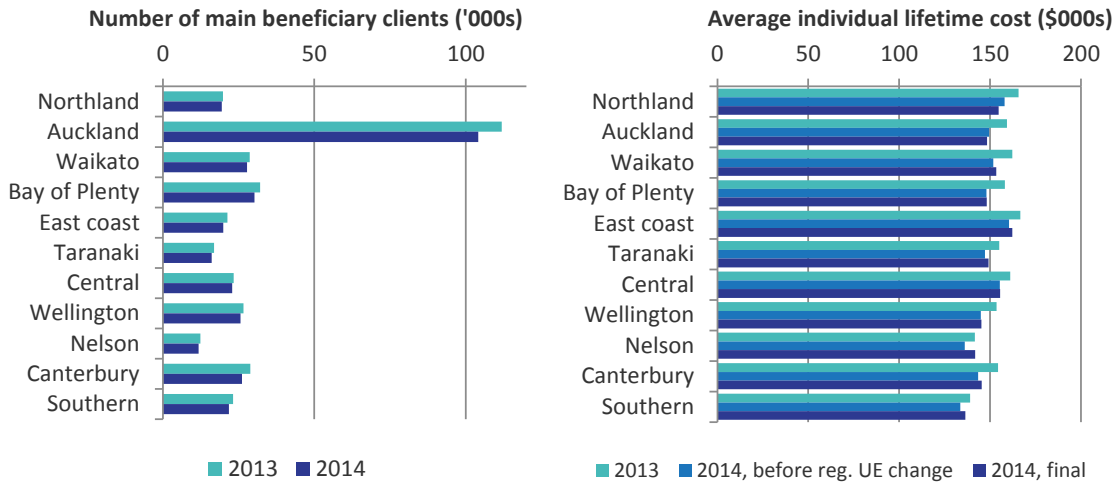


Given the significant differences between regional unemployment rates, and the importance of unemployment rates as a driver of benefit receipt, we might anticipate significant differences in the distribution of liability versus clients by region. Instead, the overall distribution of the liability between 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. For instance, the fact that the average lifetime cost in Northland is 16% higher than the national average means that it represents 6% of the total liability, compared to the 5% of the beneficiary population in the region.

6.4.3 Change from 30 June 2013

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

Figure 6.7 Number of clients and average lifetime cost for clients (excluding NOBs, expenses, loans). The average cost for 2014 is shown both before and after regional unemployment was introduced.



There has been a decrease in the number of people receiving main benefits since 30 June 2013 in all regions. Average lifetime costs have also decreased in all regions.

The largest relative decreases in beneficiary numbers occurred in the Canterbury (9%), Auckland (7%) and Southern regions (6%). Most other regions saw their client numbers fall about 2 to 4%. Average lifetime cost decreases (before the introduction of the regional unemployment rate in the projection) were fairly uniform, varying between 4 and 7%.

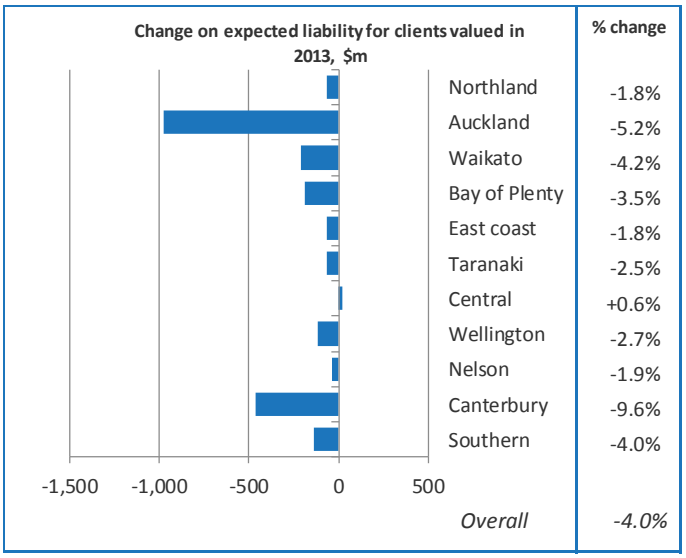
The regional level comparison to 2013 is more difficult for non-beneficiary segments, as we have poor quality data and so many clients must be randomly allocated to regions. We expect this situation to improve in future valuations.

6.4.4 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 management of the benefit system.

We have split this $2.2 billion decrease at a regional level (although conditional on the national unemployment rate, as was used in 2013), shown in Figure 6.8. This also shows the changes in regional liability between the previous and current valuation; both based on national unemployment rates. The column on the right shows the percentage change, which recognises the relative size of regions. Auckland and Canterbury have the largest decreases (in both absolute and relative terms). Their contributions represent three-fifths of the overall decrease in liability, despite representing about 40% of the liability valuation.

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



How much is each region contributing to the $2.2 billion reduction in liability due to experience?

The 4.0% decrease in liability compared to forecast is spread relatively evenly, with a few exceptions.

A decrease of nearly $1 billion in Auckland explains almost half of the overall decrease.

The Canterbury region had a very large decrease—almost 10% below expected.

The Central region was the only region that fared (very slightly) worse than expected. The region still had a large decrease in liability, but it appears largely explained by the significant fall in the unemployment rate

Apart from Auckland and Canterbury, the decreases were fairly uniform and widespread; with the exception of Central, which performed slightly worse than average after allowing for changes to regional unemployment rates.

6.5 Understanding regional differences

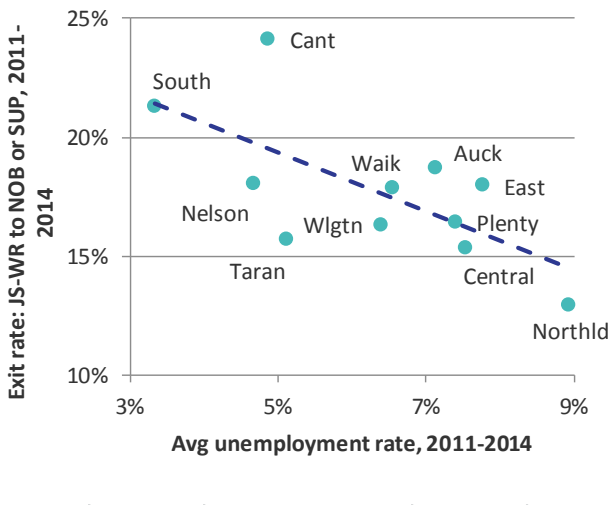
Differences in regional labour markets, mix of beneficiary types, and ethnic composition vary significantly by region, and each has an impact on expected future cost. Each of these factors is discussed in turn.

6.5.1 Regional labour markets and Jobseeker outcomes

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 for other client segments. The chart in Figure 6.9 shows that faster exit rates amongst JS-WR clients tend to correlate with the average unemployment rate in the region. Notably, Canterbury lies significantly above trend, with more exits than expected, relative to its unemployment rate; Taranaki lies significantly below. It should be noted that this analysis concerns only exit rates, not the sustainability of those exits; there are also regional differences in levels of seasonal employment and other re-entries.

The corresponding table compares current unemployment rates with the average liability for JS-WR segments. The range of liabilities is significant, with the East Coast and Northland regions having an average lifetime cost 13% above the national average and Canterbury 20% below. The ordering of cost tallies closely, but is not entirely aligned, with the regional unemployment rate. The exceptions are consistent with the chart – Taranaki and Nelson have higher liabilities than their unemployment rate would suggest, Canterbury lower. The Canterbury effect is something of an outlier; the improvements there are greater than its (already large) reduction in the regional unemployment rate would suggest. Some of this may be due to greater economic activity not captured in the unemployment rate related to the continuing earthquake recovery. Our projections for Canterbury are for this outperformance to decrease with time relative to the other regions.

Figure 6.9 The left panel shows the average exit rates from JS-WR against average regional unemployment rate (June 2011 – June 2014). The right table shows the average liability for JS-WR segments by region, compared to the (smoothed) regional unemployment rate in the June 2014 quarter.



Region	Avg JS-WR segment Liability ($000s)	UE rate, Jun-14
East coast	116	7.5%
Northland	115	8.4%
Taranaki	111	5.7%
Central	109	7.1%
Bay of Plenty	108	6.8%
Waikato	106	6.6%
Nelson	102	4.7%
Auckland	97	6.6%
Wellington	96	5.7%
Southern	92	2.6%
Canterbury	81	3.0%

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 years on main benefits by region and starting segment.

Region	JS-WR	JS-HCD	Sole parent	Supp. Living	Youth
Northland	8.5	14.7	9.8	12.8	13.5
Auckland	7.0	13.4	9.3	9.3	12.7
Waikato	7.7	13.6	10.4	10.4	13.1
Bay of Plenty	8.1	13.7	9.6	9.6	13.8
East coast	8.6	14.7	11.0	11.0	14.1
Taranaki	8.4	13.4	11.0	11.0	12.4
Central	8.3	14.2	11.5	11.5	13.2
Wellington	7.2	13.4	10.4	10.4	12.9
Nelson	7.8	12.7	9.5	9.5	12.7
Canterbury	5.9	11.7	9.2	9.2	10.5
Southern	7.2	12.2	9.8	9.8	11.3
All regions	7.5	13.5	10.0	10.2	12.7

6.5.2 Differences in segment composition by region

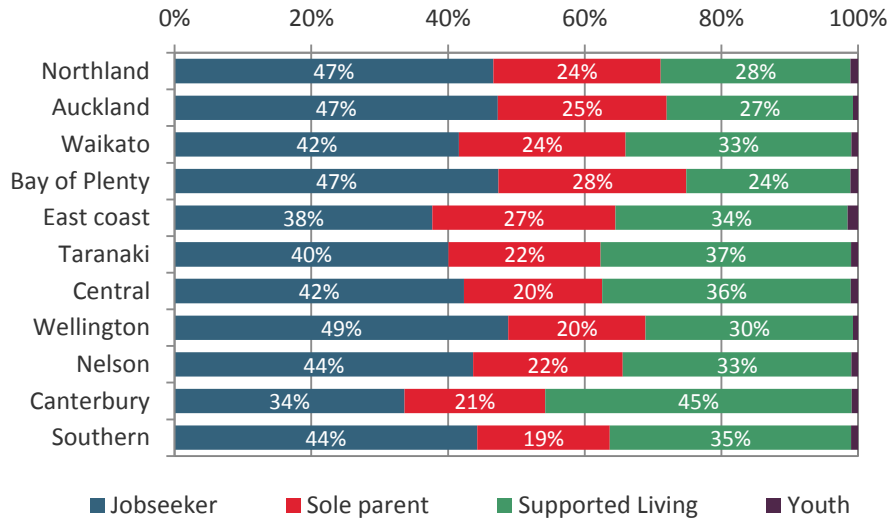
The mix of clients on benefits will heavily influence average lifetime costs for that region. Given that benefit (and segment) type is the most important determinant of lifetime cost of benefit receipt, it is important to understand how differences in the mix of beneficiaries affects each region's total and average liability. Regions with higher (relative) proportions of clients on high liability segments (such as of Sole Parent and Supported Living beneficiaries) will tend to have higher average costs as a result. We

compare relative numbers of main 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 leads to significantly higher overall liability for the region, which has the highest average lifetime costs of any region. We estimate that 30% of the East Coast's higher average lifetime cost is explained by this effect.
- The share of Jobseekers ranges from 34% in Canterbury to 47% and above in Auckland, Bay of Plenty, Wellington and Northland.
- The relative number of Sole Parent beneficiaries is highest in the Bay of Plenty region
- The lowest proportion of SLP beneficiaries of any region is in the Bay of Plenty (24%) and the highest in Taranaki (29%).
- Youth segments are proportionally highest in East coast (1.5%) and lowest in Auckland and Wellington (0.7%)

We estimate that these benefit type differences 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

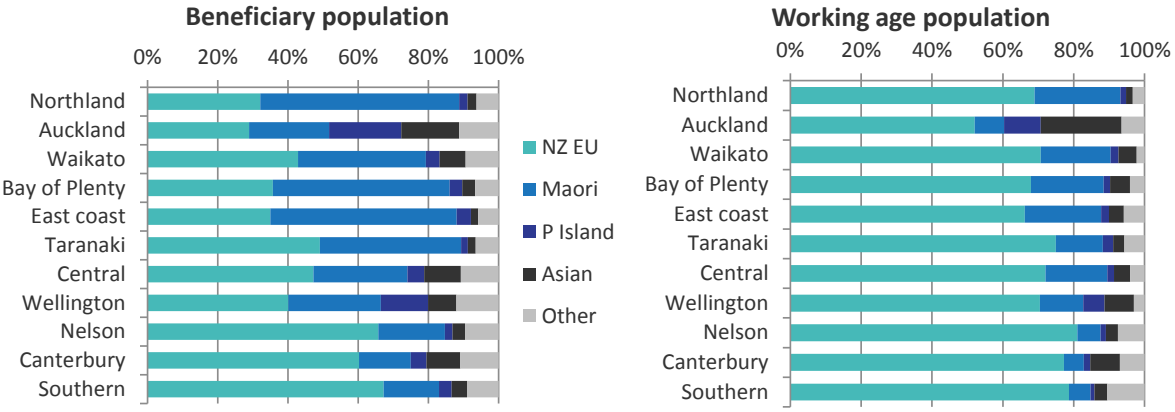


6.5.3 Differences in ethnic composition by region

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 Nelson and Southern regions
- Auckland has a high proportion of Pacific Islander and Asian clients
- The concentration of Maori beneficiaries is highest in Northland, Bay of Plenty, and East Coast

Figure 6.11 Ethnic composition by region, all beneficiaries (left) and working age population (right). Working age population taken from Stats NZ, with size of 'Other' category estimated



In considering our comments below, it is important to consider the comments regarding ethnicity in Section 4.3.3. That is, an observation that particular ethnic groups have higher average lifetime cost certainly 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.

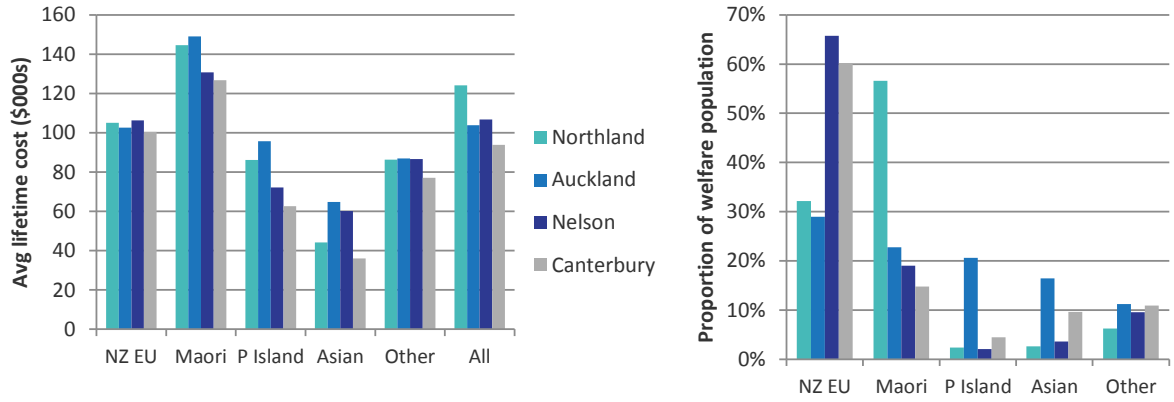
Differences in lifetime costs by ethnicity cannot be explained by the regional distribution of different ethnic groups. Instead, the reverse effect is visible: ethnic composition appears to have an influence on differences in the average lifetime costs in specific regions. Maori beneficiaries, in particular, 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 co-relation with other factors, such as higher rates of intergenerational benefit history among Maori beneficiaries (discussed in Section 4.3.3), and increased likelihood of receiving SPS.

Demographic differences are important in understanding regional variation in lifetime costs, which vary significantly by ethnicity. For instance, comparing Northland and Auckland regions shows that some of the variation in regional average lifetime costs is associated with differences in ethnic composition. On average, lifetime costs are about $20,000 higher in Northland. However, breaking down average costs in each region by ethnicity—as in Figure 6.12—shows that, perhaps surprisingly, there is more similarity in lifetime cost estimates between beneficiaries who belong to the same ethnic group whether they live in Northland or Auckland than there is between beneficiaries of different ethnicities within either region. In particular, Maori beneficiaries, whether they live in Auckland or Northland, have an average lifetime cost $40,000 higher than any other ethnic group in either region. Meanwhile, average lifetime cost estimates for all other ethnicities in Northland are lower than for Maori beneficiaries in Auckland, Nelson, or Canterbury. The overall difference in average lifetime cost between the two regions occurs in part because Northland has twice the proportion of Maori beneficiaries. Further, Auckland tends to have higher average lifetime costs than Northland, all other things being equal.

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.

Furthermore this result tends to hold true across other regions. Northland, Auckland, Nelson and Canterbury have very different unemployment rates (high in Northland and Auckland, low in Canterbury and Nelson) and ethnicity profiles, yet the average liability is fairly constant across the regions within an ethnicity group. This is particularly true for NZ European and Maori beneficiaries.

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



Despite this, it would be incorrect to attribute these differences solely to ethnicity; other drivers are related. For instance, Maori 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.

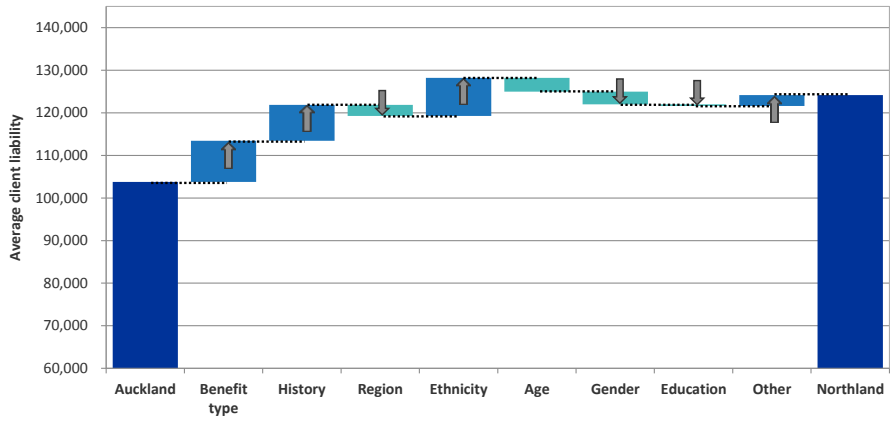
6.5.4 Breakdown of regional differences in average lifetime cost

The discussion of ethnicity and its interrelation with other variables motivates us to more carefully examine which drivers are causing differences in lifetime cost between regions. The valuation models allow us to examine these differences. For example, there is a $20,400 difference in average lifetime cost between Northland and Auckland. Figure 6.13 breaks down this $20,400 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 lifetime costs of the two regions. Significantly:

- Benefit type and benefit history explain most of the difference. These effects combined add $18,100 to the average client liability (Northland compared to Auckland). Northland has relatively more clients receiving SLP and SPS; these clients also tend to have received benefits for longer. Northland also has relatively fewer in non-beneficiary segments.
- The difference in ethnicity mix (or more accurately, differences captured by the valuation as being associated with differential risk by ethnic group) causes the Northland average liability to be $8,400 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. In fact, all other things being equal, Auckland tends to have higher expected lifetime cost (partly explained by higher Accommodation Supplement rates).
- The age and gender distributions give Auckland higher lifetime costs relative to Northland. The Auckland beneficiary population is slightly younger and has a higher proportion of females, which increases average lifetime cost.

The remaining drivers of lifetime cost are generally small, which means that either their influence on 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 Northland



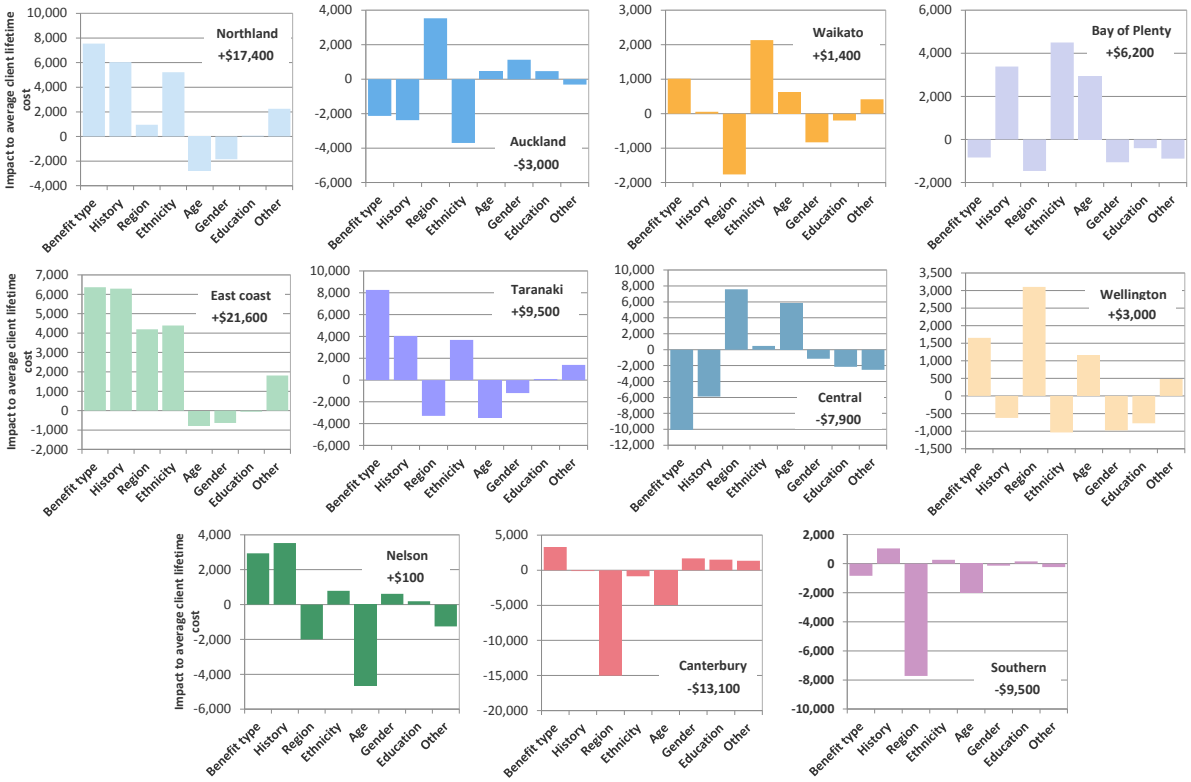
While it is useful to compare two regions in this way, it is more digestible to consider each region relative to the national average. Figure 6.14 shows how much various predictors contribute to explaining differences between the lifetime cost estimates in that region, compared to the national average. For example, in the first panel we see that Northland's average lifetime cost is about $17,400 larger than the national average, and differences in ethnicity are associated with $5,200 of this higher average. Longer benefit history and more beneficiaries on longer term benefits each have more of an impact than ethnicity in explaining the difference in average lifetime costs in Northland compared to the national average. Thus the figure shows that relatively little of Northland's higher liability is due to regional specific characteristics.

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 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 lifetime costs. This age effect is offset by a greater share of beneficiaries in Nelson on longer-term benefits and with longer benefit histories. The net effect is that the average lifetime cost is very close to the national average (just $100 more).

The panels in Figure 6-14 below give a fairly comprehensive picture of regional differences from the national average. We make the following comments:

- The low averages for Southern and Canterbury are genuinely attributable to regional factors (such as the lower current and historical unemployment rates). The Southern region also benefits from a greater proportion of clients on benefits with lower average liability.
- Conversely, the East Coast, Auckland, Wellington and Central regions all have higher liabilities due to regional factors.
- Benefit history and benefit type often move in the same direction; people in higher liability benefit types (SLP and SPS) will tend to have a benefit history that reflects a longer time in the system.
- While education and ethnicity are often seen to have similar importance in predicting lifetime cost, ethnicity tends to differ more between regions, meaning that its role in understanding regional differences is more significant.
- Child, family benefit history, partner and HCD information all tend to have small impacts on regional differences and have been grouped in the 'Other' category.

Figure 6.14 Breakdown of drivers of difference in average liability, regions compared to national average



Overall, benefit type plus benefit history explain 36% of the total differences of average lifetime cost between regions. Specific regional factors explain another 23%, while the four demographic variables shown (ethnicity, age, gender and education) explain 34%.

7 ANALYSIS BY PAYMENT TYPE

INSIDE THIS SECTION

- A breakdown of the liability by component payment type
- Analysis of 2nd and 3rd tier assistance payments, such as Accommodation Supplement
- Analysis of net cost of 'loans' due to overpayments and Recoverable Assistance
- Analysis of MSD expenditure

7.1 Introduction and highlights

Chapter 3 discussed the main result of the valuation as at 30 June 2014, and provided a detailed analysis of change. The preceding two chapters provided analysis at the segment and at the regional level, respectively.

This chapter provides detailed analysis of the components of the benefit system by payment type. Analysis in this section forecasts how much of each payment type is likely to be paid over the lifetime of current beneficiaries. This is different from the segment-level analysis in Chapter 5, since 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 99.9% of expected for the year. The majority of the current client liability (68%) is associated with main benefit payments. AS is the largest component of the liability after main benefits (12%).

The total net liability associated with overpayments and Recoverable Assistance is $330m for current clients. The net cost due to overpayments and fraud has decreased by 11% due to lower forecast benefit payments and slightly faster recovery rates. The past year has seen a substantial increase in fraud detections, but an offsetting reduction in non-fraud overpayment detections such that total detections were fairly similar to 2012/13.

The amount of Recoverable Assistance provided has generally fallen over the past five years, but remained stable from 2012/13 to 2013/14. The recovery rate is approximately 94.5%, slightly reduced from 95% in previous years to reflect recoveries below the expected rate in the valuation year (93.1%).

During the valuation year, MSD introduced a new approach to expenses called a Multi-category Appropriation (MCA). The MCA provides MSD with more flexibility to target expenses for employment, work-readiness and income support administration. Based on MSD's expected apportionment for Budget 2014, the split between employment/work-readiness and income support is 50/50; this represents a slight increase from the previous year in the share of expenses for income support.

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 3.2, although comparisons are made more difficult by changes to benefit types. We have attempted to allocate former DPB>14 and WID/WA payments based on client transfers in the September 2014 quarter. As a result, comparisons are somewhat rough, but are shown in Appendix B. The main features are as follows:

- Aggregate payments were 99.9% of expected for the year.
- SPS payments (to clients with youngest child less than 14) were 7% less than expected (about $106 million). This reflects faster exits and transfers out, particularly for SPS 5-13 clients.
- JS-HCD payments were 3% ($37 million) lower than expected, reflecting faster transfers to JS-WR.
- JS-WR was 7% higher than expected ($58 million), even after allowing for the extra DPB and WID/WA entries. Clients tended to exit more slowly than expected, with additional JS-HCD entries.
- Supported Living payments were 3% higher than expected ($42 million). These benefits had extra entries from former DPB and WID/WA clients.
- Tier 2 benefits were 1% ($8 million) more than expected, driven by AS and Childcare Subsidy (CCS)
- Tier 3 payments were 6% higher than expected ($14 million), with increased Hardship payments.

7.2.2 Current client liability by payment type

Table 7.1 breaks down the current liability as at 30 June 2013 and 30 June 2014 by payment type, and shows the key changes between the two.

Table 7.1 Current client liability by payment type as at 30 June 2013 and 30 June 2014

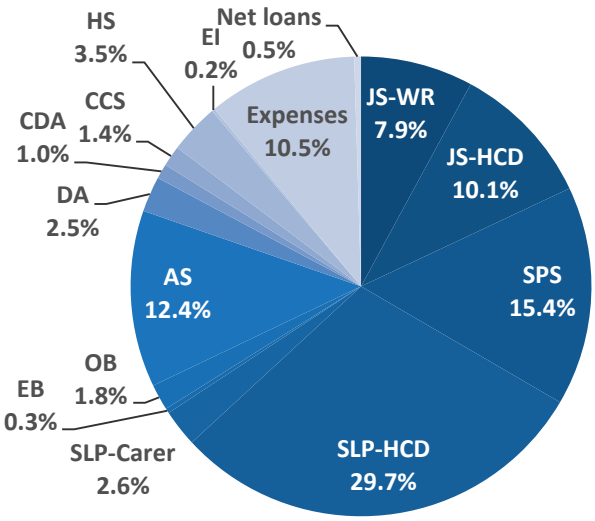
2013 current client liability ($b)			2014 current client liability ($b)			
Pre-reform Components	2013 valn	2013, updated for Eco assumps	Roll-forward to 2014	Post-reform Components	2014, Before methodology changes	2014, after methodology changes
Tier 1				Tier 1		
UB	3.3	3.1	2.8	JS-WR	5.3	5.4
SB	8.0	7.7	7.4	JS-HCD	6.9	7.0
DPB-Basic	15.1	14.6	14.2	SPS	10.8	10.6
IB	21.4	20.6	20.3	SLP-HCD	20.9	20.5
Carers	1.8	1.8	1.7	SLP-Carer	1.9	1.8
EB	0.3	0.3	0.3	EB	0.2	0.2
OB	1.4	1.3	1.3	OB	1.3	1.3
WID/WA	1.5	1.4	1.4			
Subtotal	**52.7**	**50.8**	**49.3**	**Subtotal**	**47.3**	**46.9**
Tier 2:				Tier 2:		
AS	9.4	9.1	8.8	AS	8.6	8.6
DA	1.8	1.8	1.7	DA	1.7	1.7
CDA	0.8	0.8	0.7	CDA	0.7	0.7
CCS	1.1	1.0	1.0	CCS	1.0	1.0
Subtotal	**13.1**	**12.6**	**12.2**	**Subtotal**	**12.1**	**12.0**
Tier 3:				Tier 3:		
HS	2.6	2.5	2.4	HS	2.4	2.4
EI	0.1	0.1	0.1	EI	0.1	0.1
Subtotal	**2.7**	**2.6**	**2.5**	**Subtotal**	**2.6**	**2.6**
Other:				Other:		
Expenses	7.70	7.43	7.26	Expenses	7.25	7.25
Net loans	0.37	0.37	0.35	Net loans	0.33	0.33
Subtotal	**8.1**	**7.8**	**7.6**	**Subtotal**	**7.6**	**7.6**
Grand total	**76.5**	**73.9**	**71.7**	**Grand total**	**69.5**	**69.0**

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

Of most interest is the $2.2 billion reduction due to experience, which is the difference between the roll-forward and the 2014 result before methodology changes. We observe the following:

- The decreases are entirely attributable to Tier 1 benefits plus Accommodation Supplement; other Tier 2 and 3 benefits, expenses and net loans are all fairly stable.
- The introduction of new benefit types has caused redistribution from DPB and WID/WA into JS-WR. Combining these payment types, we see that the forecast JS-WR plus SPS payments are $2.2 billion lower than the roll-forward sum of UB, DPB-Basic and WID/WA. We know from our Segment analysis in Chapter 5 that the bulk of the reduction is attributable to lower SPS payments.
- A decrease in forecast JS-HCD payments is roughly offset by an increase to SLP-HCD payments.
- Carers benefit payments have increased slightly.

Figure 7.1 Current client liability by benefit type, proportion of total



Main benefits make up the majority of the current client liability (68%). The largest contribution is from SLP-HCD (30%), with significant portions related to SPS (15%), JS-HCD (10%) and JS-WR (8%). Accommodation Supplement (AS) is the largest component of the liability after main benefits (12%).

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

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 9.4.2 and Appendix F.

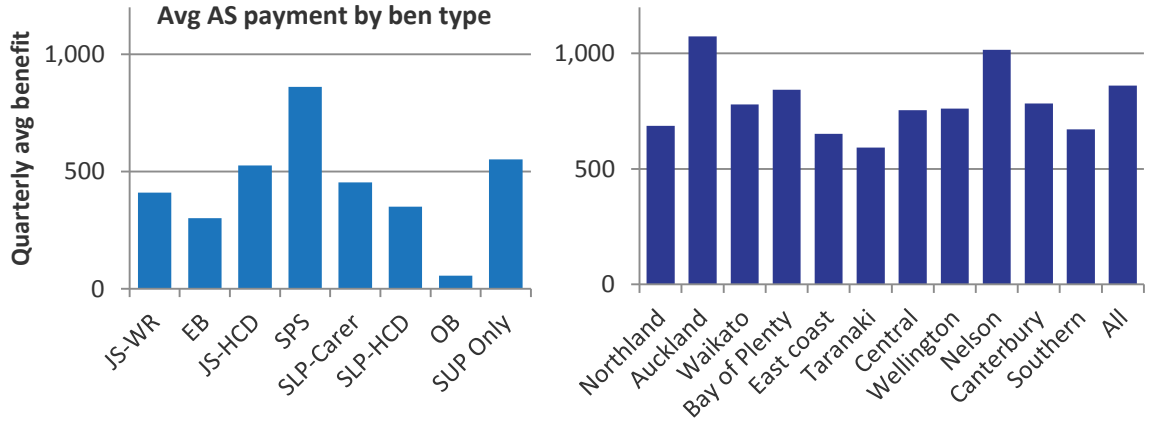
There are a few scope considerations to note in interpreting results in this section, as follows:

- 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 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 2013/14 quarterly AS payments by benefit type (left) and by region for SPS clients (right). (Figures in June 2014 dollar values).



The highest rates of AS are paid to SPS clients – on average $860 per client per quarter – though significant amounts of support are also paid to other main beneficiary clients. It is highest for Sole Parents due to a higher rate paid for having children. Additionally, the assistance is sometimes spread between partners receiving other benefit types, reducing the average individual rate for those not on SPS. AS also represents the bulk of payments to Supplementary Only clients (about three-fifths).

Average AS payments have generally been stable, in inflation-adjusted terms. At a more detailed level, average payments for SPS clients have fallen 0.7% per year (after adjusting for inflation) over the past four years. Among regions, payment levels have increased the most in Nelson and the Bay of Plenty (by 1% per year on average for SPS clients), and fallen the most in Auckland and Canterbury (by about 1.5% per year on average).

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

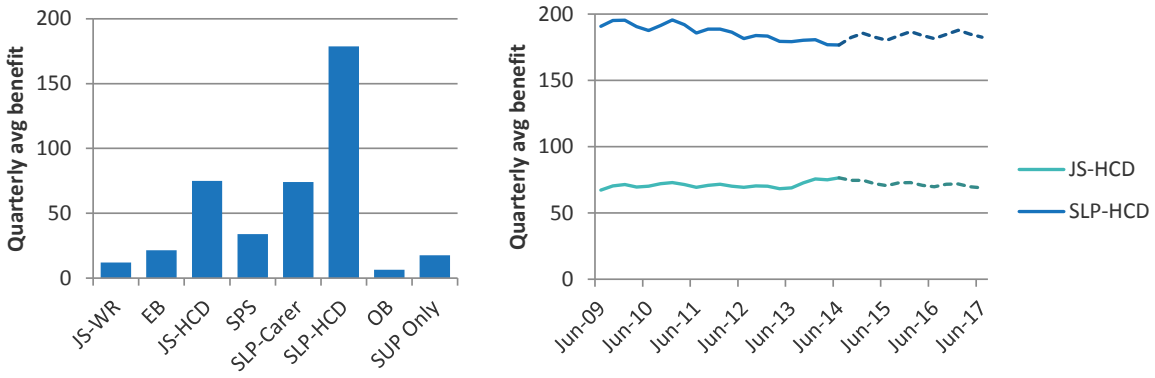
7.3.3 Disability Allowance

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 the expenses associated with disability-related costs 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 2013/14, just 22% of DA payments to working-age adults were paid to non-HCD clients. As noted in Section 3.8.3, 12% of SPS received DA payments in 2013/14.

Over the past year or so, the average quarterly payment to JS-HCD clients has increased somewhat ($5 per client per quarter, after inflation), while SLP-HCD average payments have fallen slightly ($3 per client per quarter). The JS-HCD increase is most likely related to the changing mix of clients remaining on that benefit; the increase in transfers from JS-HCD to JS-WR are more prevalent amongst beneficiaries who are not receiving DA. We have reflected these trends in this years' valuation, but projected that levels from June 2014 will remain stable in 2014 dollar terms, with the benefit inflation rate applying to future payments.

Figure 7.3 Average 2013/14 quarterly Disability Allowance payments by benefit type (left) and average benefit over time for JS-HCD and SLP-HCD client (right). Figures in June 2014 dollar values.



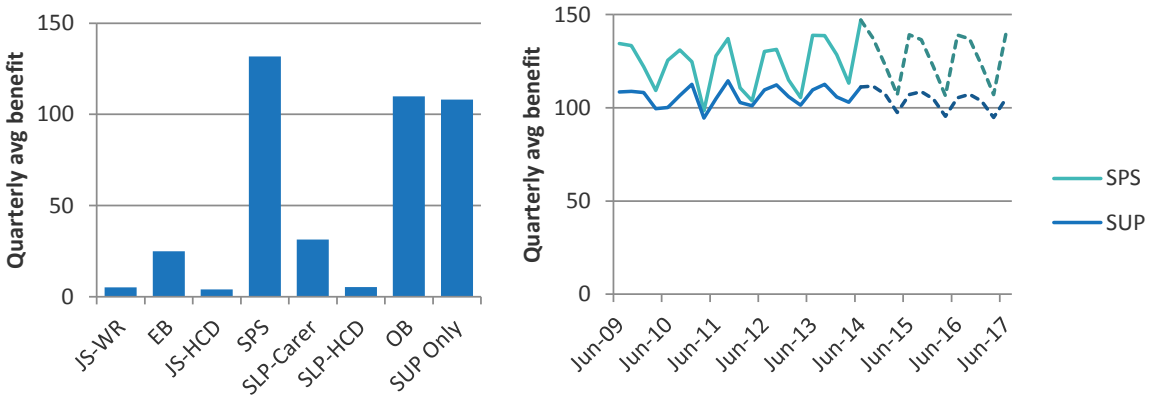
7.3.4 Childcare Subsidy

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, OB and Supplementary Only clients. Figure 7.4 shows the different levels of CCS payments by segment (selected), and average quarterly benefit payments for the two working-age segments most likely to receive CCS.

We have observed the following trends in CCS payment levels:

- There has been an increase in average payments amongst SPS clients whose youngest child is under age two, from about $150 to $170 (in 2014 dollar terms) per quarter over the past two years.
- 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 also 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.
- Average payments tend to be highest on the East Coast, Bay of Plenty and Wellington regions (for both SPS and Supplementary-only clients).

Figure 7.4 Average 2013/14 quarterly Childcare Subsidy payments by benefit type (left) and average payment over time for SPS and SUP-only (right). Figures in June 2014 dollar values.

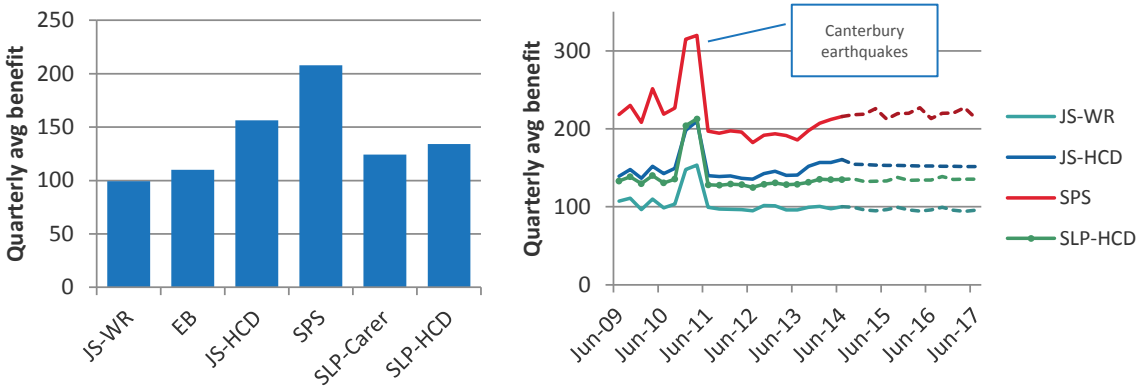


7.3.5 Non-recoverable Hardship Assistance

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 in 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 2013/14 quarterly Hardship Assistance payments by benefit type (left) and average benefit over time for various benefit types (right). Figures in June 2014 dollar values.



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.

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 $330 million, as reported in Table 3.1. 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)				
		2014/15	2015/16	2016/17	2017/18	2018/19
Further overpayments/fraud on existing debtors	71	0	0	0	0	0
Recoveries on overpayments/fraud on existing debtors	-191	0	0	0	0	0
Overpayments/fraud related to future payments	2,228	227	219	211	204	198
Recoveries on overpayments/fraud related to future payments	-1,853	-189	-182	-175	-169	-164
Net cost – overpayments/fraud	**255**	**38**	**37**	**36**	**34**	**33**
Recoverable Assistance payments	1,349	146	142	137	133	129
Recoveries on Recoverable Assistance	-1,275	-138	-134	-130	-126	-122
Net cost – Recoverable Assistance	**74**	**8.0**	**7.8**	**7.5**	**7.3**	**7.1**
Total net loans cost	**330**	**46**	**45**	**43**	**42**	**41**

The net cost due to overpayments and fraud has decreased by 11%, due to a combination of:

- Lower forecast benefit payments
- Slightly faster recovery rates for overpayments

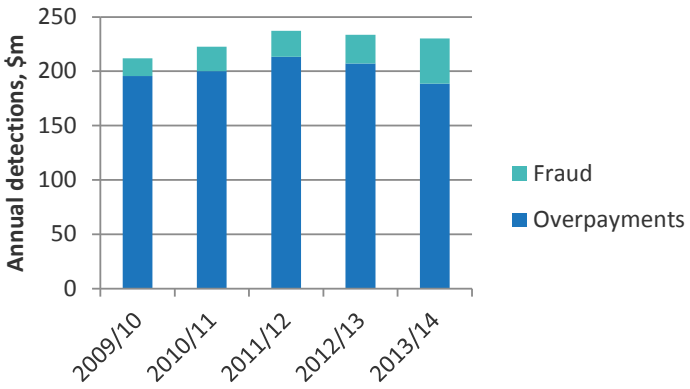
Offsetting these changes, we have slightly increased the rate of overpayments detected and slightly lowered the amount of Recoverable Assistance that is ultimately recovered. These changes have been made in line with emerging experience.

7.4.2 Overpayments, including fraud

Detected overpayments, including fraud, represent slightly more than 3% of payments made by MSD, or about $230 million. The table below shows the recent experience for payments and recoveries.

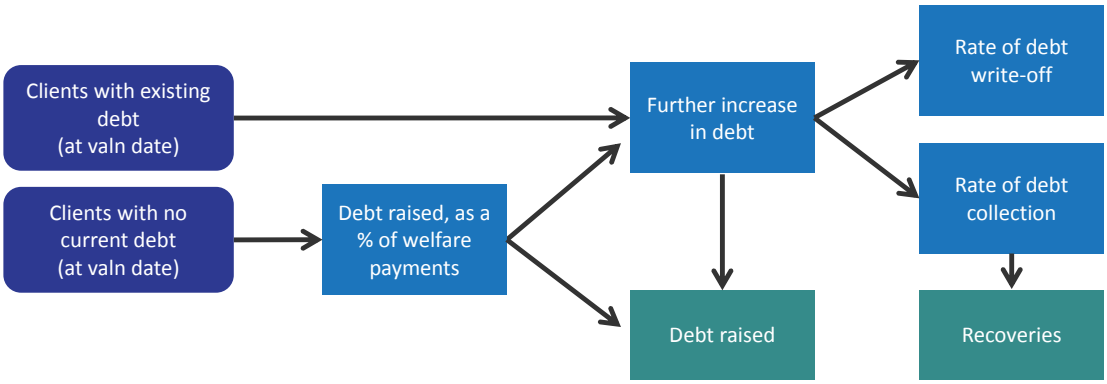
In the past, fraud has typically represented just over 10% of the total detections. The vast majority of overpayments (the remaining 90%) are not fraud-related. The past year has seen a substantial increase in fraud detections (18% of total overpayments), mostly due to the IRD data-matching activity (see Section 3.8.4). Non-fraud overpayment detections fell by an offsetting amount, so that total detections were fairly similar to 2012/13.

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. These are 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. We have increased our assumption of detected overpayments from 3.6% to 3.65% of total payments in response.

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 $1.26 of detected debt over the subsequent five years, a rate of growth that is unchanged 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. Recovery rates over the first two years have increased slightly in the past year; whereas we used to forecast that for every $100 of ultimate debt detected, $68 was recovered in the first two years, we are now predicting $69. This slightly lowers the ultimate amount of outstanding debt written off.

This trend is 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 relatively short time period for which data are available means 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 26%. This represents extra overpayments that will be accrued by a client before their outstanding debt reduces to zero.
- About 84.8% of overpayments are assumed to be recovered (up from 84.2% last year) eventually. 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 83.2%.
- The average collection date is one year after the establishment of the original debt.
- Total outstanding detections in the liability total $2.3 billion. The offsetting recoveries are estimated to be $2.0 billion, with a net difference of $255 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 fairly evenly 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.

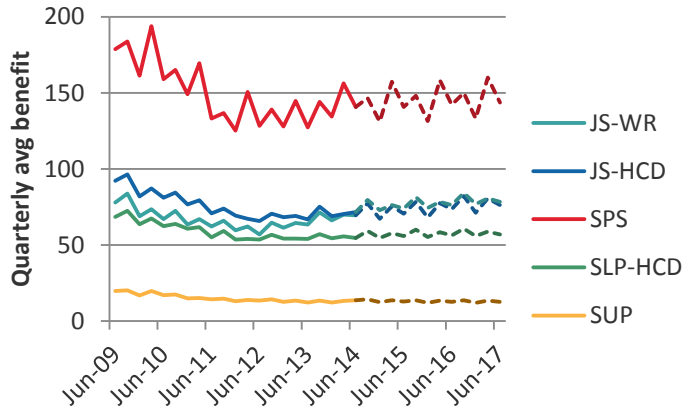
Table 7.3 Historical levels of Recoverable Assistance

Year	Payments ($m)	Average number receiving loan per quarter (nearest 100)	Average quarterly payment per client ($)
2009/10	176	79,400	550
2010/11	160	74,000	540
2011/12	140	64,200	550
2012/13	135	61,800	550
2013/14	135	62,400	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 2014 dollar values.



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. The cohort is more likely to consist of clients with some of the following characteristics:

- Middle to older ages
- Maori and Pacific Islander ethnicities
- 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 94.5% of Recoverable Assistance payments. The assumption reflects the average seen over the past four years. This assumption has been lowered this year from 95% in the previous valuation. The 2013/14 year was relatively low for recoveries, at 93.1%. We will continue to monitor this assumption closely in future valuations to identify to what extent the drop in recoveries is sustained. However, such a drop would have only a small impact on the overall result; adopting 93.1% would increase the current client liability by $18 million, or less than 0.05%.

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.

In previous valuation reports, expenditure has been categorised as 'income support administration' or 'work focused investments'. This year, the scope and categorisation of expenditures has been updated to reflect MSD's new Multi-category Appropriation (MCA) introduced progressively from 1 January 2014.

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 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 in out-years.

7.5.1 Approach to determining future liability associated with expenses

We discuss our approach to operating expenses in Section 9.5.2. It assumes the level of expenses in the 2014/15 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 2014/15 year is $701 million, up 4.9% on the actual expenses in 2012/13 (compared to inflation of 1.4%). 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 these categories over the past six years are shown in Table 7.4 . In many cases, consistent with the intent of the MCA to increase flexibility to reallocate investments, line items from previous years have been consolidated into larger funding envelopes. These larger envelopes are highlighted in Table 7.4.

Table 7.4 Historical MSD expenses, amounts in actual values, plus 2014/15 budget

Expense category	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15 Budget
	$m	$m	$m	$m	$m	$m	$m
Administration							
Payment integrity	**37**	**33**	**35**	**35**	**30**	**30**	**34**
Loan collection	**13**	**13**	**11**	**11**	**11**	**11**	**11**
Benefit processing	259	297	290	294	311	156	0
MCA- Administering Income Support	**0**	**0**	**0**	**0**	**0**	**148**	**307**
Special (e.g. quakes)	0	0	8	0	0	0	0
Admin total	**309**	**343**	**344**	**340**	**352**	**345**	**352**
Programs	0	0	0	0	0	0	0
Tailored sets of services	147	133	136	130	141	71	0
Improving Employment Outcomes	**0**	**0**	**0**	**0**	**0**	**121**	**265**
Improving Work Readiness	**0**	**0**	**0**	**0**	**0**	**9**	**67**
Life skills training	0	0	1	0	0	0	0
Mainstream employ. Support	2	4	3	3	4	4	0
OSCAR	**19**	**19**	**18**	**19**	**17**	**19**	**17**
Vocational training	89	86	69	55	55	23	0
Youth transition	10	12	12	13	26	33	0
Rena Grounding Employment Support	0	0	0	0	0	0	0
Employment Assistance	71	109	113	107	93	44	0
Job support scheme	0	1	0	0	0	0	0
Programs total	**339**	**364**	**350**	**326**	**335**	**323**	**349**
Expenses total	**648**	**706**	**694**	**666**	**687**	**668**	**701**

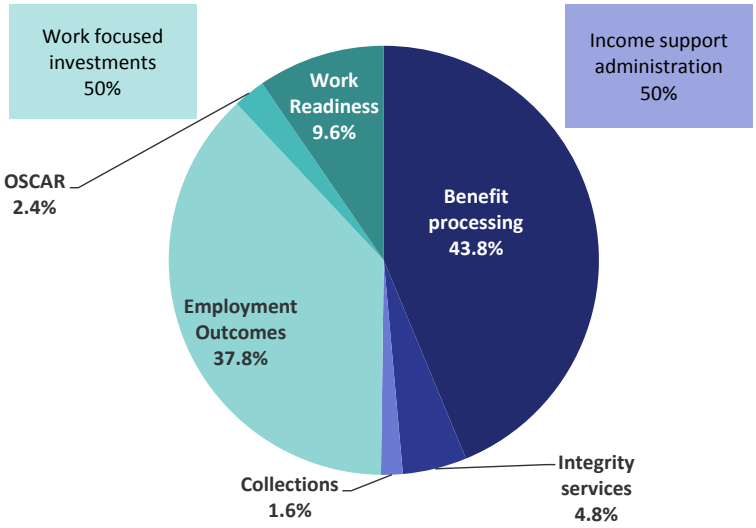
7.5.2 Breakdown of current expenses

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

Comparisons of this allocation relative to last year are complicated by the reassignment of the various expense categories. However, we note the following:

- A higher proportion of expenses has been allocated to income support administration (47% last year), with growth from 40.6% in benefit processing, and from 4.8% in integrity services.
- A lower proportion of expenses has been allocated to work focused investments (53% last year). Allocation to OSCAR has decreased from 2.8%. The remaining categories are not comparable to last year's split.
- The result of the reallocation of expenses is a 50/50 split between 'work-related' and 'income-related' expenses.

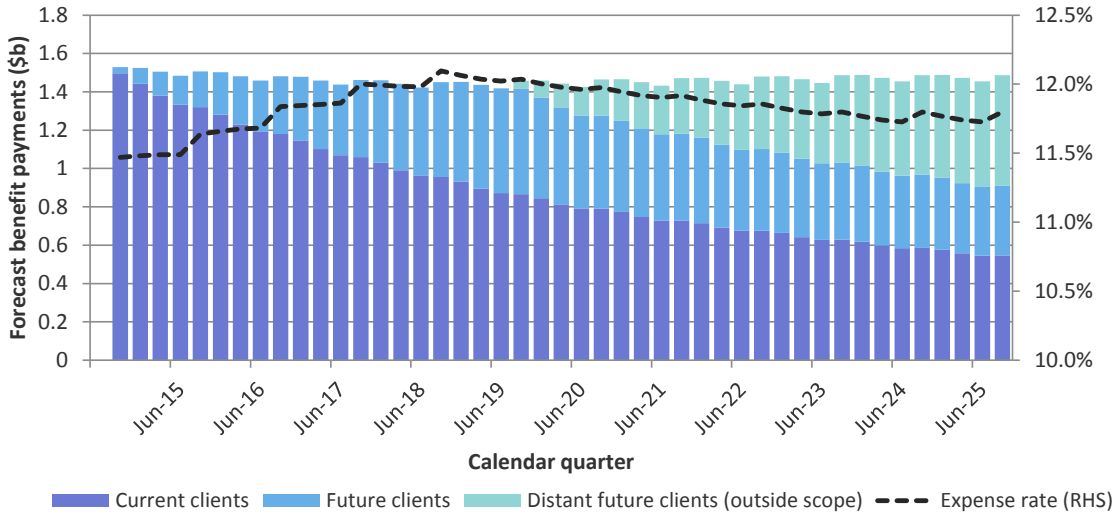
Figure 7.9 Current client liability: MSD expenses by category



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. 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 about 11.8%. This rate compares to last year's long-term assumption of 11.5%. This means that although the amount of liability attributable to MSD expenses has fallen from $7.7 billion to $7.3 billion, this is still about $0.3 billion higher than would be the case if expenses fell proportionally with benefit payments.

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.



The total operating expense liability attributable to current clients is $7.2 billion, as shown in Table 3.1. This is allocated between expense categories according to Figure 7.9.

8 PROJECTED CHANGES TO THE BENEFIT SYSTEM

INSIDE THIS SECTION

- Client numbers entering the benefit system over time and their characteristics
- A view of the benefit system in five years' time
- Discussion of uncertainty and the sensitivity of the estimate to certain parameters

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 2013/14. 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

Client entries into the welfare system (from outside the current client group) are expected to:

- Be stable and close to 2013/14 levels for most benefit types
- Slowly decrease for JS-WR and Supplementary Only benefits, reflecting the falling unemployment rate.

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.

Over 60% of entrants have a match to a parent on benefit history, and a quarter of entrants had a parent on benefits for at least 80% of their teenage years. Such history is most prevalent for clients entering SPS, SLP, JS-WR and OB benefits.

PROJECTED LIABILITY

Our forecast for the main estimate in the next valuation (as at 30 June 2015) is a further reduction in the liability to $67.0 billion. The liability is forecast to reduce gradually each year to $63.7 billion (as at 30 June 2019).

FUTURE DEMOGRAPHICS OF THE WELFARE SYSTEM

We expect past trends in characteristics of the welfare system to largely continue. Our forecasts show the following:

- The make-up of the benefit population is shifting away from Jobseeker benefits and towards Supported living payments. SLP clients represented 29% of the main benefit client base in 2009, compared to an expected 34% in 2019, an increase of five percentage points.
- The benefit population is getting older, partly due to the mix of benefits but also within benefit types. The average client age will increase by nearly a year by 2019.
- The share of clients will decrease for the Auckland and Canterbury regions, but increase for Central, Wellington and Nelson.

8.2 Clients entering the benefit system

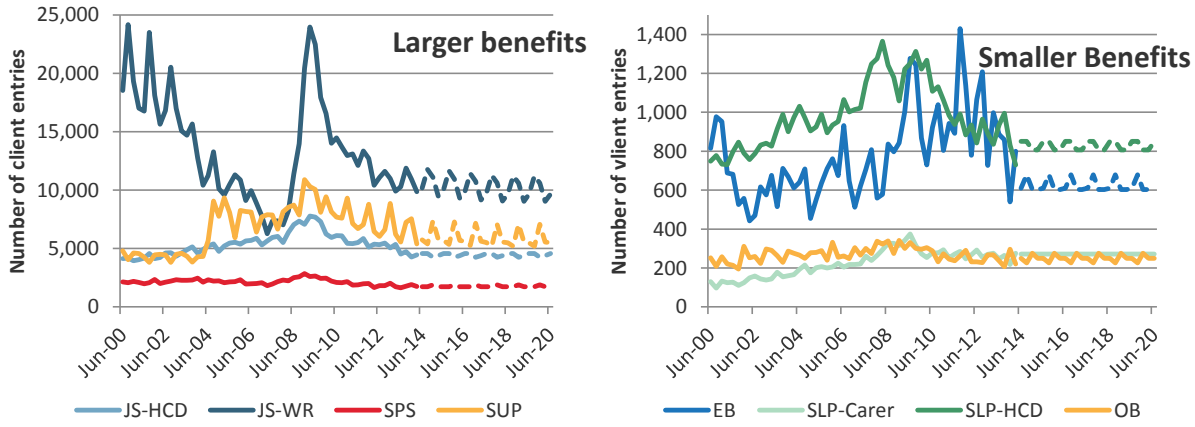
8.2.1 Client numbers

As discussed in Section 2.2, 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 have built a model that estimates the number of clients entering the welfare system which takes into account:

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

The approach used for modelling the future liability is further discussed in Section 9.4.2. Figure 8.1 shows the historic numbers of entries as well as the projections for future years.

Figure 8.1 Past (solid line) and projected (dashed line) numbers coming onto benefit each quarter, by benefit type



We make the following comments regarding forecast client entry numbers.

- In previous years WID/WA entries (about 300 per quarter) were a separate benefit state and DPB > 14 entries (about 200 entries per quarter) were combined with other DPB entries. For this valuation in the post-reform environment, we have reclassified historical WID/WA and DPB>14 entries as JS-WR entries, giving a continuous time-series.
- JS-WR and Supplementary Only client entries in 2013/14 have been in line with expectations, given the decrease in the unemployment rate. In each case we have allowed for a 1-2% decrease in entry numbers per year over the next five years, reflecting the decreasing unemployment rate.
- There appear to be lower numbers of direct entry into JS-HCD in 2013/14 compared to previous years. Much of this is explained by lower number of partner entries. We have allowed for this change and projected stable numbers of future entries based on 2013/14 levels.
- SPS, SLP-HCD and OB client entries have been fairly stable over the past few years and we have projected a stable number of entries in future years.
- SLP-Carer entries were slightly lower than expected, which we have partly allowed for in projection.
- EB numbers are generally quite volatile, but have fallen significantly in the past year. We have projected levels consistent with the last few quarters.

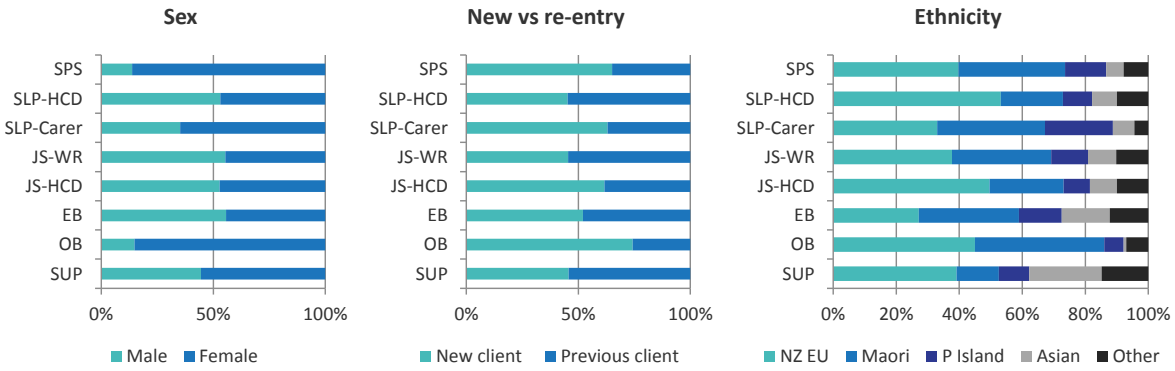
8.2.2 Demographics of client entries

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 correlate. 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 2013/14. 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.



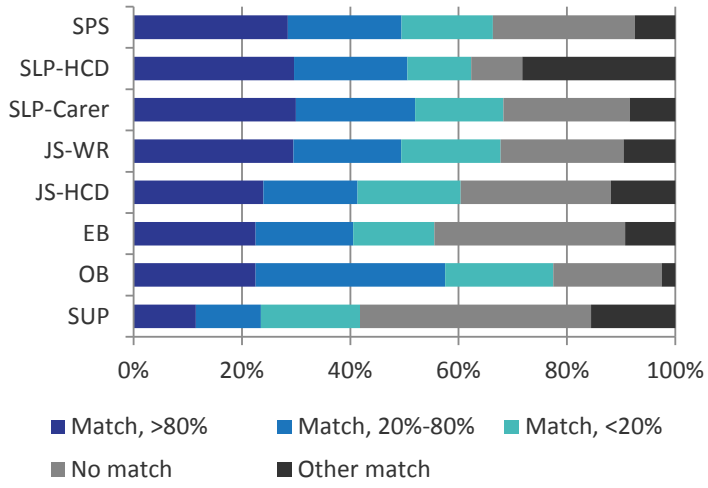
We observe in the figure that OB, SPS and Carer entries tend to be predominantly female, whereas SLP-HCD, JS-WR and EB clients tend to have slightly more male entries. Almost exactly half of all entries relate to new clients, and the other half are former clients returning to the system. New clients are more prevalent in SPS, SLP-Carer, JS-HCD and OB benefits. SPS and OB entries have a relatively high proportion of Maori clients, SLP-Carer has a high proportion of Pacific Islander clients, and there is a higher proportion of Asian clients entering Supplementary Only benefits.

The previous valuation report also considered the **age** distributions of clients entering. The results remain similar this year:

- JS-WR entries tend to be the youngest, with over 50% of entries relating to clients under 25
- JS-HCD entries tend to be relatively flat across the various age groups.
- SPS entries are concentrated between ages 25 to 40, with over 50% of entries attributable to this age group.
- There is a spike of client entries less than age 20 into SLP-HCD, but most entries are generally older; two thirds of the entries relate to clients aged over 40, with the majority of these over age 55.

We have also considered the distribution of family benefit history amongst clients entering as part of the future client liability (amongst clients entering with age less than 25). These concepts were introduced in Section 4.3. Over 60% of entrants have a match to a parent on benefit history, and a quarter of entrants had a parent on benefits for at least 80% of their teenage years. Such history is most prevalent for clients entering SPS, SLP, JS-WR and OB benefits.

Figure 8.3 Distribution of family benefit history for clients entering as part of the future client liability. By match type and proportion of time parent on benefit during ages 13-18. Shown for clients aged < 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 2015) is a further reduction to $67.0 billion. The liability is forecast to reduce gradually each year to $63.7 billion (as at 30 June 2019). 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.

The reductions are concentrated amongst Jobseeker, Sole Parent and Non-beneficiary segments. 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 gradual increase in the total liability associated with the SLP segment.

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

Top tier segment	2014 (current)	2015	2016	2017	2018	2019
Jobseeker- WR	8.0	7.8	7.4	7.0	6.6	6.3
Jobseeker - HCD	8.5	8.2	8.1	8.0	7.9	7.7
Sole Parent	14.6	14.2	14.1	13.9	13.8	13.5
Supported Living	17.0	17.0	17.2	17.4	17.5	17.7
Youth	0.5	0.5	0.4	0.4	0.4	0.4
Non-beneficiary	12.8	11.9	11.5	11.3	11.1	10.9
Sub-total	**61.4**	**59.6**	**58.8**	**58.0**	**57.3**	**56.7**
Expenses + Net loans	7.6	7.4	7.3	7.2	7.1	7.0
Total	**69.0**	**67.0**	**66.0**	**65.2**	**64.4**	**63.7**

8.4 The beneficiary population in five years

As noted earlier, the number of welfare clients is projected to fall by 7% over the next five years. 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 8.4 Benefit type and age distribution for June 2009, June 2014 and June 2019

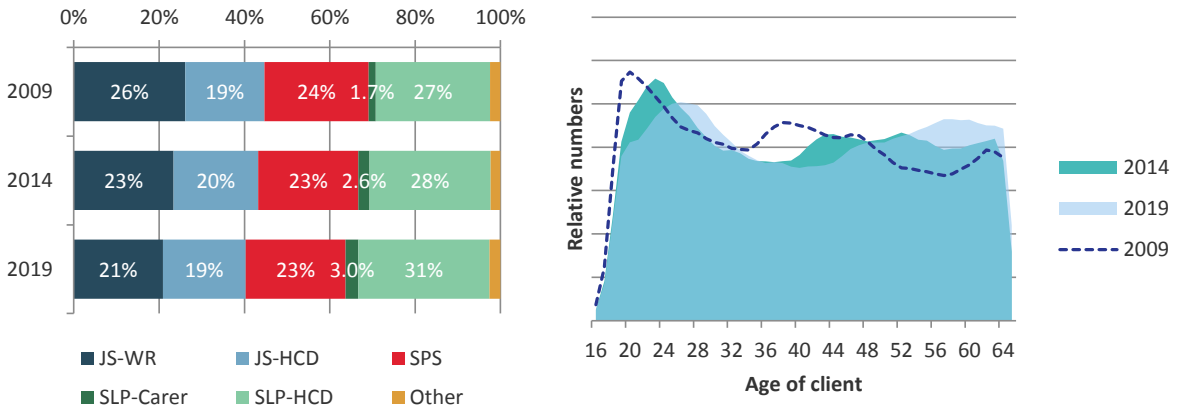
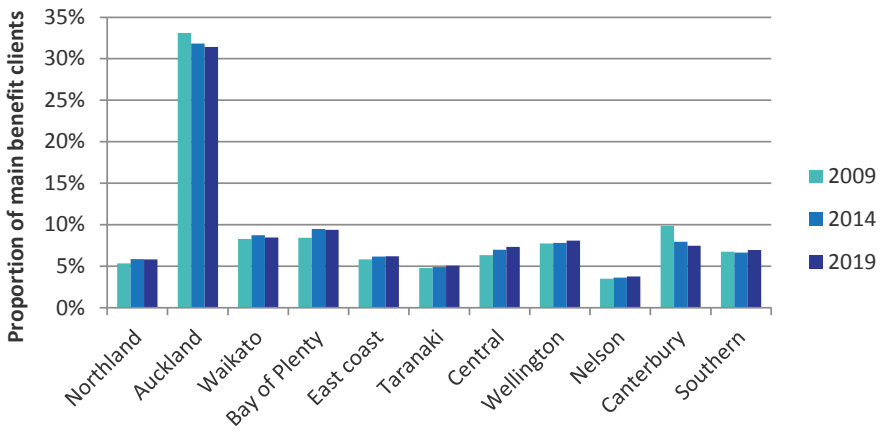


Figure 8.4 shows that the types of changes seen over the last five years are likely to continue. Jobseeker clients are forecast to drop from 43% to 40% of main beneficiary clients between 2014 and 2019. This reflects the projected continuation of downward trends in client numbers in the segments. SPS numbers are forecast to drop 7%, but this is in line with the overall drop in beneficiary numbers and so the relative share remains stable. Numbers on SLP benefits represent an increasing portion of the future welfare population. The relative increase of SLP clients continues long-term trends.

The right panel of the figure shows that the benefit population is projected to be older in five years, with the average age increasing from 40.4 to 41.2. This compares to the average age of 39.5 in 2009. 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 grow. This is partly due to broader demographic changes, including fewer young entries relative to the aging 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 JS-WR and SLP clients are expected to be almost a year older (on average) in 2019 compared to 2014.

Figure 8.5 Regional distribution for June 2009, June 2014 and June 2019



Finally, Figure 8.5 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 decreased relative numbers in Auckland and Canterbury, with relative increases in Central, Wellington and Nelson regions. There are two regions where the historical trend has been forecast to reverse, as described below:

- **Southern** region saw a small decrease between 2009 and 2014.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 **Waikato** labour market has performed slightly worse than the national average (over the past year 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 6.6% to its historical full employment rate of 4.6%. 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 be wrong; 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 was 1% higher or lower than expected? 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

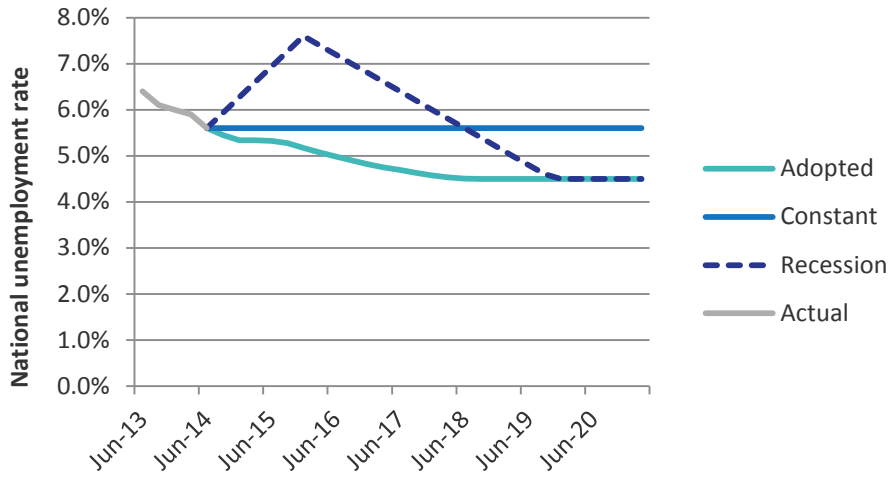
The labour market, and the impact of the economy more broadly, is one of the main sources of uncertainty in our forecasts. The labour market uncertainty is incorporated into our models using the (regional) unemployment rate. There are three elements to the uncertainty:

- 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 reverting.

Figure 8.6 Unemployment rate scenarios



Under the 'constant' scenario, benefit payments to current clients (that is, the current client liability excluding net loans and expenses) are 6% higher at $65.3 billion, compared to our central estimate of $61.4 billion. This is not spread evenly across benefit types. Future JS-WR payments are expected to be 25% higher, compared to 4% for SPS and 1% for SLP-HCD.

Under the 'mild recession' scenario, the current client lifetime benefit payments are expected to be 3% higher ($63.1 billion). Again this is more pronounced in future JS-WR payments (14% more) compared to other benefit types. We note that the impact under the constant scenario is larger than the recession scenario; this reflects the tendency of long-term trends to dominate medium term trends in the projection.

Sensitivity of the benefit system

We estimate sensitivity to the unemployment rate throughout our historical modelling; in fact, obtaining reliable estimates of such sensitivity is one of the main reasons we model such a long historical experience. We have obtained good overall sensitivity estimates, however there are some caveats. There is no guarantee that the sensitivity remains constant over time. For example, the GFC's impact on the benefit system was significantly larger than our adopted sensitivity numbers. Further, the sensitivity undoubtedly varies by client cohort, and estimation at a client cohort level is fairly challenging. For example, the unemployment rate affects younger and recently unemployed clients more significantly than older or long-duration clients.

Table 8.2 provides analysis of the impact of a range of long-term unemployment rates (above and below forecast) on the main estimate, and on the liability for different benefit types.

Table 8.2 Sensitivity of the current client liability to the unemployment rate (excluding loans and expenses)

Change in unemployment rate	Treasury estimate (4.5% long term rate)	3.5% long term unemployment rate		5.5% long term unemployment rate		6.5% long term unemployment rate	
	Liability ($b)	Liability ($b)	Change	Liability ($b)	Change	Liability ($b)	Change
SPS	10.6	10.3	-2.7%	11.0	3.0%	11.2	5.4%
SLP-HCD	20.5	20.3	-1.2%	20.7	1.2%	20.9	1.7%
JS-HCD	7.0	6.5	-6.4%	7.5	7.3%	7.9	13.9%
JS-WR	5.4	4.7	-13.0%	6.3	16.3%	7.4	35.3%
Other tier 1	3.3	3.1	-5.0%	3.5	5.6%	3.7	11.8%
Tier 2	11.0	10.6	-3.5%	11.5	4.1%	11.9	8.0%
Tier 3	3.6	3.5	-3.1%	3.7	3.5%	3.8	6.6%
Total	**61.4**	**59.1**	**-3.8%**	**64.1**	**4.4%**	**66.8**	**8.7%**

This shows that Work-Ready Jobseekers are most sensitive to changes in the unemployment rate, and Supported Living Payment clients are least affected.

Unemployment rate as a proxy for the economy

There are 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.

We have previously examined the possibility of extending the modelling of economy related variables to include other drivers. 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, 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 2.4.5). 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 $6.5 billion. Conversely, a 1% decrease in inflation or 1% increase in discount rates would decrease the current client liability by about 8.9%, or $5.5 billion.

Table 8.3 Current client liability results and sensitivity to changes in inflation and discount rates

Scenario	Liability ($b)	Change ($b)	Change (%)
Base	61.4		
Inflation +1%	67.9	6.4	-10.5%
Inflation -1%	56.0	-5.4	-8.9%
Discount rate +1%	55.9	-5.5	-8.9%
Discount rate -1%	68.0	6.6	10.7%

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 leave their non-beneficiary status) tends to be the most important of these transition assumptions.

Table 8.4 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 2013/14. 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 20% x (1.05) = 21%.

Table 8.4 Current client liability results and changes to key transition model assumptions

		5% increase in probability		5% decrease in probability	
	Liability ($b)	Change ($b)	Change (%)	Change ($b)	Change (%)
Base	61.4				
JS-WR leave rate		-0.3	-0.5%	0.3	0.5%
JS-HCD leave rate		-0.3	-0.5%	0.4	0.6%
SPS leave rate		-0.5	-0.8%	0.6	1.0%
Non-beneficiary re-entry rate		1.2	2.0%	-1.1	-1.9%

We see that of the transitions listed, the SPS exit rate and the Non-beneficiary re-entry rate tend to cause larger impacts in the lifetime cost estimates. This helps to explain why these segments have had such an impact in this year's analysis of change. For context, two of the most important changes in this year's valuation assumptions were the SPS 5-13 transition rate and the Non-beneficiary re-entry rate, shown in Figure 3.15. Relative to last year's assumptions, these were increased by 14% and decreased by 2% respectively (averaged over the next five years).

Assumptions in the face of reforms

As already discussed (see Section 3.8.5), 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.

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 reform 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 impact 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.

Failure of the valuation to reflect real-world complexity

Our 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 time in the justice system 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 impacts 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; failure to model 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 9.4.2.

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 uncertainties in the valuation.

PART C
APPROACH

9 VALUATION APPROACH

INSIDE THIS SECTION

- Data, data quality and adjustments
- Valuation parameters
- Modelling the evolution of dynamic variables
- Modelling net loans cost and operational expenses
- Model checking and validation
- Approach to setting assumptions
- Compliance with actuarial and accounting standards

9.1 Introduction and highlights

This chapter explains how Taylor Fry carries out the valuation of the NZ benefit system. It has been substantially abbreviated relative to previous years. Further detail about the approach is publicly available in previous valuation reports available on the MSD website.

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 for these clients and allowing for inflation
- Discounting the inflated payments to reflect the time value of money
- Adding the projected net cost of loans and MSD expenditures

9.2 Data and data quality

9.2.1 Data supplied

To protect the privacy of individuals, original social welfare numbers (SWN's) 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.

Previous reports have 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 2014 but extracted as at 31 July 2014
- Data files containing demographic information such as 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.

Additional data was also supplied by MSD this year. This included regional information for clients in the youth program, limited IRD data matching results and family benefit matching information. A full list of files provided is in Appendix C.

9.2.2 Modelling variables

The models discussed later in this section use a number of variables to predict the probability that a beneficiary will transition from one state to another (such as exiting main benefits), or the expected payment levels corresponding with their benefit state. These are as follows:

- **Time-related variables:** Benefit quarter and the corresponding unemployment rate (at a national and regional level)
- **Client-related variables:** Age, gender, ethnicity, education level and region
- **Benefit history:** Number of quarters: on current 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

This list includes the new variables included in the valuation. First we extended the benefit history variables to explicitly include previous benefit type received. Second, we added two variables related to family benefit history: 1) match type with a parent beneficiary; and, 2) intensity of the parent's benefit receipt while the client was aged 13-18. These two variables were calculated for all clients less than 25 years old. Third, we replaced the national unemployment rate with the new (smoothed and seasonally-adjusted) regional unemployment rate.

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.

9.2.3 Reliability of data

Standard investigations that we perform regarding the reliability of data are discussed in detail in previous reports. In summary, these include:

- Checks on internal consistency of rate files
- Consistency across provided files
- Consistency with files used in the previous valuation

Overall, 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 believe this has a material impact on the valuation results.

We also performed a number of internal consistency checks related to the July 2013 benefit reforms. At a data level, these reforms forced clients to switch benefit codes and the way in which benefit subcategories (such as JS-WR versus JS-HCD) are identified was also changed. These checks were undertaken to ensure that clients did not get 'lost' in the data across the reform period and that the conversion from old benefit types to new was internally consistent.

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 Section 10.

9.2.4 Benefit state and payments

Benefit state was generally based on the benefit codes within the payment files. Some minor changes were required (see Section 9.2.9).

All modelling of average benefits paid per quarter has been done in current dollar values, as at 30 June 2014. This means older payments have been increased in line with historical benefit inflation.

9.2.5 Missing values

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

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

Table 9.1 Missing values for key variables

Variable	Proportion missing on cohort
Education level (missing or 'None')	65%
Region	9%
Ethnicity	3%
Incapacity	1%
Child	1%

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.

The incidence of missing values this year is similar to previous valuations. However, the increased focus on regional effects in this valuation has made missing region data more serious. In particular, there is a high proportion of Supplementary Only clients without a documented region. We have improved the interpolation for these clients by tracing their 'last known' and 'next known' regions more carefully, but we expect to improve this further in future valuations.

9.2.6 Data quality issues for Youth segments

In the previous valuation we had a number of issues with the Youth segments. The following issues arose after the introduction of the Youth Service in August 2012:

- YP and YPP clients were not adequately differentiated in the main payments file
- The geographic region for these clients was no longer provided
- The rate of missing values for other variables was generally higher

The first two issues have largely been resolved this year. The new eligibility fields on the payment file enable reasonably accurate splitting between YP and YPP. MSD also provided an additional data file with region at quarter ends for each Youth client.

The third issue remains a problem. Education data in particular, is poor for Youth segments. This will tend to increase the uncertainty of projection for these clients.

9.2.7 Data quality issues for qualifications data

Qualifications data has been included in the previous valuations, 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 2%.

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 lifetime estimates in the valuation.

9.2.8 Recasting data for the post-reform environment

Changes to benefit types from mid-July 2013 cause a discontinuity in the dataset. In particular, JS-WR numbers are higher than the old Unemployment Benefit because former DPB>14 and WID/WA clients are also included. To sensibly model across the discontinuity, we have recast the historical data on a post-reform basis. This has a number of small practical consequences on the modelling data; for instance, a transfer from DPB>14 to UB in the historical time series is no longer counted as a transfer. This allows

us to view a more continuous time series and better observe the change in transfer behaviour post-reform.

9.2.9 Missing eligibility fields

The payment data files contain a new 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 10,000 payment spells since the reform dates (0.3% of the total) had a missing eligibility field. 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.

9.3 Valuation parameters

9.3.1 Benefit population and valuation definition

The definition of liability and the scope of the valuation are discussed in Section 2.2.1, and the process for determining these is detailed in previous reports and Appendix E.

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 the analysis discussed in Section 4.5.4 showing 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 that 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 5.10) for forecasting purposes.

9.3.2 Other parameters

Valuations are conducted annually as at 30 June, with a one month delay for data extraction to allow data to mature; for example, adjustments due to abatement against earned income. Valuations are gross of tax for consistency with Crown accounts, and to better reflect the liability from MSD's perspective. We use inflation and discount rates consistent with Treasury economic forecasts.

9.3.3 Reconciling Taylor Fry and MSD definitions

There are a few points of difference in how client status is determined for 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. We note this is particularly telling this year, where much of the decrease in JS numbers is attributable to partners.
- **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 also note that some benefit type definitions have been broadened to include similar payments. Most notably, Hardship and Emergency Benefits are included in the Jobseekers Support benefit.

9.4 Modelling approach

9.4.1 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 2014 quarter. These are initially estimated in 30 June 2014 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

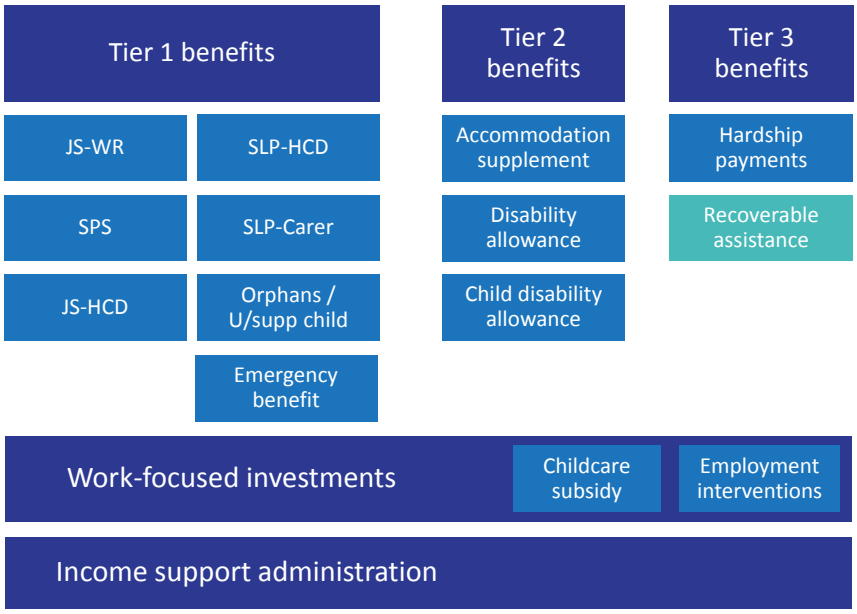
Changes in the 2014 valuation

The methodology applied for the 2014 valuation is virtually identical to that used in the previous valuation, which is documented in greater detail in previous reports. The most significant changes in the 2014 valuation are as follows:

- The move to the new benefit types that date from the July 2013 reforms (see Section 2.4.1). This has led to a reallocation amongst states (WID/WA and DPB>14 recipients moving to JS-WR), and the removal of the WA/WID benefit state entirely.
- Inclusion of additional variables into the prediction models, namely:
  - Regional unemployment rates (explained in Section 6)
  - Family benefit history (explained in Section 4.3.3)
  - Previous benefit type (explained in Section 4.4.3).

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



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 F.

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 is modelled separately and was 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 further contribution to lifetime benefit cost.

Modelling payment costs

Payment models

Clients in each state can receive a number of different benefit types simultaneously; typically a main benefit plus the various types of 2nd and/or 3rd tier assistance such as Accommodation Supplement or Hardship Assistance. Clients might also receive Recoverable Assistance payments, the bulk of which is later recovered (see Section 7.4.3).

To obtain the payment type results presented in Section 7.2, separate payment models are required for each combination of benefit state and benefit type received while in that state. This leads to a significant number of payment models; for instance, there are nine payment models for clients in the SPS benefit state (one for each of main Tier 1 benefits, OB, AS, DA, CDA, CCS, HS, EI and Recoverable Assistance). Note we allocate all Tier 1 payments to the current benefit state. This means there is a reallocation in cases where a client receives more than one Tier 1 benefit during a quarter. However, the impact of this reallocation is small. The models also vary according to other client characteristics listed in Section 9.2.2.

While there are 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 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 2014 dollars, with inflation applied afterwards to projected payments.

9.4.2 Projecting client numbers and payments

Simulated versus exact projection

A key design choice was whether to calculate an exact liability or to use 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. This process has a heavy computational load due to the many possible outcomes.
- **Simulation:** this approach follows each person through time, using the transition probabilities to simulate their path. This process is then repeated many times. 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 makes the exact approach computationally infeasible.

We adopted the simulation based approach for the 2012 and 2013 valuations and have continued to use it for the 2014 valuation. The results presented make use of 100 independent runs of the projection. Based on an analysis of simulation variability, we believe the estimated mean should be within 0.05% of the true mean that would have been obtained from an exact approach.

Further details on computational aspects of the projection are included in Appendix H.

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 2014. 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 2013/14.
- Project the sampled clients forward.

This approach treats client returns and new entries simultaneously (the sampling population from 2013/14 includes both returning and new clients). It assumes that the relative numbers of new entrants versus returns will be similar to that seen in 2013/14.

Total results are obtained by summing the 20 quarterly cohorts of future client entries into five annual cohorts and discounting their lifetime liabilities into the middle of each year.

9.4.3 Modelling the evolution of dynamic variables

Some of the modelling variables tend to remain fixed over the projection; for example, gender and 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 about 15 different incapacity groups. We have models that allocate:

- Incapacity type upon entry into JS-HCD or SLP-HCD
- The probability of incapacity type changing while in JS-HCD or SLP-HCD
- The new type of incapacity if there is a change while in JS-HCD or SLP-HCD

These models rely on a number of client characteristics. This includes demographic characteristics (age, gender and ethnicity), benefit history (duration and current benefit) and incapacity history, as well as an allowance for trends over time.

Partner related variables

Two partner-related variables are maintained in the projection. The first is a flag indicating whether the partner is also registered on the benefit, and is applicable for JS, SLH and EB. The second is a flag indicating whether it is the partner who carries the incapacity for SLH 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 some 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.

9.5 Modelling net loans and expenses

9.5.1 Modelling net loans cost

There are a number of ways in which clients become indebted to MSD. We value overpayments (whether arising from fraud or otherwise) and Recoverable Assistance (including benefit advances) separately. Summary results in Section 7.4 present the combined total of all subcomponents as a "net loans cost".

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 or 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.
- There was some uncertainty as to whether the main rate files were net of loan adjustments (that is, when it is realised that an overpayment was actually correct). Adjustments represent a small fraction of total recoveries.
- A small proportion of both existing and new debts relate to clients outside the scope of the valuation, such as debts to clients over age 65. Correct removal of these debts is difficult, but the impact on the overall valuation is not material.
- The assumption is made that Recoverable Assistance recoveries are a straight proportion of corresponding payments, and thus the dynamics of this loan type are stable over time.

We believe a more detailed analysis of loans is possible that better captures the dynamics of loans and recoveries, as well as giving some insight into the total level of overpayments and fraud, not just the detected level. However, such an analysis is beyond the scope of the current valuation.

9.5.2 Modelling Operating Expenses

MSD incurs expenses in delivering benefits, services and programs in addition to the cost of the benefit payments. These can be broadly categorised into:

- Program costs related directly to employment outcomes
- Program costs related to preparing beneficiaries for work
- Administration costs related to providing income support

Unlike demand-driven benefit receipt, the level of expenditure is determined each year through the budget process, and tends to remain relatively stable. Annual expenses as well as 2013/14 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 clients in year six and beyond is excluded. This ensures that expenses can be considered on a like-for-like future liability basis.

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 2014/15 budget
- Allocate expense costs to either current client liability, future client liability, or clients outside the scope of this valuation
- Proportionally allocate these expenses into the various categories listed above, based on the expense budget information provided by MSD.

9.6 Model checking and validation

There are many checks performed on the models to ensure their appropriateness. These relate to the:

- Individual models used, which are generalised linear model diagnostics statistics and plots
- Analysis of model changes from 2013 to 2014
- Detailed cohort-level analysis of differences in projection patterns

Back-testing has also been performed in previous valuations. Its usefulness was somewhat less this year, as validation on the past data gave little insight into the post-reform projections. Instead, we have spent more time carefully considering the pre and post-reform projections (both on 2013 and 2014 valuation cohorts), ensuring we have understood any material differences.

Additional detail on diagnostics has been provided in previous reports.

9.7 Approach to setting assumptions

9.7.1 Behavioural assumptions

Our approach to setting behavioural assumptions is discussed in Section 3.8.5. To recap briefly, we use our transition and payment models to understand how emerging experience differs from what was forecast. We conduct analysis, including splitting out the impact of cyclical changes, analysis of known changes such as policy and operational changes, and consultations with MSD to give further insight into the nature of these changes. This informs a judgement about the extent to which emerging experience is likely to continue.

9.7.2 Unemployment rate

As discussed in Section 2.4.3, the labour market is (unsurprisingly) an important determinant of benefit dynamics and client behaviour. We use standard Treasury forecasts for the unemployment rate, detailed in Appendix B. We update each successive valuation to break out the impact of changes relative to the forecast unemployment rate on the liability. This analysis is provided in Section 2.4.3. Analysis of the sensitivity of the main estimates to changes in the unemployment rate, and different scenarios, are provided in Section 8.5.

9.7.3 Inflation and discount basis

Benefit rates are indexed to inflation. Under accounting and actuarial standards for insurance and accident compensation, liabilities must be estimated allowing for future inflation and the impact 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 B.

Changes to inflation and discounting assumptions will have a significant impact on the valuation figures 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 impacts to the valuation. Results of this analysis are provided in Section 2.4.5. Analysis of the sensitivity of the main estimates to changes in these rates is provided in Section 8.5.

9.8 Compliance with actuarial and accounting standards

There are currently no accounting or actuarial professional standards strictly applicable to the valuation of social benefit liabilities. However, in general we carried out the valuation in accordance with standards applicable to the valuation of accident compensation liabilities.

As such, we have generally complied with the New Zealand Society of Actuaries Professional Standard No. 4.1 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 since the previous valuation the International Actuarial Association has published an International Standard of Actuarial Practice 2 (ISAP 2) "Financial Analysis of Social Security Programs". This standard became operational from the 13th of October 2013. 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 SECTION

- Nature and potential implications of risks
- More 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 9.2.7. 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 this is only the fourth time that a formal actuarial valuation of the NZ Social Benefit liabilities has been carried out. The benefits and data are 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 will reduce.

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 two 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.

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 not captured in 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 in the earlier section about our assumptions, we include analysis of the sensitivity of the valuation result to changes in behavioural and financial assumptions in Section 8.5.

10.2 More 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 9.2.8, changes to benefit types effective this valuation 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.

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)
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)
Tier 2 and 3 benefits (supplementary and hardship assistance)	
YP	Youth Payment
YPP	Young Parent Payment
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 UBSH, CCS, EI and HS.

Table 11.2 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 this valuation)
IB	Invalid's benefit
IYB	Independent youth benefit (combined with UB in this valuation)
NOB	Not on benefits (in a given calendar quarter)
OB	Orphan and unsupported child benefits
OTH	Other benefit, referring to those clients not on a key benefit, includes supplementary assistance, but not including UBSH, CCS, EI and HS.
SB	Sickness benefit
UBSH	Unemployment Benefit Student Hardship (excluded from scope)
UB	Unemployment benefit (and related benefits)
WA/WB	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 repaid 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.
Qualifying recipient	A client recognized as part of the current client liability as having received a qualifying benefit in the 12 months up to the valuation date. With a small abuse of terminology, the term can also be applied to the future client liability, where it means those beneficiaries who are not currently qualifying but will receive a qualifying benefit in the near future.
Qualifying benefit	Benefit types for defining a client to be "in the system" and requiring valuation. This includes DPB, IB, SB, UB, EB, DPB-CSI, WA/WB, OB, IYB, AS, DA and CDA. Notable exclusions are UBSH, CCS, EI and HS (in the absence of other benefits payable to the same client). The practical outcome of this definition is that the full future lifetime cost for CCS, EI and HS *where there is an underlying Tier 1 or Tier 2* benefit / assistance are valued.
Relative exposure	This term is used on figures throughout the report. Depending on the context it refers to the number of beneficiaries (transition and payment model figures) or the number of potential beneficiaries (*other benefits and assistance* probability models)
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.